# StatHarbor-003: Introduction to Regression Methods

## Overall Objective:

This course is designed to familiarize participants with regression methods, including their properties and effective application in data analysis.

## Specific Objectives:

Upon completing this course, participants will be able to:

- Accurately interpret the values of parameters in various regression models.
- Select the most suitable regression model for specific analytical needs.
- Understand and apply model selection methods in data analysis.
- Validate models using appropriate techniques.
- Identify outliers and influential data points within a dataset.

## Prerequisite:

StatHarbor-001: Introduction to Descriptive Statistics.
StatHarbor-002: Introduction to R Software.


## Course Content:

1. Simple Linear Regression.
2. Multiple Linear Regression: Modelling, Interpretation, Estimation, Testing, Confidence Intervals for Parameter Estimates, Prediction, Model Selection, Hypothesis Validation, Detection of Outliers, Multicollinearity, Polytomous Variables.
3. Linear Mixed Models: Modelling, Interpretation, Estimation, Selection, Forecasting.
4. Generalized Linear Models: Exponential Family, Modelling, Logistic Regression, Poisson Regression.

## Learning Process:

This course is delivered entirely online and requires participants to engage actively with the content and complete assigned exercises. Spanning three months, the course consists of 24 hours of instruction, organized into weekly 2-hour sessions. These sessions aim to address participants' questions and enhance their understanding. Participants will have access to practical exercises using R, along with data files for statistical analysis. Additional learning resources include video materials. The course begins with a placement test and concludes with a final assessment. Upon successful completion, participants will be awarded a certificate of achievement.