



...Maximizing your investment in the SAS® System...
and those in your organization who use it...

Implement, interpret and deploy the results of statistical models where the “outcome” or “dependent” variable is a binary or dichotomous “event” using PROC LOGISTIC and other powerful SAS Software analytical tools. Learn how to effectively apply logistic regression models to your projects!

Updated for SAS 9.2!

After taking this seminar you will be able to:

- **Understand why logistic regression is “better” than OLS regression when modeling a categorical outcome or response**
- **Implement and interpret the results of both simple and multiple logistic regression models**
- **Apply “goodness of fit” measures to assess and compare your models**
- **Test for the presence of “influential observations” in your data set**
- **Add the values of categorical independent variables to your model without tedious data step coding of ‘dummy variables’**
- **Apply statistical methods of optimal subset selection for multiple regression models**
- **Include and assess the effect of interaction terms in multiple logistic regression models**
- **Use the Output Delivery System (ODS) as part of your predictive modeling project.**

Building and Applying Predictive Models Using the SAS® System



Presentation Formats:

Online (two half-day sessions)
Classroom (one day lecture only or two days with customizable hands-on exercises)

Overview

This session provides an **intensive introduction to building and applying logistic**

regression models using SAS System Software. You will learn how to use key features of PROC LOGISTIC to **create and interpret the results of predictive statistical models** where the dependent (outcome, or target, variable) is dichotomous rather than continuous. At the end of this seminar you will be able to use **PROC LOGISTIC** (and other SAS tools) to build and then interpret/apply the results of this popular predictive modeling technique.

This course also shows you the key enhancements to PROC LOGISTIC contained in Version 8 and SAS 9 Software, and how to **use Output Delivery System (ODS)** capabilities in conjunction with PROC LOGISTIC to aid in the model building and interpretation process. The **emphasis of this class** is on the **generation and interpretation of statistical models** using SAS Software, and **not** on data management/programming.

Intended Audience

Those who want to learn how to use create logistic regression models using SAS Software and to then interpret the results generated by their model.. It is also appropriate for experienced practitioners wanting to learn new features added in recent releases of the SAS System.

Prerequisites

Understanding of key SAS System concepts such as data set, procedure, observation, variable, label and format. *The materials presented in this seminar also assume you are familiar with statistical concepts such as independent and dependent variable, slope, intercept, confidence interval, null and alternative hypothesis, and p-value.*

Seminar Topics:

- Why is logistic regression a superior alternative to other statistical modeling techniques when we have a dichotomous dependent variable?
- Interpreting the results of a simple logistic regression model using PROC LOGISTIC
- Understanding and interpreting the odds ratio.
- Creating and interpreting customized confidence intervals around the odds ratios
- Applying and understanding "goodness of fit" measures for the logistic regression model
- Generating and using output SAS Data Sets from PROC LOGISTIC
- Creating and interpreting gains and lift charts
- Implementation and Interpretation of multiple logistic regression models
- Automated selection of "optimal subsets" of independent variables
- Testing for "outliers" and "influential observations"
- Understanding and addressing messages reporting a "complete" or "quasi-complete separation of the sample points"
- How to use categorical variables as predictors in a logistic regression model
 - Using the CLASS Statement to avoid coding of “dummy variables”
- Assessing interaction effects among independent variables in a logistic regression model
- Forcing the inclusion of variables in to a model using the INCLUDE option.
- Applying output SAS data sets created by PROC LOGISTIC to score observations in a “validation” or “holdout” sample.
- Using the Output Delivery System (ODS) in conjunction with PROC LOGISTIC
- Implementing ODS statistical graphics tools added to PROC LOGISTIC in SAS 9.2

Contact Sierra Information Services For More Information:

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About the Instructor

This seminar is written and presented by Andrew Karp, Principal Consultant at Sierra Information Services, based on his extensive experience applying—and teaching others how to apply—SAS Software tools to data. Andrew is a 28-year SAS Software user and SAS Certified Professional™ who for 21 of those years has been teaching others to use SAS for data analysis, management, and reporting. A well-known presenter at events for SAS users, he has been selected as an invited speaker at 16 consecutive SAS Global Forum (formerly SUGI) events and to share his expertise at other SAS user events in eleven countries, including the People's Republic of China and the former Soviet Union.

Prior to starting Sierra in 1994 Andrew applied SAS to projects while employed at Federal Express Corporation, Kaiser Foundation Health Plan and Pacific Gas & Electric company. Since starting his own firm he has been an analytics consultant to, among others, Wells Fargo Bank, Blue Shield of California, the Sacramento Municipal Utilities District, Bear Creek Corporation (the parent company of Harry & David's), American Honda Motor Company, IBM's Storage Systems Division, and the Victoria's Secret division of Limited Brands.

Andrew has held leadership roles with the Pacific NW and Western regional users groups, and is currently chair of the Sacramento Valley SAS Users Group. He is also the founder of the Virtual SAS Users Group (VirtualSUG), an online free resource for the SAS user community.

Andrew earned undergraduate and graduate degrees from The George Washington University and taught semester-length courses in SAS topics for UC Berkeley's Extension Division from 1989 to 1995. He been a visiting lecturer in the Department of Experimental Statistics at Louisiana State University, the Department of Decision Sciences at The George Washington University, at the University of Auckland in New Zealand, and for the statistics departments at California Polytechnic Univ. San Luis Obispo and California State University East Bay (formerly Cal State Hayward).

About Sierra Information Services

Sierra Information Services is a leading independent provider of consulting and training services in the intelligent application of SAS tools to data. We provide a wide range of analytic and data management services to clients in many industry sectors, as well as a broad array of SAS software training solutions delivered on-site, at public venues, and via the internet.

Please visit our web site at www.Sierrainformation.com or call us (707) 360 5383 to learn more about how we can assist you. We look forward to hearing from you soon!



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