Training course on Survival Analysis and Duration Models

Professional Development Training Course Outline

Category	Economics Institute	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Training Course on Survival Analysis and Duration Models

This course is designed for professionals and researchers who want to master techniques for analyzing time-to-event data. Survival analysis focuses on the time until an event occurs, such as failure, death, or any specific event of interest. Training Course on **Survival Analysis and Duration Models** course provides participants with essential tools to model and interpret survival data effectively by understanding the underlying statistical principles and practical applications, attendees will gain insights into various fields, including healthcare, engineering, and social sciences.

In today's data-driven environment, the ability to analyze time-to-event data is critical for making informed decisions. This course covers various methodologies, including Kaplan-Meier estimation, Cox proportional hazards models, and parametric survival models. Participants will learn how to handle censored data, assess model fit, and interpret results. By the end of the training, attendees will be equipped to apply survival analysis techniques to real-world problems, enhancing their analytical skills and decision-making capabilities.

Course Objectives

1. Understand foundational concepts of survival analysis.
2. Master techniques for analyzing time-to-event data.
3. Implement Kaplan-Meier survival curves for data visualization.
4. Utilize Cox proportional hazards models for risk assessment.
5. Explore parametric survival models for robust analysis.
6. Address issues of censoring and truncation in data.
7. Conduct model diagnostics and assess goodness-of-fit.
8. Interpret survival analysis results and communicate findings.
9. Apply survival analysis in healthcare and clinical research.

10. Utilize advanced techniques such as competing risks analysis.
11. Explore statistical software tools for survival analysis (e.g., R, SAS).
12. Understand ethical considerations in survival analysis research.
13. Stay updated on emerging trends and methodologies in survival analysis.

Target Audience

1. Biostatisticians
2. Data scientists
3. Healthcare researchers
4. Social scientists
5. Economists
6. Epidemiologists
7. Graduate students in statistics and data science
8. Policy analysts

Course Duration: 10 Days

Course Modules

Module 1: Introduction to Survival Analysis

- Overview of survival analysis concepts and applications.
- Understanding key terminology: survival time, censoring, and events.
- Differences between survival analysis and traditional regression.
- Importance of survival analysis in various fields.
- Ethical considerations in time-to-event data analysis.

Module 2: Descriptive Statistics for Survival Data

- Techniques for summarizing survival data.
- Constructing Kaplan-Meier survival curves.
- Describing survival probabilities and median survival time.
- Visualizing survival data using plots.
- Analyzing differences between groups using log-rank tests.

Module 3: Cox Proportional Hazards Model

- Introduction to the Cox model and its assumptions.
- Estimating hazard ratios and interpreting coefficients.
- Assessing proportional hazards assumption.
- Conducting multivariate analysis with covariates.
- Case studies illustrating the use of Cox models.

Module 4: Parametric Survival Models

- Overview of parametric models (Exponential, Weibull, Log-normal).
- Estimating parameters and interpreting results.
- Comparing parametric models with non-parametric methods.
- Implementing model selection criteria (AIC, BIC).

- Applications in real-world scenarios.

Module 5: Handling Censoring and Truncation

- Understanding types of censoring and their implications.
- Techniques for handling right, left, and interval censoring.
- Analyzing truncated data and its effects on results.
- Best practices for data preparation and management.
- Case studies focusing on practical challenges.

Module 6: Model Diagnostics and Goodness-of-Fit

- Methods for assessing model fit and diagnostics.
- Analyzing residuals and leverage points.
- Techniques for validating survival models.
- Interpreting goodness-of-fit statistics.
- Strategies for improving model performance.

Module 7: Competing Risks Analysis

- Introduction to competing risks and their significance.
- Implementing Fine-Gray models for subdistribution hazards.
- Analyzing and interpreting competing risks data.
- Case studies showcasing applications in healthcare.
- Understanding the limitations of competing risks analysis.

Module 8: Advanced Techniques in Survival Analysis

- Exploring frailty models and their applications.
- Understanding recurrent event data analysis.
- Implementing time-varying covariates in survival models.
- Analyzing survival data with missing values.
- Emerging trends and methodologies in survival analysis.

Module 9: Software Tools for Survival Analysis

- Overview of statistical software for survival analysis (R, SAS, Stata).
- Hands-on exercises using software for data analysis.
- Importing and managing survival datasets.
- Implementing survival models using software tools.
- Best practices for data visualization in survival analysis.

Module 10: Real-World Applications of Survival Analysis

- Applying survival analysis techniques to real-world problems.
- Conducting comprehensive analyses of healthcare datasets.
- Preparing presentations of findings and recommendations.
- Collaborating on projects to evaluate survival outcomes.
- Feedback sessions to refine analytical approaches.

Module 11: Communicating Survival Analysis Results

- Best practices for presenting survival analysis findings.
- Tailoring communication for different audiences (stakeholders, policymakers).
- Writing clear and concise reports on analysis.
- Visualizing results for effective communication.
- Engaging stakeholders in the analytical process.

Module 12: Course Review and Capstone Project

- Reviewing key concepts and methodologies covered in the course.
- Discussing common challenges and solutions in survival analysis.
- Preparing for the capstone project: applying techniques to a real-world problem.
- Presenting findings and receiving feedback from peers.
- Developing a plan for continued learning and application in the field.

Training Methodology

- Interactive Workshops: Facilitated discussions, group exercises, and problem-solving activities.
- Case Studies: Real-world examples to illustrate successful applications in development economics.
- Role-Playing and Simulations: Practice applying econometric methodologies.
- Expert Presentations: Insights from experienced development economists and practitioners.
- Group Projects: Collaborative development of econometric analysis plans.
- Action Planning: Development of personalized action plans for implementing econometric techniques.
- Digital Tools and Resources: Utilization of online platforms for collaboration and learning.
- Peer-to-Peer Learning: Sharing experiences and insights on development applications.
- Post-Training Support: Access to online forums, mentorship, and continued learning resources.

Registration and Certification

- **Register as a group from 3 participants for a Discount.**
- Send us an email: info@fineskilltrainingcenter.org or call +254769199797.
- 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

- Participants must be conversant in English.
- Upon completion of training, participants will receive an Authorized Training Certificate.
- The course duration is flexible and can be modified to fit any number of days.
- Course fee includes facilitation, training materials, 2 coffee breaks, buffet lunch, and a Certificate upon successful completion.
- One-year post-training support, consultation, and coaching provided after the course.
- Payment should be made at least a week before the training commencement to Fineskill Training Center account, as indicated in the invoice, to enable better preparation.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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