

## Threats to internal validity

history

maturation

testing effects

instrumentation

statistical regression (regression toward the mean)

selection

attrition (mortality)

differential attrition

## Pre-experimental designs

one-shot case study

**X Y**

one group pretest-posttest design

**Y<sub>1</sub> X Y<sub>2</sub>**

static-group comparison

**X Y<sub>1</sub>  
Y<sub>2</sub>**

## True experimental designs

pretest-posttest control group design

**R Y<sub>1</sub> X Y<sub>2</sub>**

**R Y<sub>3</sub> Y<sub>4</sub>**

posttest-only control group design

**R X Y<sub>1</sub>**

**R Y<sub>2</sub>**