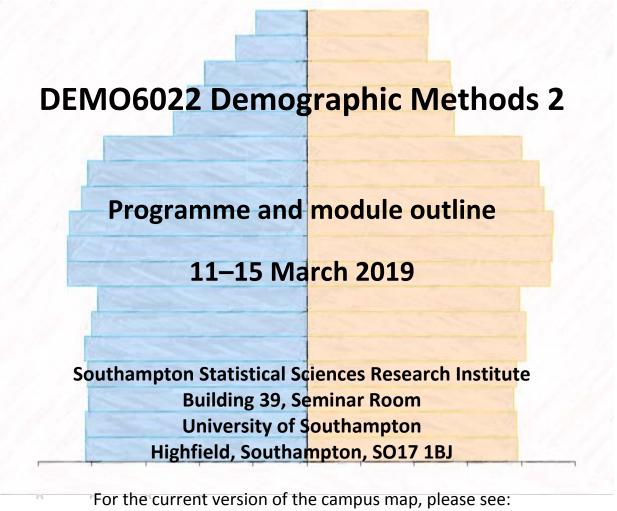MSc/Diploma in Demography
MSc/Diploma in Official Statistics
MSc/Diploma in Data Analytics for Government
MSc/Diploma in Social Research Methods with Applied Statistics
Continuous Professional Development Programme

DEMO6022 Demographic Methods 2

Programme and module outline

11–15 March 2019

Southampton Statistical Sciences Research Institute
Building 39, Seminar Room
University of Southampton
Highfield, Southampton, SO17 1BJ

For the current version of the campus map, please see:
http://www.southampton.ac.uk/visitus/campuses/maps/highfield_3d_key.pdf

This module outline should be read in conjunction with the Blackboard website for the module and the Degree Handbook for your degree programme. Degree Handbooks are available here:
https://www.southampton.ac.uk/studentservices/academic-life/faculty-handbooks.page

Contents

1. Essential information

A) Staff

Professor Jakub Bijak will be the course coordinator and the main lecturer

Office	Room 4025, Murray Building – 58
Office hours	Available throughout the course
	Afterwards please email for an appointment
Email	j.bijak@soton.ac.uk
Phone	023 8059 7486

Professor Allan G Hill will be also a lecturer on this course, contributing lectures L6–L8 on Wednesday, 13 March. Email: ah4e10@soton.ac.uk

Mr Francesco Rampazzo will be a Teaching Assistant, F.Rampazzo@soton.ac.uk

Administrators: 023 8059 2250, Building 2, Room 2040
           for MOffStat and MDataGov: socsci@soton.ac.uk
           for other programmes: SocStatDemo@soton.ac.uk

B) Programme

Monday, 11 March 2019

From 9:30	*Registration – MOffStat office, Room 2123, Murray Building – 58*
10:00	**L1:** Introduction to the Course and Refresher Session.
11:00	**Coffee/tea break**
11:15	**L2:** Multiple decrement life tables and other advanced life table methods.
12:15	*Class Exercise 1: Dependent multiple decrement life table.*
1:00	**Lunch break**
2:00	**L3:** Multiple decrement life tables and health expectancies.
3:30	**Coffee/tea break**
3:45	*Class Exercise 2: Independent multiple decrement life tables and health expectancies.*
5:00	**Close**

Tuesday, 12 March 2019

10:00	**L4:** Event history analysis and birth histories.
11:00	**Coffee/tea**
11:15	**L5:** Additional fertility measures: parity progression and birth history measures.
12:15	*Class Exercise 3: Handling event history data.*
1:00	**Lunch break**
2:00	*Class Exercise 4: Kaplan-Meier estimates.*
3:30	**Coffee/tea break**
3:45	*Class Exercise 5: Parity Progression ratios.*
5:00	**Close**

Wednesday, 13 March 2019

10:00	**L6:** Fertility and reproduction estimated from cross-sectional or longitudinal surveys.
11:00	**Coffee/tea**
11:15	**L7:** Model age patterns and stable population theory. Applications: historical data and populations lacking complete vital statistics.
12:15	**L8:** Models for measuring fertility changes.
1:00	**Lunch break**

Wednesday, 13 March 2019 (cont.)

2:00	*Class Exercise 6: Stable population calculation.*
2:45	*Class Exercise 7: Constructing a stable age distribution.*
3:30	**Coffee/tea**
3:45	*Class Exercise 8: Birth interval analysis.*
5:00	**Close**

Thursday, 14 March 2019

10:00	**L9:** Models for demographic estimation when data are incomplete or inaccurate.
11:00	**Coffee/tea**
11:15	**L10:** Matrix population models. The Leslie matrix. Introduction to multistate demography.
1:00	**Lunch break**
2:00	*Class Exercise 9: Logit models for life tables and fertility schedules.*
3:00	**Special session: Computational modelling in demography (with refreshments)**
4:15	*Class Exercise 10: Matrix population modelling*
5:00	**Close**

Friday, 15 March 2019

10:00	**L11:** Selected topics on population projections: Focus on households and small areas
11:00	**Coffee/tea**
11:15	*Class Exercise 11: Using PAS Spreadsheets and UNFPA/IUSSP 'Tools for Demographic Estimation'*
12:15	Summary and review of topics covered
1:00	**Lunch break and close**
	If there is enough demand, there may be an optional face-to-face revision session in May 2019, before the final examination.

Notes: **Lx** denotes lecture X. The times in *italics* are approximate.

C) Assessment

The course is assessed in **100% by (unseen) written examination**.

2. Course content

A) Aims and objectives

To introduce students to more advanced demographic methods and to illustrate their application to official statistical purposes and related demographic questions.

B) Learning outcomes and key skills

Having successfully completed this module you will be able to:

(a) Construct a multiple decrement life table, eliminate or modify a cause of decrement, and calculate healthy life expectancy;
(b) Critically evaluate the potential biases involved in analysing event history data, and the main methods to handle these;
(c) Interpret and apply parity specific fertility measures, and appreciate current debates regarding the measurement of fertility;
(d) Explain and assess the use of model schedules in demography, especially in the context of missing or incomplete data;
(e) Calculate a stable population, compute and analyse the basic features and measures of the associated population dynamics;
(f) Carry out basic operations on matrices and vectors, and apply basic matrix algebra to population projection problems;
(g) Appreciate specific issues in population projections, such as small area, household and multistate projections;
(h) Demonstrate problem solving by using spreadsheets and open access demographic software for a range of demographic tasks.

C) Teaching and learning methods

The course will be taught by lectures and extended small-group practical classes. Paper copies of the lecture slides and class exercises will be handed out at the beginning of the course. Some indicative reading is given at the end of this outline, and further sources will be mentioned in lectures.

D) Recommended reading

General demographic methods

Selected sections of each of these texts will be useful to you—you would not be expected to work through all of them, or even any one of them, from start to finish. Further reading will be given for each topic area. Note that the course collection items are located under different course codes – typically DEMO6020 or DEMO6028.

Useful refresher texts:

Newell, C. (1988) *Methods and Models in Demography*. London: Belhaven.

HB 881 NEW; Course collection DEMO6020

Good, introductory text, with exercises and answers. Strong on model life tables and fertility measures. From £8.50 or so used on amazon.co.uk

Hinde, A. (1998) *Demographic methods*. Arnold, London (with Internet site for exercises). **12 copies in Library: HB 881 HIN; Course collection DEMO6028**

The best single text which is worth purchasing if intending to go further is:

Preston, S.H., Heuveline, P. and Guillot, M. (2001) *Demography: Measuring and Modelling Population Processes*. Oxford: Blackwell.

HB 849.4 PRE; Course collection DEMO6028

Excellent text; more advanced than those above; paperback from £18 used on amazon.co.uk

Some other texts, arranged from easy to more difficult:

Palmore, J.A. and R.W. Gardner (1994) *Measuring mortality, fertility and natural increase*. East-West Center, Honolulu.

HB 849.4 PAL; Course collection DEMO6028

Weeks, J.R. (2004) Population: An Introduction to Concepts and Issues. Wadsworth Publishing Company: New York. Ninth Edition.

HB 871 WEE; Course collection DEMO6028

Siegel, J.S. and D.A. Swanson (eds.) (2004) *The Methods and materials of demography*. 2nd edition. San Diego, CA: Elsevier Academic Press.

HB 881 SIE; Library online resource

Siegel, J.S. (2002) Applied Demography: Applications to business, government, law and public policy. London: Academic Press.

HB 849.4 SIE; Course collection DEMO6028

Excellent on applied aspects, though with American focus and examples. See selected sections of Chapters 1, 3 and 4 on measurement, life tables and data sources, Chapter 9 on population estimates, and Chapter 10 on projections.

Pollard, A.H., Yusuf, F., and Pollard, G.N. (1990) *Demographic Techniques*. 3rd edition. Oxford: Pergamon Press. **HB 881 POL**
A very straightforward and useful text, though not comprehensive.

Rowland, D. (2003) *Demographic methods and Concepts*. Oxford: OUP.
A good recent general text on methods.

HB 849.4 ROW; Course collection DEMO6028

Poston, D. and L. Bouvier (2010) *Population and society: an introduction to demography*. Oxford.   **HB 849.4 POS**
Excellent text, more advanced than others in this list.

Smith, D. P. (1992) *Formal Demography*. New York: Plenum.   **HB 881 SMI**

Wachter, K. (2014) *Essential Demographic Methods*. Harvard University Press.
                    HB 849.4 WAC; Library online resource; Course collection DEMO6020

Handling event histories
Ní Bhrolcháin, M. (1993) Describing time-trends in fertility using maternity history information. Chapter 3 in M. Ní Bhrolcháin (ed) *New Perspectives on Fertility in Britain.* London: HMSO, pp. 33-50.   **HB 891 NIB**

Further demographic measurement
Ní Bhrolcháin, M. (2001) Demographic measurement: general issues and measures of fertility. *International Encyclopaedia of the Social and Behavioural Sciences*, Elsevier.
                    Library online resource; Course collection DEMO6020

Ní Bhrolcháin, M. (2001) Demographic measurement: nuptiality, mortality, migration, and growth. *International Encyclopaedia of the Social and Behavioural Sciences*, Elsevier.
                    Library online resource; Course collection DEMO6020

* Ní Bhrolcháin, M. (2011) Tempo and the TFR. *Demography*, 48*:* 841–861. (optional) http://link.springer.com/article/10.1007%2Fs13524-011-0033-4

Population projections
Office for National Statistics (2011) National Population Projections, 2014-Based. https://www.gov.uk/government/statistics/national-population-projections-2014-based-projections

Keilman, N. (2007) National population projections in perspective: How successful compared to those in other European countries? *Population Trends*, 129*:* 20–30. http://www.ons.gov.uk/ons/rel/population-trends-rd/population-trends/no--129--autumn-2007/uk-national-population-projections-in-perspective--how-successful-compared-to-those-in-other-european-countries-.pdf

Keilman, N. (2008) European demographic forecasts have not become more accurate over the past 25 years. *Population and Development Review*, 34: 137-153. http://folk.uio.no/keilman/pdr3.pdf

> **Can't find a book in the Library…**
>
> **The book I want is on loan to someone else.** Use WebCat to place a hold on the book even if you think it won't be returned in time (this will notify staff that the book is in demand). If you think more copies of a text may be required, please also tell your course tutor.
>
> **WebCat says it's on the shelf but it's not.** Start by asking at the Enquiry Desk. If Library staff can't find the book, look again the next day. If you still can't find it, go back to the Enquiry Desk and say that you would like to report the book missing. Library staff will then search again and let you know the outcome.
>
> **Other problems using the Library…** please ask at the Enquiry Desk for help or contact the library enquiries via email: libenqs@soton.ac.uk

E) Blackboard site

When registered for the module, you should be enrolled automatically on the module's Blackboard course and you can log on at: http://blackboard.soton.ac.uk/. If you do not have access to the site please let the module coordinator know.

The site contains all the relevant course materials: the course content (lecture slides, exercises, software links, and a selection of past exam papers), module and staff information, and a range of links to the library and other online resources. You should check in regularly to ensure you see all announcements and course materials.

The slides for each lecture will be provided in printed booklets distributed at the outset. Additional explanatory slides and other teaching materials will be added to the course website. For the class exercises, students may work in small groups. All students are welcome to use their own laptop computers if available. Some public-domain software for demographic analysis will be distributed to all students. Some key readings will be posted on the website and students are expected to have read the required papers before the class.

F) Miscellanea

CALCULATORS: Calculators will be provided for MOffStat and MDataGov students: you will be asked to sign on receipt and to return the calculator to the MOffStat/MDataGov Administrator (Room 2040, Building 2 – Business School, socsci@soton.ac.uk) before you leave Southampton. All other students: please bring a calculator with you. **You will need approved calculators for the exam.**

PRE-REQUISITE: DEMO 6020 Demographic Methods 1, or an equivalent course.

3. ASSESSMENT AND FEEDBACK

A) Assessment methods
The intended learning outcomes for the module will be assessed as follows:
The course will be assessed in **100% by a 2-hour examination** in May/June 2019. The paper will have three sections: Section A with one compulsory question, worth 33% of the total marks, Section B, where you may choose one of two questions, worth 33% of the marks, and Section C with one compulsory question, worth 34% of the marks. In exam papers prior to 2010–11 the structure differed slightly, but the style of the questions remains similar.

B) Resit arrangements
In the unfortunate event of failing the module, the resit will be in 100% by two-hour supplementary examination, to be held in August/September 2019.

C) Past exam papers
The university has a repository of past exam papers for students to consult, which can be accessed here: https://www.adminservices.soton.ac.uk/adminweb/jsp/pastPapers/pastPapers.jsp?

D) Feedback
Formative and summative feedback are provided in the following ways:

- Informal verbal feedback will be given during lectures and tutorials for individual and group work. (You'll need to contribute regularly to group discussions to make the best use of this.)
- Informal written and verbal feedback are often provided by email or during office hours when we respond to queries about assessments, for example.
- In particular, within DEMO6022 you will receive interim and informal ('formative') feedback in the lectures, exercises and workshops, including the optional revision session in May.
- Exam results are published only as a grade. Although individual feedback on examinations is not normally given, feedback on the strengths and weaknesses of the performance of the whole group which took an examination may be available via Blackboard.
- Students are entitled to view their examination scripts on request, your Student Office can advise on the process to be followed. You are only permitted to view an examination script to enable you to see how you can improve your future performance and no mark or other annotation on the script is negotiable or open to alteration. The absence of annotation on a script does not mean that it has not been marked.

- Feedback works two ways – we want to hear from you about any concerns you have and suggestions about how to improve modules. We do this through informal mid semester feedback, which can sometimes be used to make immediate improvements in module delivery, and through a formal questionnaire at the end of the module, which will benefit students taking it in subsequent years. In addition to these, informal feedback from you on how we are doing and what we could do better is welcome anytime.
- For further information about how your work is marked and moderated, university quality assurance processes etc., please visit the marking and feedback section in the University's quality handbook: https://www.southampton.ac.uk/quality/assessment/framework/marking_and_feedback.page?

For the feedback to be effective, it is important that you work with the feedback given and identify how you can improve your work in the future. Should you need further information about your work, get in touch with whoever marked the work.

Generic feedback on exam performance is, in the first instance, available online the day module marks are released. This feedback provides important information on common strengths and weaknesses in exam performance for all those who sat the exam. It gives a marks distribution, so you know how you performed relative to others and should give you some understanding of what was expected in order to achieve a high mark. As mentioned above, you may also ask to have individual feedback, in person, either with the module co-ordinator or the exam marker. To make this request, speak to someone at Reception at the Student Office, where you can collect a request form.

4. Grade Descriptors and Marking Criteria

Social Statistics and Demography follow the standard the University grade descriptors available here: http://www.southampton.ac.uk/quality/assessment/framework/principles_and_definitions.page#assessment_descriptors when marking assessed work. The marking criteria and/or marking rubric for each individual piece of assessment on this module will be made available on Blackboard and with the instructions for each assessment. Note that the rating given for each criterion is descriptive and does not necessarily relate in a direct numerical way to the mark achieved.

5. Academic integrity

The University places the highest importance on the maintenance of academic integrity and expects that all students will familiarise themselves with the Regulations Governing Academic Integrity available at:
http://www.calendar.soton.ac.uk/sectionIV/academic-integrity-regs.html

Procedures will be invoked to investigate suspected breaches of academic integrity when concerns are raised during the marking process or in connection with suspected cheating in examinations. We are aware that students may have experienced differing standards at other institutions (including those overseas) but it is essential that you take steps to ensure your full understanding of the standards expected at Southampton as significant penalties can be imposed if these standards are breached.

It is often helpful to discuss ideas and approaches to your work with your peers, and this is a good way to help you think through your own views. However, work submitted for assessment should always be entirely your own, except where clearly specified otherwise in the instructions for the assignment. In some instances working in groups will be required, and there may be occasions when work is submitted from the whole group rather than individuals. In these instances the instructions will make it clear how individual contributions to the joint work should be identified and will be assessed. If you are in any doubt, check with the person setting the assignment. If you have worked with others you should make sure that you acknowledge this in any declaration you make.

Please note that you are NOT permitted to discuss the assignment or to show any other student your written work or computer programmes or outputs. Copying includes using another student's computer program, output or graphics.

A very useful set of interactive guides is available at http://library.soton.ac.uk/sash/what-is-academic-integrity. These aim to help you gain a better understanding of academic integrity and develop your skills so that your assessed work does not accidentally plagiarise the work of others.

Referencing

There are many styles of referencing used in academic publications. Unless otherwise specified the style known as the Harvard system is preferred in our Faculty. Details about how to use the Harvard referencing system can be found

through the following Hartley library link: http://library.soton.ac.uk/sash/referencing or by downloading the guide from: http://library.soton.ac.uk/ld.php?content_id=4660789. If in doubt about what is required in any particular assignment, what referencing styles are appropriate etc., always ask. Your tutor or module co-ordinator will be able to point you in the direction of appropriate sources of advice and information.

Unfortunately, Academic integrity breaches sometimes occur. The regulations distinguish between two types of breaches of academic integrity: minor (first-time offences, "committed through inexperience or lack of understanding and ... limited in scope or their effect"), and major. The minor breaches are dealt with by individual markers, through the regular feedback process. However, everything that is not a minor breach, including all repeated cases, is a major one.

The major breaches are dealt with either by the Faculty Academic Integrity Officer or by an Academic Integrity panel, depending on the severity of the alleged breach. The outcomes from this process can vary with the maximum penalty that can be given the termination of the programme – **so please treat Academic Integrity seriously**.

6. Support and Troubleshooting

If you find yourself experiencing any study skills difficulties contact the Academic Skills Hub, level 2 in the Hartley Library, Monday – Friday: 10:00 – 12:00 & 14:00 – 16:00. http://library.soton.ac.uk/sash

You can also access specialized study support from Enabling Services: https://www.southampton.ac.uk/edusupport/study_support/index.page

If you have any difficulties or issues with this course please contact the course coordinator, Prof. Jakub Bijak (J.Bijak@soton.ac.uk). If you are not satisfied with the response contact your Personal Academic Tutor or Programme Coordinator: Dr Paul Smith for MOffStat and MDataGov (P.A.Smith@soton.ac.uk), and Dr Heini Väisänen for MSc Demography and MSc Social Research Methods with Applied Statistics (H.E.Vaisanen@soton.ac.uk).

If you have a major difficulty during the course, such as a health problem that prevents you from attending lectures or seriously interferes with your work, you should make sure to discuss this with your Personal Academic Tutor.

Jakub Bijak
March 2019