Hong Kong WSC 2013 - Short Course programme

COURSE TITLE

Analysis of Complex Sample Survey Data

DURATION

2 days

INSTRUCTOR 1

**Kirk M. Wolter, Executive Vice President, NORC and Professor,
Department of Statistics, University of Chicago, USA**

BIOGRAPHICAL SKETCH

Kirk M. Wolter is Executive Vice President, NORC and Professor, Department of Statistics, University of Chicago.   He is the author of the book Introduction to Variance Estimation, 2nd Edition and of journal articles in the field of survey research. Wolter has led or participated in designing many of America's largest and most important complex surveys, and in converting major market research surveys to scanning-based methods of data collection in approximately 25 countries. He is a member of the International Statistical Institute, a Fellow of the American Statistical Association, and a past President of the International Association of Survey Statisticians.

INSTRUCTOR 2

F. Jay Breidt, Professor, Department of Statistics, Colorado State University, USA

BIOGRAPHICAL SKETCH

Jay Breidt is Professor and past chair of the Department of Statistics at Colorado State University. His research interests include nonparametric methods, time series, and survey sampling. He regularly serves on advisory panels for statistical agencies conducting complex surveys, including current service on the Federal Economic Statistics Advisory Committee. He is a member of the International Statistical Institute and a Fellow of the American Statistical Association.

INSTRUCTOR 3

Jean D. Opsomer, Professor and Chair, Department of Statistics, Colorado State University, USA

BIOGRAPHICAL SKETCH

Jean Opsomer is Professor and Chair, Department of Statistics, Colorado State University and past Director, Center for Survey Statistics and Methodology, Iowa State University. He received his PhD in Operations Research in 1995 from Cornell University. He is a member of the International Statistical Institute, a Fellow of the American Statistical Association, and a Fellow of the Institute of Mathematical Statistics. He is a member of the US Bureau of Labor Statistics Technical Advisory Committee. His research interests include survey statistics, nonparametric regression methods and environmental statistics.

COURSE DESCRIPTION

Estimation procedures appropriate for data collected under complex survey designs will be discussed. The first part of the course will cover estimation and variance estimation for standard statistics, such as means, ratios, domain totals, and the entries in two-

way tables. The use of survey data for the estimation of the parameters of statistical models is the focus of the second part of the course. Emphasis will be placed on efficient estimation of the parameters of regression models.

SYLLABUS

1. Introduction to complex surveys.
2. Variance estimation for complex surveys
   A. Taylor linearization
   B. Replication methods
3. Inference for complex surveys
   A. Regression analysis.
   B. Domains and tables.
4. Computing

TARGET AUDIENCE

The target audience for this short course consists of any analysts, from academia, industry, or government, who need to make inferences from complex survey data. Some background in survey sampling, including basic principles of sample design and selection, will be assumed. Features of complex surveys, such as stratified multi-stage sampling with unequal probabilities of selection, will be briefly reviewed, but the main emphasis of the course will be on analysis of data from such complex surveys. Some familiarity with classical inferential statistics, including hypothesis testing and regression estimation in the non-survey context, will be useful. This course will highlight the modifications needed to standard statistical methods to make inferences with complex survey data.