Rapport package team

F test

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Contents

Description

This template will run an F-test to check if two continuous variables have the same means.

Introduction

F test compares the means of two continuous variables. In other words it shows if their means were statistically different. We should be careful, while using the F test, because of the strict normality assumption, where strict means approximately normal ditribution is not enough to satisfy that.

Normality assumption check (*Internet usage for educational purposes (hours per day)*)

The *Shapiro-Wilk test*, the *Lilliefors test* and the *Anderson-Darling test* help us to decide if the above-mentioned assumption can be accepted of the *Internet usage for educational purposes (hours per day)*.

Method	Statistic	p-value
Lilliefors (Kolmogorov-Smirnov) normality test	0.2223	2.243e-92
Anderson-Darling normality test	42.04	3.31e-90
Shapiro-Wilk normality test	0.7985	6.366e-28

So, the conclusions we can draw with the help of test statistics:

- based on *Lilliefors test*, distribution of *Internet usage for educational purposes (hours per day)* is not normal

- *Anderson-Darling test* confirms violation of normality assumption

- according to *Shapiro-Wilk test*, the distribution of *Internet usage for educational purposes (hours per day)* is not normal

As you can see, the applied tests confirm departures from normality.

Normality assumption check (*Age*)

The *Shapiro-Wilk test*, the *Lilliefors test* and the *Anderson-Darling test* help us to decide if the above-mentioned assumption can be accepted of the *Internet usage for educational purposes (hours per day)*.

Method	Statistic	p-value
Lilliefors (Kolmogorov-Smirnov) normality test	0.17	6.193e-54
Anderson-Darling normality test	32.16	1.26e-71
Shapiro-Wilk normality test	0.8216	9.445e-27

So, the conclusions we can draw with the help of test statistics:

- based on *Lilliefors test*, distribution of *Age* is not normal

- *Anderson-Darling test* confirms violation of normality assumption

- according to *Shapiro-Wilk test*, the distribution of *Age* is not normal

As you can see, the applied tests confirm departures from normality.

In this case it is advisable to run a more robust test, then the F-test.

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The F-test

Here is the the result of the *F test* to compare the means of *Internet usage for educational purposes (hours per day)* and *Age.*

Method	Statistic	p-value
F test to compare two variances	0.08618	3.772e-180

We can see from the table (in the p-value coloumn) that there is a significant difference between the means of *Internet usage for educational purposes (hours per day)* and *Age.*

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The F-test

Here is the the result of the *F test* to compare the means of *cyl* and *drat*.

Method	Statistic	p-value
F test to compare two variances	11.16	1.461e-09

We can see from the table (in the p-value coloumn) that there is a significant difference between the means of *cyl* and *drat*.

This report was generated with R (3.0.1) and rapport (0.51) in *0.814* sec on x86_64-unknown-linux-gnu platform.