Instructions for Installing R, RStudio, and Swirl for Research Staff Training

Last Updated by Sabhya Gupta, September 13, 2021

BACKGROUND

J-PAL's Training and MicroMasters teams have combined forces to create a series of self-paced courses to help you learn R. We will be using two courses from the MicroMaster's course 14.310 Data Analysis for Social Scientists in this training: Intro to R and Advanced R. Both courses make use of the swirl package in R, which turns your R console into an interactive learning environment.

In the *Intro to R* course, you will learn the basic building blocks of programming in R, including basic data manipulation, summarizing data, and elementary graphics. In the *Advanced R* course, you will learn advanced techniques for analyzing, graphing, and visualizing data, writing your own functions or programs, running simulations, and other topics.

STEP 1: Install R and RStudio

To ensure efficient use of lab time, *it is critical that you successfully install R and RStudio*[1] ***before*** *the start of training.*

1. Visit https://cran.rstudio.com/ to install the latest version of R.
2. Visit https://rstudio.com/products/rstudio/download/ to install the latest version of RStudio Desktop (we recommend installing the free, Open Source License version).

STEP 2: Install the swirl package in R

Swirl is an open source R package for learning statistics and R simultaneously and interactively. It presents a choice of course lessons and interactively tutors a user through them.

To install swirl, open RStudio and type the following into the console, followed by Enter:

```
install.packages("swirl")
```

STEP 3: Load swirl and tidyverse libraries

Load swirl package using the library( ) function by typing the following into the R console, followed by Enter:

```
library(swirl)
```

[1] RStudio is an open-source, integrated development environment (IDE) for R. It includes a console, syntax-highlighting editor that supports direct code execution, as well as tools for plotting, history, debugging and workspace management.

NOTE: As with all R packages, you will need to load swirl every time you open R.

STEP 4: Install the *Intro to R* and *Advanced R* swirl courses

Download the Intro to R and Advanced R zip files and save them to a convenient location on your computer (you do not need to unzip them).

After loading the swirl library, enter the following into the console:

```
install_course_zip("YOUR_PATH/14_310x_Intro_to_R.zip", multi=FALSE)
install_course_zip("YOUR_PATH/14_310x_Advanced_R.zip", multi=FALSE)
```

YOUR_PATH is the folder path where you saved the zip file.
IMPORTANT NOTE: On Macs, filepaths are specified using "/". You can also use "\\" to specify the filepath on a Mac.

On PCs, file paths are specified using "\" but you may have to replace them with "\\" if "\"gives an error.

STEP 5 (during the training labs): Launch the interactive swirl courses

Call the swirl function to start the interactive courses:

```
swirl()
```

Follow the instructions and select "14 310x Intro to R" when asked to select a course. After completing the intro course, you can proceed to the Advanced R course by selecting "14 310 Advanced R" when prompted.

Your progress with swirl is stored on your local drive under the name provided at the prompt "What shall I call you?". You can continue from where you left off by providing the same name again when prompted.

Helpful commands:

skip() allows you to skip the current question.
play() lets you experiment with R on your own; swirl will ignore what you do.
nxt() will regain swirl's attention and move to the next question
bye() exit swirl. Your progress will be saved.
main() returns you to swirl's main menu.
info() displays the list of helpful command

NOTE: Whenever you see "..." hit ENTER to proceed.

Course directory:

You are welcome to start from the beginning or jump into specific lectures based on your interest and proficiency with R.

14_310x Intro to R includes the following lectures:

1. Welcome
2. Basic Building Blocks
3. Workspace and Files
4. Sequences of Numbers
5. Vectors
6. Missing Values
7. Subsetting Vectors
8. Matrices and Data Frames
9. Looking at Data
10. Base Graphics
11. Manipulating Data with dplyr
12. Getting and Cleaning Data
13. Tidying Data with tidyr

14_310x Advanced R includes the following lectures:

1. Welcome
2. Logic
3. Functions
4. lapply and sapply
5. vapply and tapply
6. Simulation
7. Dates and Times
8. Dates and Times with lubridate
9. Principles of Analytic Graphs
10. Exploratory Graphs
11. Graphics Devices in R
12. Plotting Systems
13. Base Plotting System
14. Lattice Plotting System
15. Working with Colors
16. GGPlot2 Part1
17. GGPlot2 Part2
18. GGPlot2 Extras

Questions, comments, or help

If you have any problems during the installation process, email training@povertyactionlab.org.