

I. Outline

This seminar focuses on acquiring profound knowledge in quantitative empirical research and advanced statistical methods and is aimed at graduate and PhD students in political science. It focuses on procedures that are frequently used in comparative political science as well as international relations, such as linear and non-linear (conditional and polynomial) regression, survival analysis, and time-series cross-section models. Additionally, the fundamental principles of estimation methods, interpretation of coefficients, evaluation of model fit, and empirical implications of regression models will be discussed in the seminar. The seminar's structure alternates sessions of theoretical principles and applications of statistical procedures. We will use Stata for model estimation throughout the seminar and will replicate contemporary studies using the methods discussed in the course. The aim of the seminar is to enable students to conduct quantitative empirical analyses using advanced statistical methods and to facilitate a critical evaluation of empirical studies.

II. Seminar literature

Best, H., and Wolf, C. (Hrsg.) (2015). *The SAGE Handbook of Regression Analysis and Causal Inference*. 1st edition, Sage. [access via University library]

Wolf, C., and Best, H. (Hrsg.) (2010). *Handbuch der sozialwissenschaftlichen Datenanalyse*. 1st edition, VS Verlag für Sozialwissenschaften. Online access: doi:[10.1007/978-3-531-92038-2](https://doi.org/10.1007/978-3-531-92038-2). [free online alternative to the SAGE Handbook in german language]

Wooldridge, J. M. (2013). *Introductory Econometrics: A Modern Approach*. 5th edition, Cengage Learning. [access via University library]

III. Literature on Stata

Hamilton, L. (2012). *Statistics with Stata: Version 12*. 8th edition, Cengage Learning.

Kohler, U., and Kreuter, F. (2017). *Datenanalyse mit Stata: Allgemeine Konzepte der Datenanalyse und ihre praktische Anwendung*. 5th edition, Oldenbourg Verlag. <https://www.degruyter.com/view/product/469128>

IV. Course assessment

90 minutes written exam within the module „Methoden der Politikwissenschaft A“.

V. Syllabus

1. Introduction and organisation session (October 18th)

2. Logistic regression (October 25th)

Best, H., and Wolf, C. (2015). Logistic Regression. In: Best, H., and Wolf, C. (Hrsg.). *The SAGE Handbook of Regression Analysis and Causal Inference*. 1st edition, Sage. Part II, Chapter 8, pp. 153–172.

Collier, P., and Hoeffler, A. (2004). Greed and grievance in civil war. *Oxford economic papers*, 56(4), 563–595. doi:[10.1093/oeq/gpf064](https://doi.org/10.1093/oeq/gpf064)

Note: Replication material can be found on Moodle.

3. Multinomial and ordinal-logistic regression (November 8th)

Long, J. S. (2015). Regression models for nominal and ordinal outcomes. In: Best, H., and Wolf, C. (Hrsg.). *The SAGE Handbook of Regression Analysis and Causal Inference*. 1st edition, Sage. Part II, Chapter 9, pp. 173–204.

Krain, M. (2005). International intervention and the severity of genocides and politicides. *International Studies Quarterly*, 49(3), 363–388. doi:[10.1111/j.1468-2478.2005.00369.x](https://doi.org/10.1111/j.1468-2478.2005.00369.x)

Note: Replication material: <http://discover.wooster.edu/mkrain/research/>

4. Interaction terms, polynomials, and splines (November 15th)

Lohmann, H. (2015). Non-linear and non-additive effects in linear regression. In: Best, H., Wolf, C. (eds.). *The SAGE Handbook of Regression Analysis and Causal Inference*. 1st edition, Sage. Part II, Chapter 6, pp. 111–132.

Hainmueller, J., Mummolo, J., and Xu, Y. (2018). How much should we trust estimates from multiplicative interaction models? Simple tools to improve empirical practice. *Political Analysis*, (forthcoming). doi:[10.1017/pan.2018.46](https://doi.org/10.1017/pan.2018.46)

Clark, W. R., and Golder, M. (2006). Rehabilitating Duverger's theory testing the mechanical and strategic modifying effects of electoral laws. *Comparative Political Studies*, 39(6), pp. 679–708. doi:[10.1177/0010414005278420](https://doi.org/10.1177/0010414005278420)

Note: Replication material: <https://dataverse.harvard.edu/dataset.xhtml?persistentId=hdl:1902.1/10477>

Helmdag, J. (2017). INTERACTPLOT: Generate plots for interaction terms of multiplicative regressions. Install by typing `ssc install interactplot` in Stata command line.

5. Survival analysis (November 22nd)

Golub, J. (2008). Survival Analysis. In: Box-Steffensmeier, J. M., Brady, H. E., and Collier, D. (eds.). *The Oxford Handbook of Political Methodology*. Oxford University Press, Part VII, Chapter 23, pp. 530–546.

Fisher, L. D., and Lin, D. Y. (1999). Time-dependent covariates in the Cox proportional-hazards regression model. *Annual review of public health*, 20(1), 145–157.
doi:[10.1146/annurev.publhealth.20.1.145](https://doi.org/10.1146/annurev.publhealth.20.1.145)

DeRouen, K. R., and Sobek, D. (2004). The dynamics of civil war duration and outcome. *Journal of Peace Research*, 41(3), 303–320. doi:[10.1177/0022343304043771](https://doi.org/10.1177/0022343304043771)

Note: Replication material: <https://www.prio.org/JPR/Datasets/>

6. Time-series cross-section (November 29th)

Brüderl J., and Ludwig, V. (2015). Fixed-effects panel regression *The SAGE Handbook of Regression Analysis and Causal Inference*. 1st edition, Sage. Part III, Chapter 15, pp. 327–357.

Fortin-Rittberger, J. (2015). Time-series cross-section. In: Best, H., and Wolf, C. (eds.). *The SAGE Handbook of Regression Analysis and Causal Inference*. 1st edition, Sage. Part III, Chapter 17, pp. 387–408.

Allan, J. P., and Scruggs, L. (2004). Political partisanship and welfare state reform in advanced industrial societies. *American Journal of Political Science*, 48(3), 496–512.
doi:[10.1111/j.0092-5853.2004.00083.x](https://doi.org/10.1111/j.0092-5853.2004.00083.x)

Note: Replication material can be found on Moodle.

Helmdag, J. (2016). PANELL: Display panel length for a given set of variables. Install by typing `ssc install panell` in Stata command line.

7. Critical reflections and concluding discussion (December 6th)

Berrebi, C., and Ostwald, J. (2016). Terrorism and the Labor Force. Evidence of an Effect on Female Labor Force Participation and the Labor Gender Gap. *Journal of Conflict Resolution*, 60(1), 32–60. doi:[10.1177/0022002714535251](https://doi.org/10.1177/0022002714535251)

Ioannidis, J. P. A. (2005). Why most published research findings are false. *PLoS Med*, 2(8), e124, 0696–0701. doi:[10.1371/journal.pmed.0020124](https://doi.org/10.1371/journal.pmed.0020124)

Ioannidis, J. P. A., Stanley, T. D. and Doucouliagos, H. (2017). The Power of Bias in Economics Research. *Economic Journal*, 127: F236–F265. doi:[10.1111/ecoj.12461](https://doi.org/10.1111/ecoj.12461)

Kittel, B. (2006). A crazy methodology? On the limits of macro-quantitative social science research. *Inter- national Sociology*, 21(5):647–677. doi:[10.1177/0268580906067835](https://doi.org/10.1177/0268580906067835)

Schoenfeld, J. D. and Ioannidis, J. P. A. (2013). Is everything we eat associated with cancer? A systematic cookbook review. *The American Journal of Clinical Nutrition*, 97(1):127–134. doi:[10.3945/ajcn.112.047142](https://doi.org/10.3945/ajcn.112.047142)

Schrodt, P. A. (2014). Seven deadly sins of contemporary quantitative political analysis. *Journal of Peace Research*, 51(2), 287–300. doi:[10.1177/0022343313499597](https://doi.org/10.1177/0022343313499597)

Silberzahn, R., and Uhlmann, E. L. (2015). Crowdsourced research: Many hands make tight work. *Nature*, 526(7572), 189–191. doi:[10.1038/526189a](https://doi.org/10.1038/526189a)

Supplementary: Links to p-hacking modules from [FiveThirtyEight](#) (macro data) and [ShinyApps](#) (micro data). Also, watch the segment on p-hacking from Last Week Tonight <https://youtu.be/0Rnq1NpHdmw>.