

# 202122-S1 - Statistical Analysis

[Dashboard](#) / [My courses](#) / [2021-2022](#) / [2º Ciclo](#) / [Pós-Graduações](#) / [Outono](#) / [StatAnalysis-200185-202122-S1](#)  
/ [Description of the curricular unit](#) / [INFORMATION ABOUT THE ASSIGNMENT](#)

## INFORMATION ABOUT THE ASSIGNMENT

The work consists in a small assignment aiming to assess if students are able to

- select the appropriate statistical methods to analyse and compare a set of three or more independent samples;
- use software to perform statistical analyses;
- write a scientific report to present their work.

The Assignment Report must be prepared individually, in Portuguese or English, using a set of artificial data. **The data set and its description will be provided in an Excel file in Moodle.** A different Excel file will be associated with each student. The data is generated randomly in each file, so the statistical tests to be applied (i.e. parametric tests or their nonparametric counterparts) may differ from student to student. **Any software can be used to perform the data analysis** (e.g., Excel with the Real Statistics Resource Pack, Xlstat, R, SAS, JMP, SPSS, etc.).

The statistical methods required to analyse the data set must include the F-test of the One-way ANOVA (or the Kruskal-Wallis test) and other statistical tests (**see the “ANOVA process” file disclosed in LU7**).

Students must upload the report to the Moodle platform as a single PDF file. Before uploading the file, please make sure that it is the final version. No other file may be uploaded, and any other file (e.g. Excel) sent by email to the professor will be ignored. The platform notifies the professor whenever the report is uploaded.

Considering the evaluation criteria listed in Table 1 below, as well as the usual [structure of a scientific report](#), it is recommended the following structure and contents for the written report:

### 1. Introduction

One paragraph is enough in order to state the main objectives and methodological approach that will be used to attain them.

### 2. Methodology

State the names of the applied techniques/tests, explicit the assumptions and formal/mathematical statistical hypotheses of applied tests. Do not include the formulas of the tests’ statistics. State that the conclusions of all statistical tests are based on the 5% significance level, otherwise stated in the Results section.

Students who apply statistical tests that are not included in the “ANOVA process” must cite at least one publication that explains the methods (cite in the text, not just list publications in the bibliography). Otherwise, students must detail such procedures in the Methodology section.

Indicate the software used for data analysis; for example: the analyses were performed using programming in R (see the code in Appendix A). Students should not organize the report like the R example provided. This example is only meant to help choosing R packages and functions.

### 3. Results

Do not include here the formal hypotheses of tests, but you may state them as plain text if you want to. All results presented in tables and figures must be referenced in the text and have comments about them. Indicate all the statistical decisions of the tests based on either the p-value or the critical value(s). State the general conclusion of the tests.

#### 3.1 Exploratory data analysis

Should include descriptive statistics and graph(s) deemed adequate. This analysis should help commenting the results of the statistical tests (are the results according to what is expected from the exploratory analysis?).

#### 3.2 Distribution fitting tests

#### 3.3 Tests for equality of variances

#### 3.4 Analysis of variance (ANOVA)

#### 3.5 Multiple comparison tests (only if appropriate)

### 4. Conclusion

One or two paragraphs with the main conclusions; do not state the statistical decisions of the tests.

**References** (only include bibliographic documentation cited in the text) **and/or Bibliography** (it is always better to make references than to list a set of consulted publications. The reader will be in doubt if they were consulted or not, and in what context they were consulted.)

### Appendices

For example, software outputs or programming code.

**Table 1: Evaluation criteria of the reports with the analysis of artificial data.**

SCORE	PROJECT REPORT
1	Overall presentation ( <i>formatting, captions, etc.</i> )

0.5	Structure ( <i>organization of contents</i> )
0.5	Portuguese/English ( <i>clarity, sentence construction, etc.</i> )
0.5	Introduction
2	Methodology
2.5	Exploratory data analysis
2.5	Distribution fitting tests
2.5	Tests for equality of variances
2.5	ANOVA / Kruskal-Wallis test
2.5	Multiple comparisons tests (if appropriate)
1	Conclusion
2	Global appreciation ( <i>adjustment factor</i> ) A bonus of 1 point will be given here if students use a programming language for data analysis, but the code (in SAS, R, Python, ...) must be disclosed in an Appendix to prove it.
20	TOTAL

Last modified: Thursday, 27 August 2020, 11:46 AM

[◀ INFORMATION ABOUT THE EVALUATION](#)

Jump to...

[Form of course contents ▶](#)



Useful Links



Support

Serviços de Informática / IT Services  
[si@novaims.unl.pt](mailto:si@novaims.unl.pt)

NOVA IMS' Accreditations and Certifications



Cofinanced by

