Modeling Non-Linear Change Over Time In Dementia Research With R Application

Friday, July 26, 2024 | 1-5 p.m.
Philadelphia Marriott (Grand Ballroom C) — Philadelphia,USA
All times are in Eastern Standard Time
In-person attendance only

Overview

In this flash immersive course, researchers and health professionals will have a practical review of advanced analytical statistical methods commonly used in scientific articles to model non-linear changes of longitudinal continuous outcomes (i.e. cognitive scores, some measure of physical function) over time. These models are appealing approaches to ascertain (a) linear change over time before and after a known event (i.e. new medication intake or diagnosis of a condition that may be associated with the function of interest), (b) the onset of accelerated change (i.e. fixed and random change point models commonly used to study terminal decline), (c) half-decline of nonlinear curves through the sigmoidal model (such as the sigmoidal curves postulated in Jack's model), and (d) the shape of the trajectory using sigmoidal model and other strategies.

Organizing Committee

- Ana W. Capuano, Rush Alzheimer's Disease Center
- Vidyani Suryadevara, Radiology Molecular Imaging

Presenters

- Ana W. Capuano, Rush Alzheimer's Disease Center
- Maude Wagner, Rush Alzheimer's Disease Center

Target Audience

This ISTAART Immersive workshop is targeted to attendees who are in research and teaching roles and have basic knowledge in statistics and linear regression models.

Participants should bring their laptops with R Studio installed and tested before the workshop. The information for free installation of R Studio for Windows/macOS can be found at https://www.rstudio.com/products/rstudio/download/. Good working knowledge of multiple regression models is required.

Learning Objectives

1. Review basic concepts of advanced linear and nonlinear mixed effect models for longitudinal continuous outcomes.
2. Discuss the limitations and data requirements of these models.
3. Practice modeling in a hands-on and interactive way, using provided R codes and a sample dataset.

Registration

Educational workshops are offered for in-person attendance only. Workshops require a separate registration fee in addition to AAIC full conference registration, or they may be purchased as stand-alone events.

Agenda

Time	Session Details	Speakers and Moderator
Noon - 1:00 p.m.	**Lunch**	
1:00 p.m. - 3.30 p.m.	- Introductions & description of the aims of the activity - Flash review of Linear mixed effects models (LMEM) - Nonlinear mixed effects models (NLMEM) (Change-point, Sigmoidal Model, and spline-based models) application in R	Ana W. Capuano
3:30 p.m. - 5:00 p.m.	Hands-on exercise in R – fit LMEM and NLMEM with provided data	Maude Wagner