Correction for measurement error in survey data

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Short bio – Diana Zavala-Rojas

Diana Zavala-Rojas is a survey methodologist. She is a specialist in multinational, multiregional and multilingual comparative (3MC) surveys, holding a doctorate in comparative survey methodology.

She is a member of the Core Scientific Team (CST) of the European Social Survey (ESS) collaborating on questionnaire design, translation, measurement quality and cross-national measurement equivalence. She is also a member of the ESS Translation Expert Task Group. Diana is a researcher in the Synergies for Europe's Research Infrastructures in the Social Sciences (SERISS) project, studying the feasibility of applying computational linguistic methods to survey translation.

Her current research lines focus on 1) quality of cross-cultural survey data, analysing the effects of minority languages in the reliability and validity questions. 2) Language effects in surveys by studying multilingual measurement equivalence. 3) Survey translation and, 4) correction for measurement errors in survey research. Other research interests are experimental designs in survey research and structural equation modelling.

Course description

This crash-course to correction for measurement error in survey data starts with defining measurement error and highlighting why it is important to take it into account in statistical analyses using survey data.

We will move on to discuss the challenges of estimating measurement error, briefly revising different procedures. We will focus on the approach behind the prediction of measurement error using the free-access Survey Quality Predictor (SQP) software (http://sqp.upf.edu/).

Once we know what measurement error is, why it is important to correct for it and how we estimate it, we can learn the basics of **correction for measurement error** in regression analysis.

Software

We will use R software environment for statistical computing (https://www.r-project.org/). We will use "lavaan" (http://lavaan.ugent.be/) and "semTools" (https://github.com/simsem/semTools/wiki) packages.

We will use SQP software to predict measurement error http://sqp.upf.edu/

Prerequisites

Basic R knowledge is desirable, although not mandatory

Useful to revise what old friends **variance** and **variance-covariance** matrix mean.

Schedule

June 29, 2016

Time	Topic
14.00-15.45	What is measurement error? Why should we correct for it when using survey data? Outline of approaches for estimating measurement error
15.45-16.15	Break
16.15-18.00	Estimating measurement error Predicting measurement error: SQP software (lab session)

June X, 2016

Time	Topic
14.00-15.45	Correction for measurement error: Multiple indicators models (theory and lab session) Correction for measurement error: Incorporating information on measurement error in regression models I (theory and lab session)
15.45-16.15	Break
16.15-18.00	Correction for measurement error: Incorporating information on measurement error in regression models II (lab session)

References

Course largely based on:

Saris, W.E. and Gallhofer, I.N. (2014) *Design, Evaluation and Analysis of Questionnaires for Survey Research.* Second Edition. New York: Wiley.

Additional reference:

Saris, W.E**.** and Revilla, M. (2015). "Correction for measurement errors in survey research: necessary and possible". Social Indicators Research.

We will use data from the European Social Survey
http://www.europeansocialsurvey.org/