Policy Evaluation - Natural Experiments & the Oregon Medicaid Study

March 18, 2025

Estimating Treatment Effects Review

- $ATE = Avg_n[Y_i^1 - Y_i^0]$
- $ATE_{est} = Avg_n[Y_i^1 | D_i = 1] - Avg_n[Y_i^0 | D_i = 0]$
- When $(Y^1, Y^0) \not\perp\!\!\!\perp D$:

$$ATE_{est} = ATE + \underbrace{\{Avg_n[Y_i^0 | D_i = 1] - Avg_n[Y_i^0 | D_i = 0]\}}_{\text{Selection Bias}}$$

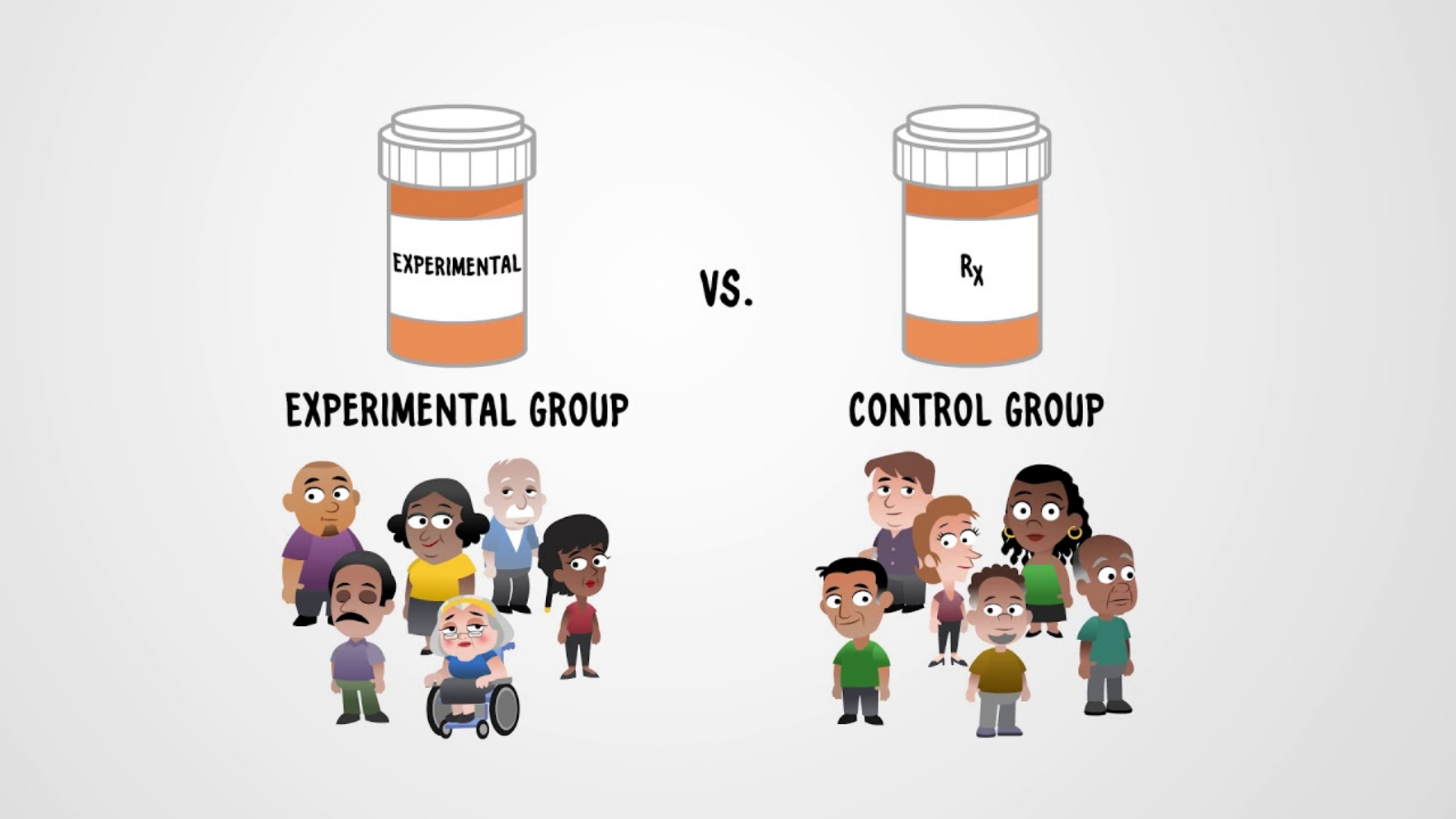
$$+ \quad \underbrace{(1 - \pi)(ATT - ATU)}_{\text{Heterogeneous Treatment Effect Bias}}$$

- $ATE_{est} = \beta_0 + \beta_1 D + \beta_2 X_1 + \beta_3 X_2 + ... \beta_k X_{k-1} + \varepsilon$

Natural Experiments to Estimate Treatment Effects

- What is a natural experiment?

Natural Experiments to Estimate Treatment Effects



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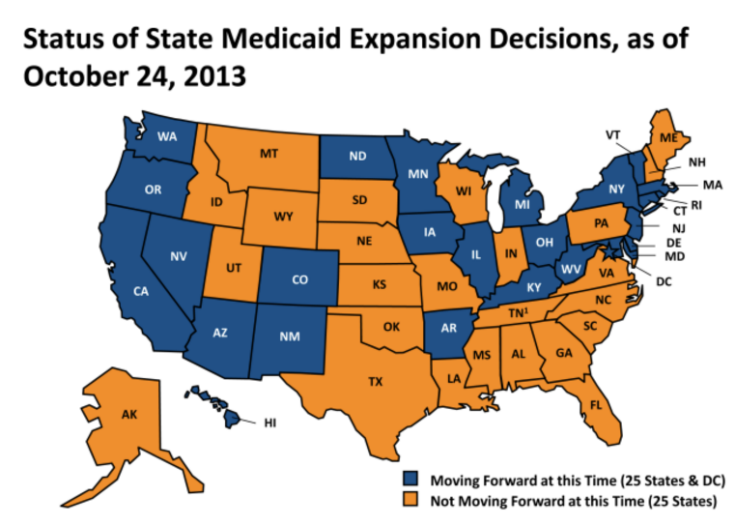

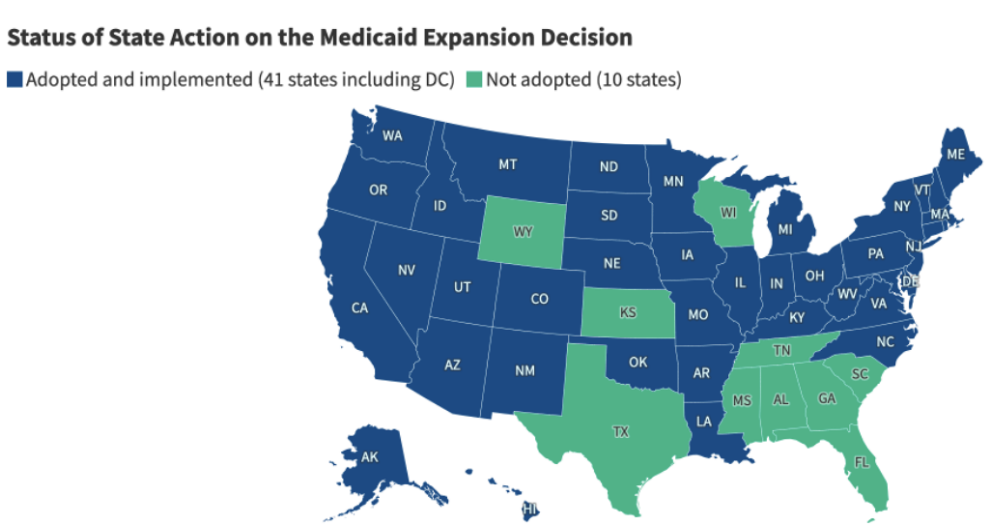

Natural Experiments to Estimate Treatment Effects

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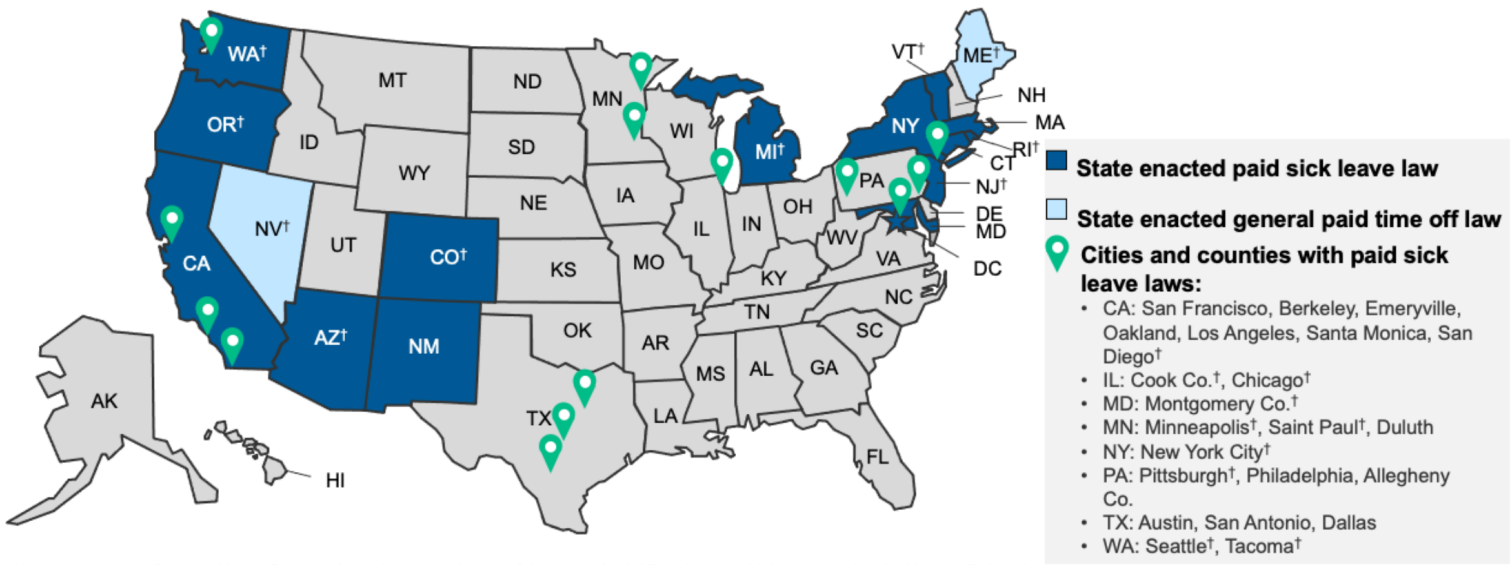
State and Local Paid Sick Leave Laws, 2021



†Law permits use of accrued leave for workplace closure or closure of the worker's child's school or childcare associated with a public health emergency.

NOTES: NM's law takes effect July 1, 2022. CO's law for employers with fewer than 16 workers takes effect Jan. 1, 2022; currently in effect for all other CO employers. Allegheny Co.'s law was enacted in Sept. 2021 and will take effect 90 days after the county posts compliance information for employers. The three local laws passed in TX are on hold due to a pending court challenge. All other state and local laws are currently in effect. All state and all local paid sick leave laws except Pittsburgh, Oakland, and Berkeley permit use of paid leave for reasons associated with sexual assault, domestic violence, or stalking, known as "safe time."

SOURCE: KFF analysis of state paid family and medical leave laws; A Better Balance. Overview of Paid Sick Time laws in the United States.

KFF

The NEW ENGLAND JOURNAL of MEDICINE

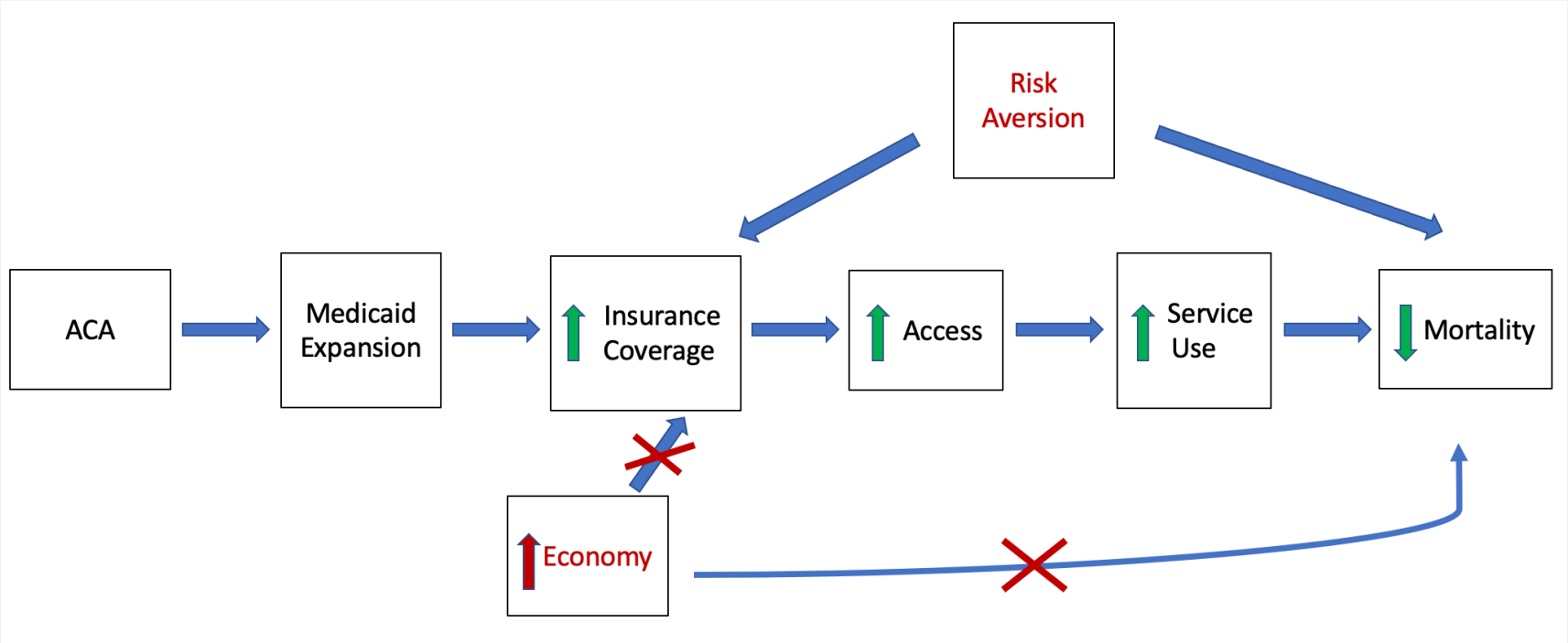
SPECIAL ARTICLE

Cancer Screening after the Adoption of Paid-Sick-Leave Mandates

Kevin Callison, Ph.D., Michael F. Pesko, Ph.D., Serena Phillips, Dr.P.H., and Julie A. Sosa, M.D.

Natural Experiments to Estimate Treatment Effects

- Why are natural experiments valuable when estimating treatment effects?



Oregon Health Study

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- Expand OHP Standard enrollment by 10k in 2008.
  - 90k people applied

Oregon Health Study

OREGON
HEALTH STUDY

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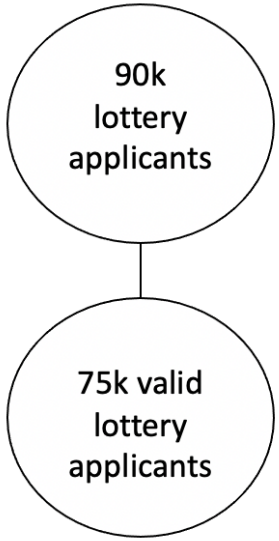

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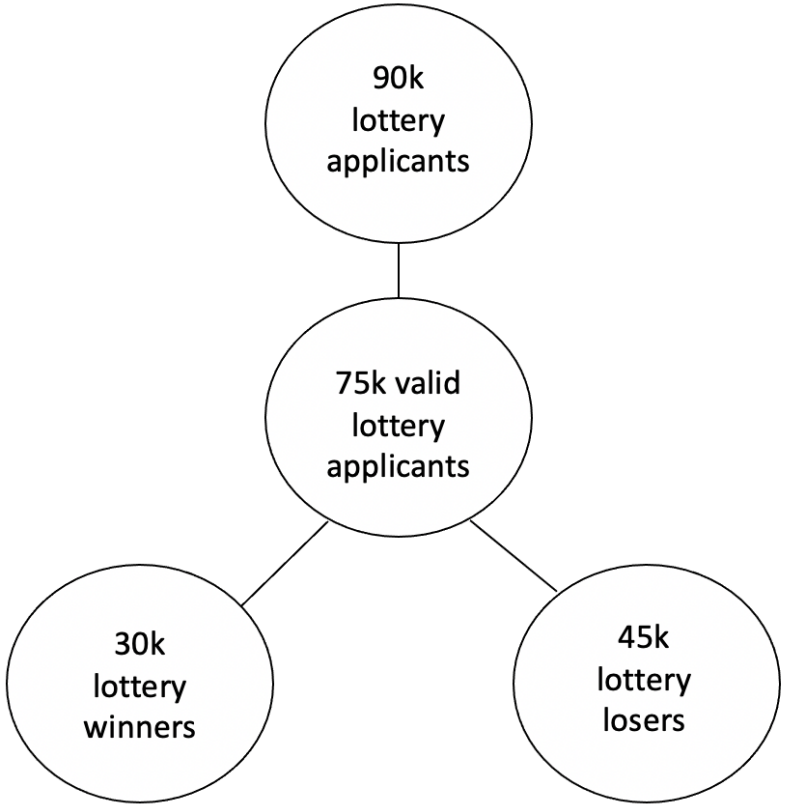

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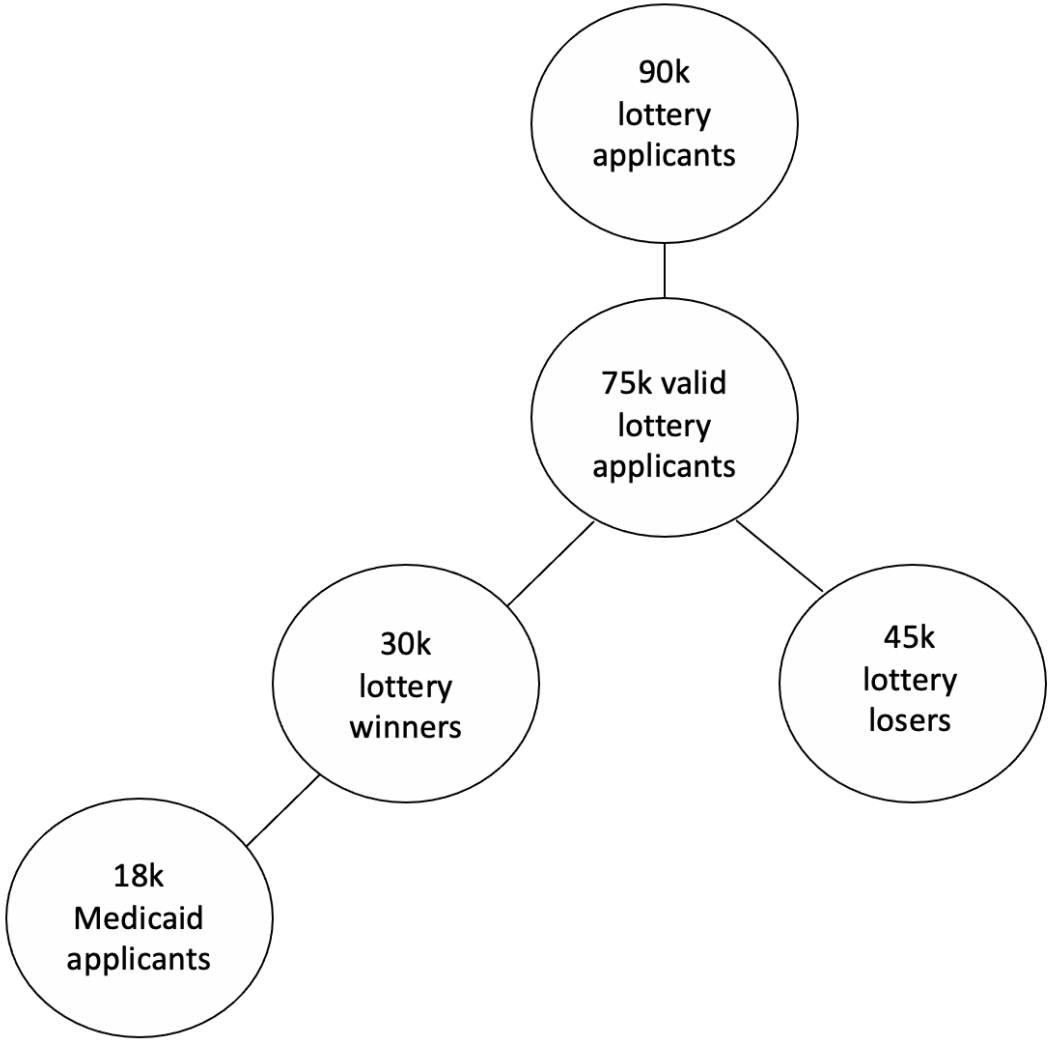

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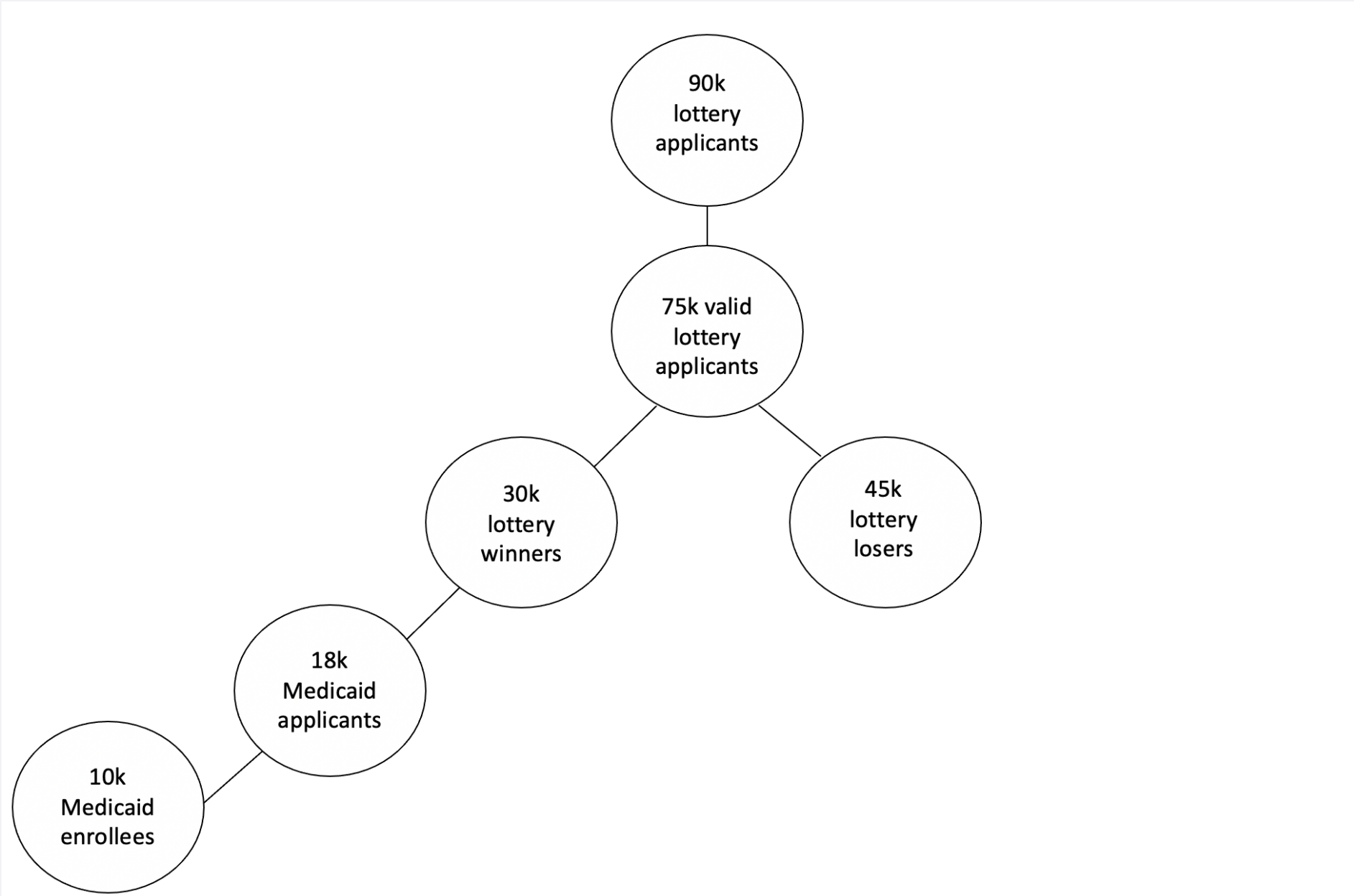

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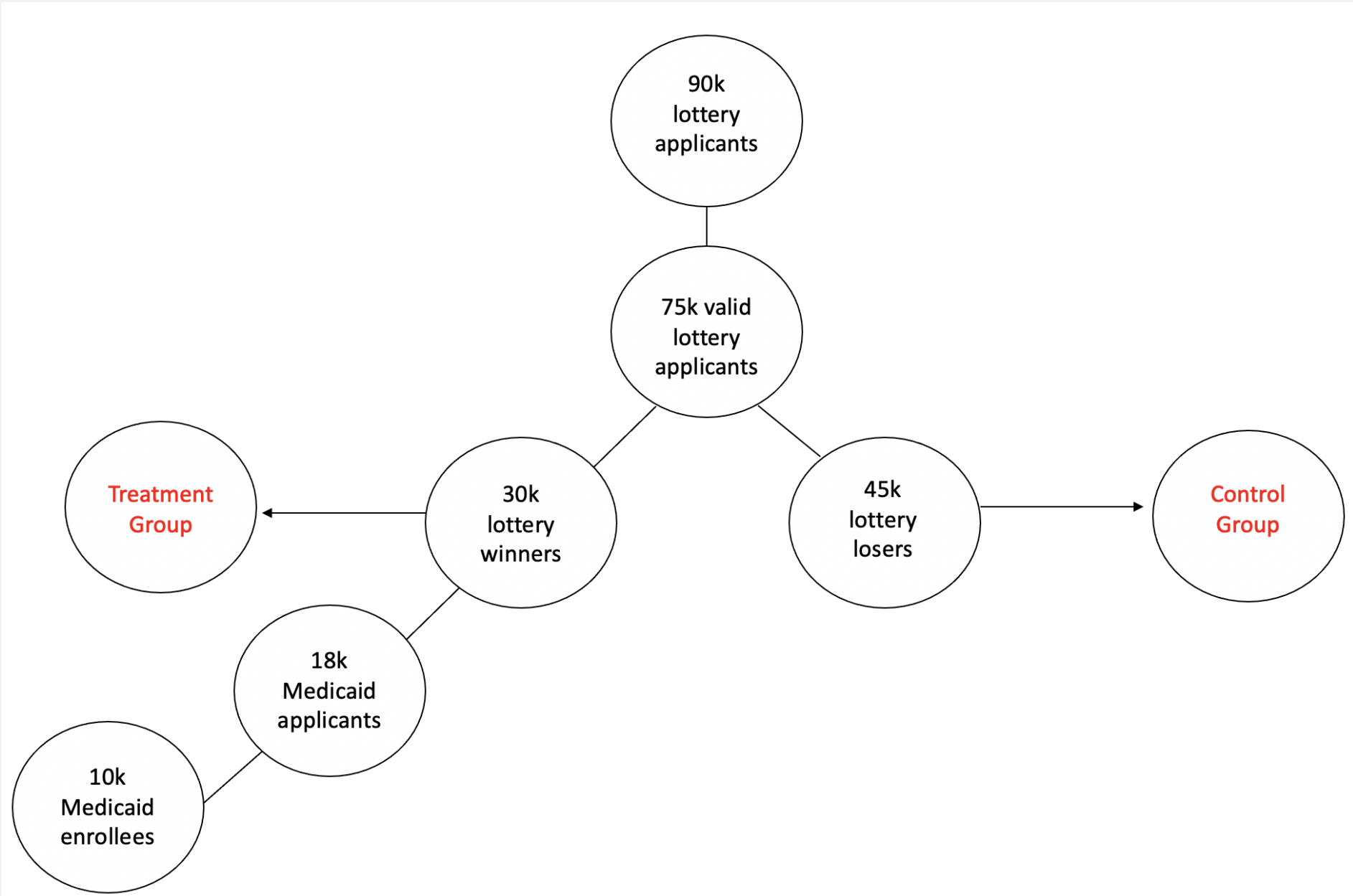

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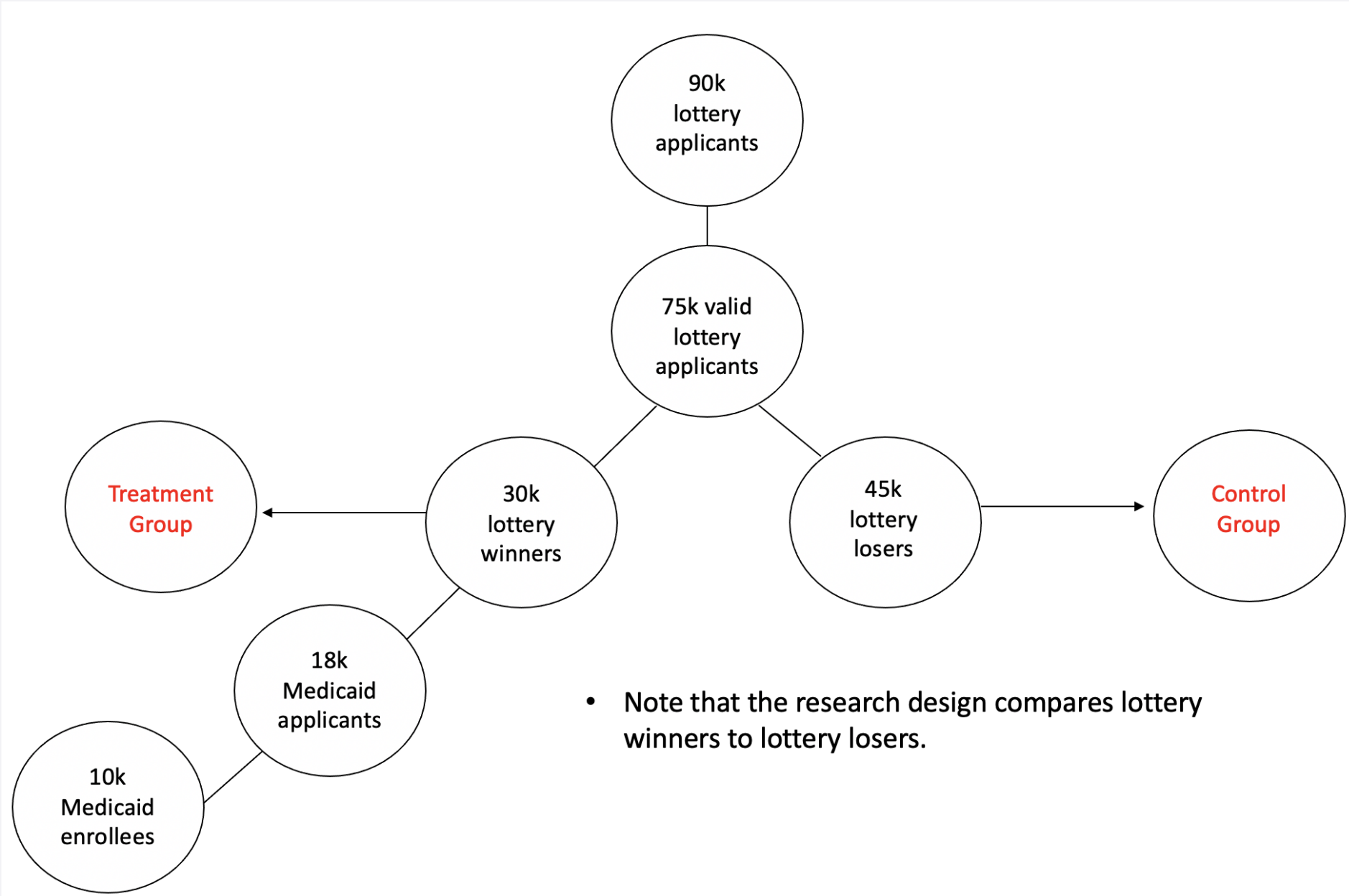

- Note that the research design compares lottery winners to lottery losers.

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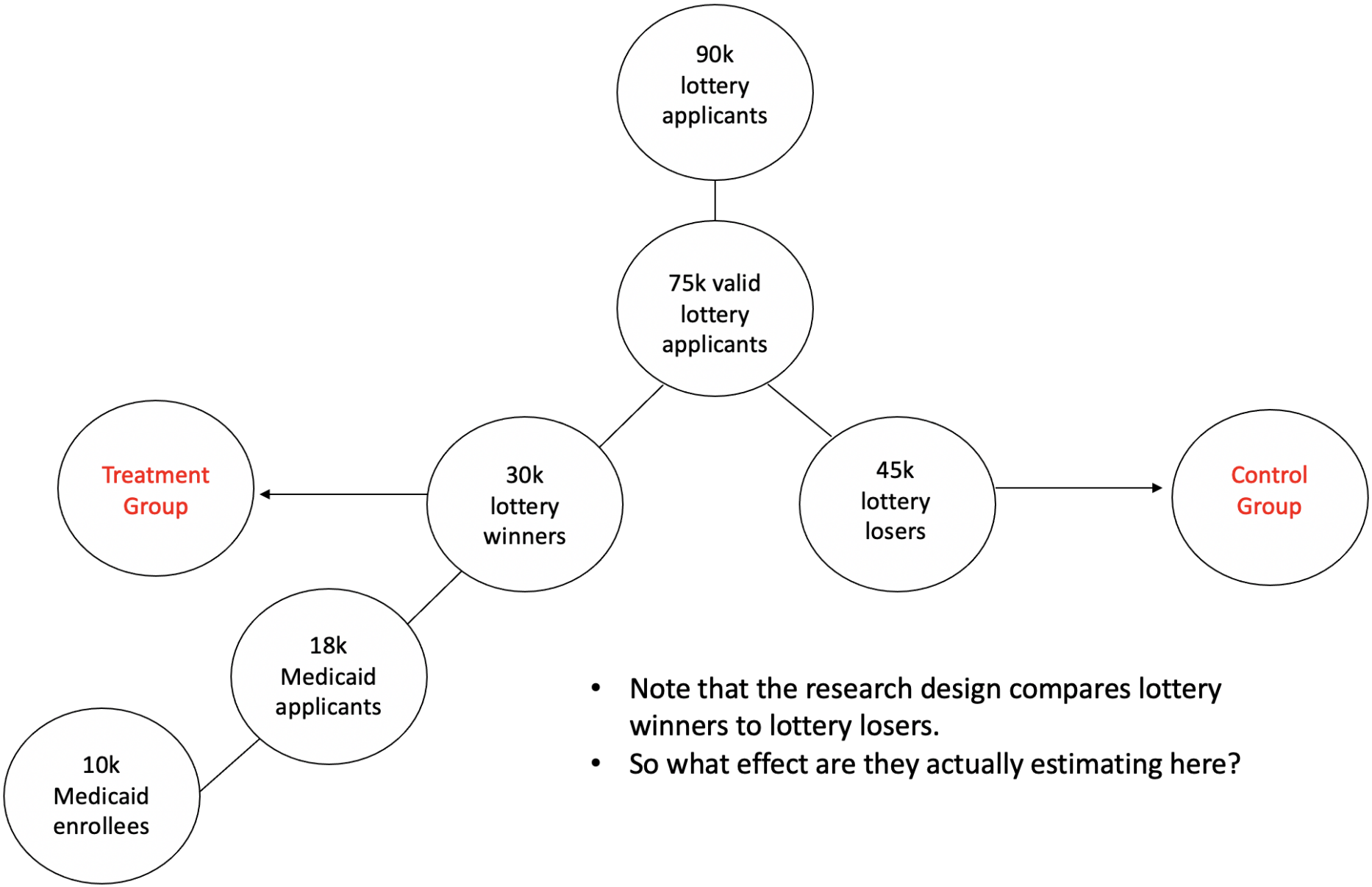

- Note that the research design compares lottery winners to lottery losers.
- So what effect are they actually estimating here?

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  2. Instrumental variables estimate of the local average treatment effect (LATE).

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- **Instrumental Variables - Two-stage least squares**

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    - How does this distinction between ITT and TOT/LATE relate to the concept of external validity?