Anders Klevmarken
Department of Economics
UPPSALA UNIVERSITY *2005-04-25*

A short guide to the sampling weights of SHARE data release 1.

Sampling weights are primarily used in inference to a finite population. The research question could for instance be: "What is the total number of people with a certain disease in a given country?" Or "What was the mean income in 2003 in country X?" The population to which this inference goes could be the population of all households with at least one 50+ member in country X, or the population of all 50+ individuals in country X, or some subpopulation (domain). This kind of inference is usually design based, that is, no model assumptions about the universe are used. The whole inference is only based on the sampling design. The design weights (the inverse of the inclusion probabilities) can be used to obtain consistent point estimates of population totals or other finite population statistics. The design weights may or may not be useful also in a model dependent analysis to a "superpopulation", the kind of analysis most economists are used to. (There is a literature on the when weights should be used in this kind of inference.)

In practice we almost never have a complete sample, there is nonresponse. The design weights do not compensate for nonresponse. Please note that compensating for nonresponse should be seen as part of the analysis and there are no general approaches that are good for all purposes. If an analyst thinks that nonresponse is systematic in dimensions that are important for the analysis the analyst should use a method of compensation that meets the needs of this particular analysis. As a service to the project members we have computed calibrated weights that to some extent compensate for unit nonresponse. Every user should, however, decide if these weights age good for the purpose at hand.

The data release 1 files include three different kinds of weights: design weights, calibrated household weights and calibrated individual weights. In countries with so called vignette samples each weight exists in three variants: For the main sample, the vignette sample and for the two combined.[1] The following list explains this,

wgtMDH	Design weight for the main sample
wgtVDH	Design weight for the vignette sample
wgtADH	Design weight for the two samples jointly
wgtMCH	Calibrated household weight for the main sample
wgtVCH	Calibrated household weight for the vignette sample
wgtACH	Calibrated household weight for the two samples jointly
wgtMCI	Calibrated individual weight for the main sample
wgtVCI	Calibrated individual weight for the vignette sample
wgtACI	Calibrated individual weight fro the two samples jointly

By the design of SHARE the probability to include any of the eligible individuals in a household is the same as the probability of including the household. Thus, the design weight is the same for the household as for any eligible individual of the household.

[1] In Sweden there is also a sample supplementary to the main sample. It was treated as part of the main sample.

The calibrated weights were obtained by adjusting the design weights. The adjustment factors were obtained in a "calibration" to known population totals. In most countries we have calibrated against the total national population by age group and gender. In two countries more information was used. Additional details can be found in the table below. This procedure will, for a given household, give calibrated household weights that differ from the calibrated individual weights.

Calibrated individual weights have been computed for responding 50+ individuals for whom we have complete information about age and gender. There are thus a few individuals with missing weights. A variable flags this and indicates reason for the missing value. No calibrated weights have been computed for individuals who are included in the cover screen but dropped out from the interview. Please also note that the calibrated weights do not compensate for any additional nonresponse in the drop-offs. Spouses less than 50 have no individual calibrated weight (missing value) because we have nothing to calibrate against (and it is really unclear what kind of calibration is desired). For countries that do not include people living in institutions in their sampling frames there is a potential problem in calibrating against population totals that include these people. (This does not apply to Switzerland.)

List of flag variables:

nowh_amh	Flag, no weights due to missing birth year(s) for HH
nowh_or	Flag, no weights, other reason
nowi_amr	Flag, no individual weights due to missing age of respondent
nowi_ne	Flag, no individual weights due to non-eligible respondent (born after 1954)

For general references to the calibration methodology see J-C Deville and C-E. Sarndal "Calibration Estimators in Survey Sampling", J of the American Statistical Association, June 1992, vol 82, No 418, and S. Lundstrom and C-E Sarndal: Estimation in the presence of Nonresponse and Frame Imperfections, Statistics Sweden 2001

Please note that the weights are designed to be used in the estimation of population totals. The sum of the weights is in itself an estimate of the size of the population. A mean can thus be estimated by just normalizing the weights to 1.

The variances of design based estimates of finite population statistics depend in general on the whole design and not only on the weights. Some computer packages (like STATA) have routines that compute proper estimates for certain standard designs. They need as input data on the primary (secondary) selection unit and stratum a sample member belongs to. Due to privacy legislation we have not been able to include these data in the released files. It is thus currently not possible to compute proper variances. A possible temporary fix-up is to carry on as if we in every country had a single stage random sample with unequal sampling probabilities.

Also note that if the weights are very different one single observation can easily have a large influence on an estimate. The Italian design in particular is extreme in this sense.

Country	Comment	Non-response correction
Austria	Not a probability sample, no true design weights available. Computations are based on the assumption of simple random sampling of households	
Denmark		Age/Gender, County
France		Age/Gender
Germany		Age/Gender
Greece		Age/Gender
Italy		Age/Gender, Geographical/City size strata
the Netherlands		Age/Gender
Spain		Age/Gender
Sweden		Age/Gender
Switzerland		Age/Gender, not including people in institutions

Frequently asked questions

1. What weights should we use?
- For most purposes the calibrated weights.

2. Why do we present the design weights at all?
- If you would like to do your own calibration you will need them.

3. When do we use household, when individual weights?
- Household weights are use in an inference to a population of households and individual weights in an inference to a population of individuals.

4. Why are some weights missing in otherwise completed interviews?
- The observation could be a partner less than 50 years old or data needed for calibration might have been missing.

Computer implementation

To a varying degree computer packages accommodate design based inference to a finite population. STATA, for instance, has a set of routines for survey sample analysis and there is a special manual. **Until information about strata and clusters become released these routines are not very helpful if one intends to compute correct standard errors**. However most STATA routines can use weights. The following simple examples illustrate how sampling weights can be used in STATA to compute the correct **point estimates**:

How to compute a (weighted) mean of a household-level variable?
Answer: sum xhhvar [aw=weightCH]
How to compute a (weighted) mean of an individual-level variable?
Answer: sum xindvar [aw=wgtjCI] where j=M, V or A
How to compute a (weighted) cross table of two household-level variables?
Answer: table xhhvar,yhhvar [aw=wgtjCH] where j=M, V or A
How to compute a (weighted) cross table of two individual-level variables?
Answer: table xindvar,yindvar [aw=wgtjCI] where j= M, V or A

Please note that STATA accepts different kinds of weights depending on routine. Please consult the STATA manual to find out how these weights are used depending on routine!

In an inference to the universe of all countries each country becomes a stratum. If one is willing to proceed as if simple random sampling had been used in each country then the STATA survey commands might be used, for instance,

Svyset [pw=wgt***], strata(country);
Svymean xvar;
Svytab yvar xvar;