

Data Analysis with R

Follow along at: <http://bit.ly/data-analysis-r>

See the code at: <http://bit.ly/data-analysis-r-code>

Open your browser to:
http://student___.datapolitan.com

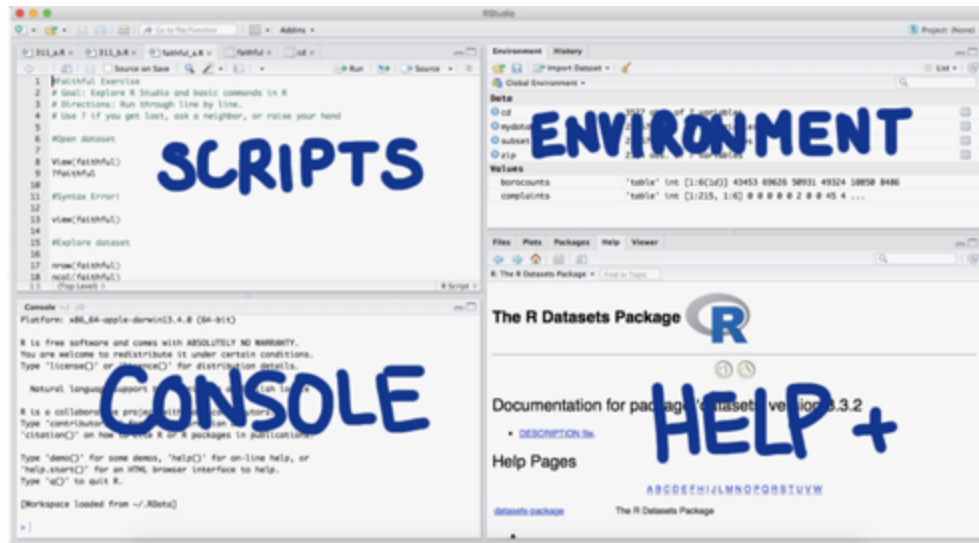
Username: rstudio

Password: rstudio

Key Questions for the Morning

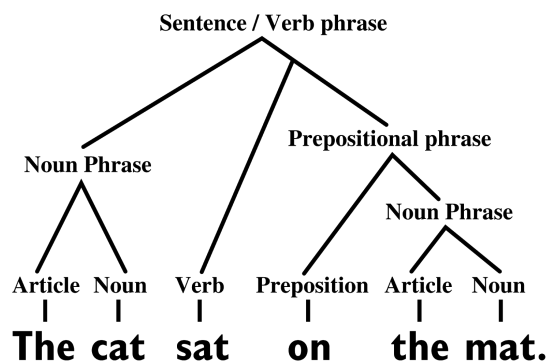
What is R?

How is R useful in analysis?



What is Syntax?

Basic constituent structure analysis of a sentence:



R Syntax

basic command

```
command(dataset)
View(faithful)
```

select a column

```
command(dataset$column)
mean(faithful$waiting)
```

get help

```
?help
?faithful
```

Exploring Data

```
View()
# show dataset as spreadsheet in Viewer
```

```
str()
# identify data type and structure
```

```
nrow()
# identify the number of rows
```

```
ncol()
# identify the number of columns
```

```
colnames()
# list the name of every column
```

Visualizing Data

```
hist()
# make a chart with numeric data
```

```
plot()
# plot two numeric variables along an x-y axis
```

```
abline()
# add a trendline to a plot
```

```
table()
# make a table with factor data
```

```
prop.table()
# make a table with percentages
```

```
barplot()
# make a chart with factor data
```

Manipulate Data

```
sort()  
# sort the values in a column
```

```
data.frame()  
# structure data into a matrix
```

```
subset()  
# extract data from a dataframe
```

Calculating Summary statistics

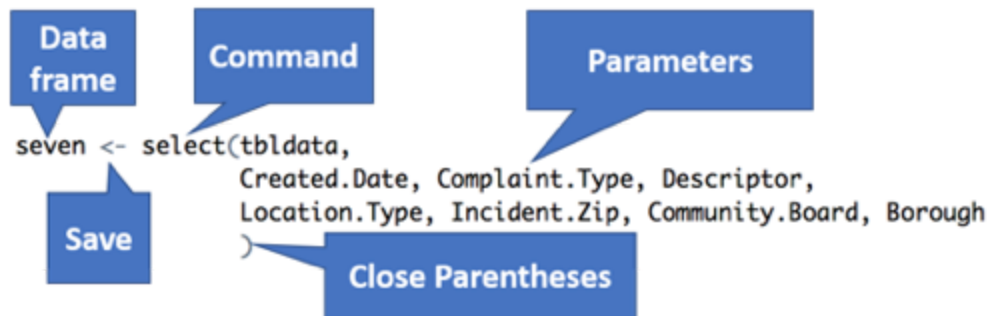
```
min()  
# identify minimum value
```

```
max()  
# identify maximum value
```

```
median()  
# calculate median value
```

```
mean()  
# calculate mean value
```

Important Parts of R Commands We're Using



```
date <- mdy_hms(as.character(cbpkg$Created.Date))
```

Nested Functions



Key Questions for the Afternoon

What are packages?	Why would I use them?

Exercise

A key question I'd like to explore today is...
The reason I find this interesting is...
I expect to find....

Debugging

What is Debugging?	
Some of the errors I had today include...	I fixed the errors by...

Wrap-Up

How is R/RStudio helpful for me?	What key tasks do I need to learn/practice to best use R/RStudio?
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Key Links

- Download R: <https://cloud.r-project.org/>
- Download RStudio: <https://www.rstudio.com/products/rstudio/download/>
- Download exercise files from this class: <http://bit.ly/data-analysis-r-code>

Learning and Practicing More with R

- Hands-On Programming with R (<https://rstudio-education.github.io/hopr/>) - Free online book with code examples meant for non-programmers
- R for Data Science (<https://r4ds.had.co.nz/>) - Free online book covering basic topics in data science
- R Cookbook (<http://www.cookbook-r.com>) - Free online walkthrough of the basics
- R Programming Coursera Course (<https://www.coursera.org/learn/r-programming>) - Free course in R that runs regularly
- Swirl (<http://swirlstats.com>) - Interactive learning inside of R -> `install.packages("swirl")`

Other Useful Resources

- NYC Open Statistical Programming Meetup (<https://www.meetup.com/nyhacker>) - Monthly talks about R and sponsor of the NYC R Conference (<http://www.rstats.nyc>)
- Tidyverse (<https://www.tidyverse.org>) - R packages for Data Science
- Stat Methods (<http://statmethods.net>) - Great documentation for doing data analysis in R
- UCLA Stats (<https://stats.idre.ucla.edu/other/dae/>) - Many examples of statistical analysis with comparisons between R, Stata, SPSS, etc.
- Stack Overflow (<https://stackoverflow.com/questions>) - One of the best Q&A sites for technology
- Datapolitan training classes (<https://www.datapolitan.com/>) - Online home of our training materials

Contact Us



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<https://www.datapolitan.com>

About Datapolitan

For over 5 years, Datapolitan has worked to empower public sector clients with the skills, techniques, concepts, and mindsets necessary to make data meaningful and actionable to effectively manage their resources and realize operational value from the information they collect. We do this through a range of consulting and training services for local government agencies and nonprofit organizations, customized to their strategic vision and operational needs.

Your Notes