Using Randomized Evaluations to Build the Evidence Base for Complex Care Programs

Please select your table for an upcoming group activity:

Orange tables: New to randomized evaluations

Blue tables: Some familiarity with randomized evaluations

Green tables: Currently brainstorming/ designing a randomized evaluation

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Using Randomized Evaluations to Build the Evidence Base for Complex Care Programs

Wes Yin
UCLA Luskin School of Public Affairs, J-PAL affiliate

Anna Spier & Sophie Shank
J-PAL North America

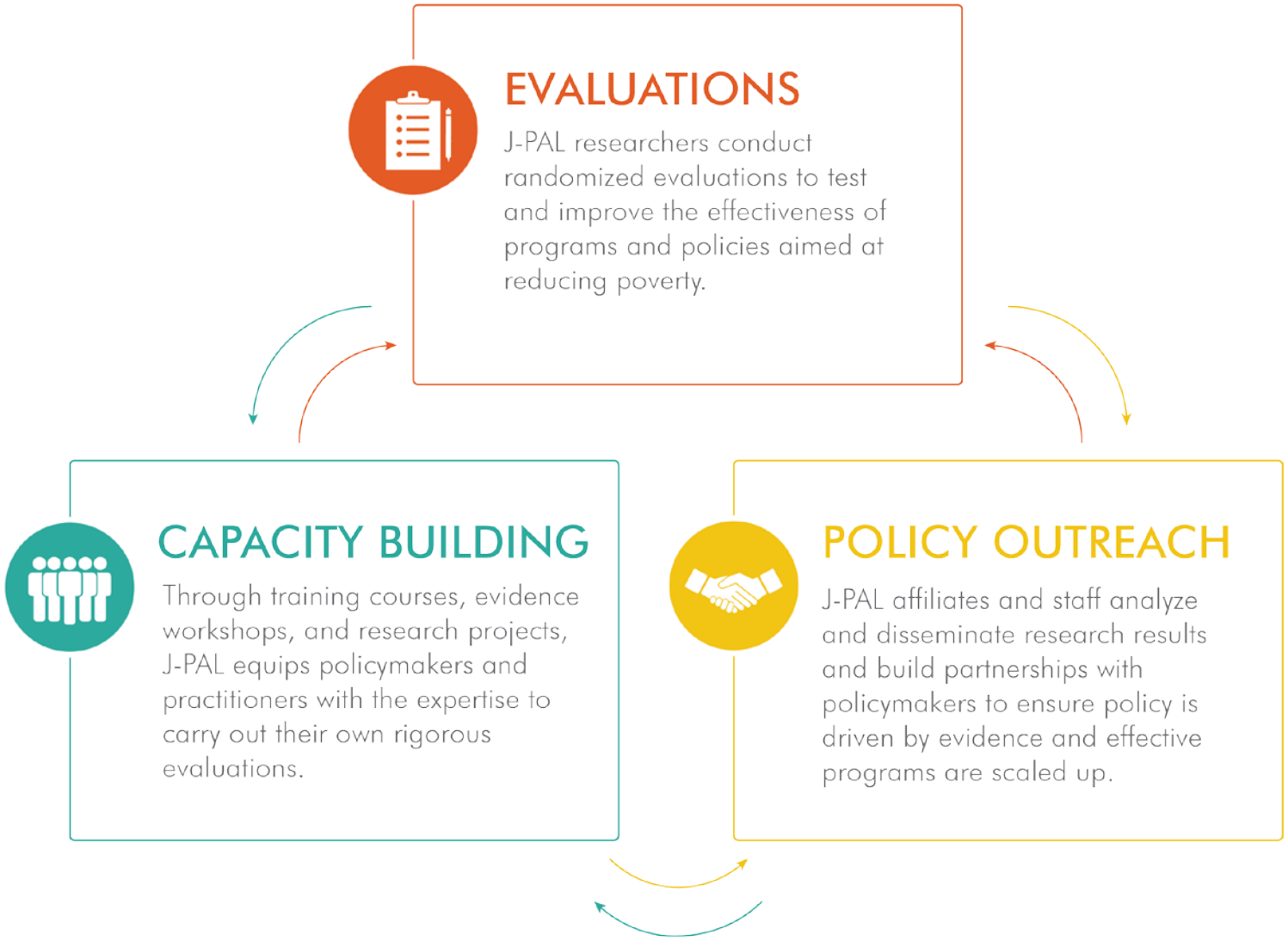
Objectives

- Share our enthusiasm for evaluation
  - Why evaluate? Why randomize?
  - What is evaluation?
  - How do we measure impact?

- Develop intuition for designing impact evaluations and provide opportunities to practice randomized evaluation design

- Share experience designing and running randomized evaluations and answer questions

J-PAL's mission is to reduce poverty by ensuring that policy is informed by scientific evidence



I. Why Evaluate?

II. What is Evaluation?

III. Measuring Impact

IV. Recent Experiences with RCTs

V. Group Work

Oregon Health Insurance Experiment

Looking for low-cost or free health coverage?

HOW IT WORKS

OHP Standard provides free or low-cost health insurance to Oregon residents who:

- **Do not have health care insurance***
- **Are 19 years old or older***
- **Are not pregnant***
- **Have limited income***

Because there are not enough openings to meet everyone's needs, DHS is creating a list of people who would like to apply for OHP Standard. You must place your name on the reservation list during January 28 - February 29, 2008.

DHS will randomly select names monthly from the list starting in March. If your name is selected, DHS will mail you an OHP Standard application form. If you apply and qualify, you will be enrolled in OHP Standard.

DHS wants you to be independent, healthy and safe. The Oregon Health Plan can help make that possible.

GET STARTED

There are three ways to get on the reservation list:

FILL OUT A REQUEST ONLINE.
Visit the OHP Standard reservation list Web site at www.oregon.gov/DHS/open and enter your information electronically.

MAIL A REQUEST.
Complete the OHP Standard reservation request form. Forms are available at any DHS or AAA office, county health department and most hospitals and clinics.

SIGN UP BY PHONE.
Call 800-699-9075 or 503-378-7800 (TTY) Monday through Friday, 7:00 a.m. to 7:00 p.m. If you cannot call during the hours listed, you can have anyone call for you – they just need your name, date of birth and mailing address.

IT'S EASY, IT'S FAIR, GET ON THE LIST!
The reservation list is only open from January 28 - February 29, 2008.

DHS Oregon Department of Human Services

Oregon Health Plan

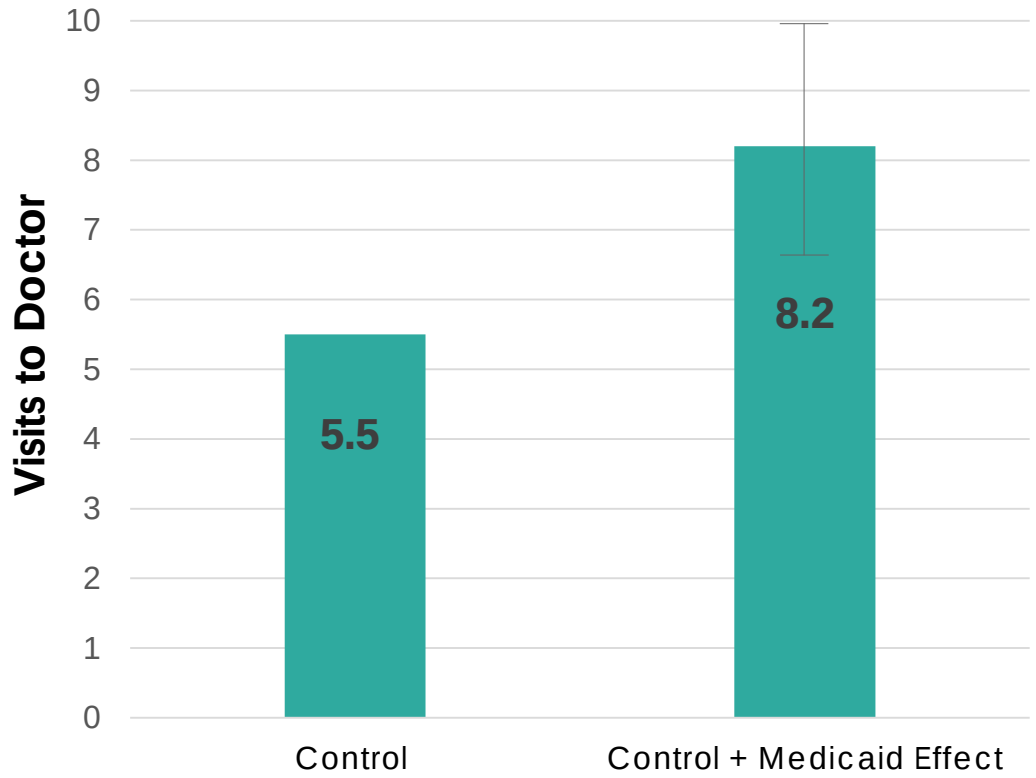
* The information above applies only to OHP Standard. Other benefit packages, such as those that cover pregnant women or people who are under 19 years of age, have different eligibility requirements and are always open. To find out if you are eligible for one of these benefit packages, complete an OHP application. OHP applications are available by calling 800-359-9517 or at any DHS branch office.

In 2008, the state of Oregon expanded its Medicaid program. Slots were allocated using a random lottery.

Clear, credible results

Medicaid expansion in Oregon…

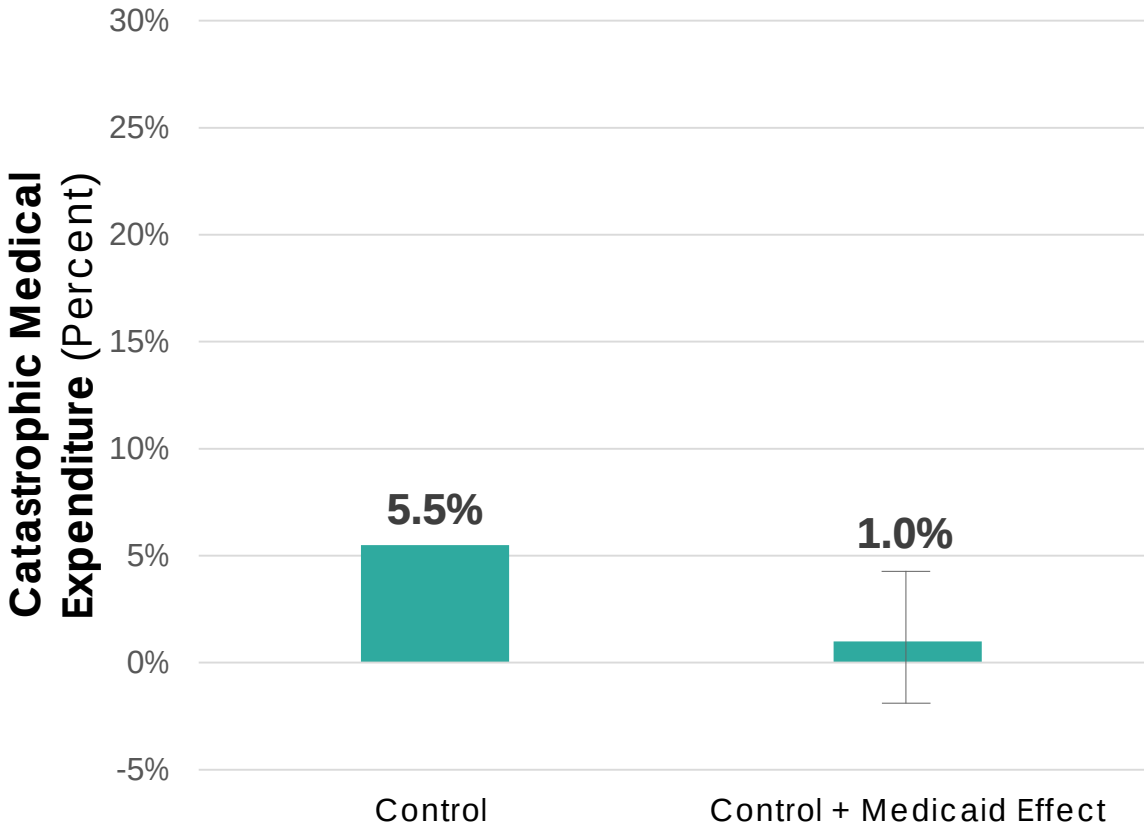
Increased the use of health-care services



Clear, credible results

Medicaid expansion in Oregon…

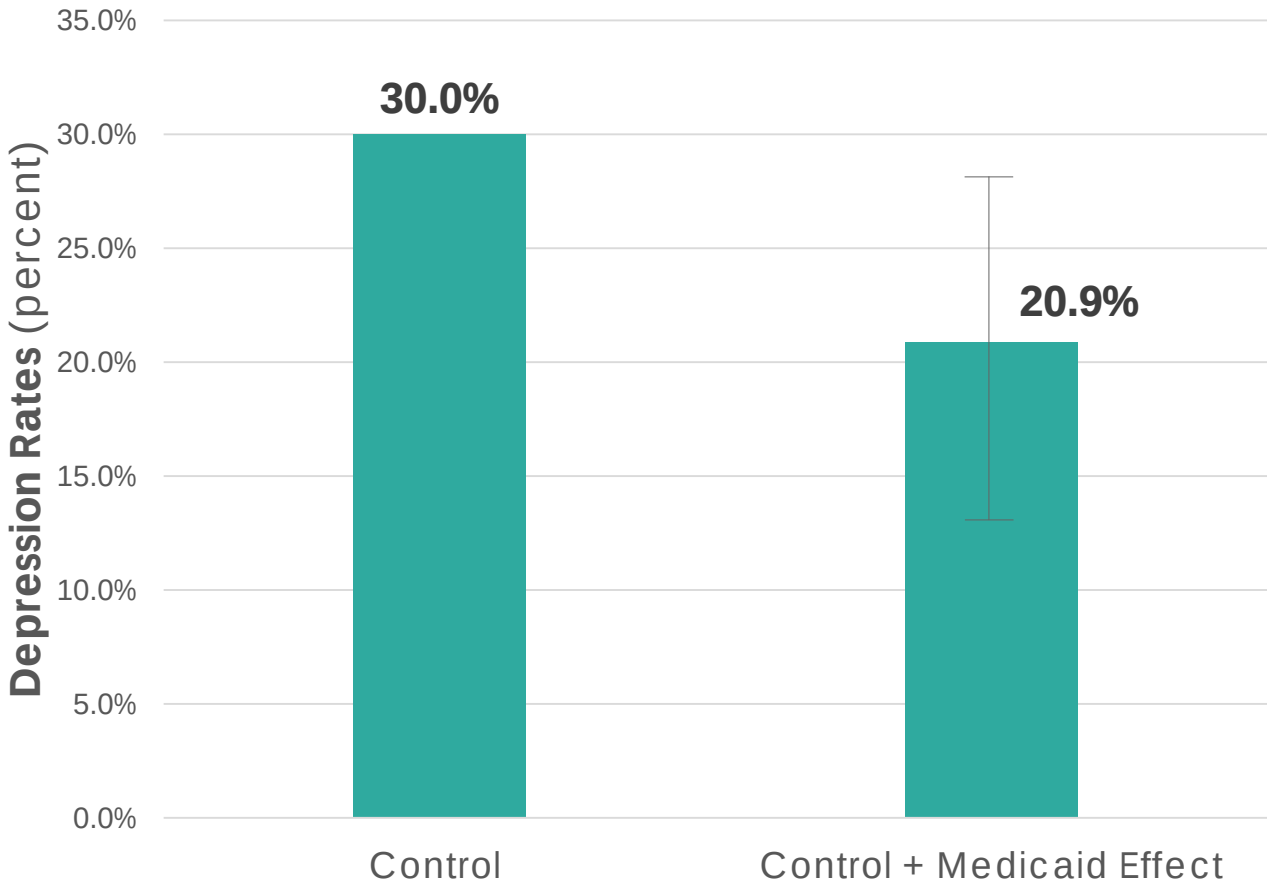
Diminished financial hardship



Clear, credible results

Medicaid expansion in Oregon…

Reduced rates of depression and improved self-reported health, but did not have a statistically significant effect on physical health measures



Media response

5 Things the Oregon Medicaid Study Tells Us About American Health Care

A landmark new study of Oregon's Medicaid program reveals what's wrong with American health care

Four Reasons Why The Oregon Medicaid Results Are Even Worse Than They Look

Is health insurance an antidepressant?

New findings show that wider coverage has one clear effect on the population, and it's not one that anyone is talking about.

Here's what the Oregon Medicaid study really said

Medicaid Access Increases Use of Care, Study Finds

Oregon Health Study: The Surprises in a Randomized Trial

Oregon's Lesson to the Nation: Medicaid Works

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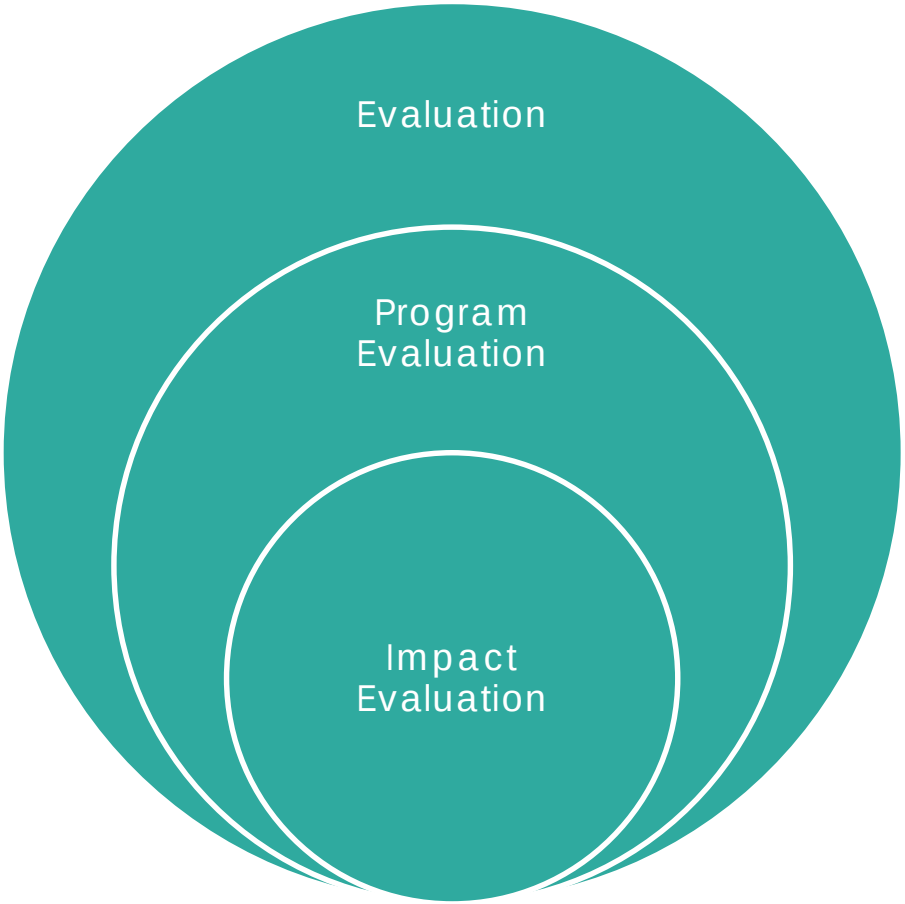
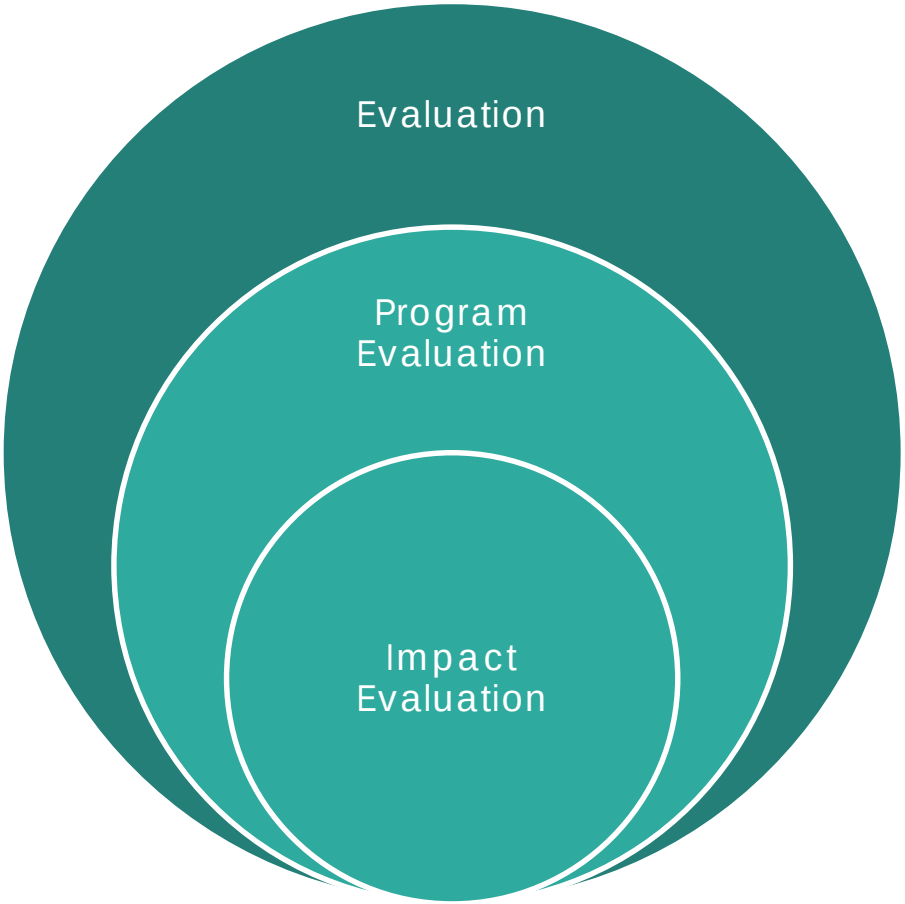
What is evaluation?



Program evaluation



Components of program evaluation

Needs Assessment	What is the problem?
Theory of Change	How, in theory, does the program fix the problem?
Process Evaluation	Is the program being implemented correctly?
Impact Evaluation	What is the causal effect of the program on outcomes?
Cost-Effectiveness Analysis	Given the cost, how does it compare to alternatives?

I. Why Evaluate?

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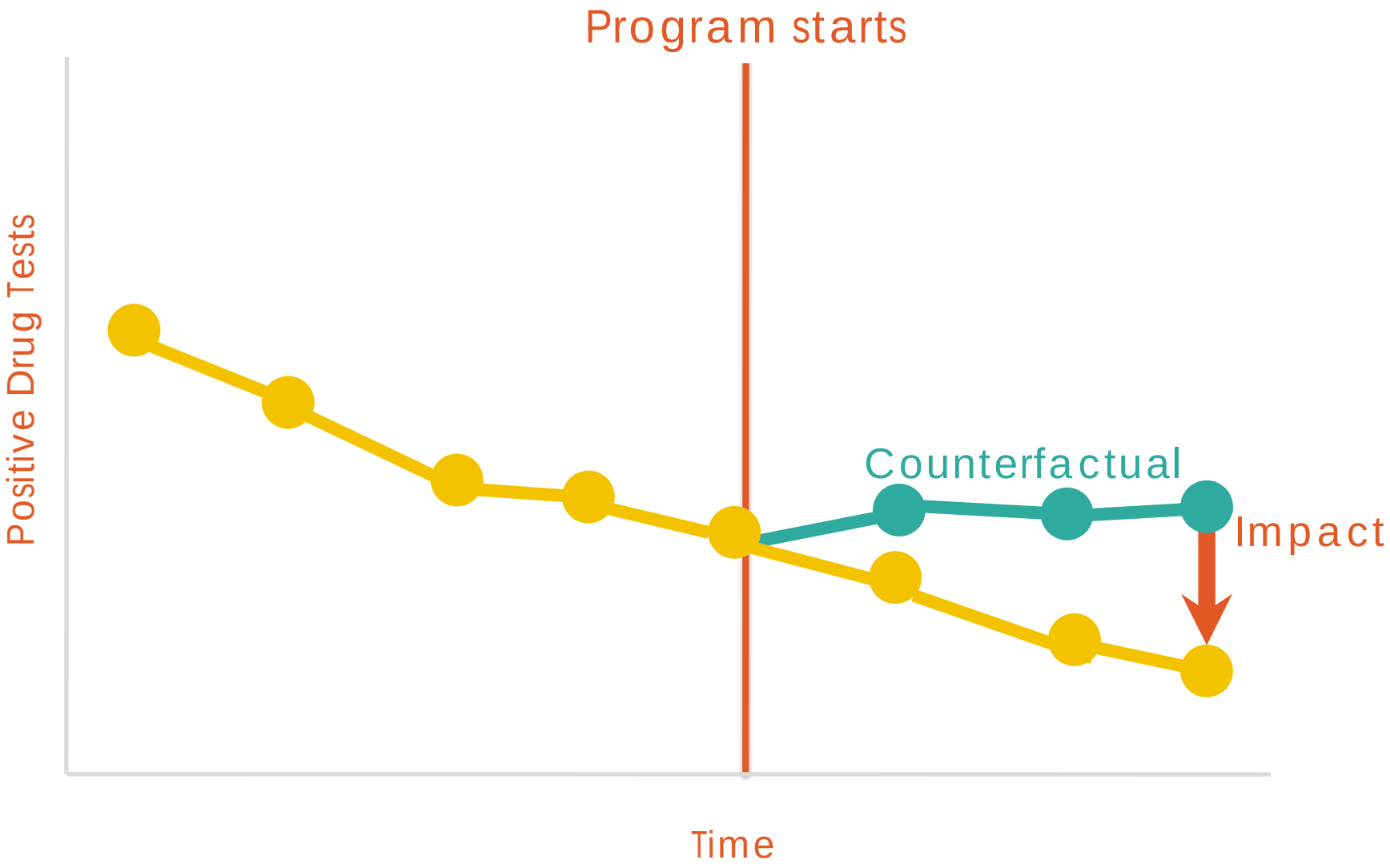
Measuring impact

Impact is defined as a comparison between:

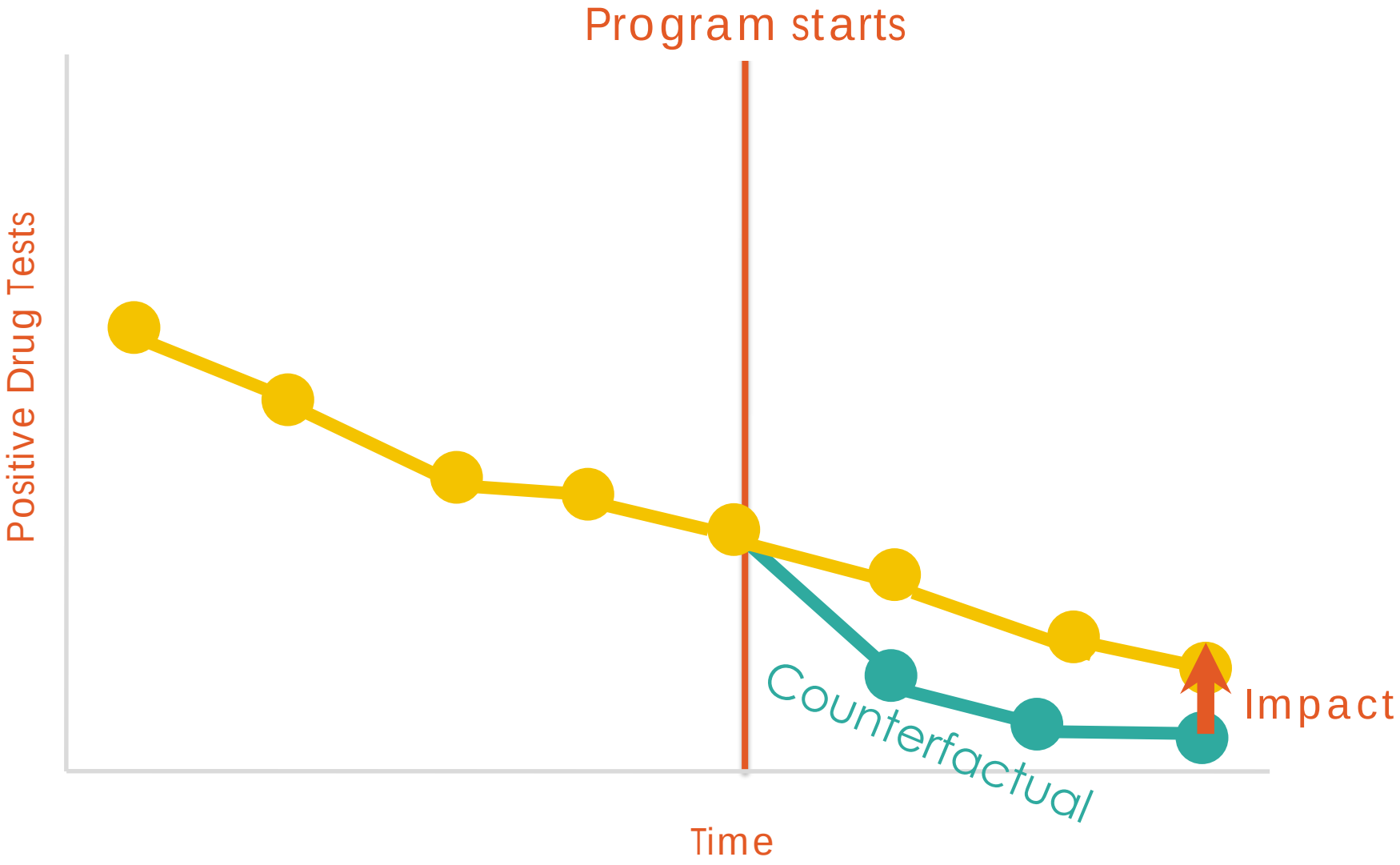
What actually happened and

What would have happened, had the program not been introduced (i.e., the "counterfactual")

What is the impact of this program?



What is the impact of this program?



The counterfactual

The counterfactual represents what would have happened to program participants in the absence of the program

Problem: Counterfactual cannot be observed

Solution: We need to "mimic" or construct the counterfactual—the comparison or control group

Selecting the comparison group

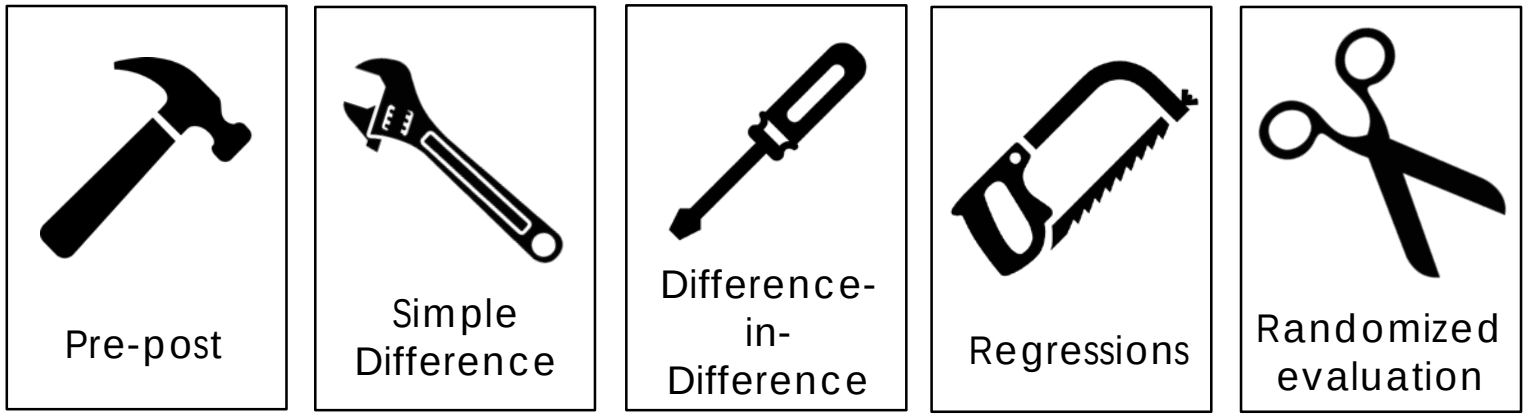
Idea: Select a group that is exactly like the group of participants in all ways except one—their exposure to the program being evaluated

Goal: To be able to attribute differences in outcomes to the program (and not to other factors)

Why randomize?

- Mathematically, it can be shown that random assignment makes it very likely that we are making an apples-to-apples comparison

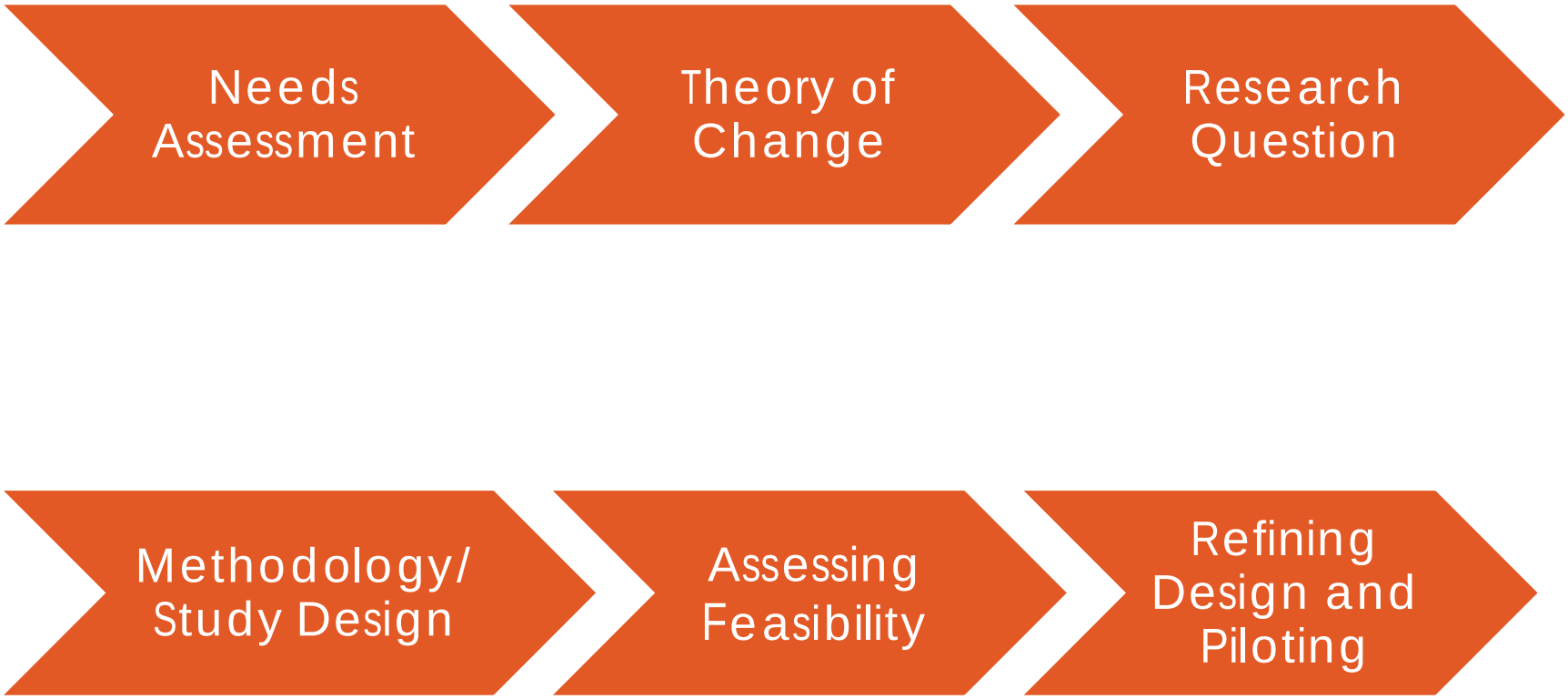
Methods as tools



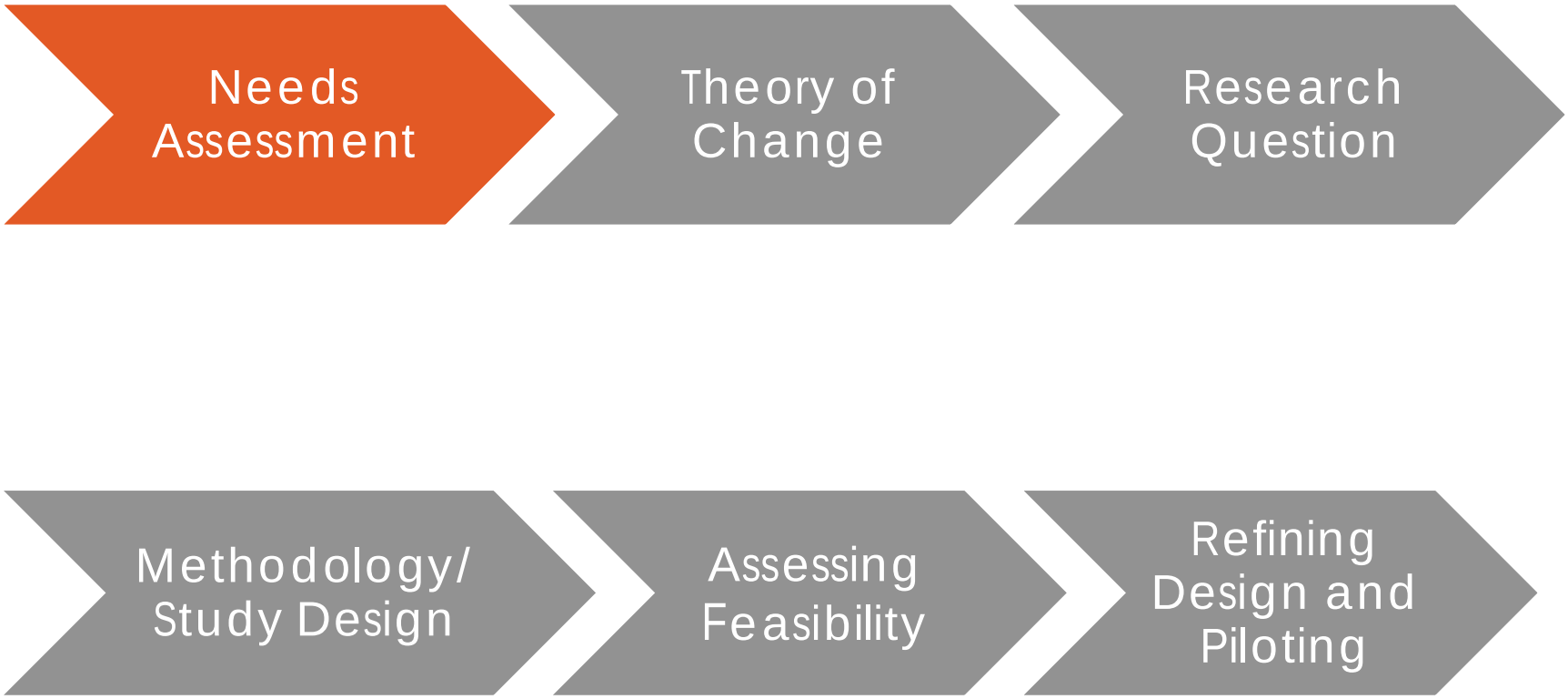
Since randomization requires fewer assumptions, we can be more confident that the impact we estimate reflects the actual impact of the program.

Wrench by Daniel Garrett Hickey from the Noun Project
Screwdriver by Chameleon Design from the Noun Project

Overview of RCT design



Overview of RCT design

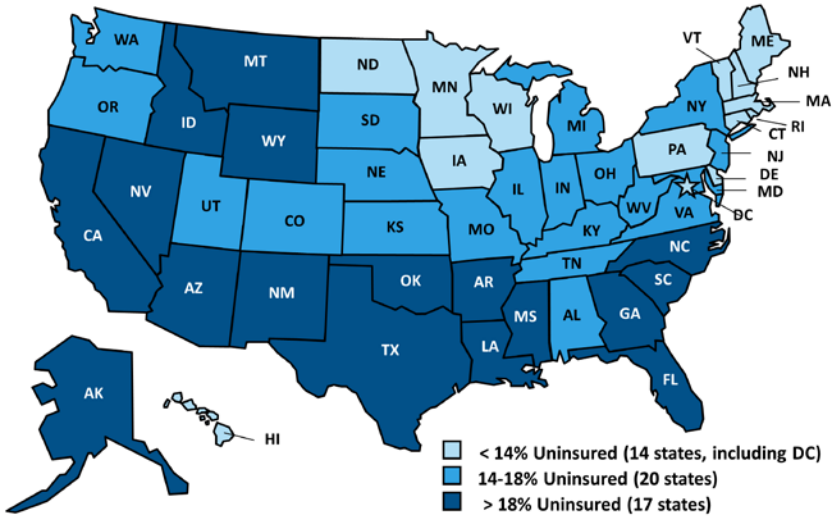


Problem

Uninsured populations face worse health outcomes, higher healthcare costs, and significant financial strain.

Figure 1

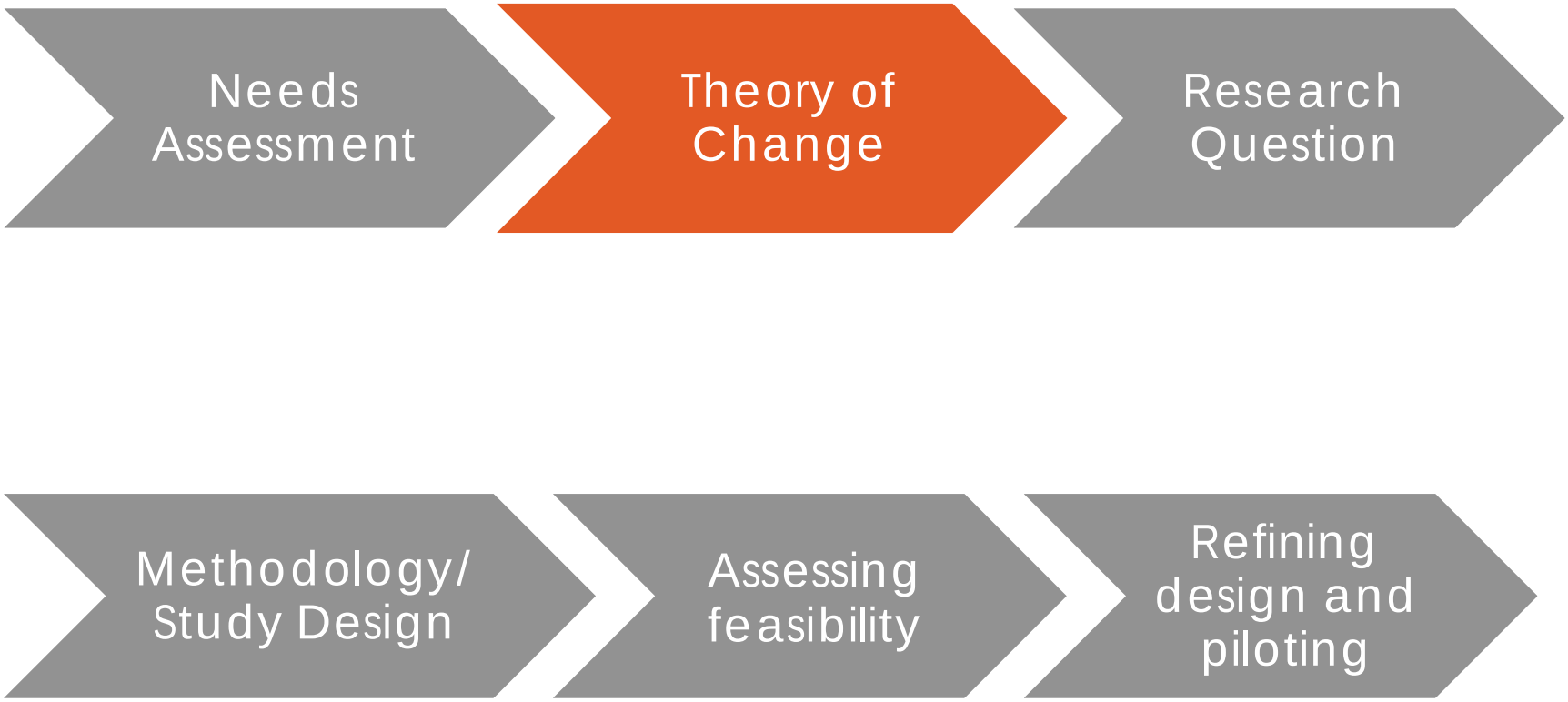
Uninsured Rates Among the Nonelderly by State, 2010-2011



SOURCE: KCMU/Urban Institute analysis of 2012 ASEC Supplement to the CPS.

THE HENRY J. KAISER FAMILY FOUNDATION

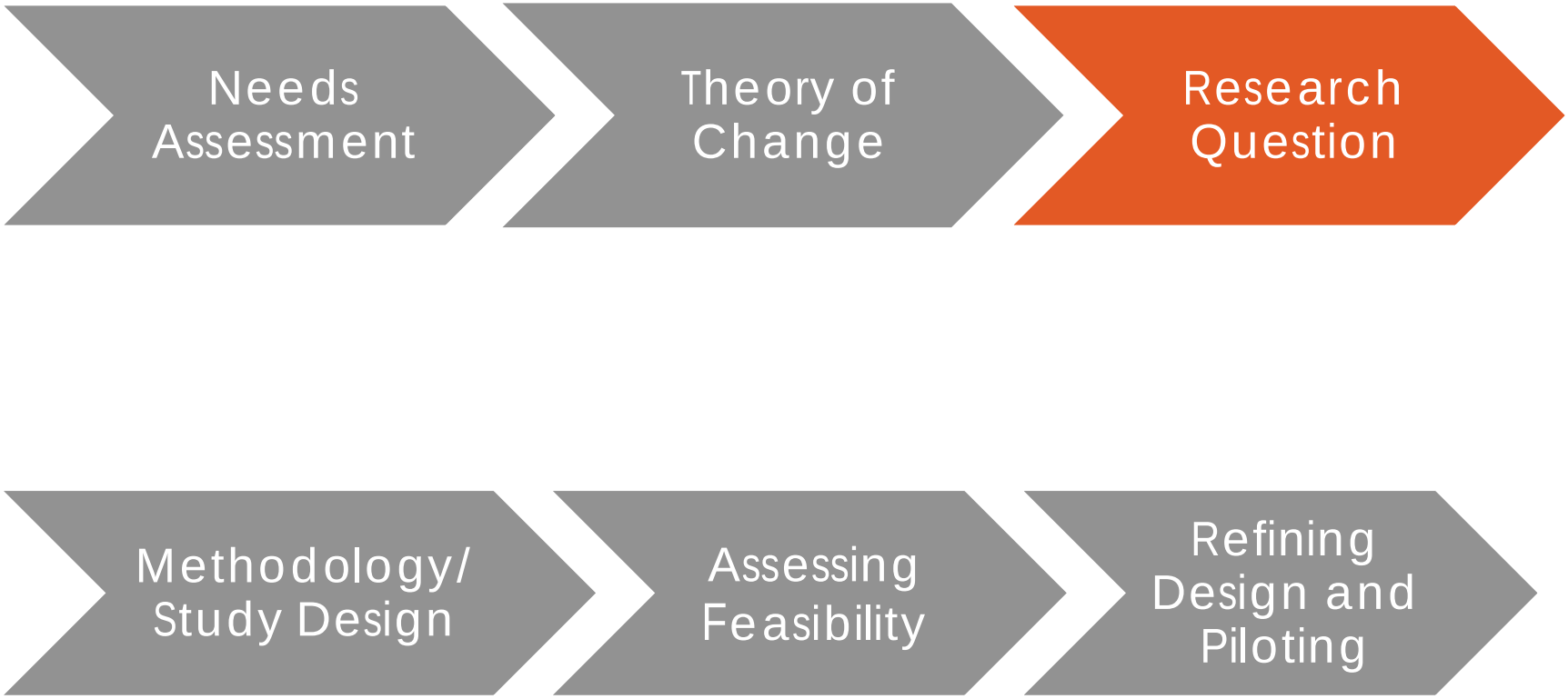
Overview of RCT design



Theory of Change

Needs Assessment	Poor health outcomes, higher healthcare costs, significant financial strain
Intervention	Medicaid coverage
Assumptions	Lottery winners enroll in and receive Medicaid
Outcomes	Health care utilization Financial strain Depression and self reported health A few measures of physical health

Overview of RCT design

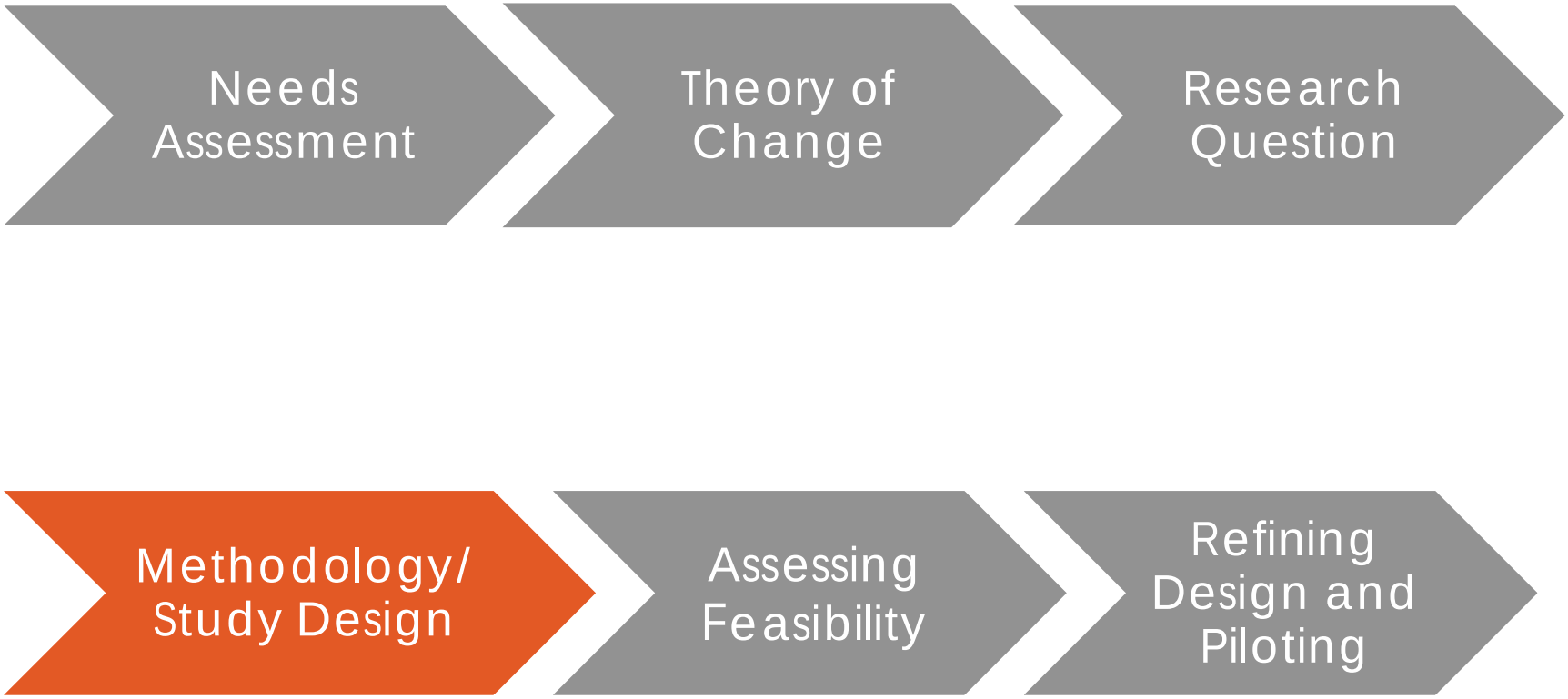


Research question

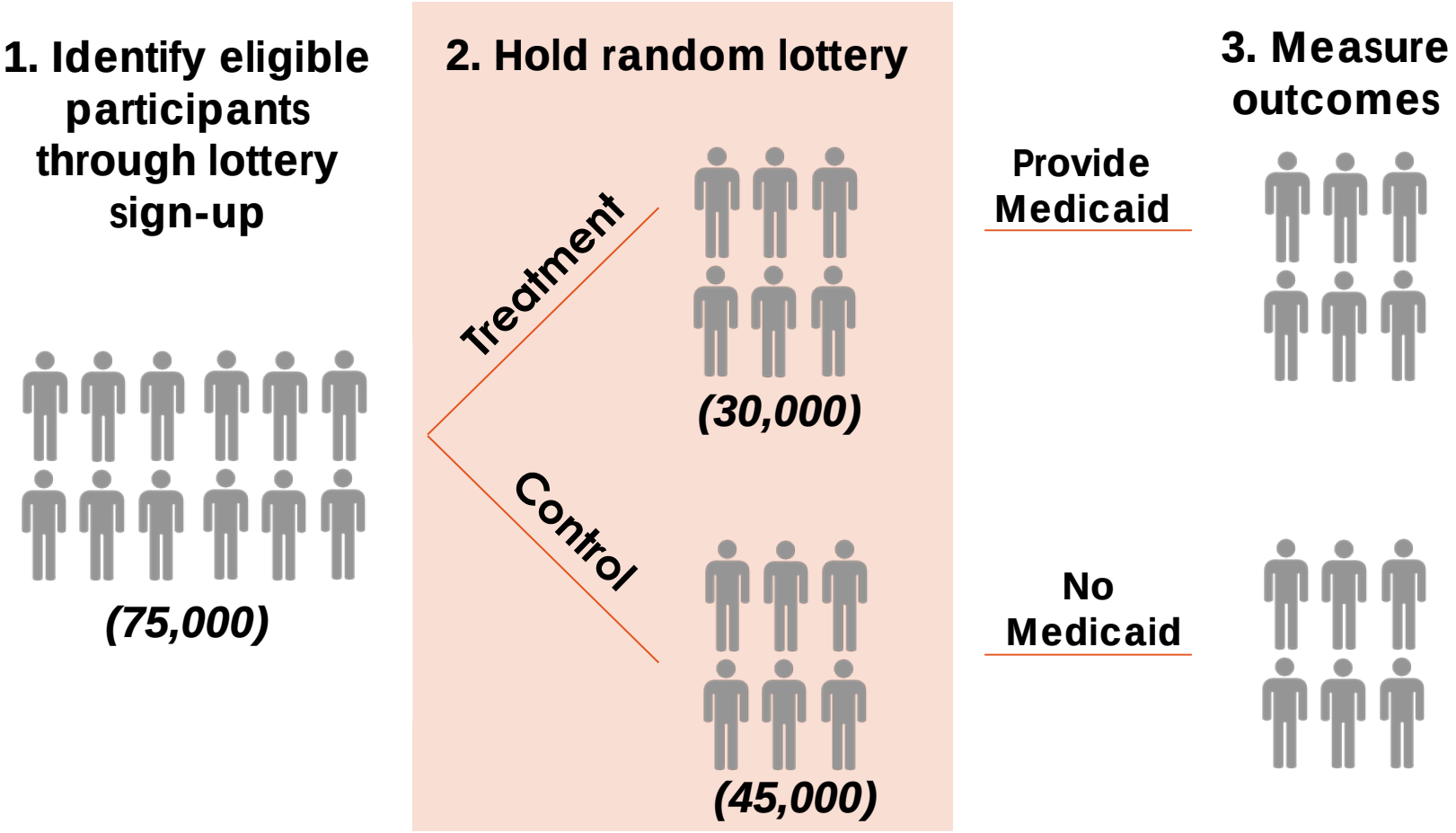
- What is the intervention?
- What are the primary outcomes?
- Who is your study population?

What is the effect of expanding Medicaid on health, health care costs, and financial strain among low-income adults in Oregon?

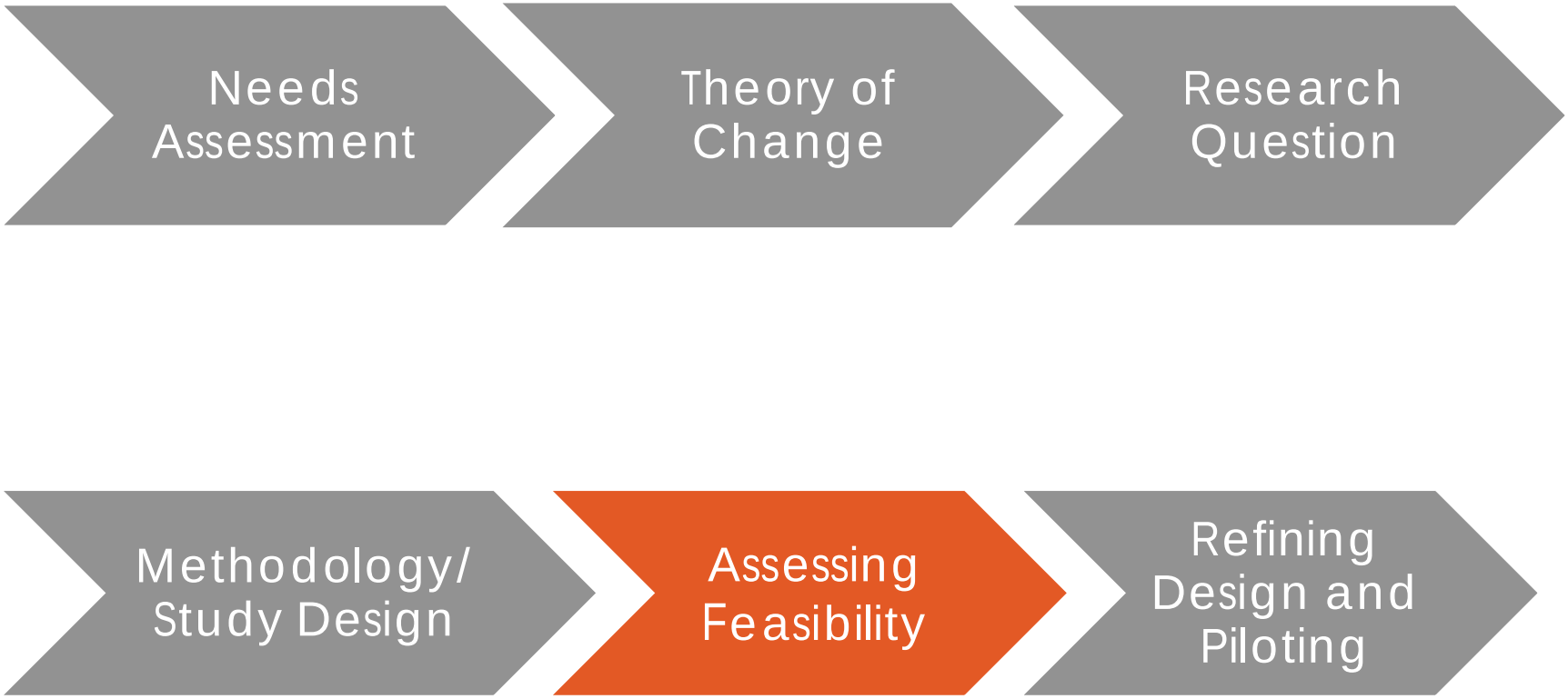
Overview of RCT design



Medicaid randomization



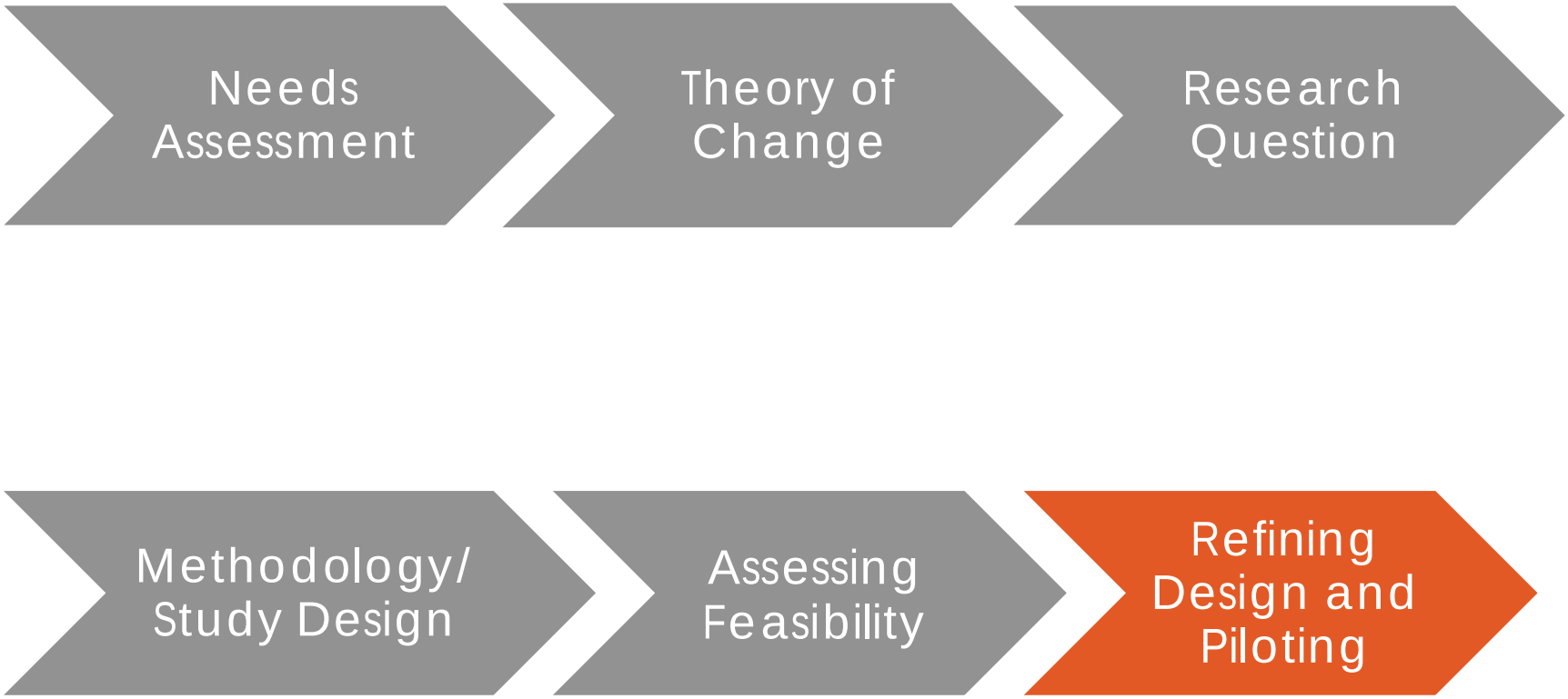
Overview of RCT design



Assessing feasibility

- Data sources for primary outcomes?
- Process metrics?
- Sample size?
- How many people in *treatment* and *control* groups?
- Whose buy-in do you need? Who are the stakeholders?

Overview of RCT design



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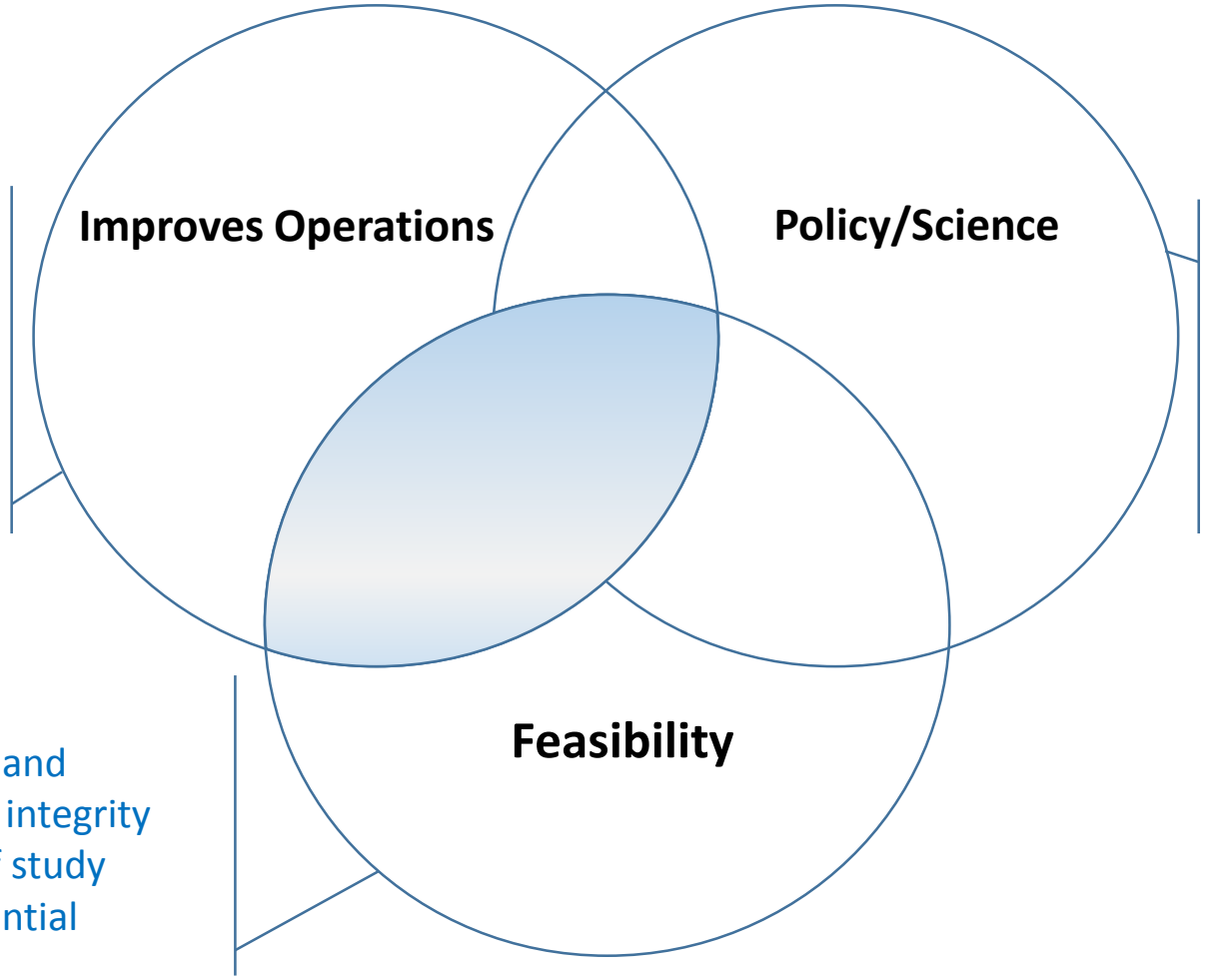
Recent Experiences with RCTs

Wes Yin

UCLA and J-PAL

Overview

- Keys to developing collaborations
- Examples of recent experiences
  - Successful RCT collaboration with Covered California
  - …and a cautionary tale
- Ongoing RCT opportunities in health care



- Study addresses identifiable and important issue
- Results are actionable

- Compelling policy question
- Tests based in theory
- Publishable

- Capacity
- Logistics and research integrity
- Optics of study and potential results

Transparency and buy-in matters

- Buy-in from key stakeholders
  - "Enthusiastic CEO" is insufficient
  - All relevant key leadership needs to see the utility
  - Need sufficient time/staffing capacity
  - Legal/optics
  - Risk: failure to implement on time; failure to adhere to protocol or RCT design; even project abandonment
- Researchers need to be sensitive to operations and institutional goals
  - Not just for design, but for results and dissemination
  - Data security
  - Risk: design doesn't permit learning; failure to translate results to actions to improve operations; surprises in how study and results are framed/disseminated

Clarity on RCT nuts and bolts

- Understanding purpose of, and commitment to, RCT design
- Mapping research design, data, tests, and finding to action
    - And how different findings will inform policy and/or science
- Sufficient sample size
- Conduct pilot
    - Helps determine sufficient sample size to measure an impact
    - For logistics and capacity

Recent Experiences: Covered California

Covered California

- 1.4 million covered in 2017
- 12 carriers, dominated by big four (Anthem, BS, Kaiser, HealthNet)
- Generally stable premium growth, and robust competition, spotty areas of problems with exit/premium hikes

Active purchaser

- Negotiates premiums, entry
- Standardizes plans (with the exception of networks)
- Leans on carriers to maintain network adequacy

Challenge facing Covered California

Take-up in Covered CA

- ~40% of subsidy eligible don't enroll
- Evidence of even lower enrollment among Latinos and African-Americans

Plan choice

- Some CSR eligible choose "dominated" gold and platinum plans over enhanced silver

Questions:

- What strategies can help consumers take-up plans?
- What strategies can help consumers choose plans better?

Two studies on consumer information

Renewal study: target current enrollees

- Different letter interventions provide different information about plan options
- One made salient no. of physicians and nearest large hospitals for each plan
- Search costs, especially on network attributes

Take-up study: target uninsured

- Different letter interventions provide different information about deadlines, subsidies, penalties, plan options

Renewal study: a cautionary tale

- Week before launch, study pulled
- Carrier sensitivities over accuracy of their reported network data

- Root analysis
  - Tight timelines meant Plan Management buy-in was not solid
  - Study coincided with negotiations with carriers on unrelated matter
  - Lack of sensitivity meant no “escape valves” were built into the design (e.g. dropping one RCT arm, only)

Take-up study: Success

Sample: ~100,000 households

- People who initiated eligibility determination, but did not enroll

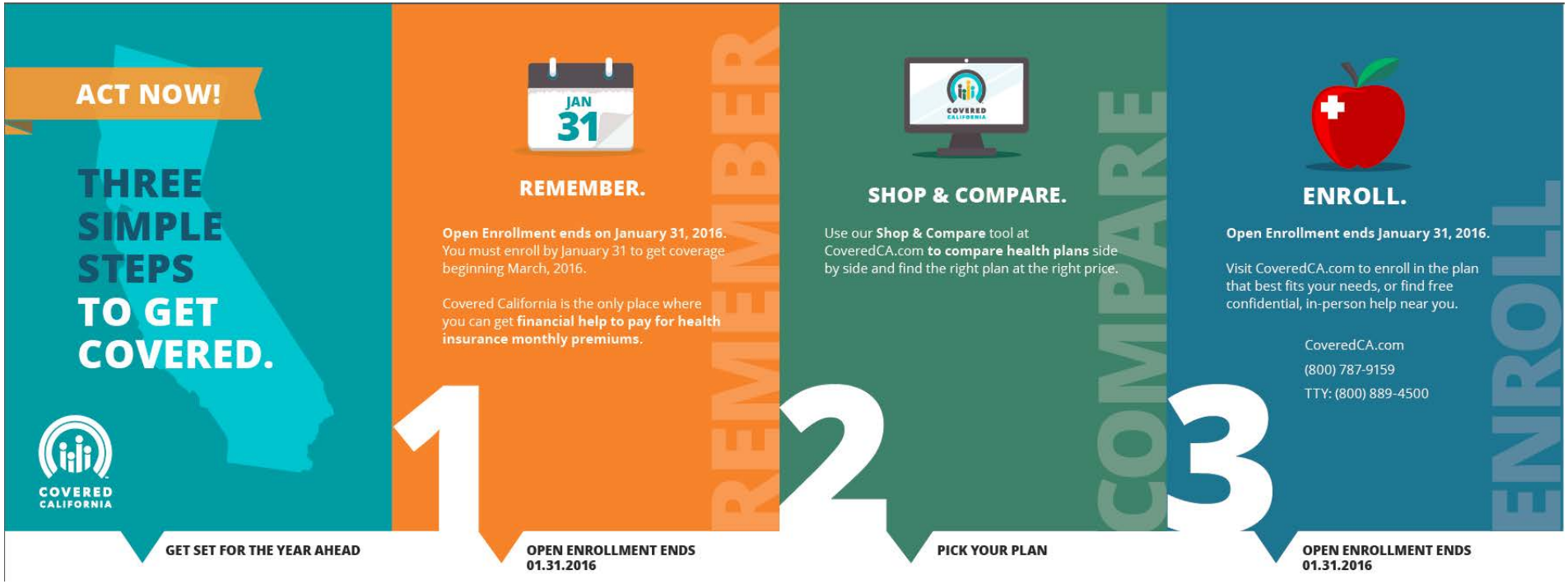
5 equal sized treatment arms

- **Control**: no treatment
- **Basic Reminder Letter**: "value of insurance", deadlines, CC website/telephone
- **Subsidy + Penalty (SP)**: Basic letter, *personalized* subsidy/penalty estimates
- **Price Compare**: SP plus comparison of BR/SLVR plans (net price)
- **Price/Star Compare**: SP plus comparison on both net price and quality rating

Stratified by income bracket, race, and language

Letters in Spanish and English

Uniform Front



Basic Reminder Letter (Arm 2)

Dear <First name last name>,

You have **<three weeks left>** to enroll in health coverage for 2016 through Covered California. **The deadline to enroll is January 31, 2016.**

Every health insurance plan offered through Covered California offers free preventive care, helps pay for doctor visits, and protects you from high, unexpected medical costs. For example, without insurance:

- A typical emergency room visit costs over $1,200.
- A typical 3-day hospital stay costs over $20,000.

When you enroll through Covered California, <your family> can have the peace of mind knowing you will have your health care covered when you need it. **Sign in at CoveredCA.com to enroll in the plan that best fits your needs, or find free confidential, in-person help near you.**

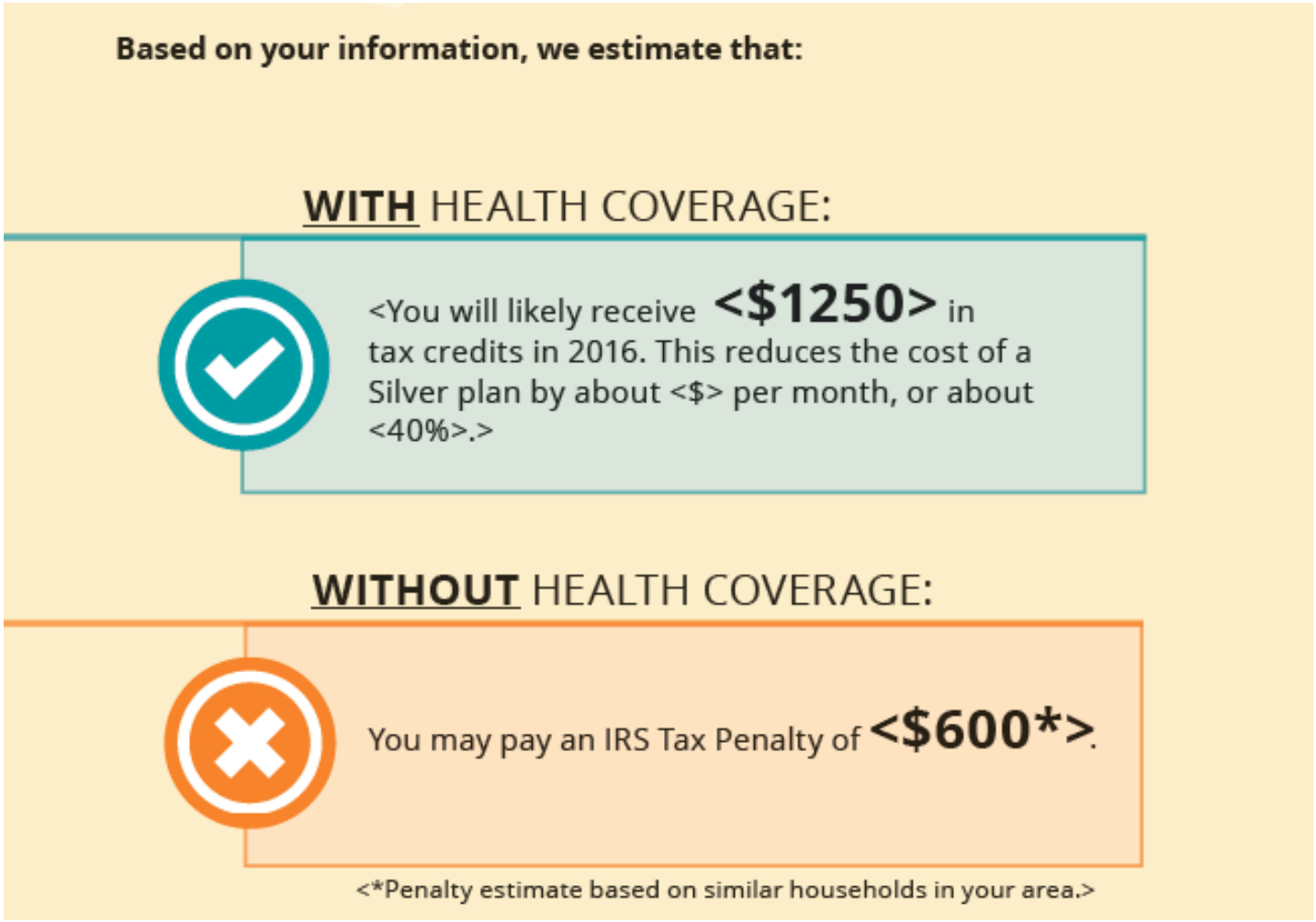
3 SIMPLE STEPS TO OBTAIN COVERAGE

1. REMEMBER: The deadline to enroll in a health plan is January 31, 2016.

2. SHOP & COMPARE: Use the Shop & Compare Tool at CoveredCA.com to review your health plan options.

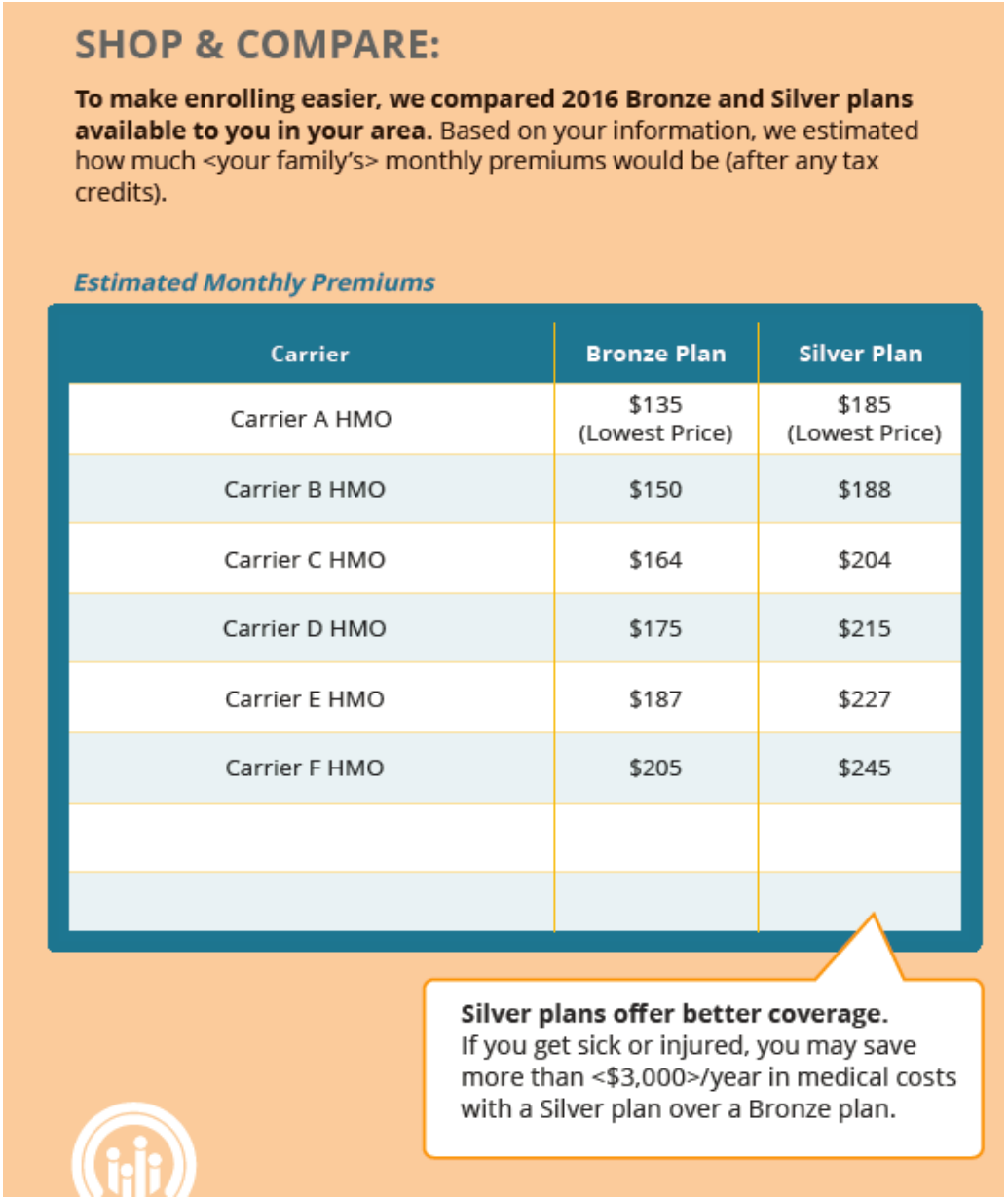
3. ENROLL: Sign in at CoveredCA.com to enroll in the plan that best fits your needs, or find free confidential, in-person help near you.

Subsidy/Penalty (SP) (Arm 3)



Plan Price Compare (Arm 4)

- Plans shown
  - For CSR eligible, show only silver plans
  - All others, show bronze and silver plans
- Report net-of-subsidy premium



SHOP & COMPARE:

To make enrolling easier, we compared 2016 Bronze and Silver plans available to you in your area. Based on your information, we estimated how much <your family's> monthly premiums would be (after any tax credits).

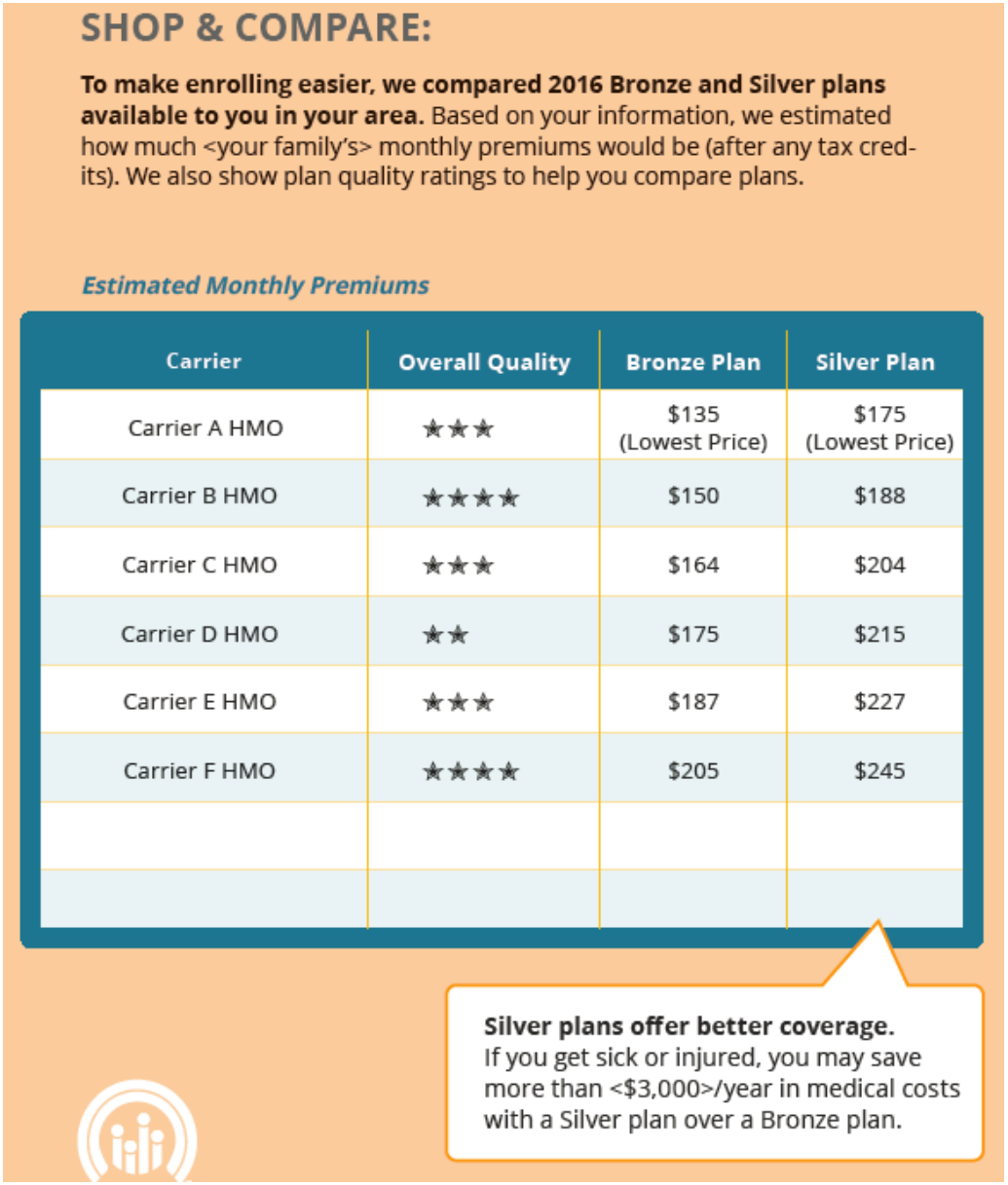
Estimated Monthly Premiums

Carrier	Bronze Plan	Silver Plan
Carrier A HMO	$135 (Lowest Price)	$185 (Lowest Price)
Carrier B HMO	$150	$188
Carrier C HMO	$164	$204
Carrier D HMO	$175	$215
Carrier E HMO	$187	$227
Carrier F HMO	$205	$245

Silver plans offer better coverage. If you get sick or injured, you may save more than <$3,000>/year in medical costs with a Silver plan over a Bronze plan.

Price/Star Compare (Arm 5)

- Plans shown
  - For CSR eligible, show only silver plans
  - All others, show bronze and silver plans
- Report net premium *and* star rating



SHOP & COMPARE:

To make enrolling easier, we compared 2016 Bronze and Silver plans available to you in your area. Based on your information, we estimated how much <your family's> monthly premiums would be (after any tax credits). We also show plan quality ratings to help you compare plans.

Estimated Monthly Premiums

Carrier	Overall Quality	Bronze Plan	Silver Plan
Carrier A HMO	★★★	$135 (Lowest Price)	$175 (Lowest Price)
Carrier B HMO	★★★★	$150	$188
Carrier C HMO	★★★	$164	$204
Carrier D HMO	★★	$175	$215
Carrier E HMO	★★★	$187	$227
Carrier F HMO	★★★★	$205	$245

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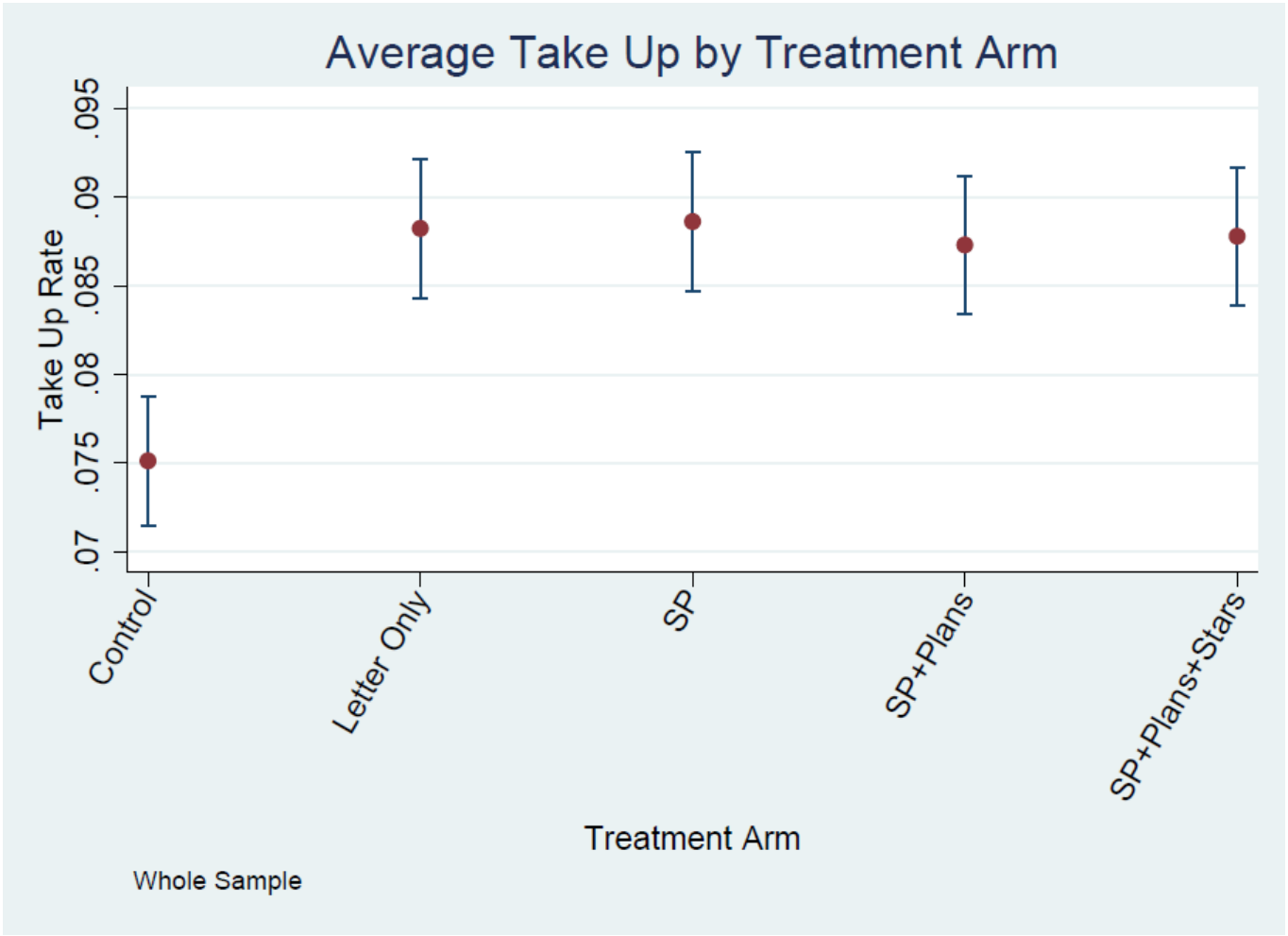
Average Take Up by Treatment Arm
Take Up Rate
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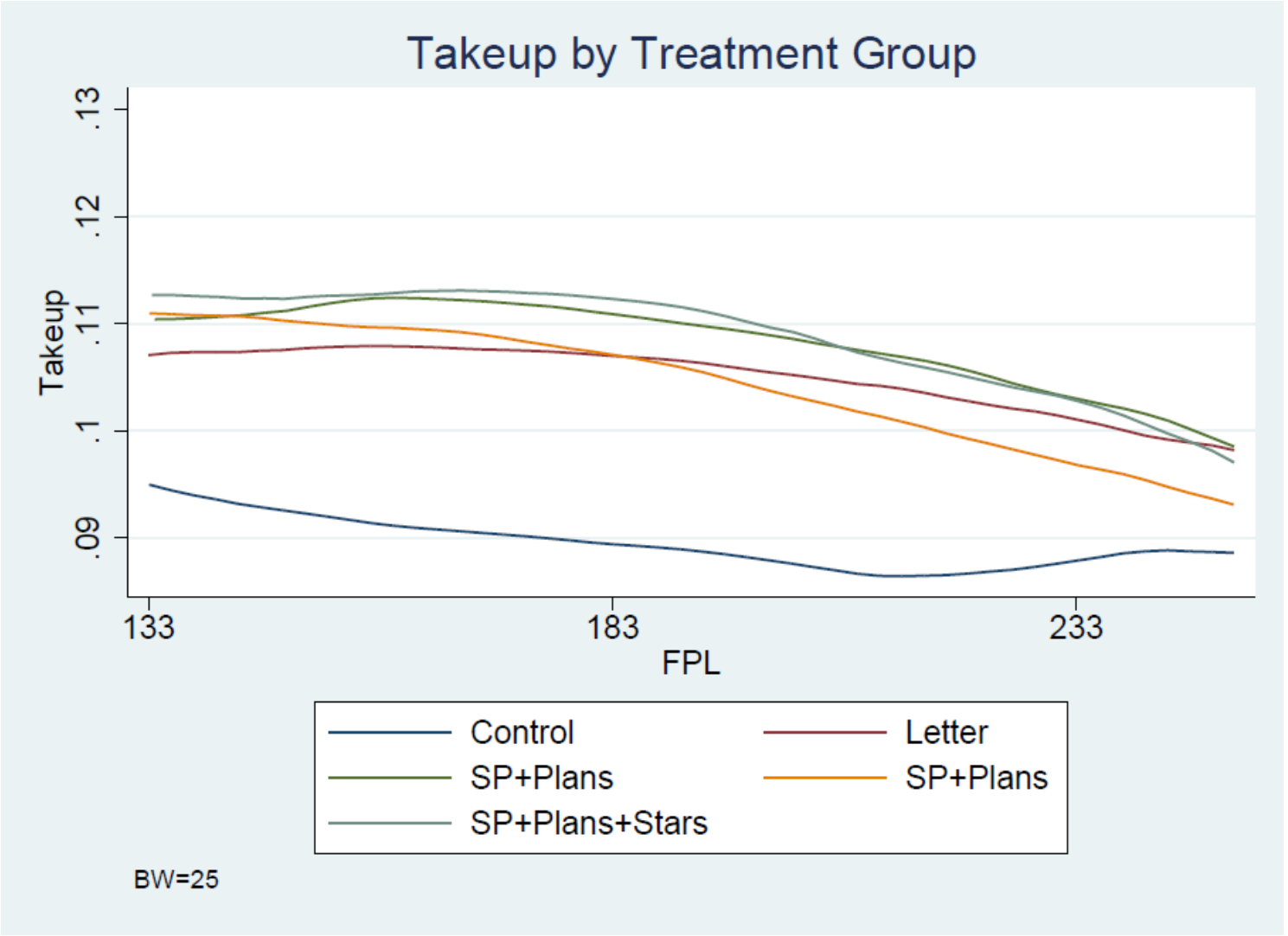
SP
SP+Plans
SP+Plans+Stars
Treatment Arm
Whole Sample


Takeup by Treatment Group
Takeup
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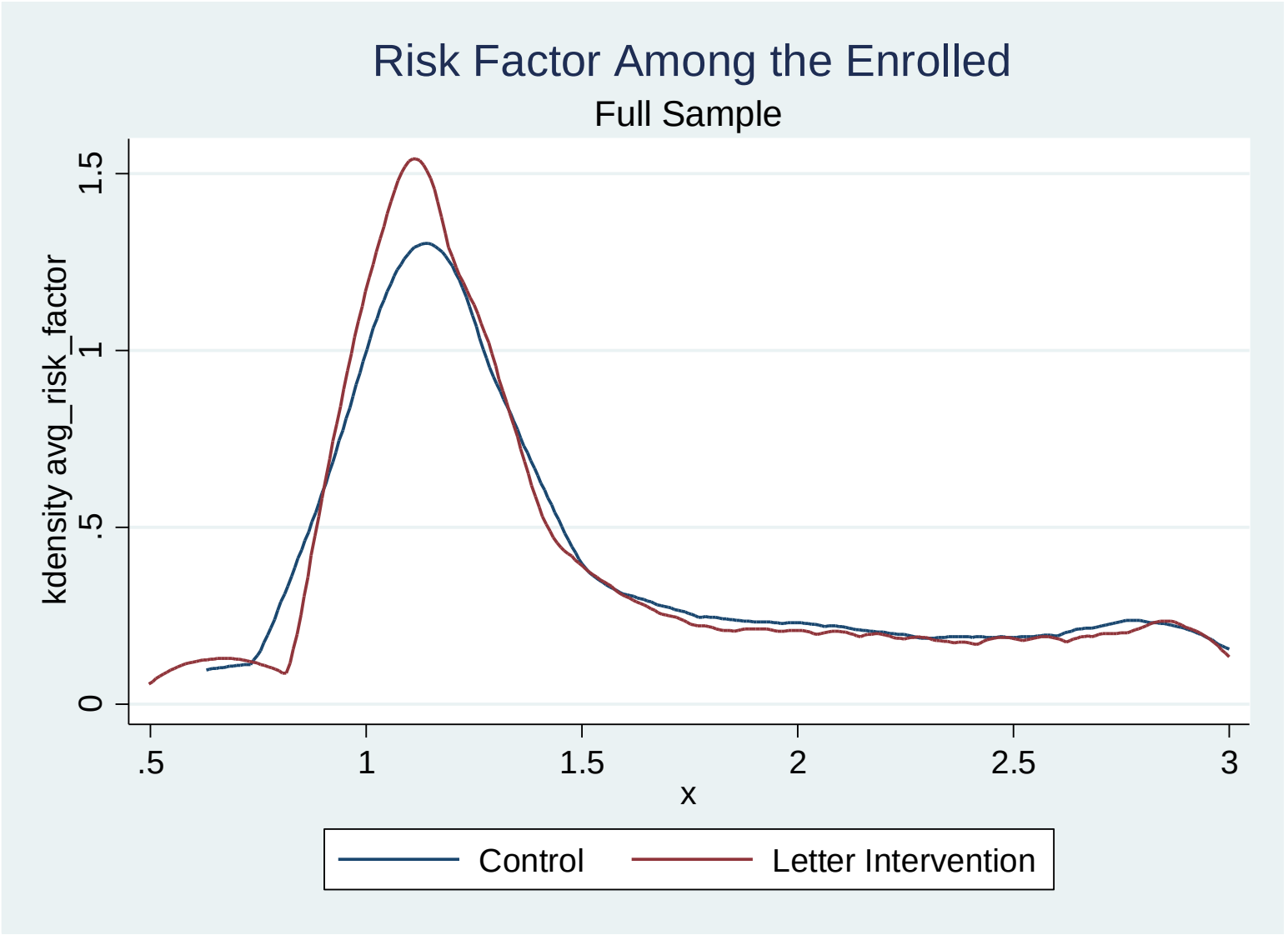
Risk Factor Among the Enrolled
Full Sample
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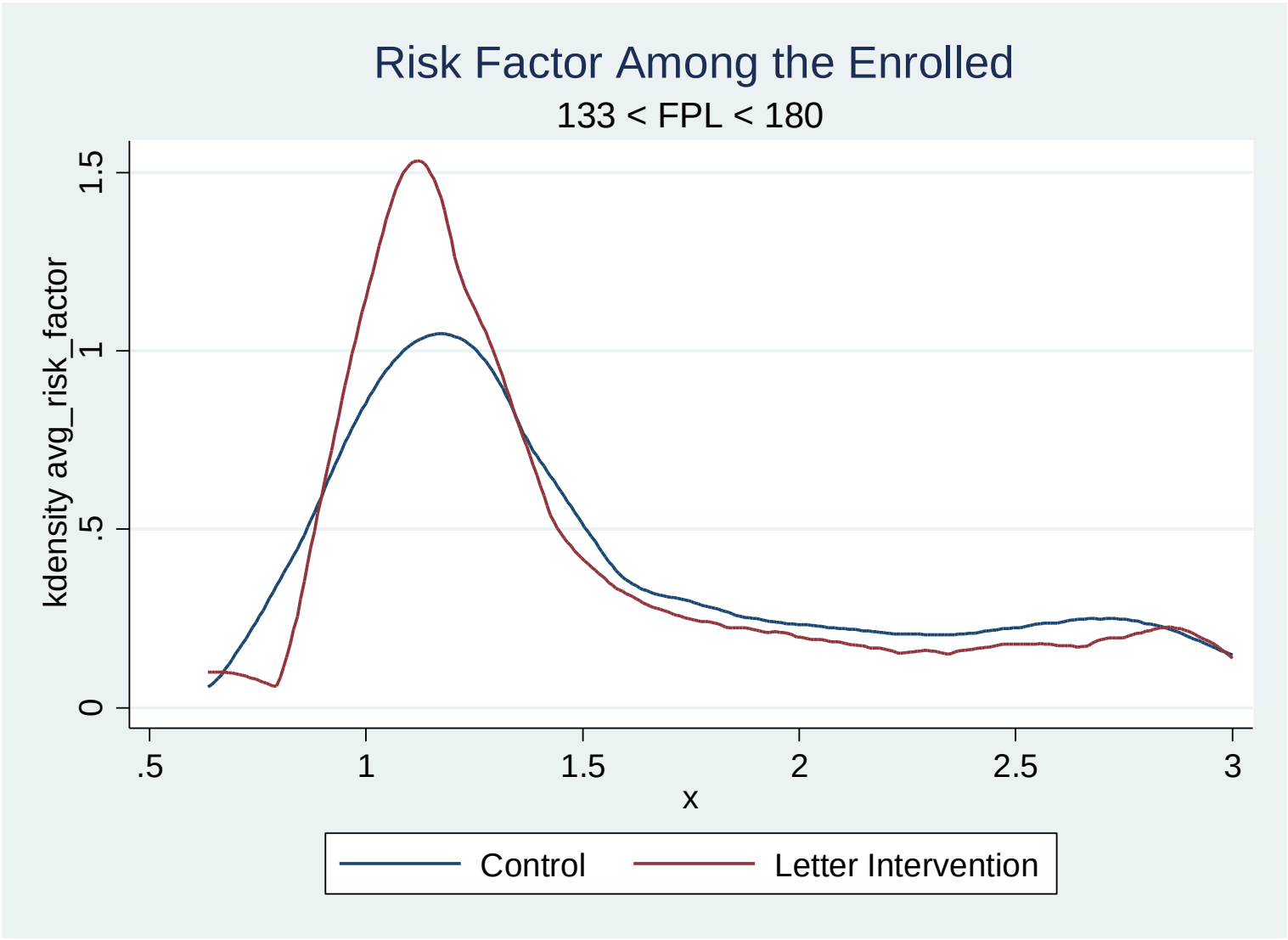
Control
Letter Intervention


Risk Factor Among the Enrolled
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Control
Letter Intervention

Key takeaways

- Target both general and individualized letters
  - Reminders are important for everyone
  - Spanish language important
  - Information about subsidies beneficial for those at lowest income, but not at higher incomes, where expectations may be higher
- Sustainable
  - Administration fees more than pay for total cost of letter intervention
  - Marginal person induced tends to be *healthier, improving risk pools*—a further benefit of marketing or outreach to improve uptake

Challenges in health care

- Consumer choice
  - Choice increasingly devolved to the patient
- Spending risk
  - With higher cost sharing, increased inequality, and rising health care costs, patient faces greater spending and health risk, medical debt
- Provider consolidation means better bargaining, not better care
  - Scope to improve care coordination
  - Point of service care vs. population management
  - Inputs into care go beyond medical services

RCT opportunities in health care

- Consumer empowerment
  - Plan/physician choice, health behaviors, care seeking in response to:
    - Information, defaults/nudges, financial and non-financial incentives
  - Debt management
- Provider behaviors
  - Prescribing behaviors, protocol adherence, referrals in response to:
    - Information, defaults/nudges, financial (e.g. P4P) and non-financial incentives
- System-wide reforms
  - Payment reform and risk sharing (e.g. ACOs)
  - Team-based care and care in non-traditional settings (i.e. telemedicine, in-community food and medical support, transportation services)
  - Hotspotting: intensive case management for HNHC patients (e.g. Camden & J-PAL)
  - Integrating social services (criminal justice, permanent housing, behavioral health) with medical care

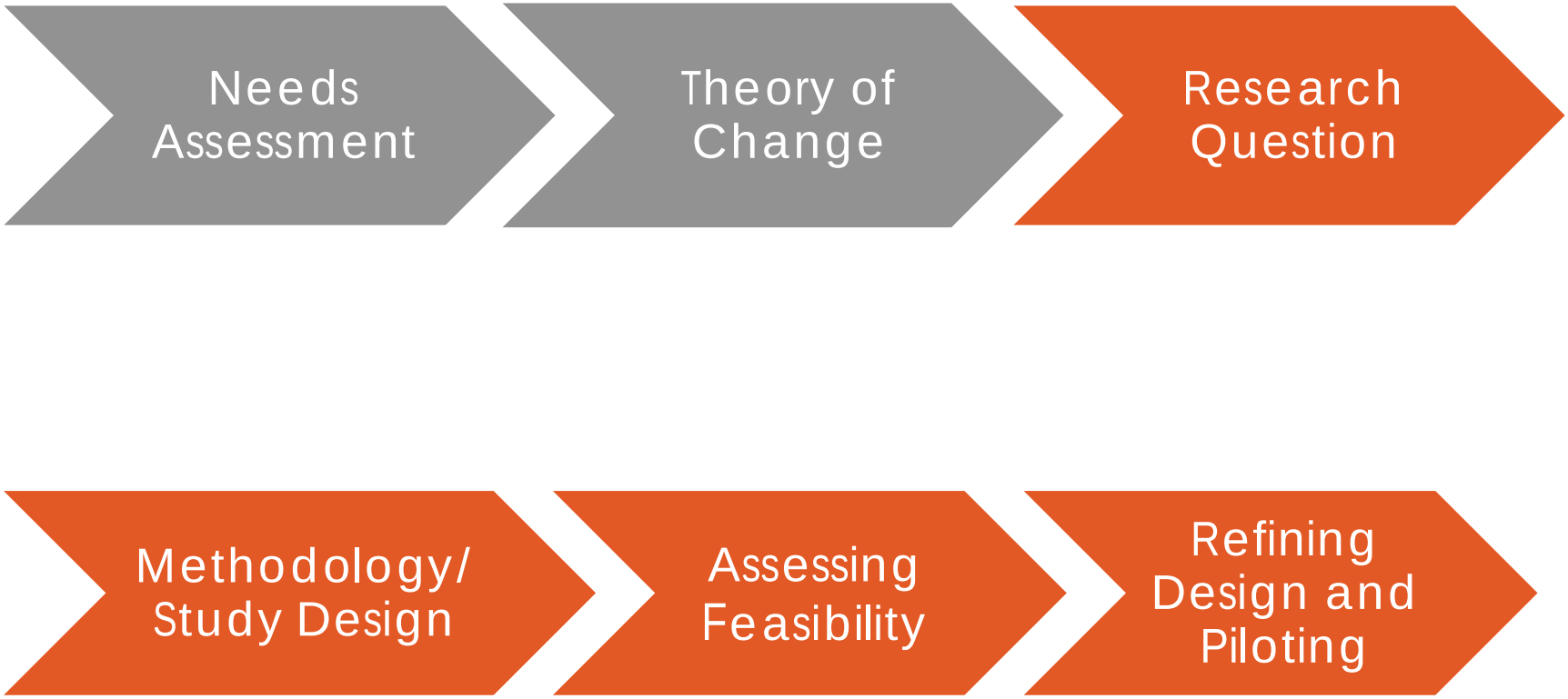
Questions?

Wes Yin: wyin@ucla.edu

Anna Spier: aspier@mit.edu

Sophie Shank: scshank@mit.edu

Group Work


Needs Assessment
Theory of Change
Research Question
Methodology/ Study Design
Assessing Feasibility
Refining Design and Piloting

Group Work

Orange tables: New to randomized evaluations

Blue tables: Some familiarity with randomized evaluations

Green tables: Currently brainstorming/ designing a randomized evaluation

Appendix

Different Methodologies Can Give Different Estimates of Impact:

Example of Case Management Program Following Heart Failure

1. Pre-Post

Average readmissions (per 100 patients) before the program began	26.4
Average readmissions (per 100 patients) after the program ended	19.3
Impact Estimate:	***-7.1***

2. Simple Difference

Average readmissions (per 100 patients) for people in the program	19.3
Average readmissions (per 100 patients) for people who are not in the program	29.5
Impact Estimate:	***10.2***

3. Randomized Evaluation

Average readmissions (per 100 patients) for people randomly assigned to the program	25.0
Average readmissions (per 100 patients) for people not randomly assigned to the program	28.2
Impact Estimate:	***-3.2***

Summary

Method	Impact Estimate
(1) Pre-Post	-7.1*
(2) Simple Difference	10.2*
(4) Randomized Evaluation	**-3.2***

* Statistically significant at the 5% level

Why randomize?

- Mathematically, it can be shown that random assignment makes it very likely that we are making an apples-to-apples comparison

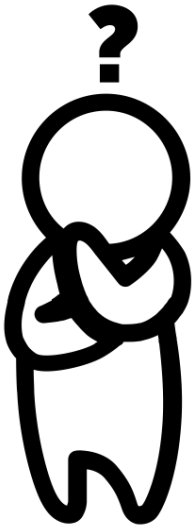
When to consider randomization

- When your program is…
  - Over-subscribed
  - Being rolled out (“Smart-piloting”)
  - Expanding (e.g., moving into a new location or service area)
  - Adding a new component

When is a randomized evaluation the right method?

Consider the…

- ❑ Existing evidence
- ❑ Program's capacity
- ❑ Size of the target population
- ❑ Maturity of the program
- ❑ Existence of reliable data



Child Question by Christopher Smith from the Noun Project

When to consider randomization

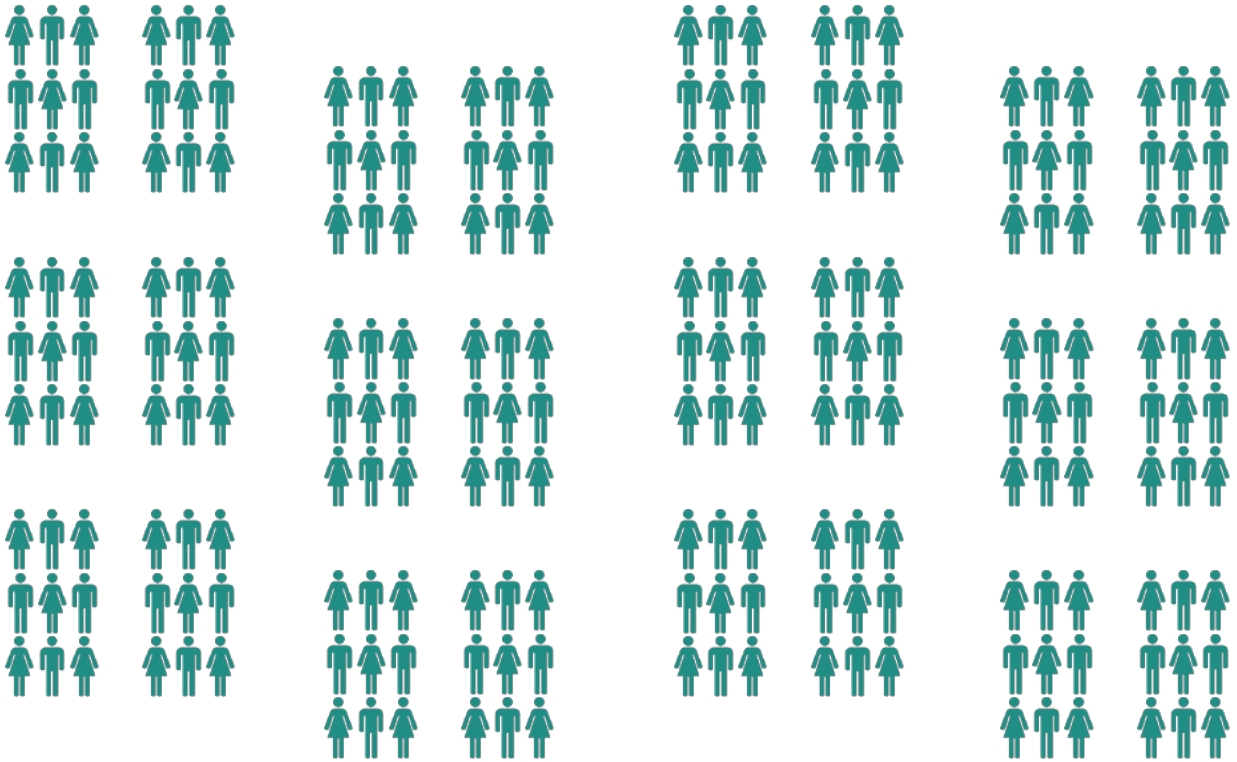
- ❑ New program
- ❑ New service
- ❑ New people
- ❑ New location
- ❑ Oversubscription
- ❑ Undersubscription
- ❑ Admissions or eligibility cutoff

I. **Phase-in design**

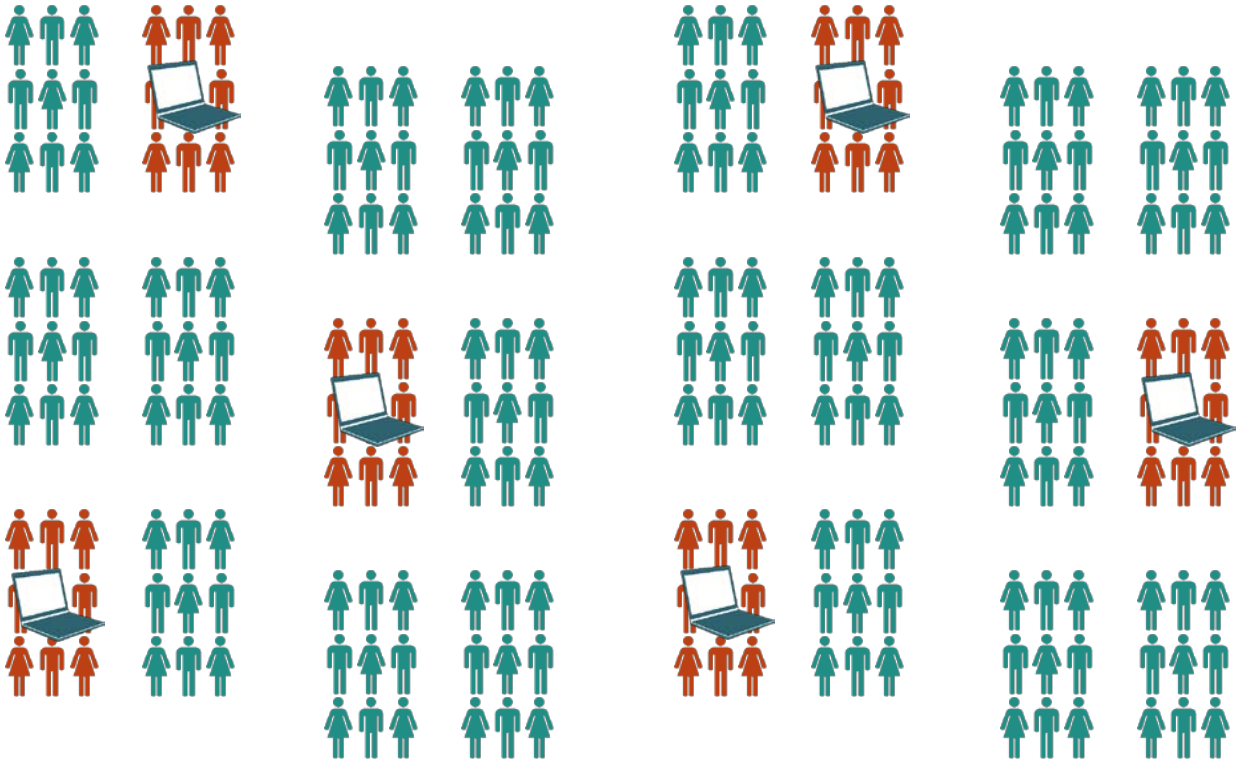
II. Encouragement design

III. Randomization among the marginally ineligible

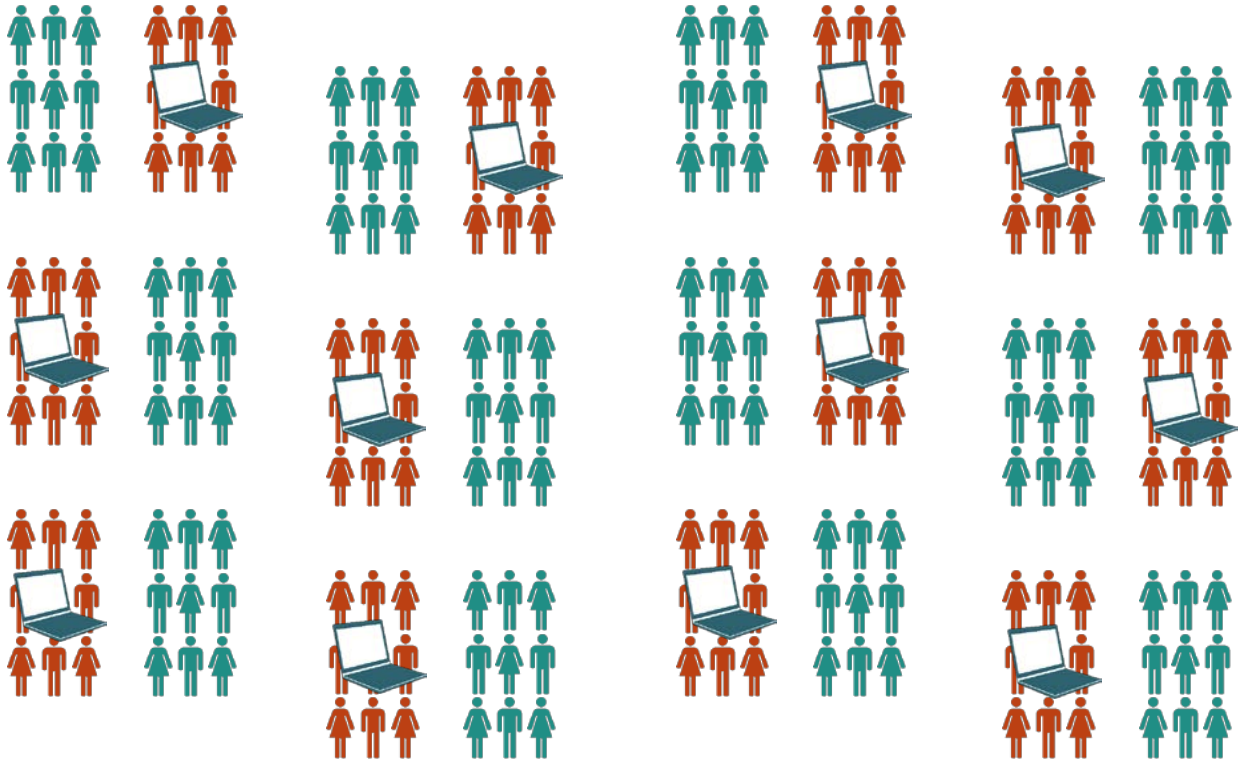
Phase 0:
No one treated yet
All control



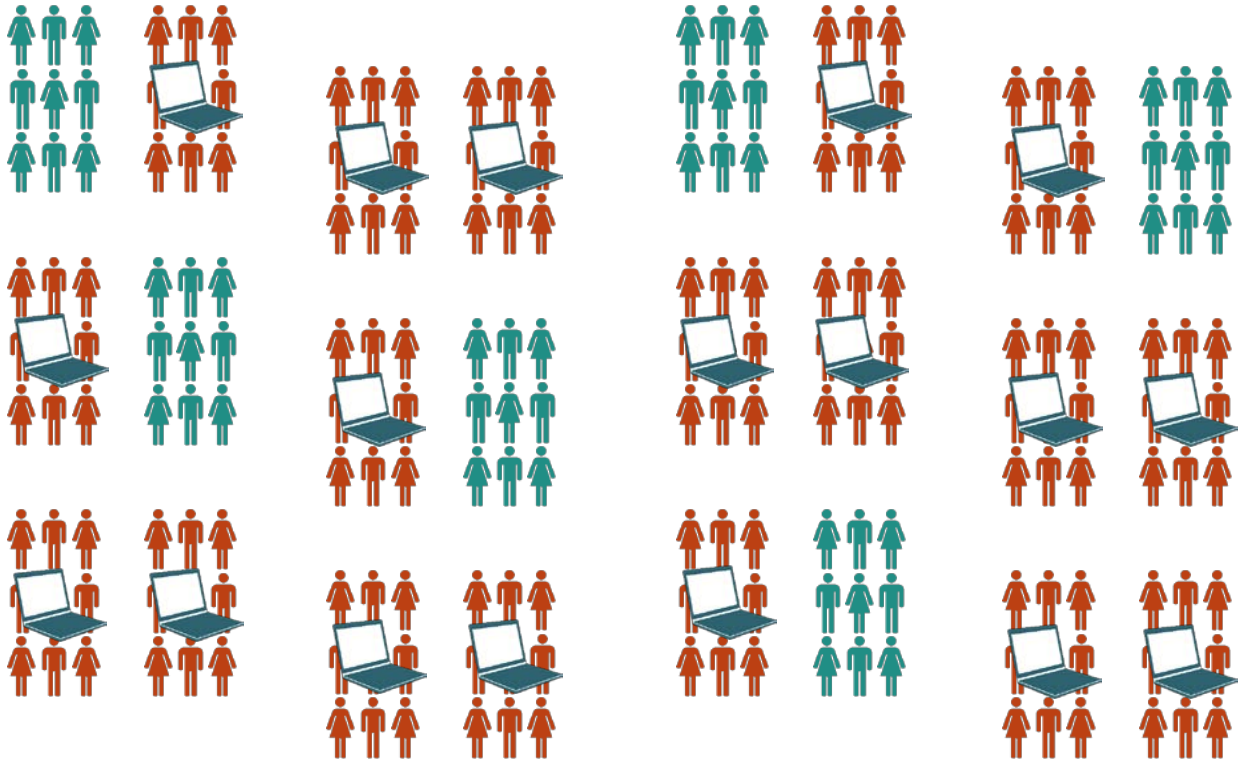
Phase 1:
1/4 treated
3/4 control



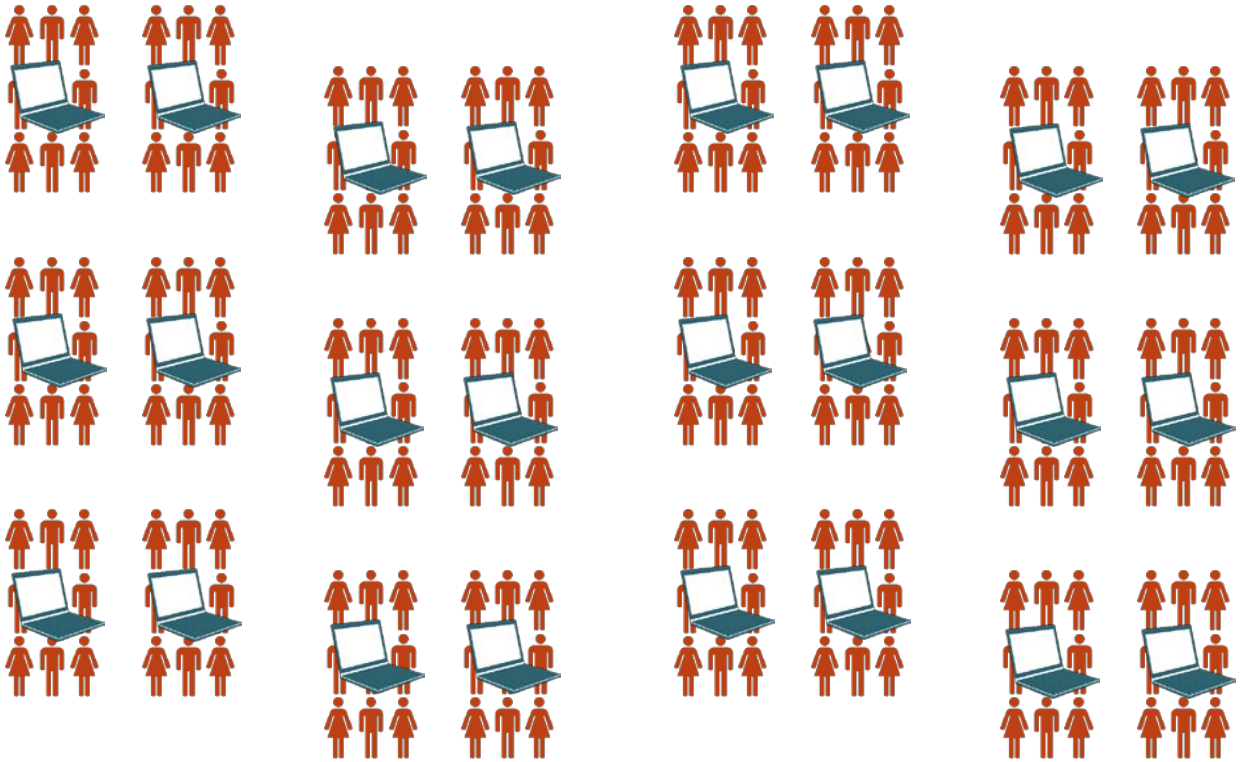
Phase 2:
1/2 treated
1/2 control



Phase 3:
3/4 treated
1/4 control



Phase 4:
All treated
No control (experiment over)



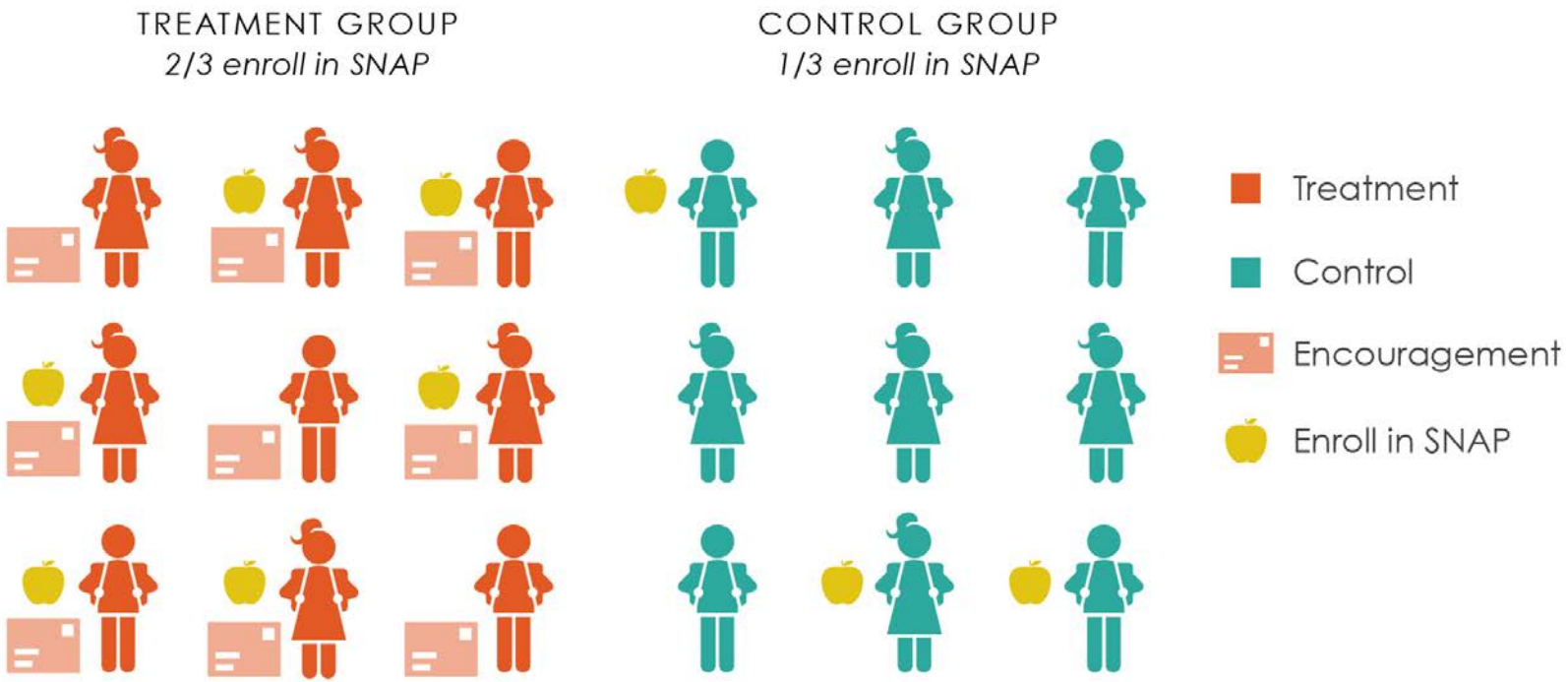
I. Phase-in design

II. Encouragement design

III. Randomization among the marginally ineligible

Randomly assign an encouragement

Compare entire treatment group to the entire control group to measure impact

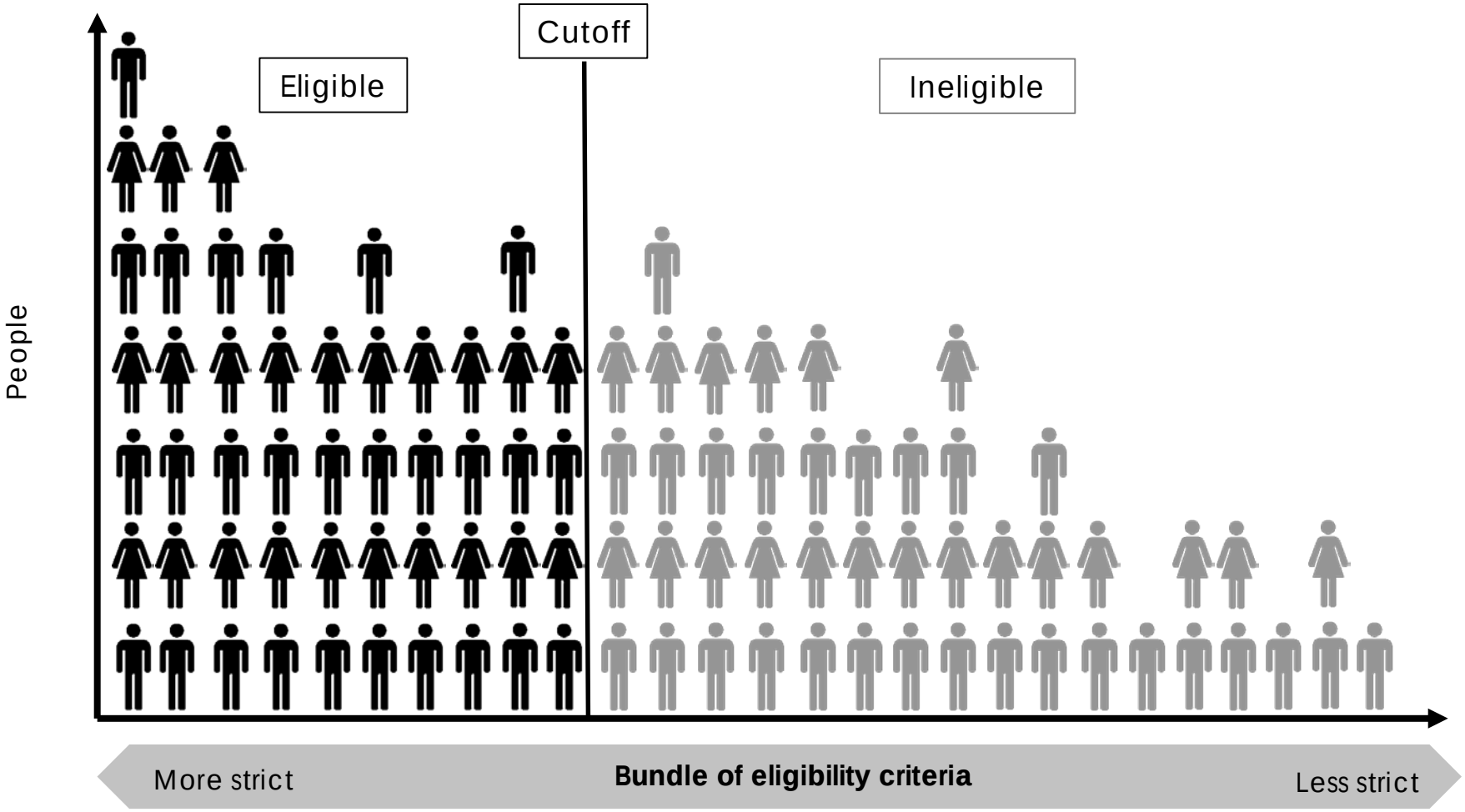


I. Phase-in design

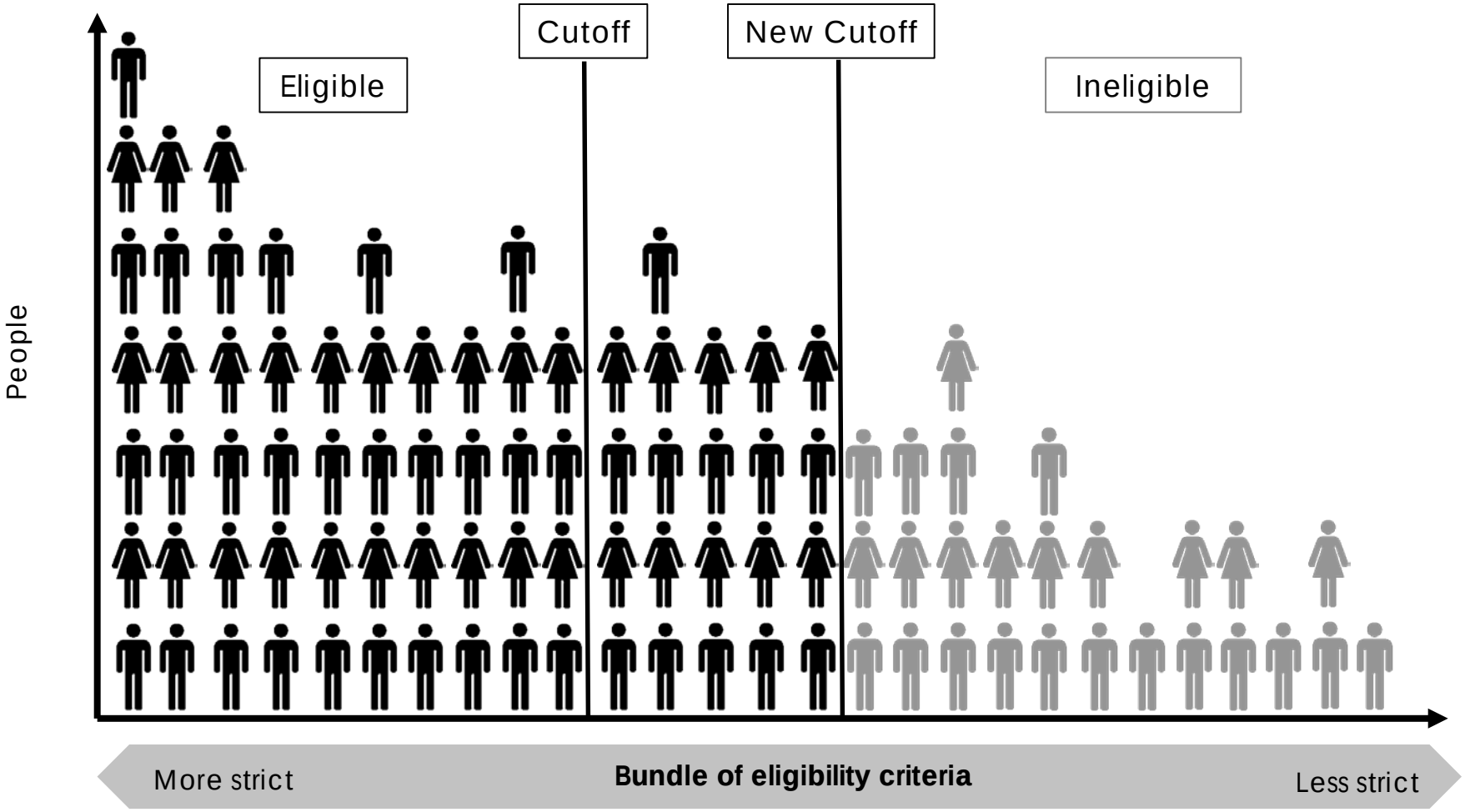
II. Encouragement design

III. Randomization among the marginally ineligible

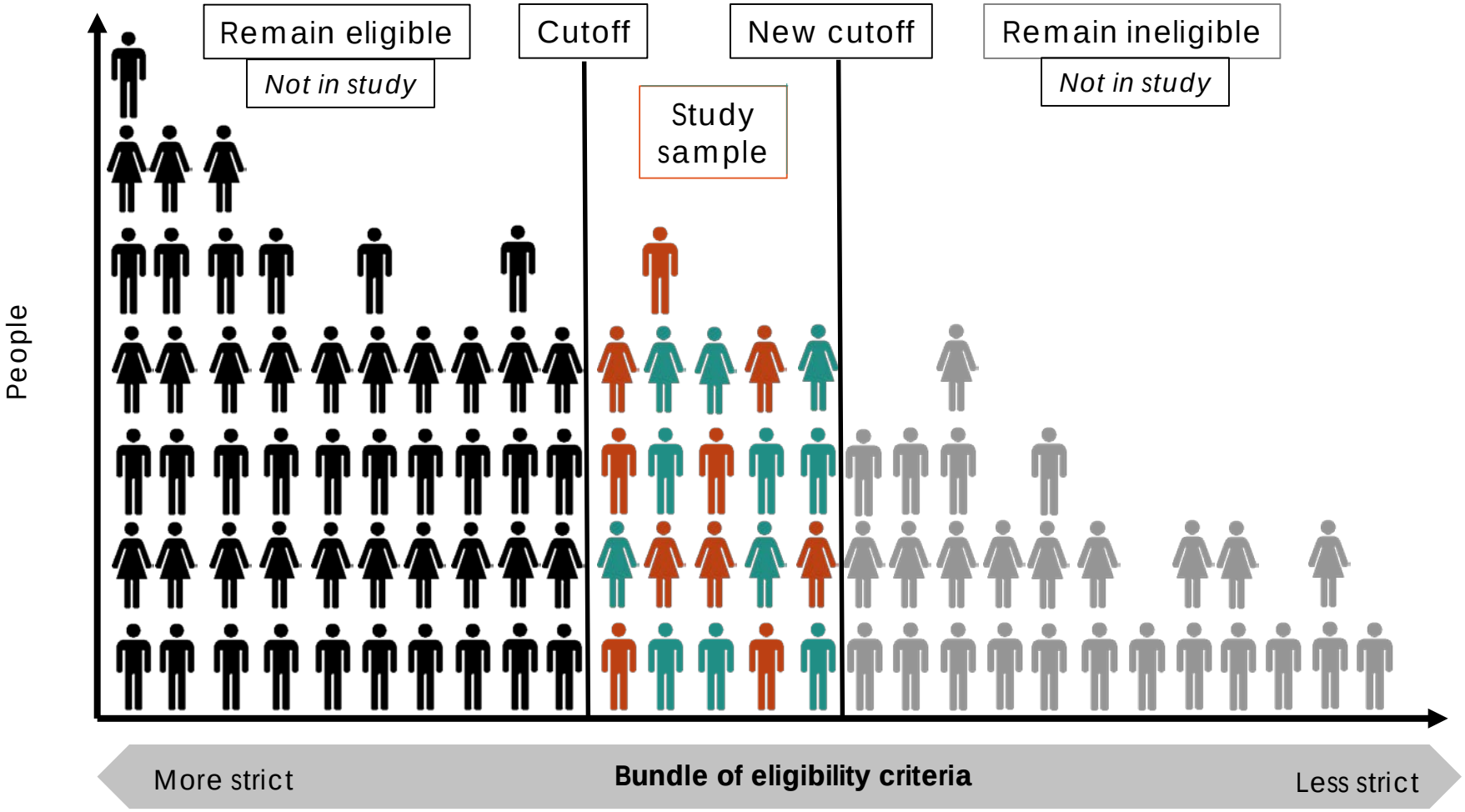
Strict eligibility criteria



Relax eligibility criteria



Hold lottery among the marginally ineligible



Prior to the expansion

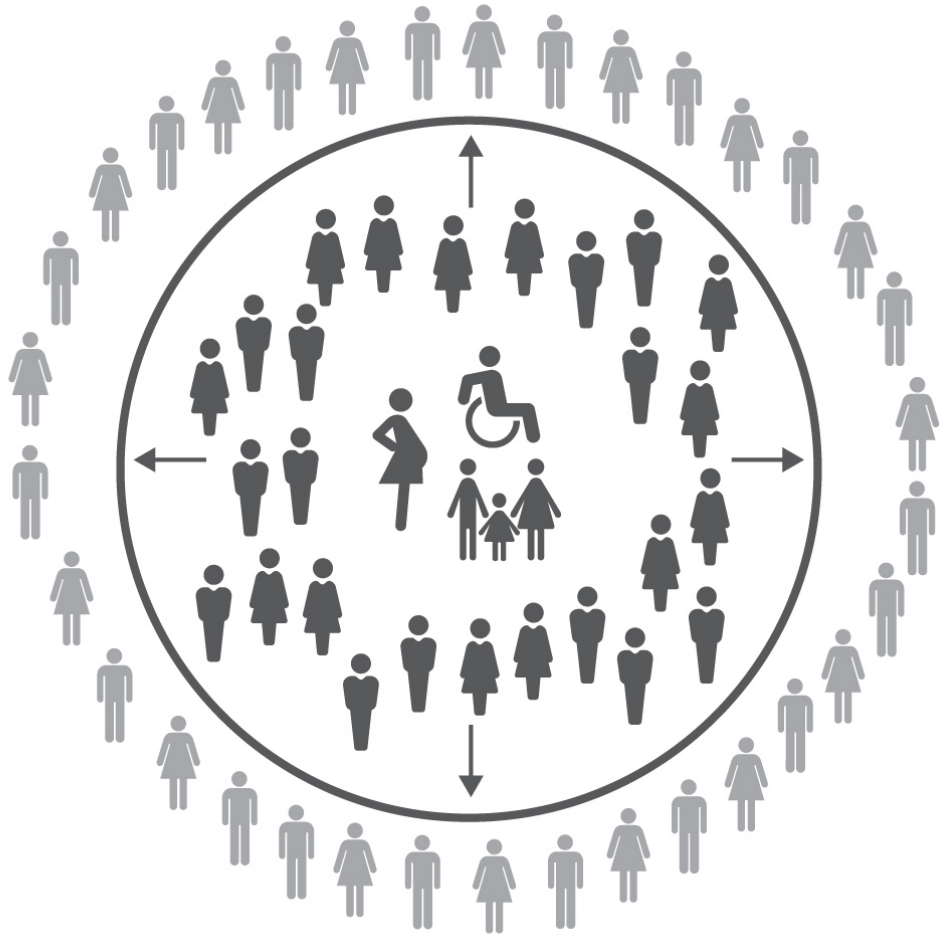
Uninsured,
low-income adults

Children and pregnant women, disabled individuals, and families enrolled in TANF

Everyone else

Eligible Ineligible

Expansion of the eligibility criteria



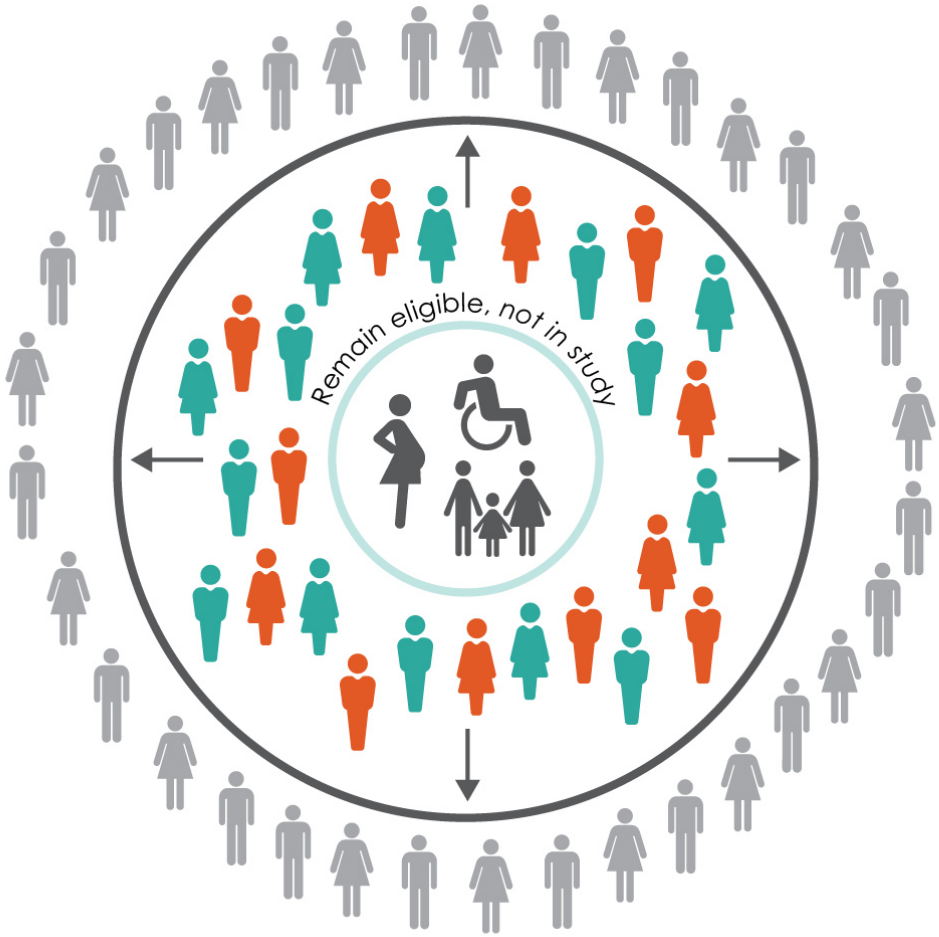
Uninsured,
low-income adults

Children and pregnant women, disabled individuals, and families enrolled in TANF

Everyone else

Eligible Ineligible

Lottery among the “newly” eligible



Uninsured, low-income adults

Children and pregnant women, disabled individuals, and families enrolled in TANF

Everyone else

Eligible
Ineligible
Treatment
Control