



Winter Semester 2018/19

Hauptseminar (MA)

Hauptseminar Vergleichende Politikwissenschaft II

Vergleichende Politikwissenschaft II: MA/SM Introduction to Survival Analysis **Using R** (language of instruction is English)

Time: Wednesdays, 12.00-14.00
Venue: FMA/01.20 & RZ/00.07
Start date: 17 October 2018
Registration in FlexNow!: 1-29 October 2018 (Deregistration until 29 October 2018),
doctoral fellows register in the first session
Instructors: Prof. Dr. Thomas Saalfeld

Entry Requirements

BA in Political Science and familiarity with basic techniques of quantitative data analysis for social scientists. This module is open to Masters students and doctoral fellows of the Bamberg Graduate School of Social Sciences (BAGSS). For Masters students, it is recommended to take this module after having passed the modules Politikwissenschaftliche Methoden III and IV, unless they are already familiar with the material covered in these modules. Knowledge of R and RStudio is beneficial but not essential. Members of BAGSS are expected to have equivalent knowledge.

Requirements for credit

Masters students requiring credit need to submit a portfolio of completed exercises (50%) and a replication study (50%). Doctoral fellows at BAGSS will need to submit all exercises and attend regularly to have the module registered.

ECTS credits: 8

Programme

Survival analysis or “time to event“ models are used in many areas of the social sciences, for example in the study of the duration of governments, regimes and wars – or in the modelling of events such as the time between adolescence and child birth, the duration of marriages, transitions from education to the labour market and similar processes. Survival analysis has advantages over traditional regression models including the statistical modelling of processes and the treatment of censored records. In this module students will acquire basic knowledge of the statistical foundations of survival analysis and apply these to specific research questions. We will use a variety of data sets to explore the strengths and weaknesses of survival analysis. The emphasis of this module will be on the application of survival models

rather than statistical theory. Participation is only recommended for students with an interest in quantitative methods. The language of instruction will be English. The replication studies can be submitted in English or German.

Recommended introductory reading

Steffensmeier, Janet und Bradford Jones: Event-History Modeling: A Guide for Social Scientists. Cambridge: Cambridge University Press 2004.

Mills, Melinda: Introducing Survival and Event History Analysis. Newbury Park: SAGE Publications 2011.

Wenzelburger, Georg, Jäckle, Sebastian, & König, Pascal: Weiterführende statistische Methoden für Politikwissenschaftler: Eine anwendungsbezogene Einführung mit Stata. München: DeGruyter Oldenbourg 2014, pp. 161-209 (available as an e-book).

Topics covered (subject to slight adjustments)

Date	Topic
1 17.10.2018	Introduction
2 24.10.2018	Basics
3 31.10.2018	Survival Analysis in R: A first introduction
4 07.11.2018	Specific properties of time-to-event data
5 14.11.2018	Non-parametric models: Nicht-parametrische Modelle: the Kaplan-Meier estimator
6 21.11.2018	The semi-parametric Cox Model
7 28.11.2018	Parametric models
8 05.12.2018	Model specification and diagnostics
9 12.12.2018	Frailty and repeated events
10 19.12.2018	Discrete-time models
	Christmas break
11 09.01.2019	Competing risks in Cox models
12 16.01.2019	Effect plots and discussion of student projects
13 23.01.2019	Discussion of student projects
14 30.01.2019	Discussion of student projects
15 06.02.2019	Conclusions and feedback

Please note: the first two sessions will be held in FMA01.20. From the third session, we will move to the Computing Centre (00.07).

Datasets for download and replication

Datasets	Link
European Representative Democracy (ERD)	http://www.erdda.se/index.php/projects/erd/data-archive
Correlates of War (CoW)	http://www.correlatesofwar.org/data-sets/COW-war
Archigos: A Database of Political Leaders	http://privatewww.essex.ac.uk/~ksg/archigos.html
Political Institutions and Political Events (PIPE)	https://sites.google.com/a/nyu.edu/adam-przeworski/home/data
(will be added to)	

Further Reading (literature on applications currently taken from political science only)

Aalen, Odd Olai. 1994. Effects of frailty in survival analysis. *Statistical Methods in Medical Research* 3(3): 227–243.

Agadjanian, Victor, und Ekaterina Makarova. 2003. From Soviet modernization to post-Soviet transformation: Understanding marriage and fertility dynamics in Uzbekistan. *Development and Change* 34(3): 447–473.

Allison, Paul D. 1982. Discrete-time methods for the analysis of event histories. *Sociological Methodology* 13:61–98.

Allison, Paul D. 1990. Change scores as dependent variables in regression analysis. *Sociological Methodology* 20:93–114.

Baybeck, Brady, William D. Berry, und David A. Siegel. 2011. A strategic theory of policy diffusion via intergovernmental competition. *The Journal of Politics* 73(1): 232–247.

Beck, Nathaniel, Jonathan N. Katz, und Richard Tucker. 1998. Taking time seriously: Time-series-cross-section analysis with a binary dependent variable. *American Journal of Political Science* 42(4): 1260–1288.

Bennett, D. Scott. 1999. Parametric models, duration dependence, and time-varying data revisited. *American Journal of Political Science* 43(1): 256–270.

Bennett, D. Scott, und Allan C. Stam III. 1996. The duration of interstate wars. 1816–1985. *The American Political Science Review* 90(2): 239–257.

- Bennett, D. Scott, und Allan C. Stam III. 1998. The declining advantages of democracy. A combined model of war outcomes and duration. *Journal of Conflict Resolution* 42(3): 344–366.
- Berlinski, Samuel, Torun Dewan, und Keith Dowding. 2007. The length of ministerial tenure in the United Kingdom, 1945–97. *British Journal of Political Science* 37(2): 245–262.
- Berry, Frances Stokes, und William D. Berry. 1990. State lottery adoptions as policy innovations: An event history analysis. *The American Political Science Review* 84(2): 395.
- Bienen, Henry, und Nicolas van de Walle. 1991. *Of time and power. Leadership duration in the modern world*. Stanford: Stanford University Press.
- Blossfeld, Hans-Peter, Katrin Golsch, und Götz Rohwer. 2007. *Event history analysis with stata*. Mahwah: Lawrence Erlbaum Associates.
- Blossfeld, Hans-Peter, Alfred Hamerle, und Karl Ulrich Mayer. 2014. *Event history analysis: Statistical theory and application in the social sciences*. New York: Taylor & Francis.
- Box-Steffensmeier, Janet M., und Bradford S. Jones. 2004. *Event history modeling: A guide for social scientists*. Cambridge, UK: Cambridge University Press.
- Box-Steffensmeier, Janet M, und Byungwon Woo. 2011. Event history analysis. *International encyclopedia of political science*, 2455 Teller Road, Thousand Oaks California 91320 United States: Sage. <http://sk.sagepub.com/Reference/intlpoliticalscience/n202.xml>
- Box-Steffensmeier, Janet M., und Christopher J. W. Zorn. 2001. Duration models and proportional hazards in political science. *American Journal of Political Science* 45(4): 972.
- Bräuning, Thomas, Marc Debus, und Fabian Wüst. 2017. Governments, parliaments and legislative activity. *Political Science Research and Methods* 5(3): 529–554.
- Browne, Eric C., John P. Frenreis, und Dennis W. Gleiber. 1984. An „Events“ approach to the problem of cabinet stability. *Comparative Political Studies* 17(2): 167.
- Bueno de Mesquita, Bruce, und Randolph M. Siverson. 1995. War and the survival of political leaders. A comparative study of regime types and political accountability. *The American Political Science Review* 89(4): 841–855.
- Caplan, Richard, und Anke Hoeffler. 2017. Why peace endures: An analysis of post-conflict stabilisation. *European Journal of International Security* 2(2): 133–152.

- Carroll, Glenn R., und Karl Ulrich Mayer. 1986. Job-shift patterns in the federal republic of Germany: The effects of social class, industrial sector, and organizational size. *American Sociological Review* 51(3): 323–341.
- Chiba, Daina, Nils W. Metternich, und Michael D. Ward. 2015. Every story has a beginning, middle, and an end (but not always in that order): Predicting duration dynamics in a unified framework. *Political Science Research and Methods* 3(3): 515–541.
- Cleves, Mario Alberto, Roberto G. Gutierrez, William Gould, und Yulia V. Marchenko. 2010. *An introduction to survival analysis using Stata*. College Station: Tex.
- Coleman, James Samuel. 1981. *Longitudinal data analysis*. New York: Basic Books.
- Cox, David R. 1975. Partial likelihood. *Biometrika* 62(2): 269–276.
- Cox, David R., und E. Joyce Snell. 1968. A general definition of residuals. *Journal of the Royal Statistical Society. Series B (Methodological)* 30(2): 248–275.
- Darmofal, David. 2009. Bayesian spatial survival models for political event processes. *American Journal of Political Science* 53(1): 241–257.
- Diekmann, Andreas. 1989. Diffusion and survival models for the process of entry into marriage. *Journal of Mathematical Sociology* 14(1): 31–41.
- Diermeier, Daniel, und Randolph T. Stevenson. 1999. Cabinet survival and competing risks. *American Journal of Political Science* 43(4): 1051–1068.
- Dowding, Keith M., und Patrick Dumont, Hrsg. 2009. *The selection of ministers in Europe: Hiring and firing*. London/New York: Routledge.
- Ecker, Alejandro, und Thomas M. Meyer. 2015. The duration of government formation processes in Europe. *Research & Politics* 2(4): 1–9.
- Elandt-Johnson, Regina C., und Norman L. Johnson. 1980. *Survival models and data analysis*. New York: Wiley.
- Elbers, Chris, und Geert Ridder. 1982. True and spurious duration dependence. The identifiability of the proportional hazard model. *Review of Economic Studies* 49:403–409.
- Fleischer, Julia. 2016. Partisan and professional control: Predictors of bureaucratic tenure in Germany. *Acta Politica* 51(4): 433–450.
- Gandhi, Jennifer, und Adam Przeworski. 2007. Authoritarian institutions and the survival of autocrats. *Comparative Political Studies* 40(11): 1279–1301.
- Gasiorowski, Mark J. 1995. Economic crisis and political regime change: An event history analysis. *American Political Science Review* 89(4): 882–897.

- Gilardi, Fabrizio, Katharina Füglistner, und Stéphane Luyet. 2009. Learning from others: The diffusion of hospital financing reforms in OECD Countries. *Comparative Political Studies* 42(4): 549–573.
- Golub, Jonathan. 2008. The study of decision-making speed in the European Union. Data, theory and methods. *European Union Politics* 9(1): 167–179.
- Gray, Robert J. 1992. Flexible methods for analyzing survival data using splines, with applications to breast cancer prognosis. *Journal of the American Statistical Association* 87(420): 942.
- Harrell, Frank E., Jr., Robert M. Califf, David B. Pryor, Kerry L. Lee, et al. 1982. Evaluating the yield of medical tests. *Journal of the American Medical Association* 247(18): 2543–2546.
- Hartzell, Caroline, und Matthew Hoddie. 2003. Institutionalizing peace: Power sharing and post-civil war conflict management. *American Journal of Political Science* 47(2): 318–332.
- Hildebrandt, Achim, Eva-Maria Trüdinger, und Sebastian Jäckle. 2017. Sooner or later: The influence of public opinion and religiosity on the enactment of laws recognizing same-sex unions. *Journal of European Public Policy* 24(8): 1191–1210.
- Horiuchi, Yusaku, Matthew Laing, und Paul't Hart. 2015. Hard acts to follow: Predecessor effects on party leader survival. *Party Politics* 21(3): 357–366.
- Hosmer, David W., Stanley Lemeshow, und Susanne May. 2008. *Applied survival analysis*. Hoboken: Wiley.
- Huber, John D., und Cecilia Martinez-Gallardo. 2008. Replacing cabinet ministers: Patterns of ministerial stability in parliamentary democracies. *American Political Science Review* 102(2).
- Hughes, Melanie M., Mona Lena Krook, und Pamela Paxton. 2015. Transnational women's activism and the global diffusion of gender quotas. *International Studies Quarterly* 59(2): 357–372.
- Jäckle, Sebastian. 2011. *Determinanten der Regierungsbeständigkeit in parlamentarischen Systemen*. Berlin: LIT.
- Jäckle, Sebastian. 2013. Ministerial turnover in the German Länder (1991–2010). *Zeitschrift für Vergleichende Politikwissenschaft* 7(1): 27–48.
- Jäckle, Sebastian. 2015. Event-history-analyse. In *Methodologie, Methoden, Forschungsdesign*, 163–189. Wiesbaden: Springer Fachmedien Wiesbaden.
- Jäckle, Sebastian. 2018. Event-History-Analysis. In *Handbuch Methoden der Politikwissenschaft*, eds. Claudius Wagemann, Achim Goerres, and Markus Siewert. Wiesbaden: Springer Fachmedien Wiesbaden, 1–30.

- Jäckle, Sebastian, und Matthew Kerby. 2018. Temporal methods in political elite studies. In *The Palgrave handbook of political elites*, Hrsg. Heinrich Best und John Higley, 115–133. London: Palgrave Macmillan UK. http://link.springer.com/10.1057/978-1-137-51904-7_10. Zugegriffen am 31.03.2018.
- Kalbfleisch, John D., und Ross L. Prentice. 2002. *The statistical analysis of failure time data*. Hoboken: Wiley-Interscience.
- Kaplan, Edward L., und Paul Meier. 1958. Nonparametric estimation from incomplete observations. *Journal of the American Statistical Association* 53(282): 457–481.
- King, Gary, James E. Alt, Nancy E. Burns, und Michael Laver. 1990. A unified model of cabinet dissolution in parliamentary democracies. *American Journal of Political Science* 34(3): 846–871.
- Kleinbaum, David G., und Mitchel Klein. 2012. *Survival analysis: A self-learning text*, 3. Aufl. New York: Springer.
- Klein, John P., und Melvin L. Moeschberger. 2003. *Survival analysis: techniques for censored and truncated data*. 2nd ed. Statistics for biology and health. New York: Springer.
- König, Thomas. 2008. Analysing the process of EU legislative decision-making: To make a long story short. *European Union Politics* 9(1): 145–165.
- Laver, Michael. 2003. Government termination. *Annual Review of Political Science* 6(1): 23–40.
- Lawless, Jerald F. 1982. *Statistical models and methods for lifetime data*. New York: Wiley.
- Mandel, Micha. 2007. Censoring and truncation. Highlighting the differences. *The American Statistician* 61:321–324.
- Mills, Melinda. 2011. *Introducing survival and event history analysis*. Los Angeles: Sage.
- Newson, Roger B. 2010. Comparing the predictive powers of survival models using Harrell's C or Somers' D. *Stata Journal* 10(3): 339–358.
- Phillips, Brian J. 2015. Enemies with benefits? Violent rivalry and terrorist group longevity. *Journal of Peace Research* 52(1): 62–75.
- Piplani, Varun, und Caitlin Talmadge. 2016. When war helps civil–military relations: Prolonged interstate conflict and the reduced risk of coups. *Journal of Conflict Resolution* 60(8): 1368–1394.
- Rabe-Hesketh, Sophia, und Anders Skrondal. 2012. *Multilevel and longitudinal modeling using stata – Volume 2: Categorical responses, counts, and survival*. College Station: Stata Press.

- Reimer, Kerstin, und Christian Barrot. 2009. Hazard-Raten-Modelle. In *Methodik der empirischen Forschung*, Hrsg. Sönke Albers, Daniel Klapper, Udo Konradt, Achim Walter, et al., 331–348. Wiesbaden: Gabler.
- Saalfeld, Thomas. 2008. Institutions, chance, and choices. The dynamics of cabinet survival. In *Cabinets and coalition bargaining. The democratic life cycle in Western Europe*, Hrsg. Kaare Strom, Wolfgang C. Müller und Torbjörn Bergman, 327–368. Oxford: Oxford University Press.
- Sagara, Issaka, Roch Giorgi, Ogobara K. Doumbo, Renaud Piarroux, et al. 2014. Modelling recurrent events: Comparison of statistical models with continuous and discontinuous risk intervals on recurrent malaria episodes data. *Malaria Journal* 13:293–293.
- Schönherr, Maximilian. 2007. *Der Zufall des Sir David Cox – Ein Porträt des Meisters der Stochastik und seiner Wissenschaft (Rundfunkinterview mit Sir David Cox)*, Südwestrundfunk SWR2: Sendung: Montag, 8.30 Uhr. <http://www.swr.de/swr2/programm/sendungen/wissen/-/id=660374/nid=660374/did=1855836/qzu6tv/index.html>. Zugegriffen am 15.01.2007.
- Strang, David. 1991. Global patterns of decolonization. 1500–1987. *International Studies Quarterly* 35(4): 429–454.
- Strom, Kaare, Eric C. Browne, John P. Frendreis, und Dennis W. Gleiber. 1988. Contending models of cabinet stability. *The American Political Science Review* 82(3): 923–941.
- Therneau, Terry M., und Patricia M. Grambsch. 2000. *Modeling survival data. Extending the Cox model*. New York: Springer.
- Tuma, Nancy B., und Michael T. Hannan. 1984. *Social dynamics. Models and methods*. Orlando: Academic.
- Vermunt, Jeroen K. 1996. *Log linear event history analysis*. Tilburg: Tilburg University Press.
- Vermunt, Jeroen K. 1997. *Log-linear models for event histories*. Thousand Oaks: Sage.
- Warwick, Paul V. 1994. *Government survival in parliamentary democracies*. Cambridge: Cambridge University Press.
- Wenzelburger, Georg, Sebastian Jäckle, und Pascal König. 2014. *Weiterführende statistische Methoden für Politikwissenschaftler: Eine anwendungsbezogene Einführung mit Stata*. Berlin: De Gruyter Oldenbourg.
- Werner, Suzanne. 1999. The precarious nature of peace. Resolving the issues, enforcing the settlement, and renegotiating. *American Journal of Political Science* 43(3): 912–934.

- Windzio, Michael. 2013. *Regressionsmodelle für Zustände und Ereignisse: eine Einführung*. Wiesbaden: Springer VS.
- Wright, Joseph. 2009. How foreign aid can foster democratization in authoritarian regimes. *American Journal of Political Science* 53(3): 552–571.
- Yamaguchi, Kazuo. 1991. *Event history analysis*. Newbury Park: Sage.
- Ziegler, Andreas, Stefan Lange, und Ralf Bender. 2004. Überlebenszeitanalyse. Die Cox-Regression. *Deutsche Medizinische Wochenschau* 129:1–3.