

Applied Statistics Workshops

Fall 2026

The **Center for Statistical Computing** (CSC) invites all graduate students, staff, and faculty to participate in our **Applied Statistics Workshops**. Sessions will be offered via Zoom and in [Lab C](#), located on the upper level (UL) of Healey Library. These workshops focus on recently developed statistical methods and use software such as SPSS, SAS, Stata, R, G*Power, and AMOS. Participants will receive handouts, program files, example data sets, and a certificate of participation upon completing each workshop. Workshop descriptions, schedules, and registration links are provided below.

Introduction to HLM (Mixed Models) (SPSS): This workshop provides an overview of the fundamental principles of multilevel/hierarchical linear models. Topics include the necessity for appropriate methods to model dependencies (e.g., clustering of students within schools), formulating and interpreting two-level multilevel models and their relevant parameters, and using SPSS to estimate model parameters.

Structural Equation Modeling I (AMOS & R): This workshop introduces techniques for structural equation modeling (SEM). SEM is employed to test complex relationships between observed (measured) and unobserved (latent) variables. Topics covered include fundamentals underlying SEM, SEM notation, path diagrams, data preparation, mediation analysis, path analysis, parameter estimation, and assessment of model fit. AMOS and R are used to demonstrate examples.

Structural Equation Modeling II (AMOS & R): The second SEM workshop delves into advanced topics including measurement error, latent variables analysis, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), development of structural equation models with estimation, and model testing. Additionally, this workshop introduces latent growth models for longitudinal data. An R program and AMOS are utilized to demonstrate model structures, parameter estimation, and model modification.

Introduction to Statistical Learning (R): This is an introductory workshop in statistical learning focusing on the important elements of modern data analysis such as regression and classification methods. Topics covered include linear and logistic regression, linear discriminant analysis, cross-validation, principal components, and clustering. Data analysis examples in this workshop are demonstrated using R.

Missing Data Analysis (SAS & Stata): This workshop covers the mechanisms of missing data, analysis of non-random selection bias, and methods of single and multiple imputation (MI) using SAS and Stata. Missing data is a common issue in various datasets. Most statistical software packages automatically eliminate entire cases with missing data from analysis, potentially leading to low sample sizes and biased results.

Sample Size Estimation and Power Calculations (SAS and G*Power): This workshop introduces methods for determining required sample sizes, estimating statistical power, and selecting or calculating appropriate **effect sizes** for a variety of statistical tests and study designs. Participants will

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learn how sample size, effect size, significance level, and statistical power are related, and how to conduct these calculations using the **PROC POWER** procedure in SAS and **G*Power**.

Event History Analysis (Survival Models) in SPSS: This workshop introduces statistical methods for survival (event history) analysis, with a focus on studies in which the outcome is a time-to-event variable. Topics include estimating and comparing survival times using life-table and Kaplan–Meier methods and modeling the effects of risk factors and other covariates on survival using the Cox proportional hazards regression model. Participants will learn how to interpret survival curves, hazard ratios, and model results. IBM SPSS Statistics will be used for data analysis.

Event-Study Regression using R: This workshop introduces event-study regression as a causal inference method for examining how the effect of a specific event or treatment changes over time. Within a difference-in-differences (DiD) framework, changes in outcomes before and after the event are compared between treated and control groups. Topics include data preparation, traditional and staggered-adoption DiD models, dynamic treatment effects, assessment of pre-treatment trends, and graphical presentation of event-study estimates. The workshop will use the R packages *fixest*, *plm*, and *did*.

Logistic Regression and Random Forest in R, a Practical Introduction: This workshop is designed to introduce the fundamental principles of classification techniques in data science, with a particular emphasis on Logistic Regression and Random Forest using R programming language. Participants will develop a conceptual understanding of both models, gain hands on experience implementing them in R, and examine their respective strengths and limitations through real-world examples. The session aims to equip students with the analytical skills needed to critically evaluate and apply classification methods in research and data analysis across a range of academic disciplines.

Registration Procedures:

Seats and handouts are limited. Please register in advance.

1. Click the 'In-person Register' or 'On-Zoom Register' under Registration.
2. Fill out all the information requested and submit your registration.
3. Join the workshops via Zoom link in the confirmation email or attend in-person sessions for in-person workshops.

All in-person workshops will be held in **Lab C** on the upper level (UL) of Healey Library.

Please contact Mr. Inal Mashukov at inal.mashukov001@umb.edu for any questions regarding the workshops.

Web: https://www.umb.edu/academics/graduate/info_for_graduate_students/center_for_statistical_computing

Location: **Healey Library, Lab C.** (From the main elevators in Healey Library, take the Upper level (UL). Turn right leaving the elevator, and you'll find Lab C on the right in the hallway)

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<i>Topic</i>	<i>Date</i>	<i>Day</i>	<i>Time</i>	<i>Registration</i>
Intro to HLM (Mixed Models) (SPSS)	Sep. 24	Thursday	11:00-1:00 P.M.	On-Zoom Register
Structural Equation Modeling I (AMOS & R)	Oct. 14	Wednesday	11:00-1:00 P.M.	In-Person Register
Intro to Statistical Learning (R)	Oct. 19	Monday	11:00-1:00 P.M.	On-Zoom Register
Structural Equation Modeling II (AMOS & R)	Oct. 21	Wednesday	11:00-1:00 P.M.	In-Person Register
Missing Data Analysis (SAS & Stata)	Oct. 23	Friday	11:00-1:00 P.M.	On-Zoom Register
Sample Size Estimation (SAS and GPower)	Oct. 26	Monday	11:00-1:00 P.M.	In-Person Register
Event History Analysis (Survival Models) in SPSS	Oct. 28	Wednesday	11:00-1:00 P.M.	On-Zoom Register
Event-Study Regression using R	Nov. 3	Tuesday	11:00-1:00 P.M.	On-Zoom Register
Logistic Regression and Random Forest in R	Nov. 4	Wednesday	11:00-1:00 P.M.	In-Person Register