

Workshop

Building Multi-Source Databases for Comparative Analyses

Survey Data Recycling as an Analytic Framework
for Survey Data Reprocessing

Part 1: Survey Weights

The SDR Team

SDR framework: defining source survey quality

Total Survey Error (TSE) + Survey Process Quality Management (SQM)



3 dimensions of survey quality

a) Quality of the **data records** in national datasets (i.e. computer files)

- errors can lead to distortion of empirical results.

b) Quality of surveys as reflected in the **survey documentation**

- inadequate information in documentation reduces confidence in the data

c) Degree of consistency **documentation <-> data records** in the computer file

- processing errors can affect the overall usability of the survey

Operationalization:

a) Data Records in the Computer File: are data records formally correct?

Summary index on the basis of 4 variables:

| | |
|---|-----------------|
| Are survey weights free of formal errors (not inflating sample size)? | Yes = 1, No = 0 |
| Do survey cases (respondents) have unique identification numbers (IDs)? | Yes = 1, No = 0 |
| Is the proportion of missing values for gender and age within the standard limits (< 5%)? | Yes = 1, No = 0 |
| Is the data file free from repeated cases (duplicates)? | Yes = 1, No = 0 |

Effect of positive answers (Yes = 1): Less distortion of research results based on the data

Operationalization: Data Records in the Computer File

Survey weights

Survey weights assign an adjustment number to each respondent. Persons in under-represented get a weight larger than 1, and those in over-represented groups get a weight smaller than 1.

However, some numbers >1 and some numbers < 1 seems suspicious.

MIN&MAX (weight)

Ranges of MIN(wght):

exactly=0 in 42 surveys!

1.91 Philippines (ISSP 1991)

Ranges of MAX(wght):

0.92 Lithuania (NBB 2001)

90.32 New Zealand (ISSP 2007)

These findings prompted us to study weights carefully.

Main work on weights in SDR1 and SDR2 is done by Marcin Zieliński

Frequency of weighting procedures

43.4 % poststratification type of weighting only

8.5 % design type of weighting only

22.9 % combined

25.2 % no information on the type of weighting

Components of wght. factors

Gender (62.4 %)

Age (61.5)

Region (39.3)

Urbanity level (24.8)

Education (18.7)

Economical factors (1.4)

Corrections for HH samples (13.8)

Corrections due to the stratified sampling (21.8)

Quality of weights

Technically “good weight”

$\text{MIN}(\text{wght}) > 0$ and $\text{MIN}(\text{wght}) < 1$

$\text{MAX}(\text{wght}) > 1$ but small

$\text{mean}(\text{wght}) = 1$

$\text{sd}(\text{wght})$ as small as possible

Consequences

$\text{MIN}(\text{wght}) = 0$: excluding cases

high $\text{MAX}(\text{wght})$: possible bias

$\text{mean}(\text{wght}) \neq 1$: inflation or deflation
of the net sample size (std errors, potential bias)

high $\text{sd}(\text{wght})$: high variance introduced into the data

mean(weight)

70 % mean(wght) != 1

Less strict: $0.999 \leq \text{weight} \leq 1.001$

12.7 % bad

e.g.:

Philippines (ASB 2010) = 0.83

Philippines (ISSP 1996) = 3.29

Cross-project perspective

No evident errors:

Americas Barometer (AMB)

Comparative National Elections Project (CNEP)

European Quality of Life (EQLS)

European Social Survey (ESS)

World Values Survey (WVS)

Summing up (SDR 1)

National surveys differ in:

- the use of data weighting
- weighting procedure (post-stratification, design, combined)
- composition of weighting factors (gender, age, region, urban, education, economic factors)
- quality of weights (errors in min/max, mean, sd)

Correcting errors and provided recalculated weights

Strategy for SDR2

1. Preserve as much information on weights as possible – coding:
 - the use of data weighting (yes/no)
 - weighting procedure (post-stratification, design, combined)
 - composition of weighting factors (gender, age, region, urban, other)
 - quality of weights (errors in min/max, mean, sd)
2. Providing new weights (Re-weighting as needed due to errors)

Advantages:

re 1 – maximum information for users

re 2 – elimination of errors and standardizing impact on the data

Biblio

Marcin W. Zieliński, Przemek Powalko and Marta Kołczyńska (2018). “The Past, Present and Future of Statistical weights in International Survey Projects: Implications for Survey Data Harmonization.” In: Timothy P. Johnson, Beth-Ellen Pennell, Ineke I. Stoop, Brita Dorer (Eds.) *Advances in Comparative Survey Methodology* (Wiley Series in Survey Methodology), John Wiley & Sons, Inc.

Recommended:

Dominique Joye, Marlène Sapin, and Christof Wolf. 2019. Weights in Comparative Surveys? A Call for Opening the Black Box. In *Harmonization: Newsletter on Survey Data Harmonization in the Social Sciences* Vol. 5, No. 2.