Module C2 – Multilevel Models for Clustered and Longitudinal Data

Overview

Purpose

To provide participants with an understanding of the varying methods of analysis to calculate differences between groups as well as differences within groups. The focus of this module will be on clustered data. That is, data that is nested in high-ordered structures (students, within classrooms, within schools, within suburbs). This module will demonstrate how to analyse clustered or nested data and how to account for correlation of variance.

Learning objectives

On completing this module, participants will have an understanding of:

1. clustered data and hierarchical structures
2. the importance of accounting for correlation of variance due to clustering
3. how to model data accounting for within group and between group variation
4. how to test for differences between groups after accounting for clustering
5. how to visually display clustered data
6. how to interpret results from these tests

Who should attend, and module pre-requisites

This module is designed for people who need to have an understanding of the statistical tests required to analyse data that is nested or clustered and as such how to account for correlation due to clustering. This module will be beneficial those who need to analyse clustered data (from surveys or experiments).

Participants will need a sound understanding of quantitative data and a strong understanding of regression modelling techniques (such as ordinary least squares, or logistic regression).

Topics covered

Day 1

a) Introduction
b) Demonstration of hierarchical or nested data
c) Demonstration of why accounting for clustering is necessary
d) Visually presenting data

day 2

e) Understanding results
f) Testing for differences within groups and between groups
g) Applying model diagnostics