

RDOE

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2018-01-17

Introduction

Module of Design of Experiments (RDOE) is a user – oriented interface that integrates the functions from the book Design and Analysis of Experiments with R (Lawson, 2014) to fulfill the requirements of an experimental research considering a completely randomized one factor statistical design covering descriptive statistics, basic plots, anova, multiple comparisons tests and diagnostics.

Installation

The RDOE package is loaded in the usual fashion from the CRAN-R repository:

```
install.packages("RDOE", repos = "https://cran.itam.mx/")
```

Users may change the `repos` options depending on their locations and preferences.

Quick Start

First step, we load the RDOE package:

```
library(RDOE)
```

We call library RDOE.

```
RDOE()  
#> Loading required package: gWidgetsTcltk  
#> Loading required package: gWidgets  
#> Loading required package: tcltk  
#> Loading required package: digest
```

This is a point and click package so that the user can click on any of the words on top: File, CRD, Help, each of which opens a menu of options. To indicate the sequence of clicks needed for a certain operation we are going to use the notation **Click1** > **Click2** > **Click3** > etc. To observe the numerical results of the operations, the user should click on the tabs below the line File, CRD or Help.

For example, to load the data coming from a csv file you have to click the following sequence: **File** > **Open** > **csv**. The package gives also the option to open files in .xlsx or .txt format (see Figure 2) and to view the data click **File** > **View**.

Completely Randomized Designs (CRD)

In this section, we will explain the way of using the Completely Randomized Designs (CRD). The design of experiments that studies the effects of one factor.

To start the analysis, the package in general requires some input information. (see Figure 3)

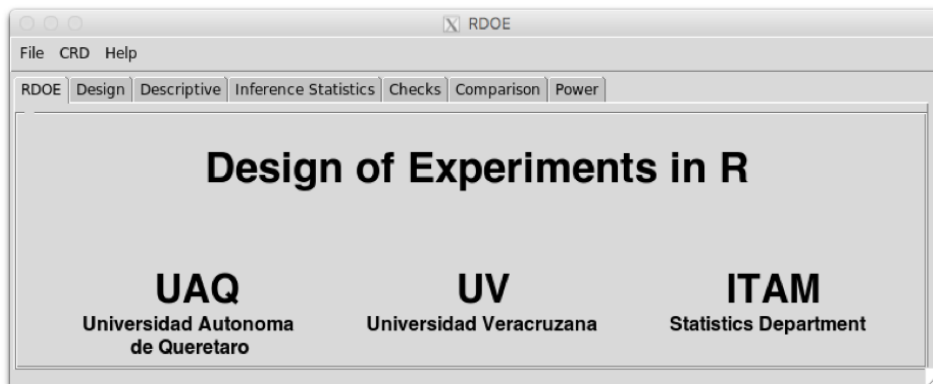


Figure 1. Front face RDOE package

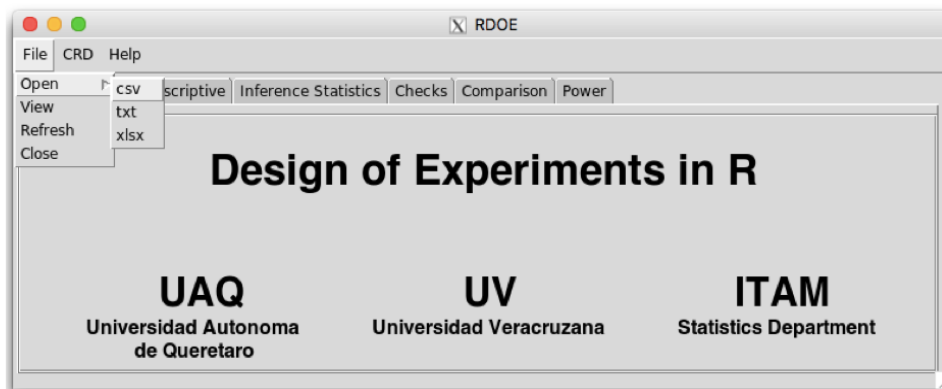


Figure 2. Choosing a data set (csv, txt or xlsx file)

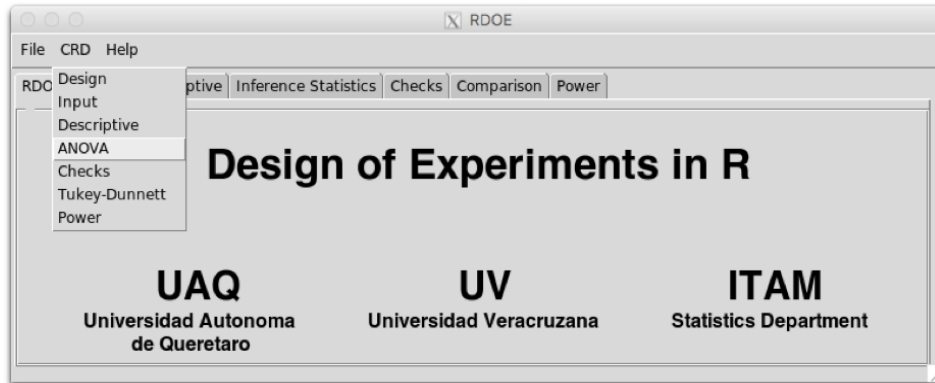


Figure 3. Choosing elements

Design

The design section presents several tabs to include Factor (Factor name), Unit (Unit of Measure), Levels (Number of levels) and Replications (Number of replicas). (see Figure 4)

Input

This is done by clicking **CRD > Input**. Figure 5 shows the window that opens at this stage, one must define the names of the columns that correspond to Response and Factor. In this example, Response corresponds to *tpococ* and Factor to *NaCl*. In this, the data contains one control and 3 treatments; a total of 4 levels. The design could be a balanced one or not, but without missing data.

Presentation of results

To view the results, it is required to go to the tab with the same name at the bottom of the interface containing plots and numerical results. (see Figure 6)

Considerations

This section presents some important aspects for using the package correctly.

- It is necessary to consider the version of R and the requirements of the installation for each operating system.
- One must view the post-load information to check if the information is correct before running the analysis.
- If more than one analysis is required, the program must be refreshed after running each analysis and getting the results **File > Refresh**.
- The saved information of each window is under specific formats: Tables (csv) and Plots (png).

Note: Contact us if further information is required.

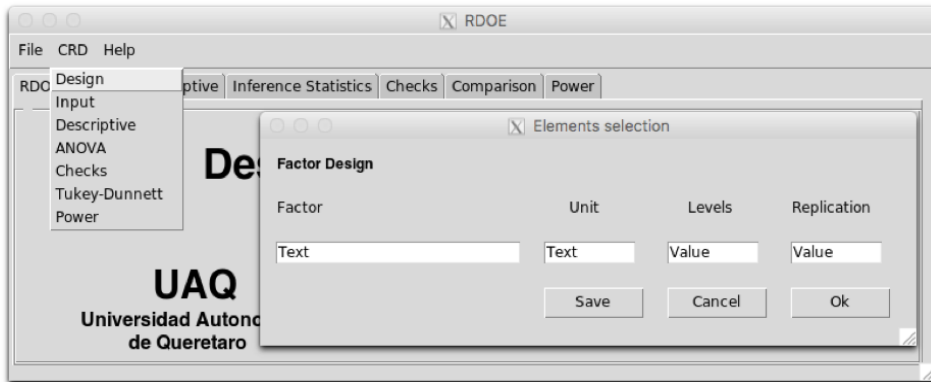


Figure 4. Elements selection - Desing

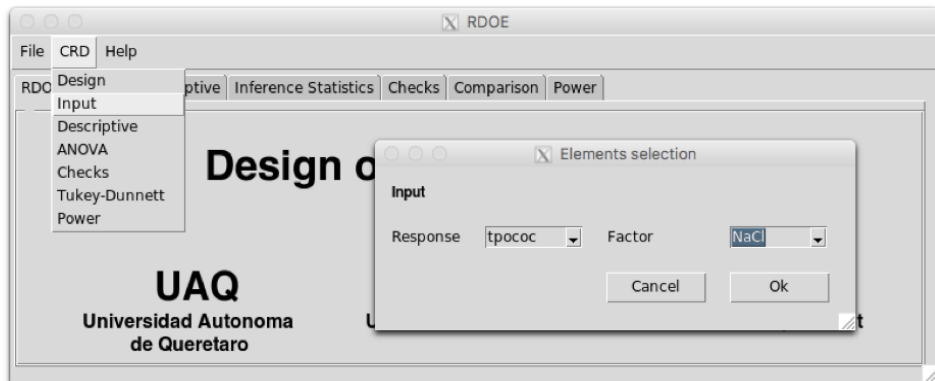


Figure 5. Elements selection - Input

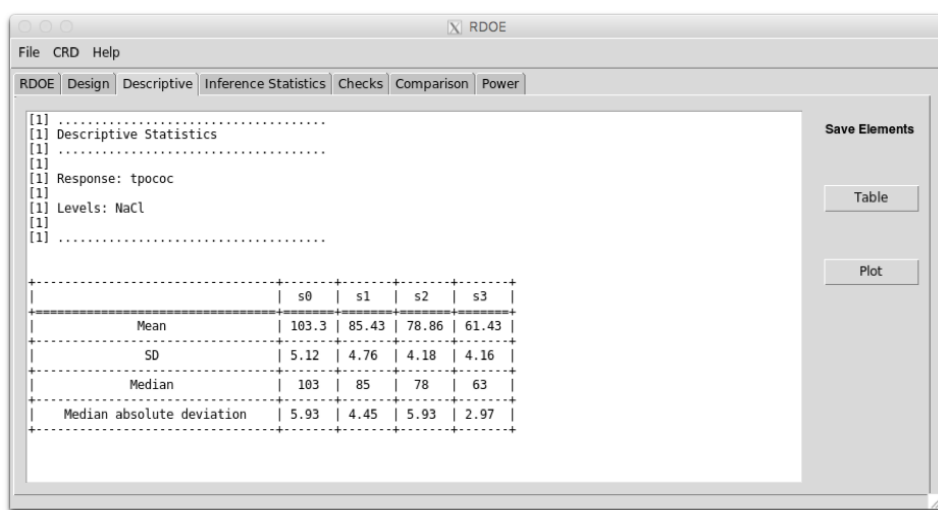


Figure 6. Presentation of results - Descriptive