THE UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER

OSCTR Oklahoma Shared Clinical & Translational Resources

Biostatistics, Epidemiology, and Research Design
Key Component Activity

OSCTR Biostatistics, Epidemiology and Research Design Core

WORKSHOP

INTRODUCTION TO SELECTION BIAS AND THE HECKMAN CORRECTION

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The University of Oklahoma Health Sciences

Wednesday, April 23rd, 2025
12:00 PM – 2:00 PM

Virtual: Zoom **Meeting ID:** 997 5642 2667 **Passcode:** 44287323

Registration required in advance for this meeting.

After registration, you will receive a confirmation email containing the Zoom link and information about the workshop materials.

DATE: April 23rd, 2025
TIME: 12:00 PM – 2:00 PM
FORMAT: Lecture with in-class, hands-on practice exercises

SOFTWARE:

- Prior to the workshop, please install the following software on your laptop.
  - R (https://www.r-project.org/)
  - RStudio Desktop: (https://posit.co/download/rstudio-desktop/)
- Please bring your laptop to the workshop so you can complete the in-class exercises.

PREREQUISITES:

- Basic R programming (variables, functions, loops, etc.). Only a cursory knowledge of advanced programming is necessary.
- Knowledge of statistical methods such as linear regression and logistic regression.

DESCRIPTION:

- Selection bias is a distortion in some parameter estimate due to a sample selection that does not accurately reflect the target population.
- The Heckman two-stage estimation is a procedure that can be used at the analysis stage of a study to assist with correction of selection bias under certain circumstances.
- In this workshop, we will discuss the theory and application of the two-stage procedure. We will further demonstrate how to perform the analysis in R and cover the sample Selection package in R using general and health examples.

WORKSHOP CONTENT:

1. Introduction to Selection Bias and Methods-Based Solutions
2. Introduction to Heckman Model
3. Example Applications Overall With Special Attention to Applications in Health Models.
4. Implementation in R manually and with sample Selection Package.

COURSE MATERIALS:

- Lecture slides, example code, and practice datasets may be downloaded prior to attendance, printed, and saved for personal use.
- Access materials at https://osctr.ouhsc.edu/seminars/short-course.

END OF WORKSHOP EVALUATION SURVEY:

- Please complete the survey at the following link: https://bbmc.ouhsc.edu/redcap/surveys/?s=4EFJ9DNPKTAP4773

- You will also receive the link by email after the workshop.

REGISTRATION:

- Registration is required by 6:00 PM on April 22nd.
- Registration can be completed at https://osctr.ouhsc.edu/seminars/short-course.

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FACULTY BIOGRAPHICAL SUMMARY:

- Michael Machiorlatti is an Assistant Professor in the Department of Biostatistics and Epidemiology at the Hudson College of Public Health. He has over 13 years of experience in health-based research. His focus is on applied statistics with applications to public health and medical sciences. He has worked with investigators in various content areas including oncology, smoking and tobacco cessation, surgery, cardiology, psychology and psychiatry and OBGYN. He has an interest in computation methods and performance analytics and statistics in sport. He has taught undergraduate and graduate courses in statistics and business/economics.