DEMO 6020: DEMOGRAPHIC METHODS 1

PROGRAMME, COURSE OUTLINE AND READING GUIDES

12 – 16 November 2018

Dept. of Social Statistics and Demography,
Faculty of Social, Human and Mathematical Sciences,
University of Southampton, Highfield Campus,
Southampton SO17 1BJ.

Lecturers: Prof. Allan G. Hill and Prof. Jakub Bijak
Teaching assistant: Francesco Rampazzo

Location.
All Sessions will be held in the in the Computer Lab on the ground floor of Statistical Science Research Institute, Building 39, Room 2015. Building 39 is just behind the Murray Building reached via Salisbury Road (see map below and online).

https://www.southampton.ac.uk/visitus/campuses/maps/highfield_3d_key.pdf

Refreshments (morning and afternoon tea and coffee) will be served in this building but students will be expected to make their own lunch arrangements.

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
Important! Please bring a calculator with you to all lectures and classes and be prepared to make extensive use of MS Excel throughout the course.

1.1) Aims of the Module
To introduce students to the core demographic methods and to provide practical experience using such methods.

1.2) Learning Outcomes
On successful completion of this course, you will be able to:
(a) Define and interpret key concepts and measures used in demographic analysis;
(b) Identify principal sources of demographic data and assess their strengths and weaknesses;
(c) Specify and calculate the principal demographic measures and standardise these measures for comparison and interpretation;
(d) Quantify the components of past, current and future population change, including the effects of changing birth, death and migration rates on age structures and population composition;
(e) Describe the rationale for the use of demographic models and to be able to use such models for practical purposes;
(f) Construct and interpret single-decrement life tables;
(g) Apply the cohort-component method to compute your own population projection.

1.3) Key Skills
You will develop skills demonstrating your:
KS1 Ability to identify online sources of demographic data and to distinguish reliable primary sources and their underlying assumptions;
KS2 Capacity to make use of relevant demographic software;
KS3 Ability to compute demographic parameters, simple extrapolations, life tables, population accounts and cohort component projection using Excel and other relevant programs.

2.) Module Staff
The module co-ordinator is Prof. Allan G. Hill who will be available for consultation throughout the week (contact details below).

ah4e10@soton.ac.uk
Building 58 / Room 4123
Tel: 023 8059 2564 (x2-2564)
Office hours: By appointment.

Additional staff include Prof. Jakub Bijak
j.bijak@soton.ac.uk
Building 58 / Room 4025
Tel: 023 8059 7486
Office hours: By appointment

Teaching Assistant: Francesco Rampazzo

3) Teaching and Learning Methods
The course will be taught by lectures, computer workshops, exercises and problem sets. All lectures and computer workshops are compulsory.

3.1) Lectures
Lectures are scheduled every day in the Southampton Statistical Sciences Research Institute (SSRI), Building 39 following the attached timetable. There will be practical assignments in class and students are expected to review the exercises and class notes in the evenings before each session.

For each session, there will be required and supplemental readings assigned (see Timetable and Readings and other Sources below). You are expected to have done the required reading ahead of each lecture; the lectures will build upon these readings which will be discussed in class.

All presentations and exercises as well as additional materials can be freely downloaded from the module Blackboard site. The lectures will be recorded and stored on Blackboard so students can review the slides with the voice-over in their own time. You should still come prepared to take notes. You will be given print-outs of the slides and copies of the exercises in a folder at the outset so you can annotate these during the course.

The course is structured in three blocks – mortality (Monday and Tuesday); fertility (Wednesday and Thursday morning); and projections (Thursday afternoon and Friday morning). After each block, there will be a review of the content and time for questions.

In the SSRI building, a small library of relevant texts is available. These can be consulted on the spot or borrowed for further study.

3.2) Computer Lab Sessions
Computer Lab Sessions will take place in class interspersed with the presentations. During these sessions, you will apply the methods presented in the lectures and readings to analyse and present demographic data using Excel and a number of different
demographic computing packages. You may need to download and/or print the handout for each computer lab session but printed instructions will be included in your course folder.

3.3) Problem Sets
In addition to in-class exercises and the computer lab sessions, additional formative problem sets will be referenced for practice and revision. These are mostly available online through the IUSSP website – details provided in Class. These problem sets will not be marked but will give you the opportunity to practice the demographic methods you are learning in the lectures and readings. Answer sheets will be provided so you can check your workings. Generally, these problem sets will not be discussed in the lecture or the computer lab sessions; if you have questions or would like to discuss your answers, please discuss with the relevant presenter.

4) Blackboard
When registered for the module, you should be enrolled automatically on the module’s Blackboard course. 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 right away.

The site contains all the relevant course materials. The lecture slides will be posted in advance of each session as *pdf files and will be available for revision after the end of the module. All the exercises and materials used during the module will also be posted on the module website. After the exercises have been completed, we shall post model answers and commentaries to help with revision.

Other key readings will be posted on the website together with answers to recent past examination papers.

You should check in regularly to ensure you see all announcements and course materials.

5) Calculators and computers
Calculators are required for the 2-hour examination. It is advised that you purchase a calculator early in the semester so that you are familiar with its use well in advance of the examination. You may need to use the calculators for the class exercises but most exercises will require the use of Excel. In the classroom, you will have access to an individual desktop computer with Excel and other relevant programs pre-installed. You may use your own personal laptop and it may be useful to bring a flash drive to copy your workings from the classroom computers to your own machines.

6) Assessment Methods
The course will be assessed 100% by a 2-hour examination in January 2018. The examination paper is in three compulsory sections: Section A comprises a series of short answers and is worth 33% of the marks; Section B has a choice of one of two questions, worth 33% of the marks; Section C has one question, worth 34% of the total marks.

It is University policy that the only calculators that may be used in University exams are Casio FX85GT and FX85GT Plus or Casio FX570 (all models). These no longer need to carry the University logo. This means that they can be purchased from any retail outlet, including the Student Union shop. You can also use a Casio FX83ES, GT and Plus, which are the older approved models. No other calculator may be used in the examination room and no calculators will be available for loan.
Past examination papers are available online via the “Quick links” on the right hand side of the Library/Resources page: [http://www.soton.ac.uk/library/resources/index.shtml](http://www.soton.ac.uk/library/resources/index.shtml) and on the module web site. Note that this course have been given under several module codes, so previous papers can be found under module codes DEMO6020, DEMO6002, STAT6033, and ST645. To find all past papers, you should search under all of these codes. You should also have a look at the examination feedback from previous years, which is available online at: [http://www.southampton.ac.uk/socscinet/pgt/examfeedback/](http://www.southampton.ac.uk/socscinet/pgt/examfeedback/). Note that you should look for the earlier course codes also.

6.1) Resit arrangements  
In case you need to resit the examination, you will have to take a supplementary examination which will be worth 100% of the module marks in August 2018.

7) 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#assessmentDescriptors](http://www.southampton.ac.uk/quality/assessment/framework/principles_and_definitions.page#assessmentDescriptors) 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.

8) 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.
- 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:
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.

8) Problem Set and Revision Sessions
Since there is a large gap in time between the end of the module and the written examination in January, one or more revision sessions will be arranged. These may take the form of an online exchange or a face-to-face session held before the examination. Participants with individual queries or problems may e-mail the module co-ordinator – Prof. Allan Hill (ah4e10@soton.ac.uk).

9) 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.

A very useful set of interactive guides is available at: http://www.studyskills.soton.ac.uk/integrity/index.htm. 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. There is also further information and resources on the Library page here: http://library.soton.ac.uk/sash/ai.

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.

10) Support and Troubleshooting
If you have any difficulties or issues with this course please contact the course co-ordinator, Prof. Allan Hill (ah4e10@soton.ac.uk). You can seek help after the module has ended either by attending the January revision session or by contacting the module co-ordinator by email. You can typically expect a response within 24-48 hours, although response times may be longer during weekends and holiday periods.

If you are not satisfied with the response contact your Personal Academic Tutor or the Programme Coordinator.

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 inform the module co-ordinator and make sure to discuss this with your Personal Academic Tutor.

https://www.southampton.ac.uk/quality/assessment/framework/marking_and_feedback.page
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<th>9:30 - 11:00 am</th>
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<tr>
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<td>Welcome and registration</td>
<td>Ex1a. Population growth.</td>
<td>Ex2. The Lexis diagram</td>
<td>Ex3. A simple Life Table</td>
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<td>Ex1b. Age-sex structures</td>
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<td>Ex4. Constructing a period life table</td>
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<td>Ex8. Direct standardisation</td>
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<td>Ex9. The indices of marriage, marital fertility and non-marital fertility</td>
<td>Ex10. TFRs, GFRs, C/W ratios, marital fertility.</td>
<td>Ex11. ASFRs and TFRs from an event history</td>
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<td>Ex12: Parity progression ratios and total fertility rates</td>
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<td>Ex16. Estimating net migration</td>
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READINGS AND OTHER USEFUL SOURCES.

Selected sections of each of the following texts will be useful to you—you would not be expected to work through all of them from start to finish.

Core texts:
Many copies in Library. From £8 used on Amazon.com.

Good, introductory text, with exercises and answers. Strong on model life tables and fertility measures. £3 or so used on Amazon.com


Other general texts arranged from easy to more difficult:


Online resources.
This site is up-to-date and covers a wide range of demographic methodologies.
Additionally, there is a free copy of the text of this site in book form that can be downloaded at:
You will need to REGISTER (an easy process) to access the materials.
A training module developed in collaboration with UNFPA. Covers a wide range of demographic topics with practice exercises.

"PAS is a set of Microsoft Excel workbooks developed by the U.S. Census Bureau containing frequently used procedures and methods in basic demographic analysis. The purpose of the workbooks is to facilitate analysis of available data for the following topics: age structure, mortality, fertility, migration, distribution of population, urbanization, and population projections. The workbooks are distributed with two manuals describing the demographic methods they implement and the procedures they perform." (US Census Bureau, Accessed 30 September 2014)

"MORTPAK is a software package for demographic measurement in developing countries, with special emphasis on mortality measurement." (UN Population Division, Accessed 30 September 2014)

SPECIFIC READINGS BY TOPIC

Introduction to formal demography; demographic data; principal demographic measures
Suggested readings:
Newell, chapters 1 and 2
Palmore, chapter 1

Additional readings:
ONS Census 2021 website https://www.ons.gov.uk/census
ONS Census Transformation Programme https://www.ons.gov.uk/census/censustransformationprogramme
For a global view on Censuses, see:

Population accounting; population growth; age structures
Required readings:
Newell, chapters 2 and 3.
Shryock and Swanson, pp. 136-140.
See: http://demographicestimation.iussp.org/. Read the sections on Fertility from one census (pp. 51-95 in the printed version; and Adult mortality from one census (pp. 195-256).

Additional readings:
Ballinger. Chapter 3, see especially pages 62-67 [HB 3505 PIT]
Shryock and Swanson, chapter 7 and 8.


**Comparing populations: standardisation**

**Required readings:**
Newell, pp. 63-7.
Shryock and Siegel (condensed edition) pp. 234 and 241-244.

**Additional readings:**
- Preston et al, chapter 2. pp. 21-30
- Pollard et al, pp. 71-75.


**Period and cohorts: the Lexis diagram.**

**Required readings:**

**Additional readings:**

**The life table (1): principles and use.**

**Required readings:**
- Shryock and Siegel (condensed edition) chapter 15.

**Additional readings:**

**The life table (2): stationary populations; model life tables and relational models.**

**Required readings:**
- Newell, pp. 120-21, chapters 12 and 13.
- IUSSP Population Analysis for Policies & Programmes Training Module: PAPP103 - S01: Demographic models: model life tables [http://papp.iussp.org/sessions/papp103_s01/PAPP103_s01_010_010.html](http://papp.iussp.org/sessions/papp103_s01/PAPP103_s01_010_010.html)

**Additional readings:**

**Population census**

**Fertility and fertility determinants.**
Required readings:

Additional readings:

**The demography of migration**
Required readings:

Additional readings:
Excellent summaries of the UK methodology on migration estimates can be found at:

Required readings:

Additional reading:
Kelilman N (2008) European demographic forecasts have not become more accurate during the past 25 years, Population and Development Review, 34(1)

See the IASA/Institute website on probabilistic projections:


Required readings:

Additional reading:

Population Projections (3); Population momentum; Stable population.

Required readings:

Additional reading:

Allan G. Hill.
12 October 2018