



PAPER IV: METHODS IN SOCIAL RESEARCH HILARY TERM 2014

Convenor: Evelyn Ersanilli

Classes: Thursdays, Weeks 1-8, 9.00-11.00, Queen Elizabeth House, Seminar Room 3

Tutorials: Tuesdays, Weeks 2-8:

Group 1 (George Wood): 11.15-12.30, Queen Elizabeth House, Seminar Room 3

Group 2 (Dingeman Wiertz): 11.45-13.00, Queen Elizabeth House, Meeting Room A

Group 3 (Juta Kawalerowicz): 12.30-13.45, Queen Elizabeth House, Seminar Room 3

Stata workshops: Week 2 and 3 only, Thursday 12.00-14.00 IT services, 11-13 Banbury Road, Isis Room

Aims

The course will provide students with an elementary understanding of the logic of statistical inference and the skills to conduct a basic analysis using statistical software.

The course assumes no prior knowledge of statistics.

Course structure

In Hilary Term this paper is taught in weekly 2-hour lectures supplemented with weekly tutorials (starting in week 2).

You are expected to come to the lectures having read the assigned readings. The lectures will be interspersed with small group exercises.

Weekly homework exercises are supplied on WebLearn after each lecture on Thursday. You are expected to submit your answers on WebLearn by the following Monday 15:00.

You can do the exercises by yourself or in pairs (*only with people in the same tutorial group*).

Submit your answers to WebLearn in the folder of your tutor in the "assignments" section.

Clearly list your name at the top of the document you submit. If you work in a pair, only upload one copy and include both your names at the top of the document. You can submit your answers in Word format, or, if you write the answers by hand, scan the forms and upload them as a pdf file.

Detailed answer keys to the exercises will be posted on WebLearn on Mondays at 18.00 so you can have a look at them before the tutorial.

In the tutorials you will discuss the exercises and any other questions related to the topics of that week. The tutorial group division is posted on WebLearn.

To develop your statistical skills it is crucial that you undertake independent reading and try to apply what you have learnt from the lectures on your own. How much you learn will largely depend on how much time you spend on reading and doing exercises outside the class.

Evelyn has weekly office hours on Fridays from 13.30-15.30. You are welcome to attend office hours for support with the homework exercises, the examples from class, or if you would like to have more advanced exercises or readings.

In week 7 or 8 you will have the opportunity to attend a 1-hour personal consultation on your plans for assignments 3 with Dingeman or Juta. They will give advice on how to structure your analysis and will help you write the necessary syntax. Sign-up will be done via Weblearn closer to the date.

Text books

In preparation for the course it is suggested you read one of

Klein, G & A Dabney (2013) *The Cartoon introduction to statistics* Hill and Wang

Blastland, Michael and Andrew Dilnot (2008) *The Tiger That Isn't: Seeing Through A World Of Numbers*. Profile: London. 226 pp.

These books provide a math-free introduction to the logic of inferential statistics.

Different authors may explain the same principles differently, and one may resonate more with you than the other. The Social Sciences Library has a wide range of statistics books, requiring different degrees of prior knowledge. Some of the books that I find most accessible include:

Diamond, I. and Jeffries, J. (2001) *Beginning Statistics: An Introduction for Social Scientists*. London: Sage. (Available online via SRMO on Oxlip+)

Students from past years found this book very helpful and accessible. It includes exercises at the end of each chapter, so you can test your level of understanding. I strongly recommend you do these exercises. The book does not cover multivariate analyses, so for the final weeks you will need to use another statistics book.

Agresti, A. and Finlay, B. (2009 or 2014) *Statistical Methods for the Social Sciences*, 4th ed. (Pearson International Edition). Upper Saddle River NJ, Pearson Prentice Hall.

This book covers everything we will cover during this term and more. It includes exercises at the end of each chapter, so you can test your level of understanding. I strongly recommend you do these exercises. The explanations in Agresti and Finlay are a bit less accessible than those in Diamond and Jeffries.

Urdan, T. C. (2010) *Statistics in Plain English*, 3rd ed. New York-Hove, Routledge.

This is a great book for those who have had statistics courses before. Urdan provides a nuanced explanation of inferential statistics and the underlying assumptions. It provides a really good explanation of the key concept in inferential statistics, the standard error. It might take several readings of this chapter to fully understand it, but it is worth the effort. There are no exercises in this book.

For most people, learning statistics requires repetition. Therefore I recommend that you use two books for this course.

We will cover the main topics in the following order, although we may slow down or speed up as needed. You will receive a weekly email detailing the topics and readings for the next lecture. If you are using a different book, you should read the chapters of the same topic as the lecture.

There will be additional (applied) readings connected to the weekly exercises.

Week by week readings

Week1

Topics

- Populations and samples
- Measurement levels
- Tables and graphs
- Percentages
- Measures of central tendency

Readings

Diamond & Jefferies: chapters 1-4
and/or

Agresti & Finlay: chapters 1, 2, 3 (only 3.1-3.2)
and/or

Urdan: chapters 1-2
and/or

Chapters on these topics in any other statistics book.

Week 2

Topics

- Measures of dispersion
- Z-scores
- Normal distribution
- Probability distributions

Readings

Diamond & Jefferies: chapters 4-7
and/or

Agresti & Finlay: chapter 4
and/or

Urdan: chapters 2-5
and/or

Chapters on these topics in any other statistics book.

Week 3:

Topics

- Central Limit Theorem
- Confidence intervals for means
- Confidence intervals for proportions

Readings

Diamond & Jefferies: chapters 8-10
and/or

Agresti & Finlay: chapter 5 (skip 5.5)
and/or

Urdan: chapters 4 (repeat), 6, 7 (skip the bits on hypothesis testing and effect size for now)
and/or

Chapters on these topics in any other statistics book.

Week 4:

Topics:

- Hypothesis tests (significance tests / null-hypothesis testing)
- T-distributions & t-tests
- Independent t-tests (also called unpaired t-tests)

It is recommended you browse through the section on one-sided tests in your text book; however this topic will not be covered in class or in the exercises. This is because many students find the topic confusing and in practice most analysts uses two-sided tests.

Readings

Diamond & Jefferies: chapters 11 & 12 (NB they do not cover independent t-tests so you will need to use an additional text book)

and/or

Agresti & Finlay: the t-distribution, properties and t-scores (pp 118-121), chapter 6, chapter 7 (only 7.1-7.3)

and/or

Urdan: chapters 6 (repeat), 7 & 9 (only 'independent sample t tests' and 'comparing boys and girls)

and/or

Chapters on these topics in any other statistics book.

Week 5:

Topics:

- Dependent t-tests (also called paired t-tests)
- Chi-square tests

Readings

Diamond & Jefferies: chapter 14 (NB they do not cover independent or dependent t-tests so you will need to use an additional text book)

and/or

Agresti & Finlay: chapters 7 and 8

and/or

Urdan: chapters 9 (in full) & 14

and/or

Chapters on these topics in any other statistics book.

Week 6:

Topics:

- correlation
- regression

Readings

Diamond & Jefferies: chapter 13

and/or

Agresti & Finlay: chapter 9

and/or

Urdan: chapters 8 & 13 (only pages 145- 151)

and/or

Chapters on these topics in any other statistics book.

Week 7:

Topics:

- Multivariate relationships
- Multivariate regression
- Multivariate regression with dummy variables

Readings

Urdan: chapter 8

and/or

Agresti & Finlay: chapters 10, 11 (skip section 11.5 on interactions), 12.3 performing ANOVA by regression modelling (dummy variables) + 13.2 regression with quantitative and categorical predictors (dummy variables)

Urdan does not discuss dummy variables. You can either read the two paragraphs from Agresti & Finlay, or read chapter 6 in: Treiman, Donald J (2009) *Quantitative Data Analysis. Doing Social Research to Test Ideas*. You can read Treiman's chapter instead of the chapter in Urdan or just read the pages on dummy variables and the worked out example in this book (pp120-133) in addition to Urdan. Note: what Treiman calls 'categorical variables' covers both what we have been referring to as nominal and ordinal-level variables.

Week 8:

Topics: Q&A

Software

You will need to use statistical software in order to complete the statistics assignment in the Methods in Social Research Portfolio (assignment 3). There will be Stata workshops in Weeks 2 and 3. You will receive a tailor made Stata guide that covers all the codes you will need for this course. You will receive your own copy of Stata from QEH. You will also have access to Stata on all the student computers at QEH and some of the student computers at Anthropology. You are free to use another software package such as R or SPSS however the answer keys to the weekly exercises will only include Stata-codes. R is free to download. SPSS is available for personal use from IT-services for a small fee.

IT-services provides training for both packages (R or SPSS), but be aware that these classes tend to fill up fast and thus **early sign-up is necessary**. (<http://courses.it.ox.ac.uk/catalogue>)

For all programmes, the UCLA statistics website (<http://www.ats.ucla.edu/stat/>) is a great resource. If you click on the programme of your choice you will see a new page that has a menu and a special Google search function for all the UCLA-stats pages on that programme. The site gives the syntax (codes) to do a range of statistical analyses and gives output examples (you can download the datasets from the website).

For working with **SPSS** I recommend:

Field, A. (2013) *Discovering Statistics with SPSS*, 4th ed. Los Angeles-London, Sage.

The book explains statistical principles as well as how to apply them in SPSS.

The disadvantage is that it only explains the pull-down menus and not the syntax codes; this makes it extra attractive to beginners, but less suited for more advanced users or people planning to become advanced users. For your statistics assignment it is highly recommended that you work with syntax.

For a syntax-based SPSS textbook, you could turn to

Landau, S., & Everitt, B. (2004). [*A handbook of statistical analyses using SPSS*](#). Boca Raton, FL: Chapman & Hall/CRC.

For **Stata**:

Kohler, U. and Kreuter, F. (2012) *Data Analysis Using Stata*, 3rd ed. College Station TX, Stata Press.

Kohler and Kreuter is a great introduction, showing the range of ways in which Stata lets you present data using different types of tables and graphs and also more advanced codes for data manipulation and analysis that are very useful. This book only explains Stata commands (syntax), not how to use pull-down menus.

Acock, A. (2012) *A Gentle Introduction to Stata*, rev. 3rd ed. College Station TX, Stata Press

Acock does include screenshots of the pull-down menu options in Stata. For your statistics assignment it is highly recommended that you work with syntax.

For **R** you can consult one of the following:

Crawley, M. J. (2007) *The R Book*. Chichester-Hoboken NJ, Wiley.

Field, A. Z. Field & J. Miles (2012) *Discovering statistics using R*. London: Sage. (most accessible)

Fox, J. (2011) *An R Companion to Applied Regression*, 2nd ed. Los Angeles-London, Sage.