



Advanced Topics in Applied Regression Analysis

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Course outline

While it feels like regression analysis is not getting much love these days in the social sciences, it is still foundational for survey analysis – the tool that causal inferential models utilize for most (if not all their) estimation and that serves as the basis of the fancy advanced techniques receiving most of the attention today in social science outlets. For this reason, it is not only worth learning regression foundations well, but it is important to understand how advanced techniques build upon regression to analyse more flexibly.

We will start by reviewing the assumptions of regression modeling with an eye on what could go wrong with the kind of data used in the social sciences. We will explore the estimators and link functions necessary to deal with binary, ordered, and unordered (multinomial) outcomes with a specific emphasis on the correct interpretation of such regression results. Second, we start to explore the complexities of various data structures that emerge in voting behavior research, such as cross-country surveys, repeated cross-sectional surveys, panel data, or other within-person analyses. We will approach this complexity through three approaches: clustered standard errors, fixed and random effects corrections, also venturing into the world of multilevel modeling. In addition, we will also consider the (admittedly frustrating) topic of survey weights and discuss considerations and limitations in their applications. Building on this knowledge, time allowing, we will address topics of nonresponse and use imputation procedures for item missing data.

Although we will not fully cover topics of GLM, panel data analysis, multilevel modeling, sampling and weights, missing data, we will highlight the foundations important to embark on any of these paths and have a glance at (and take home some R code for) examples of such analyses. This workshop will have an applied focus and will not go into the mathematical foundations of mentioned tools.

Prerequisites

If you have done regressions before but feel like you are missing some foundations, you need a review, or you would like to build on the regression basics you have expanding into the advanced topics, you have come to the right workshop. If you have never done any regression analysis and would like to receive an introduction, this workshop is probably not for you just yet.

Basic R knowledge is strongly recommended. At least, you should be able to load a dataset and run a simple `lm` command. If you don't know how to do this, please get there before the workshop. (This is not much, you can do it.) Also, once you know what you are doing, you can easily transfer your knowledge to the analysis tools of your preference.

About the Trainer

Levente Littvay is a research professor at the Centre for Social Sciences of the Hungarian Academy of Sciences Centre of Excellence. Formerly he was a Professor of Political Science at Central European University where he taught graduate courses in research design, applied statistics, electoral politics, voting behavior, political psychology, and American politics and remains affiliated with its Democracy Institute. As a founder and academic coordinator of the Methods Excellence Network MethodsNET, he is dedicated to promoting accessible, excellent and innovative method trainings. His research interests include multilevel and structural equation models, populist polarization, in particular the measurement and mitigation of partisan motivated democracy eroding policy preferences, and motivations underlying secessionist attitudes.