Inferential

Sample

$n = 100$

$\bar{x} = 85$ Statistic

$s = 5$

Population

$N = 500$

$\mu = 89$ Parameter

$\sigma = 10$

$\mu = 85$

Empirical research

Data-analysis

X_6: Region

X_5: Teachers

X_4: Subject

X_3: parents education

X_2: Income

Connect X_1: Variable of interest

y: dependent variable

Score

vary

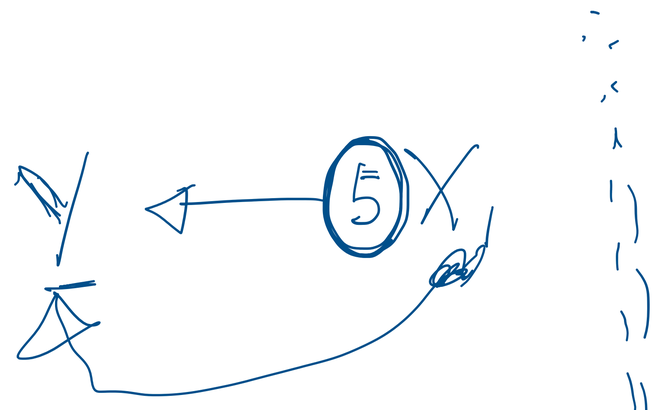
$n = 30$

i	Sex	Wt
1	F	40
2	M	58
3	F	49
90	F	

Observation

Variable :

Subject



$R^2 = 0.002$

0.2%

Experimental data

— Clinic Trial

— new drug

— placebo :

1000

500 drugs

500 placebo

50%

80%

Δy 30%

Observational data

500 Infos

w/ Light

w/o Light

60%

20%

10%

Δy 10%

Confounding variable : Z_i

1) Corr(Z_i, w/light$_i$) ≠ 0

2) Corr(Z_i, y_i) ≠ 0

Score

y_i ← Connect

$y_i = b_0 + 5\,\text{Connect} + b_2 \cdot \text{Inc} + u_i$

$\Delta\hat{y} = 5$

Cause

War

oil price

y

a_2

$\ln \text{oil price} = b_0 + b_1\,\text{war} + b_2\,\text{GDP} + u_i$

s.e.

severity

"Cause"

Dynamics

PSID

Panel Study Income

fishing

$y \leftarrow X_1\ X_2\ X_3\ X_4\ X_5$

Exogenous

IV

Income

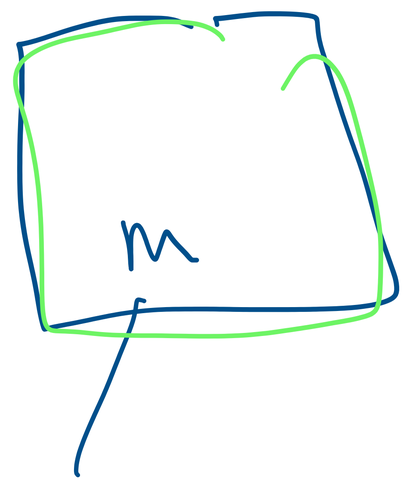
Military

Lottery

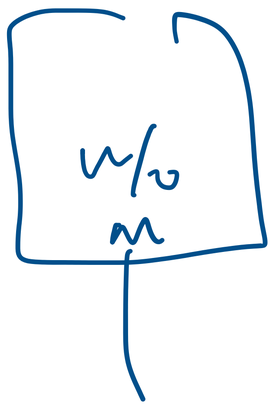
G

S

0 1 0 ...



Income



Income