



Parkland College
Arba Minch
Short Term Trainings Programs

Epidemiological Data Analysis Using Stata

About the Course

Epidemiologists have relied on Stata for over 30 years because of its specialized epidemiologic commands, accuracy, and ease of use. Whether you are researching infectious diseases, investigating exposure to pathogens, or studying chronic diseases, Stata provides the data management and statistical tools to support your research. It also gives you the ability to make publication-quality graphics so you can clearly display your findings.

Target Participants

The Epidemiological Data Analysis course is suitable for potential epidemiologists and biostatisticians and current researchers including clinicians, laboratory and social scientists. Participants should have knowledge of Basic Statistics and be familiar with the Statistical package Stata.

Note: This course outline is for guidance purposes and will be customized according to the participant's requirements.

Course Duration

- 6 Days at 8 hours a day

What you will learn

By the end of this course, the participants will be able to:

- Understand the principles of Epidemiology
- Perform data analysis tasks with Stata
- Perform simple to complex data management tasks for epidemiological study designs using software
- Statistical tests using Stata software

Course Outline

1. Principles of Epidemiology

- 1.1 Epidemiology: concepts and terminology
- 1.2 Population and Samples
- 1.3 Measuring disease: Incidence and prevalence
- 1.4 Study Design
 - 1.4.1. Intervention studies
 - 1.4.2. Cohort studies



- 1.4.3. Case control studies
- 1.4.4. Observational studies
- 1.5 Measuring the risk factor
- 1.6 Exercises
- 2. Basic analytical procedures**
 - 2.4. Review of Stata software
 - 2.5. Basic concepts about data type and analysis
 - 2.6. Introduction to basic Statistical models used in epidemiology
 - 2.7. Chi-square
 - 2.8. t-test
 - 2.9. Simple and Multiple linear regressions
 - 2.10. Logistic regression
 - 2.11. ANOVA and ANCOVA
 - 2.12. Mann-Whitney
 - 2.13. Exercises using Stata
- 3. Sample size determination**
 - 3.4. Sample size calculation
 - 3.5. Sampling weight
 - 3.6. Statistical power
 - 3.7. Constructing valid comparison groups
 - 3.8. Exercises
- 4. Epidemiological tables**
 - 4.1. $n \times 2$ table
 - 4.1.1. 2×2 stratified table for longitudinal study
 - 4.1.2. 2×2 stratified table for cohort study
 - 4.1.3. 2×2 stratified table for case–control study
 - 4.1.4. 2×2 stratified table for matched case–control data
 - 4.2. Odds ratio, incidence ratio, risk ratio, risk difference, and attributable fraction
 - 4.3. Chi-squared, Fishers’s exact, and Mantel–Haenszel tests
 - 4.4. Exercises using Stata
- 5. Survival Analysis**
 - 5.1. Analysis of duration outcomes
 - 5.2. Estimating the probability of survival
 - 5.3. Modeling survival as a function of covariates using Cox, Weibull, lognormal, and other regression models.
 - 5.4. Predict hazard ratios
 - 5.5. Exercises using Stata
- 6. Cohort Design**
 - 6.1. Standard cohort analysis
 - 6.2. Sample weighting
 - 6.3. Adjustment of variance
 - 6.4. Parametric models: poisson regression, Flexible Parametric survival Models (FPM)
 - 6.5. Exercises using Stata
- 7. Case Control Studies**



- 7.1. Basic design concepts
- 7.2. Selection of Cases
- 7.3. Selection of Control
- 7.4. Matching
- 7.5. Odds ratio for case control
- 7.6. Case cohort studies
- 7.7. Exercises using Stata

Prerequisites

Participants should have knowledge of Basic Statistics and be familiar with the Statistical package Stata.

Training Approach

This Epidemiological Data Analysis course is delivered by our seasoned trainers who have vast experience as expert professionals in Epidemiology. The course is taught through a mix of practical activities, theory, group works and case studies.

Training manuals and additional reference materials are provided to the participants.

Certification

Upon successful completion of this course, participants will be issued with a certificate.

Tailor-Made Course

We can also do this as a tailor-made course to meet organization-wide needs. A training needs assessment will be done on the training participants to collect data on the existing skills, knowledge gaps, training expectations, and tailor-made needs.