Test 4 (testing of hypotheses)

1 Example

We monitor speeds of three race car. Randomly, we measured their speeds and got tho following data

x1= {231 158 223 197 185 194}

x2= {185 163 238 199 221 236}

x3= {241 222 231 195 187 201}

x4= {254 267 241 224 178 200}

At the level 0.05 test the equality of the average speeds of the cars. The variances are assumed to be equal.

Results

ANOVA, pv=0.358

2 Example

From two classes 1 and 2 several children were tested how long they need to solve an example from math. The following data (in minutes) have been measured

x1={8 4 9 6 4 8 7 9 4 7 9 6 9 3}

x2={5 4 5 9 4 4 3 7 6 4 6 4 8 4 4 3 7 7 4 5 3}

The populations from which the data have been measured cannot be assumed normal. On the level 0.05 test if in both classes the children compute with equal speed.

Results

TH two medians, Mann Whitney, independent, both-sided, pv=0.037

3 Example

We are interested if the children from a chosen class are improving in math. To this end we have chosen 18 children last year add let them compute certain example. This year we have asked the same children to solve another example similarly difficult. The following data (in minutes and in the same order) have been measured

x1={12 10 14 5 6 9 7 10 11 12 9 8 5 3 8 9 15 7}

x2={10 12 14 8 7 7 9 12 9 15 9 8 6 7 8 12 18 6}

The populations from which the data have been measured cannot be assumed normal. On the level 0.05 test if the children individually improve.

Results

TH two medians, Wilcoxon, paired, left-sided pv=0.025

4 Example

A connection between weight and height at children has been investigated. The following data sample has been obtained (frequencies of combinations of both these features)

weight (kg) \ height (m)	less than 1.2	between 1.2 and 1.5	more than 1.5
less than 12	59	42	43
between 20 and 30	44	59	45
more than 30	42	49	31

At the level 0.05 test the hypothesis that the color of eyes and hair are independent.

Results

TH Chi2 test of independence, pv=0.173. Setting the data in Statext: {} {} {}

5 Example

Tree supervisors are evaluating functionality of five fast tea services. Each inspector evaluates each service with marks 1,2,..,10 (10 being the best one). Test if the quality of the services is equal. The data are in the table

supervisor \ service	1	2	3	4	5
1	6	8	4	8	9
2	6	4	5	6	7
3	7	8	5	7	9

Results

TH Friedman test, pv=0.067. Setting: {} {} {}, data set for subject