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Exercises Quantitative Methods Ws 2015/2016

Worksheet: Kruskal-Wallis Test

Exercise 10.1 (cf. Bereson et al., page 580)
The *Wall Street Journal* has conducted a stock-picking contest. The lats one was conducted in March 2001. In this experiment, three different methods were used to select stocks that were expected to perform well during the next five months. First group: Four Wall Street professionals, considered experts on picking stocks, each selected one stock. Second group: Four randomly chosen readers of the *Wall Street Journal* each selected one stock. Third group: Four stocks were selected by flying darts at a table containing a list of stocks.

The returns of the selected stocks for March 20,2001, to August 31, 2001, (in percentage return), are given in the following table:

Experts	Readers	Darts
+39.5	−31.0	+39.0
−1.1	−20.7	+31.9
−4.5	−45.0	+14.1
−8.0	−73.3	+5.4

Is there evidence of a significant difference in the median return for the three groups?

Exercise 10.2 (cf. Berenson et al., page 581)
The following data (CD=Certificate of Deposit) 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 median yields of the different accounts?

Solution of exercise 10.1
The medians are: -2.8 Experts, -38.0 Readers, 23.0 Darts.

The p-value of the Kruskal-Wallis test is 0.018, it is we reject the null hypothesis of equal medians, i.e. the medians differ significantly in the three groups.

Solution of exercise 10.2
The medians are: 5.19 Money Market, 5.40 Six-Month CD, 5.40 One-Year CD, 5.20 2.5-Year CD, 5.25 Five-Year CD.

The p-value of the Kruskal-Wallis test is 0.001, it is we reject the null hypothesis of equal medians, i.e. the medians of the five accounts differ significantly.

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Worksheet: Recall

Example (c.f. Anderson et al. page 742)
Three colleague admission test preparation programmes are being evaluated. The scores obtained by a sample of 20 people who used the test preparation programmes provided the following data:

Programme		
A	B	C
540	450	600
400	540	630
490	400	580
530	410	490
490	480	590
610	370	620
	550	570

Use a test to determine whether there is a significant difference among the three preparation programmes.

Example (c.f. Anderson et al. page 742)
Condé Nast Traveler Magazine conducts an annual survey of its readers in order to rate the top 80 cruise ships in the world. With 100 the highest possible rating, the overall ratings for a sample of ships from Holland America, Princess and Royal Caribbean cruise lines are shown here:

Holland America		Princess		Royal Caribbean	
Ship	Rating	Ship	Rating	Ship	Rating
Amsterdam	84.5	Coral	85.1	Adventure	84.8
Maasdam	81.4	Dawn	79.0	Jewel	81.8
Ooterdam	84.0	Island	83.9	Mariner	84.0
Volendam	78.5	Princess	81.1	Navigator	85.9
Westerdam	80.9	Star	83.7	Serenade	87.4

Use a test to determine whether the overall ratings among the three cruise lines differ significantly.

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Exercises Quantitative Methods

Worksheet: Kruskal-Wallis Test

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.