Rapport package team

t-test Template

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## Description

A t-test report with table of descriptives, diagnostic tests and t-test specific statistics.

### Introduction

In a nutshell, *t-test* is a statistical test that assesses hypothesis of equality of two means. But in theory, any hypothesis test that yields statistic which follows [*t-distribution*](https://en.wikipedia.org/wiki/Student%27s_t-distribution) can be considered a *t-test*. The most common usage of *t-test* is to:

* compare the mean of a variable with given test mean value - **one-sample *t-test***
* compare means of two variables from independent samples - **independent samples *t-test***
* compare means of two variables from dependent samples - **paired-samples *t-test***

### Overview

Independent samples *t-test* is carried out with *Internet usage in leisure time (hours per day)* as dependent variable, and *Gender* as independent variable. Confidence interval is set to 95%. Equality of variances wasn't assumed.

### Descriptives

In order to get more insight on the underlying data, a table of basic descriptive statistics is displayed below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Gender | min | max | mean | sd | var | median | IQR |
| male | 0 | 12 | 3.27 | 1.953 | 3.816 | 3 | 3 |
| female | 0 | 12 | 3.064 | 2.355 | 5.544 | 2 | 3 |

Table continues below

|  |  |
| --- | --- |
| skewness | kurtosis |
| 0.9443 | 0.9858 |
| 1.398 | 1.87 |

### Diagnostics

Since *t-test* is a parametric technique, it sets some basic assumptions on distribution shape: it has to be *normal* (or approximately normal). A few normality test are to be applied, in order to screen possible departures from normality.

#### Normality Tests

We will use *Shapiro-Wilk*, *Lilliefors* and *Anderson-Darling* tests to screen departures from normality in the response variable (*Internet usage in leisure time (hours per day)*).

|  |  |  |
| --- | --- | --- |
| N | p |  |
| Shapiro-Wilk normality test | 0.9001 | 1.618e-20 |
| Lilliefors (Kolmogorov-Smirnov) normality test | 0.168 | 3e-52 |
| Anderson-Darling normality test | 18.75 | 7.261e-44 |

As you can see, applied tests yield different results on hypotheses of normality, so you may want to stick with one you find most appropriate or you trust the most..

### Results

Welch Two Sample t-test was applied, and significant differences were found.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | statistic | df | p | CI(lower) | CI(upper) |
| **t** | 1.148 | 457.9 | 0.2514 | -0.1463 | 0.5576 |

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### Overview

One-sample *t-test* is carried out with *Internet usage in leisure time (hours per day)* as dependent variable. Confidence interval is set to 95%. Equality of variances wasn't assumed.

### Descriptives

In order to get more insight on the underlying data, a table of basic descriptive statistics is displayed below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | min | max | mean | sd | var |
| Internet usage in leisure time (hours per day) | 0 | 12 | 3.199 | 2.144 | 4.595 |

Table continues below

|  |  |  |  |
| --- | --- | --- | --- |
| median | IQR | skewness | kurtosis |
| 3 | 2 | 1.185 | 1.533 |

### Diagnostics

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#### Normality Tests

We will use *Shapiro-Wilk*, *Lilliefors* and *Anderson-Darling* tests to screen departures from normality in the response variable (*Internet usage in leisure time (hours per day)*).

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As you can see, applied tests yield different results on hypotheses of normality, so you may want to stick with one you find most appropriate or you trust the most..

### Results

One Sample t-test was applied, and significant differences were found.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | statistic | df | p | CI(lower) | CI(upper) |
| **t** | -0.007198 | 671 | 0.9943 | 3.037 | 3.362 |

This report was generated with [R](http://www.r-project.org/) (3.0.1) and [rapport](http://rapport-package.info/) (0.51) in *0.88* sec on x86\_64-unknown-linux-gnu platform.

