Psi Chi Honor Society & Psychology Club

RStudio / jamovi Workshop

Introduction
March 3rd, 2021

https://joshmgarciaa.github.io/PsiChiDASW1/Introduction.html

UH PSI CHI & PSYCHOLOGY CLUB
VOLUNTEER EVENT

LETTERS OF HOPE

Join UH Psi Chi & Psychology Club as we support Letters of Hope-CLE. Letters of Hope collects anonymous stories and letters and share them through multiple platforms, building community throughout the county and world. We will write a handwritten Letter of Hope in response to a story. Letters of Hope can be words of connection, encouragement, support, or gratitude. All the information can be found at their website through the link below.

https://www.neverevergiveupcle.com/how-to-write-a-letter-of-hope

For volunteering credit, please write one letter of hope and send a screenshot of your submission confirmation page and your ID number to uh.psichi@gmail.com by March 14th. Earn 50 points for volunteering!

ONGOING EVENT OPEN
MARCH 1 - 14, 2021
50 POINTS FOR PARTICIPATING!

3rd General Meeting

Presentation about diversity, equity, and inclusion in psychology from APA's Committee of State Leaders Diversity Liaison Dr. Erin Alexander.

Earn 20 points for attending.

The meeting will be held on Microsoft Teams. The meeting link can be found under the "General" channel on the UH Psi Chi & Psychology Club Teams page.

Alternatively, follow this link: https://tinyurl.com/3rdGMPsiChi

Wednesday, March 24th

5:45 - 6:45 PM

jamovi download link

- https://www.jamovi.org/download.html

R & R Studio download links

1. https://cran.microsoft.com/
2. https://rstudio.com/products/rstudio/download/

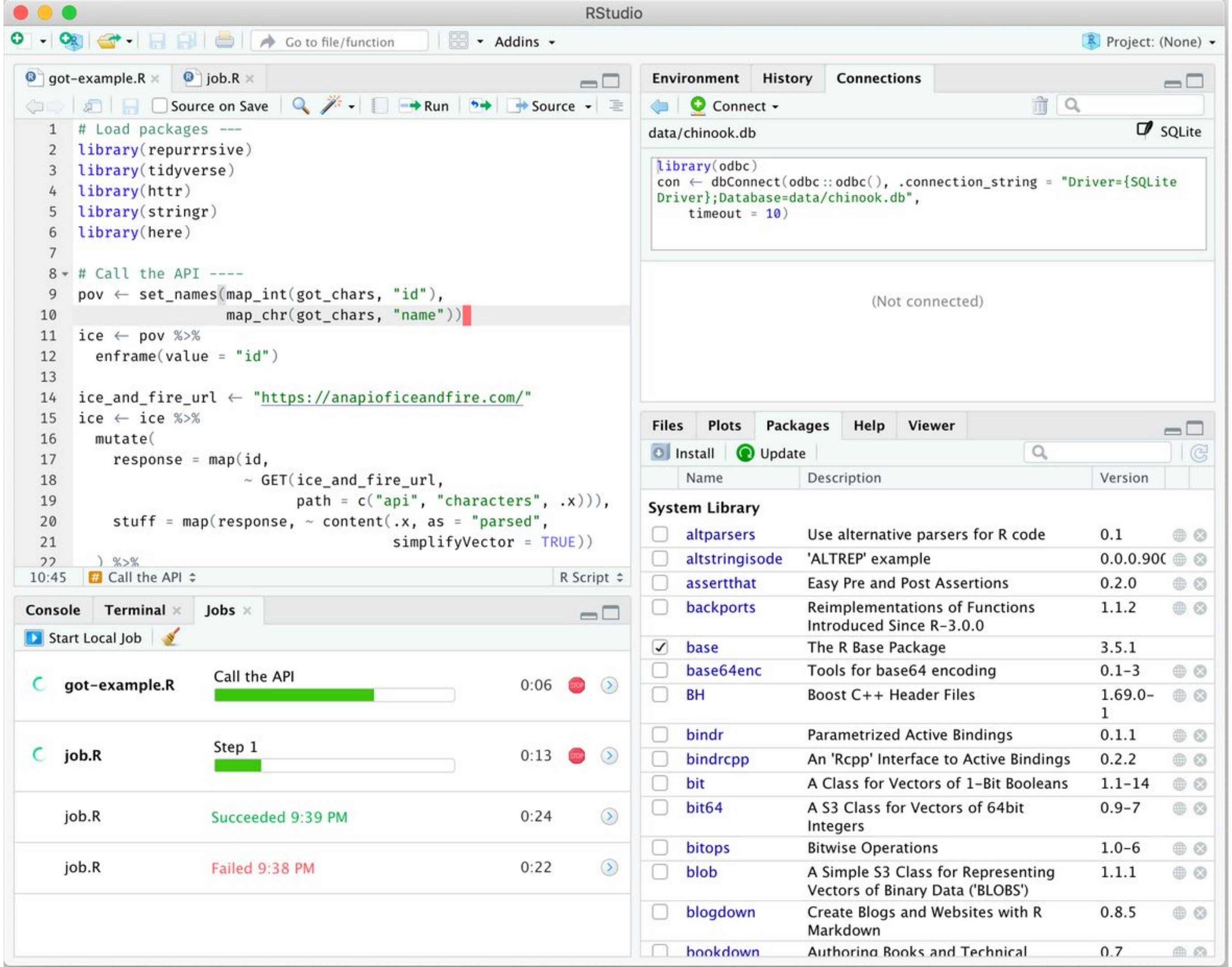
You need both R and R Studio

Agenda

1. What are R Studio and jamovi?
2. Introduction & Descriptive Statistics in jamovi
3. Introduction & Descriptive Statistics in R Studio
4. Creating an html report in R Studio

R / R Studio

R is an integrated suite of software facilities for data manipulation, calculation and graphical display.



```
# Load packages ---
library(repurrrsive)
library(tidyverse)
library(httr)
library(stringr)
library(here)

# Call the API ----
pov ← set_names(map_int(got_chars, "id"),
                map_chr(got_chars, "name"))
ice ← pov %>%
  enframe(value = "id")

ice_and_fire_url ← "https://anapioficeandfire.com/"
ice ← ice %>%
  mutate(
    response = map(id,
                   ~ GET(ice_and_fire_url,
                         path = c("api", "characters", .x))),
    stuff = map(response, ~ content(.x, as = "parsed",
                                    simplifyVector = TRUE))
  ) %>%
```

data/chinook.db

```
library(odbc)
con ← dbConnect(odbc::odbc(), .connection_string = "Driver={SQLite
Driver};Database=data/chinook.db",
    timeout = 10)
```

(Not connected)

got-example.R	Call the API	0:06
job.R	Step 1	0:13
job.R	Succeeded 9:39 PM	0:24
job.R	Failed 9:38 PM	0:22

System Library

	Name	Description	Version
☐	altparsers	Use alternative parsers for R code	0.1
☐	altstringisode	'ALTREP' example	0.0.0.90(
☐	assertthat	Easy Pre and Post Assertions	0.2.0
☐	backports	Reimplementations of Functions Introduced Since R-3.0.0	1.1.2
☑	base	The R Base Package	3.5.1
☐	base64enc	Tools for base64 encoding	0.1-3
☐	BH	Boost C++ Header Files	1.69.0-1
☐	bindr	Parametrized Active Bindings	0.1.1
☐	bindrcpp	An 'Rcpp' Interface to Active Bindings	0.2.2
☐	bit	A Class for Vectors of 1-Bit Booleans	1.1-14
☐	bit64	A S3 Class for Vectors of 64bit Integers	0.9-7
☐	bitops	Bitwise Operations	1.0-6
☐	blob	A Simple S3 Class for Representing Vectors of Binary Data ('BLOBS')	1.1.1
☐	blogdown	Create Blogs and Websites with R Markdown	0.8.5
☐	bookdown	Authoring Books and Technical	0.7

R packages

“Packages are the fundamental units of reproducible R code. They include reusable R functions, the documentation that describes how to use them, and sample data.” (Wickham and Bryan, 2021)

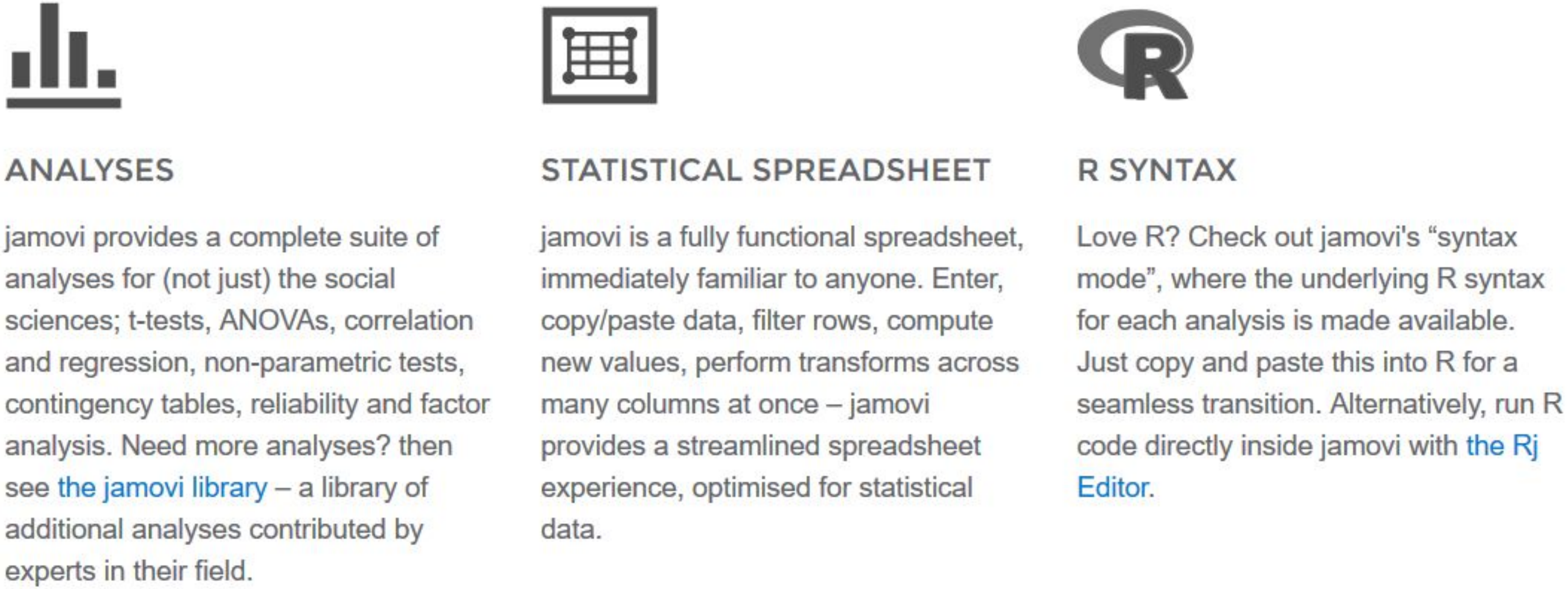
They are like collections of formulas where you can input your data and select specific options to run analyses.

Example code for loading packages:

```
library(jtools)

library(jmv)

library(tidyverse)
```

For more info:
https://r-pkgs.org/index.html

jamovi



ANALYSES

jamovi provides a complete suite of analyses for (not just) the social sciences; t-tests, ANOVAs, correlation and regression, non-parametric tests, contingency tables, reliability and factor analysis. Need more analyses? then see the jamovi library – a library of additional analyses contributed by experts in their field.

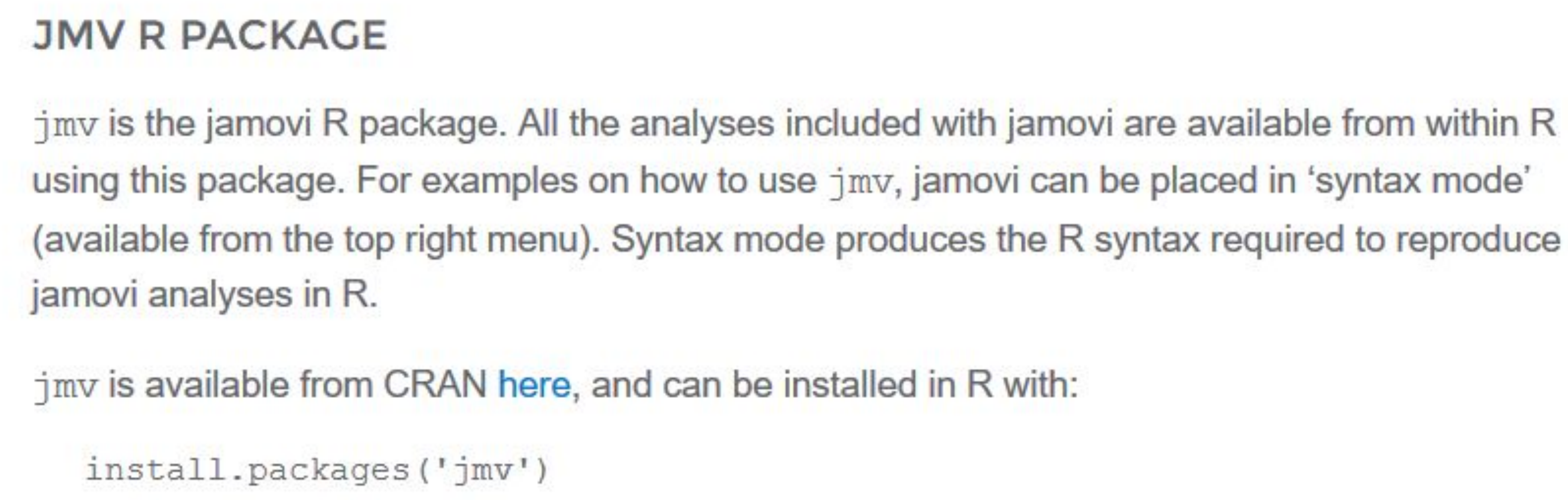
STATISTICAL SPREADSHEET

jamovi is a fully functional spreadsheet, immediately familiar to anyone. Enter, copy/paste data, filter rows, compute new values, perform transforms across many columns at once – jamovi provides a streamlined spreadsheet experience, optimised for statistical data.

R SYNTAX

Love R? Check out jamovi's “syntax mode”, where the underlying R syntax for each analysis is made available. Just copy and paste this into R for a seamless transition. Alternatively, run R code directly inside jamovi with the Rj Editor.

How are R and Jamovi connected?

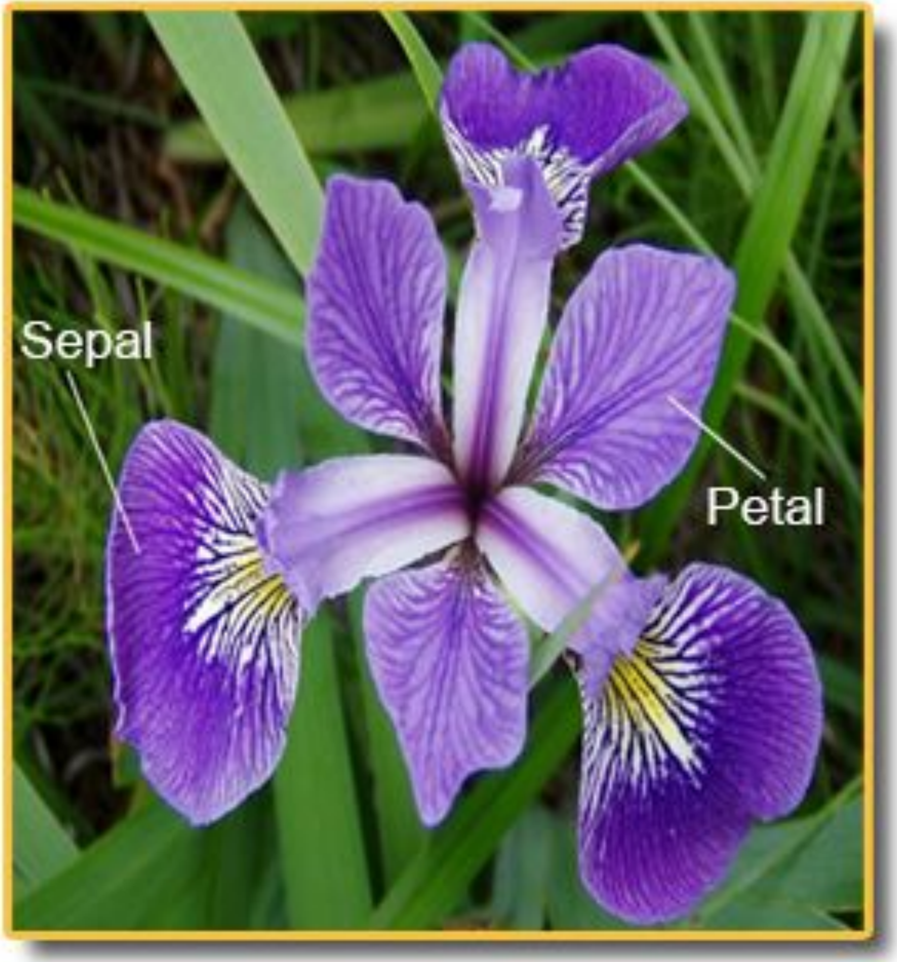


JMV R PACKAGE

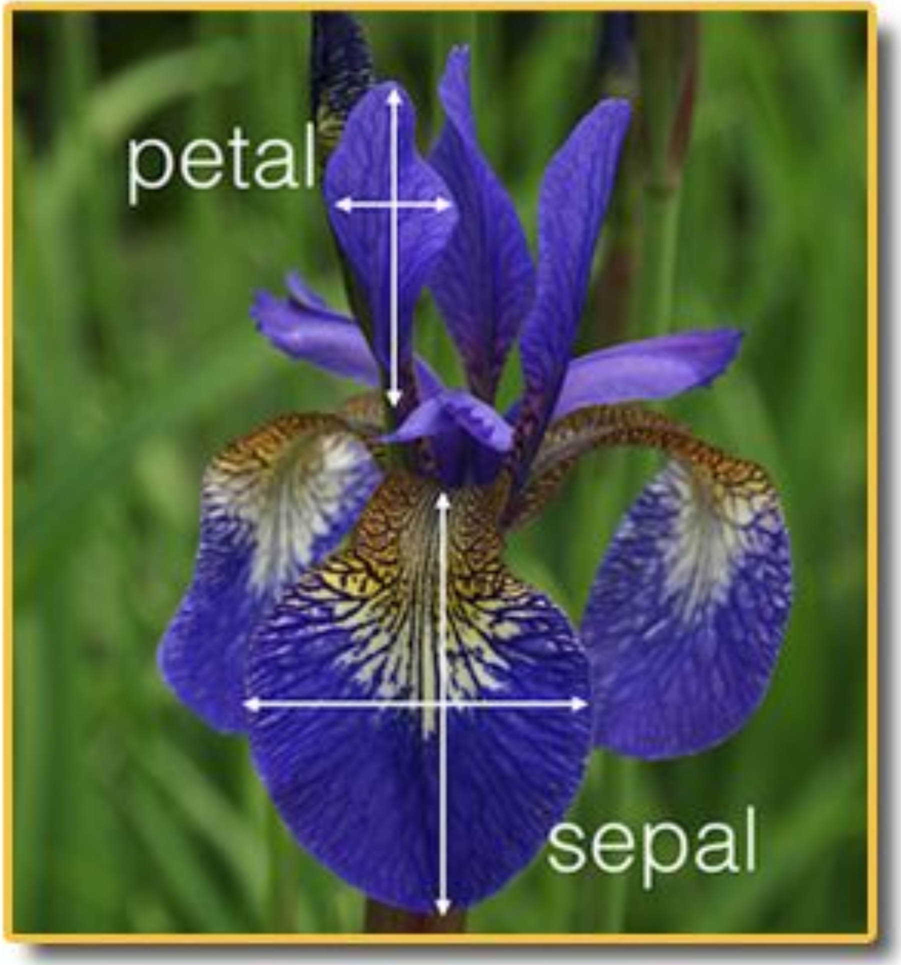
`jmv` is the jamovi R package. All the analyses included with jamovi are available from within R using this package. For examples on how to use `jmv`, jamovi can be placed in ‘syntax mode’ (available from the top right menu). Syntax mode produces the R syntax required to reproduce jamovi analyses in R.

`jmv` is available from CRAN here, and can be installed in R with:

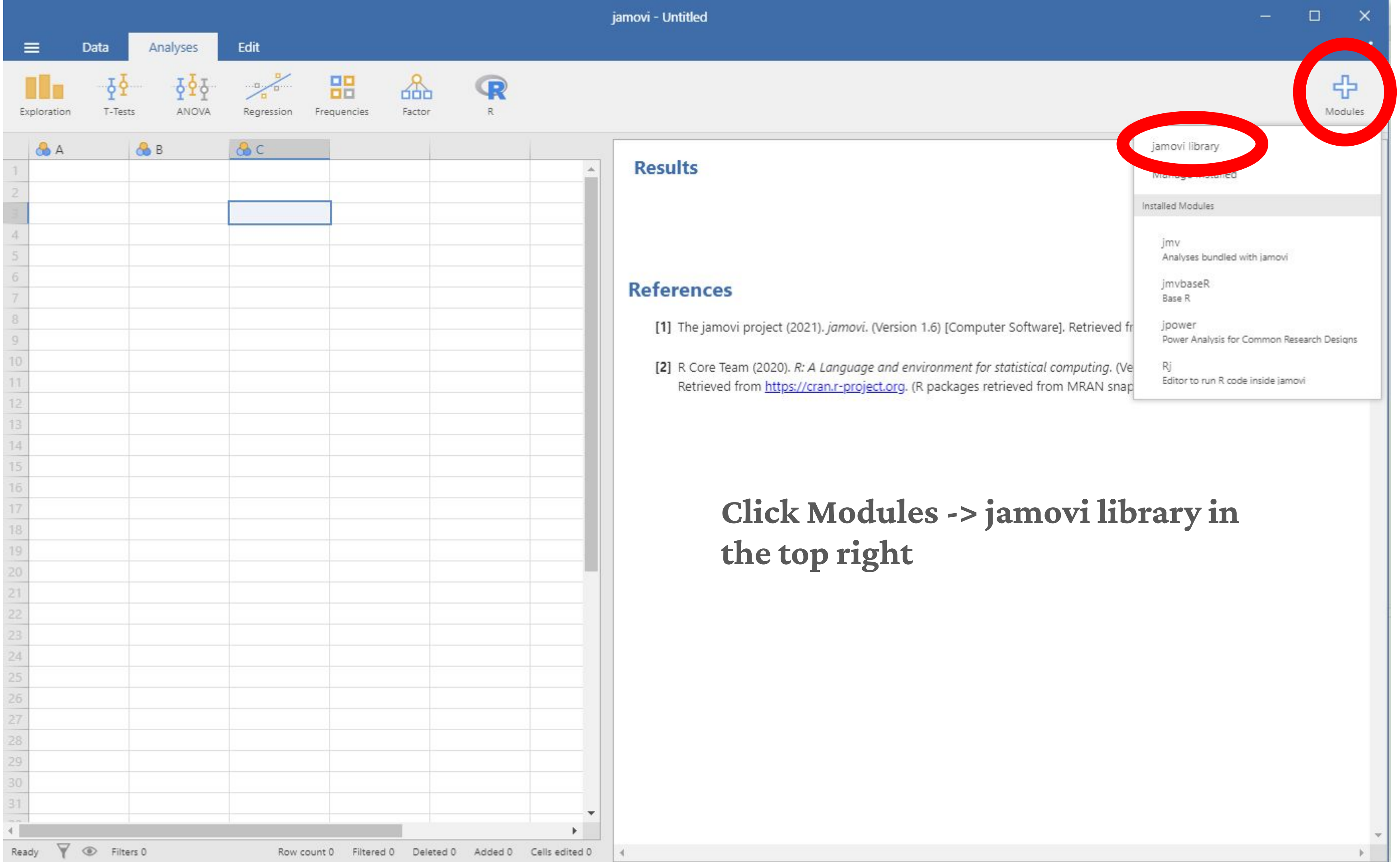
```
install.packages('jmv')
```



Sepal
Petal



petal
sepal



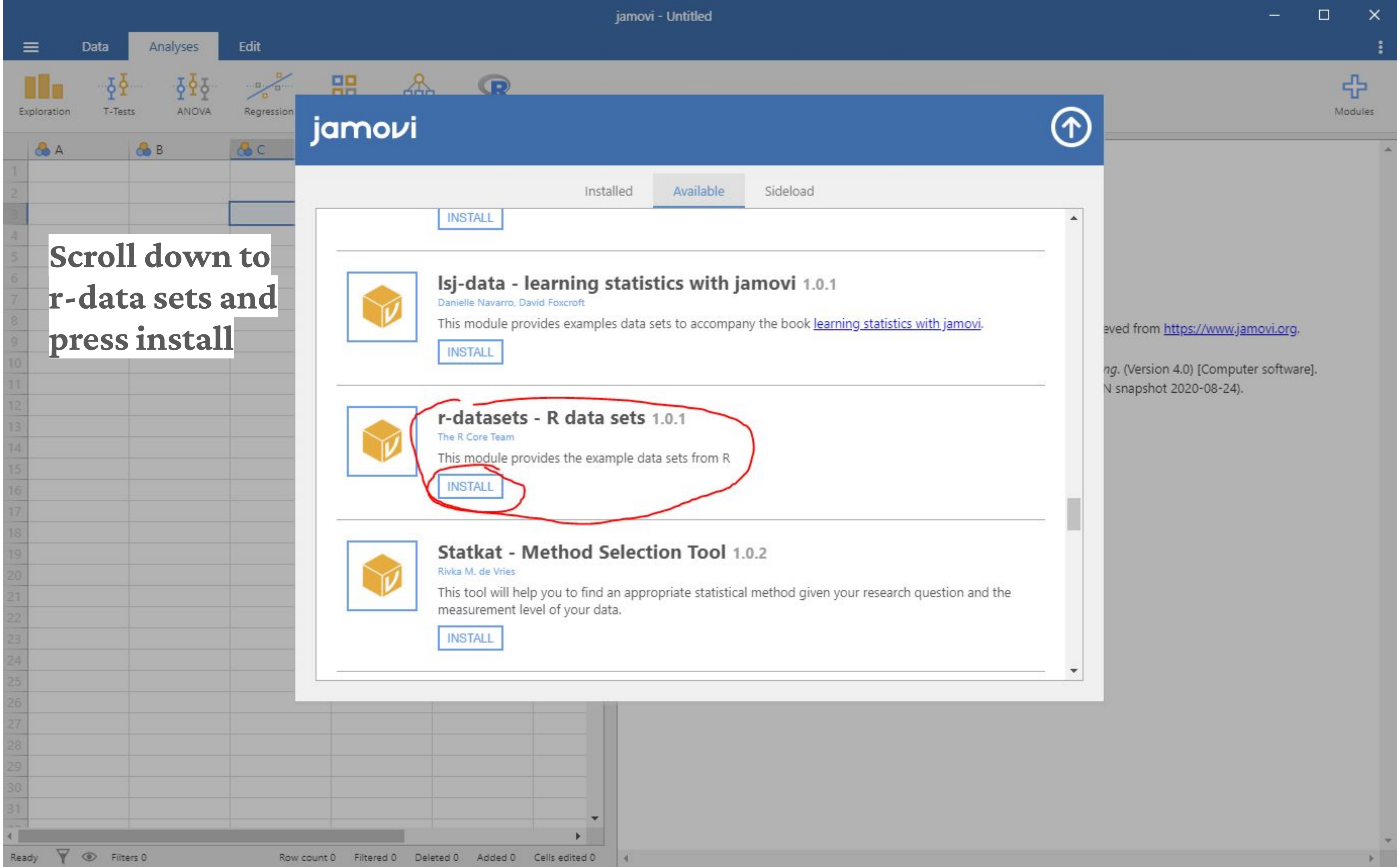
Results

References

[1] The jamovi project (2021). *jamovi*. (Version 1.6) [Computer Software]. Retrieved fr

[2] R Core Team (2020). *R: A Language and environment for statistical computing*. (Ve
Retrieved from https://cran.r-project.org. (R packages retrieved from MRAN snap

Click Modules -> jamovi library in the top right



lsj-data - learning statistics with jamovi 1.0.1

Danielle Navarro, David Foxcroft

This module provides examples data sets to accompany the book learning statistics with jamovi.

r-datasets - R data sets 1.0.1

The R Core Team

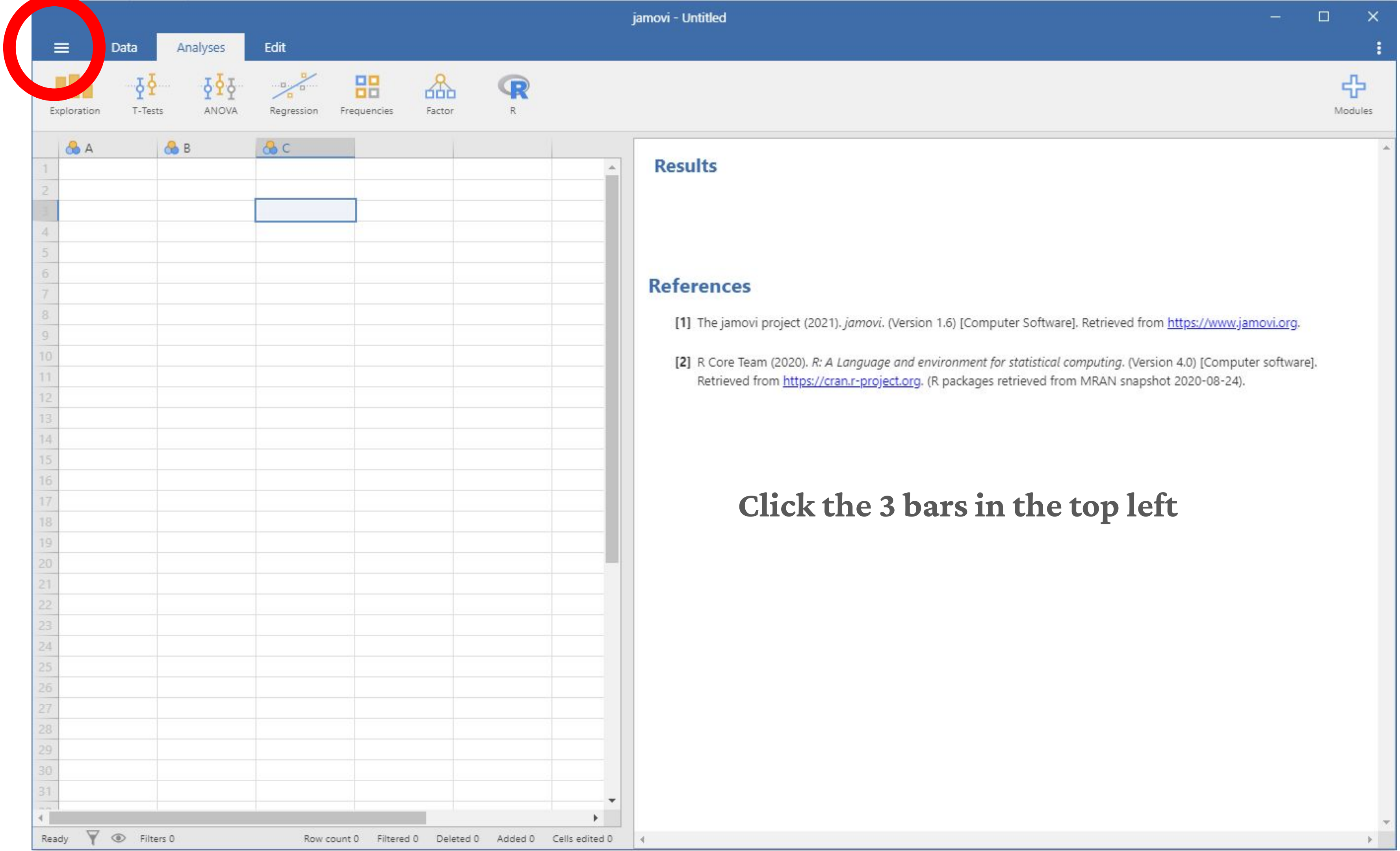
This module provides the example data sets from R

Statkat - Method Selection Tool 1.0.2

Rivka M. de Vries

This tool will help you to find an appropriate statistical method given your research question and the measurement level of your data.

Scroll down to r-data sets and press install



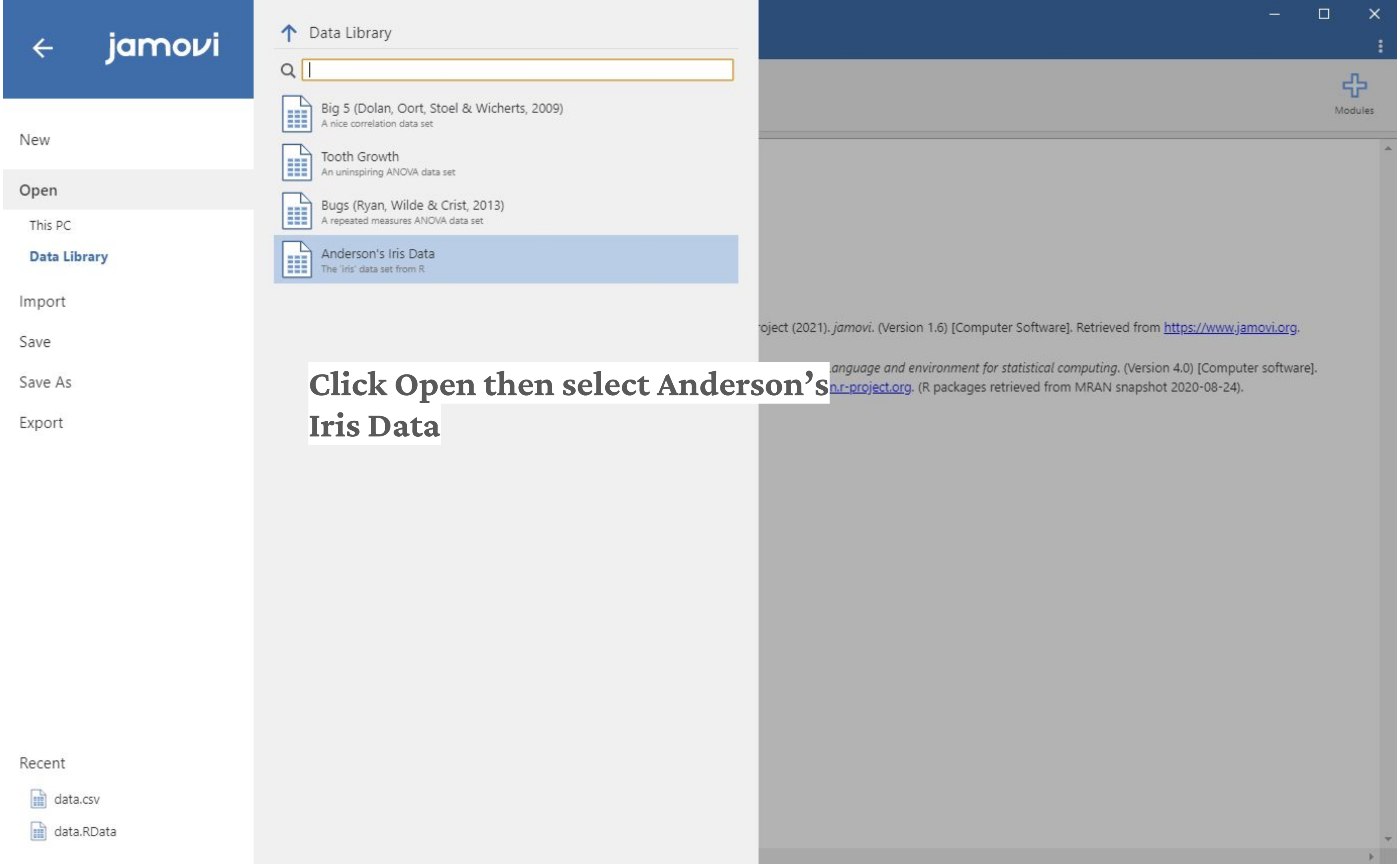
Results

References

[1] The jamovi project (2021). *jamovi*. (Version 1.6) [Computer Software]. Retrieved from https://www.jamovi.org.

[2] R Core Team (2020). *R: A Language and environment for statistical computing*. (Version 4.0) [Computer software]. Retrieved from https://cran.r-project.org. (R packages retrieved from MRAN snapshot 2020-08-24).

Click the 3 bars in the top left



Big 5 (Dolan, Oort, Stoel & Wicherts, 2009)
A nice correlation data set

Tooth Growth
An uninspiring ANOVA data set

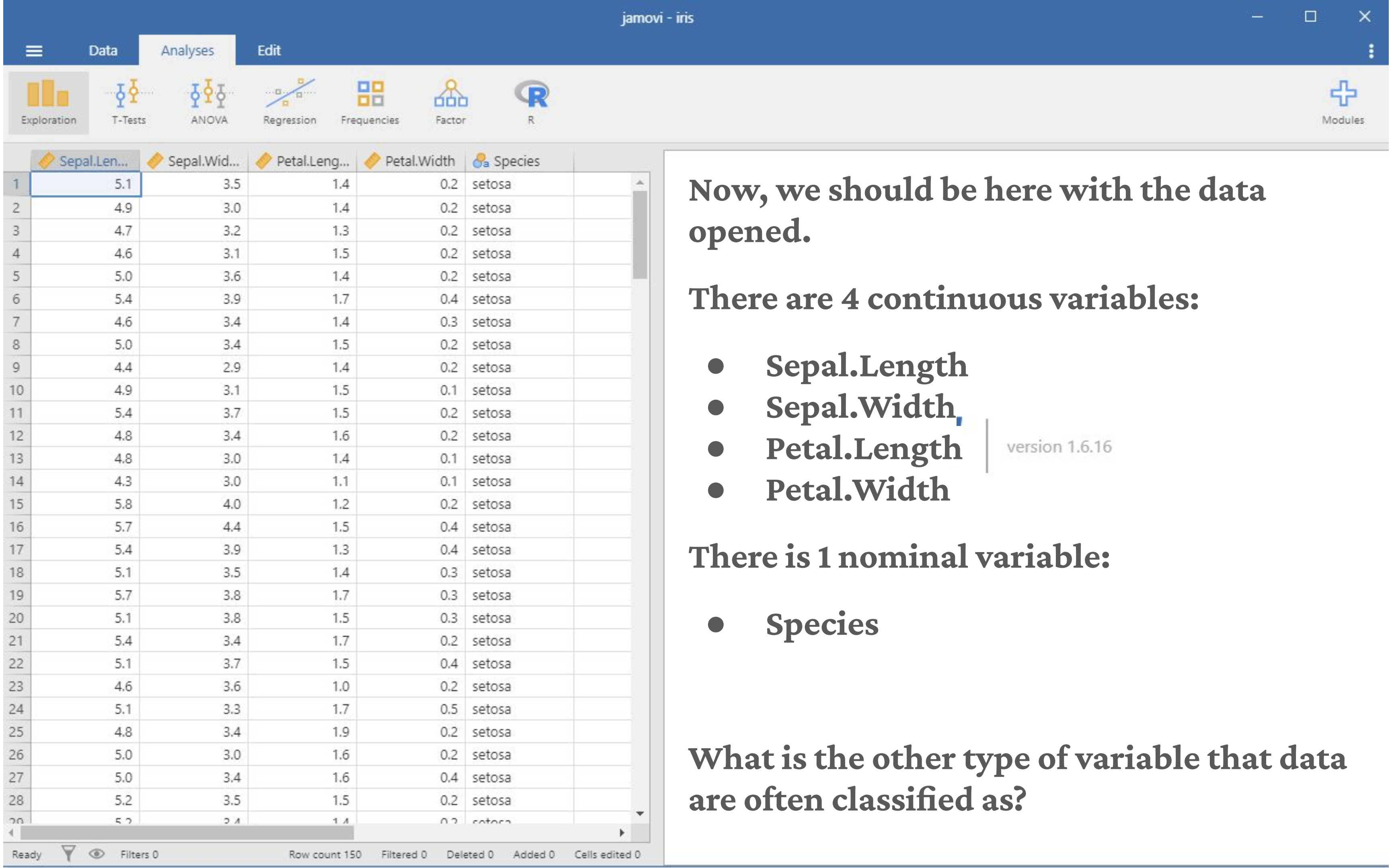
Bugs (Ryan, Wilde & Crist, 2013)
A repeated measures ANOVA data set

Anderson's Iris Data
The 'iris' data set from R

roject (2021). *jamovi*. (Version 1.6) [Computer Software]. Retrieved from https://www.jamovi.org.

.anguage and environment for statistical computing. (Version 4.0) [Computer software].
n.r-project.org. (R packages retrieved from MRAN snapshot 2020-08-24).

Click Open then select Anderson's Iris Data



	Sepal.Len...	Sepal.Wid...	Petal.Leng...	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3.0	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5.0	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5.0	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa
13	4.8	3.0	1.4	0.1	setosa
14	4.3	3.0	1.1	0.1	setosa
15	5.8	4.0	1.2	0.2	setosa
16	5.7	4.4	1.5	0.4	setosa
17	5.4	3.9	1.3	0.4	setosa
18	5.1	3.5	1.4	0.3	setosa
19	5.7	3.8	1.7	0.3	setosa
20	5.1	3.8	1.5	0.3	setosa
21	5.4	3.4	1.7	0.2	setosa
22	5.1	3.7	1.5	0.4	setosa
23	4.6	3.6	1.0	0.2	setosa
24	5.1	3.3	1.7	0.5	setosa
25	4.8	3.4	1.9	0.2	setosa
26	5.0	3.0	1.6	0.2	setosa
27	5.0	3.4	1.6	0.4	setosa
28	5.2	3.5	1.5	0.2	setosa

Now, we should be here with the data opened.

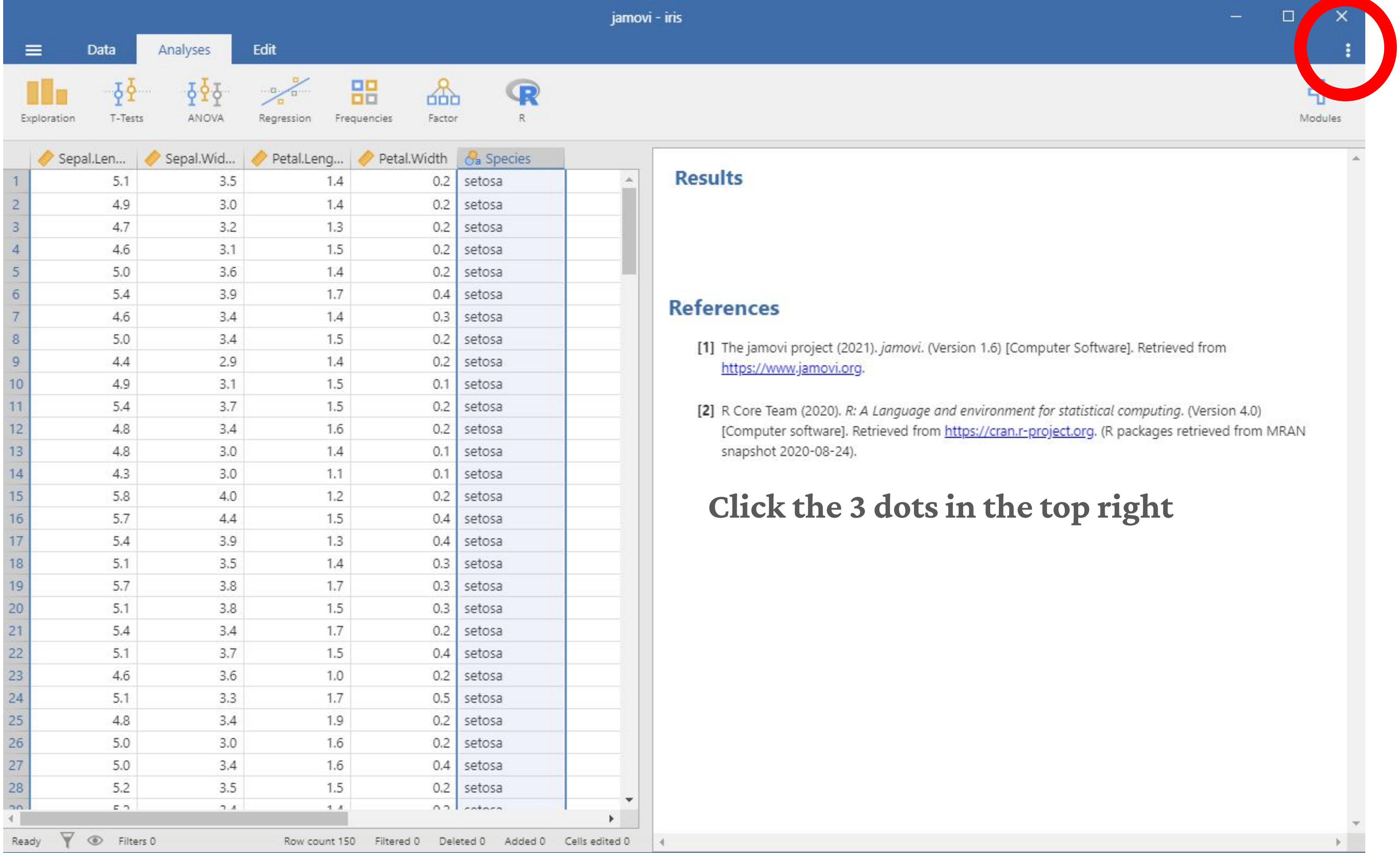
There are 4 continuous variables:

- **Sepal.Length**
- **Sepal.Width**
- **Petal.Length**
- **Petal.Width**

There is 1 nominal variable:

- **Species**

What is the other type of variable that data are often classified as?



	Sepal.Len...	Sepal.Wid...	Petal.Leng...	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3.0	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5.0	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5.0	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa
13	4.8	3.0	1.4	0.1	setosa
14	4.3	3.0	1.1	0.1	setosa
15	5.8	4.0	1.2	0.2	setosa
16	5.7	4.4	1.5	0.4	setosa
17	5.4	3.9	1.3	0.4	setosa
18	5.1	3.5	1.4	0.3	setosa
19	5.7	3.8	1.7	0.3	setosa
20	5.1	3.8	1.5	0.3	setosa
21	5.4	3.4	1.7	0.2	setosa
22	5.1	3.7	1.5	0.4	setosa
23	4.6	3.6	1.0	0.2	setosa
24	5.1	3.3	1.7	0.5	setosa
25	4.8	3.4	1.9	0.2	setosa
26	5.0	3.0	1.6	0.2	setosa
27	5.0	3.4	1.6	0.4	setosa
28	5.2	3.5	1.5	0.2	setosa

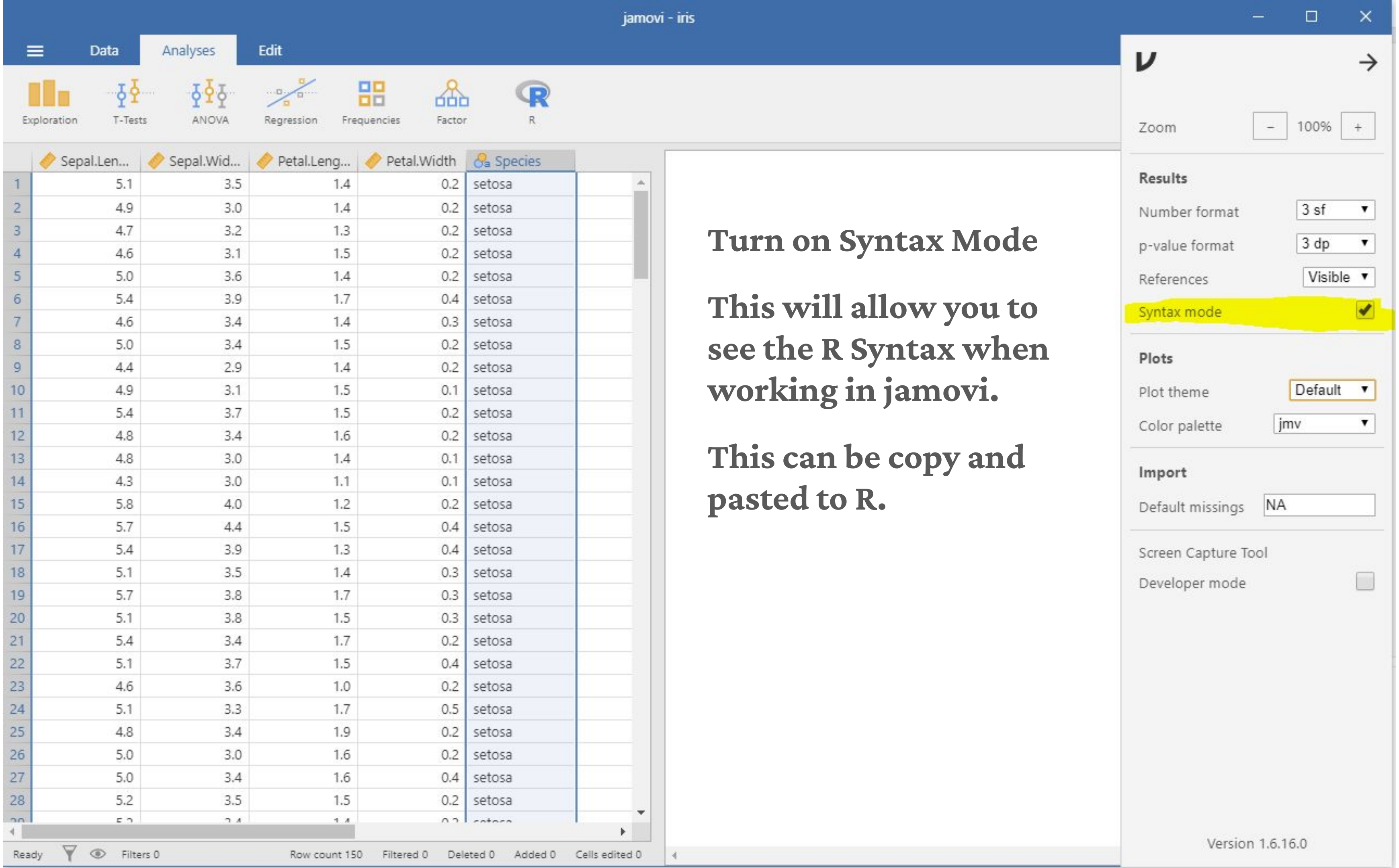
Results

References

[1] The jamovi project (2021). *jamovi*. (Version 1.6) [Computer Software]. Retrieved from https://www.jamovi.org.

[2] R Core Team (2020). *R: A Language and environment for statistical computing.* (Version 4.0) [Computer software]. Retrieved from https://cran.r-project.org. (R packages retrieved from MRAN snapshot 2020-08-24).

Click the 3 dots in the top right



	Sepal.Len...	Sepal.Wid...	Petal.Leng...	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3.0	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5.0	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5.0	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa
13	4.8	3.0	1.4	0.1	setosa
14	4.3	3.0	1.1	0.1	setosa
15	5.8	4.0	1.2	0.2	setosa
16	5.7	4.4	1.5	0.4	setosa
17	5.4	3.9	1.3	0.4	setosa
18	5.1	3.5	1.4	0.3	setosa
19	5.7	3.8	1.7	0.3	setosa
20	5.1	3.8	1.5	0.3	setosa
21	5.4	3.4	1.7	0.2	setosa
22	5.1	3.7	1.5	0.4	setosa
23	4.6	3.6	1.0	0.2	setosa
24	5.1	3.3	1.7	0.5	setosa
25	4.8	3.4	1.9	0.2	setosa
26	5.0	3.0	1.6	0.2	setosa
27	5.0	3.4	1.6	0.4	setosa
28	5.2	3.5	1.5	0.2	setosa

Ready Filters 0 Row count 150 Filtered 0 Deleted 0 Added 0 Cells edited 0

Zoom – 100% +

Results

Number format: 3 sf

p-value format: 3 dp

References: Visible

Syntax mode ☑

Plots

Plot theme: Default

Color palette: jmv

Import

Default missings: NA

Screen Capture Tool

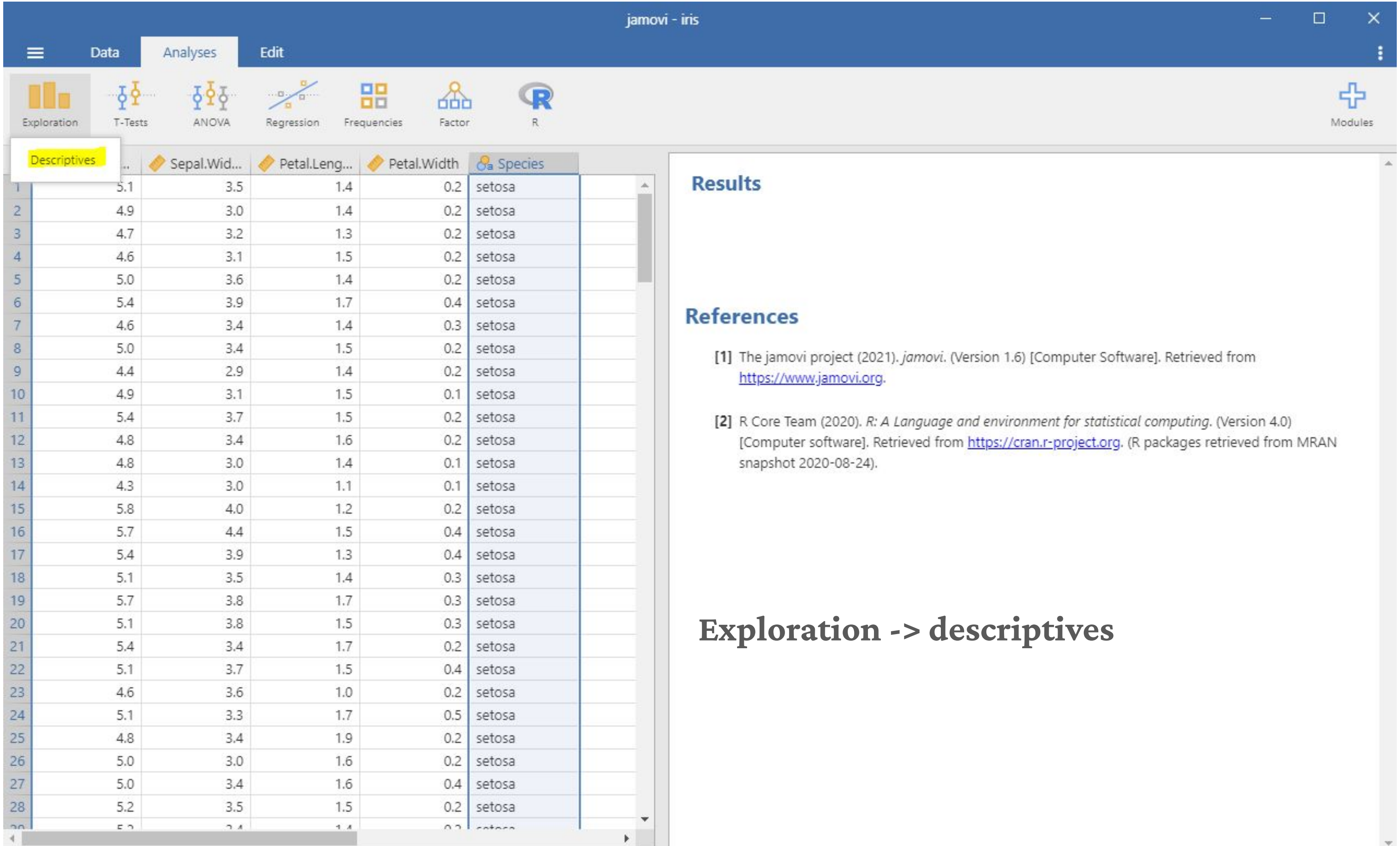
Developer mode ☐

Version 1.6.16.0

Turn on Syntax Mode

This will allow you to see the R Syntax when working in jamovi.

This can be copy and pasted to R.



	...	Sepal.Wid...	Petal.Leng...	Petal.Width	Species
1	5.1	3.5	1.4	0.2	setosa
2	4.9	3.0	1.4	0.2	setosa
3	4.7	3.2	1.3	0.2	setosa
4	4.6	3.1	1.5	0.2	setosa
5	5.0	3.6	1.4	0.2	setosa
6	5.4	3.9	1.7	0.4	setosa
7	4.6	3.4	1.4	0.3	setosa
8	5.0	3.4	1.5	0.2	setosa
9	4.4	2.9	1.4	0.2	setosa
10	4.9	3.1	1.5	0.1	setosa
11	5.4	3.7	1.5	0.2	setosa
12	4.8	3.4	1.6	0.2	setosa
13	4.8	3.0	1.4	0.1	setosa
14	4.3	3.0	1.1	0.1	setosa
15	5.8	4.0	1.2	0.2	setosa
16	5.7	4.4	1.5	0.4	setosa
17	5.4	3.9	1.3	0.4	setosa
18	5.1	3.5	1.4	0.3	setosa
19	5.7	3.8	1.7	0.3	setosa
20	5.1	3.8	1.5	0.3	setosa
21	5.4	3.4	1.7	0.2	setosa
22	5.1	3.7	1.5	0.4	setosa
23	4.6	3.6	1.0	0.2	setosa
24	5.1	3.3	1.7	0.5	setosa
25	4.8	3.4	1.9	0.2	setosa
26	5.0	3.0	1.6	0.2	setosa
27	5.0	3.4	1.6	0.4	setosa
28	5.2	3.5	1.5	0.2	setosa

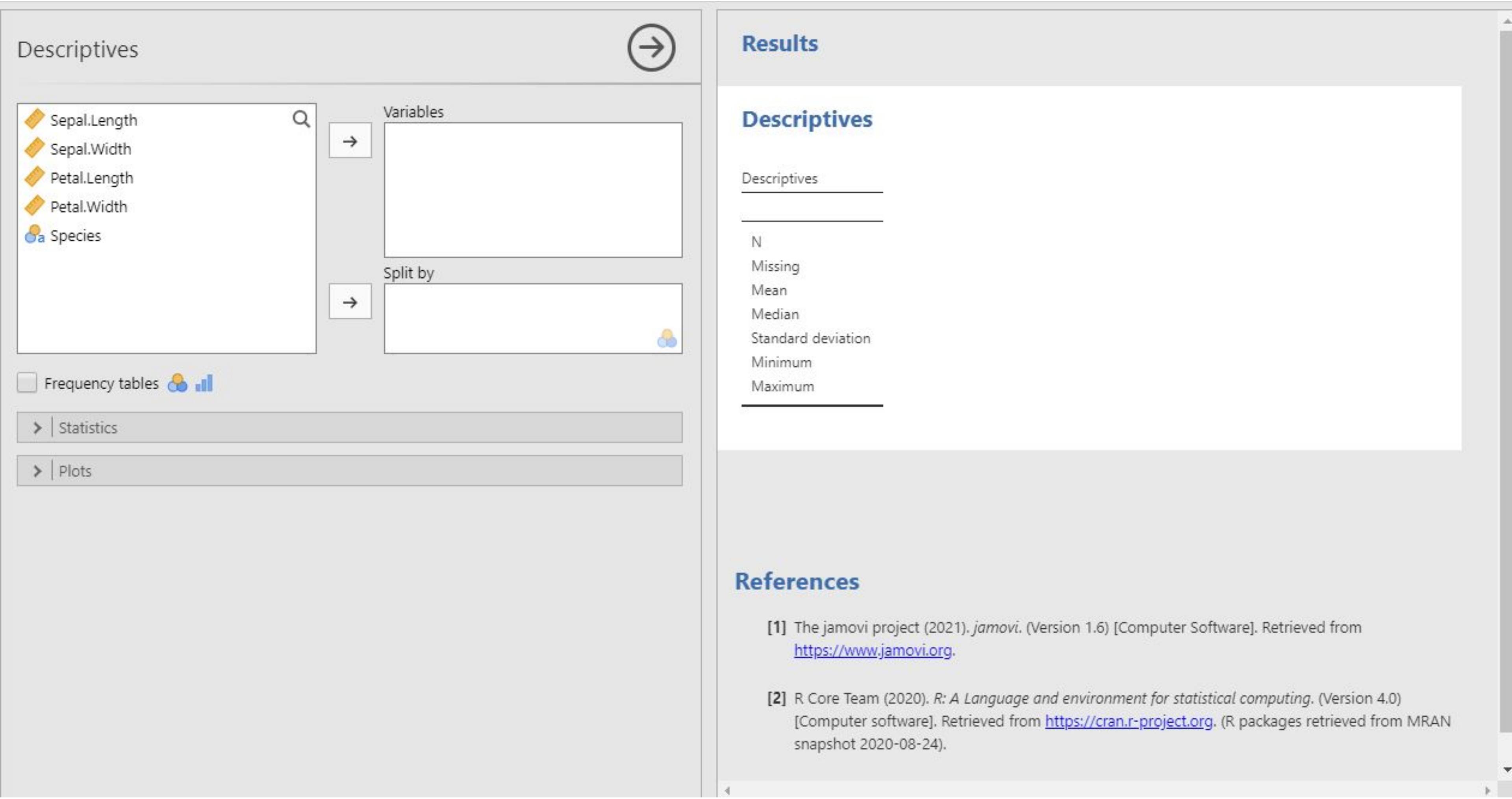
Results

References

[1] The jamovi project (2021). *jamovi*. (Version 1.6) [Computer Software]. Retrieved from https://www.jamovi.org.

[2] R Core Team (2020). *R: A Language and environment for statistical computing*. (Version 4.0) [Computer software]. Retrieved from https://cran.r-project.org. (R packages retrieved from MRAN snapshot 2020-08-24).

Exploration -> descriptives



Results

Descriptives

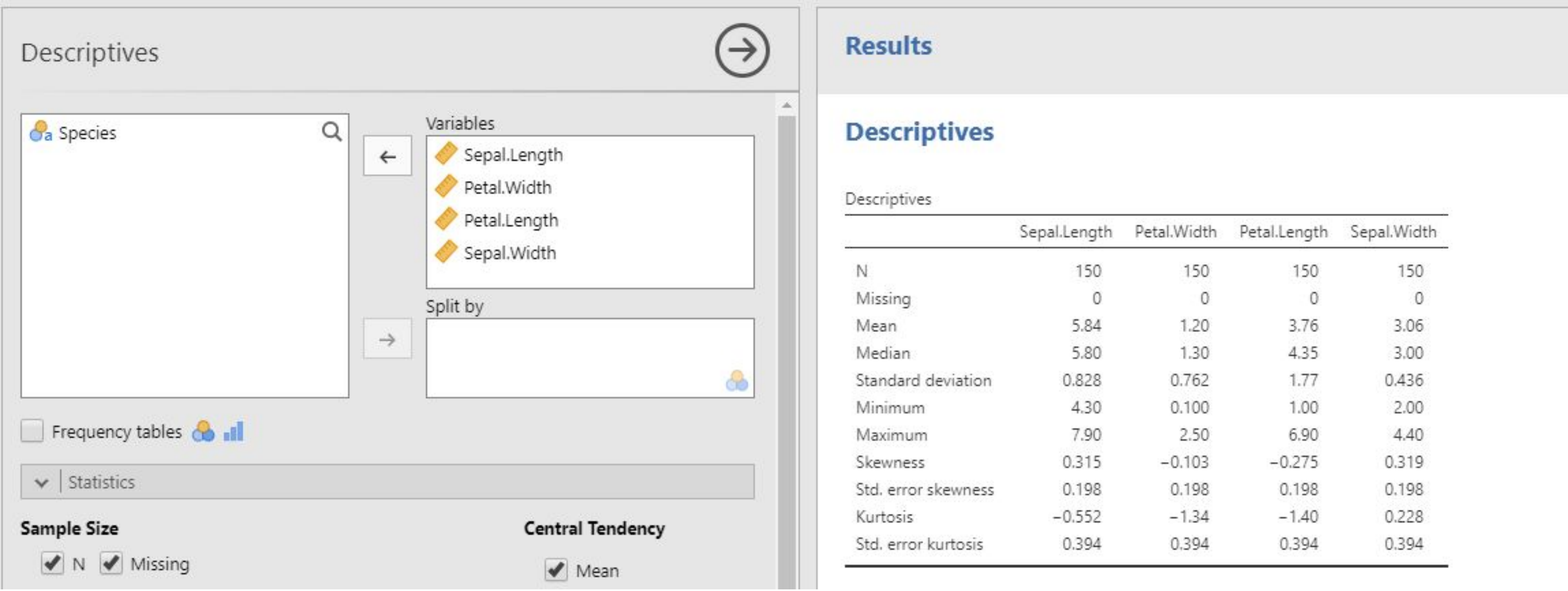
Descriptives

N
Missing
Mean
Median
Standard deviation
Minimum
Maximum

References

[1] The jamovi project (2021). *jamovi*. (Version 1.6) [Computer Software]. Retrieved from https://www.jamovi.org.

[2] R Core Team (2020). *R: A Language and environment for statistical computing*. (Version 4.0) [Computer software]. Retrieved from https://cran.r-project.org. (R packages retrieved from MRAN snapshot 2020-08-24).



Variables:
- Sepal.Length
- Petal.Width
- Petal.Length
- Sepal.Width

☐ Frequency tables

Sample Size

☑ N ☑ Missing

Central Tendency

☑ Mean

Results

Descriptives

Descriptives

	Sepal.Length	Petal.Width	Petal.Length	Sepal.Width
N	150	150	150	150
Missing	0	0	0	0
Mean	5.84	1.20	3.76	3.06
Median	5.80	1.30	4.35	3.00
Standard deviation	0.828	0.762	1.77	0.436
Minimum	4.30	0.100	1.00	2.00
Maximum	7.90	2.50	6.90	4.40
Skewness	0.315	−0.103	−0.275	0.319
Std. error skewness	0.198	0.198	0.198	0.198
Kurtosis	−0.552	−1.34	−1.40	0.228
Std. error kurtosis	0.394	0.394	0.394	0.394

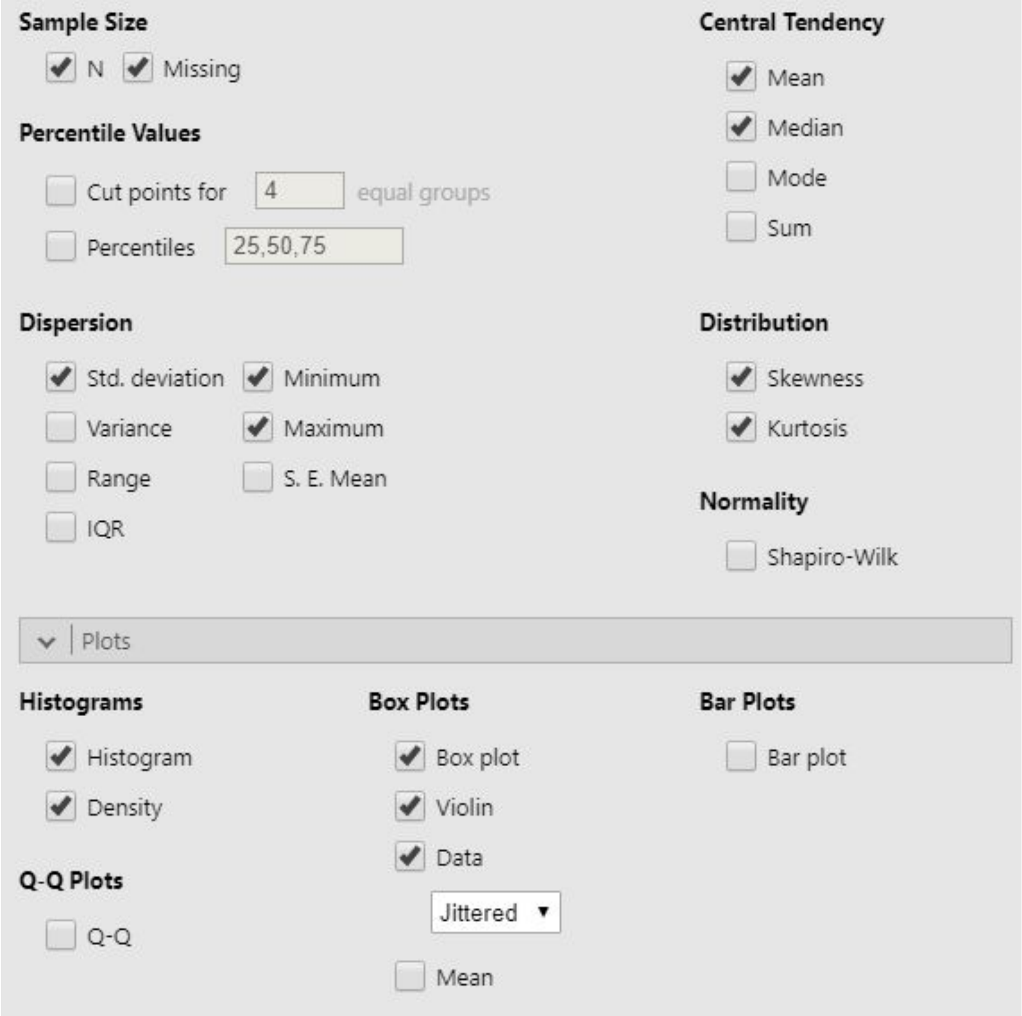
I select all of the continuous variables for descriptives

I select the following to create a table with:

- Number of data points
- Number of missing data points
- Standard deviation
- Minimum value
- Maximum value
- Mean
- Median
- Skew
- Kurtosis

I also get the following plots for each variable:

- Histograms
- Box plots



Sample Size

☑ N ☑ Missing

Percentile Values

☐ Cut points for 4 equal groups

☐ Percentiles 25,50,75

Dispersion

☑ Std. deviation ☑ Minimum

☐ Variance ☑ Maximum

☐ Range ☐ S. E. Mean

☐ IQR

Central Tendency

☑ Mean

☑ Median

☐ Mode

☐ Sum

Distribution

☑ Skewness

☑ Kurtosis

Normality

☐ Shapiro-Wilk

Histograms

☑ Histogram

☑ Density

Q-Q Plots

☐ Q-Q

Box Plots

☑ Box plot

☑ Violin

☑ Data

Jittered

☐ Mean

Bar Plots

☐ Bar plot

```
jmv::descriptives(
    data = data,
    vars = vars(Sepal.Length, Sepal.Width, Petal.Length, Petal.Width),
    hist = TRUE,
    dens = TRUE,
    box = TRUE,
    violin = TRUE,
    dot = TRUE,
    boxMean = TRUE,
    skew = TRUE,
    kurt = TRUE)
```

Sample Size

☑ N ☑ Missing

Percentile Values

☐ Cut points for 4 equal groups

☐ Percentiles 25,50,75

Central Tendency

☑ Mean

☑ Median

☐ Mode

☐ Sum

Dispersion

☑ Std. deviation ☑ Minimum

☐ Variance ☑ Maximum

☐ Range ☐ S. E. Mean

☐ IQR

Distribution

☑ Skewness

☑ Kurtosis

Normality

☐ Shapiro-Wilk

Plots

Histograms

☑ Histogram

☑ Density

Q-Q Plots

☐ Q-Q

Box Plots

☑ Box plot

☑ Violin

☑ Data

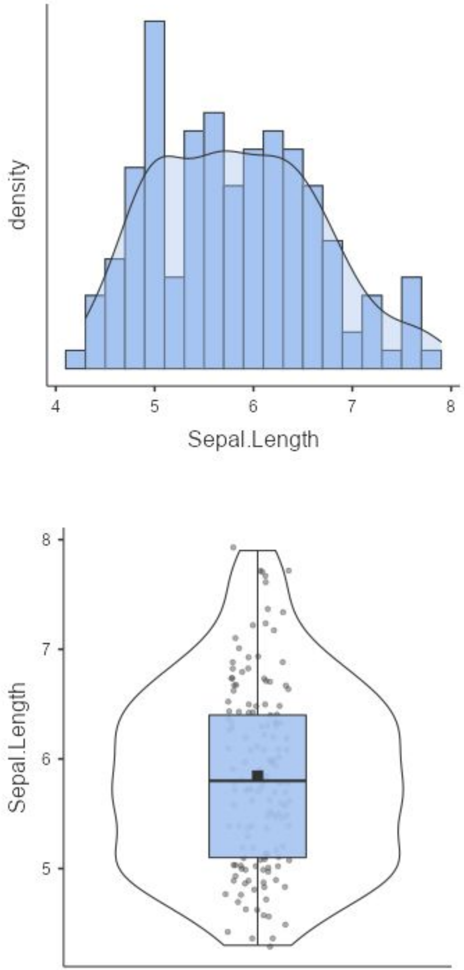
Jittered ▾

☐ Mean

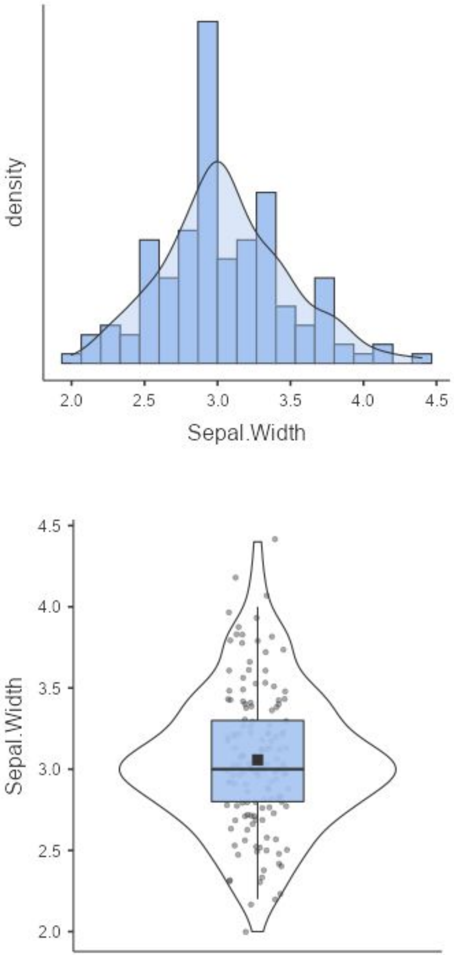
Bar Plots

☐ Bar plot

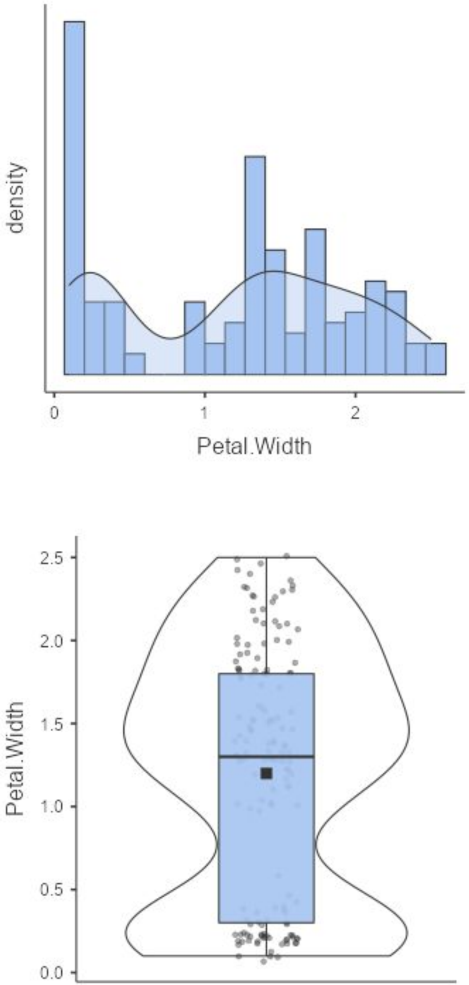
`Sepal.Length`

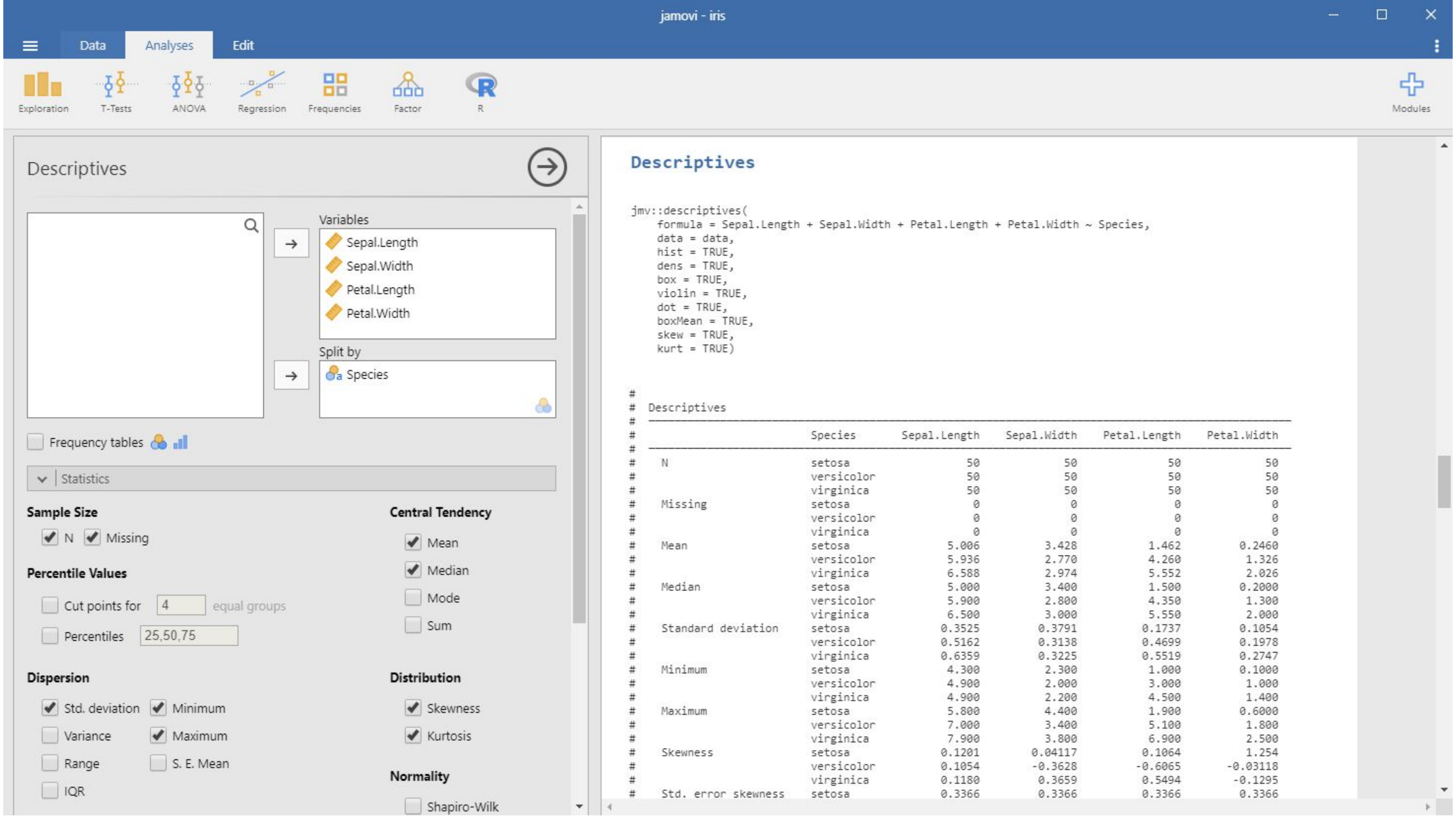


`Sepal.Width`



`Petal.Width`





Descriptives

Variables
- Sepal.Length
- Sepal.Width
- Petal.Length
- Petal.Width

Split by
- Species

☐ Frequency tables

Statistics

Sample Size

☑ N ☑ Missing

Percentile Values

☐ Cut points for 4 equal groups

☐ Percentiles 25,50,75

Dispersion

☑ Std. deviation ☑ Minimum

☐ Variance ☑ Maximum

☐ Range ☐ S. E. Mean

☐ IQR

Central Tendency

☑ Mean

☑ Median

☐ Mode

☐ Sum

Distribution

☑ Skewness

☑ Kurtosis

Normality

☐ Shapiro-Wilk

Descriptives

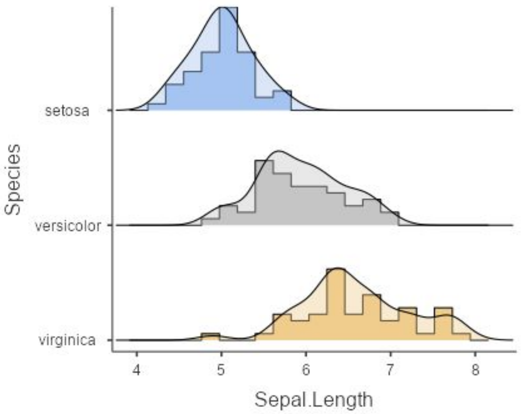
```
jmv::descriptives(
    formula = Sepal.Length + Sepal.Width + Petal.Length + Petal.Width ~ Species,
    data = data,
    hist = TRUE,
    dens = TRUE,
    box = TRUE,
    violin = TRUE,
    dot = TRUE,
    boxMean = TRUE,
    skew = TRUE,
    kurt = TRUE)
```

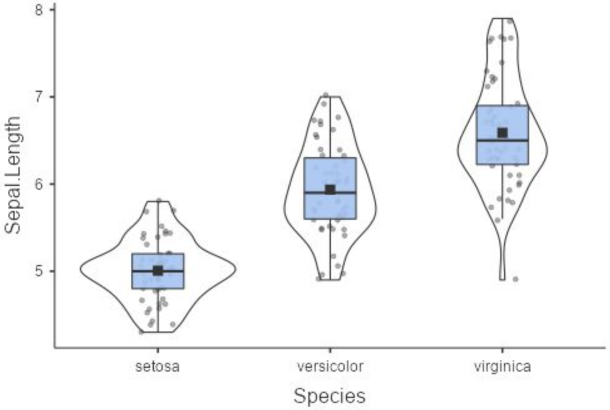
```
#
#  Descriptives
#  ──────────────────────────────────────────────────────────────────────────────────────────────
#                          Species       Sepal.Length    Sepal.Width    Petal.Length    Petal.Width
#  ──────────────────────────────────────────────────────────────────────────────────────────────
#    N                     setosa                  50             50              50             50
#                          versicolor              50             50              50             50
#                          virginica               50             50              50             50
#    Missing               setosa                   0              0               0              0
#                          versicolor               0              0               0              0
#                          virginica                0              0               0              0
#    Mean                  setosa               5.006          3.428           1.462         0.2460
#                          versicolor           5.936          2.770           4.260          1.326
#                          virginica            6.588          2.974           5.552          2.026
#    Median                setosa               5.000          3.400           1.500         0.2000
#                          versicolor           5.900          2.800           4.350          1.300
#                          virginica            6.500          3.000           5.550          2.000
#    Standard deviation    setosa              0.3525         0.3791          0.1737         0.1054
#                          versicolor          0.5162         0.3138          0.4699         0.1978
#                          virginica           0.6359         0.3225          0.5519         0.2747
#    Minimum               setosa               4.300          2.300           1.000         0.1000
#                          versicolor           4.900          2.000           3.000          1.000
#                          virginica            4.900          2.200           4.500          1.400
#    Maximum               setosa               5.800          4.400           1.900         0.6000
#                          versicolor           7.000          3.400           5.100          1.800
#                          virginica            7.900          3.800           6.900          2.500
#    Skewness              setosa              0.1201        0.04117          0.1064          1.254
#                          versicolor          0.1054        -0.3628         -0.6065       -0.03118
#                          virginica           0.1180         0.3659          0.5494        -0.1295
#    Std. error skewness   setosa              0.3366         0.3366          0.3366         0.3366
```

I now split the descriptives by flower species.

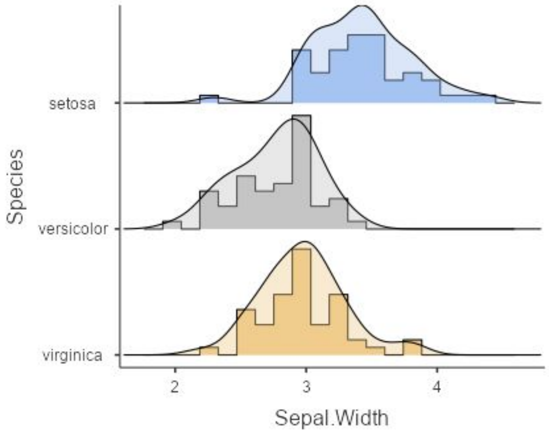
```
# Plots
```

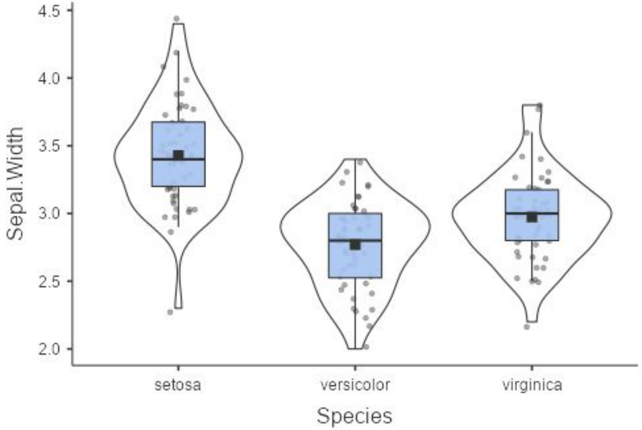
`Sepal.Length`



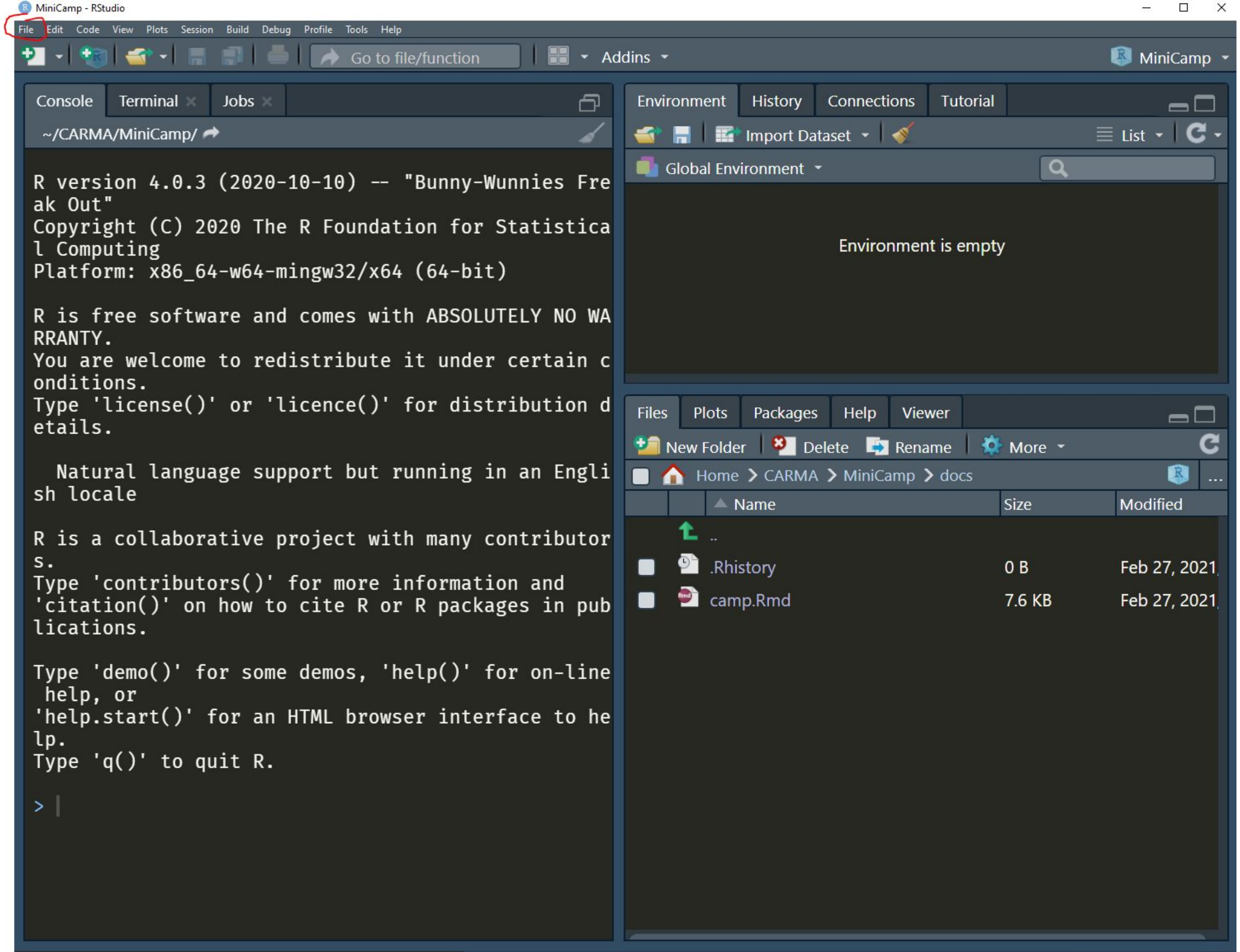


`Sepal.Width`





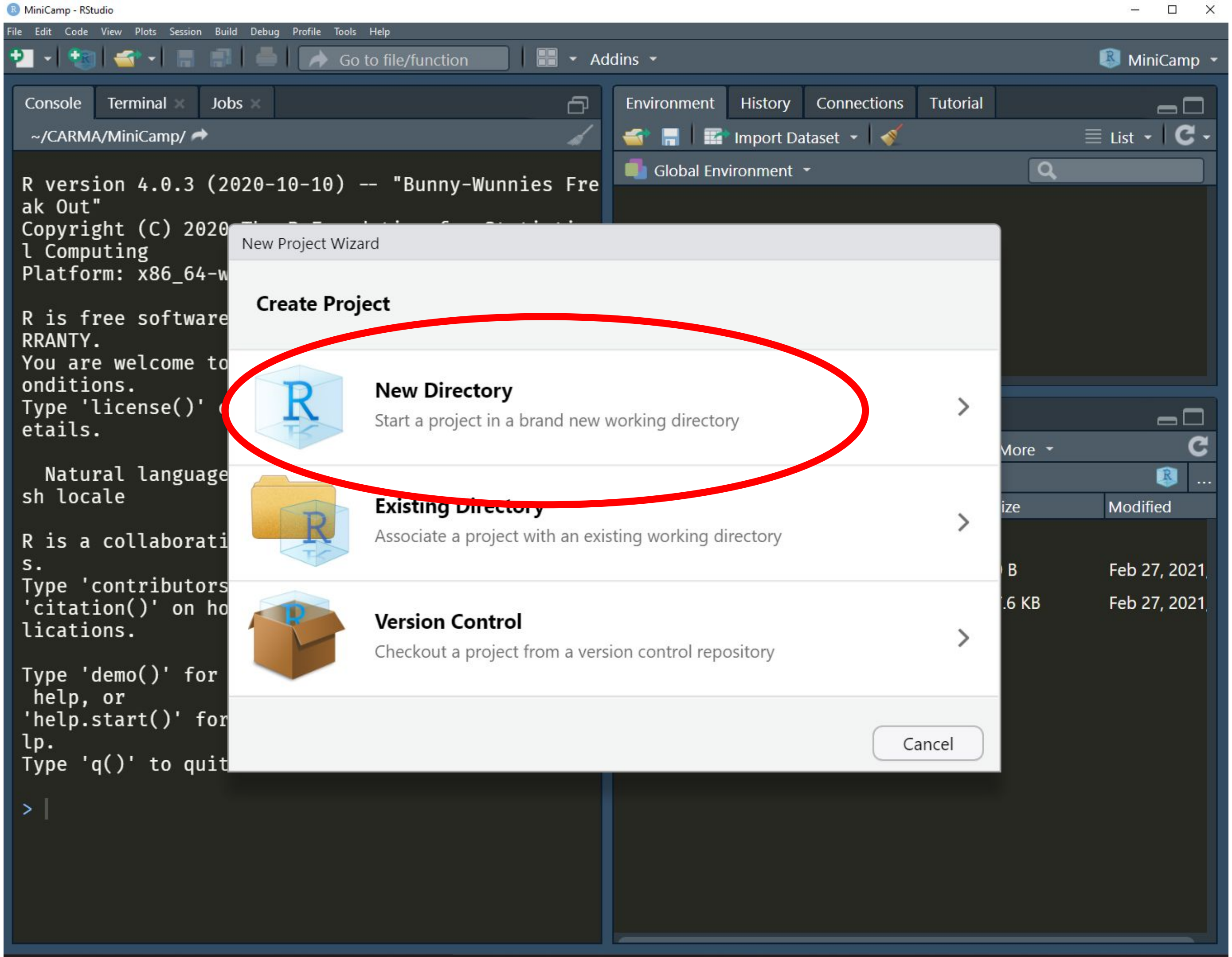
Open R Studio and Press File then New Project



```
R version 4.0.3 (2020-10-10) -- "Bunny-Wunnies Fre
ak Out"
Copyright (C) 2020 The R Foundation for Statistica
l Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WA
RRANTY.
You are welcome to redistribute it under certain c
onditions.
Type 'license()' or 'licence()' for distribution d
etails.

  Natural language support but running in an Engli
sh locale

R is a collaborative project with many contributor
s.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in pub
lications.

Type 'demo()' for some demos, 'help()' for on-line
 help, or
'help.start()' for an HTML browser interface to he
lp.
Type 'q()' to quit R.

>
```

Name	Size	Modified
..		
.Rhistory	0 B	Feb 27, 2021
camp.Rmd	7.6 KB	Feb 27, 2021

Select New Directory



```
R version 4.0.3 (2020-10-10) -- "Bunny-Wunnies Freak Out"
Copyright (C) 2020
l Computing
Platform: x86_64-w

R is free software
RRANTY.
You are welcome to
onditions.
Type 'license()'
etails.

  Natural language
sh locale

R is a collaborati
s.
Type 'contributors
'citation()' on ho
lications.

Type 'demo()' for
 help, or
'help.start()' for
lp.
Type 'q()' to quit

> 
```

New Project Wizard

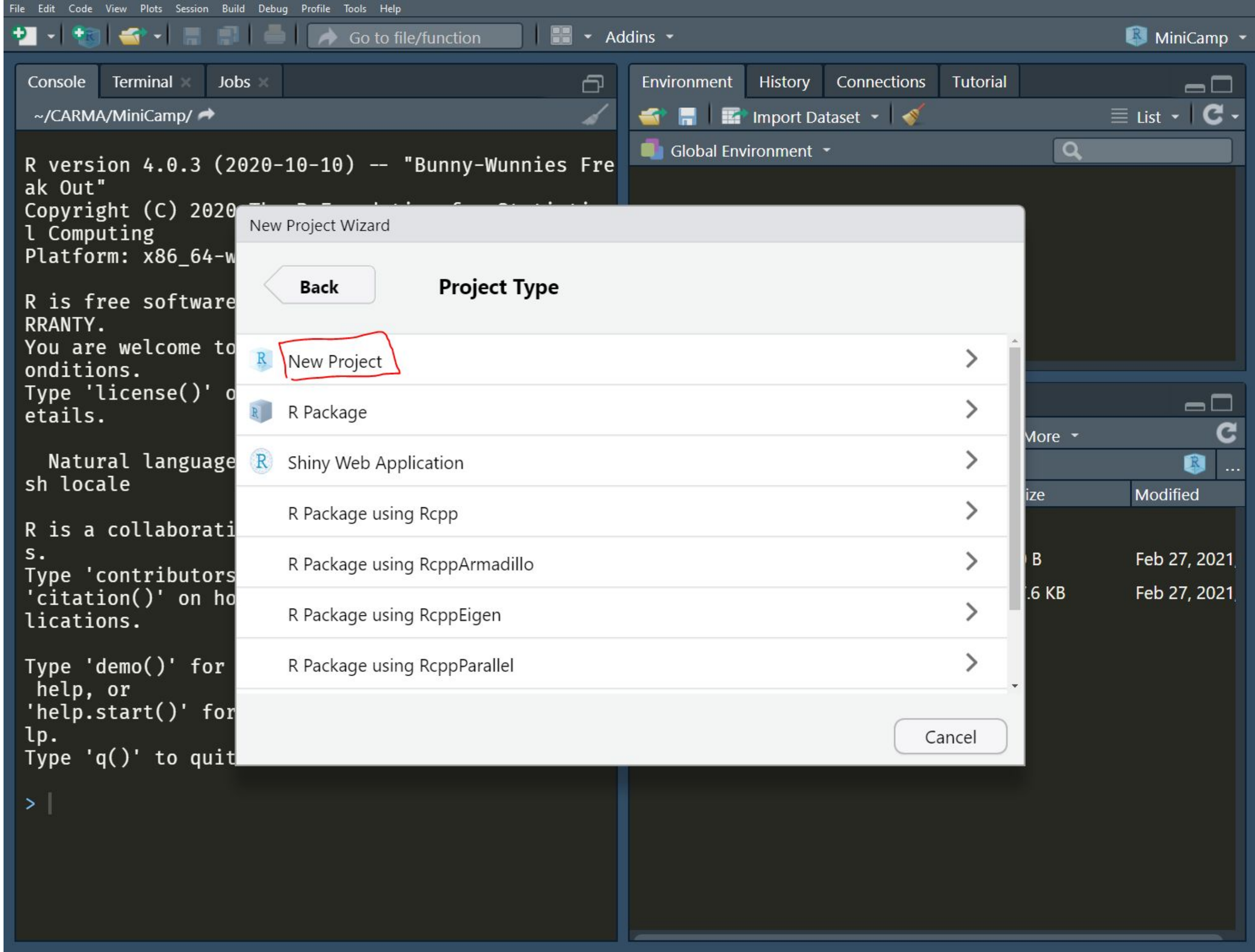
Create Project

New Directory
Start a project in a brand new working directory

Existing Directory
Associate a project with an existing working directory

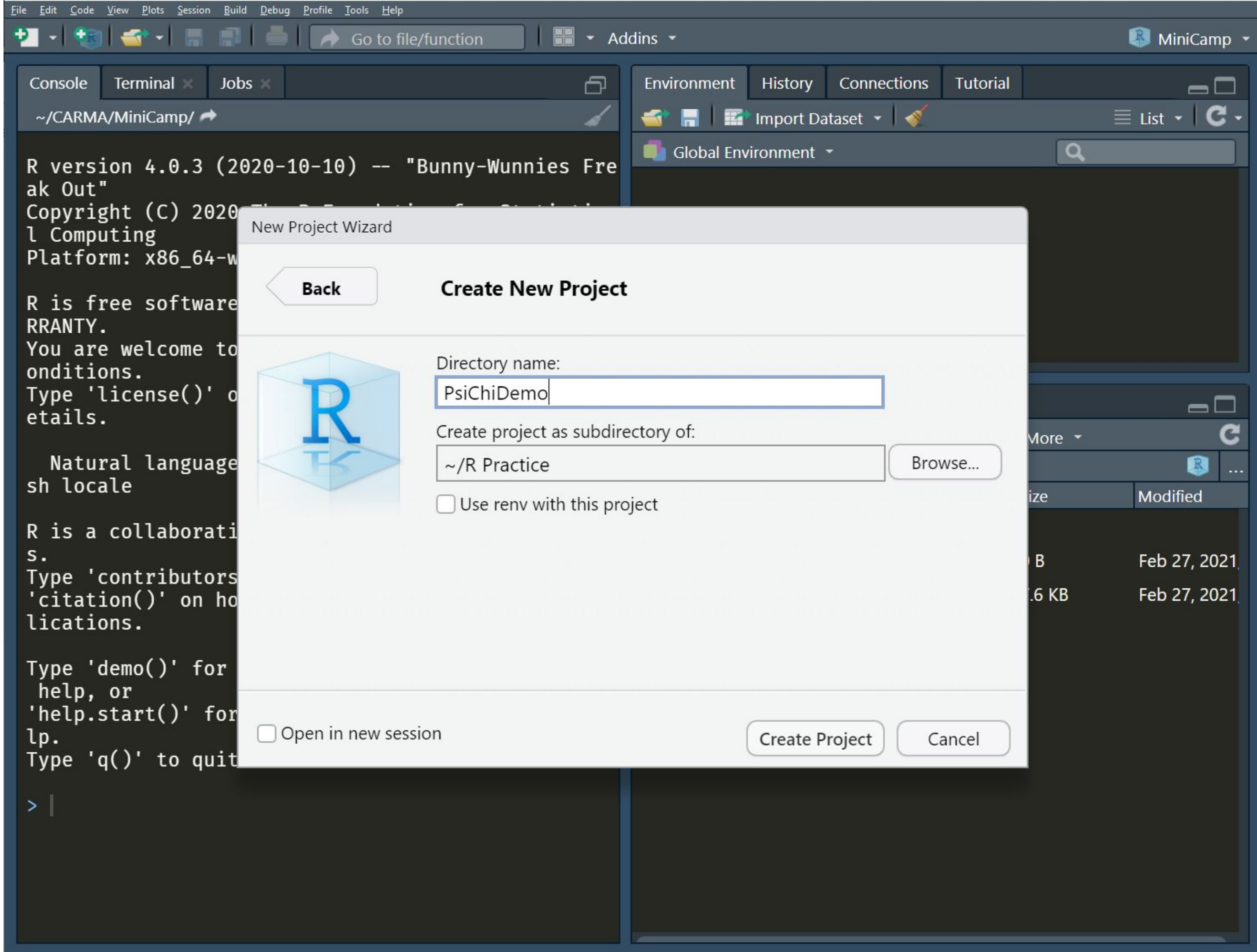
Version Control
Checkout a project from a version control repository

Select New Project



```
R version 4.0.3 (2020-10-10) -- "Bunny-Wunnies Fre
ak Out"
Copyright (C) 2020
l Computing
Platform: x86_64-w

R is free software
RRANTY.
You are welcome to
onditions.
Type 'license()' o
etails.

  Natural language
sh locale

R is a collaborati
s.
Type 'contributors
'citation()' on ho
lications.

Type 'demo()' for
 help, or
'help.start()' for
lp.
Type 'q()' to quit

>
```

Name the Directory (the new project folder) and choose the location.



```
R version 4.0.3 (2020-10-10) -- "Bunny-Wunnies Fre
ak Out"
Copyright (C) 2020
l Computing
Platform: x86_64-w

R is free software
RRANTY.
You are welcome to
onditions.
Type 'license()' o
etails.

  Natural language
sh locale

R is a collaborati
s.
Type 'contributors
'citation()' on ho
lications.

Type 'demo()' for
 help, or
'help.start()' for
lp.
Type 'q()' to quit

>
```

Create New Project

Directory name: PsiChiDemo

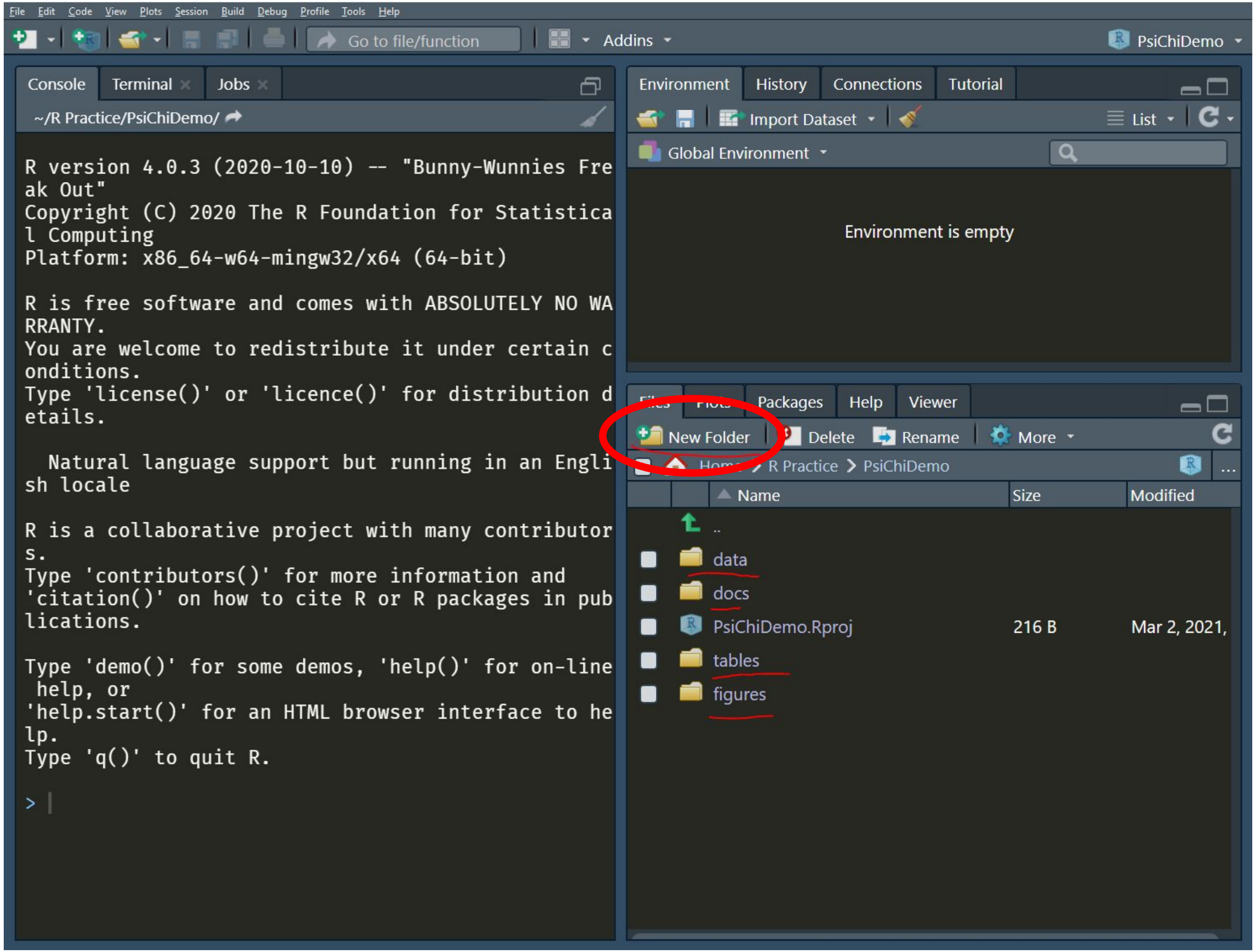
Create project as subdirectory of: ~/R Practice

☐ Use renv with this project

☐ Open in new session

It’s typically good practice to make folders for:

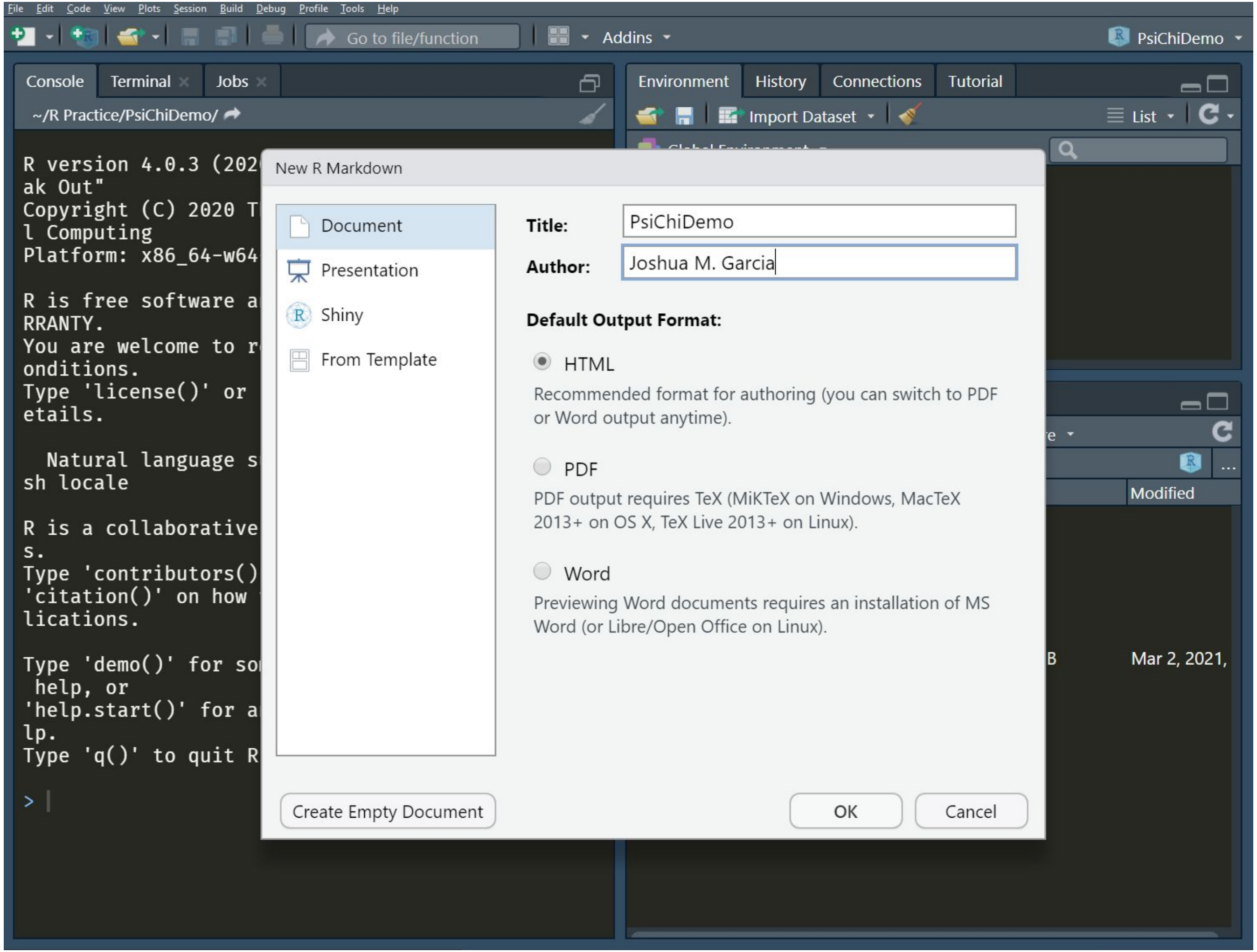
- data
- docs
- tables
- figures



```
R version 4.0.3 (2020-10-10) -- "Bunny-Wunnies Fre
ak Out"
Copyright (C) 2020 The R Foundation for Statistica
l Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WA
RRANTY.
You are welcome to redistribute it under certain c
onditions.
Type 'license()' or 'licence()' for distribution d
etails.

  Natural language support but running in an Engli
sh locale

R is a collaborative project with many contributor
s.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in pub
lications.

Type 'demo()' for some demos, 'help()' for on-line
 help, or
'help.start()' for an HTML browser interface to he
lp.
Type 'q()' to quit R.

> 
```

Name	Size	Modified
..		
data		
docs		
PsiChiDemo.Rproj	216 B	Mar 2, 2021,
tables		
figures		

Select File →
New File →
R Markdown



~/R Practice/PsiChiDemo/

```
R version 4.0.3 (202
ak Out"
Copyright (C) 2020 T
l Computing
Platform: x86_64-w64

R is free software a
RRANTY.
You are welcome to r
onditions.
Type 'license()' or
etails.

  Natural language s
sh locale

R is a collaborative
s.
Type 'contributors()
'citation()' on how
lications.

Type 'demo()' for so
 help, or
'help.start()' for a
lp.
Type 'q()' to quit R

> 
```

New R Markdown

- Document
- Presentation
- Shiny
- From Template

Title: PsiChiDemo

Author: Joshua M. Garcia

Default Output Format:

● HTML

Recommended format for authoring (you can switch to PDF or Word output anytime).

○ PDF

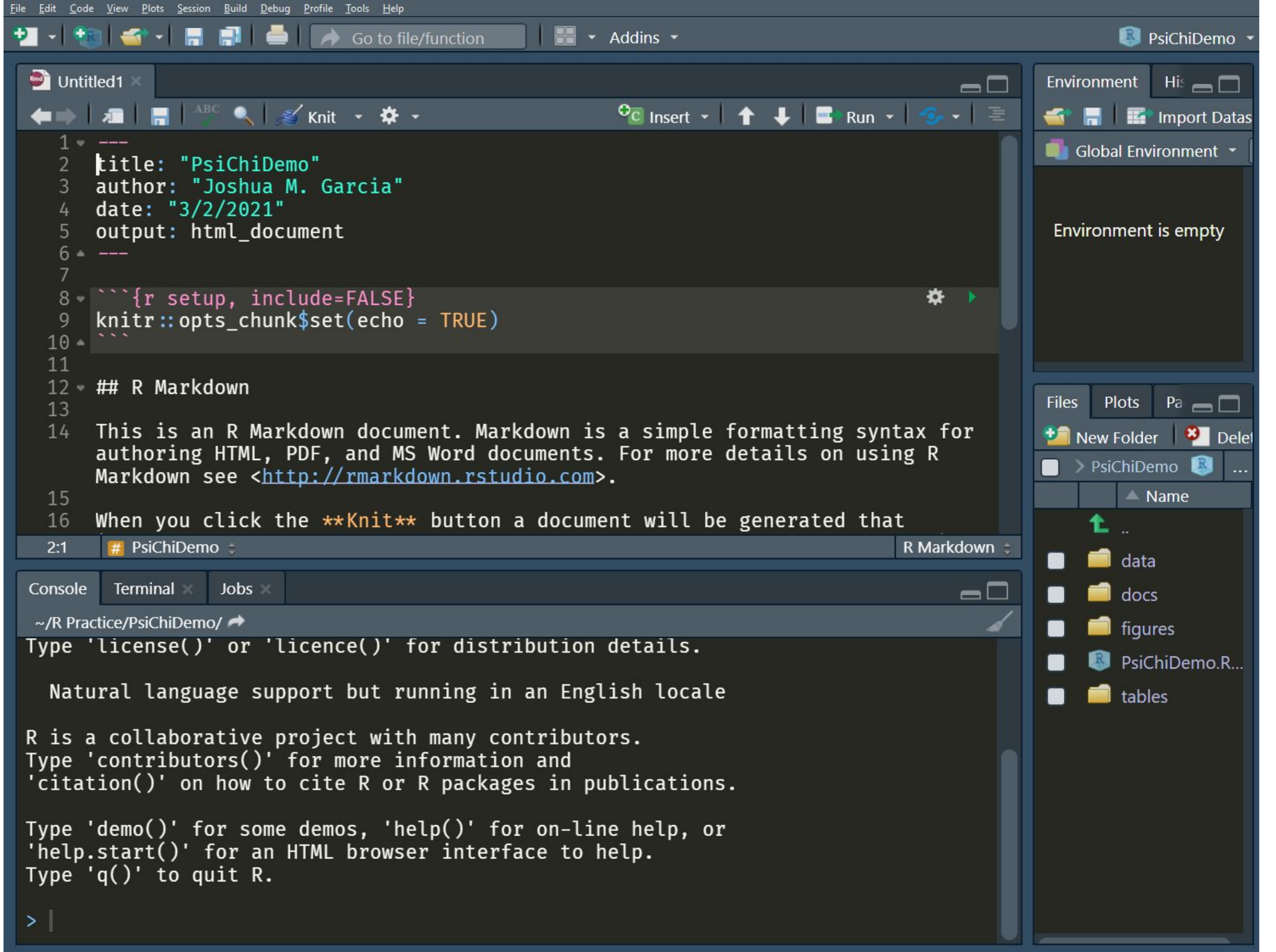
PDF output requires TeX (MiKTeX on Windows, MacTeX 2013+ on OS X, TeX Live 2013+ on Linux).

○ Word

Previewing Word documents requires an installation of MS Word (or Libre/Open Office on Linux).

R Studio presents with a description of the R Markdown document. Read this for clarification.

Save the file to your docs folder.



~~~
---
title: "PsiChiDemo"
author: "Joshua M. Garcia"
date: "3/2/2021"
output: html_document
---

```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
~~~

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for
authoring HTML, PDF, and MS Word documents. For more details on using R
Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated that
```

```
Type 'license()' or 'licence()' for distribution details.

  Natural language support but running in an English locale

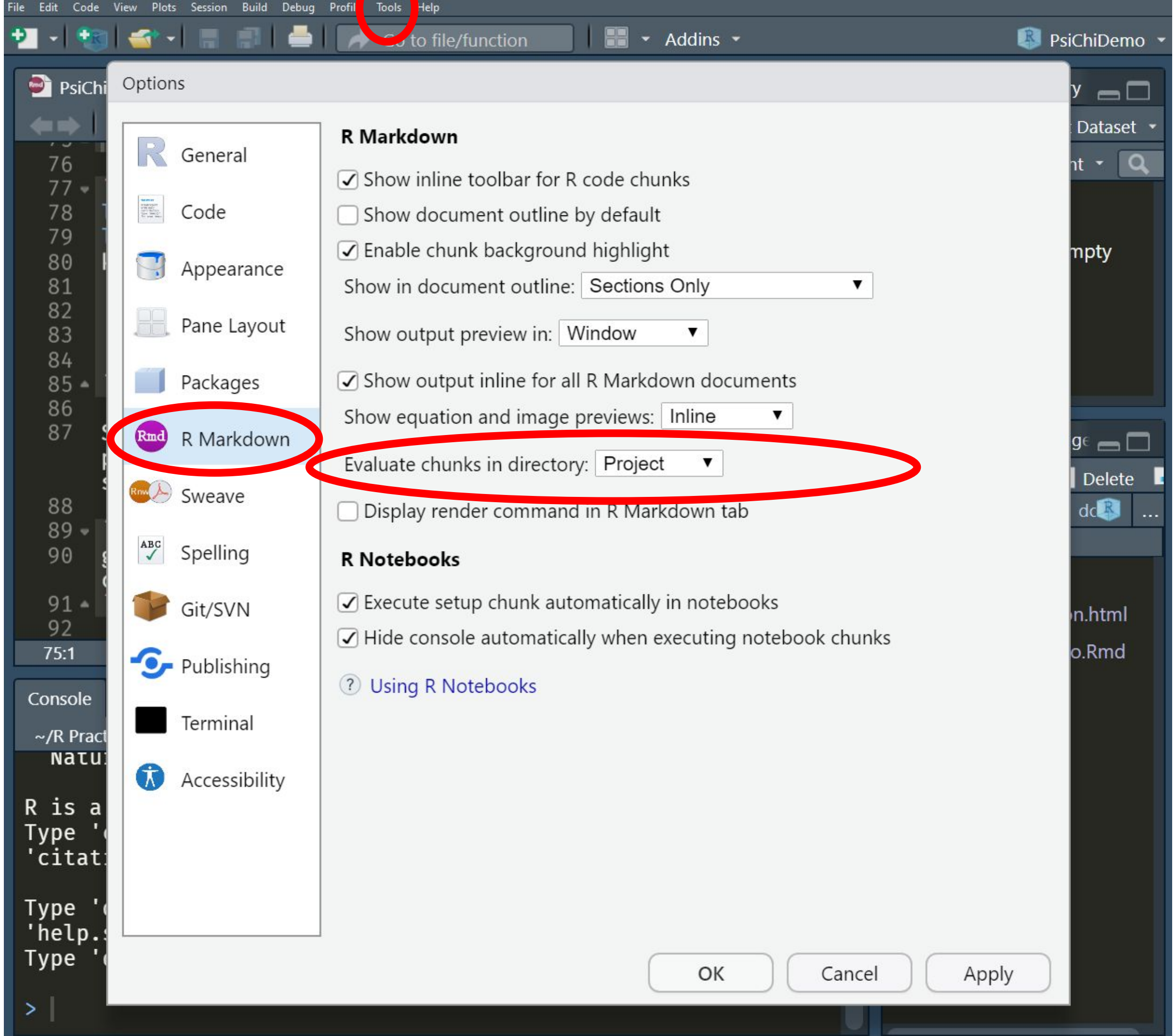
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
```
```

1. Select Tools
2. Global Options
3. R Markdown
4. Set your R Markdown document to evaluate chunks in directory to “Project”

Note that Global Settings are saved between sessions and R projects.

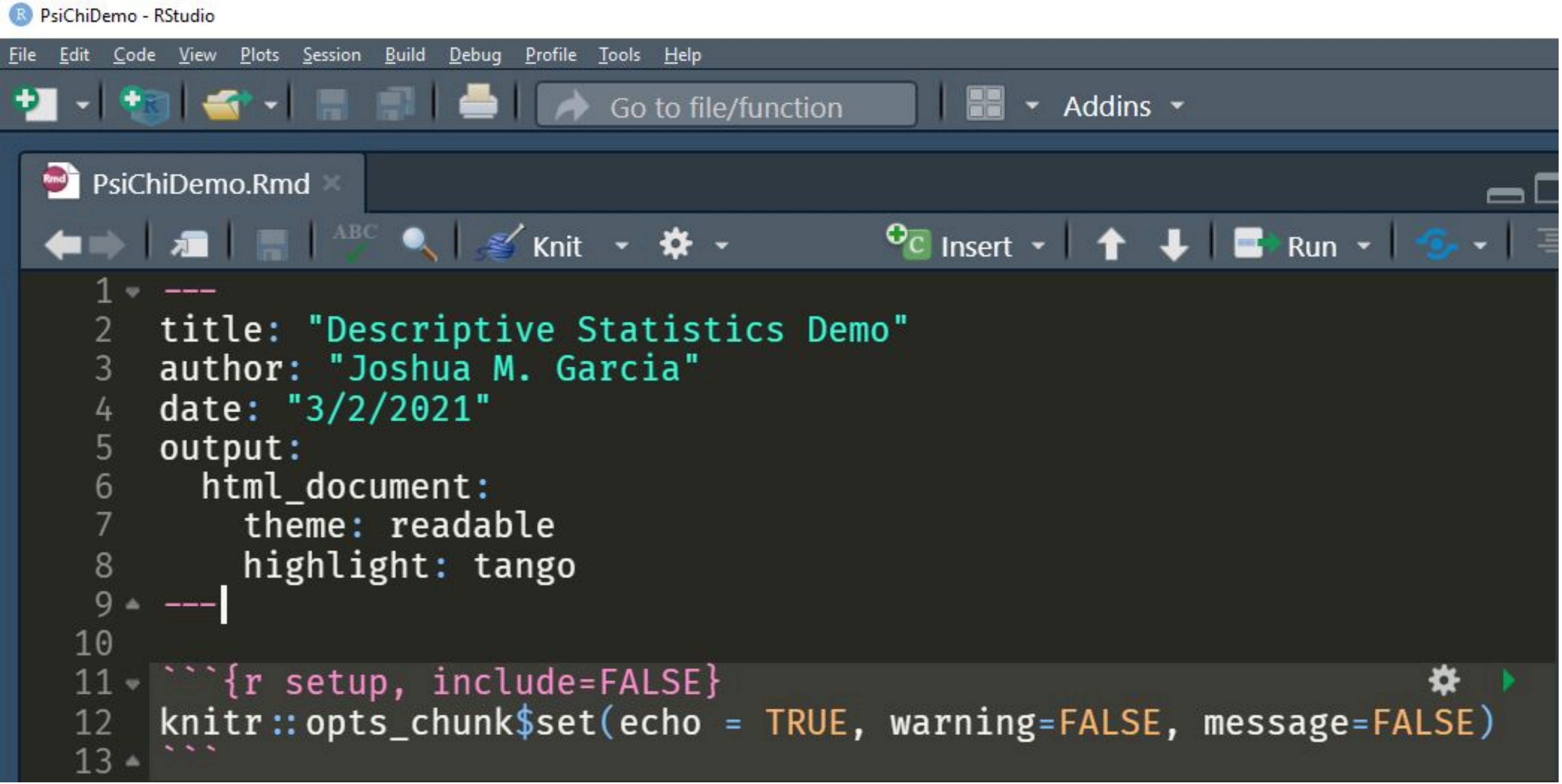


**R Markdown**

☑ Show inline toolbar for R code chunks
☐ Show document outline by default
☑ Enable chunk background highlight
Show in document outline: Sections Only
Show output preview in: Window
☑ Show output inline for all R Markdown documents
Show equation and image previews: Inline
Evaluate chunks in directory: Project
☐ Display render command in R Markdown tab

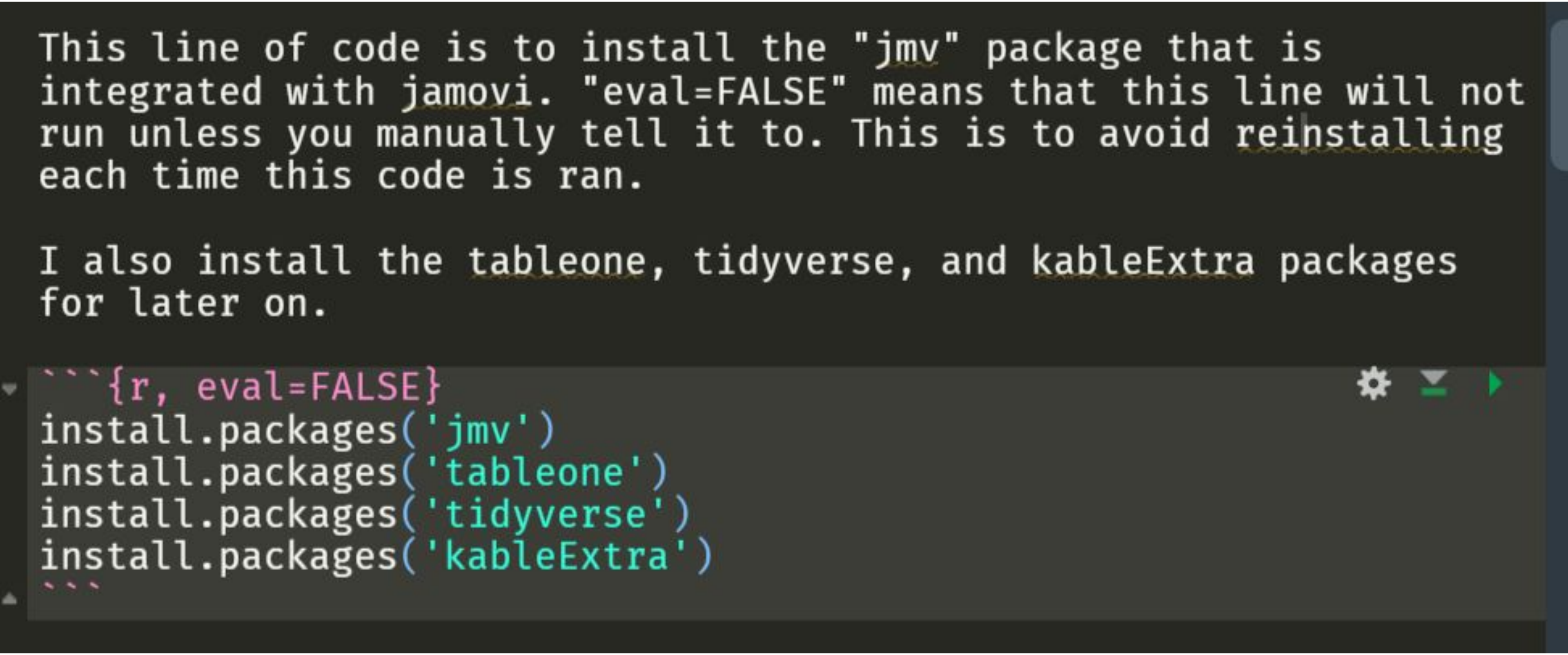
**R Notebooks**

☑ Execute setup chunk automatically in notebooks
☑ Hide console automatically when executing notebook chunks
Using R Notebooks



~~~
---
title: "Descriptive Statistics Demo"
author: "Joshua M. Garcia"
date: "3/2/2021"
output:
  html_document:
    theme: readable
    highlight: tango
---

```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE, warning=FALSE, message=FALSE)
```
~~~

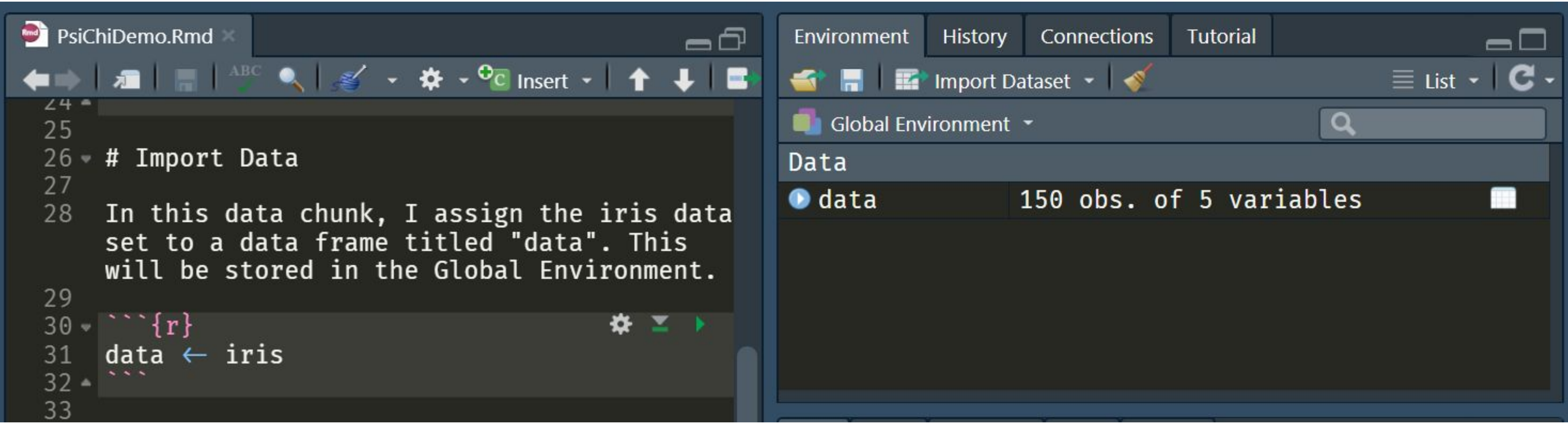
I updated the header to have preferable settings. I also added warning and message to FALSE.



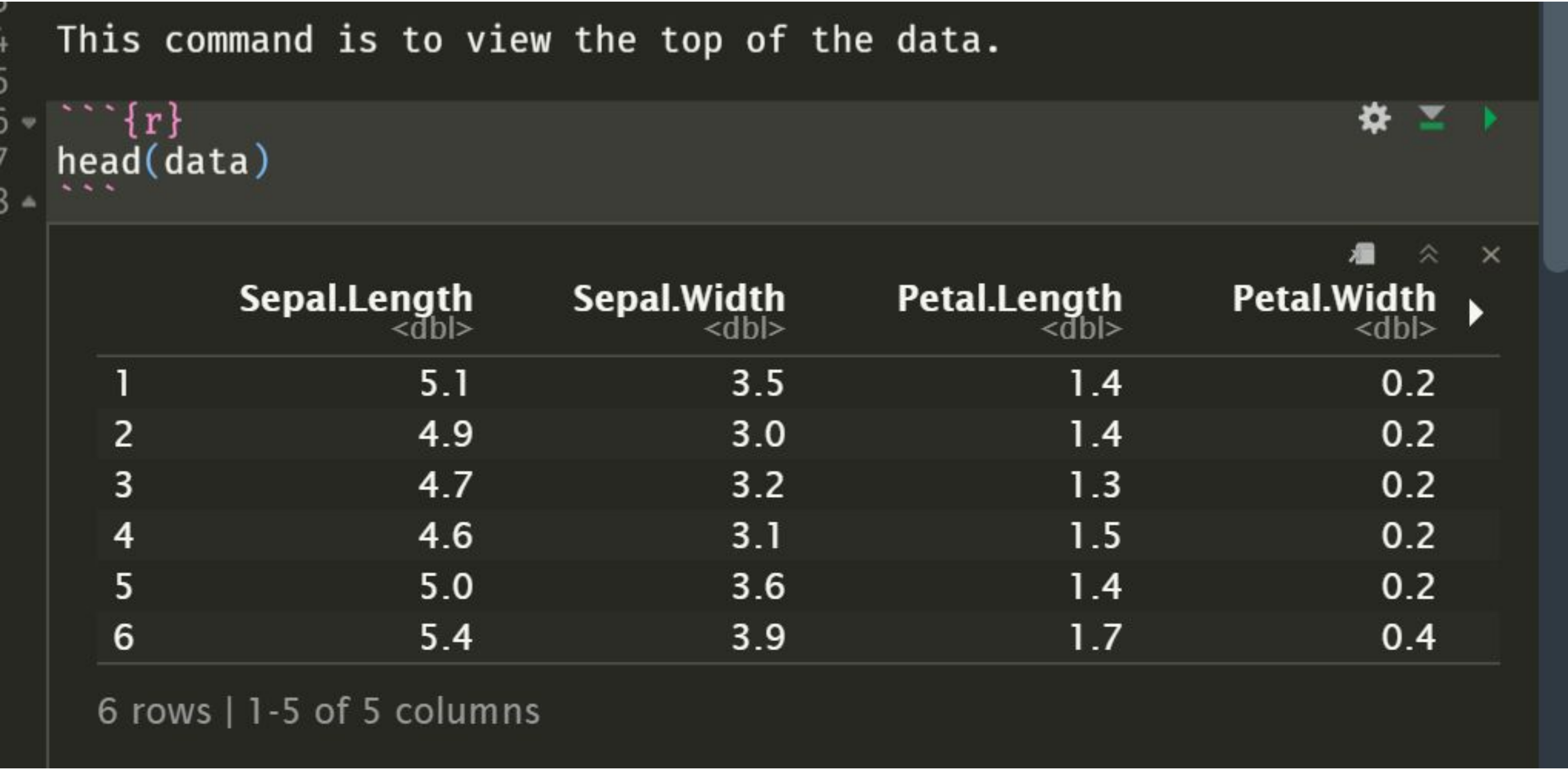
This line of code is to install the "jmv" package that is integrated with jamovi. "eval=FALSE" means that this line will not run unless you manually tell it to. This is to avoid reinstalling each time this code is ran.

I also install the tableone, tidyverse, and kableExtra packages for later on.

~~~
```{r, eval=FALSE}
install.packages('jmv')
install.packages('tableone')
install.packages('tidyverse')
install.packages('kableExtra')
```
~~~



~~~
# Import Data

In this data chunk, I assign the iris data
set to a data frame titled "data". This
will be stored in the Global Environment.

```{r}
data ← iris
~~~
```

```
Data
data   150 obs. of 5 variables
```
```

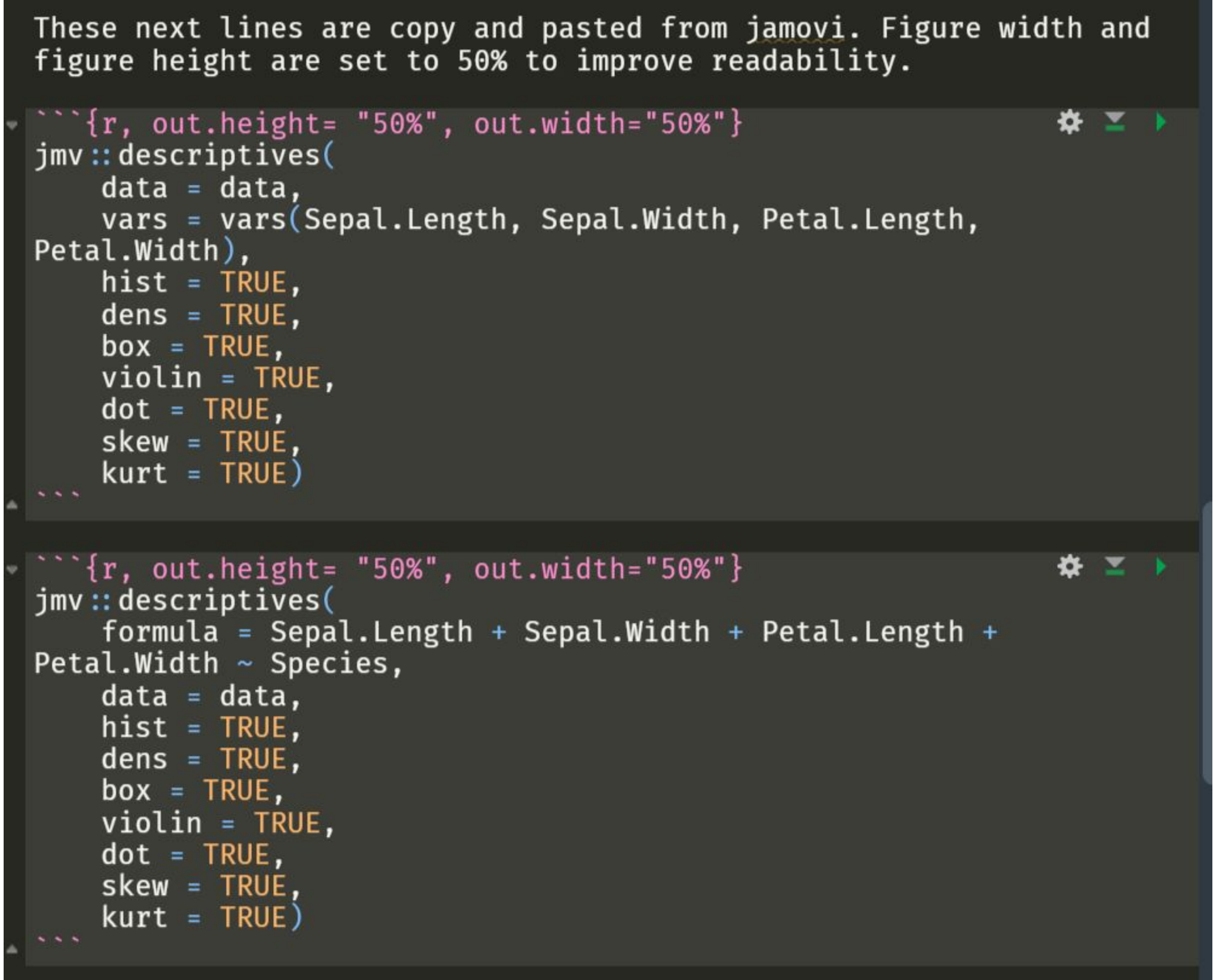


This command is to view the top of the data.

```{r}
head(data)
```

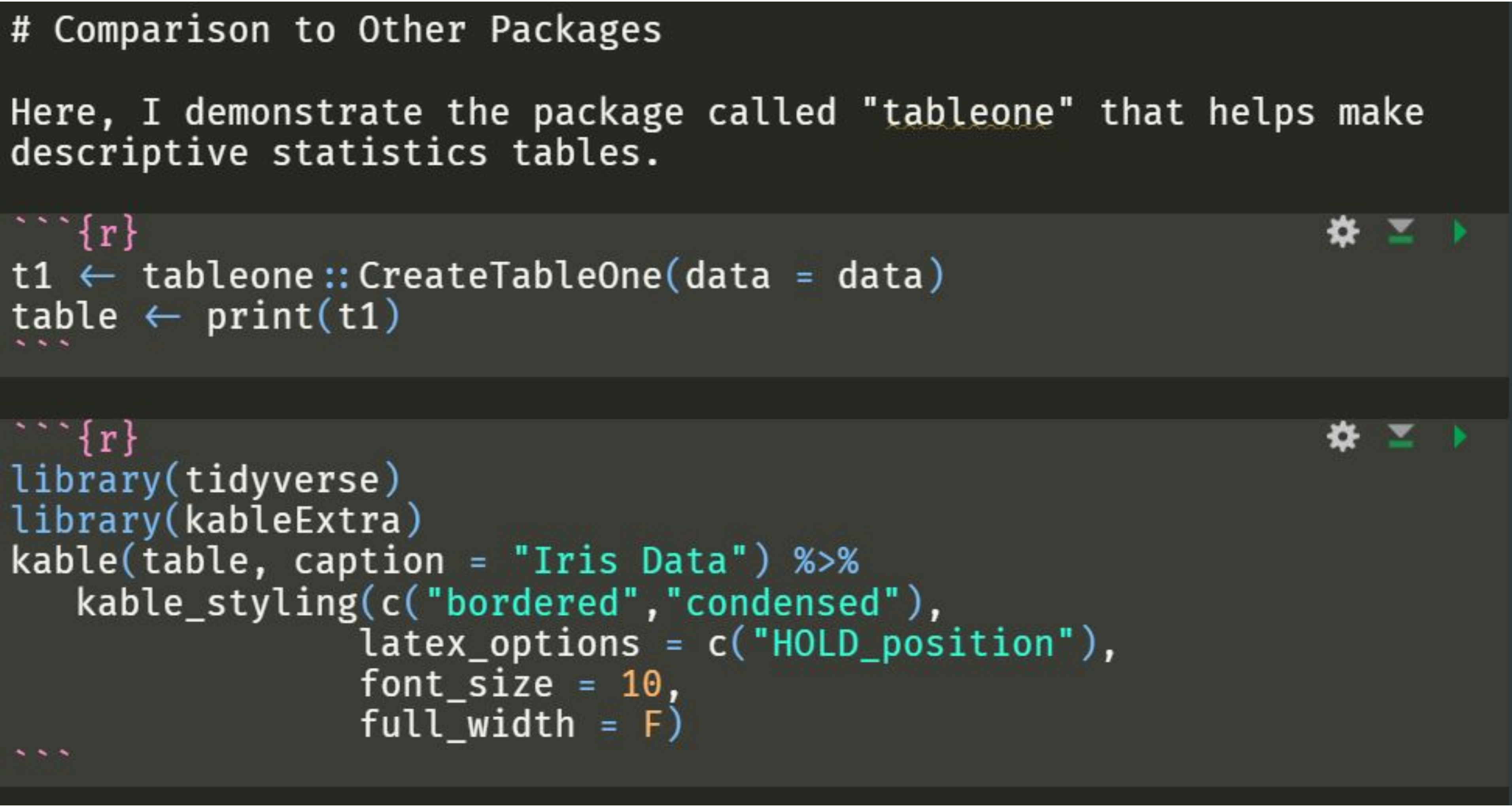
	Sepal.Length <dbl>	Sepal.Width <dbl>	Petal.Length <dbl>	Petal.Width <dbl>
1	5.1	3.5	1.4	0.2
2	4.9	3.0	1.4	0.2
3	4.7	3.2	1.3	0.2
4	4.6	3.1	1.5	0.2
5	5.0	3.6	1.4	0.2
6	5.4	3.9	1.7	0.4

6 rows | 1-5 of 5 columns



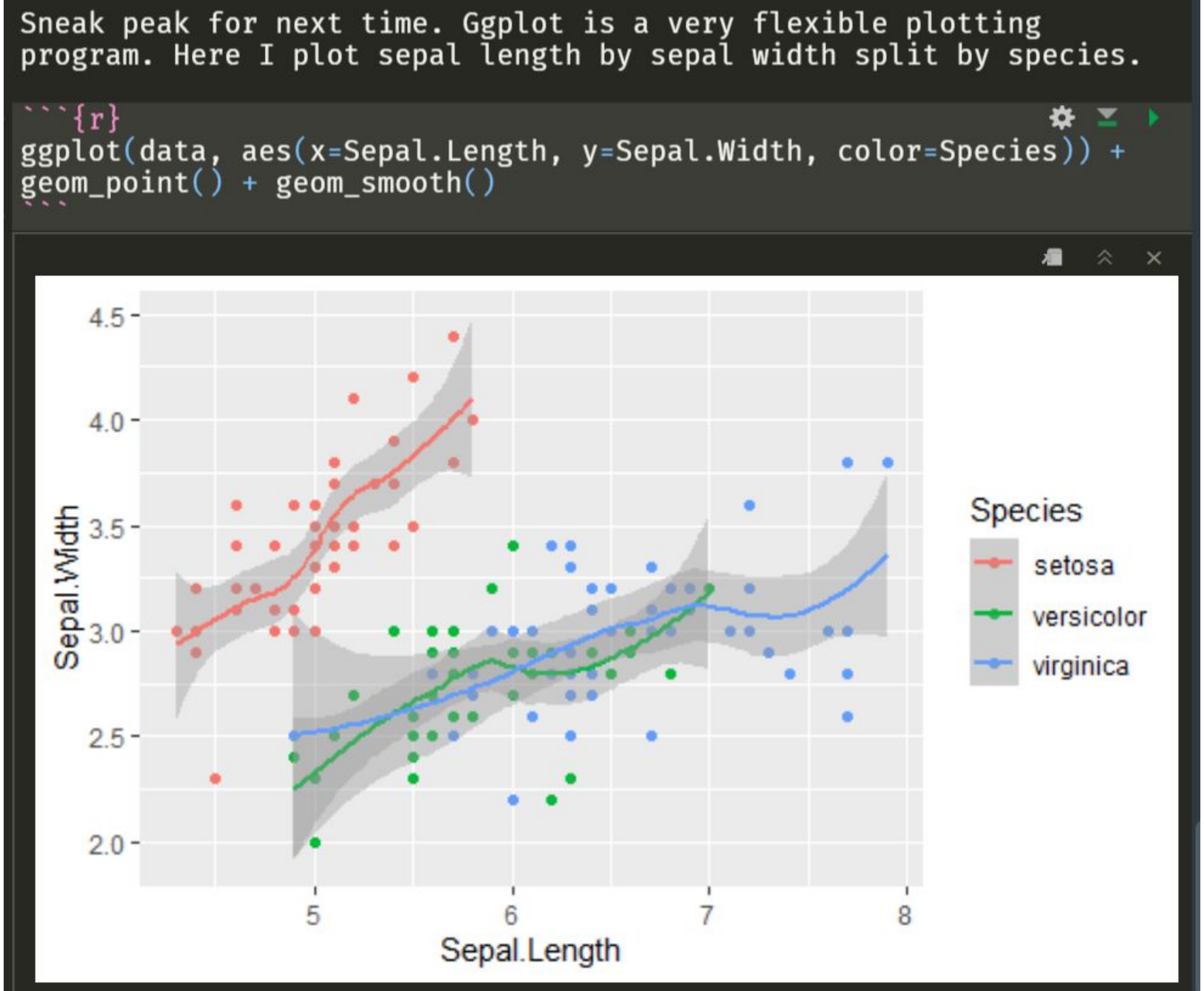
These next lines are copy and pasted from jamovi. Figure width and figure height are set to 50% to improve readability.

~~~
```{r, out.height= "50%", out.width="50%"}
jmv::descriptives(
    data = data,
    vars = vars(Sepal.Length, Sepal.Width, Petal.Length,
Petal.Width),
    hist = TRUE,
    dens = TRUE,
    box = TRUE,
    violin = TRUE,
    dot = TRUE,
    skew = TRUE,
    kurt = TRUE)
~~~
```

```
```{r, out.height= "50%", out.width="50%"}
jmv::descriptives(
    formula = Sepal.Length + Sepal.Width + Petal.Length +
Petal.Width ~ Species,
    data = data,
    hist = TRUE,
    dens = TRUE,
    box = TRUE,
    violin = TRUE,
    dot = TRUE,
    skew = TRUE,
    kurt = TRUE)
```
```
```



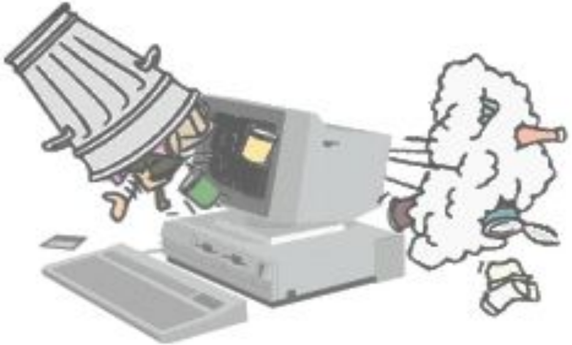
~~~
# Comparison to Other Packages

Here, I demonstrate the package called "tableone" that helps make
descriptive statistics tables.

```{r}
t1 ← tableone::CreateTableOne(data = data)
table ← print(t1)
~~~

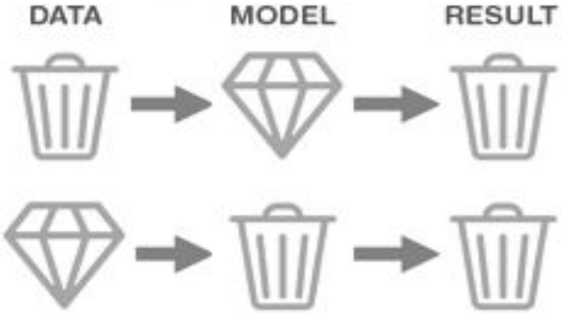
```{r}
library(tidyverse)
library(kableExtra)
kable(table, caption = "Iris Data") %>%
   kable_styling(c("bordered","condensed"),
                latex_options = c("HOLD_position"),
                font_size = 10,
                full_width = F)
```
```
```

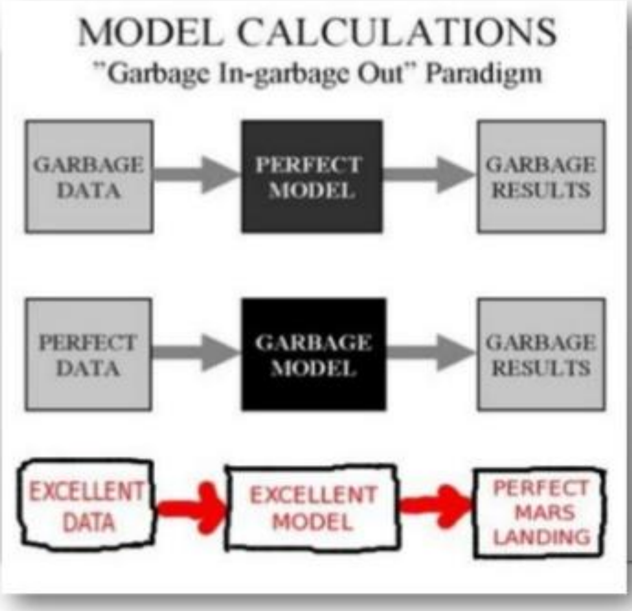


Sneak peak for next time. Ggplot is a very flexible plotting program. Here I plot sepal length by sepal width split by species.

~~~
```{r}
ggplot(data, aes(x=Sepal.Length, y=Sepal.Width, color=Species)) +
geom_point() + geom_smooth()
```
~~~






MODEL CALCULATIONS

"Garbage In-garbage Out" Paradigm

GARBAGE DATA → PERFECT MODEL → GARBAGE RESULTS

PERFECT DATA → GARBAGE MODEL → GARBAGE RESULTS

EXCELLENT DATA → EXCELLENT MODEL → PERFECT MARS LANDING

"The old concept of

Garbage in, Garbage out (GIGO)

still reigns"

R Resources

- New to R? Kickstart your learning and career with these 6 steps!
- R resources (free courses, books, tutorials, & cheat sheets)
- swirl teaches you R programming and data science interactively, at your own pace, and right in the R console!
- R for Psychological Science by Danielle Navarro
- R for Data Science
- Andy Field - Youtube
- Statistics of DOOM - Youtube
- StatQuest with Josh Starmer - Youtube
- 3Blue1Brown - Youtube
- An Introduction to Psychological Statistics - Textbook
- Get R Done | R Tutorials - Youtube
- R for the Rest of Us