






1 - Framing

 **Population**
Patients with sepsis in the ICU

 **Intervention**
A=1, albumin + crystalloids

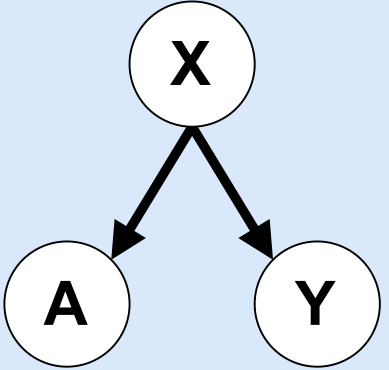
 **Comparator**
A=0, crystalloids

 **Outcome**
Y = 28-day mortality

 **Time**

2 - Identification

Confounders

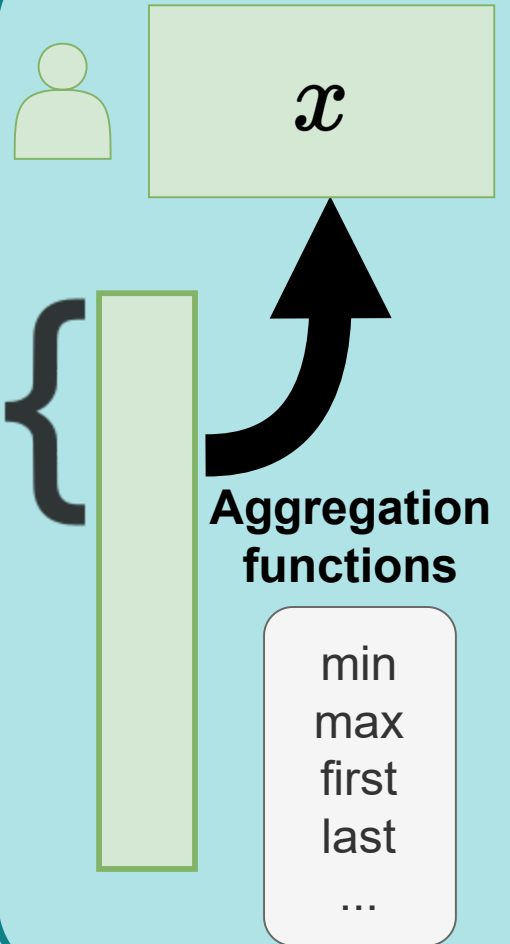


Estimand
 $\mathbb{E}[Y(1)] - \mathbb{E}[Y(0)]$

Look for other sources of bias

3 - Estimation

Feature extraction



Causal estimator

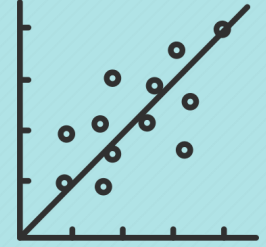
G-formula
 $\mu(a; x) = \mathbb{E}[Y|a; x]$

IPW
 $e(x) = \mathbb{P}[A = 1|x]$

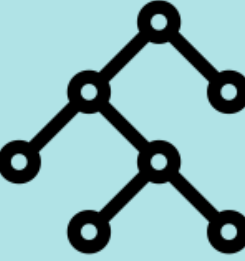
Double-robust
 $(e(x), \mu(a; x))$

Nuisance estimator

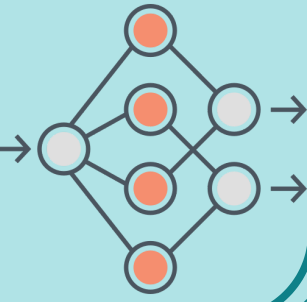
Linear Regression



Trees

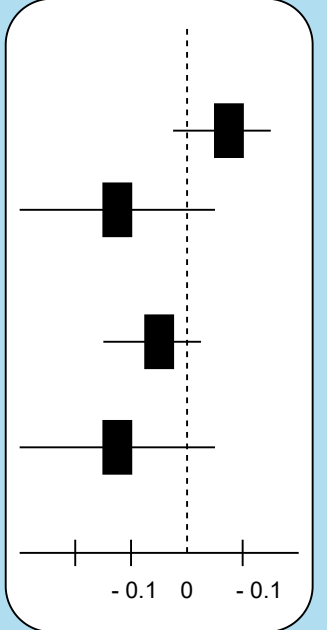


Neural Networks



4 - Vibration Analysis

Question analyses choices



5 - CATE

Estimate treatment effect in subgroups

