



# R: ONE-DAY WORKSHOP

Lesson 1: Welcome to the R Project

Lesson 2: Introduction to RStudio

Lesson 3: Working with vectors

Lesson 4: Working with data frames

Lesson 5: Reading, writing and  
exploring data frames

Lesson 6: Data manipulation with  
dplyr

Lesson 7: Data manipulation with  
dplyr, continued

Lesson 8: R for data visualization

Lesson 9: Capstone

## Learning Objectives

- Student can install and load an R package
- Student can navigate the RStudio integrated development environment
- Student can create, inspect and modify vectors
- Student can create, inspect and modify data frames
- Student can read, write and analyze tabular external files
- Student can perform common data manipulation tasks with dplyr
- Student can perform more advanced data manipulation with dplyr
- Student can create graphics in R using visualization best practices
- Student can complete end-to-end data exploration project in R

Lesson plan developed by George Mount. For more resources like this, visit [stringfestanalytics.com](https://stringfestanalytics.com)

### Lesson 1: Welcome to the R Project

Objective: Student can install and load an R package

Description:

- What is R and when would I use it?
- R plus RStudio
- Installing and loading packages

Exercise: Install a CRAN task view

Assets needed: None

Time: 35 minutes

### Lesson 2: Introduction to RStudio

Objective: Student can navigate the RStudio integrated development environment

Description:

- Basic arithmetic and comparison operations
- Saving, closing and loading scripts
- Opening help documentation
- Plotting graphs
- Assigning objects

Exercises: Practice assigning and removing objects

Assets needed: None

Time: 40 minutes

### Lesson 3: Working with vectors

Objective: Student can create, inspect and modify vectors

Description:

- Creating vectors
- Vector operations
- Indexing elements of a vector

Exercises: Drills

Assets needed: None

Time: 35 minutes

### Lesson 4: Working with data frames

Objective: Student can create, inspect and modify data frames

Description:

- Creating a data frame
- Data frame operations
- Indexing data frames
- Column calculations
- Filtering and subsetting a data frame
- Conducting exploratory data analysis on a data frame

Exercises: Drills

Assets needed: Iris dataset

Time: 70 minutes

### Lesson 5: Reading, writing and exploring data frames

Objective: Student can read, write and analyze tabular external files

Description:

- Reading and writing csv and txt files
- Reading and writing Excel files
- Exploring a dataset
- Descriptive statistics

Exercises: Drills

Assets needed: Iris dataset

Time: 40 minutes

### Lesson 6: Data manipulation with dplyr

Objective: Student can perform common data manipulation tasks with dplyr

Description:

- Manipulating rows
- Manipulating columns
- Summarizing data

Exercises: Drills

Assets needed: Airport flight records

Time: 50 minutes



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## Lesson 7: Data manipulation with dplyr, continued

Objective: Student can perform more advanced data manipulation with dplyr

Description:

- Building a data pipeline
- Joining two datasets
- Reshaping a dataset

Exercises: Drills

Assets needed: Airport flight records

Time: 50 minutes

## Lesson 8: R for data visualization

Objective: Student can create graphs in R using visualization best practices

Description:

- Graphics in base R
- Visualizing a variable's distribution
- Visualizing values across categories
- Visualizing trends over time
- Graphics in ggplot2

Exercises: Drills

Assets needed: Airport flight records

Time: 70 minutes

## Lesson 9: Capstone

Objective: Student can complete end-to-end data exploration project in R

Assets needed: Baseball records

Time: 40 minutes



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