

Bootcamp Info Sheet

Instructor

Name: < *Martin Laptev* >

Bootcamp Details

Bootcamp Title: < *Introduction to visualization and interactive visualizations in R* >

Number of Days: < *4* >

Hours per Day: **3 hours**

Type of Instruction: < *Lectures with hands-on exercises and knowledge checks* >

Description: < *Creating visualizations is a critical means of exploring data and revealing insights. In this course, learners will take their R skills to the next level by preparing data for exploratory analysis and creating basic, static visualizations. Using both base R and tidyverse packages, learners will generate bar charts, scatter plots, histograms, and other common visualizations to better understand the shape, structure, and features of a sample dataset. Learners will also use R packages to create charts and maps with interactive elements. Tooltips, hover states, and other dynamic elements allow for the encoding of additional layers of data to enrich your data visualizations. Learners will build basic interactive visualizations using the Highcharter package before moving on to more advanced chart types. Learners will also work with more complex data to create maps and network graphs, exportable as HTML widgets.*>

Target Audience: < *Learners who are moderately proficient at wrangling data and performing basic data cleaning operations in R.* >

Technologies: < *R and R studio* >

Prerequisites: < *Learners should be moderately proficient at wrangling data and performing basic data cleaning operations in R* >

Student References: < *Class slides, class code, exercise files, data files* >

Bootcamp Syllabus

Outline – Add or delete days/topics as needed.

Day 1

- Exploratory Data Analysis
 - Define the exploratory data analysis (EDA) cycle
 - Differentiate between static and interactive visualizations
- Basic data visualizations

- Describe and build univariate plots to illustrate patterns in the data
- Discuss and create bivariate and multivariate plots to illustrate patterns in data
- Static plots
 - Formulate the process of using ggplot2 to build plots
 - Build a histogram and a scatterplot with ggplot2

Day 2

- Static plots
 - Transform data using tidyverse to prepare for compound visualizations
 - Visualize the transformed data in a boxplot and a scatterplot with
- Interactive Plotting Libraries
 - Discover different functions to build interactive visualizations
 - Visualize data with highcharter
- Interactive plots
 - Create correlation plots, column plots, box plots
 - Save and view interactive plots by using htmlwidgets library

Day 3

- Summary data visualization
 - Transform and summarize data for visualization
 - Visualize the summary data
- Interactive maps
 - Transform and prepare data for maps
 - Create maps and display spatial data over time

Day 4

- Network Graphs
 - Summarize the concepts of distance matrix and network visualization
 - Create a distance matrix for a given dataset
 - Create nodes and edges dataframes
 - Build and customize a network HTMLwidget