Introduction to Survival Analysis: Models for Time-to-Event Data

Informational Webinar

Steve Simon, PhD

Overall Goal of the Workshop

By the end of the workshop, you can run a survival analysis that extracts the most information possible from your data and the confidence to read, comprehend and explain the results. You will also understand how well your model fits the data and answers your research question.

Covered in this informational webinar:

- 5 W's for Survival Analysis
  - What does it consist of?
  - Why do you need it?
  - When do you need it?
  - Who needs it?
  - Where can you find resources?
- Survival Analysis Workshop
  - The Analysis Factor Approach
  - Modules and Overview

What does Survival Analysis Consist Of?

- A set of tests, graphs, and models that are all used in slightly different data and study design situations

- Most common types of tests and models:
  1. Kaplan-Meier Curves and Log Rank Test
  2. Cox proportional hazards regression
  3. Parametric models: exponential, weibull
  4. Frailty models
  5. Accelerated Failure Time models for competing risks
  6. Complementary Log-Log Model for Interval Censored Data

Why Do You Need Survival Analysis?

- Incredibly useful set of statistics tools that apply well in many fields
- Dependent variable is the time until an event occurs
  - Originally developed for mortality events
  - Adaptable to many time-to-event outcomes

When do you need Survival Analysis?

- Censored time-to-event data

Who Needs Survival Analysis?

- Data analysts in many fields
  - Education
  - Psychology
  - Medicine
- Intermediate users of statistics
- Those interested in furthering their statistical skills

Where Can You Learn Survival Analysis?

- University Course
- Books
- The Analysis Factor Workshops

Workshop Overview

8 Modules

Level: Intermediate

Software: SPSS, SAS, R, Stata

Instructor: Steve Simon

Price: $797 (Students: $477)

Begins: September 11th

The Winning Workshop Set up

Workshop Module Structure

Training Webinar

Step-by-Step Software Demos

Exercises

Ask Questions

The Mechanics of the Workshop:

1. Eight webinars each on one main topic
2. Attend live lectures and/or watch recordings
3. Download a pdf copy of the slides

The Training Webinar

The Mechanics of the Workshop:

When you attend live:

Ask questions anonymously

During and at the end

The Training Webinar

The Mechanics of the Workshop:

Step-by-Step Software Demos

1. Syntax to repeat all training examples in R, Stata, SPSS and SAS.

2. Video demonstrations of menus and a walk through of the syntax

3. Participants can download the data and syntax to all software packages

The Mechanics of the Workshop:

Exercises

1. Exercises to practice what you learned
2. Downloadable syntax to do the exercises in R, SAS, Stata, SPSS
3. Answers sheets so you check your work

The Mechanics of the Workshop:

Ask Questions

Forum

1. Write in questions on our private forum. The goal is to answer all questions within 24 hours

2. Read and learn from others' questions

3. Access forum for up to a year

The Mechanics of the Workshop:

Ask Questions

Q&A sessions

1. Eight one hour weekly live Q&As.

2. Can't attend the Q&A live? Send in your questions and have them answered during the live Q&A.

3. Any software specific questions for all software packages covered in the workshop.

4. The Q&A sessions are recorded and will be available for viewing within 24 hours.

Workshop Resources

Bonus Videos

- Probability Rules and Applications (1:34:32)
- 13 Steps to Running any Statistical Model (58:06)
- Discrete Time Event History Analysis (01:26:54)
- A Primer on Exponents & Logarithms for the Data Analyst (01:43:46)

Workshop Resources

Program Center Website

Calendar
Bonus Videos
Data Files and Descriptions
Q&A Recordings
Extra Reading
Support form
FAQ

Each Module:

- Handouts
- Recordings
- Syntax Files
- Software Demo Videos
- Exercises and Answers

Workshop Schedule

Training webinars: Tuesdays, from 12 – 2pm (Eastern)

September	September	September	October	October	October	October	November
11	18	25	2	16	23	30	6
Tuesday	Tuesday	Tuesday	Tuesday	Tuesday	Tuesday	Tuesday	Tuesday

Q&A sessions: Mondays 12 – 1pm (Eastern)

September	September	October	October	October	October	November	November
17	24	1	15	22	29	5	19
Monday	Monday	Monday	Monday	Monday	Monday	Monday	Monday

Workshop Outline

Module 1: The Kaplan-Meier Curve

- Constructing a Kaplan-Meier Curve
- Censoring and Its Assumptions
- Log Rank Test for Subgroup Comparisons

Workshop Outline

Module 2: The Hazard Function and the Cox Proportional Hazards Model

- Definition of a Hazard Function
- Constant Hazard vs Increasing or Decreasing Hazard
- Steps to Run Cox Regression Models and Interpret Model Coefficients

Workshop Outline

Module 3: Planning and Data Management Issues

- Data Set Up for Survival Analysis
- Compute and Compare Power
- Problems with Date Variables

Workshop Outline

Module 4: Cox Model: Model Fitting and Diagnostics for the Cox Model

- Multiple Predictor Variables
- Risk Adjustment
- Proportional Hazards

Workshop Outline

Module 5: Parametric Models

- Comparing Hazard Functions for Popular Distributions
- Interpreting Coefficients
- Understanding Advantages and Disadvantages

Workshop Outline

Module 6: Time-Varying Covariates in a Cox Model

- How to Code Data for Time-Varying Covariates
- Fit Time-Varying Models
- Interpreting the Results

Workshop Outline

Module 7: Frailty Models

- Multiple Events per Patient
- How to Define Random Effects
- How to Fit and Interpret the Models

Workshop Outline

Module 8: Competing Risk Models

- Multiple Events per Patient

Questions?

https://www.theanalysisfactor.com/survival-analysis-workshop/