Thesis Seminar
Sampling strategy for quantitative research

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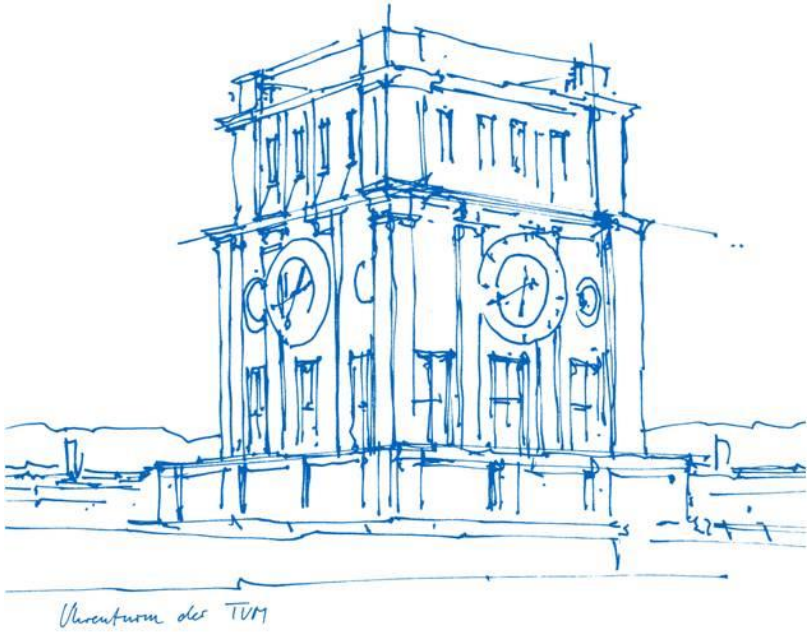


Data collection methods I

Primary data collection

- Data is collected to answer a (specific) research question
- Data collection through surveys, experiments, interviews, phone
- Population or sample

Secondary data collection

- Existing dataset is used to answer a research question
- Researcher has no influence on type, size, and quality of data

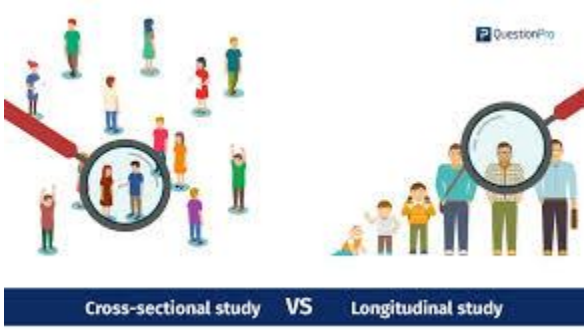
Data collection methods II

Cross-sectional data collection

- Status quo analysis
- Data collection at one point in time
- Cannot observe any change

Longitudinal data collection

- Data collection at several points in time
- Possible causal interpretations of relationships
- Observation of changes, developments, influences



Research question, population, and sample

What is your research question?

- How can this research question be translated into questions and answers?

Who can answer your research question?

- What‘s the population?
- Can you ask the population? Or do you have to draw a sample?
- If you can only ask a sample, how should you choose it?

Who is the population?

How can we collect data about unit and department leaders?

Hypothesis: There is a difference between unit leaders and department leaders in their job satisfaction.

How to test difference between means?
see Data Analysis

How to measure job satisfaction?

Consider the unit of analysis

- **Individuals:** e.g. How does personality facilitate innovative behavior?
- **Groups:** e.g. How does team composition facilitate innovative team behavior?
- **Organizations:** e.g. How does absorptive capacity facilitate innovative performance?
- **Interactions:** e.g. How does Leader-Member exchange influence task performance?
- **(Social) artifacts:** e.g. Does the tenor of announcements of product retraction affect media coverage about firms?

Theory informs the level of analysis (and vice versa)

Population vs sample

Population ≠ world population

Population = target population, i.e., all people that are interesting to answer your research question, e.g., innovation managers, all German-speaking students etc.

- It‘s very rare to collect data from the whole population.
- Usually, you draw a sample.
- How a sample is drawn is crucial for the generalization of the results.

Sampling strategies

Research question: How do Germans think about the elections in East Germany?

- **Random sampling**
  - Select subjects from all over Germany (registration office, phone book?)
- **Stratified random sampling**
  - Divide German man and women, then select subjects randomly from these two groups
- **Cluster sampling**
  - Select subjects from the five biggest cities in Germany.
- **Multi-stage sampling**
  - Divide population in clusters or layers. Clusters/layers are randomly drawn and subjects from these clusters/layers are randomly drawn.

Sample characteristics of representativeness

- Definition of population
- Sampling procedure
- Distribution of important attributes of population in the sample

What can be done to increase representativeness?

- Correct distortions caused by software programs
- Weight answers
- Draw conclusions with great care
- Non-response bias tests
- Find out why companies did not respond

Exercise: How to get a representative sample?

Please think about how to identify a representative sample for the following populations:

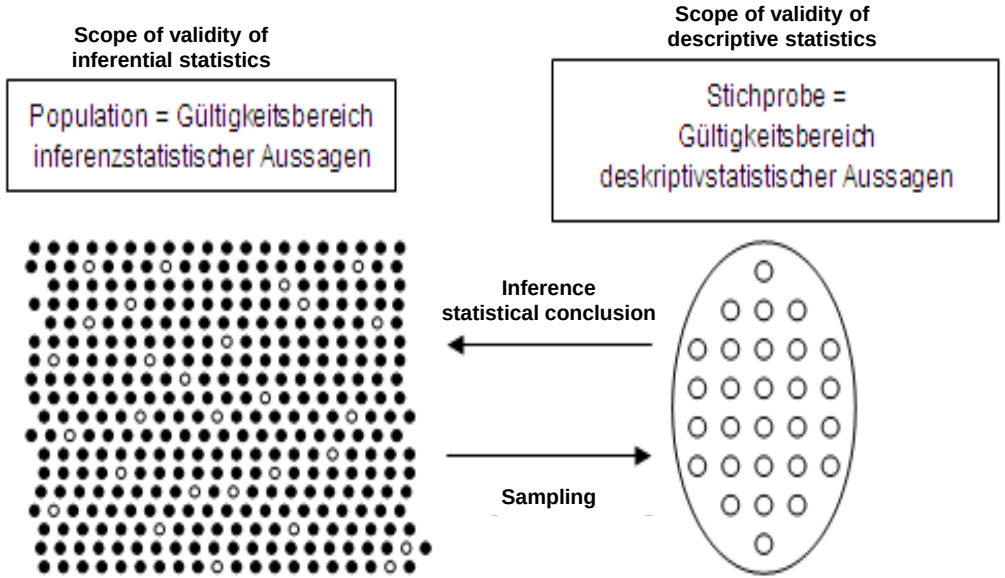
... venture capital funded companies

... Nanotechnology companies in Germany

... Executives

Question to you:

What do you respond to someone who says to you that your research is bad because you have used a so-called "convenience sample"



Sources of error in sampling

Random Error
(sampling error)

- probability calculation can handle this type of error
- Unavoidable error in sampling
- Will lower with larger sample size

Systematic Error
(non-sampling error)

- probability calculation can handle this non-error type
- Avoidable
- Will *not* lower with larger sample size

Beller (2004)

What is shown here?

Intelligence of men between 18 and 22 years.

- Unequal distribution across regions
- Be aware when sampling!