# Data Science with R

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9/15/2020

This document would complies R commands from basic to advanced level, along with relevant outputs, when required.

Course Outline

Week 01: Data Science and R

- What & Why Data Science? Statistics vs Sata Science; Why R? Who Use R? Other Languages; Who Developed R? Install R and Rstudio; Start Writing R Code (Windows, Linux, and Command Line); Effectively Using Rstudio; R Script; R Documentation (Help); Handling Error; R Packages
- Week 1 Quiz

Week 02: Getting Familiar with R

- R Mathematical Operations; Variables; Data Types; Vector Basics; Vector Operations; Vector Indexing and Slicing; Comparison Operators; List and Data Frame; Functions (When and Why); Loops (Alternatives and Comparison with Other Languages).
- Week 2 Quiz

Week 03: Data Manipulation (Base R and tidyverse)

Concept of Tuidy Data; Reading Data from Different Files (Base R, tidyverse, and data.table way); Handling Missing Values; Subsetting/Filtering Data; Selecting Rows and Columns; Transforming Data; Summarizing Data; Relational Data (e.g, Merging Tables)

- Week 3 Quiz

Week 04: Basic Statistics, Charts, and Curves Summary Statistics; Pie Chart; Bar Chart; Histogram; Chart Characteristics (color, title etc.); Boxplot; Line Chart; Scatter Plot; Curves; Love Equation and Curve.

- Week 4 Quiz

Week 05: Data Visualization with ggplot2 How ggplot2 works; Pie Chart; Bar Chart; Time Series Plots/Line Chart; Doughnut Chart; Density Chart; Violin Chart; Histogram; Boxplot; Scatter Plot; Correlogram; Bubble Chart; Spider/Radar Chart; Wordcloud; Lollipop Chart; Area Chart;

- Week 5 Quiz

Week 06: Modeling with R Different Types Regression and Interpretation of Results; Prediction; Test of Hypothesis.

- Week 6 Quiz

Week 07: Mapping with R Acquiring Data for Mapping; Retrieving Data from Google Map; Choropleth Map; Different Ways to Make a Choropleth; Animated Map

- Week 7 Quiz

In R, assignment operator is usually "<-", although "=" is also usable.

I divide data science in two broad parts:

i. Getting results
ii. Understanding and Explaining Results

**Assign some value to a variable**

```
x <- 2
x
```

```
## [1] 2
```

R does not print command to be used explicitly, although *print(x)*, instead of just $x$ in the above would produce the same output.