## Quantitative methods

Week #1

Gergely Daróczi

Corvinus University of Budapest, Hungary

### 8 February 2013



◆□▶ ◆□▶ ◆三▶ ◆三▶ ○□ ○○○

## Outline

### Resources, syllabus

Final examination questions

### 3 Natural and social sciences

- A few examples
- A comparison
- Possible errors
- Types of error
- Possible goals of research
- 5 Stages of Social Research

### My homepage:

http://ppke.snowl.net

My e-mail address:

daroczi.gergely@btk.ppke.hu

▶ < 글 > < 글 >

### My homepage:

http://ppke.snowl.net

My e-mail address:

daroczi.gergely@btk.ppke.hu

### **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

Comprehensive exam

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

Questions:

- 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)
- What is meant by probability sampling? How do stratification and multistage cluster sampling affect sampling errors? Why? (pp. 141-142, 145-156)
- What are the main types of non-probability sampling? Explain why these types do not meet the criteria of probability samples. (pp. 157-169)
- What factors affect the desired sample size? (pp. 163-169)

#### Syllabus?

A few examples

Determining the eye color of

• fruit/vinegar flies,



A few examples

Determining the eye color of

- fruit/vinegar flies,
- horses,



A few examples

### Determining the eye color of

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



A few examples

### Determining the eye color of

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

Determining the "best" ice-cream in the world:



A few examples

### Determining the eye color of

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

Determining the "best" ice-cream in the world:

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



#### A comparison



### Thermometer:

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

#### A comparison



### Thermometer:

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

### Measuring mood and happiness:

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



#### A comparison



### Thermometer:

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

### Measuring mood and happiness:

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

### BUT:

• What the heck is happiness?



Gergely Daróczi (BCE)

8/2/2013 6 / 11

Possible errors

Natural sciences:

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

- user error:
  - missing data,
  - distortion.



Possible errors

Natural sciences:

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

Social sciences:

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

- user error:
  - missing data,
  - distortion.



Types of error



















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



Gergely Daróczi (BCE)

8/2/2013 10 / 11

# It was a pleasure!

Gergely Daróczi daroczi.gergely@btk.ppke.hu

◆□▶ ◆□▶ ◆三▶ ◆三▶ 三三 のへで