

Data Science with R Outline

Abdullah Al Mahmud

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Course Outline

Week 01: Data Science and R

- What & Why Data Science? Statistics vs Data 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; Comparison Operators; Vector, Matrix, 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 Tidy 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;

Measures of Central Tendency and Dispersion (Averages, Quartiles, Variance, etc.); 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; Plotting Points on Map; Animated Map; Misc.

- Week 7 Quiz