

An Introduction to Event History Analysis

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Trinity Term, 2015, Weeks 1 to 4
Monday 9-11 a.m.
Seminar Room D, Manor Road

Assessment: 2000 word assessed essay that must include data analysis. In addition, three weekly assignments will be handed out together with practice datasets, or students can use their own data. Assignments will not be assessed but are required if students are taking the course for credit. Deadline for handing in 2000 word assessed essay is 12 noon, Friday 5th June, and resubmission deadline is 12 noon, Friday 19th June.

Course description: Many important social science questions focus on time, duration, and the probability of event occurrence - the lengths of wars or legal disputes, the failure of cabinets over time, the longevity of alliances or dictatorships, the survival of firms or persons. Event history or survival analysis is a class of statistical techniques that analyzes the probability that an event occurs, how that probability changes over time, and how it is mediated by other factors. This short course focuses on the research logic of event history, data structure, non-parametric techniques, and introduction to multivariate survival models. The course will end with a discussion of special topics [competing risks, unobserved heterogeneity]. A working knowledge of STATA and OLS regression is a prerequisite.

Aims of the course: the course aims to introduce students to the key concepts of event history, data structure, an overview parametric, semi-parametric and non-parametric approaches, and a focus on application of these concepts on practice datasets and students own data.

Each class will consist of a lecture component where we will discuss key concepts, and an applied component where we will analyze data, and implement the concepts from the lecture. The course structure is a guideline for reading the required readings before each class. The recommended readings are useful especially for special topics (unobserved heterogeneity, time dependence). The substantive readings provide empirical exemplars.

Course structure:

1. WEEK 1: In the first week, we will cover basic concepts of event history, research logic, when to use event history, and the concept of temporal dependence. For the applied component, we will explore the typical data structure of an event history dataset [read the entry on *stset* in the STATA Manual]
2. WEEK 2: In the second week, we will cover non-parametric methods of analysis including Kaplan-Meier curves, life tables, and hazard and survival curves. For the applied component, we will implement these non-parametric methods [read especially the entry on *ltable*, *sts* set of commands in STATA Manual]

3. WEEK 3: In the third week, we will cover semi-parametric and parametric multivariate models for analyzing event history data. We will cover the logic behind the Cox model, the exponential model and the Weibull model. For the applied component, we will implement these methods with a focus on the Weibull method [read the entry on *streg* and *stcox* in the STATA Manual]
4. WEEK 4: In the final week, we will continue with semi-parametric and parametric multivariate models and briefly cover special topics of competing risks and unobserved heterogeneity. For the applied component we will continue with our focus on the Weibull method [read the entry on *stcrreg* and the sections on frailty in *streg* in the STATA Manual]

REQUIRED TEXTS

1. Cleves, Mario, William W. Gould, and Roberto Gutierrez. 2008. *An Introduction to Survival Analysis Using Stata, Revised Edition*. Stata Press.
2. STATA. (n.d.). *STATA Survival Analysis and Epidemiological Tables: Reference Manual Release 12*. [available online]

RECOMMENDED READINGS

3. Blossfeld, H., & Hamerle, A. 1989. Unobserved heterogeneity in hazard rate models: a test and an illustration from a study of career mobility. *Quality and Quantity*, 23, 129–141.
4. Box-Steffensmeier, Janet M. and Bradford Jones. 2004. *Event History Modeling: A Guide for Social Scientists*. Cambridge, UK: Cambridge University Press.
5. Box-Steffensmeier, Janet M., & Christopher J. W. Zorn. 2001. Duration Models and Proportional Hazards in Political Science, *American Journal of Political Science*, Vol. 45 (4): 972-988.
6. Box-Steffensmeier, Janet M., Dan Reiter, & Christopher Zorn. 2003. Nonproportional Hazards and Event History Analysis in International Relations. *Journal of Conflict Resolution*, Vol. 47 (1): 33-53.
7. Christopher J. W. Zorn. 2000. Modeling Duration Dependence. *Political Analysis*, 8:3; 367-380.
8. Gordon, S. 2002. Stochastic Dependence in Competing Risks. *American Journal of Political Science*, 46(1), 200–217.

SUBSTANTIVE READINGS

1. Alt, J. E., & King, G. 1994. Transfer of Governmental Power: The Meaning of Time Dependence. *Comparative Political Studies*, 27(2), 190–210.
2. Bennett, D. Scott, & Allan C. Stam III. 1992. The Duration of Interstate Wars, 1816-1985. *APSR*, Vol. 90, 2: 239-257.
3. Besedes, Tibor and Thomas J. Prusa. 2006. Ins, outs, and the duration of trade. *Canadian Journal of Economics*, Vol. 39, No. 1, 266-295.
4. Gasiorowski, Mark J. 1995. Economic Crisis and Political Regime Change: An Event History Analysis, *American Political Science Review*, Vol. 89, 4. 882-897.
5. Golub, Jonathan. 2008. The Study of Decision-Making Speed in the European Union

- Methods, Data and Theory. *European Union Politics*, Vol. 9 (1): 167–179.
6. Kiefer, Nicholas M. 1988. Economic Duration Data and Hazard Functions. *Journal of Economic Literature* 26: 646-679.
 7. Kroft, K., Lange, F., & Notowidigdo, M. J. 2013. Duration Dependence and Labor Market Conditions: Evidence from a Field Experiment. *The Quarterly Journal of Economics*, 1123–1167.
 8. Marco, Alan C. 2007. The Dynamics of Patent Citations. *Economics Letters*, 94: 290-296.
 9. Quackenbush, Stephen L. and Paul D. Senese. 2003. Sowing the Seeds of Conflict: The Effect of Dispute Settlements on Durations of Peace. *The Journal of Politics*, Vol. 65, No. 3, August 2003, Pp. 696–717.
 10. Schleiter, P., & Morgan-jones, E. 2009. Constitutional Power and Competing Risks: Monarchs, Presidents, Prime Ministers, and the Termination of East and West European Cabinets. *American Political Science Review*, 103(3), 496–512.
 11. South, Scott J. and Glenna Spitze. 1986. Determinants of Divorce over the Marital Life Course. *American Sociological Review* 51: 583-590.
 12. Teachman, Jay D., and Mark D. Hayward. 1993. Interpreting Hazard Rate Models. *Sociological Methods & Research* 21: 340-371.
 13. Vaupel JW, Yashin AI. 1985. Heterogeneity's ruses: Some surprising effects of selection on population dynamics. *American Statistician* 39:176-85.
 14. Wu, Lawrence L. and Brian C. Martinson. 1993. Family structure and the risk of a premarital birth. *American Sociological Review* 58: 210-232.