Read Me

Replication Material for
Quantifying change over time: Interpreting time-varying effects in duration analyses, Political Analysis

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Thank you very much for your interest in my research!

The replication archive contains all code and data which enable to replicate the analysis presented in the article and the web appendix. All calculations were performed using Stata 14.2 (update level 04may2017). If you have any questions, please contact me at Constantin.Ruhe@uni-konstanz.de or visit my website to identify my current e-mail address.

If you use or build off my analysis or code, please cite the original article in Political Analysis.

When you use the Stata package **scurve_tvc**, please cite the article in Political Analysis as well as the Stata Journal article:

Ruhe, Constantin. 2016. Estimating survival functions after stcox with time-varying coefficient. *Stata Journal* 16(4), 867-879.

The Stata Journal paper is available at the Stata Journal website and as an author produced version on my website.

Replicating the analysis

If you are interested in the analysis, please proceed as follows:

- Open the master do-file ("0_MasterDoFile.do") and make sure you specify the correct working directory.
- The do-file calls separate do-files which replicate the individual results reported in the paper and web appendix.
- Each do-file saves the tables and figures in the working directory where the do-files are located.

- Please also note that it will take several hours if you run the entire code of the master do-file at once. The time-consuming do-files are the simulations and the bootstrap procedure.

- In order to run the Royston Parmar models, you will need to install the relevant Stata package **stpm2**. For an introduction see Royston, Patrick and Paul C. Lambert. 2011. *Flexible Parametric Survival Analysis Using Stata: Beyond the Cox Model.* College Station, Texas: Stata Press.

Using the scurve_tvc package

scurve_tvc is the Stata command which implements the calculations of survival functions from Cox models with time-varying coefficients described in the paper. The command was published in the Stata Journal 16(4), 867-879 (see full citation above). To install the package, type „search scurve_tvc“ in Stata and click on the search result to install the package. You may also type „net install st0458“ and it will install the package automatically.

The ado and help file are also provided with the replication material, but I recommend installing the latest version provided by the Stata Journal.

At the moment, two procedures used in the web appendix are not available in the automated calculations of the package:

- Integrating time-varying covariates:
  If you wish to produce a graph of survival functions in which the value of a covariate changes its values at specific analysis times, please use the manual implementation in do-file "6a_SurvivalRestricted_hypothetical_late_mediation.do". Consult the Stata Journal paper for further instructions on the manual steps involved.

- Bootstrap confidence intervals:
  I am currently working on a package to implement bootstrap confidence intervals for survival functions (with and without time-varying effects). Check my website for updates. In the meantime, please build your own code based on the code provided in do-file "6b_SurvivalDiffRestricted_BootstrappedCIs.do".

Using the mediation data

The two data files "book-basedata-replication.dta" and "book-dyadyeardata.dta" were provided by Kyle Beardsley for the purpose of this replication study. If you use this data, please cite:

Beardsley, Kyle. 2011. *The Mediation Dilemma.* Ithaca, NY: Cornell University Press.

Files included in the replication material

Files with replication code:

- 0_MasterDoFile.do
- 1_ExampleGraph.do
- 1a_ExampleGraph_flatbaseline.do
- 2_NonParametric.do
- 3_Cox.do
- 4_Tables.do
- 5_SurvivalOriginal.do
- 6_SurvivalRestricted.do
- 6a_SurvivalRestricted_hypothetical_late_mediation.do
- 6b_SurvivalDiffRestricted_BootstrappedCIs.do
- 7_PlotResults.do
- 8_RoystonParmar.do
- 9_PlotCoxRoystonParmar.do
- 10_PlotResultsWithRoystonParmar.do
- 10a_discrete_survival_Beardsley.do
- 11_Simulation.do
- 12_Simulation_obs50.do
- 13_Simulation_obs200.do

Data files

- book-basedata-replication.dta
- book-dyadyeardata.dta
- sim.dta

Log files

- _LogFile.log

Stata ado and help files

- scurve_tvc.ado
- scurve_tvc.sthlp