Cluster Analysis and Latent Class Analysis

Objective
This course provides a hands-on introduction to group identification in data sets. Participants will develop a comprehensive understanding of the capabilities and limitations of cluster analysis and latent class analysis.

Description
When working with large data sets with many variables, cursory examination falls short in revealing potential groups. Cluster analysis and latent class analysis emerge as powerful tools in these scenarios. Cluster analysis utilizes various algorithms to identify similar entities, such as individuals or organizations, thereby forming distinct clusters. This method falls under the umbrella of unsupervised machine learning.

Conversely, latent class analysis employs a probabilistic model to ascertain group membership, leveraging data distribution and accommodating covariates. This method provides metrics for model fit, aiding in the comparison of models.

Topics covered will include hierarchical and non-hierarchical cluster analysis, fuzzy clustering, latent class analysis, latent profile analysis, and their longitudinal applications.

Methodology
The course will be interactive, blending lectures with practical exercises that can be undertaken individually or in groups. Resources will include presentation slides, exercise scripts, annotated solutions, and curated readings.

Conditions
Participants should have a grounding in univariate and bivariate statistics. We will primarily use R. Prior experience with R is beneficial and recommended, but not mandatory, provided the participant has experience with other syntax-based statistical software (e.g., Stata, SPSS) and is open to learning new software. Basic data management skills in R or equivalent software are essential, including tasks such as variable recoding and handling missing values.

Organizational Information

<table>
<thead>
<tr>
<th>Language / Format</th>
<th>English / On campus</th>
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<tbody>
<tr>
<td>Target group</td>
<td>Doctoral Candidates at all stages and Postdocs (R2/R3) from the Humanities and Social Sciences</td>
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<tr>
<td>Date</td>
<td>Wednesday-Thursday, 12-13 June 2024, 9:00 – 16:00</td>
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<td>Registration</td>
<td>For registration click here</td>
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