Advanced Demographic Methods 1: 
An Introduction to Event-history Analysis
10.5 ECTS credits

Main teacher: Gunnar Andersson 
Co-teacher: Sofi Ohlsson

Course at advanced level for students who want to learn how to analyze duration data. The course is offered within the multidisciplinary Master’s program in Demography at Stockholm University. It provides an introduction to advanced demographic methods and their applications to longitudinal life-course data. Different approaches and strategies for univariate and multivariate analyses of duration data in the form of demographic rates are presented. Students are expected to develop own analytical skills and to achieve a sound methodological understanding of literature based on event-history analyses. Course work and examination consist of computer-based exercises and discussion of research output from published demographic studies.

The course is provided at 70% of full-time study during weeks 39–48 of 2010. For further information and application details, see www.suda.su.se.

Entrance qualifications: Course applicants should have completed the basic demographic methods course of the Master’s program in Demography, or other suitable courses in research methods or statistics.

HT 2010: Part-time studies
Teaching language: English
Course Syllabus. Advanced Demographic Methods 1: An Introduction to Event-history Analysis

1. General information

The course consists of 10.5 ECTS credits and is at advanced level in Demography.

2. Decision

The syllabus is approved by the head of Department on behalf of the board of the Department of Sociology at Stockholm University as of September 2008.

3. Entrance qualifications

Course applicants should have completed the basic demographic methods course of the Master’s program in Demography, or other suitable courses in research methods or statistics.

4. Course organization

The course is provided at part time during 10 weeks. Course participants meet twice a week, with about one lecture and one computer-based exercise every week.

5. Course contents

The course provides an introduction to advanced demographic methods and their applications to longitudinal life-course data. Different approaches and strategies for univariate and multivariate analyses of duration data in the form of demographic rates are presented. Students are expected to develop own analytical skills and to achieve a sound methodological understanding of literature based on event-history analyses.

6. Learning outcome

After accomplishing this course, participants are expected to be able to:
In terms of knowledge and understanding:
- Judge in what situations event-history analysis/intensity-regression is a suitable method of analysis
- Identify how the method is related to more basic methods of analyses of demographic rates
- Specify how demographic raw data should be organized for an event-history setup
- Identify common problems and limitations of event-history analyses

In terms of accomplishment and competence:
- Make an own empirical analysis of a demographic data set
- Communicate the output of own analyses so that they can be understood also by someone who is not an expert in the field

In terms of values and evaluation:
- Interpret and judge results of own and others’ empirical event-history analyses
- Evaluate publication output based on different versions of event-history analyses and other related methods of analysis

More specifically, in empirical analyses, students are expected to be able to:
- Apply different analytical techniques to detect and present interesting relations between model variables
- Make use of statistical testing as help in judging the relevance of estimated model results
- Reflect on the role of selection effects in creating different model results

7. Instruction and examination

Course work and examination consist of computer-based exercises and discussion of research output from different demographic studies, and is evaluated according to the following degrees:

- A  = Excellent
- B  = Very good
- C  = Good
- D  = Satisfactory
- E  = Sufficient
- Fx = Insufficient
- F  = Fail

A and B are given when a student in his or her work demonstrates an ability to bring up empirical analyses to a higher analytical level and to provide innovative solutions to the research questions that are handled in exercises and discussions. These degrees would indicate that the student is suitable to perform independent research, with an A qualifying for research at internationally acceptable quality level, and B for research at the national level in any country in Europe. C and D is given when course requirements and tasks as formulated under point 6 above are fulfilled by means of correct exercises and demonstration of a good understanding of the concepts that are handled. This would indicate that the student is suitable to work with analyses of duration data as an investigator, with C indicating suitability to handle more advanced analyses and D suitability to handle quite simple analyses. An E is given when a student delivers acceptable exercise solutions and in his or her work demonstrates a basic understanding of concepts and abilities formulated under point 6 above, allowing for occasional errors in output. This grade indicates that the student understands the techniques that are handled, but is not necessarily suited to work
with independent analyses of own data. Fx is given when the student demonstrates only partial understanding of event-history techniques.

E is needed to pass the course. Students with Fx are offered the opportunity to upgrade his or her exam. Students with grade F or Fx are entitled to another examination as long as the course is provided in order to achieve grade E at least. A student with E is not entitled to another examination to raise his or her degree.

8. Literature and other course materials

Kompendium with handouts, by Gunnar Andersson and Jan Hoem: A large part of the course materials consists of various handouts with examples from different empirical demographic analyses. The handouts contain examples on: the intensity (hazard) function and its connection to other related functions and to demographic rates; multiplicative intensity models; maximum-likelihood estimation; intensity regression as a generalization of classical demographic methods; interaction effects; combination factors; structural zeros; selectivity/unobserved heterogeneity; harmless model misspecification; testing of statistical hypotheses; anticipatory analysis.

Further readings to be distributed or accessed via JSTOR / SUB:


Hoem, Jan, 1996. The harmfulness or harmlessness of using an anticipatory regressor…, *Yearbook of Population Research in Finland* 33: 34-43.


Non-curricular preparatory reading with an overview of event-history methods:


Computer exercises are carried out with the help of the software “EvHA – an Event-History Analyst”.

9. Course Schedule – Advanced Demographic Methods 1: Introduction to Event-history Analysis

Meeting times: Tuesdays and Fridays at 13:00-15:00 during weeks 39-48  
Meeting room: B900

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<th>Date</th>
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<th>Topic</th>
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<td>Thu 30 Sept</td>
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<td>Introduction (B900)</td>
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<tr>
<td>Fri 1 October</td>
<td>10:00-12:00</td>
<td>Life-course data (B900)</td>
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<td>Tue 5 October</td>
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<td>Demographic rates and duration data (B900)</td>
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<td>Fri 8 October</td>
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<td>Examples of event-history analyses (B900)</td>
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<td>Tue 12 October</td>
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<td>Fri 15 October</td>
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<td>Software: EvHA (ex 1-2) (B389)</td>
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<td>Tue 19 October</td>
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<td>Standardization and event-history analysis (B900)</td>
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<td>Fri 22 October</td>
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<td>Interaction effects (ex 3) (B900)</td>
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<td>Tue 26 October</td>
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<td>Combination factors (B900)</td>
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<td>Fri 29 October</td>
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<td>Structural zeros (ex 4) (B900)</td>
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<td>Tue 2 November</td>
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<td>Selectivity and selection effects (B900)</td>
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<td>Fri 5 November</td>
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<td>Individual-level duration data (ex 5) (B900)</td>
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<td>Tue 9 November</td>
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<td>Issues of causality in event-history analyses (B900)</td>
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<td>Fri 12 November</td>
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<td>Statistical testing (ex 6) (B900)</td>
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<td>Tue 16 November</td>
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<td>Problems with anticipatory analyses (ex 7) (B900)</td>
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<td>Fri 19 November</td>
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<td>Aggregation of individual data to occ/exp data (ex 8) (B900)</td>
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<td>Tue 23 November</td>
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<td>Remaining modeling issues (B900)</td>
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<td>Fri 26 November</td>
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<td>Generalizations of event-history techniques (ex 9) (B900)</td>
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<td><strong>Mon 29 November</strong></td>
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<td>Project proposals (B900)</td>
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<td><strong>Tue 30 November</strong></td>
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<td>Project proposals (B900)</td>
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(weeks 40-43 with presentations of introductory examples)  
(weeks 44-47 with presentations of case studies)