

Lesson 5

- Ex. 2.5.1 Construct difference between results for lab-ass 2 and lab-ass 1.
- One sided test: $v_+ = 8 \geq 8$; the hypothesis of equal value measurement is rejected. Lab-ass 2 tends to get higher value.
 - $T_- = 9.5 < 14$. the same conclusion as in a).
 - $I_{\mu_D} = (A_{15}, A_{41}) = (4.0, 22.5)$.
- Ex. 2.5.2 a) $T_- = 10 < 16$; H_0 is rejected.
b) $TS = \frac{10-52.5}{\sqrt{253.75}} = -2.67 < -2.33$; H_0 is rejected.
The results suggest that drug users psychological dependence on heroin decreased.
- Ex. 2.5.3 Kruskal-Wallis test with χ^2 -approximation: $T = 10.29 < 11.32$.
We can not claim that there is a difference between splicing methods.
- Ex. 2.5.4 a) $T = 181 < 184$; hypothesis about the same distributions is rejected at the level 0.05.
b) Number of observations that *stand out* is $2 + 5 = 7 \geq 7$; the hypothesis of equal distribution is rejected at the level 0.05.
B-components seems to last longer.
- Ex. 2.5.5 We can block design with block=instrument. Test statistic $T = 10.89 > 9.49$. With high probability there is significant difference between threads.
- Ex. 2.5.6 a) $I_{\mu_1 - \mu_2} = (5.5, 12.0)$
b) $I_{\mu_1 - \mu_2} = (d_{(3)}, d_{(22)}) = (5, 13)$
In both cases the conclusion is that the higher dose gives shorter time to fall asleep.
- Ex. 2.5.7 Wilcoxon's rank sum test.
 H_0 : The same lifetime distribution for A and B
 H_1 : Different lifetime distribution for A and B
 H_0 can not be rejected as $50 < T_{OBS} < 104$.
- Ex. 2.5.8 Kruskal-Wallis test with χ^2 -approximation: $T = 12.75 > 5.99$.
With high probability time has impact on results.
- Ex. 2.5.9 a) Friedman's test. $T = 10.67 > 9.49$. Copper concentration seems to have impact on results.
b) Make differences $y_{i3} - y_{i5}$. We obtain $T_- = 0$ with $P = 0.125 > 0.05$. We can not state that the concentration no. 5 is better than no. 3. We do one sided test as we already in advance could argue that if there was a difference, then it should be that the higher the concentration of copper inhibits bacteria growth more effectively.