

Quantitative methods

Week #1

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Required readings:

- Singleton, R. A. Jr. and Bruce C. Straits (1999): *Approaches to Social Research*. Third Edition. Oxford University Press: New York/Oxford.
- Das Gupta, P. *Standardization and decomposition of rates*. A user's manual.
<http://www.census.gov/popest/research/p23-186.pdf>, pp. 1-7
- P. J. Bickel, E. A. Hammel and J. W. O'Connell (1975): Sex Bias in Graduate Admissions: Data from Berkeley. *Science*, Vol. 187 no. 4175 pp. 398-404
- Darrel Huff (1993): *How to lie with statistics*. W. W. Norton Company

Final examination questions

Comprehensive exam

Singleton, R. A. Jr. and Bruce C. Straits (1999): Approaches to Social Research. Third Edition. Oxford University Press: New York/Oxford.

Questions:

- 1 What is reliability? How do the main rules concerning the order of survey questions improve the reliability and validity of survey data? (pp. 113-117, 292-296)
- 2 What is meant by probability sampling? How do stratification and multistage cluster sampling affect sampling errors? Why? (pp. 141-142, 145-156)
- 3 What are the main types of non-probability sampling? Explain why these types do not meet the criteria of probability samples. (pp. 157-169)
- 4 What factors affect the desired sample size? (pp. 163-169)

Natural and social sciences

A few samples

Determining the eye color of

- fruit/vinegar flies,
- horses,
- humans.



Natural and social sciences

A few samples

Determining the eye color of

- fruit/vinegar flies,
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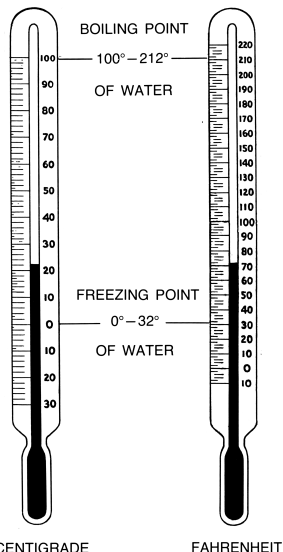
Determining the “best” ice-cream in the world:

- with recipes revised by chemists,
- with electroencephalography,
- survey questionnaire.



Natural and social sciences

A comparison

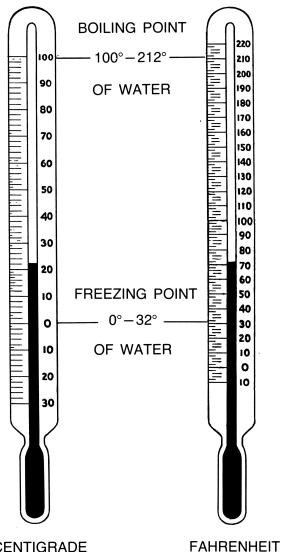


Thermometer:

- different scales,
- interaction,
- measuring high/low values,
- other possible errors.

Natural and social sciences

A comparison

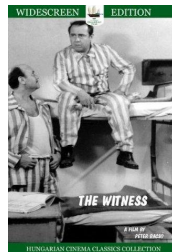


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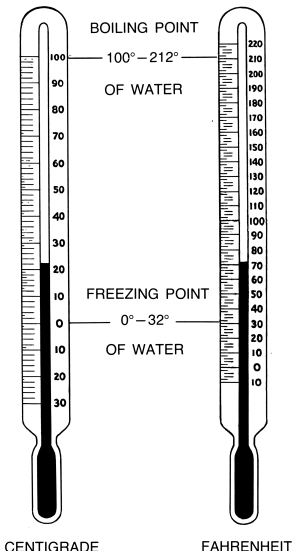
Measuring mood and happiness:

- monitoring body signs,
- writing a diary or a blog,
- tailing people...



Natural and social sciences

A comparison



Thermometer:

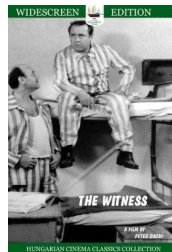
- different scales,
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- other possible errors.

Measuring mood and happiness:

- monitoring body signs,
- writing a diary or a blog,
- tailing people...

BUT:

- *What the heck is happiness?*



Natural and social sciences

Possible errors

Natural sciences:

- instrumental error:
 - missing data,
 - distortion.
- interaction with environment,
- other possible errors.

Social sciences:

- user error:
 - missing data,
 - distortion.



Natural and social sciences

Possible errors

Natural sciences:

- instrumental error:
 - missing data,
 - distortion.
 - interaction with environment,
 - other possible errors.
- user error:
 - missing data,
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Social sciences:

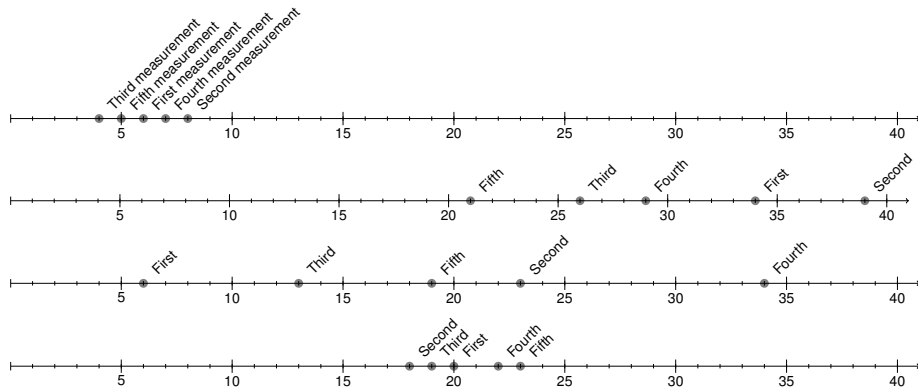
- ALL ABOVE 😊
- plus the “objects” of the research:
 - might lie,
 - might deny answering,
 - might be unattainable,
 - might have no idea about the issue etc.



Natural and social sciences

Types of error

Measuring the temperature of a bowl of water kept at 20°C:



Which set of measures should be considered as valid, reliable and as accurate?

Possible goals of research

Brainstorming

Natural science:

- Will the world really end in 2010?
- How many worm can be found under the University?
- What is the most common molecule in the air of Budapest?

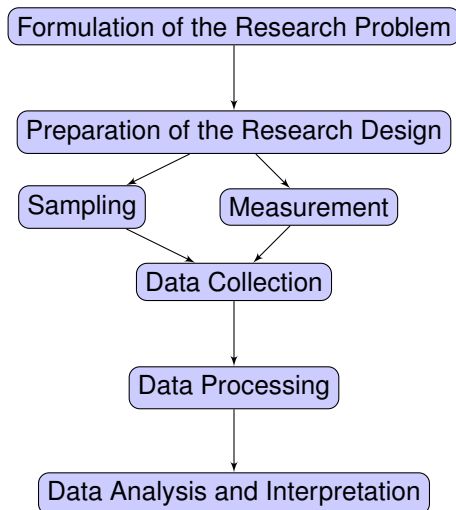


Social sciences:

- Will the world really end in 2010?
- How much does a diploma worth today?
- What is the most favorable color by women?

Stages of Social Research

A flowchart



It was a pleasure!

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