

StatHarbor-006: Introduction to Trajectory Analysis

Overall Objective:

This course aims to introduce participants to trajectory analysis, focusing on different types, including Latent Class Analysis, Group-Based Trajectory Analysis, and Growth Mixture Models. It will cover essential aspects of model selection, model adequacy, and data visualization in the context of trajectory analysis.

Specific Objectives:

By the end of this course, participants will be able to:

- Understand the fundamental concepts and differences between various trajectory analysis methods.
- Apply Latent Class Analysis, Group-Based Trajectory Analysis, and Growth Mixture Models to appropriate datasets.
- Make informed decisions in model selection and assess model adequacy.
- Effectively visualize trajectory analysis results for better interpretation and communication.

Prerequisite:

A foundational understanding of statistical methods and principles, preferably with some prior exposure to regression models and multivariate analysis.

Course Content:

1. Overview of Trajectory Analysis: Introduction to the concept of trajectory analysis and its applications.
2. Latent Class Analysis: Understanding the methodology, application, and interpretation in the context of trajectory analysis.
3. Group-Based Trajectory Analysis: Exploring the approach, uses, and nuances of group-based modeling for identifying distinct trajectory groups.
4. Growth Mixture Models: Delving into growth mixture models, their application in heterogeneous population studies, and interpretation of results.
5. Model Selection and Adequacy: Techniques for selecting the most appropriate model for a given dataset and assessing the adequacy and fit of trajectory models.

6. Visualization Techniques: Learning effective methods for visualizing trajectory analysis results, including graphical representations and interpretative tools.

Learning Process:

This course will be conducted online, requiring active engagement with course materials and practical exercises. It spans three months, comprising 24 hours of instruction delivered in weekly 2-hour sessions. These sessions will address participants' questions and enhance understanding through interactive discussions. Participants will engage in hands-on exercises using statistical software for real-world data analysis, supplemented by video tutorials and case studies. The course will begin with an introductory assessment and conclude with a final evaluation. Successful participants will receive a certificate of completion.