

STATISTICS GUIDANCE NOTES

FOR Applied PEP

Year 3 (April – June 2019)

Contents	Page
Statistical Methods	2
Data Analysis And Statistical Software	2
Statistical Advice Clinics	3
Resources	3

STATISTICAL METHODS

Both research and non-research options may require statistical methods. Students doing a research option will need to carry-out February 2017

statistical analysis of their data. Some non-research option projects may need to analyse data available from public sources. In both

research and non-research options it may be necessary to interpret research reports containing statistical analyses.

When designing your project it has been recommended that you consider the statistical methods that you will be using. In years 1 and 2 of the course you were introduced to statistical methods as part of the **Information Science Modules**. To decide which statistical methods to use you may wish to refer to the workbooks for that part of the course. Topics covered included cross-

tabulation of data, analyses using the chi-squared test and Fishers exact test, correlation and regression including multiple regression, statistical significant tests and confidence intervals, paired and un-paired analyses, non-parametric statistical tests including the mann-whitney u-test and the wilcoxon test, odds-ratio and relative. Alternatively you may wish to refer to the recommended course text for this unit, Campbell and Machin, or some of the other recommended texts at the end of this document.

DATA ANALYSIS AND STATISTICAL SOFTWARE

Some of you may not need to use statistical software for the analysis of your data. It may be possible using a calculator or using **EXCEL** but some of you will need to use a statistical package.

During Years 1 and 2 you were introduced to the statistical package **StatsDirect**. If you only have a limited number of variables in your dataset, **StatsDirect** may be all you require for your statistical analysis. **StatsDirect** has several advantages including ease of use. It has some procedures specifically designed for medical statistics, and has helpful information related to medical statistics. Its disadvantage is that it is not suitable for analysing data sets with large

numbers of variables (questions) particularly where some variables have missing observations.

If your project involves a survey or a database with a large number of variables, it may be easy to use **SPSS**. This package, designed for the social sciences, contains procedures that are useful when analysing questionnaire type data. Disadvantages are that it is more complicated to use and it does not contain some important statistical methods used in medical statistics.

Notes in the use of **SPSS** or **StatsDirect** are provided via the Support web site (see resources).

STATISTICAL ADVICE CLINICS

To begin with your supervisor should advise you on the design and analysis of your project. Depending on the requirements of the project and the experience of the supervisor this may be sufficient.

The statistical advice appointments will give additional individual advice for your project where required. These sessions are provided by the Statisticians in the Faculty of Biology, Medicine and Health's Biostatistics Group and bases at the Teaching Hospitals. Each student may have up to three statistical advice appointments.

In order to make best use of the clinic sessions, it is essential that students discuss the project outline and statistical aspects of their study with their supervisor prior to an

appointment. It is suggested that this be put in writing and might include the following:

- A statement of objectives of the project.
- An outline of the design of project.
- Suggested data collection.
- Proposed how it will be analysed

Please bring any documents you would like to discuss with the statistician in a hard copy format (printouts etc) as this will enable the statistical advice clinic to run smoothly.

Students should bring the written outline to the discussion with the statistical advisor.

Please note that the statistical advisor cannot do your statistical analysis for you.

Statistical advice appointments must be booked in advance

Up to 3 sessions available at 30 minutes each

- Attempt to provide continuity
- Good to meet fairly early on
- Don't leave it till the last week

Bookings are made by E-mail (MHS-medstats@manchester.ac.uk).

State: **Your Name**

APEP Location (Central Manchester, Salford, Christie, Wythenshawe)

Short paragraph explaining project

Any Questions (2 or 3)

Bring any relevant documents as hard copies

Written draft of aims, objectives and outline design is helpful

Students completing their projects at Preston have separate support and should contact Zoe Cross zoe.cross2@LHTR.nhs.uk

RESOURCES

Software for Statistics

SPSS (version 22) is available to students to download from IT Services web pages www.itservices.manchester.ac.uk/software/. Students are advised to obtain the software well in advance.

For StatsDirect, a limited time trial version can be downloaded from www.statsdirect.com students can also request a license by contacting the IT Service Desk via the contact us page www.manchester.ac.uk/servicedesk.

Notes in the use of SPSS or StatsDirect are provided via the Support web site. <http://research.bmh.manchester.ac.uk/biostatistics/teaching/statisticalsupport>

Some Useful Statistical Texts

Introductory

- Campbell MJ & Machin D (1990) *Medical Statistics: A Commonsense Approach*. West Sussex. John Wiley & Sons Ltd. Multiple Copies available in JRL
- Bland M (1995). *An Introduction to Medical Statistics*. Oxford: Oxford University Press.
- Gardner MJ & Altman DG. (2000) *Statistics with Confidence: Confidence Intervals and Statistical Guidelines*. London: BMJ Publishing.

More Advanced

- Altman DG (1991). *Practical Statistics for Medical Research*. London: Chapman & Hall.
- Armitage P & Berry G (1994). *Statistical Methods in Medical Research*. Oxford: Blackwells.

