

PS 312: Programming with R

Course Notes

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Welcome

This course is an introduction to the statistical programming language [R](#) and various applications. We will cover the entire data analytics pipeline from data ingestion to data wrangling, summarizing, modeling, visualizing and reporting, all using tools found within the R ecosystem.

The version of these notes you are reading now was built on 2019-03-23.

Reproducibility

These notes are written with [bookdown](#), a R package for writing books using [rmarkdown](#). All code in these notes were developed on R version 3.5.0 (2018-04-23), using the same packages pre-installed in your virtual machines. When you're on your own, you will need to install a recent version of R, and also install the corresponding packages, on your computer, for all the code to work. A listing of all the packages used in this course will be available as an appendix.

To build these notes locally, clone or [download](#) the [Github repo](#) hosting these notes, unzip it if necessary, and double-click on `FSI_Book.Rproj`. Assuming you have RStudio installed, this will open this project (more on *RStudio Projects* later). You can then go to the console and enter the following code:

```
bookdown::render_book("index.Rmd") # to build these notes
browseURL("_book/index.html") # to view it
```

Starting up

Chapter 1

An Introduction to R

R is the most popular¹ open source *statistical programming language* in the world. It allows you to

1. read datasets written in a wide variety of formats,
2. clean and process the data,
3. derive summaries,
4. run analytics,
5. visualize
6. create automated reports, presentations, websites, dashboards and interactive applications

R is not just a language, but an ecosystem comprising over 15,000 user- and corporation-developed *packages* or modules, all written in the R language for a variety of purposes.

¹<https://spectrum.ieee.org/static/interactive-the-top-programming-languages-2018>