

Introduction to basic statistics with SPSS

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How will we work?

- Those who are unfamiliar with SPSS will work on the computers
- Those who are familiar with SPSS help if others can not proceed
- We will make some of the exercises on the large screen so you can follow while you are trying
- Switch after every exercise so that everyone has done at least one exercise!

SPSS

1. Processing and recoding data
2. Correlation and χ -square
3. T-tests

SPSS

1. Processing and recoding data

Processing data

- SPSS
- Cfr spreadsheet
 - rows
 - columns
- Columns = variables
- Rows = cases - participants
- All data from the same participants in one row/line

- Convert all variables into numbers
- Number every case
- Name variables: 2 screens
 - Data view
 - Variable view
- Variable view :
 - Name
 - Type
 - Label
 - Values

=> Make Exercise 1.1

- Missing values :
 - Leave empty
 - Define in variable view
- Select part of the data: Select cases

Transform data

RECODE

- New categories
- From negative to positive
- Into SAME
- Into DIFFERENT
- Name new variable

=> Make Exercise 1.2

COMPUTE

- Calculations
- Creating sum scores :
 - Plus en Sum
- Mathematical calculations

=> Make Exercise 1.3, 1.4 and 1.5

Creating graphs

- Histogram

Analyze > descriptive statistics > frequencies > charts

> *Show normal curve on histogram*

Graphs > legacy dialogs > histogram

> *Display normal curve*

- Boxplot

Analyze > descriptive statistics > explore

Graphs > legacy dialogs > boxplot

Simple > Summaries of seperated variables

=> **Make Exercise 1.6 and 1.7**

Descriptive statistics

- Characteristics PER variable

E.g. mean, SD, frequenties, %, ...

- Descriptive statistics:

Analyze > descriptive statistics

> frequencies: statistics

> descriptives: options

> explore: statistics

=> Make Exercise 1.8 and 1.9

Exercises

1. Exercise 1: done together
2. Exercise 2: Individually

SPSS Les 2

Correlation
 χ -square

Pearson correlations

Relationship between 2 *kwantitative* variables:

Correlatie

e.g.: is there a relationship between age and number of hours spent in sports?

Analyze < correlate < bivariate < Pearson

Pp	Leeftijd	Uren sport
1	12	10
2	11	8
3	15	4
4	17	2
5	15	3
6	14	7
7	13	7
8	18	1
9	16	1
10	12	8

χ -square

- Relationship between 2 *qualitative* variables
- making a crossed table
 - chi-square
 - percentages

Pp	SES	Sport	Pp	SES	Sport	Pp	SES	Sport
1	low	<1	12	low	<1	23	high	1-3
2	low	1-3	13	average	1-3	24	high	1-3
3	low	<1	14	average	>3	25	high	>3
4	low	<1	15	average	>3	26	high	>3
5	low	<1	16	average	1-3	27	high	>3
6	low	>3	17	average	<1	28	high	<1
7	low	<1	18	average	1-3	29	high	1-3
8	low	<1	19	average	1-3	30	high	>3
9	low	1-3	20	average	>3	31	high	>3
10	low	<1	21	average	<1	32	high	>3
11	low	<1	22	average	>3			

- Type into SPSS: 2 columns
 - column 1ste variable SES
 - column 2^{de} variable hours of sport
- Analyze < descriptive statistics < crosstabs
 - Statistics: Chi-square
 - Cells: row, column, total %
- You need sufficient numbers per cell

Exercises

Exercise 1

Exercise 2

Exercise 3

=> Try to write a conclusion in words!

SPSS

Chapter 3: T-tests

T-toetsen

- Chapter 2:

Relationships between variables

2 quantitative (correlation)

2 qualitative (χ -square)

- Chapter 3: comparing averages across groups:

differences between variables :

both 1 quantitative variable

and 1 qualitative variable

→ **T-TESTS**(3 types)

1. Independent samples T-test

- 10 boys, 10 girls
→ kwalitative (sex)
- Number of hours of PA/week
→ quantitative
- Question:
Is there a difference in the number of hours of PA per week between boys and girls?

FA boys	FA girls
4	3
3	4
4	3
5	2
5	3
4	2
3	4
2	2
3	3
4	2

- SPSS:
 - 2 columns: 1) sex (*qualitative*)
 - 2) hours of PA/week(*quantitative*)
- Analyze < Compare means
 - < **independent samples t-test**

2. Paired samples T-test

- 20 students, marks for one test
→ quantitative
- Once before the course, once afterwards
→ qualitative
- VRAAG: Is there a difference in test score after they followed the course?

Pp	Before	After	Pp	Before	After
1	6	7	11	7	8
2	8	8	12	7	9
3	9	9	13	8	8
4	5	7	14	8	9
5	6	8	15	8	9
6	7	9	16	9	8
7	8	7	17	7	7
8	6	7	18	6	6
9	7	7	19	6	6
10	7	7	20	6	8

- SPSS:
2 columns: 1) pre-course score
2) post-course scores
- Analyze < Compare means
< **paired-samples t-test**

3. One sample t-test

- Fitness score of students in PE
→ quantitative
- Norm for fitness scores for the entire population
→ fixed value
- VRAAG: Is there a difference in scores on the fitness test between students in PE and the entire population of students?

Pp	fitness	Pp	fitness
1	15	11	19
2	12	12	16
3	16	13	13
4	18	14	18
5	14	15	16
6	17	16	16
7	11	17	17
8	9	18	19
9	15	19	15
10	17	20	14

- SPSS:
1 column: fitness score
- Analyze < Compare means
 < **one-sample t-test**