

# 3-Day Intensive Medical Statistics and SPSS Course



■ Duration: One day ■ Time: 9:30 – 4:30 ■ Venue: Ormskirk Hospital, LRC

## Day-1 Understanding Health and Medical Statistics

### Target Audience

Doctors, dentists, nurses, allied health professionals, researchers, academics, service staff, and students, who want to understand statistical information that appears in health and medical research publications.

### Pre-requisites

Little or no previous knowledge of statistics is required. Participants are encouraged to bring a published paper relevant to their discipline. The article should contain some statistical information of which they wish to gain a clearer understanding.

### Aim

This course focuses on the fundamental concepts of statistics used in health and medical research publications. Health and medical examples are used to explain statistical concepts to enable researchers to firstly understand the concepts and secondly to learn to use them in their own research.

### Learning Outcomes

By the end of the course, you will be able to:

- Recognise basic statistical terms used in publications, e.g. p-values, confidence interval, standard deviation, standard error of the mean, etc.
- Determine when a given p-value is significant.
- Recognise some of the commonly used statistics and how they are used.
- Gain a basic understanding of meta-analysis output.

### Course Content

#### Basic statistical concepts

- The purpose of statistics.
- Statistical notations and symbols.
- Descriptive – data types, averages, dispersion, normal distribution, variance, standard deviation, standard error of the mean, degree of freedom.
- Hypothesis testing and P-value
- Confidence interval and confidence level
- Tail of test – two-tail and one-tail
- Type I, Type II errors
- Sample, sample size, population
- The Power of the test
- Risk ratio, odd ratio
- Sensitivity, specificity and Predictive Values.

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## Inferential Statistics

Parametric and non-parametric test - how and when to use commonly used tests: Chi-squared, Ttest, Mann-Whitney U test, ANOVA, Krusall-Wallis, Pearson correlation, Spearman correlation, Wilcoxon Sign rank test, Freidmam, Univariate and Multivariate statistics. Understanding Meta analysis outputs.

## Teaching Methods

Presentation, lecture, demonstration, individual and group exercises, question and answer sessions, discussions, reflective evaluation of the learning points, opportunity for participants to share tips and insights, clinic session for those who bring articles to receive explanation.

## Recognition for Learning

This is a non-credit bearing course however; participants will receive a certificate of attendance on completion of the course.

## Lunch and Refreshments

Hot and cold lunch and refreshments are provided.

## Future Dates

21<sup>st</sup> September 2009

1<sup>st</sup> December 2009

## Day-2 Introduction to SPSS Statistics

### Target Audience

Doctors, dentists, nurses, allied health professionals, researchers, academics, service staff, who have collected survey data and are about to summarise and analyse or those who want to know how to use SPSS.

### Pre-requisites

No previous knowledge of SPSS is required. Knowledge of Windows environment is however, essential. You are encouraged to bring a questionnaire or an Excel data file you wish to analyse with SPSS.

### Aim

This introductory course will help you to acquire the skills necessary to create SPSS file from scratch, from either a paper base questionnaire data. You will learn to format and upload existing Excel or Access data into SPSS, ready for descriptive statistics and graphical summaries. You will also learn basic data manipulation techniques such as compute, recode, select if, count, split file and merge files.

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## Learning Outcomes

By the end of the course, you will be able to:

### Session 1

- Explore the SPSS package using a sample data file.
- Recognise the basic concept of levels of measurement – categorical and continuous measurements.
- Examine summary statistics and graphs appropriate to use on categorical and continuous variables.
- Summarise and explore relationships and comparisons between variables.

### Session 2

- Create an SPSS data entry template from scratch.
- Enter questionnaire responses into the newly created data file.
- Generate graphs, descriptive statistics, cross-tabulations and means tables.
- Transfer the outputs (statistics/ tables /graphs) into Word.

### Session 3

- Use the recode command to transform some of the original variables.
- Use the compute command to create new variables based on existing variables.
- Select cases if a given criteria is met.
- Split file for tailored output base on a grouping variable(s).
- Merge files on variables and cases.

## Course Content

- Demonstrate how SPSS works using a sample data.
- Create a new SPSS data file from scratch.
- Populate the file and produce descriptive statistics, reports and graphs.
- Format and upload Excel data file into SPSS.
- Use data manipulation techniques to prepare the data to take advantage of further summaries and analysis.

## Teaching Methods

Presentation, demonstration, hands-on exercises, question and answer sessions, discussions, reflective evaluation of the learning points, opportunity for participants to share tips and insights, clinic session for practice/advice.

## Recognition for Learning

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### Lunch and Refreshments

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### Future Dates

22<sup>nd</sup> September 2009

2<sup>nd</sup> December 2009

## Day-3 SPSS with Statistics

### Target Audience

Doctors, dentists, nurses, allied health professionals, researchers, academics, service staff, and students, who want explore, analyse and test hypotheses for evidence in their data.

### Pre-requisites

This is a **follow-up** to the 'Introduction to SPSS' and 'Understanding Health & Medical Statistics' courses. It is assumed that you have had some exposure to basic SPSS and also some understanding of basic statistical concepts. However, if you are new to SPSS but keen to use the software to generate statistics and understand the interpretation of the output, then you could attend this course.

### Aim

To develop the skill and confidence to select the correct statistics to analyse and to draw informed conclusions about your research data. Understand when and how to use the common statistics, responsive to your data. Learn how to interpret the output and report the statistics.

### Learning Outcomes

By the end of the course, you will be able to:

- Explore the basic concepts of statistics such as hypothesis, p-value, confidence interval, standard deviation, averages, percentiles, normal distribution.
- Observe the difference between categorical and numerical data types and how to summarise single, pairs, groups and mixed variables.
- Identify response and explanatory variables in conducting a test.
- Appreciate the basic rules of selecting statistics, base on the data types.
- State hypothesis and select the appropriate statistics to test the hypothesis
- Evaluate when to use some of the common statistical tests such as Chi-squared, Ttest, ANOVA, correlation and regression.
- Perform univariate, bivariate, and multivariate analysis.

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- Interpret the test output and learn how to report the statistics.
- Present the summary analysis using charts and tables.

## Course Content

- Use case studies exercises to teach data exploratory analysis.
- Examine the assumptions of test statistics before using.
- State hypothesis and carefully select the appropriate statistics to test it.
- Interpret the statistical output and write the statistical statement for it.

## Teaching Methods

Presentation, demonstration, hands-on exercises, question and answer sessions, discussions, reflective evaluation of the learning points, opportunity for participants to share tips and insights, clinic session for practice/advice.

## Recognition for Learning

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## Lunch and Refreshments

Hot and cold lunch and refreshments are provided.

## Future Dates

23<sup>rd</sup> September 2009

3<sup>rd</sup> December 2009

## Fees and Bookings

Individual course fee is £173.73, Student rate is £147.73. VAT not applicable.

## Discount

There is a **10%** discount if you book 2 courses and **15%** for all 3 courses.

Please book your place through [elizabeth@datasolutionservices.co.uk](mailto:elizabeth@datasolutionservices.co.uk) or phone Elizabeth Wiredu on 01704 822110.

## Venue

Learning Resources Centre,

Ormskirk & District General Hospital,

Wigan Road,

Ormskirk, L39 2AZ