Lecture 7

Time schedule:
12.30-14.15 : Lectures
14.30-16.15 : Exercises

Topic:
Statistical hypothesis and test, hypothesis test of the mean and variance in a single sample and comparison of two samples.

Literature:
[W] sections 10.1 to 10.8 and 10.13.

Slides:
PDF

Exercises:

- 10.19, 10.25
- 10.15, 10.67, 10.73, 10.30
- Solutions to exercises (in handwritten Danish)
- MATLAB exercise
  - Again, consider the data set `wage1.dat` here (rightclick and Save Page As...).
  - In Matlab import the data using `data = importdata('wage1.dat')` (you might need to adjust the path).
  - Extract the wage data using `wage = data.data(:,1);`
  - Make a histogram of the `wage` and `log(wage)` using `hist` or `histfit` - which histogram looks most like a normal distribution? Why is this relevant?
  - Define `lwage = log(wage);`. We want to test if the mean log-wage is 1.6 at the 5% significance level. Specifiy the relevant statistical hypotheses.
  - Use `mean`, `std` and `size` to calculate the *t*-test statistic.
  - Compare the test statistics to the critical values : `tinv([.025 .975],sampleSize-1).`
  - Assume that `t` is your test statistic. Apply the following command `2*(1-tcdf(abs(t),size(lwage,1)-1))`. What do you think it calculates?
  - Find a 95% confidence interval for μ
  - Use `ttest` to verify your results.

English-Danish:
- Hypothesis test = Hypotesetest
- Test statistic = Teststørrelse
- Critical area/value = Kritisk område/værdi
- One/two sided test = En-/to-sidet test
- Significance level (α) = Signifikansniveau
- Power (of a test) = Styrken (af en test)

Svante