Epidemiology: Advanced Data Analysis for Public Health Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today's data-driven healthcare landscape, the ability to perform advanced data analysis in epidemiology is a vital skill for public health professionals seeking to make evidence-based decisions. Epidemiology in Advanced Data Analysis for Public Health Training Course is a cutting-edge program tailored to equip learners with robust skills in data interpretation, predictive modeling, statistical software application, and epidemiologic surveillance. With a growing global demand for accurate health data insights, this course bridges the gap between theoretical epidemiology and real-world public health data solutions, ensuring learners gain practical expertise in tools like R, Python, SAS, and advanced biostatistics.

Through immersive case studies, hands-on projects, and interactive modules, participants will master core competencies such as multivariate analysis, spatial epidemiology, machine learning integration in epidemiological research, and interpretation of population health data. This course is designed for professionals aiming to lead in disease prevention, outbreak analysis, and policy development using advanced analytical methodologies and current technologies.

Programme Curriculum

Epidemiology in Advanced Data Analysis for Public Health Training Course

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Course Objectives

1. Analyze epidemiologic data using machine learning algorithms.
2. Apply predictive modeling to identify trends in public health.
3. Use data visualization tools to interpret epidemiological patterns.
4. Conduct time-series analysis for disease outbreak prediction.
5. Integrate geospatial analytics in health surveillance systems.
6. Perform risk factor analysis using multivariate regression.
7. Evaluate public health interventions using advanced metrics.
8. Utilize big data platforms such as Hadoop and Spark for epidemiological studies.
9. Manage large-scale epidemiologic datasets using R and Python.
10. Interpret findings to influence health policy decisions.
11. Conduct meta-analysis for evidence synthesis in epidemiologic studies.
12. Assess the impact of social determinants of health through data mining.
13. Develop data-driven public health strategies based on real-time analytics.

Target Audiences

1. Epidemiologists
2. Public Health Officers
3. Biostatisticians
4. Health Data Scientists
5. Policy Analysts
6. Healthcare Administrators
7. Global Health Researchers
8. Graduate Students in Public Health and Data Science

Course Duration: 5 days

Course Modules

Module 1: Foundations of Advanced Epidemiologic Analysis

- Review of epidemiologic concepts and study designs
- Introduction to advanced statistical methods
- Data cleaning and transformation techniques
- Software overview: R, Python, SAS
- Common pitfalls in data interpretation
- *Case Study*: Re-analysis of CDC obesity dataset using R

Module 2: Multivariate and Regression Analysis

- Linear and logistic regression models
- Cox proportional hazards modeling
- Confounding and interaction effects
- Model diagnostics and goodness-of-fit
- Reporting and visualizing multivariate models
- *Case Study*: Modeling cardiovascular risk factors using NHANES data

Module 3: Time-Series and Longitudinal Data Analysis

- Time-series decomposition and forecasting
- Repeated measures and growth curve models
- Autocorrelation and seasonality in data
- Tools: ARIMA, GEE, Mixed Models
- Best practices for temporal data visualization
- *Case Study*: Forecasting flu trends with Google Flu Trends and CDC data

Module 4: Spatial Epidemiology and Geospatial Data

- Mapping disease distribution
- Introduction to GIS in health research
- Spatial regression and clustering methods
- Tools: QGIS, GeoDa, ArcGIS
- Addressing spatial autocorrelation and bias
- *Case Study*: Identifying malaria hotspots using Kenyan health data

Module 5: Machine Learning in Epidemiology

- Supervised vs. unsupervised learning
- Algorithms: Random Forests, SVM, KNN
- Feature selection and model validation
- Ethical implications of machine learning in health
- Deployment of models for real-time surveillance
- *Case Study*: Predicting diabetes risk using a machine learning model on BRFSS data

Module 6: Data Visualization and Communication

- Principles of health data storytelling
- Creating dashboards with Tableau and Power BI
- Custom visualizations in R (ggplot2) and Python (Seaborn)
- Designing visuals for policy and public consumption
- Communicating uncertainty and limitations
- *Case Study*: Visualizing COVID-19 vaccine rollout across demographic groups

Module 7: Meta-Analysis and Systematic Reviews

- Designing and conducting systematic reviews
- Effect size calculation and heterogeneity assessment
- Fixed vs. random-effects models
- Funnel plots and publication bias detection
- PRISMA guidelines for transparency
- *Case Study*: Meta-analysis of interventions for childhood asthma

Module 8: Ethics, Policy, and Data-Driven Decision Making

- Data governance and ethical considerations
- Informed consent and anonymization techniques
- Translating data into policy action
- Frameworks for decision-making under uncertainty
- Engaging stakeholders in data interpretation
- *Case Study*: Policy shift analysis following opioid epidemic data in the U.S.

Training Methodology

- Interactive lectures with real-time demonstrations
- Guided coding labs using R, Python, and SAS

- Hands-on group projects and datasets
- Case-based learning for real-world applicability
- Continuous assessment through quizzes, peer reviews, and feedback
- Access to a collaborative learning platform and mentorship

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com