

## Latent Growth Modeling

### Overview

This five-day intensive workshop will focus on the practical application of structural equation modeling for analysis of longitudinal data with specific applications for social and health researchers.

Mornings will consist of a series of lectures and computer demonstrations covering the theory and practice of working with longitudinal data.

Afternoons will include hands-on applications of specific data analysis techniques.

### Learning objectives

In this beginner/intermediate level workshop participants will:

- Review basic concepts of path analysis, confirmatory factor analysis, and structural equation modeling
- Gain hands-on experience in preparing longitudinal data files for analysis using SPSS and/or SAS
- Gain hands-on experience in modeling real longitudinal data using Mplus software.
- Be introduced to advanced structural equation models for longitudinal data

### Workshop format

The workshop will consist of lecture presentations and working in pairs conducting hands-on data analysis of specific case examples.

### Instructor: Dr. Piotr Wilk

Dr. Piotr Wilk is an Assistant Professor in the Departments of Epidemiology & Biostatistics and Paediatrics at Western University, Scientist in the Division of Children's Health and Therapeutics at the Children's Health Research Institute, and Academic co-director of Statistics Canada's Research Data Centre.

Dr. Wilk's research is focused on individual, family, and neighbourhood-level factors affecting the health of children and youth. Dr. Wilk has a wide range of experience facilitating professional development including workshops and courses in structural equation modeling and techniques for analysis of longitudinal and hierarchical data.

August 21 to 25, 2017

University of British Columbia  
Vancouver campus  
School of Population &  
Public Health Bldg  
Room 424 (4th floor)

9:00am to 4:00pm PST

### Who should attend this workshop?

Graduate students, researchers, and faculty in the health sciences, as well as epidemiologists and healthcare professionals interested in developing and applying statistical modeling in their research and work.

### Prerequisites

Participants are expected to have knowledge of multivariate linear regression techniques. Prior knowledge and experience with structural equation modeling techniques and Mplus software is beneficial, but not a requirement for this workshop as these topics will be covered during the first day.

# Five-day workshop in Latent Growth Modeling

## Workshop outline

### Day one

- Introduction to structural equation modeling: basic concepts, model development and testing, core techniques
- Review of assumptions, data requirements, and software
- Introduction of Mplus modeling framework
- Application of Mplus to path analysis, confirmatory factor analysis, and basic structural equation models

### Day two

- Review of longitudinal data collection designs
- Preparing analytical files with longitudinal data: variable names and transformations, selection of cases, person-level and person-period formats, etc.
- Exploratory analysis of longitudinal data: empirical and parametric growth plots
- Selected methodological issues: metric of change, spacing between data collection points, data collection schedule, point of origin, psychometric properties of instruments, centring, missing data, etc.
- Review of basic statistical techniques for longitudinal data: regression with change scores, multilevel technique, etc.

### Day three

- Introduction to latent growth modeling
- Overview of analytical steps: model specification, identification, estimation, testing, and modification
- Basic latent growth models: unconditional linear growth models, unconditional quadratic growth models, piecewise growth models

### Day four

- Advanced latent growth models: conditional growth models with time-invariant and time-varying covariates, multiple group growth models, cohort sequential designs, parallel processes models, models with categorical data, growth mixture modeling, etc.

### Day five

- Group projects involving analysis of longitudinal data. Participants will work in small groups to prepare and clean analytical files and then analyse the data; to reinforce their newly acquired analytical skills, they will address a specific research question by completing all stages of the research project, from formulating research questions to presenting the results.

## Additional materials/software requirements

15 laptops with Windows XP and Mplus software are available for participant use. Please book upon registration.

If you are bringing your own laptop, you'll need to load Mplus software.

Note: Upon registration, please indicate if you are registering with a partner as course laptops will be shared depending on number of attendees.

## Webinar fees

- Regular rate: \$750
- Student rate: \$500

Fee includes a bound copy of course notes, training dataset and refreshment breaks. Please note that participants will be responsible for their own lunches.

**Enrollment is limited to 25 participants**

**Email: [ann.greenwood@popdata.bc.ca](mailto:ann.greenwood@popdata.bc.ca) to reserve your seat**