Data Harmonization in the Social Sciences: An Interdisciplinary Approach

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Data Harmonization

Harmonization is about comparability

Data producers:
  → before fieldwork begins – Input harmonization
  → during data processing – Ex-ante output harmonization

Data users (+ some data producers):
  → after public data release – Ex-post output (retrospective) harmonization
A Brief History of SDR

2013 – 2016 Democratic Values and Protest Behavior:
Data Harmonization, Measurement Comparability, and Multi-Level
Modeling in Cross-National Perspective (NCN 2012/06/M/HS6/00322)

Substantive interest → methodological implications
Concern with feasibility

Academic background → decisions about specialized literature, data and measures
Specialized literature

Substantive literature
Political sociology
Social psychology
Political science

Methodological literature
Survey research methodology (TSE, SQM)
Comparative survey research
Ex-post harmonization of survey data
Multi-level regression models
The SDR Database V.1

Asian Barometer  International Social Justice Project
Afrobarometer   International Social Survey Programme
Americas Barometer Latinobarometro
Arab Barometer   Life in Transition Survey
Asia Europe Survey New Baltic Barometer
Caucasus Barometer Political Action II
Consolidation of Democracy Political Action - An Eight Nation Study
Comparative National Elections Project Political Participation and Equality
Eurobarometer Values and Political Change
European Quality of Life Survey World Values Survey
European Social Survey
European Values Study

22 projects; 89 waves; 1,721 national surveys; 142 countries/territories, btw. 1966 - 2013.
N= 2, 289,060 respondents.

Available via Harvard dataverse (asc.ohio-state.edu/databarmonization/data/)
Substantive target variables, SDR v.1.1

Political attitudes & behavior

Trust in the national parliament

Trust in the justice system

Trust in political parties

Trust in government

Participation in demonstrations

Signing petitions

Interest in politics

+ Trust in people (social trust)

Socio-demographics

Gender

Age

Year of birth

Rural/non-rural

Metropolitan

Education levels

Schooling years
Methodological challenges

Large variation in data quality within and across international projects

Inter-survey differences in properties of specific items on the same issue

Increased total variability following harmonization partly due to non-random errors
The survey data recycling (SDR) analytic framework (I)

Define, measure and store, as indicators, variability due to:

- source survey quality

- data reprocessing (i.e. ex-post harmonization)

Methodological biases and errors understood as consequences of:

(a) deviations from standards of documenting and preparing survey data suggested in the specialized literature (e.g. Biemer and Lyberg 2003)
(b) inter-survey variability of items measuring the same issue
(c) harmonization procedures
The SDR analytic framework (II)

Metadata stored as variables capture:

(i) Unequal source data quality as reflected in:
   (a) data records in computer files;
   (b) survey documentation (codebook, questionnaires, technical reports, etc.)
   (c) (in)consistency documentation – data records (i.e. processing errors)

(ii) Variability stemming from ex-post harmonization
   - properties of scales
   - question wording
   - questionnaire context
   - deriving information for one target variable from “extra” source data

Researchers can use metadata variables as controls.

Work ongoing, SDR Project, 2017 -2021
Co-edited volume on Survey data harmonization in the social sciences

Ex-ante and ex-post harmonization matter for comparability also in relation to each other

Rapidly growing number of harmonized survey datasets (ex-ante, ex-post); weak documentation of harmonization decisions (Granda and Blaszcyk 2016)

Small methodological literature on harmonization *per se*

Limited scope of *Harmonization: Newsletter on Survey Data Harmonization in the Social Sciences*  
(asc.ohio-state.edu/dataharmonization/harmonization-newsletter-fall-2019/)

→ Proposed volume + Warsaw Event
Main Themes of Data Harmonization - I

A. Relevance for the survey life cycle

The Effects of Data Harmonization on the Survey Research Process, by Peter Granda, University of Michigan

B. Bursting the disciplinary bubble

Harmonizing Census Data: IPUMS International, by Matthew Sobek

Harmonizing time-use data: current practices and challenges in the field, by Ewa Jarosz, Sarah Flood, Margarita Vega Rapun

Effecting rigorous data harmonization and documentation to understand data heterogeneity and quality, by Isabel Fortier and Tina W. Wey
Main Themes of Data Harmonization - II

C. Theory-informed ex-post harmonization

Harmonization of Panel Data: CNEF by Dean Lillard

Theory Driven Approach to Data Harmonization: The True European Voter Project, by Paolo Segatti and colleagues

SDR-based Roundtable discussions on Wednesday (Day 1 of Workshop)

D. Inter-survey comparability of concepts

Using Latent Class Analysis for Testing the Equivalence of Multi-Item Scales across Data from Different Survey Programs. The Example of National Identity Types, by Markus Quandt and Antonia May
Main Themes of Data Harmonization - III

E. Data quality of source surveys and the data harmonized ex-post

Comparative Sample Quality: Facing the Obstacles to Applying External and Internal Evaluation Criteria to Large Harmonized Datasets, by Piotr Jabkowski and Piotr Cichocki

Effecting rigorous data harmonization and documentation to understand data heterogeneity and quality, by Isabel Fortier and Tina W. Wey

Inter-survey variability in source data quality, Workshop, Day 1, by SDR Team

Harmonization control variables, Workshop, Day 1, by SDR Team
Main Themes of Data Harmonization - IV

F. Creation and use of metadata

Harmonizing Census Data: IPUMS International, by Matthew Sobek
SDR as an analytic framework for survey data reprocessing, Workshop Day 1, by SDR Team

G. Documentation of the ex-post harmonization process

From Source to Target: Harmonization, Workflow, Procedures and Tools, Workshop Day 1, by SDR Team
Main Themes of Data Harmonization - V

H. Statistical issues in analyzing harmonized data
   Statistical Issues in Analyzing Harmonized Data, by Claire Durand

   Applying Multiple Imputation to Survey Data Harmonized Ex-Post, Workshop, Day 2, by Stef van Buuren

I. Dissemination of ex-post harmonized data; sustainability
   HUMAN Surveys: Challenges of Harmonizing Multiple Sources Using Stata Scripts by Andrew Klassen
Main Themes of Data Harmonization - VI

J. The potential for new methodological and substantive knowledge

Analyzing repeated-wave panel data to identify causal direction: Lessons from a meta-analysis of digital media use and political participation, by Jennifer Oser

Three methodological papers in political sociology, on aggregation of survey data into measures of country characteristics – Workshop, Day 3, by Joonghyun Kwak & Craig Jenkins; Joonghyun Kwak & Kazimierz Slomczynski; and Joshua Dubrow & Olga Zelinska

Complexity in Society: From Indicators Construction to their Synthesis, Workshop, Day 3, by Filomena Maggino
Acknowledgements

Work presented here, and this event itself, exist through collaboration. Thank you!

This event is organized by CONSIRT, The Ohio State University and the Polish Academy of Sciences.

Financial support comes from the US National Science Foundation (SMA-1738502), the Polish National Science Centre (NCN 2016/23/B/HS6/03916), as well as the Polish Academy of Sciences, and the Institute of Philosophy and Sociology PAN.