

U Wroclaw, Fall 2015  
Applied Stats  
DISCUSSION/LAB 4: CORRELATION/ASSOCIATION

We will use data set: correxample1.MTW, correxample2.MTW, and correxample3ties.MTW.

**TO DO**

**You will write a report from the lab today. The report will follow the order of the exercises we do in class. The report is to be concise and the graphs are to be small and illustrative. You need to incorporate them into the report. The graphs should be of a size that would allow at least 6 of them to fit on a page, if nothing else was on a page. You will submit **printed** reports to me in class tomorrow (THURSDAY, October 15) for grading. Make sure you write your name clearly on the top of the reports. The reports have to be typed. The reports should not take more than 1 page.**

**Work with data set: correxample1.MTW**

- Draw a scatter diagram of the x and y variables in the data set correxample1.MTW
- Compute Pearson, Spearman and Kendall correlations for the variables x and y in the correxample1.MTW data set.
- For each type of correlation test the hypothesis of the correlation being significantly different from zero at 0.05 significance level.
- For the coefficients where we can use approximations of the test statistics compute the p-values in two ways: using exact p-values and using approximations.

Discuss the results.

**Work with data set: correxample2.MTW**

I removed an observation that was far from the rest of the data in correxample1.MTW to get the new data set: correxample2.MTW. Graph a scatter plot and compute all three correlation coefficients for the new data set and comment on any changes. Summarize influence (if any) of outliers on each of the correlation coefficients.

**Work with data set: correxample3ties.MTW**

This data set has ties. Compute Kendall correlation tau for this data and test the hypotheses that Kendall's tau is equal to zero vs. different from zero. Use the approximate distribution of the test statistic corrected for ties to make your decisions. Summarize your analysis.