DGB03 Introduction Design Research

Set Up of Studies

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Where innovation starts

Overview

- The research variables
- The research design
- Sample versus population

Reference: Research methodology – a step-by-step guide for beginners, Ranjit Kumar, 2005

Overview

- **The research variables**
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The research variables: Opinions

Opinions about the iPhone:

"The best phone that was ever made!!!"

"It is the best I ever had"

"It is overvalued by Apple freaks…"

"Frustrating and annoying!"

"The Phone is perfect!"

"Incredible!!"

"Incredible!!"

"After 3 days of use, returning to the store…"

Concepts versus variables

Concept is a mental image or perception

Subjective Impression-No uniformity of understanding-Not measurable

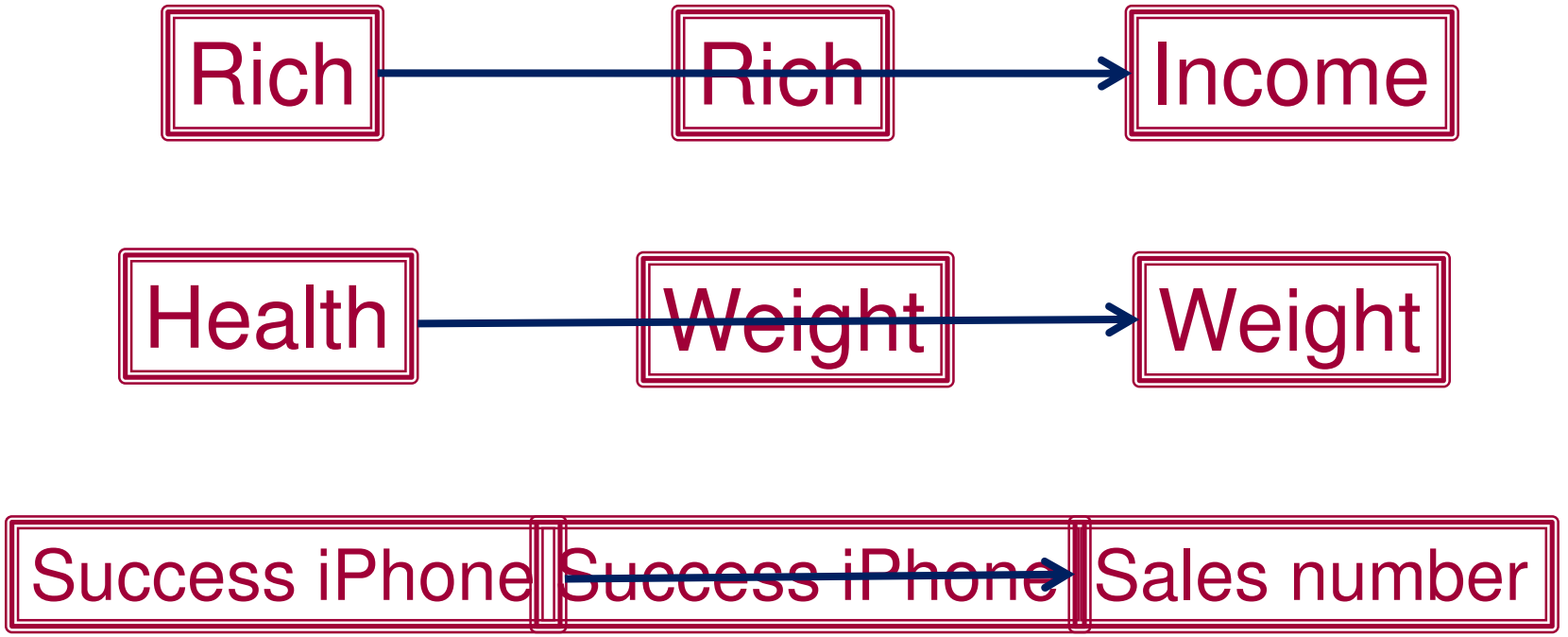
TRANSLATION

Variable is a property that takes on different values

Measurable but degree of precision varies

Concepts versus variables: exercise

Concept or Variable?

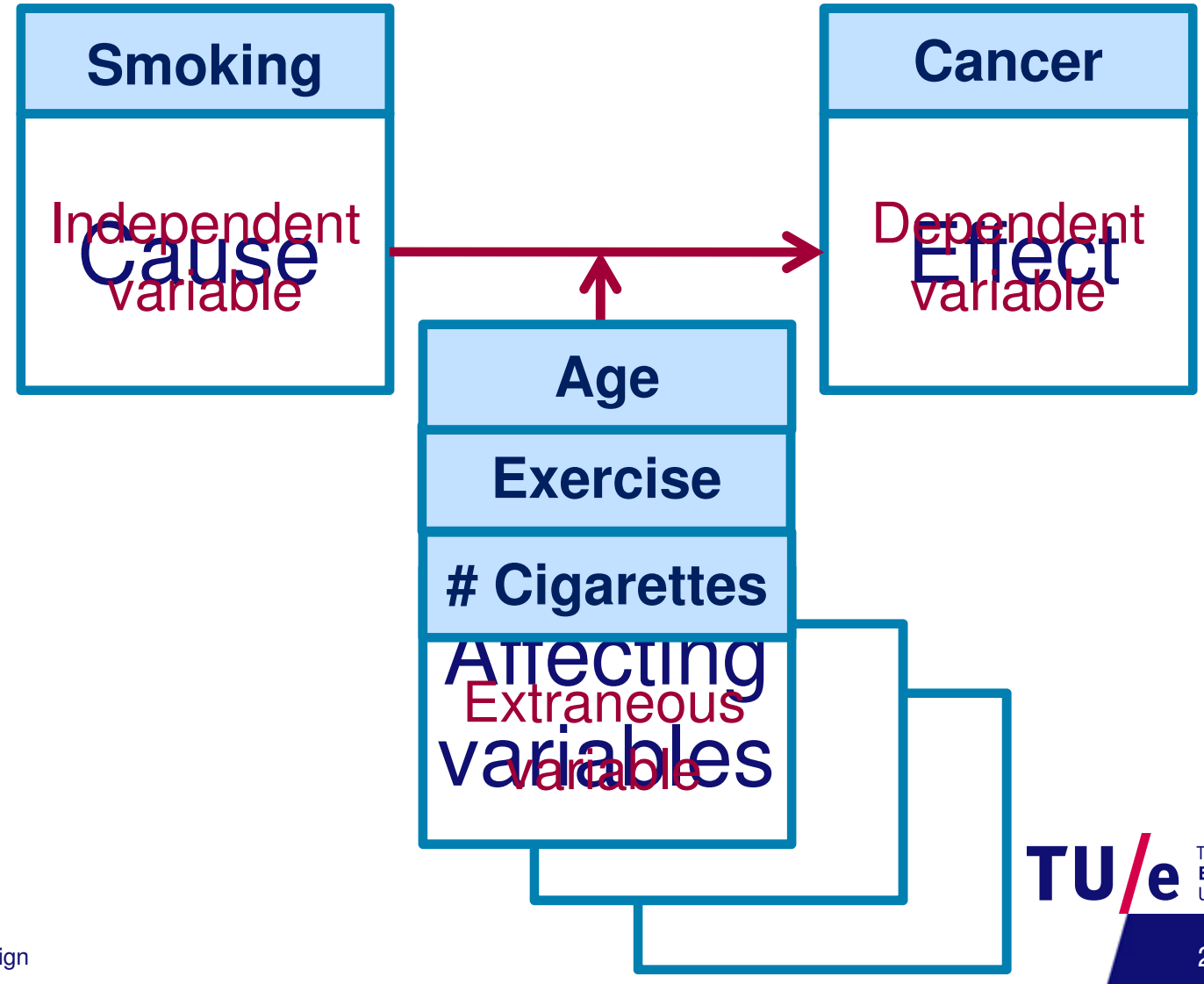


Types of variable

Different variable classifications:

1. The causal relationship
2. The unit of measurement

Types of variable: the causal relationship



Types of variable: unit of measurement

Categorical			Continuous
Constant	Dichotomous	Polytomous	
1 value	*2 values*	*> 2 values*	
water tree taxi dog …	yes/no good/bad rich/poor day/night male/female hot/cold …	political parties - labor - liberal - democrat income - high - middle - low …	income ($) age (years) weight (kg) temp. (°C) …

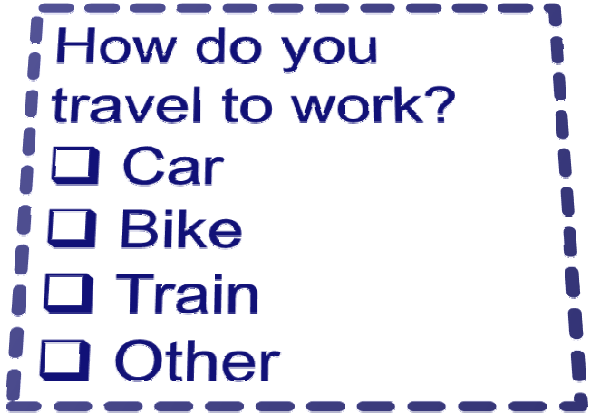
Variables: measurement scales

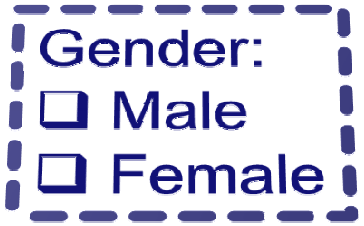
4 types of measurement scales:

1. **Nominal or classificatory scale**
2. **Ordinal or ranking scale**
3. **Interval scale**
4. **Ratio scale**

Nominal or classificatory scales

A nominal scale enables the classification of individuals, objects or responses based on a common/shared property or characteristic





Ordinal or ranking scales

A ordinal scale enables the classification of individuals, objects or responses based on a common/shared property or characteristic and it ranks the subgroups in a certain order.

Interval scales

An interval scale enables the classification of individuals, objects or responses based on a common/shared property or characteristic and it ranks the subgroups in a certain order.

It uses a unit of measurement that enables the individual responses to be placed at equally spaced intervals in relation to the spread of the variable.

Attitudinal scales (e.g.):
- ❑ 10-20 points
- ❑ 20-30 points
- ❑ 30-40 points
- ❑ 50-60 points

Temperature:
- Celsius
- Fahrenheit

Ratio scales

An interval scale enables the classification of individuals, objects or responses based on a common/shared property or characteristic and it ranks the subgroups in a certain order. It uses a unit of measurement that enables the individual responses to be placed at equally spaced intervals in relation to the spread of the variable.

The zero point of a ratio scale is fixed, which means it has a fixed starting point.

Income: €

Height: cm

Age: years

Weight: kg

Speed: km/hrs

Measurement scales

Some examples:

Nominal Scale

Ordinal Scale

Interval Scale

Ratio Scale

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The research design

A research design is a blueprint or detailed plan for how a research study is to be completed (Thyer, 1993):

- operationalizing variables so they can be measured,
- selecting a sample of interest to study,
- collecting date to be used as a basis for testing hypotheses,
- and analyzing the results

The research design: purposes

The functions of a research design:

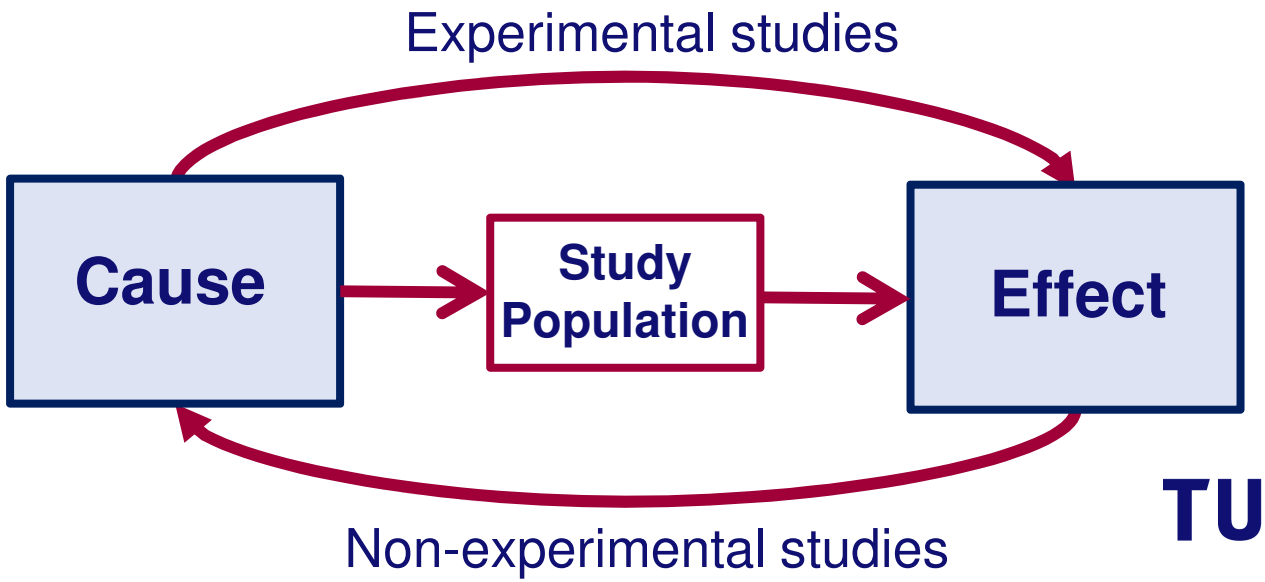
- conceptualize an operational plan to undertake various procedures and tasks to complete the study (what will you do?)
- ensure that these procedures are adequate to obtain valid, objective and accurate answers to the research questions (quality of the approach)

Research design: nature of investigation

3 classes of studies:

- Experimental
- Non-experimental
- Quasi-experimental

Controlled versus natural environment



Experimental study designs

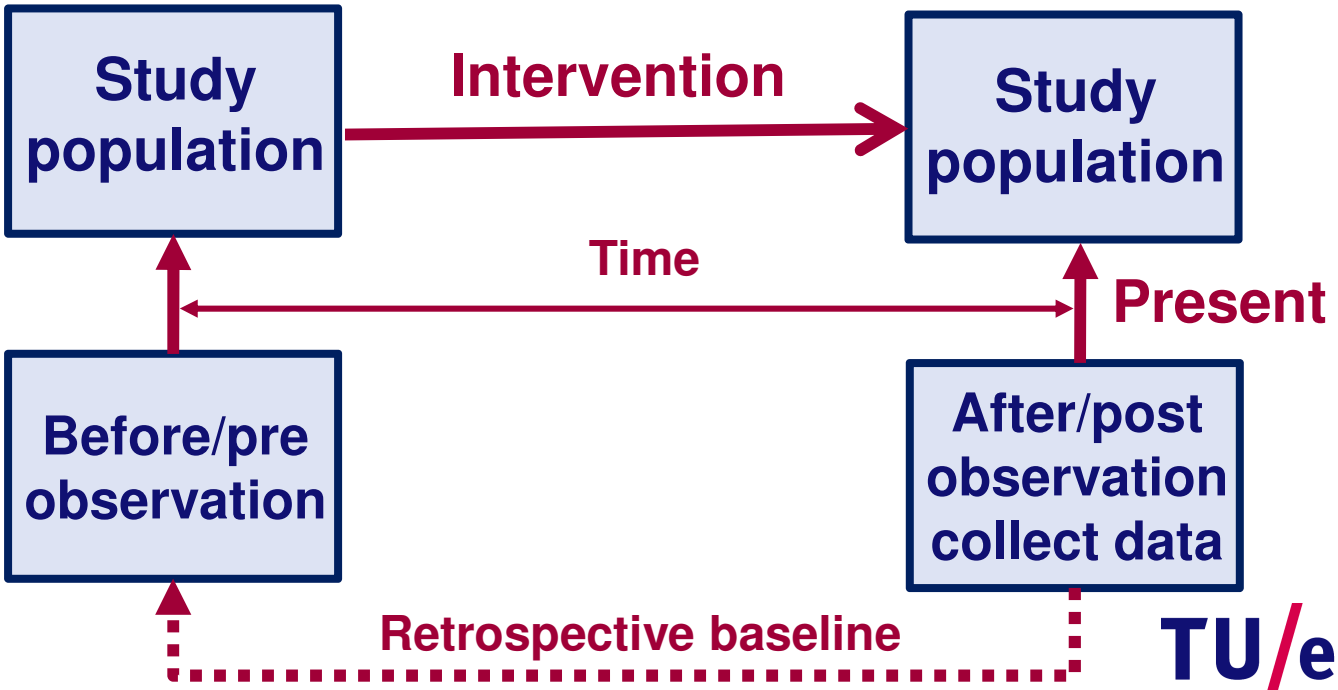
Many types of experimental designs:

- **the after-only design**
- **the before-and-after design**
- **the control-group design**
- **the double-control design**
- **the comparative design**
- **the “matched control” experimental design**
- **the placebo design**
- **…**

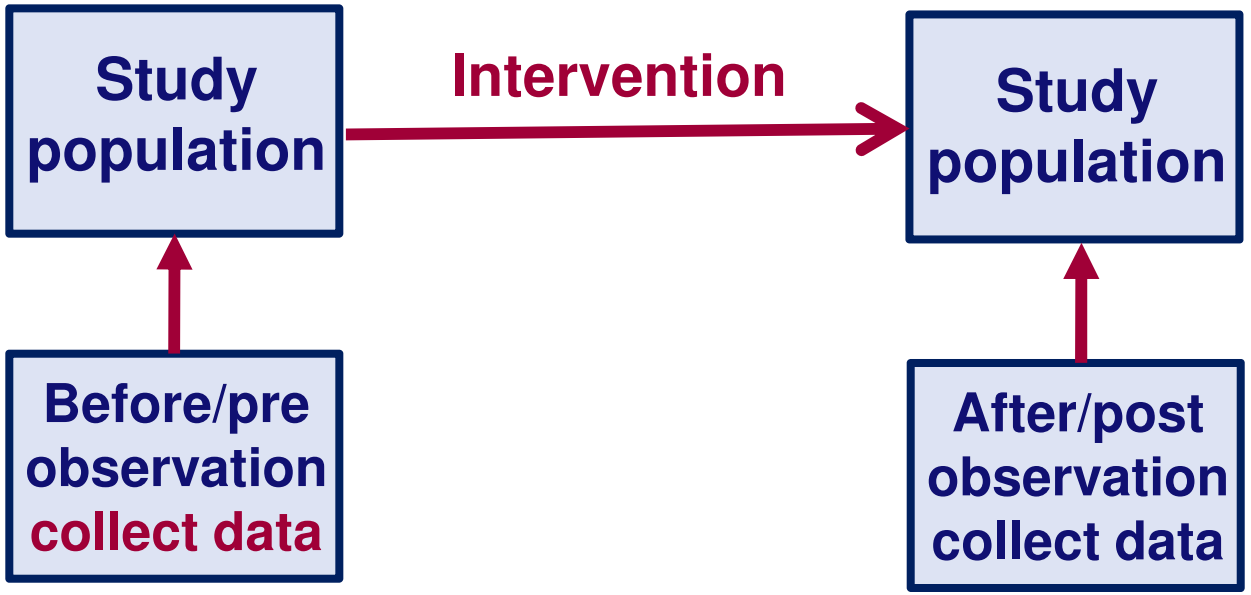
After-only design

The population is being, or has been, exposed to an intervention.

What is the impact on the population?



Before-and-after design



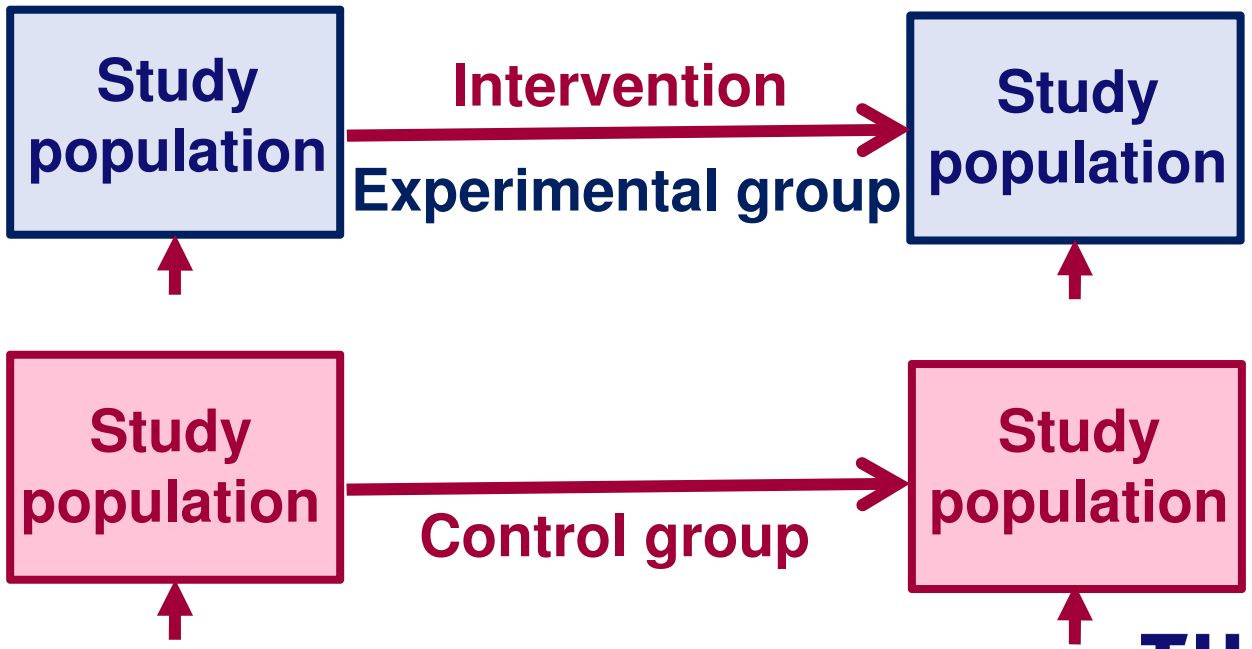
[Change in dependent variable] =

[status of the dependent variable at the "after" observation] -
[status of the dependent variable at the "before" observation]

Control-group design

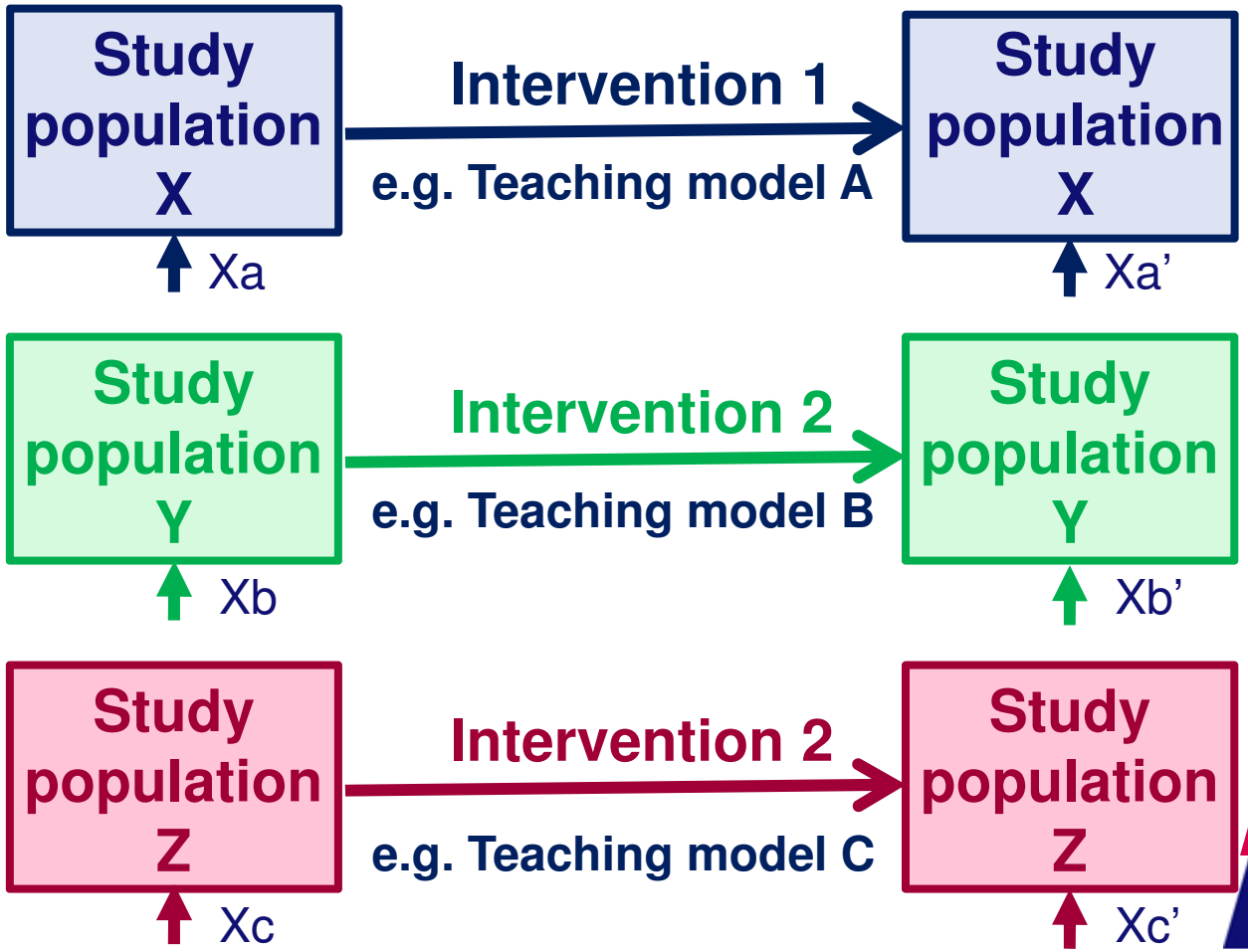
Two population groups:

- a control group
- an experimental group



Comparative design

Compare the effectiveness of different treatments/interventions

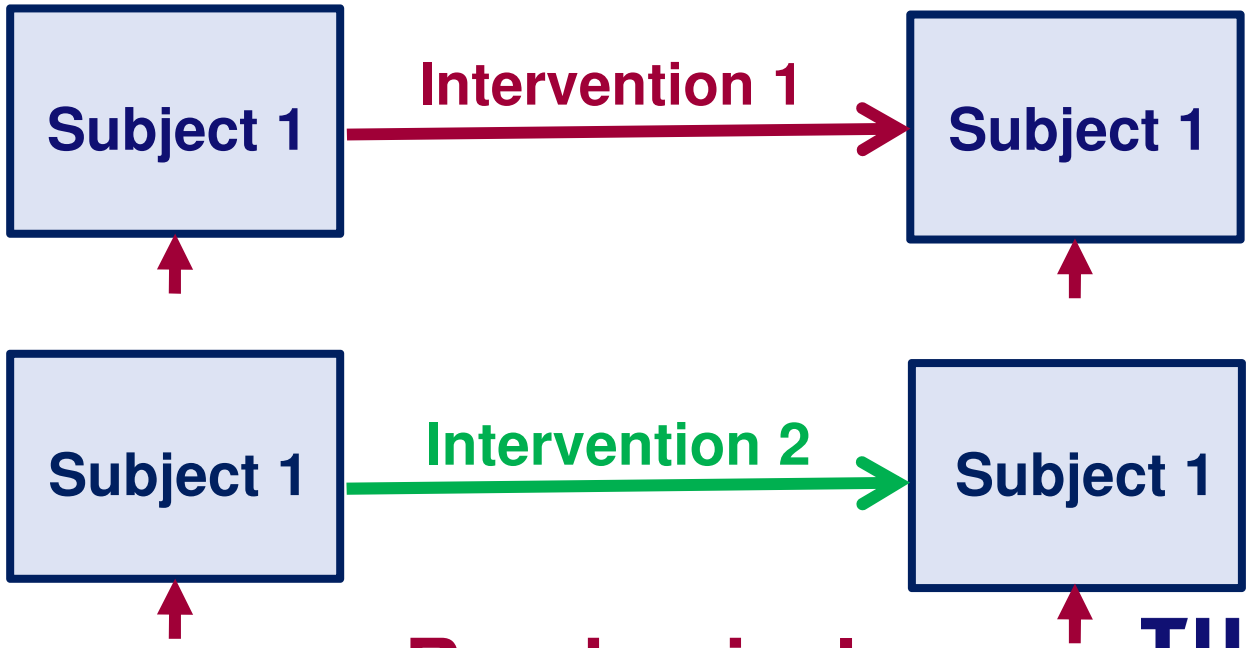


Between-subject vs. Within-subject design

Counterbalancing to prevent order problems

Within subject design:

The same subjects may be tested at each level of the independent variable

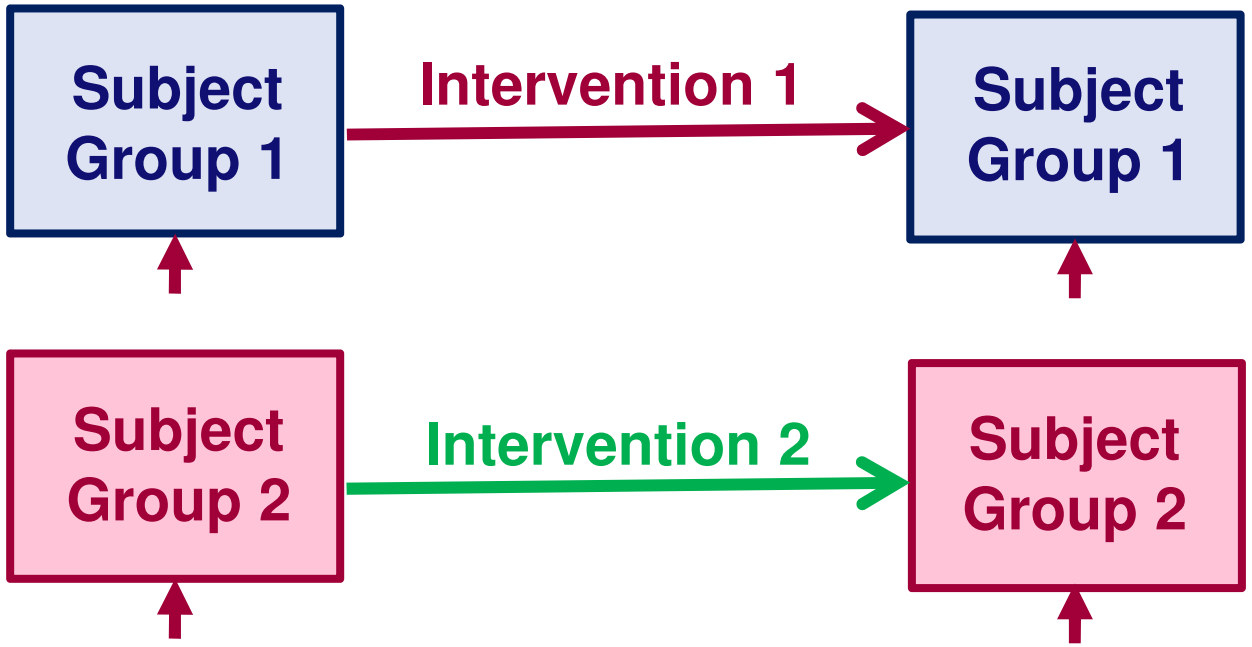


Randomize!

Between-subject vs. Within-subject design

Between subject design:

Different group of subjects for each level of the independent variable



Subject Group 1 ≈ Subject Group 2

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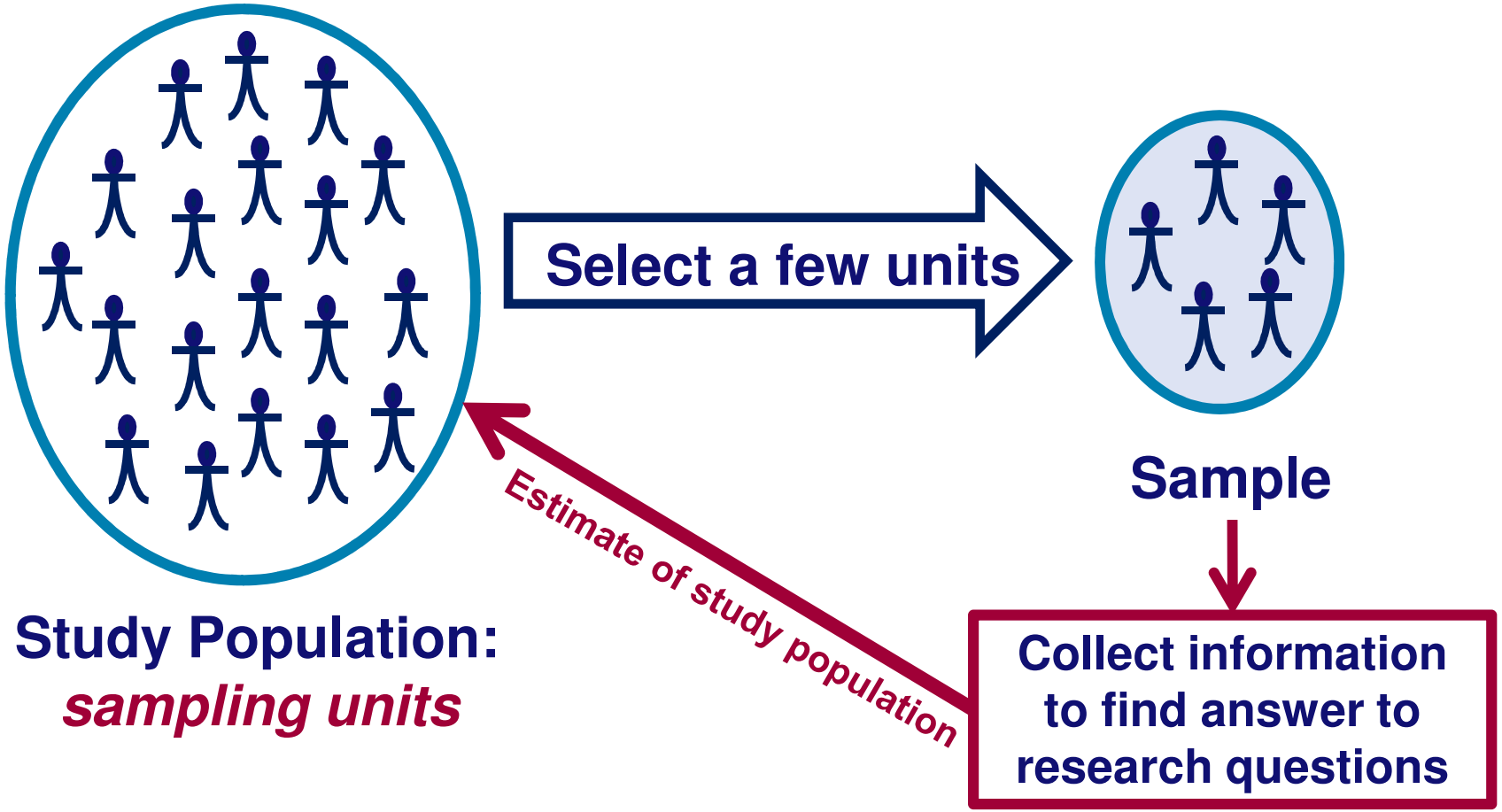
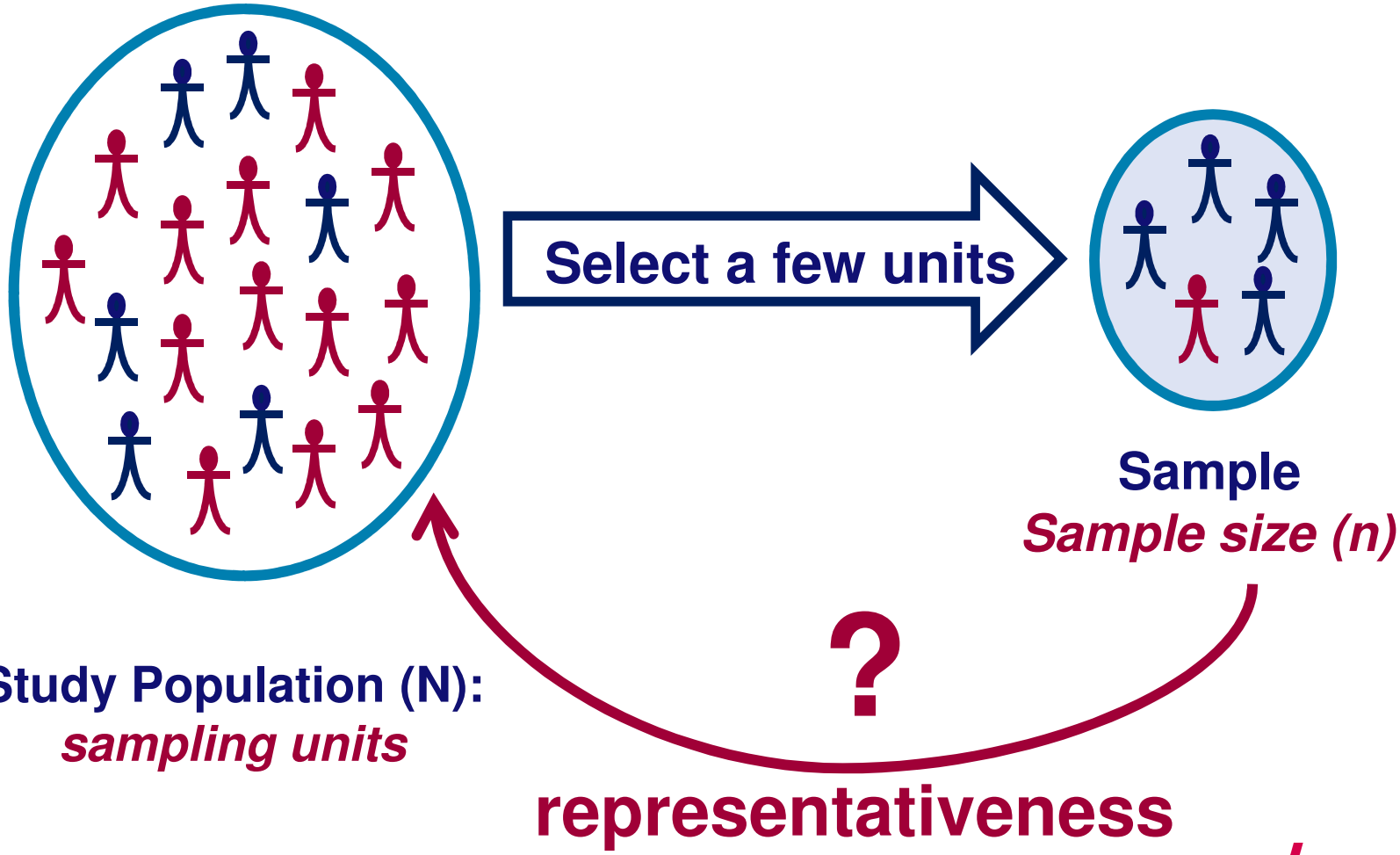
Sample versus population



Sample representativeness



Questions?


TARGET GROUPS LIKELY TO BE AFFECTED
ARE YOU IN FAVOUR OF MORE TREES?
WUFF!