Professor McDonald
FNCE 5352 – Financial Programming and Modeling
February 26, 2019
Prerequisites for R Programming Section

Course Materials

Course materials can be found at https://github.com/mattmcd71/fnce5352_spring2019

We will be using the book "R for Data Science" by Hadley Wickham and Garrett Grolemund. The book is available online at https://r4ds.had.co.nz/index.html. It is free and licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 3.0

If you'd like a hard copy of the book, it is available from Amazon (https://www.amazon.com/Data-Science-Transform-Visualize-Model/dp/1491910399/ref=sr_1_3?ie=UTF8&qid=1548809834&sr=8-3&keywords=r+for+data+science)

An optional text that could be useful is Applied Predictive Modeling by Max Kuhn and Kjell Johnson. It is available from Amazon (https://www.amazon.com/Applied-Predictive-Modeling-Max-Kuhn/dp/1461468485/ref=sr_1_1?ie=UTF8&qid=1550523968&sr=8-1&keywords=applied+predictive+modeling+kuhn)

R Fundamentals

The course assumes some intermediate understanding of the R programming language. If you would like to get a basic introduction to the R programming language, please visit the following link:

https://www.rstudio.com/online-learning/

R Installation

I will be periodically using R and RStudio interactively during the class instruction. If you would like to follow along during the class, please follow these instructions

Local Installation Instructions:

R

I'll be using the most recent version of R locally but I believe that anything > 3.4.1 should be fine.

R can be downloaded from the following link: https://www.r-project.org/

RStudio

RStudio is an Interactive Development Environment for the R programming language. It is very useful. You can download it at:

https://www.rstudio.com/products/rstudio/download/

R Packages

The package installation instructions are:

```
from_cran <-
    c("AmesHousing", "broom", "caret", "devtools", "doParallel", "e1071", "earth",
        "glmnet", "ipred", "klaR", "pROC", "rpart", "rsample", "sessioninfo",
        "tidyposterior", "tidyverse", "yardstick", "recipes", "ggplot2movies")

install.packages(from_cran, repos = "http://cran.rstudio.com")
```

That `install.packages` command may additionally install over 100 more packages.

To verify the installation, try running:

```
library(caret)
library(tidyposterior)
library(dplyr)
library(recipes)
library(AmesHousing)

ames <- make_ames()
```

Installing packages from github (optional)

The caret and Recipe package may need to be installed from github to get all functionality presented in class. Instructions for that are below:

The package installation instructions are:

```
library(devtools)

install_github("topepo/recipes")
```

That `install.packages` command may additionally install over 100 more packages.

If you can install from source, it would be good (but not required) to get the development version of `caret` too:

```
install_github("topepo/caret", subdir = "pkg/caret")
```

Lessons and Assignments

Lecture Date	Topic	Assignment	Reading assignment (before next class)
5-Mar	Intro to R and Rstudio	R4DS: 5.2.4: Exercises 1, 3 5.3.1: Exercise 1 5.5.2: Exercises 2, 5 (Due 3/12)	R4DS: Sections 1, 5, 6, 7, 8
12-Mar	Analytic Workflow & Visualization	R4DS: 3.2.4: Exercise 5 3.3.1: Exercise 2 3.6.1: Exercise 1 4.4: Practice 3 (Due 3/26)	R4DS: Sections 2,3,4
26-Mar	Modeling - Basic Principles		R4DS: Sections 9-13
2-Apr	Modeling - Feature Engineering		R4DS: Sections 14-16
16-Apr	Regression in R	Credit Modeling Project (due 4/30)	R4DS: Sections 17-21
23-Apr	Classification in R		R4DS: Sections 22-25
30-Apr	Communicating and Distributing Analytses and Models		