StatHarbor-002: Introduction to the Use of R Software

Overall Objective:

This course aims to acquaint participants with R software, enabling them to conduct exploratory data analyses. Participants will learn to design and execute R programs for tasks such as data capture, reading, importation, manipulation, computing one-dimensional and multi-dimensional descriptive statistics, graph production, and integrating statistical outputs in reports.

Specific Objectives:

By the end of this course, participants will be skilled in:

- Conducting exploratory data analyses, including numerical summaries and graphical representations.
- Developing and executing R programs for data entry, reading, importing, manipulation, calculating descriptive statistics, and creating graphs.

Module Summary:

The R programming language, created in August 1993 by Ross Ihaka and Robert Gentleman, has gained widespread popularity. Its user-friendly RStudio interface and a vibrant community of developers contributing numerous free analysis modules make R an exceptionally appealing tool. R software caters to a wide range of disciplines, offering something for everyone.

Prerequisite:

Introduction to Descriptive Statistics.

Course Content:

1. Introduction to R: Basics of Writing R Programs and Utilizing R Software Help Features.
2. Data Manipulation: Data entry and importation, variable creation, data sorting, dataset merging, data extraction, data exporting.
3. Descriptive Statistics: Frequency analysis, measures of central tendency (mean, median, quantiles), dispersion measures (variance, standard deviation, coefficient of variation, interquartile range, range).

4. Graphical Representations: Pie charts, bar charts, histograms, stem-leaf charts, box plots, scatter plots, time series charts.

Learning Process:

This course is delivered online, requiring participants to engage with course materials and complete exercises. Spanning two months, the course includes 16 hours of instruction, broken down into weekly 2-hour sessions. These sessions are designed to address participants' questions and support their learning journey. Following each session, participants will receive practical exercises using R software. Statistical analysis will be facilitated using provided data files. Participants will also have access to video resources for additional learning support. The course begins with a placement test and concludes with a final assessment. Successful participants will be awarded a certificate of completion.