Quantitative Work after Case Studies

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Case-Study Designs

Regression Roles

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- Testing generalizability

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- Mechanisms and models

Regression Roles

- Testing generalizability
- Mechanisms and models
- Addressing measurement problems

Regression Roles

- Testing generalizability
- Mechanisms and models
- Addressing measurement problems
- Testing the importance of omitted variables

Generalizability

Data Quality

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Does the model capture the qualitative hypothesis?

Generalizability

Data Quality for HIRDs:

Generalizability

Data Quality for HIRDs:

- Proximity of Observations

Generalizability

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- Proximity of Observations
- Transparency of Citations

Generalizability

Data Quality for HIRDs:

- Proximity of Observations
- Transparency of Citations
- Certainty of the Historical Record

Generalizability

Data Quality for HIRDs:

- Proximity of Observations
- Transparency of Citations
- Certainty of the Historical Record
- Attention to Valid Comparison

Generalizability

Data Quality for Surveys:

Generalizability

Data Quality for Surveys:

- Simple Questions

Generalizability

Data Quality for Surveys:

- Simple Questions
- Framing Effects

Generalizability

Data Quality for Surveys:

- Simple Questions
- Framing Effects
- Pre-Test Evidence

Generalizability

"Thick" Concepts:

Generalizability

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- Cannot be reduced to a single indicator without losing some important part of their meaning.

Generalizability

"Thick" Concepts:

- Cannot be reduced to a single indicator without losing some important part of their meaning.
- Multidimensional: no aspect of the concept is reducible to any of the others.

Mediation

T_i is 1 or 0

Mediation

T_i is 1 or 0

$Y_i(t)$

Mediation

$M_i(t)$

Mediation

$M_i(t)$

$Y_i(t, m)$

Mediation

$$\tau_i = Y_i(1, M_i(1)) - Y_i(0, M_i(0))$$

Mediation

$$\tau_i = Y_i(1, M_i(1)) - Y_i(0, M_i(0))$$
$$\delta_i(t) = Y_i(t, M_i(1)) - Y_i(t, M_i(0))$$

Mediation

$$\tau_i = Y_i(1, M_i(1)) - Y_i(0, M_i(0))$$
$$\delta_i(t) = Y_i(t, M_i(1)) - Y_i(t, M_i(0))$$
$$\zeta_i(t) = Y_i(1, M_i(t)) - Y_i(0, M_i(t))$$

Mediation

Assumption of Sequential Ignorability:

Mediation

Assumption of Sequential Ignorability:

$$\{Y_i(t, m), M_i(t')\} \perp T_i | X_i = x$$

and

$$Y_i(t, m) \perp M_i | T_i = t', X_i = x$$

Mediation

1. Fit model for mediator, conditional on treatment, etc.

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2. Fit model for observed outcome, conditional on treatment, mediator, etc.

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1. Fit model for mediator, conditional on treatment, etc.
2. Fit model for observed outcome, conditional on treatment, mediator, etc.
3. Using the first model, simulate $M_i(0)$ and $M_i(1)$ for each case.

Mediation

4. Using the second model, simulate $Y_i(0, M_i(0))$, $Y_i(0, M_i(1))$, $Y_i(1, M_i(0))$, and $Y_i(1, M_i(1))$ for each case.

Mediation

4. Using the second model, simulate $Y_i(0, M_i(0))$, $Y_i(0, M_i(1))$, $Y_i(1, M_i(0))$, and $Y_i(1, M_i(1))$ for each case.
5. Use simulated values to compute τ_i, $\delta_i(t)$, and $\zeta_i(t)$ for each case.

Mediation

4. Using the second model, simulate $Y_i(0, M_i(0))$, $Y_i(0, M_i(1))$, $Y_i(1, M_i(0))$, and $Y_i(1, M_i(1))$ for each case.
5. Use simulated values to compute τ_i, $\delta_i(t)$, and $\zeta_i(t)$ for each case.
6. Repeat steps 3, 4, and 5 many times, saving the calculated values for each repetition.

Making mediation analysis go in R

Assignment

Do a mediation analysis, for data on my website or another dataset of your interest.