PURDUE UNIVERSITY | Methodology Center

Schedule: Methodology Center Summer Institute 2026

Time / Location	Topic	Instructor	Session Goals / Learning Objectives
SUNDAY July 12 — ARRIVAL AND INTRODUCTION TO R			
11:30–12:00 WALC 1132	**Registration; snacks**		
12:00–4:00 *1:20–1:30 break* *2:40–2:50 break* WALC 1132	**01: Intro to R for longitudinal data management (optional)**	Dr. Katie Thompson	Introduction to the tools for efficiently managing data, unique data structures for repeated measures, tutorial for using various identifiers, transposing between long and wide formats
4:30–6:30 Welcome Reception — Heavy appetizers and drinks provided; Registration *(2nd floor of the Purdue Memorial Union (PMU), West Faculty Lounge)*			
MONDAY July 13 — UNDERSTANDING YOUR LONGITUDINAL DATA			
7:30–8:00 WALC 1018	**Registration: light breakfast, snacks, and coffee**		
8:00–8:30 WALC 1018	**Introduction to the Summer Institute**	Dr. Trenton Mize & Dr. Kristine Marceau	Overview of course structure, events, and opportunities; AI rules/advice; research ethics
8:30–9:30 *9:30–9:45 break* WALC 1018	**02. Introduction to Longitudinal Data Structures**	Dr. Kristine Marceau	Long and wide data structures; combining data sources to study multilevel determinants and contextual effects
9:45–10:45 *10:45–11:00 break* WALC 1018	**03: Understanding longitudinal data**	Dr. Sharon Christ	Time-varying vs time-invariant variables; measured and/or measurable variables; merging data
11:00–12:00 WALC 1018	**04 Part A: Missing data in longitudinal datasets**	Dr. James McCann	Sources of missing data in longitudinal studies (e.g., attrition, measure-specific); how to assess missing data patterns
12:00–1:15 Lunch Break			
1:15–2:15 *2:15–2:30 break* WALC 1018	**04 Part B: Missing data in longitudinal datasets**	Dr. James McCann	Introductory overview of missing data techniques available for longitudinal data
2:30–4:30 WALC 1018	**05: Data Visualization — getting to know your data**	Dr. Trenton Mize	Visualizing raw data (e.g., distributions, missing data, etc.); incorporating longitudinal information in visualizations; overview of best practices
4:30–5:30 WALC 1018	**Office hours**	Faculty instructors and TAs	Assignment 1: Getting to know your longitudinal data; missing data considerations; visualizations

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TUESDAY July 14 — OVERVIEW OF MODELS FOR LONGITUDINAL DATA			
8:00–8:30 WALC 1018	**Light breakfast, snacks, and coffee**		
8:30–9:00 WALC 1018	**Analyses in R / overview of assignment 1**	TA	Implement the prior day's topics in R. Overview assignment 1
9:00–12:00 *10:30–10:45 break* WALC 1018	**6: Introduction to longitudinal data analytic methods**	Dr. Rob Duncan	Broad goals and types of research questions and hypotheses applicable to large, complex longitudinal data; temporal ordering and causal inference; understand the classes of common longitudinal data analysis techniques
12:00–1:15 Lunch Break			
1:15–2:15 *2:15–2:25 break* WALC 1018	**7: Longitudinal model typologies**	Dr. Shawn Bauldry	Synthesizing terminology for longitudinal models; a framework for understanding estimators for longitudinal data
2:25–3:25 *3:25–3:35 break* WALC 1018	**8: Related models and quasi-longitudinal models**	Dr. Kristine Marceau	A brief overview of related models we do not cover in depth at the summer institute: age-period-cohort analyses; models for time series data or intensive longitudinal designs/EMA; survival models
3:35–4:35 WALC 1018	**9: Measurement error**	Dr. James McCann	Overview of measurement error; specific concerns for longitudinal data; solutions
4:35–5:30 WALC 1018	**Office hours**	Faculty instructors and TAs	Assignment 2: fit core longitudinal models to your data; practice interpretation
6:30 - 8:30 Social Gathering for students — Heavy appetizers and drinks provided *(Basement of Purdue Memorial Union (PMU), Walk Ons)*			

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WEDNESDAY July 15 — FIXED EFFECTS MODELS AND COMPLICATIONS			
8:00–8:30 WALC 1018	**Light breakfast, snacks, and coffee**		
8:30–9:00 WALC 1018	**Analyses in R / overview of assignment 2**	TA	Implement the prior day's topics in R. Overview assignment 2
9:00–12:00 *10:15–10:30 break* WALC 1018	**10: Fixed effects models**	Dr. Shawn Bauldry	Fixed effects models; time-varying vs. time-invariant covariates; lagged variable predictors
12:00–1:15 Lunch Break			
1:15–4:15 *2:30–2:45 break* *4:15–4:30 break* WALC 1018	**11: Complications — nonlinearities, categorical outcomes, moderation, and mediation**	Dr. Trenton Mize	Complications: modeling nonlinear effects and categorical outcome variables; analyses of moderation (interaction) and mediation (and other cross-model comparisons)
4:30–5:30 WALC 1018	**Office hours**	Faculty instructors and TAs	Assignment 3: fit fixed effects models to your data and interpret; add a complication to your model and interpret
6:00 - 8:00 Social Gathering for students — Horticulture Walk (Meet outside First Street Towers Dorms)			
THURSDAY July 16 — MULTILEVEL MODELS AND MARGINAL MODELING			
8:00–8:30 WALC 1018	**Light breakfast, snacks, and coffee**		
8:30–9:00 WALC 1018	**Analyses in R / overview of assignment 3**	TA	Implement the prior day's topics in R. Overview assignment 3
9:00–12:00 *10:30–10:45 break* WALC 1018	**12: Multilevel modeling / random effects models**	Dr. Kristine Marceau	Overview of multilevel and random effects models; growth curve models; cross-lagged panel models
12:00–1:15 Lunch Break			
1:15–2:15 *2:15–2:30 break* WALC 1018	**13: Sampling weights**	Dr. Donna Xu	When to use survey weights for analysis; issues of sample attrition
2:30–4:30 WALC 1018	**14: Marginal modeling using complex samples**	Dr. Sharon Christ	Accounting for complex sampling techniques in longitudinal datasets
4:30–5:30 WALC 1018	**Office hours / Open Consulting**	Faculty instructors and TAs	• Assignment 4: fit a multilevel model to your data and interpret; account for complex sampling and compare results • Consult with TAs and instructors about projects you are working on

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FRIDAY July 17 — SPECIAL TOPICS — GENE-ENVIRONMENT INTERPLAY, CAUSAL INFERENCE, AND MODEL VISUALIZATION

8:00–8:30 WALC 1018	**Light breakfast, snacks, and coffee**		
8:30–9:00 WALC 1018	**Analyses in R / overview of assignment 4**	TA	Implement the prior day's topics in R. Overview assignment 4
9:00–10:00 *10:00–10:10 break* WALC 1018	**15: Gene-environment interplay**	Dr. Kristine Marceau	Overview of behavioral genetics theory; using polygenic scores as predictors; family-based designs; longitudinal considerations for studying gene-environment interplay; ethical considerations
10:10–11:10 *11:10–11:20 break* WALC 1018	**16: Causal Inference**	Dr. Trenton Mize	Asking causal questions; benefits and limitations of longitudinal data for determining causality; comparing models
11:20–12:20 WALC 1018	**17 Part A: Embedded family-based designs**	Dr. Kristine Marceau	Understand why many large-scale longitudinal studies include embedded family-based designs (e.g., twins/siblings; data collected on parents and children); gain the tools to avoid non-independence in these types of studies
12:20–1:35 Lunch Break			
1:35–2:35 *2:35–2:45 break* WALC 1018	**17 Part B: Embedded family-based designs**	Dr. Kristine Marceau	Gain an introductory understanding of options for leveraging family-based subsets to inform research questions, along with resources for more in-depth instruction; causal considerations
2:45–4:30 WALC 1018	**18: Model visualization**	Dr. Trenton Mize	Visualizing model results; presenting complex results in an accessible way; coefficient plots; plots of predictions and marginal effects
4:30–5:30 WALC 1018	**Office hours / Open Consulting**	Faculty instructors and TAs	• Assignment 5: fit a model to a family-based subsample; interpret; identify causal inference benefits and limitations of your model • Consult with TAs and instructors about projects you are working on
5:30–7:30 Closing Reception — Heavy appetizers and drinks provided *(Marriott Hall, John Purdue Room)*			