

College of HEST Quantitative Methods Workshop Series

FALL 25' - SPRING 26' PROGRAM SUMMARY | HEST.NMSU.EDU



Overview

The Quantitative Methods Workshop Series was developed to strengthen quantitative research capacity across the college by providing faculty, staff, and students with access to advanced methodological training and opportunities for interdisciplinary collaboration. The series featured a diverse range of workshops led by faculty and researchers from across the university, covering contemporary quantitative methods relevant to research in health, education, social sciences, and related fields. Workshops were offered in a hybrid format, allowing participants to attend either in person or virtually. Materials from the workshops as well as extended resources on each topic were made publicly available after each event.

Workshop Summaries

Dr. Mike Kalkbrenner, Counseling & Educational Psychology

Attendees were introduced to commonly used approaches to factor analysis and psychometric research in the social sciences. Topics covered included exploratory factor analysis (EFA), confirmatory factor analysis (CFA), multiple-group CFA, bifactor CFA, and higher-order CFA. The session also addressed best practices for instrument development and validation, helping attendees determine when to use existing measures and when to develop new instruments. Interactive activities and group discussion encouraged participants to consider how psychometric methods could be applied within their own research programs.

Dr. Giovanna Del Sordo, Post Doctoral Researcher

The *Intro to Linear Mixed-Effects Modeling* workshop, focused on linear mixed-effects modeling (LMMs) and its application in social, behavioral, and health sciences research. Attendees learned when mixed-effects models are appropriate, how they differ from traditional approaches, and how to specify, interpret, and evaluate these models using R software. Designed for researchers with basic statistical knowledge, this workshop used practical examples and reusable code to help attendees gain foundational skills for data analysis.

Dr. Samantha Estrada, Department of Public Health Sciences

This workshop session introduced attendees to the initial stages of planning a meta-analysis, including developing research questions, establishing inclusion and exclusion criteria, conducting systematic literature searches, and organizing extracted data. The workshop provided attendees with a practical roadmap for initiating evidence synthesis projects in their own fields.

Dr. M. Blake Rafferty, Department of Communication Disorders

Through Dr. Rafferty's workshop, *When Your Sample is Small but Your Predictors Are Many: A Hands-On Guide to Machine Learning Basics and Ridge Regression*, participants were introduced to cross-validation techniques and regularization methods designed to improve model stability and generalizability. Guided exercises allowed attendees to apply these methods using R and explore how machine learning approaches can be adapted to a variety of research questions.



Workshop Summaries

Dr. Rong Zheng, Department of Economics, Applied Statistics, and International Business

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This workshop, *Data Visualization with R Software*, highlighted the central role of visualization in exploratory data analysis and research communication. Attendees were introduced to the ggplot2 package and a variety of graphical approaches for presenting data effectively. Participants explored examples of contemporary visualizations, learned principles of effective data presentation, and engaged with hands-on templates that could be adapted for their own research projects.

Networking Opportunity

Beyond formal training, the Quantitative Methods Workshop Series fostered interdisciplinary networking through a Quantitative Methods Collaboration Mixer. The mixer provided an opportunity for both HEST and non-HEST researchers seeking quantitative expertise to meet and discuss collaborating on research projects, manuscripts, and grant proposals. The event encouraged interdisciplinary connections across disciplines, promoting a stronger community of quantitative researchers within and beyond the college.

Key Takeaways

This workshop series provided participants with exposure to a broad spectrum of contemporary research methods, ranging from psychometrics and mixed-effects modeling to machine learning, data visualization, and evidence synthesis. The series was successful in its goal to further expand attendees' methodological toolkits. By combining skill development with opportunities for collaboration and networking, the series supported HEST's commitment to advancing rigorous, innovative, and interdisciplinary research.