

## East Asia Training & Consultancy Pte Ltd

Head Office: 3 Raffles Place, #07-01 Bharat Building, Singapore 048617  
Regional Offices: Malaysia, Indonesia, Thailand, Philippines, Vietnam, Hong Kong  
Fax : (65)-62506369 Tel: (65)-62199062  
Email : enquiry@eastasiatc.com.sg  
Website: www.eastasiatc.com.sg



# Applied Survival Analysis Using STATA

## 2-Day Professional Development Workshop

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**East Asia Training & Consultancy Pte Ltd** invites you to attend a two-day professional development workshop reviewing statistical methods used in Biostatistics and Epidemiology and using Stata to analyse the course databases. Stata is the well-known statistics and econometrics software package developed by StataCorp (USA). Stata is a statistical software package that offers a broad range of statistics to professional researchers in many disciplines. Stata is particular useful to professionals working in areas of biostatistics, epidemiology, medical research and economic research.

### Course Objectives

By the end of this course you should be able to:

- Understand basic concepts of survival analysis such as censoring, and survival and hazard functions
- Understand and be able to obtain and interpret nonparametric estimates of the survival distribution using actuarial and Kaplan-Meier Product Limit methods
- Understand and be able to undertake and interpret nonparametric methods for comparison of survival curves
- Be familiar with maximum likelihood methods for parameter estimation and hypothesis testing for survival data
- Be familiar with common probability distributions for failure time data
- Be able to understand, undertake and interpret semi-parametric and parametric methods of analysis for proportional hazards regression models for survival data

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- Be able to understand, undertake and interpret accelerated failure time models for analysis of survival data
- Be able to understand, undertake and interpret models for analysis of survival data which include time varying covariates
- Be able to check assumptions for proportional hazards models and be able to use appropriate analysis methods for data where this assumption is not valid
- Be familiar with methods of analysis for interval censored data, competing risks and correlated survival data

### Who should Attend

Researchers, physicians, clinicians, public health professionals, students and lecturers in biostatistics, epidemiology and biomedical sciences, from public and private institutions who wish to increase their familiarity with quantitative methods in the principles of epidemiology and biostatistics, or epidemiology applied to health care planning and evaluation, so they can more effectively address problems in health research and use computational tools to solve practical problems.

### Fee & Registration

The fee includes extensive course materials, data-sets, lectures, lunches, morning and afternoon coffee/tea breaks, receptions and the opportunity to network with medical researchers, epidemiologists and biostatisticians across the various industries in Asia. This is a “hands-on” workshop. Participants are required to bring their own laptops.

**The number of participants is restricted.** Please register early to guarantee your place. Please complete the official registration form and fax to (65)-67694739 or email it to us at [stata@eastasiatc.com.sg](mailto:stata@eastasiatc.com.sg) to reserve your place. Confirmation will only be made upon receiving full payment. Further instructions will be sent to confirmed participants.

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### Course Outline

	<u>Day 1</u>	<u>Day 2</u>
	<b>Introduction to survival analysis; Non-parametric methods</b>	<b>Regression Methods; Advanced Methods and correlated data</b>
<b>9.00 a.m- 10.30 a.m</b>	<b>Introduction</b> <ul style="list-style-type: none"> <li>• introduction to course</li> <li>• revision of basic survival analysis concepts</li> <li>• introduction to Stata survival commands</li> </ul>	<b>Regression diagnostics</b> <ul style="list-style-type: none"> <li>• proportional hazards assumption</li> <li>• appropriateness of covariates in model</li> <li>• adequacy of prediction of survival</li> <li>• influence of individual observations</li> </ul>
<b>10.30 a.m- 11.00 a.m</b>	<b>Tea / coffee break with snacks</b>	
<b>11.00 a.m- 12.30 p.m</b>	<b>Estimating survival time</b> <ul style="list-style-type: none"> <li>• Calculation of times from dates</li> <li>• Generating survival curves</li> <li>• Actuarial method</li> <li>• Kaplan-Meier estimator</li> </ul>	<b>Parametric regression</b> <ul style="list-style-type: none"> <li>• exponential model</li> <li>• Weibull model</li> </ul> <b>Accelerated Failure time methods</b> <ul style="list-style-type: none"> <li>• Weibull regression</li> <li>• Log-logistic model</li> <li>• Proportional odds model</li> </ul>
<b>12.30 p.m- 1.30 p.m</b>	<b>Lunch</b>	
<b>1.30 p.m- 3.00 p.m</b>	<b>Non-parametric comparison of survival</b> <ul style="list-style-type: none"> <li>• generating curves by covariates</li> <li>• logrank tests</li> <li>• weighted logrank tests</li> <li>• stratified logrank tests</li> </ul>	<b>Time varying covariates</b> <ul style="list-style-type: none"> <li>• Data manipulation</li> <li>• Analysis including time-varying covariate</li> <li>• Interpretation of results</li> </ul>
<b>3.00 p.m- 3.30 p.m</b>	<b>Tea /coffee break with snacks</b>	
<b>3.30 p.m- 5.00 p.m</b>	<b>Cox proportional hazards regression</b> <ul style="list-style-type: none"> <li>• Proportional hazards assumptions</li> </ul>	<b>Analysis of data where proportional hazards assumption violated</b> <ul style="list-style-type: none"> <li>• accelerated failure time models</li> </ul>

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	<ul style="list-style-type: none"><li>• analysis commands</li><li>• use of continuous and categorical variables</li><li>• interpretation of coefficients</li><li>• tests for significance of variables</li><li>• confidence intervals</li></ul>	<ul style="list-style-type: none"><li>• use of time-varying covariate</li><li>• stratified analysis</li></ul> <p><b>Analysis of correlated censored data</b></p> <ul style="list-style-type: none"><li>• format of data</li><li>• Anderson-Gill method</li><li>• Prentice, William and Peterson method</li><li>• Wei, Lin, Weissfield</li><li>• Comparison of methods</li></ul>
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### General outcome for each Session

- ~ 15 minute discussion of topic (eg method used for comparison of means, etc)
- ~ 15 minute discussion of the Stata commands
- ~ 60 minutes hands on practice using commands on example data sets