**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**
2. Epidemiology: concepts and terminology
3. Population and Samples
4. Measuring disease: Incidence and prevalence
5. Study Design
	* 1. Intervention studies
		2. Cohort studies
		3. Case control studies
		4. Observational studies
6. Measuring the risk factor
7. Exercises
8. **Basic analytical procedures**
	1. Review of Stata software
	2. Basic concepts about data type and analysis
	3. Introduction to basic Statistical models used in epidemiology
	4. Chi-square
	5. t-test
	6. Simple and Multiple linear regressions
	7. Logistic regression
	8. ANOVA and ANCOVA
	9. Mann-Whitney
	10. Exercises using Stata
9. **Sample size determination**
	1. Sample size calculation
	2. Sampling weight
	3. Statistical power
	4. Constructing valid comparison groups
	5. Exercises
10. **Epidemiological tables**
	1. n2 × 2 table
		1. 2 × 2 stratified table for longitudinal study
		2. 2 × 2 stratified table for cohort study
		3. 2 × 2 stratified table for case–control study
		4. 2 × 2 stratified table for matched case–control data
	2. Odds ratio, incidence ratio, risk ratio, risk difference, and attributable fraction
	3. Chi-squared, Fishers’s exact, and Mantel–Haenszel tests
	4. Exercises using Stata
11. **Survival Analysis**
	1. Analysis of duration outcomes
	2. Estimating the probability of survival
	3. Modeling survival as a function of covariates using Cox, Weibull, lognormal, and other regression models.
	4. Predict hazard ratios
	5. Exercises using Stata
12. **Cohort Design**
	1. Standard cohort analysis
	2. Sample weighting
	3. Adjustment of variance
	4. Parametric models: poisson regression, Flexible Parametric survival Models (FPM)
	5. Exercises using Stata
13. **Case Control Studies**
	1. Basic design concepts
	2. Selection of Cases
	3. Selection of Control
	4. Matching
	5. Odds ratio for case control
	6. Case cohort studies
	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.