University of Applied Sciences Cologne
Faculty of Economics, Business Administration and Law
Prof. Dr. Arrenberg
Room 221, Tel. 39 14
jutta.arrenberg@fh-koeln.de

Exercises Quantitative Methods

Worksheet: Analysis of Variance

Exercise 9.1
Please open the file *Dauer_Museum.sav*. Is there evidence of a significant difference in the mean duration of visiting of the different museums Museum Ludwig, Wallraf Richartz Museum, Roemisch-Germanisches?

Exercise 9.2
Please open the file *buecher.sav*. Test the null hypothesis of equal theoretical means of the monthly costs for books of the different school education levels.

Exercise 9.3
Please open the file *Tiefkühl.sav*. Consider the two variables:

X =Annual Income
Y =Monthly costs for frozen food

Please compute the three income classes:

1: up to 20 000
2: 20 001 up to 50 000
3: 50 001 or more

Is there evidence of a significant difference in the mean costs for frozen food of the three different income classes?

Exercise 9.4 (Berenson et al., page 489)
The following data represent the US-nationwide highest yield of different types of accounts in 2007:

Money Market	Six-Month CD	One Year CD	2.5-Year CD	Five-Year CD
5.21	5.50	5.41	5.35	5.35
5.19	5.44	5.40	5.25	5.30
5.20	5.40	5.40	5.20	5.25
5.16	5.40	5.40	5.20	5.25
5.12	5.39	5.39	5.15	5.22

At the 0.05 level of significance, is there evidence of a difference in the mean yields of the different accounts?

Exercise 9.5 (Berenson et al., page 489)
The retailing manager of a supermarket chain wants to determine whether product

location has any effect on the sale of pet toys. Three different aisle locations are considered: front, middle, and rear. A random sample of 18 stores is selected, with 6 stores randomly assigned to each aisle location. The size of the display area and the price of the product are constant in all stores. At the end of a one-month trial period, the sales volumes (in thousands of dollars) of the product in each store were as follows:

Aisle Location		
Front	Middle	Rear
8.6	3.2	4.6
7.2	2.4	6.0
5.4	2.0	4.0
6.2	1.4	2.8
5.0	1.8	2.2
4.0	1.6	2.8

At the 0.05 level of significance, is there evidence of a significant difference in mean sales among the various aisle locations?

Exercise 9.6 (Anderson et al., page 451)
Managers at all levels of organization need adequate information to perform their respective tasks. One study investigated the effect the source has on the dissemination of information. In this particular study the sources of information were superior, a peer and a subordinate. In each case, a measure of dissemination was obtained, with higher values indicating greater dissemination of information. Use α=0.05 and the following data to test whether the source of information significantly affects dissemination. What is your conclusion, and what does it suggest about the use and dissemination of information?

Superior	Peer	Subordinate
8	6	6
5	6	5
4	7	7
6	5	4
6	3	3
7	4	5
5	7	7
5	6	5

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Exercise Please open the file *1991 U.S. General Society Survey.sav* of the SPSS-Tutorial:

C:\ Programme \ SPSSInc \ PASW Statistics 18 \ Samples \ English

This is a poll of 1 517 US-Americans of age 18 up to 89. Please consider the variable X=happy=General Happiness (1= very happy, 2= pretty happy, 3=not to happy) and X=childs=Number of Children.

We want to test the hypothesis that the mean value of the number of children is the same for all three happiness-groups.