IDinsight

gLOCAL EVALUATION WEEK 2022

GEI Global Evaluation Initiative

Valuing New Information

How can we make better decisions about which evaluations to pursue?

Chau Hoang, Mallika Sobti, Zack Devlin-Foltz

31 May 2022

Agenda

1 Introduction to IDinsight

2 Motivation

3 Introducing VOI

4 Looking forward

5 Discussion

IDinsight uses data and evidence to help leaders combat poverty worldwide.

Our collaborations deploy a large analytical toolkit to help clients **design better policies**, rigorously **test what works**, and use evidence to **implement effectively at scale**.

We place special emphasis on using the right tool for the right question, and tailor our rigorous methods to the real-world constraints of decision-makers.

We have offices in
Dakar, Manila, Lusaka, Nairobi, New Delhi, and **Rabat**

In other words...

We do **program evaluations** all the time.

A classic decision-focused evaluation

GiveWell

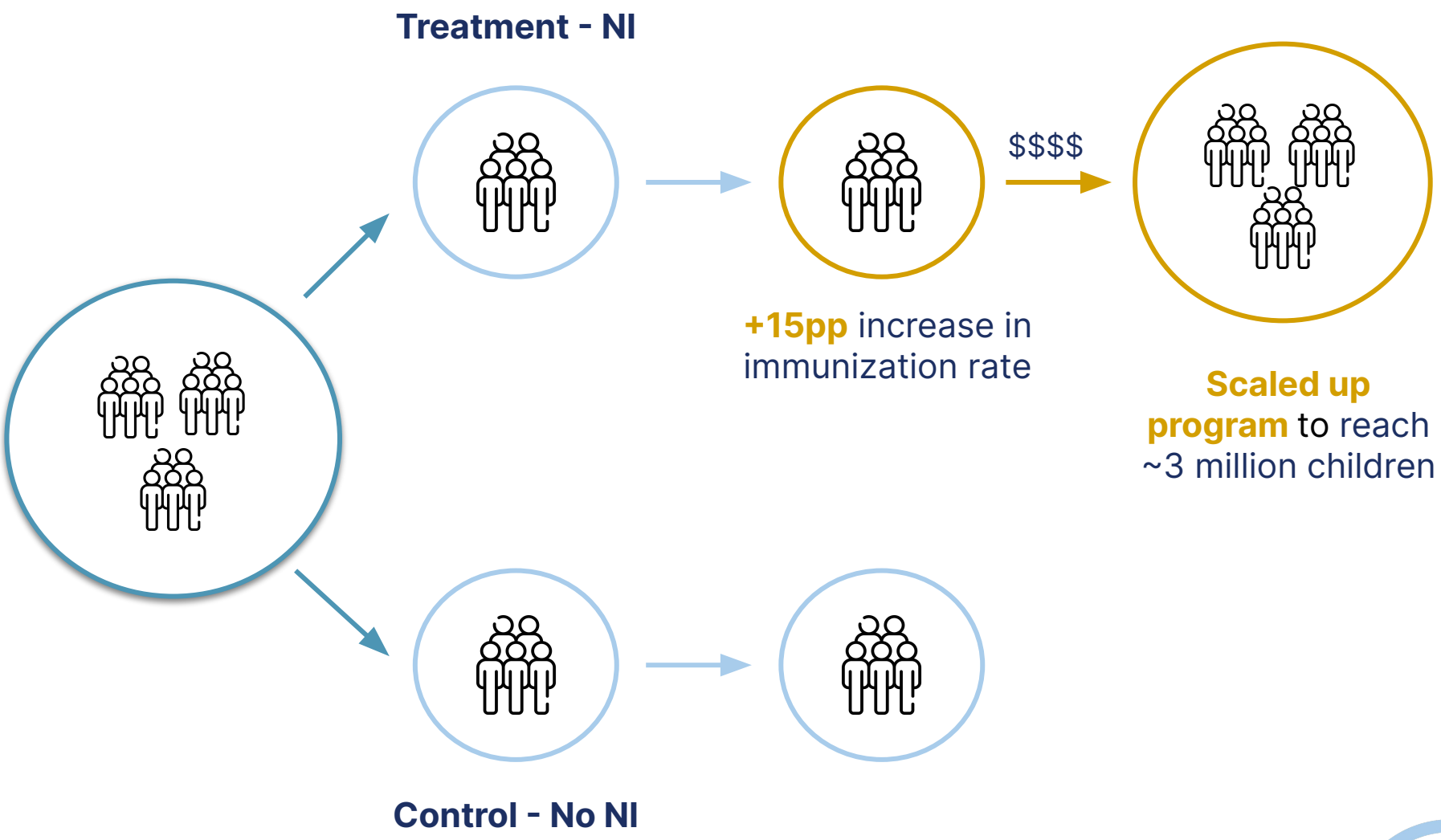
REAL CHANGE FOR YOUR DOLLAR

New Incentives

IDinsight

Immunization card describing the incentive scheme

A classic decision-focused evaluation



To evaluate or not?

Step 1: Consider the ask

Decision maker's needs	How are results from an evaluation going to be used?

Step 2: Determine feasibility

Study feasibility	Study cost vs decision maker's budget Study duration vs decision maker's timelines Fit with org skill set & experience

Step 3: Decision

To evaluate or not?

Step 1: Consider the ask

Decision maker's needs

How are results from an evaluation going to be used?

- Uncertainty about program's impact → evaluations generally reduce uncertainty
- Evaluations add to knowledge about what works and why

Step 2: Determine feasibility

Study feasibility

Study cost vs decision maker's budget
Study duration vs decision maker's timelines
Fit with org skill set and experience

Step 3: Decision

A question rarely asked

“How much do we expect our social impact to improve based on information generated from new research?”

	Low impact on program + outcomes	High impact on program + outcomes
Low study cost	???	???
High study cost	???	???

A question rarely asked

“How much do we expect our social impact to improve based on information generated from new research?”

	Low impact on program + outcomes	High impact on program + outcomes
Low study cost	???	???
High study cost	???	???

Improving research funding allocation

A better allocation of funding requires

- A more systematic way of **understanding the benefits** decision makers derive from the results of an evaluation
- A way to **quantify these benefits**, so that they can be weighed against the cost of generating information

Improving research funding allocation

A better allocation of funding requires

- A more systematic way of **understanding the benefits** decision makers derive from the results of an evaluation
- A way to **quantify these benefits**, so that they can be weighed against the cost of generating information

The ideal approach should allow us to

- Conceptualize the benefits as **social impact (in dollars or another common metric) expected** from a given design
- **Weigh the expected social impact** against the cost of the design (in dollar amounts)

Value of Information (VoI) approach

IDinsight

gLOCAL EVALUATION WEEK 2022

GEI Global Evaluation Initiative

Introducing VOI

What is Value of Information (VoI)?

- A method for **quantifying the value of acquiring additional information**.
- **Information has value primarily by improving decisions** - causing decision-makers to change what they do in ways that increase their social impact
- Draws on techniques from various fields (e.g. business, psychology, economics, etc.).
- Can be applied in the development sector to **help funders make better funding decisions** and **evaluators make better design choices**.
- Does so by nudging both parties to answer - explicitly - a series of questions often left implicit...

Key questions (steps) of VoI

- What decisions face the partner?
- What options are available to them? (e.g. approaches, scales, prioritizations)
- **How do their decisions depend on what they believe about the world?**

- **What does the client/partner currently believe about the world?**
- What are our best guesses for key statistics that matter to the client's decisions?
- How uncertain are we about these best guesses?
- **How likely is it that the current decisions are wrong** due to our uncertainty (decision risk)?

- How much **will new information improve the decision?**

- Is that **improvement worth the cost?**

Key questions (steps) of VoI

1 **What's the decision?**

- What decisions face the partner?
- What options are available to them? (e.g. approaches, scales, prioritizations)
- **How do their decisions depend on what they believe about the world?**

2 **What do we know already?**

- **What does the client/partner currently believe about the world?**
- What are our best guesses for key statistics that matter to the client's decisions?
- How uncertain are we about these best guesses?
- **How likely is it that the current decisions are wrong** due to our uncertainty (decision risk)?

3 **What can we learn?**

- How much **will new information improve the decision?**

4 **Is it worth learning?**

- Is that **improvement worth the cost?**

Step 1: What's the decision? (and how does it depend on what we know/believe?)

Example : An education program that aims to improve children's test scores

Impact estimate	Action
Impact < .15 SD	Not scale the program, review implementation
Impact between .15 SD and .50 SD	Scale to 100 new districts in 5 states
Impact > .50 SD	Secure funding to scale to every district

Key questions (steps) of VoI

1 What's the decision?

2 What do we know already?

3 What can we learn?

4 Is it worth learning?

- What decisions face the partner?
- What options are available to them? (e.g. approaches, scales, prioritizations)
- **How do their decisions depend on what they believe about the world?**

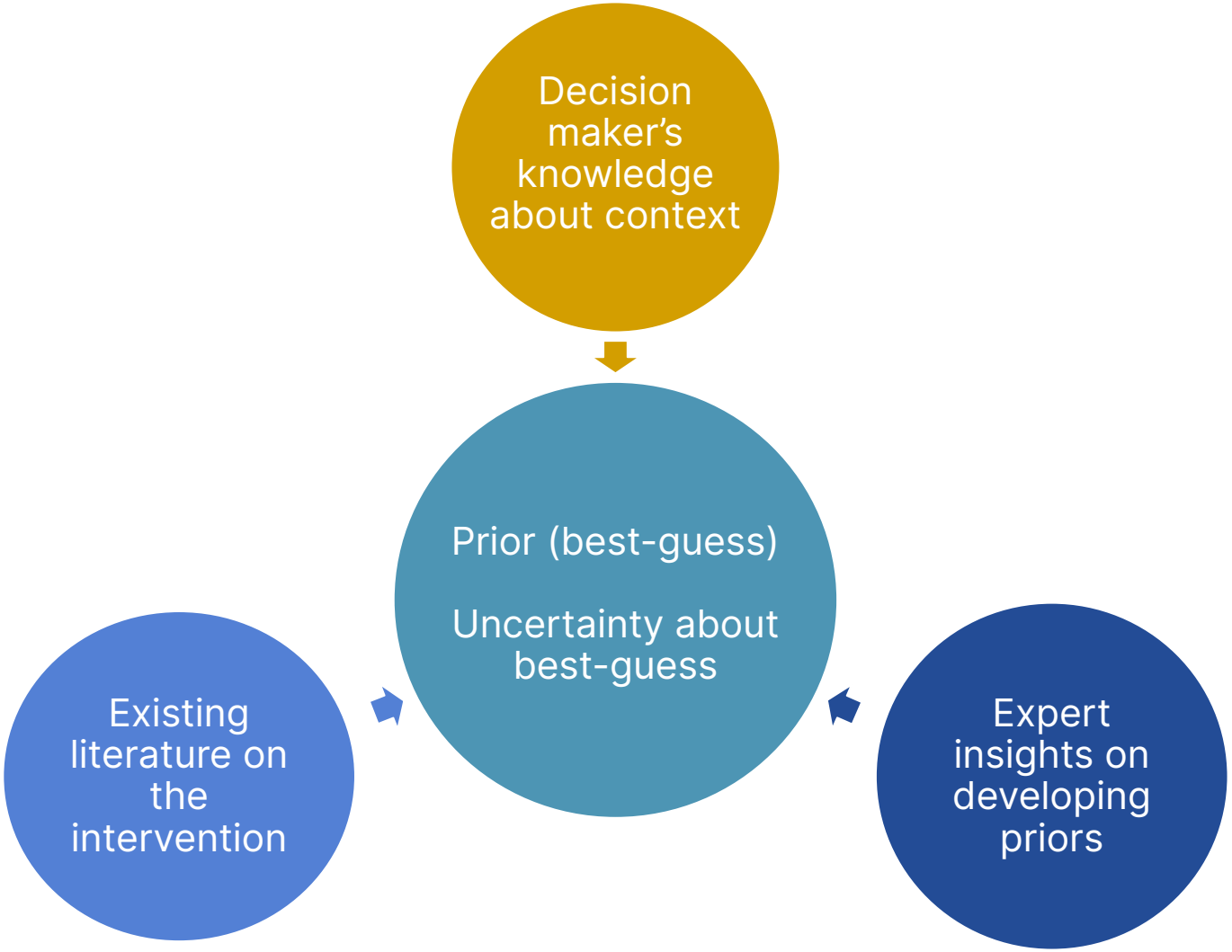
- **What does the client/partner currently believe about the world?**
- What are our best guesses for key statistics that matter to the client's decisions?
- How uncertain are we about these best guesses?
- **How likely is it that the current decisions are wrong** due to our uncertainty (decision risk)?

- How much **will new information improve the decision?**

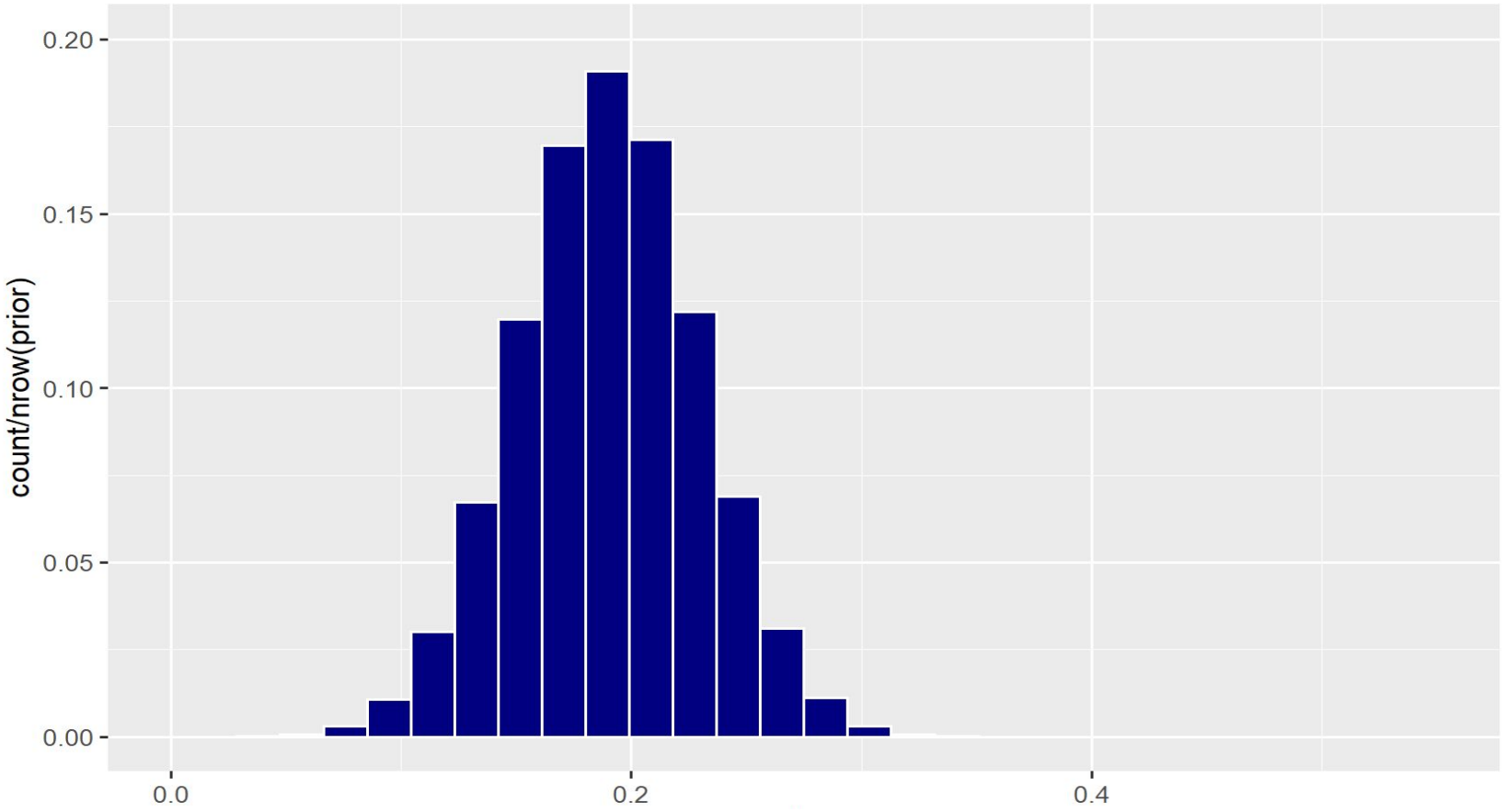
- Is that **improvement worth the cost?**

IDinsight gLOCAL EVALUATION WEEK GEI Global Evaluation Initiative

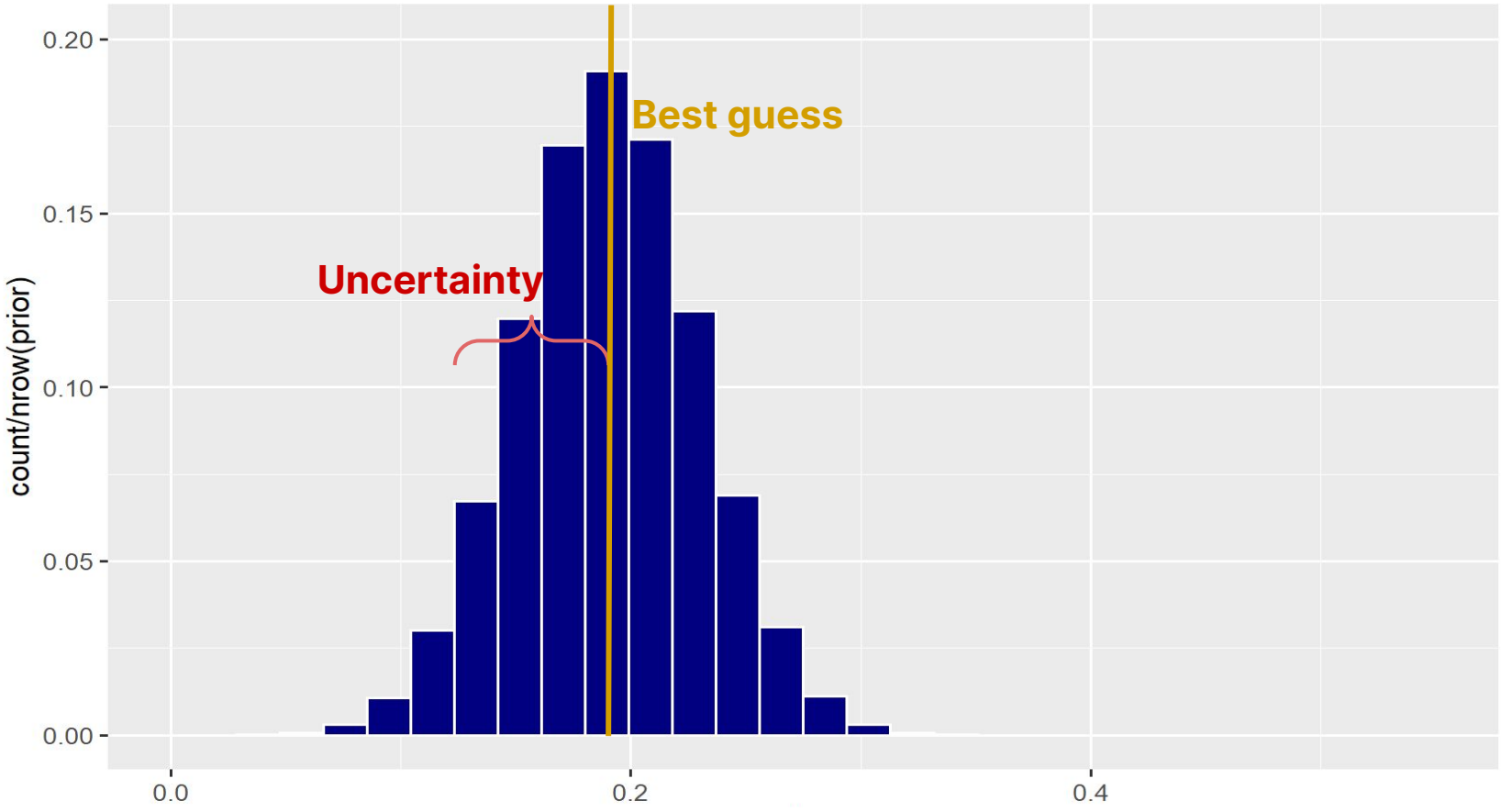
Step 2: What do we know already? (What are our “priors”?)



Construct prior distributions



Best guess + uncertainty gives us a prior

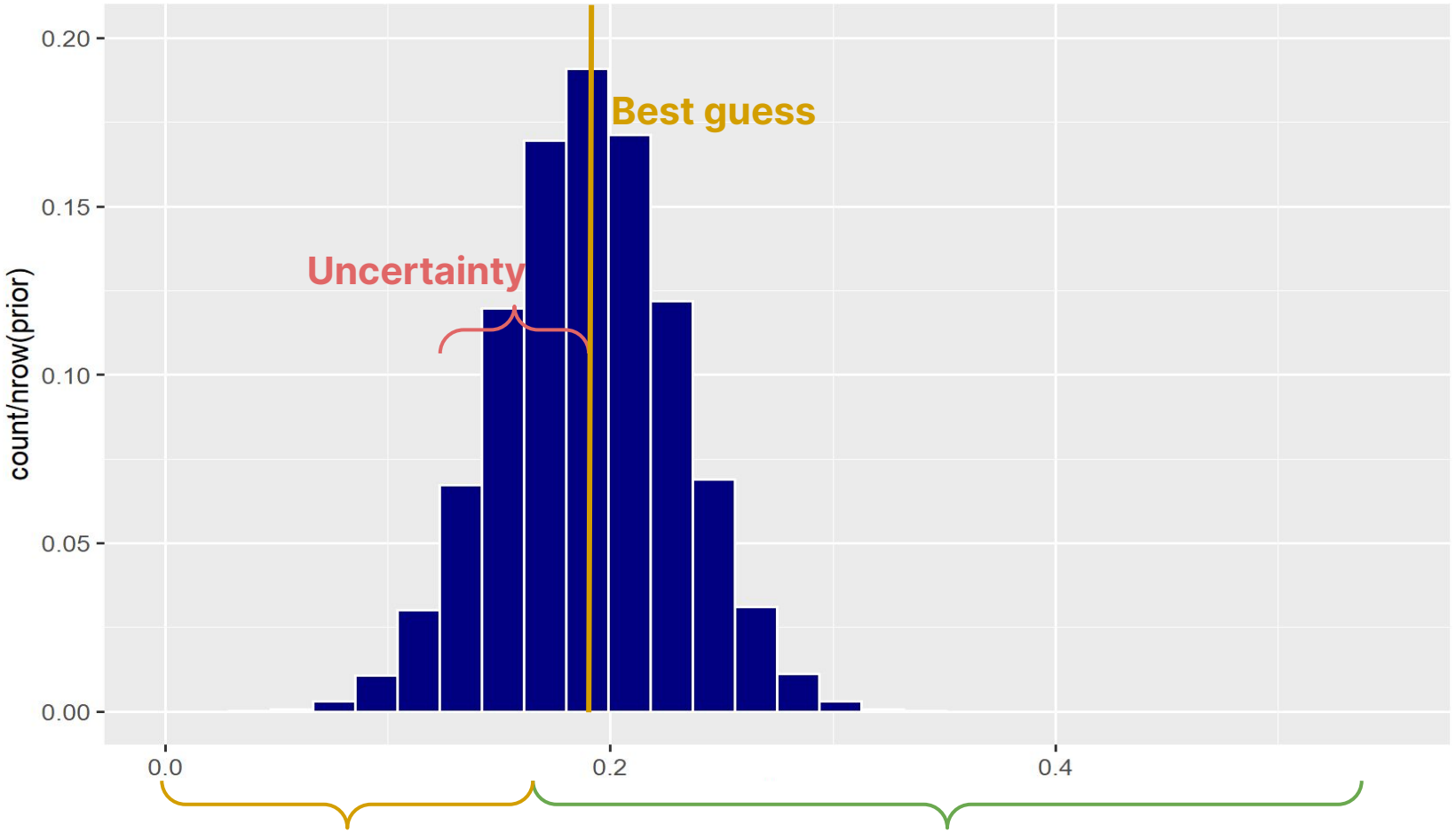


Priors + decision models give us the status quo decision

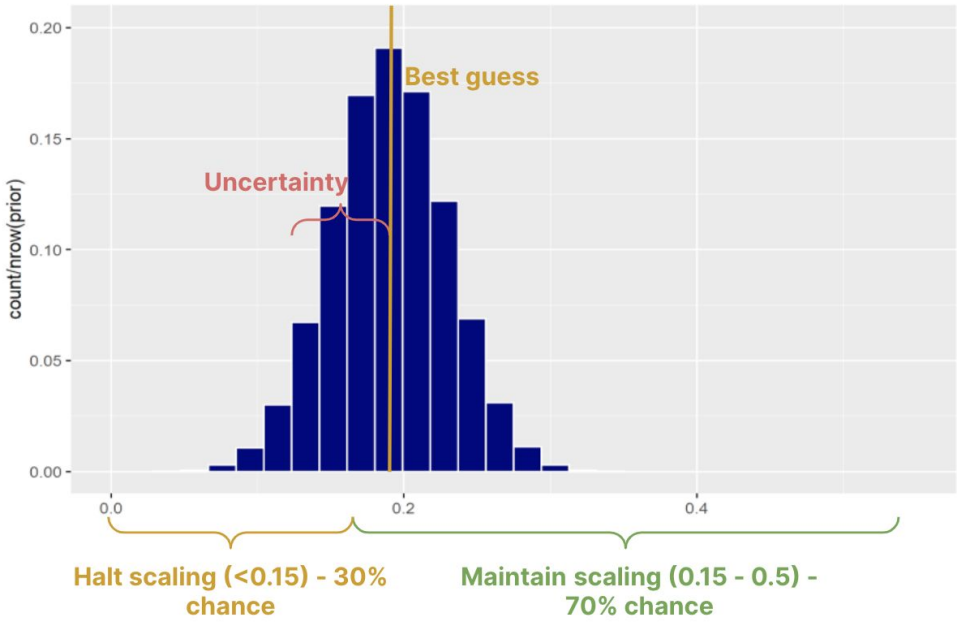
Example : An education program that aims to improve children's test scores

Impact level	Action
Impact < .15 SD	Not scale the program, review implementation
Impact between .15 SD and .50 SD	Scale to 100 new districts in 5 states
Impact > .50 SD	Secure funding to scale to every district

Priors + Decision Models Give us Decision Risk



Priors + Decision Models Give us Decision Risk



- Here, the status quo decision is to scale the program. We estimate a 70% chance that the true program impact is in the range that justifies that decision

- We also estimate a **30% chance that true impact is too low to justify the status quo decision. We call this "decision risk"**

Key questions (steps) of VoI

1 What's the decision?

- What decisions face the partner?
- What options are available to them? (e.g. approaches, scales, prioritizations)
- **How do their decisions depend on what they believe about the world?**

2 What do we know already?

- **What does the client/partner currently believe about the world?**
- What are our best guesses for key statistics that matter to the client's decisions?
- How uncertain are we about these best guesses?
- **How likely is it that the current decisions are wrong** due to our uncertainty (decision risk)?

3 **What can we learn?**

- How much **will new information improve the decision?**

4 Is it worth learning?

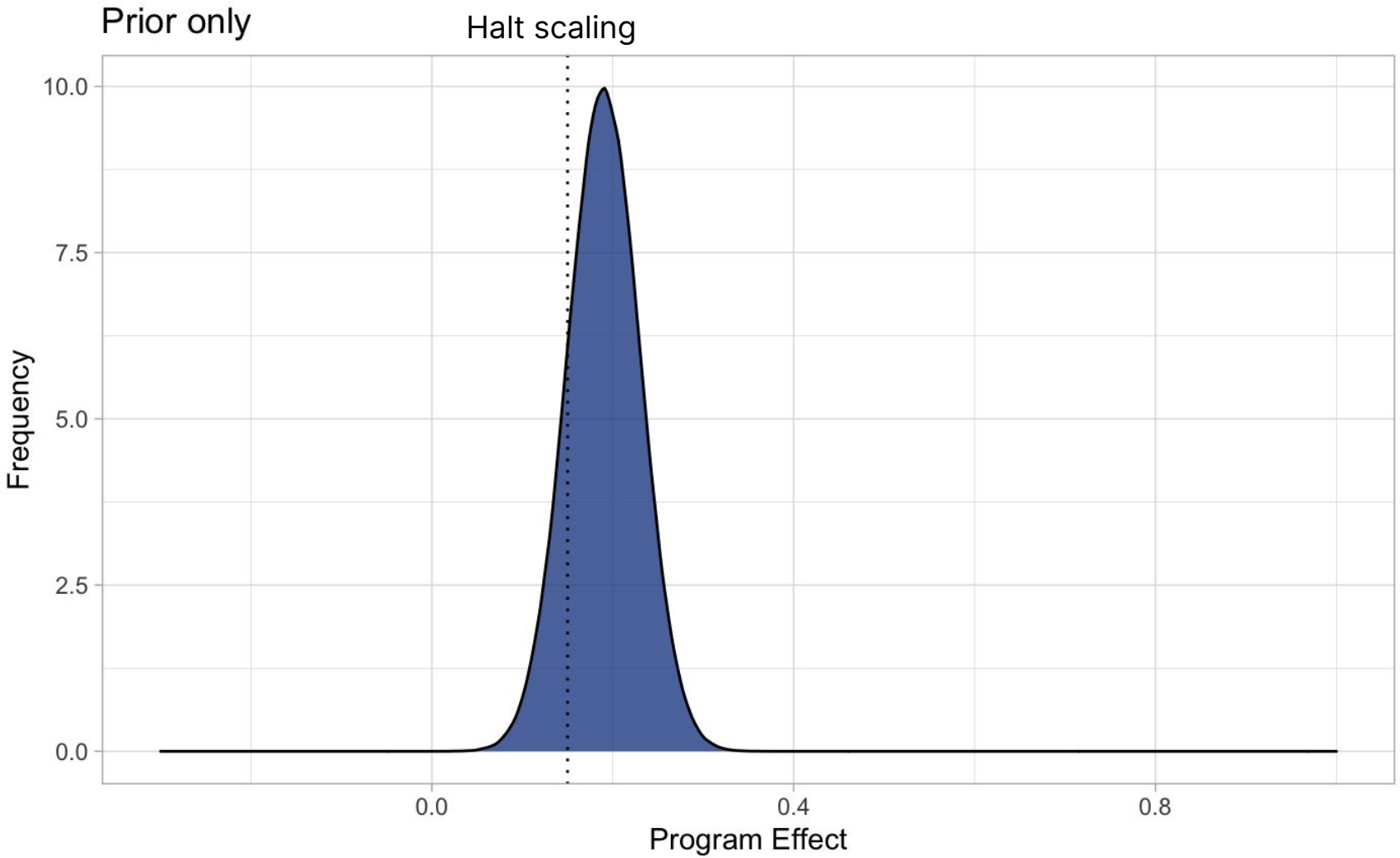
- Is that **improvement worth the cost?**

Step 3: What can we learn?

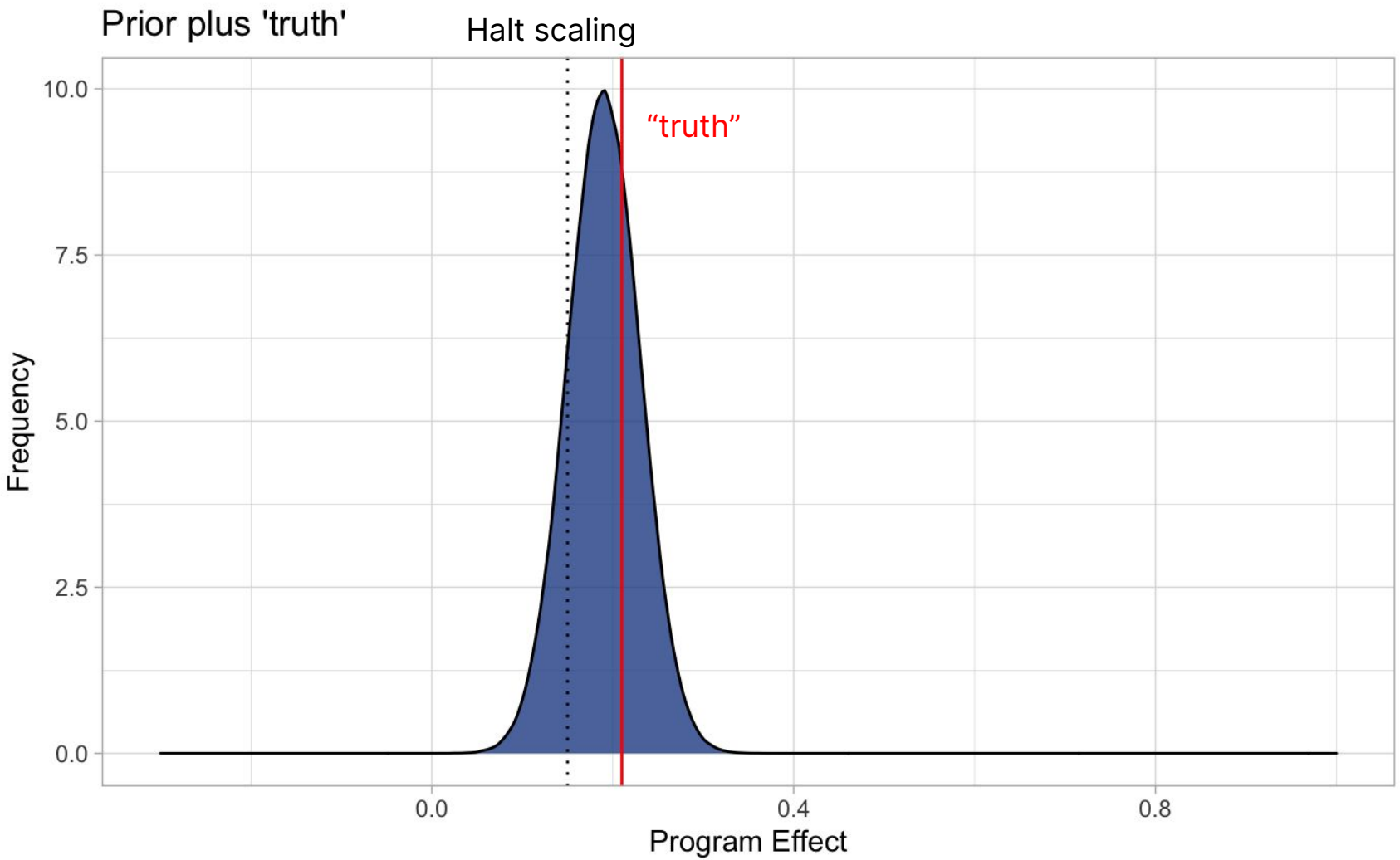
Simulate generating new evidence:

- In each simulation, we create a “truth” comprised of a simulated “true” program effect and a study result that reveals something about that true effect (with uncertainty)
- We then apply the decision model to the study result - imagining what the decision-maker would do having learned from the study
- Then we compare the status quo decision and the with-study decision to “the truth” in our simulated world. This tells us whether the study improved the decision and by how much
- Averaging over tens of thousands of simulations, we get the “expected” improvement in decisions based on the study

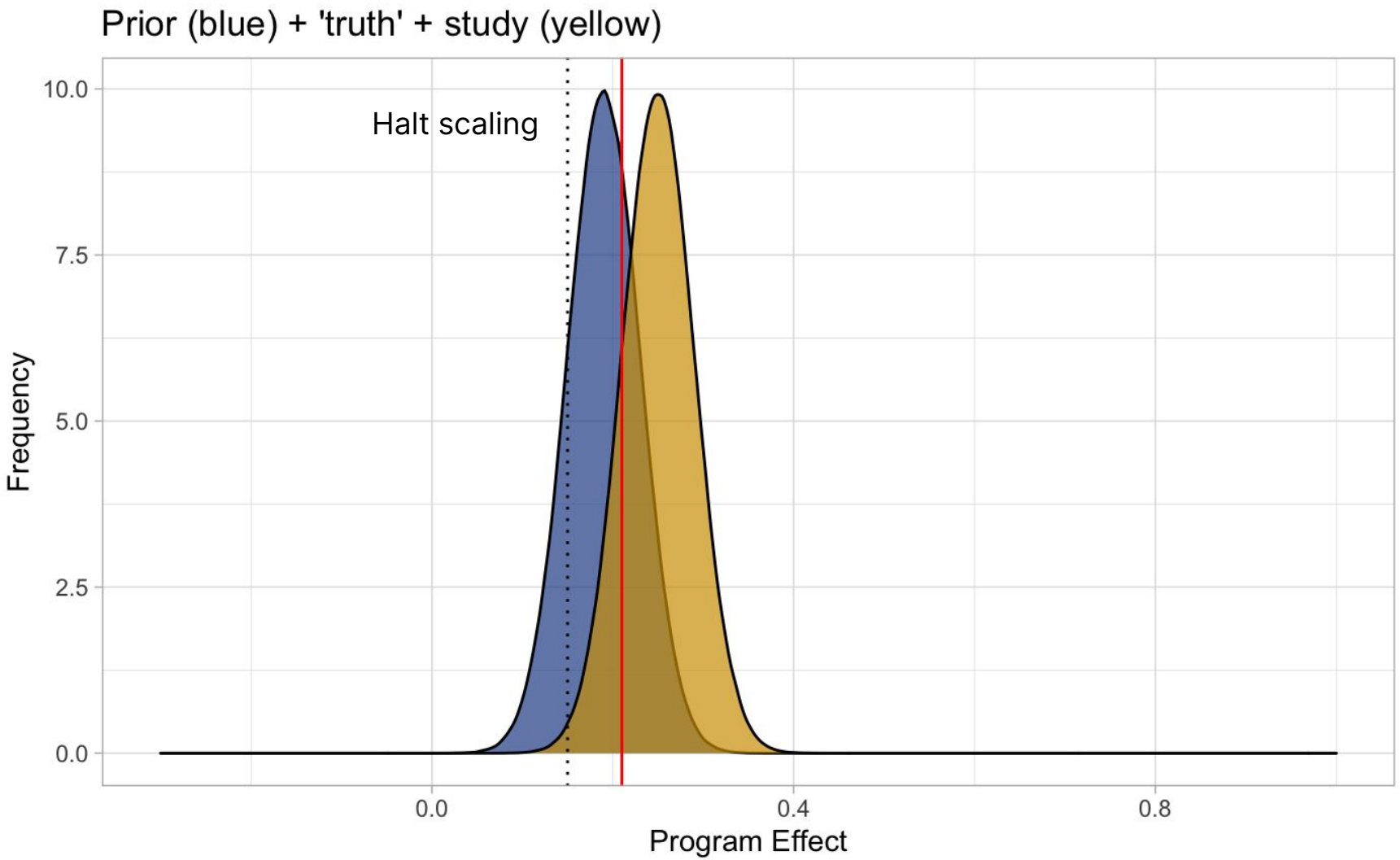
Step 3: What can we learn?



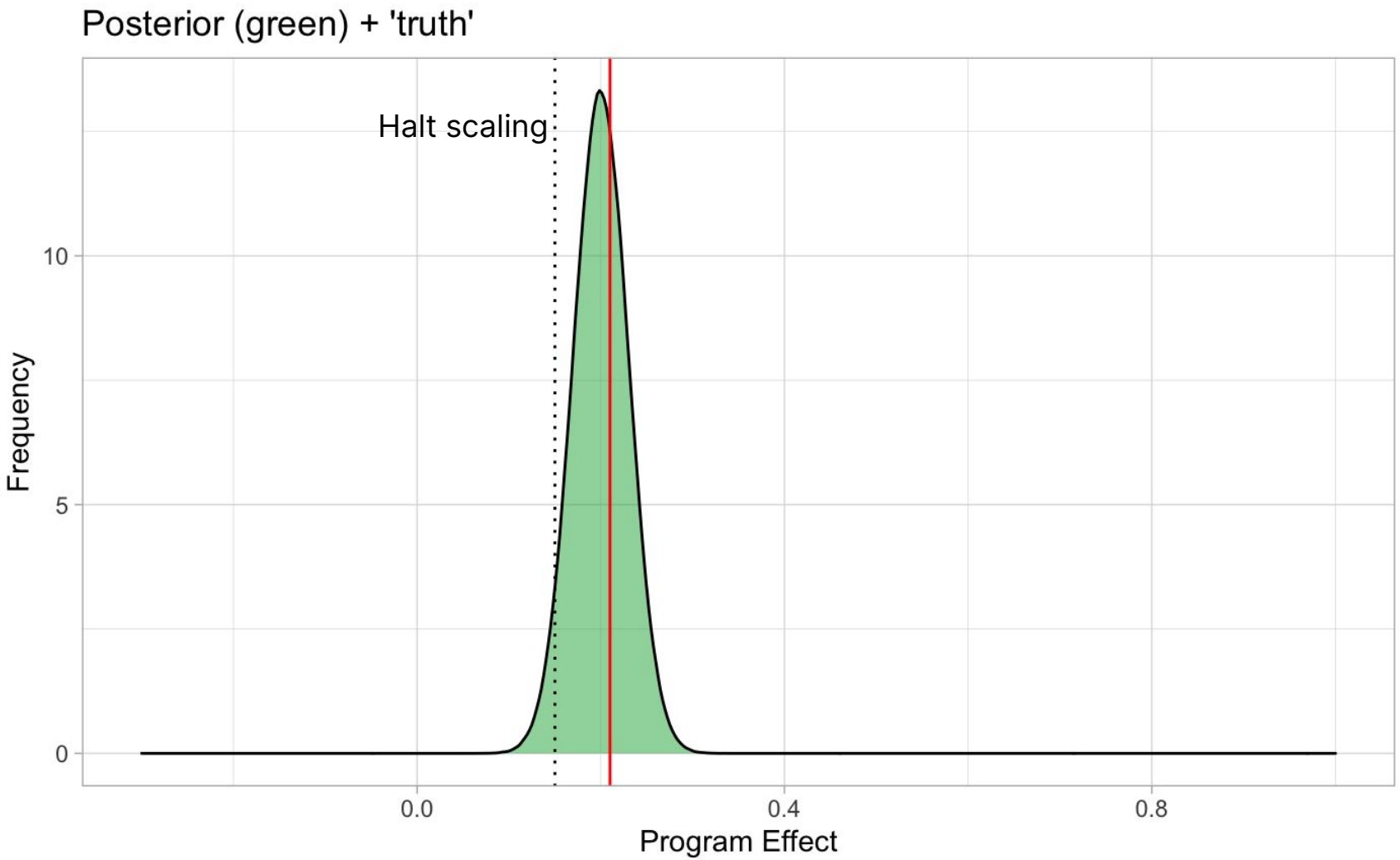
Case 1 : The “truth” falls above the halt threshold



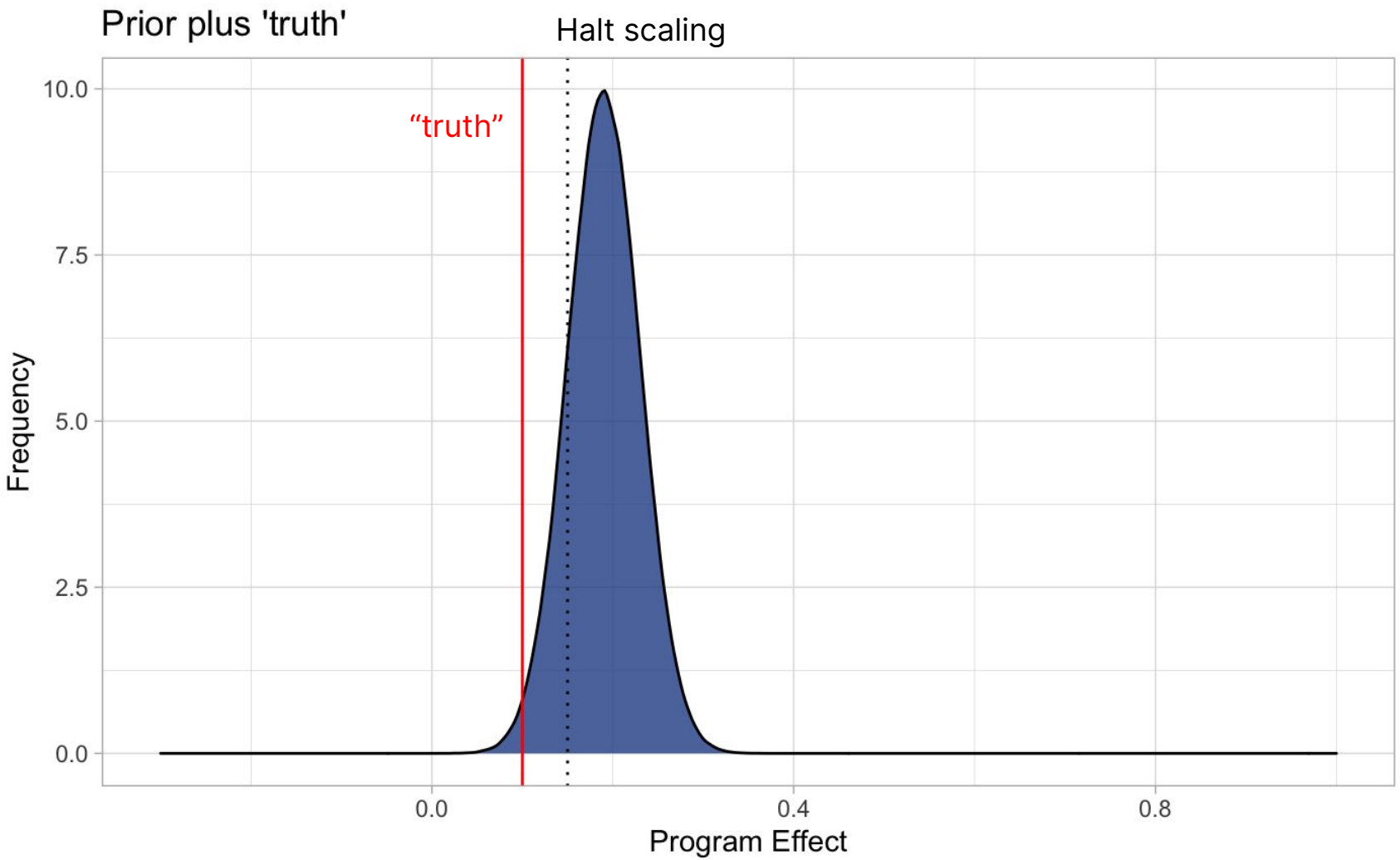
Case 1 : The “truth” falls above the halt threshold



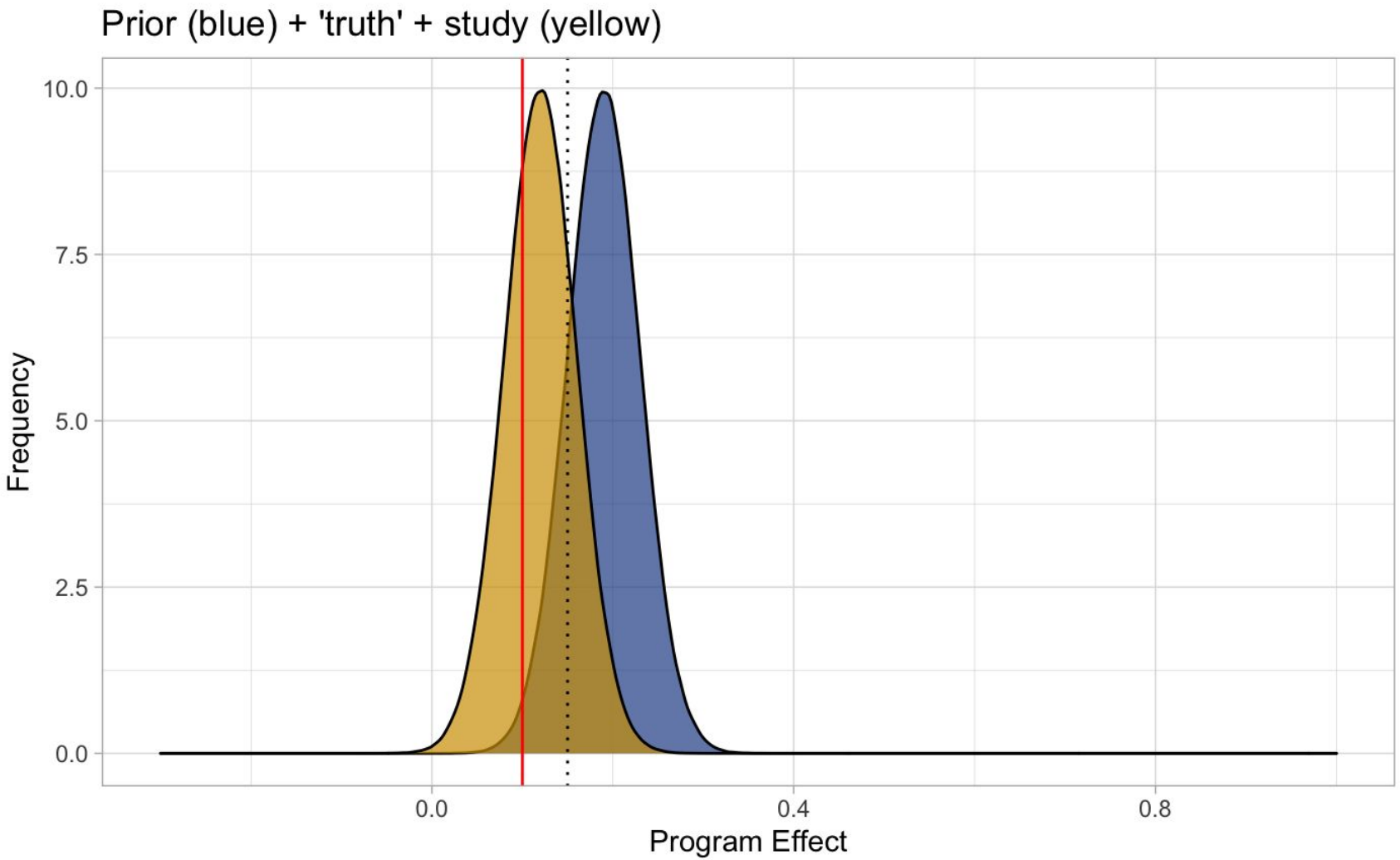
Case 1 : The “truth” falls above the halt threshold



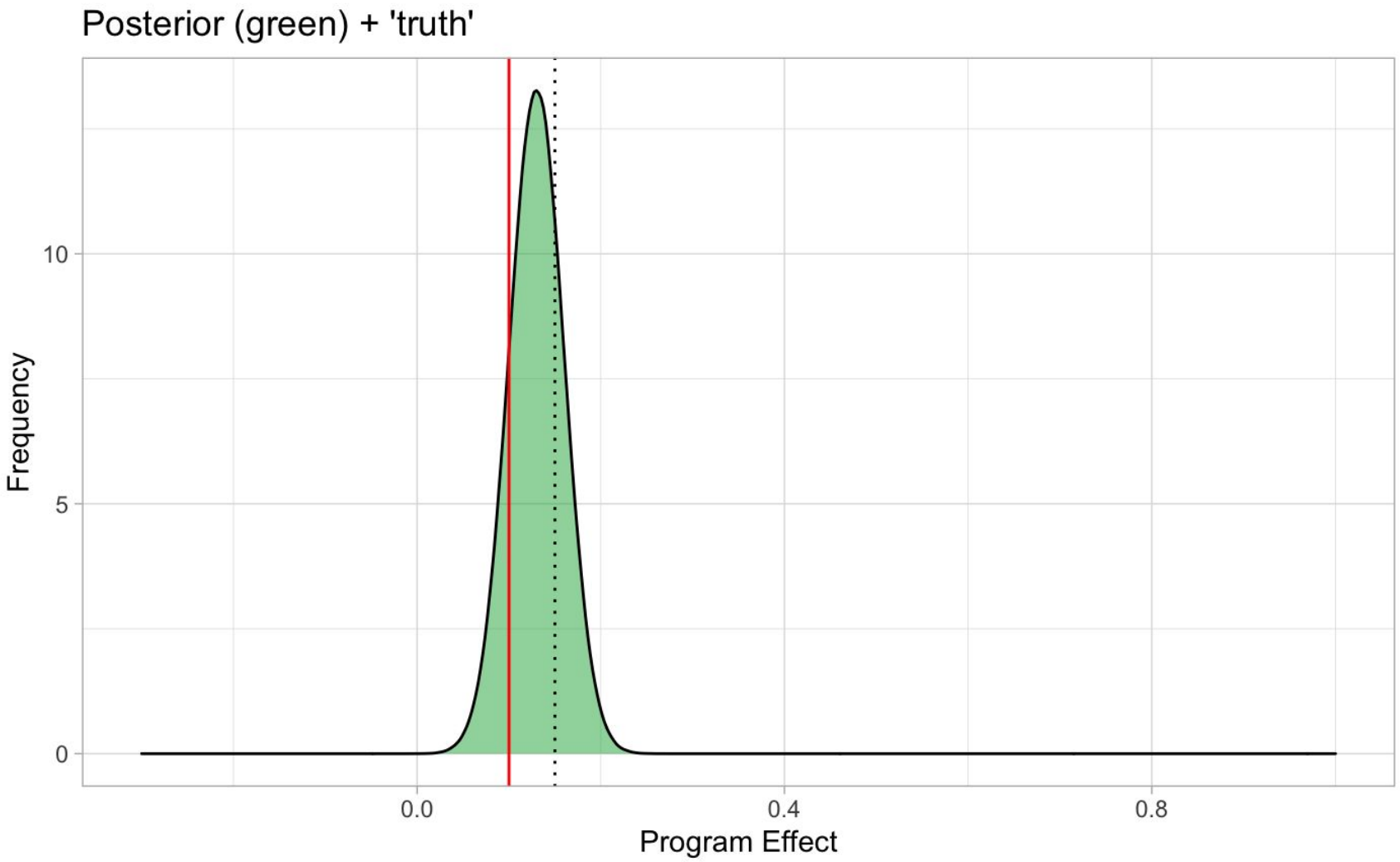
Case 2 : The “truth” falls under the halt threshold



Case 2 : The “truth” falls under the halt threshold



Case 2 : The “truth” falls under the halt threshold



Step 3: Like that! But many many times!

We average the results of tens of thousands of simulations to give us the “expected” result of a given study design in terms of changed (improved) decisions

Key questions (steps) of VoI

1 What's the decision?

- What decisions face the partner?
- What options are available to them? (e.g. approaches, scales, prioritizations)
- **How do their decisions depend on what they believe about the world?**

2 What do we know already?

- **What does the client/partner currently believe about the world?**
- What are our best guesses for key statistics that matter to the client's decisions?
- How uncertain are we about these best guesses?
- **How likely is it that the current decisions are wrong** due to our uncertainty (decision risk)?

3 What can we learn?

- How much **will new information improve the decision?**

4 Is it worth learning?

- Is that **improvement worth the cost?**

Step 4: Is it worth learning (given its cost)?

- Once we have an estimate of information value, we can pair this with estimates of information cost to help **decide what information to pay for.**

- **Several options** for analyzing the cost-effectiveness of any evidence-generating activity - increasing rigor and complexity
    - **The simplest**: cost to reduce decision risk by a given amount (i.e. “For $500,000 USD, we can reduce the risk of choosing the wrong funding allocations (scale) from 30% to 20%)
    - **One step more complicated**: cost to change decisions by a given amount (i.e. “For $500,000 USD, we can reallocate an average of $5M USD to more impactful programs”)
    - **Most complicated**: value all available uses of funds in a common metric, measure information value in that same metric (i.e. “For $500,000 USD, we create $700,000 USD of additional social impact by improving funding allocations”)

IDinsight

gLOCAL EVALUATION WEEK 2022

GEI Global Evaluation Initiative

Looking forward

To put it all into perspective

- We know that real-world decisions are almost always more complex than the example here.
- “Doing VOI” to us is, first and foremost, about answering the above key questions one way or another.
- While we think answering them precisely and quantitatively is ideal, we recognize that this won’t be possible in every case or palatable to every decision-maker.
- We still think asking and answering these questions out loud will lead to better thinking and, ultimately, better research funding and design decisions.

Questions for future work

Methodology

- What are the best methodologies for eliciting priors and modeling how evidence affects decisions?
- How accurate are these elicited priors and decision models?
- What factors about the study / program / client / decision-making context influence the accuracy of priors and decision models?

Applications

- How would funders respond to this line of thinking about decisions?
- How realistic is the expectation that the client will be able (with our help) to tie program decisions to specific statistics?
- Will they know this ahead of time (i.e. can they predict their own reactions?). Will they tell us?
- What are some other ways in which our clients/we conceptualize “value”, that are not yet captured by this approach ?

IDinsight

gLOCAL
EVALUATION WEEK
2022

GEI
Global
Evaluation
Initiative

Discussion

We'd love your feedback

- What parts of this VoI approach don't feel particularly convincing?
- Are there situations in your work/organization where this approach might be valuable?

Want to continue to conversation? Reach out to us!

Zack: zack.devlinfoltz@idinsight.org

Mallika: mallika.sobit@idinsight.org

Chau: chau.hoang@idinsight.org

IDinsight

gLOCAL
EVALUATION WEEK
2022

GEI
Global
Evaluation
Initiative

Thank you!