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CMIST Short Courses



2016-2017



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CMIST Courses



CMIST Courses



Our short course training in research methods and quantitative data analysis is aimed at post-graduate students, academics and applied researchers in the public and private sectors.

We run introductory, intermediate and advanced courses on all aspects of the research process, including

research design, data collection and data analysis. We also provide in-house courses and workshops for local authorities and other organisations.

All courses are developed and delivered by staff who are experts in their fields. Course leaders and teaching assistants are on hand to ensure a friendly and supportive learning environment.

Most courses are one day in duration, although a number run over two or three days. Courses are designed to be free-standing, though many build together to provide learning pathways from basic to a more advanced level.



Our courses include a combination of lectures and/or demonstrations, supported by a substantial practical component, to ensure participants gain hands-on experience in the application of the methods being taught.

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COURSES: QUICK GUIDE

COURSE TITLE	LEVEL	DATE
Introduction to R	Introductory	07 October 2016
Multiple Linear Regression	Introductory	19 October 2016
Logistic Regression	Introductory	20 October 2016
Introduction to Statistics	Introductory	27 Oct 16 / 08 Feb 17
Practical Skills for Data Analysts	Introductory	09 Nov 16 / 13 Feb 17
Excel for Data Analysis	Intermediate	15 Nov 16 / 15 May 17
Latent Factor Analysis	Intermediate	29 November 2016
Social Media Data Analysis	Introductory	02 December 2016
Longitudinal Structural Equation Modelling	Advanced	05 December 2016
Multilevel Modelling	Intermediate	08 December 2016
Introduction to Sequence Analysis	Introductory	19 January 2017
Introduction to STATA	Introductory	23 Jan / 24 Apr 17 tbc
Measurement with the Rasch Model	Introductory	25-26 January 2017
Fuzzy Set and QCA Analysis	Intermediate	02 February 2017
NVIVO for Qualitative Data and Corpus Analysis	Introductory	16 February 2017
Structural Equation Modelling using Mplus	Intermediate	22-24 February 2017
Introduction to Cluster Analysis	Introductory	02 March 2017
Introduction to Data Analysis 1	Introductory	06 Mar / 05 Jun 17
Introduction to Data Analysis 2	Introductory	07 Mar / 06 Jun 17
Bayesian Analysis using WinBUGS / OpenBUGS	Intermediate	04-05 April 2017
Introduction to Longitudinal Data Analysis	Introductory	10 April 2017
Longitudinal Data Analysis	Intermediate	11 April 2017
Introduction to Experimental Design	Introductory	12 June 2017

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CMIST Short Courses Presents: Introduction to R

COURSE OUTLINE 7 October 2016

This one day course aims to provide a basic introduction to R and RStudio for those with no previous experience with this statistical programming language. We will discuss some of the motivations to use R (instead of other applications) and will provide a practical introduction to the basic grammar of R language. Specifically, we will cover how to create and import data into R and will provide an overview of the ggplot2 package for data visualisation. We will also introduce the rmarkdown language to generate fully reproducible reports and analysis. The course will also provide information on books and other various resources where you could continue your R training.

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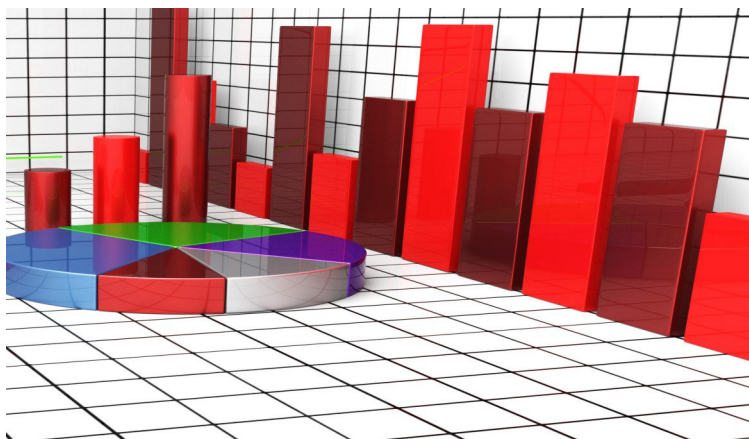
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CMIST Short Courses Presents: Multiple Linear Regression

COURSE OUTLINE 19 October 2016

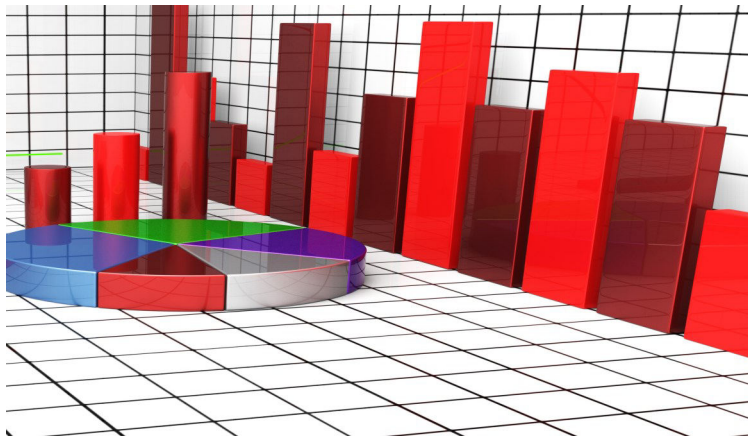
This course provides a thorough grounding in the theory and methods of multiple linear regression including: model selection, nonlinear relationships and transformations, dummy variables, interaction terms and assumption testing. The course comprises taught and practical components in about equal proportions.

The course is designed for users of survey data with some experience of data analysis and who are comfortable using SPSS and who want to expand their understanding of more sophisticated techniques.

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CMIST Short Courses Presents:

Logistic Regression

COURSE OUTLINE

20 October 2016

This course examines the fitting of models to predict a binary response variable from a mixture of binary and interval explanatory variables.

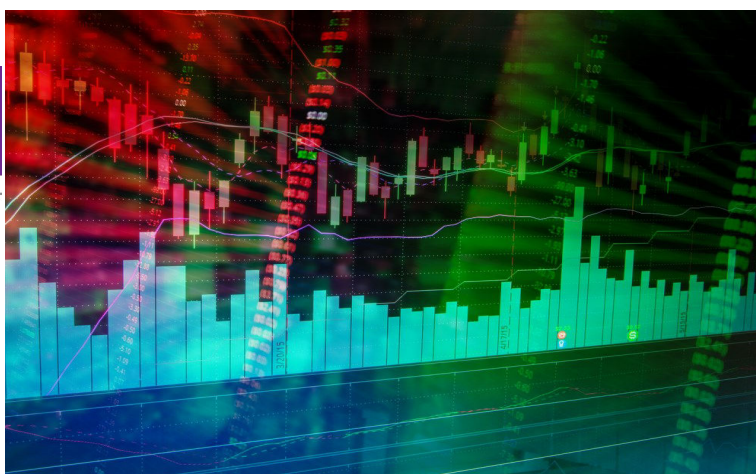
The approach is illustrated using examples from a social science perspective, including cases where logistic regression models are used as a means of analysing tabular data where one of the dimensions of the table is a two-category outcome variable.

You will also learn how to fit a logistic regression model, and how to interpret the results.

The course uses SPSS as the platform for analysis.

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CMIST Short Courses Presents:

Introduction to Statistics

COURSE OUTLINE

27 October 2016 / 8 February 2017

The aims of the course are to familiarise participants with some of the most commonly utilised statistical procedures using IBM SPSS, and to provide an introduction to the theory and methods of inferential statistical analysis using example datasets and exercises.

By the end of the day participants will be familiar with how to access and run a range of key statistical procedures and be able to understand and interpret output generated by IBM SPSS.

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CMIST Short Courses Presents: Practical Skills for Data Analysts

COURSE OUTLINE

9 November 2016 / 13 February 2017

This is a foundation course for participants with no previous experience in statistics or statistical analysis software. It will introduce key concepts such as: cases, variables, values and levels of measurement.

A component of the course is the use of SPSS in hands-on sessions. By the end of the day, participants will be able to open a data file, to do basic manipulations to the data, to produce descriptive statistics, one and two way tables and simple graphs.

This course will provide participants with the appropriate background to progress to other CMIST courses, particularly Introduction to Data Analysis 1 and Introduction to Data Analysis 2.

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CMIST Short Courses Presents:

Excel for Data Analysis

COURSE OUTLINE & OBJECTIVES

15-16 November 2016 / 15-16 May 2017

This course is designed to provide a range of skills and techniques in the use of Excel for social and policy research.

To enable the student to:

- load and prepare statistical data into Excel from a range of sources including Nomis, Neighbourhood Statistics as well as the considerations for the incorporation of data from organisational sources
- manage data in Excel including recoding, dealing with missing data, deriving new variables, filtering, sorting, totalling and deriving summary statistics through the use of formulae
- explore data using Excel including simple charts and pivot tables presenting data using Excel including charts and tables
- create profiles by combining a database of variables into a Word document using the Merge function

Excel is a registered trademarks of Microsoft Corporation in the United States and/or other countries.

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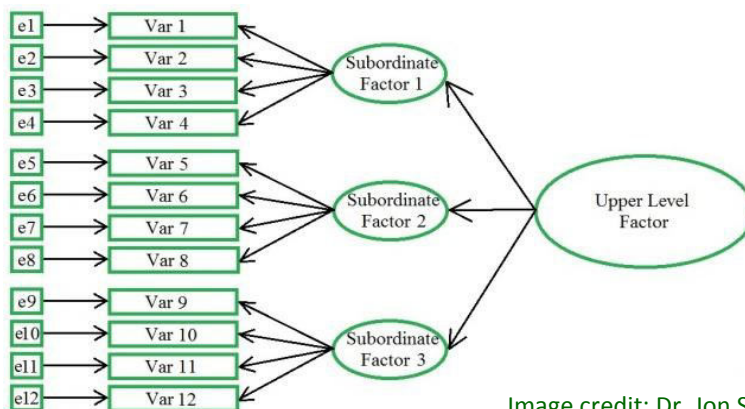


Image credit: Dr. Jon Starkweather

CMIST Short Courses Presents:

Latent Factor Analysis

COURSE OUTLINE

29 November 2016

This short course covers latent variables and factor analysis at an introductory and intermediate level. A latent variable is something invisible (such as a concept, an attitude, or an illness) that cannot be measured directly, but that has been measured using a set of related observed indicators.

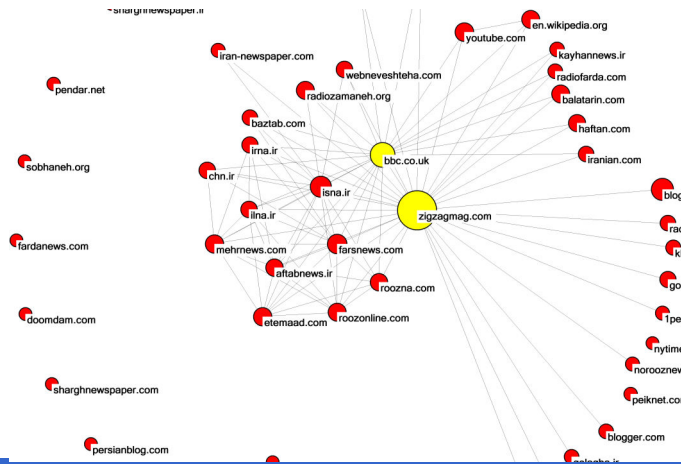
Factor analysis is one way to derive a factor from a set of variables, and is thus called a data reduction method. Other data reduction methods include principal components analysis, which is very closely related to factor analysis, and multiple correspondence analysis.

We will cover both exploratory and confirmatory factor analysis, and highlight their differences. More advanced topics, such as testing for measurement equivalence, will also be touched upon. The course is suitable both for primary-data collection researchers (who may need to write a suitable questionnaire), and for those who want to analyse data sets, with a focus on measurement issues.

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CMIST Short Courses Presents: Social Media Data Analysis

COURSE OUTLINE 2 December 2016

This course describes how to use free software Mozdeh and Webometric Analyst to gather tweets and to download comments on YouTube videos. The course will also describe simple methods to gain insights into the meaning of the downloaded texts and to identify patterns within the data.

You will learn to use the free Mozdeh and Webometric Analyst software in order to:

- Gather tweets from a specific user or matching a keyword query
- Gather comments on one or more YouTube videos
- Construct network diagrams from users or comments

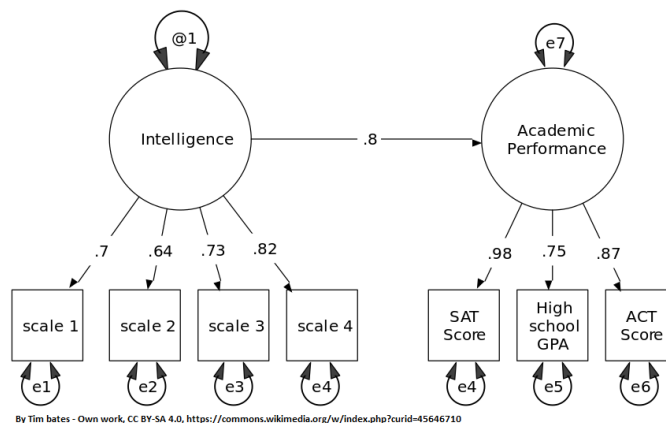
You will also learn some basic analysis methods for the Twitter and YouTube comments gathered:

- Simple quantitative methods, such as word frequency analysis, gender difference detection, sentiment analysis and time series graphs.
- Content analysis to provide insights into the YouTube or Twitter topic studied

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CMIST Short Courses Presents: Longitudinal Structural Equation Modelling

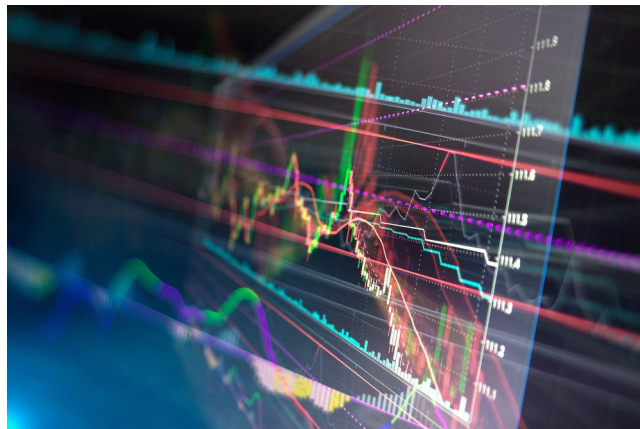
COURSE OUTLINE 5 December 2016

Structural Equation Modelling (SEM) has been growing in popularity due to its ability to estimate complex relationships between variables, the possibility to control for measurement error and the comprehensive model fit indicators. This approach is also very well suited to dealing with longitudinal data (i.e., data collected repeatedly from the same unit). In this context, it offers a number of unique modelling opportunities. Thus, using SEM with longitudinal data it is possible to investigate how the change in one variable is related to the change in another. For example, it can estimate how the change in physical health is linked to changes in happiness. Similarly, the SEM framework makes it possible to create typologies based on patterns of change in time. Thus, it is possible to see what are the typical patterns of change in cognitive ability or party support and who are the people that manifest them. This one-day course introduces two of the main models used to analyse longitudinal data using SEM: cross-lagged models and latent growth models (LGM). The course will be a mix of short conceptual presentations and hands on applications using Mplus (which will be available in the computer cluster). No prior knowledge of Mplus is required.

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CMIST Short Courses Presents: Multilevel Modelling

COURSE OUTLINE 8 December 2016

This one-day course begins with a description of some examples where multilevel models are useful in statistical analysis and some examples of multilevel populations. We then cover the basic theory of multilevel models including random intercept and random slope specifications, the use of contextual variables in multilevel analysis and modelling repeated measures. This course suits social scientists who want to learn about a quantitative technique that allows both individual and group level variations to be simultaneously taken into account when modelling social phenomena.

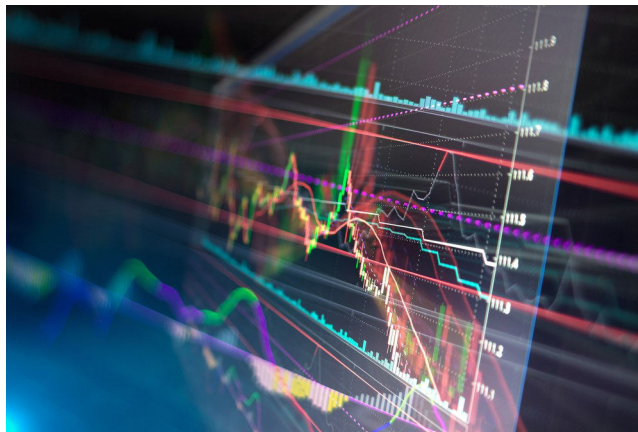
- Introduce the general idea of multilevel modelling
- Consider some issues of multilevel modelling from a substantive and theoretical perspective.
- Show how multilevel modelling can be applied to social data using specialist software MLwiN

No prior knowledge of multilevel modelling is assumed. You will need to have some familiarity with regression models.

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CMIST Short Courses Presents: Introduction to Sequence Analysis

COURSE OUTLINE 19 January 2017

Sequence analysis has recently experienced increasing interest in life course research and summarizes a variety of techniques to analyse whole "sequences", for example, employment or partnership histories. The interest, hereby, is not only to describe and visualize whole sequences, but also to compare and regroup similar sequences into clusters, which in turn can be used within other methods (e.g. as independent variable in regression analyses).

The course provides a basic introduction into sequence analysis, including its theoretical implication within life course research, and the practical skills required to conduct sequences analysis with STATA.

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CMIST Short Courses Presents:

Introduction to STATA

COURSE OUTLINE & OBJECTIVES

23 January 2017 / additional date tbc

The course provides an introductory training in Stata, a statistical package increasingly used for social research data analysis which has powerful data manipulation procedures and extensive and powerful statistical capabilities.

The aim of the course is to familiarise participants with the basic features of Stata 14. On completing the course, participants will have covered the following through a combination of presentation and practical sessions:

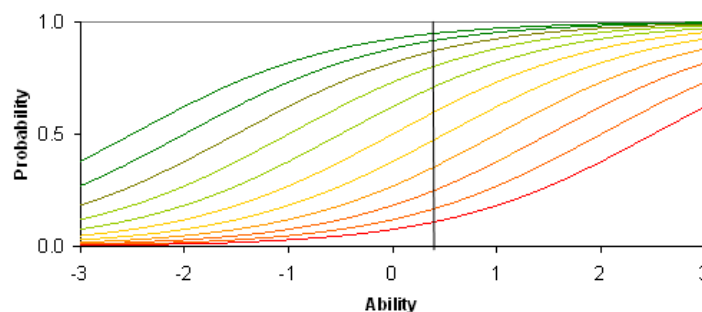
- The STATA environment: Opening and exploring files, looking at labels, editing and entering data.
- Exploratory analysis: logging outputs, producing tables, subsetting and descriptive statistics.
- Data manipulation: computing new variables, recoding, keeping and dropping, saving commands in a .do file.
- STATA graphics, help and supporting resources.

On completion of the course, participants will have the necessary familiarity with Stata to move on to further Stata courses and/or continue learning themselves .

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CMIST Short Courses Presents: Measurement with the Rasch Model

COURSE OUTLINE 25-26 January 2017

This two-day course aims to introduce participants to measurement theory and the Rasch model for construction and validation of measures. It covers the basic theory behind measurement, from an Item Response Theory perspective, focusing on the assumptions of the Rasch models, in particular.

The Rasch model provides the means to create measures (or score scales) from a combination of items in tests or questionnaires. The principles governing the application of such models are shown through examples from educational measurement but are easily applicable to other areas in social and health sciences. Participants will have the chance to practice with various models of the Rasch family (Dichotomous, Rating Scale and Partial Credit) with specialised software (Winsteps).

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fsQCA

CMIST Short Courses Presents:

fsQCA (Fuzzy Set Qualitative Comparative Analysis)

COURSE OUTLINE

02 February 2017

Qualitative Comparative Analysis is a systematic method of studying data on multiple comparable cases from about N=8 through to large datasets of N=10,000 etc. The QCA methods firstly involve casing, i.e. delineating cases; secondly organising a systematic data matrix (we will show these in NVIVO and in Excel); thirdly examining sets of cases known as configurations; fourth interpreting these in terms of 'necessary cause' and 'sufficient cause' of each major outcome of interest. We demonstrate the fsQCA software for QCA. A fuzzy set is a record of the membership score of a case in a characteristic or set. A crisp set is a membership value of 0 (not in the set) or 1 (fully in the set), and thus is a simplified measure compared with a fuzzy set. Fuzzy sets or crisp sets, and combinations, can be used in QCA. All the permutations of the causal factors, known as X variates, are considered one by one. We test whether X is necessary, or sufficient, or both, for an outcome Y. We then augment the standard measures of 'consistency'. We show that one can generate both within-group and sample-wide consistency levels for testing sufficient cause.

This one-day training course will attract those doing case-study research, those using the comparative research approaches, and those who want to extend their skills in QCA and fuzzy analysis from beginner to intermediate levels. It will suit qualitative researchers with no prior experience, as well as quantitative and mixed-methods researchers; all are welcome.

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CMIST Short Courses Presents: NVIVO for Qualitative Data & Corpus Analysis

COURSE OUTLINE

16 February 2017

This course introduces NVIVO and uses various menu option in NVIVO to analyse data.

The structure of the training session will be a combination of formal presentation alongside practical application. Those attending the training session will have access to data sets for practical sessions and can also bring their own data to use in the practical parts of the session. Among the methods we teach in the morning are: coding, browsing, queries, models, and viewing the coding stripes.

In the afternoon, an advanced application is considered. We look at the data in terms of comparing one empirical corpus with a larger, linguistic corpus. The terms keyness, discourses, concordance, agent, dominant discourses, deviant discourses, tropes and intertextuality (based in part on the work of Norman Fairclough) are used in developing an argument as follows. Those with medium-to-large databases may wish to interpret mainly a few key dominant discourses and the deviant variants that are closely related and comparable to them. The corpus analysis method enables a keyness measure to be calculated, and the most prominent discourse topics discovered. An interpretation is offered as an example using real data from South and North India. Methodologically this offers rigour, transparency, and sophistication as well as originality for a qualitative analysis.

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CMIST Short Courses Presents: Structural Equation Modelling using Mplus

COURSE OUTLINE 22-24 February 2017

Structural Equation Models (SEM) amalgamate regression analysis, path/mediation analysis and factor analysis, allowing for more richly detailed statistical models to be specified and compared to data than by using these techniques individually.

Historically, SEM models were confined to the analysis of continuous observed data, limiting their usefulness in applied social research, where many phenomena are inherently discrete or are measured only with coarse-grained instruments.

Advances in recent years have made available SEM methods for categorical data to applied researchers. This course covers both linear SEM and generalized SEM for non-continuous outcomes, as well as models with non-continuous latent variables, i.e. latent classes.

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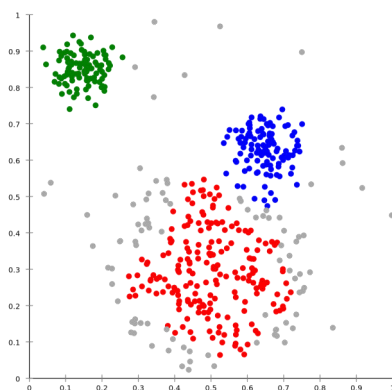


Image credit: Chire—Wikimedia Commons

CMIST Short Courses Presents: Introduction to Cluster Analysis

COURSE OUTLINE 2 March 2017

The course covers cluster analysis concepts and methods in SPSS. It is aimed at those with an interest in developing practical skills to implement clustering techniques and those with an interest in area typologies and classifications.

Participants will develop an understanding of clustering methods and procedures in SPSS. By the end of the course they will be able to carry out preliminary analysis to select and transform variables for cluster analysis, choose a clustering method, evaluate and choose cluster solutions, interpret clusters and present cluster analysis results. Hierarchical and non-hierarchical cluster analysis will be applied to 2011 Census local area data to produce an area classification to group areas with similar overall population characteristics into clusters.

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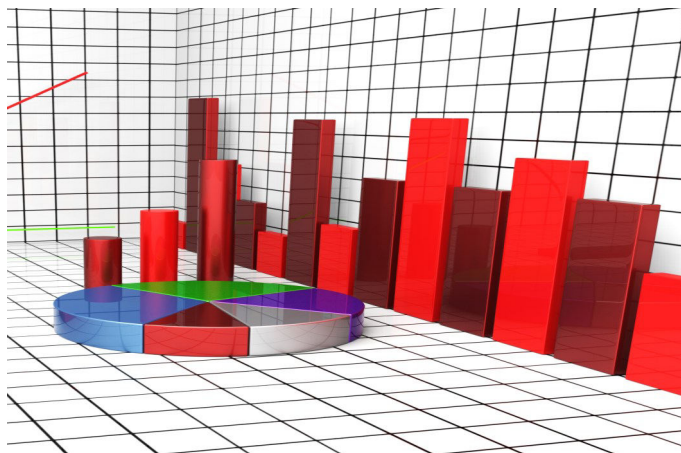
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CMIST Short Courses Presents: Introduction to Data Analysis 1

COURSE OUTLINE

6 March 2017 / 5th June 2017

This course provides an introduction to the theory and methods of quantitative data analysis, focussing on the social survey. It has an emphasis on hands-on learning, with a series of practical sessions using a statistical software package such as SPSS to explore the British Social Attitudes Survey Dataset.

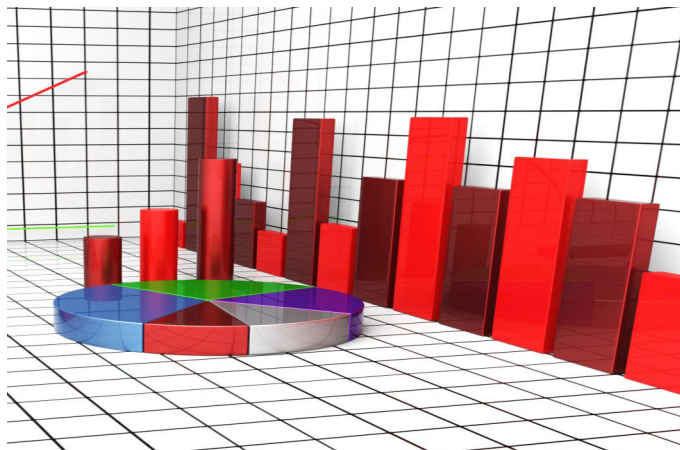
The course will:

- Introduce participants to survey data as a key quantitative resource for social science research;
- Introduce the structure and properties of survey data and consider the process by which variables in a dataset are derived;
- Explain the distinction between interval and discrete variables;
- Consider strategies for exploratory data analysis including methods for describing and summarising variable distributions;
- Provide participants with a conceptual understanding of the stages involved in exploring the relationship between variables;
- Provide essential skills of data manipulation including selecting sub-sets and recoding;
- Introduce the visual representation of variables in scatter graphs, bar charts and histograms.

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CMIST Short Courses Presents:

Introduction to Data Analysis 2

COURSE OUTLINE

7 March 2017 / 6 June 2017

This course provides an introduction to the theory and methods of quantitative data analysis of relationships between variables, focussing on the techniques of Chi-square tests, correlation and linear regression.

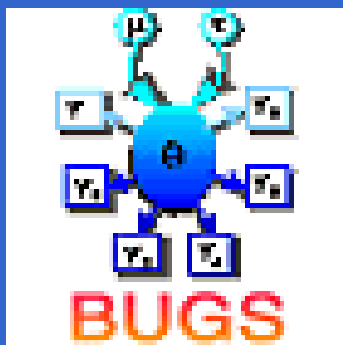
The course will examine relationships between variables covering:

- The concept of statistical significance
- The theory and execution of a simple chi square test for relationships between categorical variables
- How to test whether a relationship between two interval variables exists using correlation
- How to describe relationships between variables using a statistical model based on linear regression methods
- The use of control variables to control for confounding variables
- The interpretation of statistical results and their use in making research conclusions

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CMIST Short Courses Presents:

Bayesian Analysis using WinBUGS / OpenBUGS

COURSE OUTLINE

4-5 April 2017

Use of Bayesian methods is becoming increasingly widespread within quantitative social and health sciences, particularly for analysing data with complex structure, such as hierarchical or multilevel data. However, very few applied researchers have any formal training in Bayesian methods. This two-day course aims to introduce quantitative researchers to the basic principles of Bayesian inference and simulation-based methods for estimating Bayesian models, and to highlight some of the potential benefits that a Bayesian approach can offer. There is a large practical component to this course with time for hands-on data analysis using examples drawn mainly from the social and health sciences.

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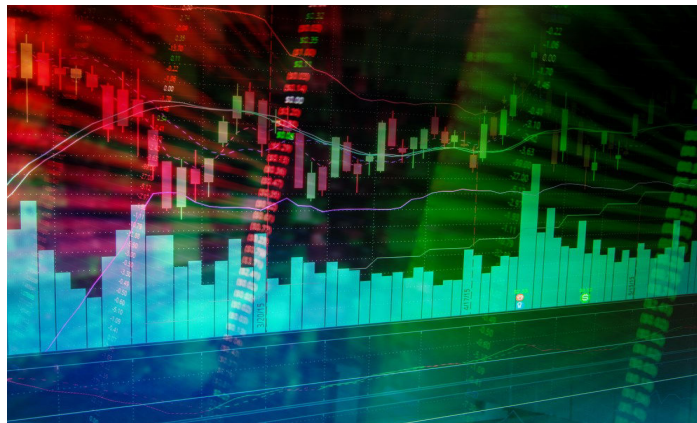
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CMIST Short Courses Presents: Introduction to Longitudinal Data Analysis

COURSE OUTLINE

10 April 2017

The course covers basic concepts in longitudinal design and analysis. The morning session focuses on the strengths and methodological difficulties of the longitudinal approach such as defining longitudinal populations and target samples; levels and dimensions of change; age, period and cohort effects. There will be one small group discussion. After lunch, we start with an overview session on the sources and causes of missing data (attrition etc.), and how to adjust for missingness; this will be followed by another group exercise.

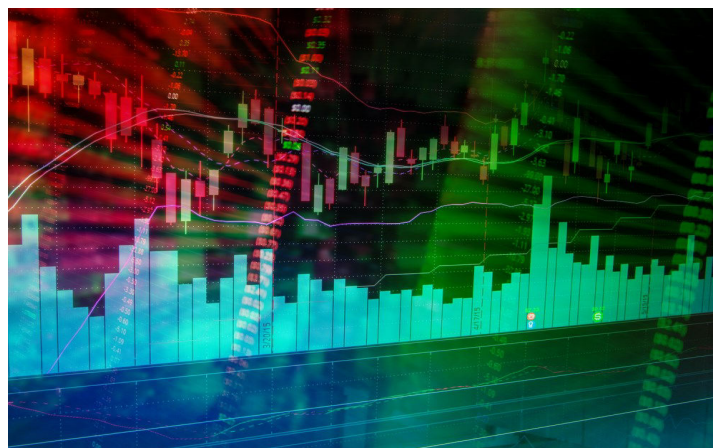
By the end of the course, students should have gained (i) an understanding of the different ways of measuring and explaining change using longitudinal data; (ii) an appreciation of the particular problems posed by missing data in longitudinal research; (iii) a basic understanding of ways of adjusting for missing data and (iv) confidence to address questions about longitudinal design and missing data.

Students should have some background in empirical social science and a basic grounding in statistical modelling, at least in linear regression.

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CMIST Short Courses Presents: Longitudinal Data Analysis

COURSE OUTLINE

11 April 2017

The course covers two of the most useful ways of analysing longitudinal data. In the morning we cover growth curve analysis within a multilevel modelling framework. The theoretical ideas are embellished with practical work using data from the National Child Development Study. After lunch, basic concepts in survival analysis and event history analysis are introduced followed by practical work with a simple (pencil and paper) example.

By the end of the course, students should have gained (i) an understanding of how growth curve models can be used to analyse repeated measures data; (ii) an appreciation of the ways in which duration and transition data can be analysed using techniques initially developed in medicine and industry; (iii) confidence to carry out practical work with some kinds of longitudinal data.

Students should have a strong background in empirical social science and a good understanding of the basics of statistical modelling, at least up to multiple linear regression. Some experience with STATA would be useful.

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CMIST Short Courses Presents: Experimental Design

COURSE OUTLINE

12 June 2017

The course covers two of the most useful ways of analysing longitudinal data. In the morning we cover growth curve analysis within a multilevel modelling framework. The theoretical ideas are embellished with practical work using data from the National Child Development Study. After lunch, basic concepts in survival analysis and event history analysis are introduced followed by practical work with a simple (pencil and paper) example.

By the end of the course, students should have gained (i) an understanding of how growth curve models can be used to analyse repeated measures data; (ii) an appreciation of the ways in which duration and transition data can be analysed using techniques initially developed in medicine and industry; (iii) confidence to carry out practical work with some kinds of longitudinal data.

Students should have a strong background in empirical social science and a good understanding of the basics of statistical modelling, at least up to multiple linear regression. Some experience with STATA would be useful.

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