achieve valid causal conclusions.

The simplest possible way to do this is a completely randomized design.

As far as possible, all relevant confounders should be balanced in the sample.

For the purposes of this study, we consider it necessary to make the treatment as similar as possible to all relevant controls.

Experiment 3

572

exp.

people

treatment

treatment

283

285

Control

IHA

IHA

Fisher

IHA
outcome $y_{ij} \# hosp. for$ person $i \in C$

$(\gamma_t - \gamma_c)$  absolute comparison

$\frac{\gamma_t - \gamma_c}{\gamma_c}$  relative comparison

$-19\%$  this is large enough to be practically significant

practical sig. vs. statistical sig.

benefit: only summary (judgment)
benefits need to be weighed against costs: cost/benefit analysis

\[ P \]

with IHGA

\[ \begin{bmatrix} 100,000 \\ 0.02 \end{bmatrix} \]

mean \( 100,000 \times 0.02 = ? \)

\[ \frac{100,000}{0.02} \]

mean \( ? \times \frac{1}{0.02} = ? \)

learning about \( \mu_c, \mu_r \): statistical inference

classical inference: frequentist

Bayesian \[ \rightarrow \] Bayesian
Inference: about numerical population summary (e.g., $\mu_c$)

Parameters = often conceptually unobservable

Prediction: about unknown data values (e.g., future)

Conceptually observable

To validate easier: feedback loop (compare your prediction with what actually happened)