



Alternatives to Using Random Assignment in Outcome Evaluations

MAY 19, 2021



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Outcome Evaluation Designs

Outcome evaluations compare the outcomes of individuals who got the intervention with a **comparison group** of individuals who did not



Random
Assignment
Design

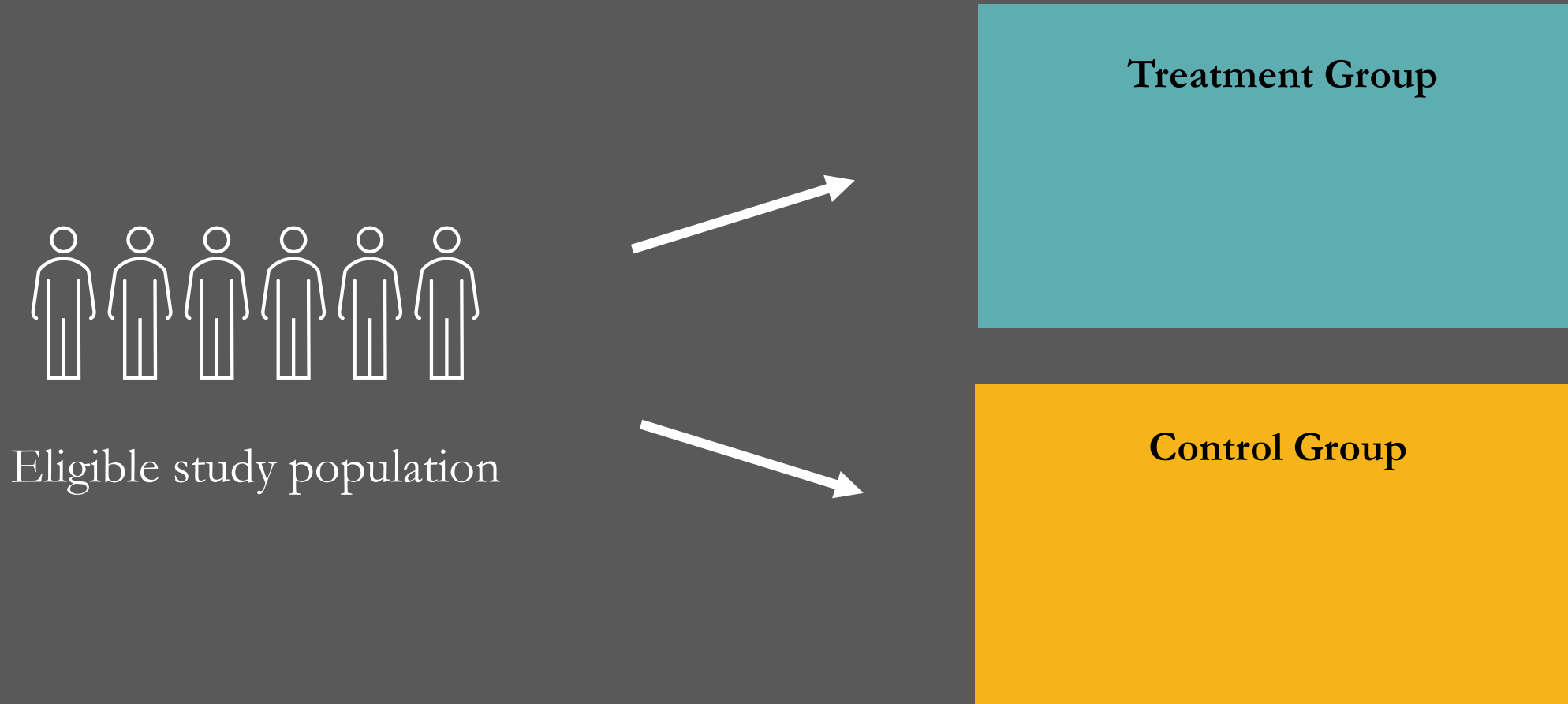


Non-
Equivalent
Comparison
Group Design



One Group
Pre-test/Post-
test Design

Random Assignment: The Gold Standard



Random Assignment: The Gold Standard

Treatment Group



=

Control Group



Random Assignment may not be feasible because of...

...**ethical concerns** about withholding treatment

...**potential backlash** from participants or partners

...**artificial reduction of enrollment**

...**difficulties in implementation**

Dear Parents,
To show our commitment to evidence-based practice, this year's fourth grade class will be randomly assigned to one of two groups. The treatment group will receive a good education while the control group will receive a placebo. This study will provide value for generations to come.



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Alternatives to Random Assignment

Non-Equivalent Comparison Group Design

- Researcher does not control who gets the intervention
- Available data is used to get treatment and comparison groups who are as similar as possible
- Referred to as “*quasi-experimental design*”
- **Limitation:** Cannot rule out selection bias

**Treatment
Group**

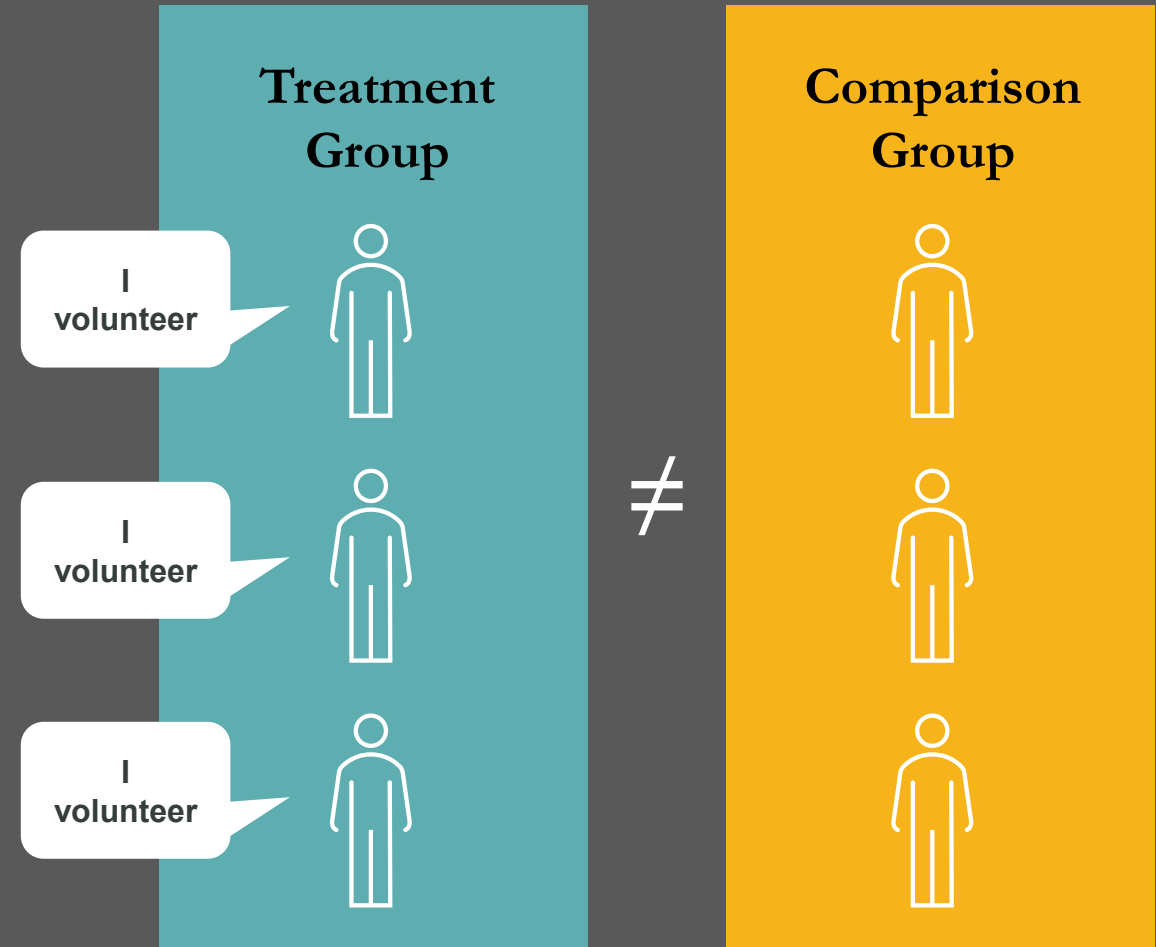


**Comparison
Group**



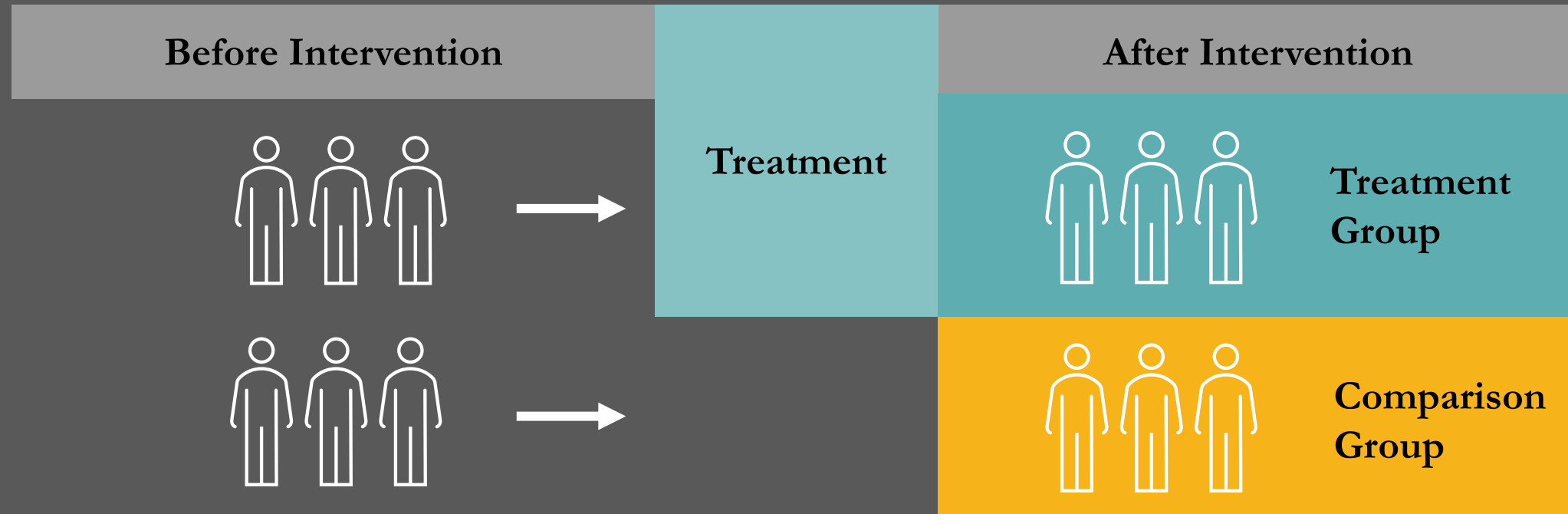
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Non-Equivalent Comparison Group Design

- Collect/obtain pretest and posttest data on both groups
- May identify comparison group using prospective or retrospective methods



Non-Equivalent Comparison Group Design

Approach 1:
Waitlist Design

Approach 2:
**Matched Comparison
Group Design**

Prospective method

Retrospective method
(Ex Post-Facto Design)

Precision or Exact Matching

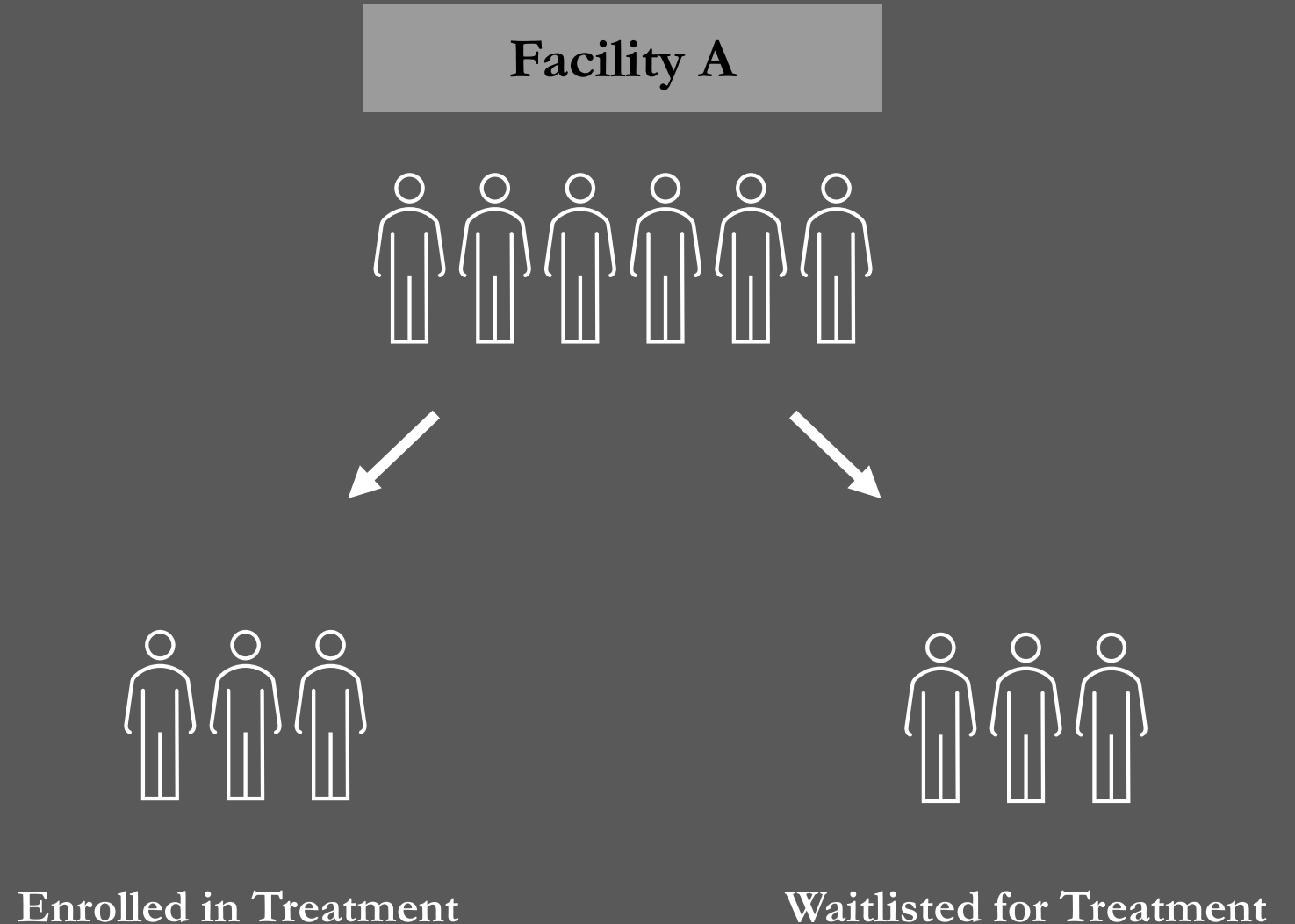
Propensity Score Matching

**What comparison is
being made?**

How are participants “matched”?

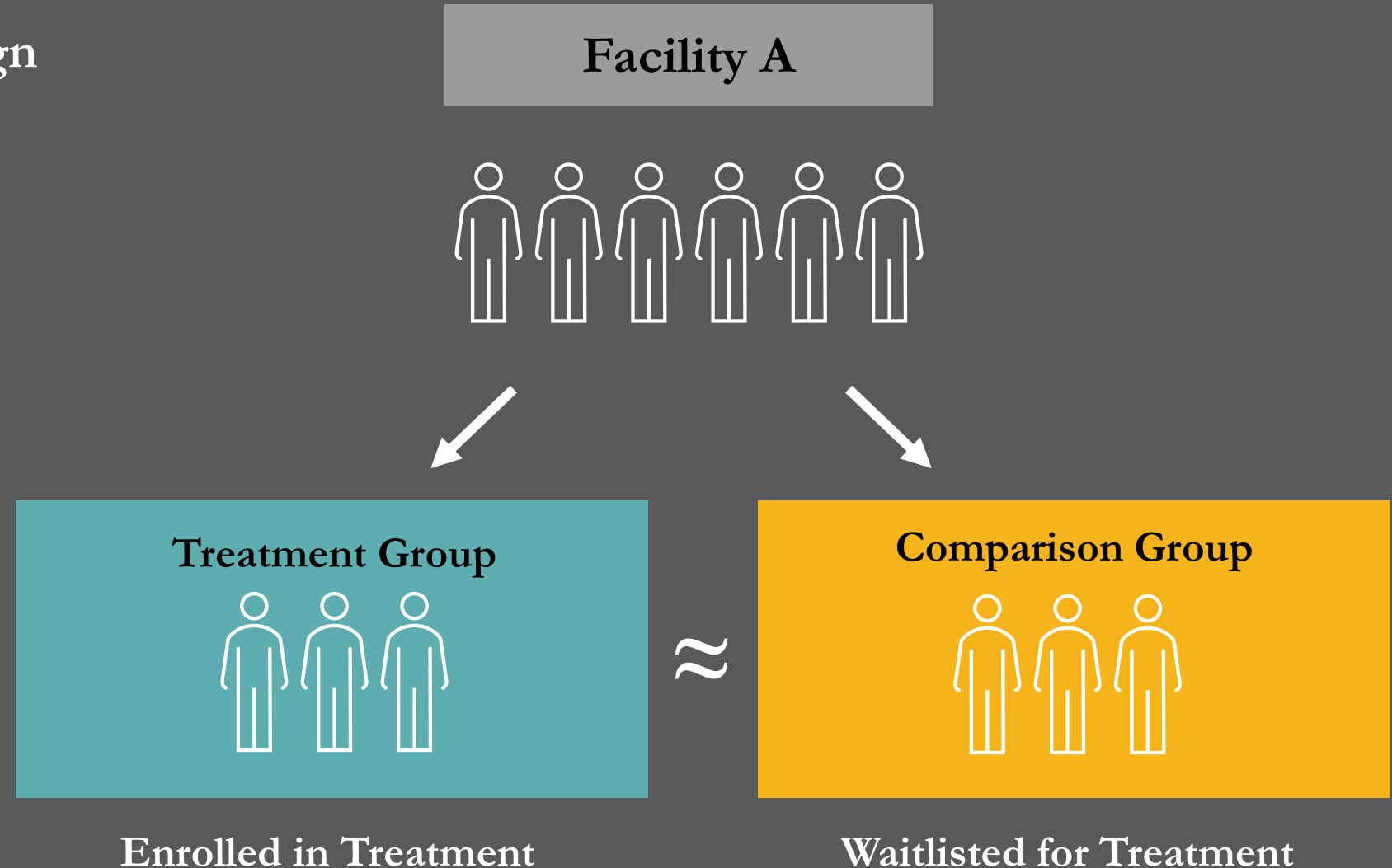
Non-Equivalent Comparison Group Design

Approach 1: Wait-list design



Non-Equivalent Comparison Group Design

Approach 1: Wait-list design



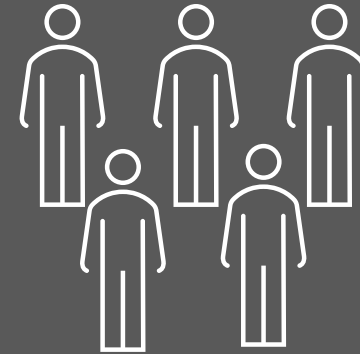
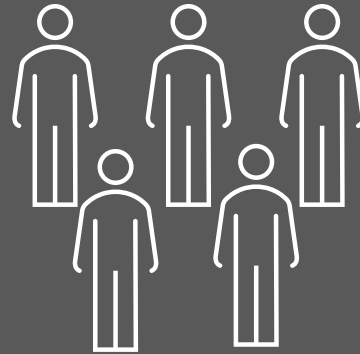
Non-Equivalent Comparison Group Design

Approach 2: Matched comparison group design – comparable correctional facility

Facility A

Facility B

Facility Population



Non-Equivalent Comparison Group Design

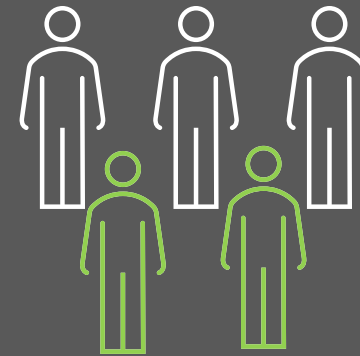
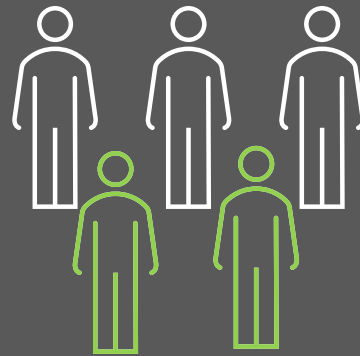
Approach 2: Matched comparison group design – comparable correctional facility

Facility A

Facility B

Eligible For Treatment

- ✓ Age 18-35
- ✓ Substance use disorder

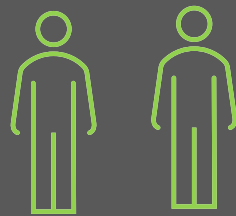


Non-Equivalent Comparison Group Design

Approach 2: Matched comparison group design – comparable correctional facility

Facility A

Facility B



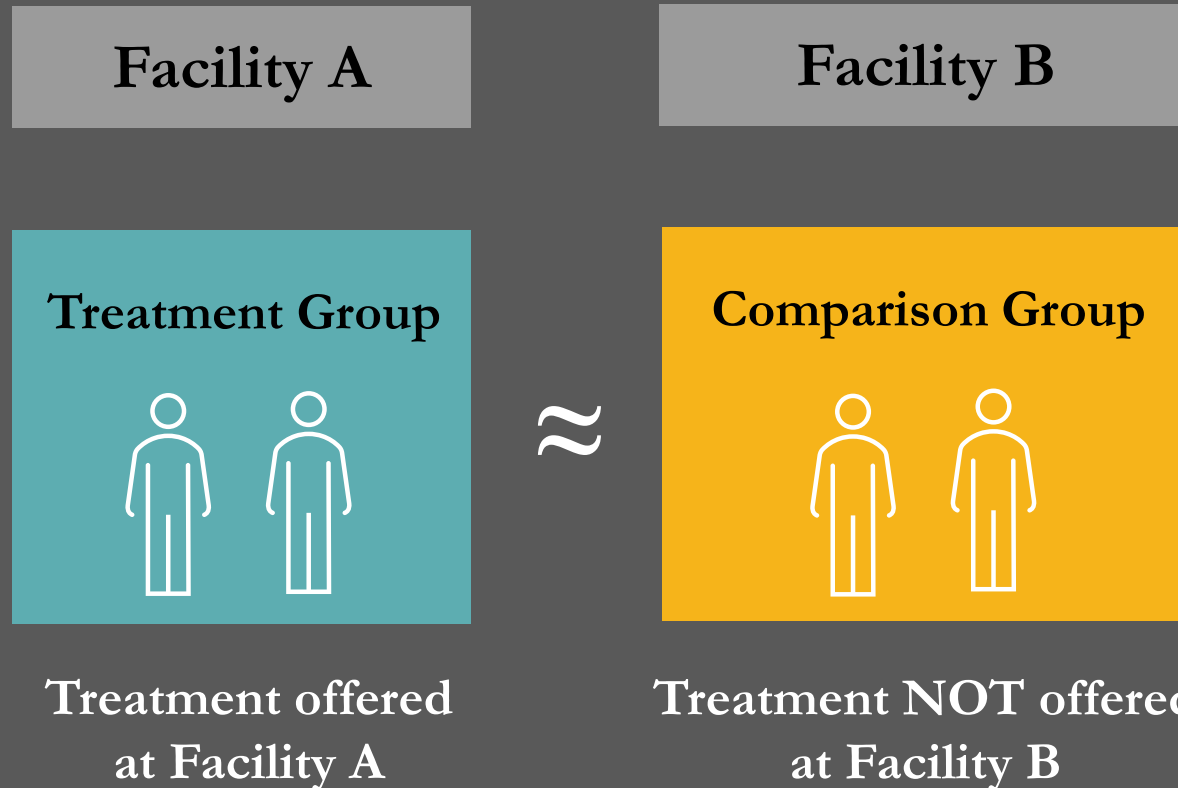
Treatment offered
at Facility A



Treatment **NOT** offered
at Facility B

Non-Equivalent Comparison Group Design

Approach 2: Matched comparison group design – comparable correctional facility

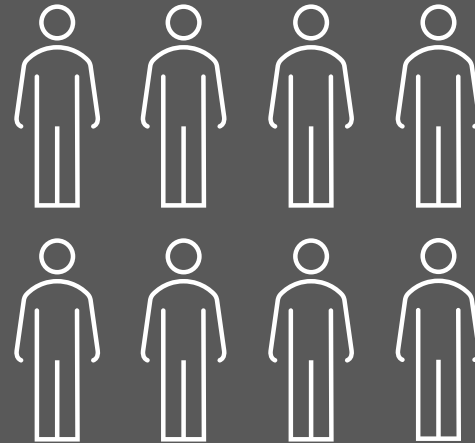


Non-Equivalent Comparison Group Design

Approach 2: Matched comparison group design – comparable catchment area upon release

Facility Population

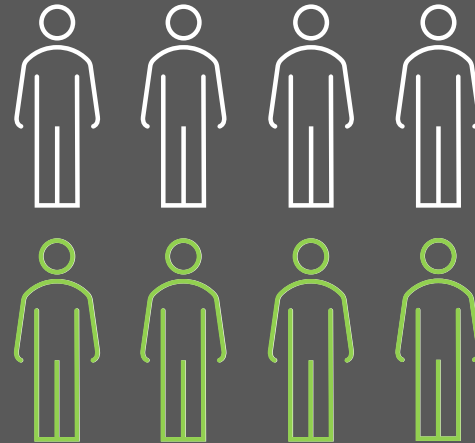
Facility A



Non-Equivalent Comparison Group Design

Approach 2: Matched comparison group design – comparable catchment area upon release

Facility A

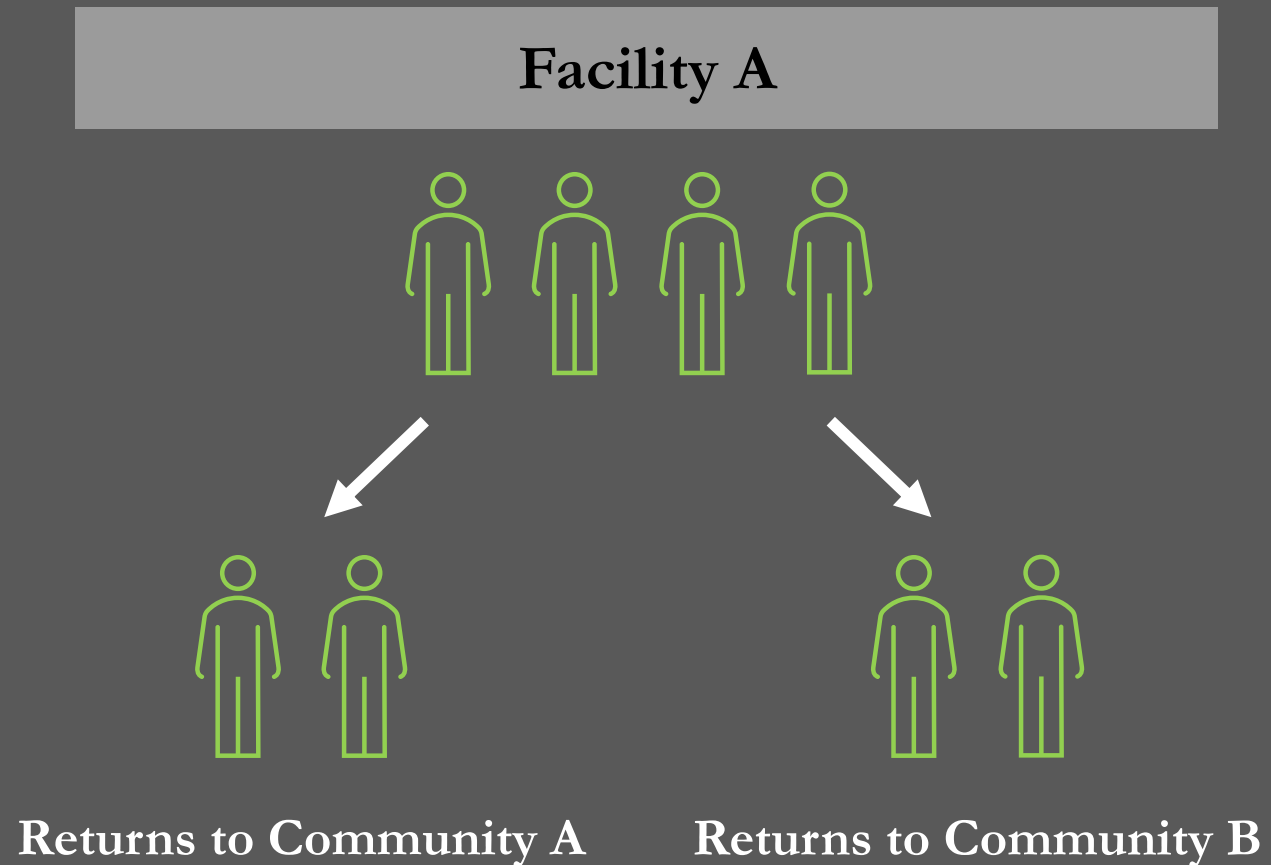


Eligible For Treatment

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Non-Equivalent Comparison Group Design

Approach 2: Matched comparison group design – comparable catchment area upon release



Non-Equivalent Comparison Group Design

Approach 2: Matched comparison group design – comparable catchment area upon release

Facility A



Treatment offered
in Community A



Treatment **NOT** offered
in Community B

Non-Equivalent Comparison Group Design

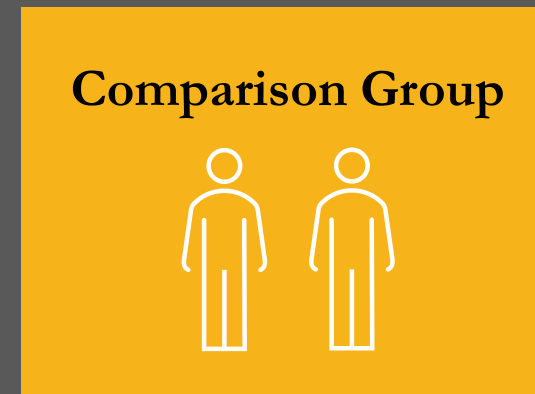
Approach 2: Matched comparison group design – comparable catchment area upon release

Facility A



Treatment offered
in Community A

≈



Treatment **NOT** offered
in Community B

Non-Equivalent Comparison Group Design

Retrospective Method – Precision or Exact Matching

Matching Variables

- Gender
- Risk Score
- Number of Prior Arrests

Treatment Group



Male
Medium risk
0



Female
High risk
2



Female
Medium risk
1

Comparison Group



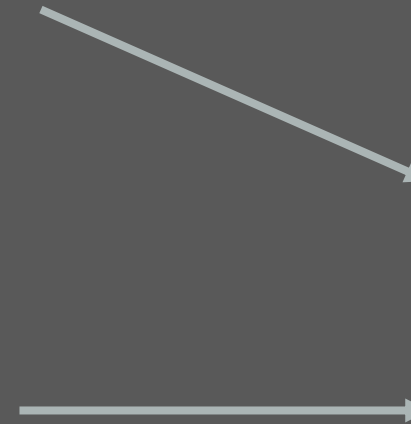
Male
High risk
0



Male
Medium risk
0



Female
Medium risk
1



Non-Equivalent Comparison Group Design

Retrospective Method – Propensity Score Matching

Pre-Intervention Characteristics

- Gender
- Age
- Number of prior arrests

Treatment Group

 .82

 .13

 .29

Comparison Group

 .80

 .17

 .22

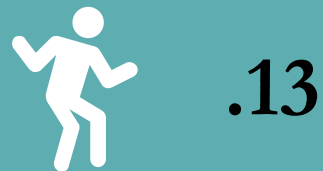
Non-Equivalent Comparison Group Design

Retrospective Method – Propensity Score Matching

Pre-Intervention Characteristics

- Gender
- Age
- Number of prior arrests

Treatment Group

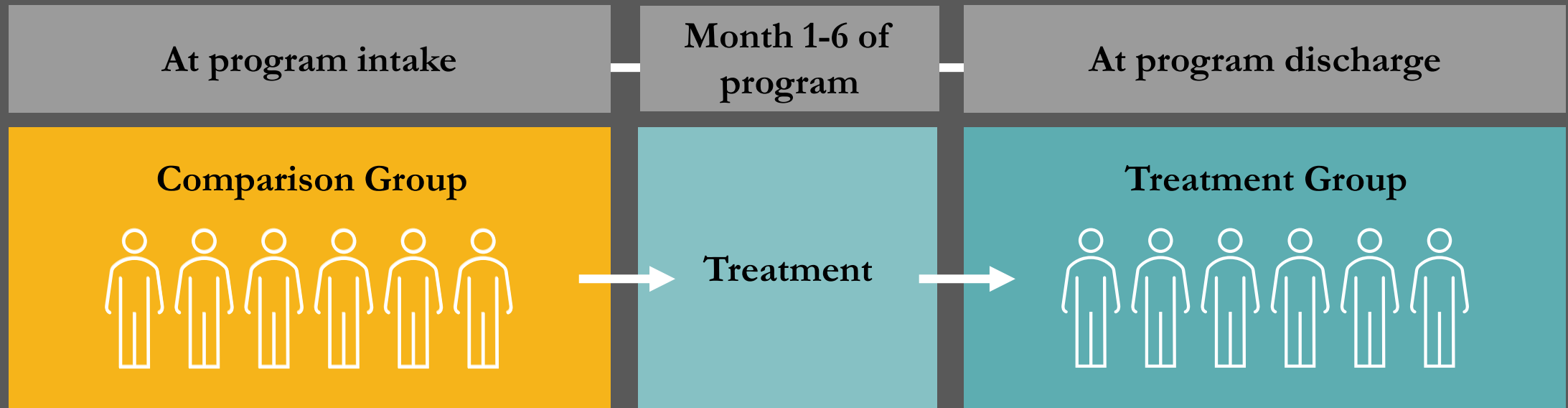


Comparison Group



One Group Pre-test/Post-test Design

- Measuring outcomes for one group of individuals before and after an intervention





Evaluating the Impact of the **Tech2Connect Program**

Sarah Fineran
Research Director
Iowa Department of Corrections

Tech2Connect Project Background

- Iowa's Second Judicial District
 - Primarily consists of rural counties
 - Unique barriers to service access, transportation difficulties, and higher service provision costs
- The program targets individuals who have been sentenced to a term of community supervision
 - Uses video conferencing equipment, web cameras, American Prison Data Systems (APDS) tablet computers, Zoom licenses, and other related devices and equipment to provide individual and group services (that would previously have required travel to receive in-person)
 - Individuals under supervision can borrow technology at no charge



Research Design

- Mixed Methods: Process and Outcome Studies
- The outcome evaluation will examine the influence of Tech2Conect on recidivism outcomes compared to a cohort of clients supervised during the same time period in a similarly situated district, who did not have access to technology resources
- Data used in this evaluation come from the Iowa Department of Corrections ICON system
 - Key outcomes will include reincarceration and treatment dosage

Random Assignment Considerations

- Despite benefits of random assignment, it was inappropriate to use in the Tech2Connect program's outcome evaluation for practical and ethical issues
 - Because the program entails delivering interventions through the technology issued to clients, the control group would have many more barriers to getting legally mandated services and supervision components
 - Correctional professional responsibility to ensure everyone has similar access to resources that could benefit their well being and allow them to meet supervision requirements

Eligibility Criteria and Drawing a Comparison Group

- Design uses an “intent to treat” model
 - The primary treatment group includes those who were enrolled in the Tech2Connect program. Eligibility criteria include:
 - Being moderate-to-high-risk
 - Having an assaultive charge(s)
 - Having eighteen or more months remaining on supervision
 - The comparison group includes clients in a similar jurisdiction who will be matched to the treatment group based on various pre-treatment demographic and risk indicators such as age, race, and sex, as well as criminogenic risk and offense type
 - Inappropriate comparison groups include those who were referred but who were ineligible, unsuccessful Tech2Connect participants, and a historical group of individuals supervised in the Second Judicial district

Contact Information

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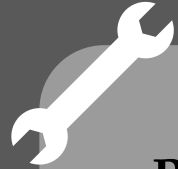
* The Tech2Connect project is funded under the BJA FY18 Innovations in Supervision Initiative Solicitation.



Applying Design Tools to **My Evaluation**

What DESIGN should my evaluation use?

What DATA is available for my evaluation?



**Random
Assignment
Design**



**Non-
Equivalent
Comparison
Group Design**



**One Group
Pre-test/Post-
test Design**

Will you be able to collect prospective data to answer your research questions?

Data available on program eligibility and other background characteristics for both groups?

Are data coming from the same source?

Data available on outcomes for both groups?

If...



Random
Assignment
Design



Non-
Equivalent
Comparison
Group Design



One Group
Pre-test/Post-
test Design

If... ... researcher does NOT control who gets treatment, use a quasi-experimental approach



If... ...treatment and control group members CANNOT be matched with available data,
use one group as treatment and comparison



Questions?

My match
smells funny.



We were only matched on
the color of our coat.
Measures for floppy ears and
weight were not available in
the administrative data...