

R Lab 1: Introduction to R

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Why Do You Need to Learn R?

- Why do you need to learn programming?
 - ▶ Because it makes your life easier!
 - ▶ It is helpful in all the steps in data analysis.
- Why R?
 - ▶ Free
 - ▶ Relatively easy to learn compared to other languages
 - ▶ Many people are using it → there are lots of helpful resources out there!
 - ▶ It's the standard software for quantitative political science (and other social science) research.

Basic Steps of Data Analysis

- 1 Specify research question
- 2 Collect data
- 3 Preprocess data
 - ▶ The data you have can contain errors, be incomplete etc.
 - ▶ Clean and tidy the dataset so that it can be used for analysis
- 4 Summarizing/Visualizing data
- 5 Statistical analysis
- 6 Summarizing/Visualizing the results

R is Helpful...

- For collecting data
 - ▶ Web scraping
 - ▶ Text extraction
 - ▶ ...
 - ▶ By automating the process, we can reduce the costs and errors in data collection.
- For data preprocessing
- For data visualization
- For statistical analysis

Example: Effort and Team Performance in Japanese Professional Soccer

- Does total distance run matter for soccer team performance?
 - ▶ Russia in 2018 World Cup?
- Data collection, preprocessing, & visualization with R
 - ▶ `rcode_jleague.R`

What You Need to Have

- R

- ▶ Download from CRAN website
- ▶ <https://cran.r-project.org/>

- RStudio

- ▶ An interface to use R
- ▶ Optional but very helpful
- ▶ Download from <https://www.rstudio.com/>

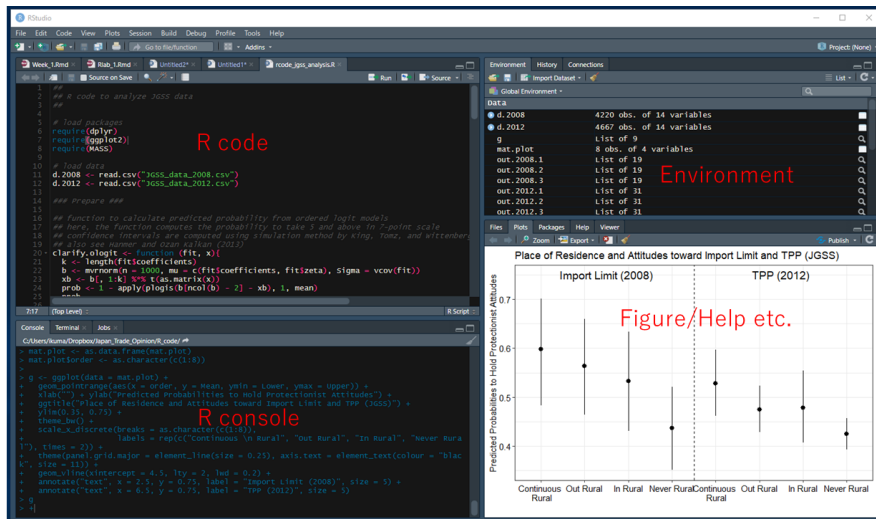


Figure 1: RStudio

Tips for Learning/Programming R

① Keep Record

- ▶ Don't directly type your R codes into the console.
- ▶ Store your R codes as .R files.

② Make the Code Easy to Understand

- ▶ Add comments to your code
 - ★ R ignores everything written after # in implementing the codes
- ▶ Follow coding guidelines
 - ★ e.g., Google's R Style Guide
 - ★ <https://google.github.io/styleguide/Rguide.xml>

③ Practice Makes Perfect!

Glossary

- **Object**

- ▶ Named “box”/“container” that we store values/data etc. in R

- **Assignment**

- ▶ The process of creating/modifying objects

- **Command/Function**

- ▶ We use a command/function to perform some tasks on an object/objects

- **Argument**

- ▶ The definitions, directions, or objects that are passed to a command/function

- **Package**

- ▶ A collection of functions, data, and documentations which is publicly shared to enhance the functionality of R.

Example

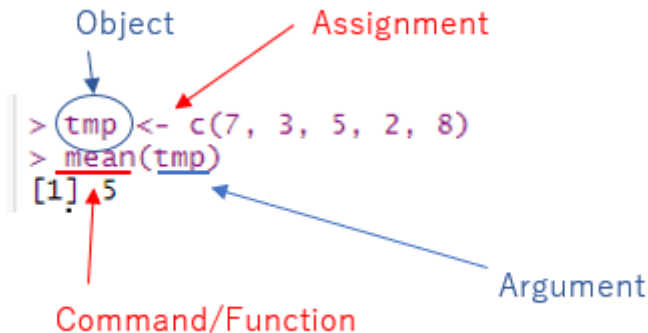


Figure 2: Example

Homework & Tomorrow

- Homework

- ▶ Download R and RStudio to your laptop if you haven't done so.

- Tomorrow

- ▶ Working with objects and functions
- ▶ Please bring your laptop to the class!