Applied Survey Analysis: Family P Models (MrP, MrsP, and autoMrP)

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Wednesday June 14th
Time: 09.00 to 13.00,
"Room": →Zoom
Class material: →Dropbox

1 Overview

This is a four hour class on small area estimation. Multilevel regression with poststratification (MrP) has quickly become a relevant tool in applied survey research. MrP can be one response to the question of how one can optimally extract information from a survey sample and how much structure one should induce (with a model)? Historically, researchers were interested in exploiting nationally representative surveys to make inferences about sub-national preferences. While this does not pose major problems for larger units (such as California, Zurich, or Bavaria) it is not reasonable for small units (e.g. Wyoming, Appenzell Innerhodes, Bremen). This class will present a short introduction to MrP as well to further extensions (MrsP and autoMrP) and will also provide a hands-on lab session.

2 Learning Objectives

Students who participate in **Applied Survey Analysis: Family P Models** can expect to achieve the following goals:

- To understand different motivations for using poststratified model predictions.
- To develop an understanding oft strengths and weaknesses of MrP, MrsP, and autoMrP.
- To develop an understanding when these models will perform best and when they will be of little help.
- To provide hands-on experience with the analysis of survey data.

3 Course Materials

Dropbox

All class materials are available from →Dropbox a week before the class starts. papers mentioned below will be available.

Software

It is crucial that you have access to R, since we shall be using this in the lab part. Please make sure that you install the latest version of the following packages: `swissMrP` and `autoMrP`.

4 Topics

Multilevel Regression with Poststratification

- *The original paper:* Gelman, Andrew, and Thomas C. Little. 1997. "Poststratification into Many Categories Using Hierarchical Logistic Regression." *Survey Research* 23(2): 127–35.
- *First paper in political science:* Park, Gelman, and Bafumi 2004. "Bayesian Multilevel Estimation with Poststratification: State-Level Estimates from National Polls" *Political Analysis* 12(4): 375 - 385.
- *Extension:* Selb, Peter, and Simon Munzert. 2011. "Estimating Constituency Preferences from Sparse Survey Data Using Auxiliary Geographic Information." *Political Analysis* 19(4): 455–70.
- *Extension:* Leemann and Wasserfallen. 2017. "Extending the Use and Prediction Precision of Subnational Public Opinion Estimation" *American Journal of Political Science* 61(4): 1003–1022.
- *Extension:* Bisbee, James. 2018. "BARP: Improving Mister P using Bayesian Additive Regression Trees." *American Political Science Review* 113(4): 1060–1065.
- *Extension:* Broniecki, Philipp, Lucas Leemann, and Reto Wüest. 2020. "Improved Multilevel Regression with Post-Stratification Through Machine Learning (autoMrP)" forthcoming *Journal of Politics*.

(LL, 8. Juli 2021)