



Labour Force Survey: Estimation method

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Considerations for estimation procedure

Several types of variables may be involved, such as labour force participation rate, unemployment, employment by status, occupation or industry, etc. The frequency and precision with which different estimates need to be produced given the survey objectives, and can be produced given the survey size and structure, may differ from one variable to another.

Estimates are usually required not only for the *total study population* but also for *separate geographical or administrative areas* such as urban and rural sectors and national regions, *for different subpopulations* such as particular age, sex or ethnic groups, and at different levels of aggregation within each category. Such categories and levels are called *reporting domains*. These domains may or may not have formed explicit *sampling domains* in the design and selection of the sample.

Considerations for estimation procedure

Estimates may be required for different types of units of analysis, such as individuals, households, families and communities.

Fourthly, it is important in sample surveys to make a distinction between estimates of proportions, means, rates and other types of ratios where the numerator and the denominator are obtained under essentially the same conditions from the same survey; and estimates of population aggregates such as total numbers of persons unemployed, where the survey results have to be inflated using internal or external information. Often sample surveys of moderate size by themselves are able to provide estimates of population totals with much less precision (in terms both of variance and bias) than estimates of proportions, means, rates and other types of ratios.

Finally, various types of estimates can be distinguished in terms of the time dimension.

Design weight

- The estimation procedure at this stage is relatively straightforward :
 - Each observation is weighted according to the inverse of its probability of being selected into the sample.
- These weights are called “design weights”. The resulting weighted data can then be aggregated in any fashion

Adjustment for non-response

- In certain situations it is necessary to modify the design weights to compensate for special problems which arise at the implementation stage.
- The most common and important of these is the adjustment for non-response. Non-response affects the survey results in several ways :

1. In so far as non-responding units differ systematically from responding units, the distribution observed in the sample is distorted and results become biased.

2. The overall population totals directly estimated from the achieved sample will be biased downwards if no account is taken of the missed units.

3. Non-response reduces effective sample size and hence increases sampling variance.

4. In addition to “total non-response” where no information at all is obtained on some units in the sample, there is also “item” or “partial” non-response where incomplete information is obtained on some units. This problem weakens and complicates analysis of the survey data.

No adjustments can fully remove the effect of non-response. The objective of various adjustments is to reduce the distorting effect as far as possible.

Adjustment for non-response (cont'd)

Three types of adjustments are commonly made

1. Substitution of non-responding units by new units with some sort of matching on the basis of selected characteristics.

- common practice in many surveys,
- often does little good and can easily result in loss of control over field operations

2. Imputation of missing values on the basis of the partial information available on the same or other units

- often necessary and useful in complex surveys,
- might be its indiscriminating if used in large-scale

Adjustment for non-response (cont'd)

3. The adjustment of design weights in order to correct, as far as possible, for sample distribution and overall size.

- basic procedure as follows:
 - Sample is divided into “cells” which are relatively homogeneous according to some important criteria, available for both responding and non-responding units.
 - For each cell an appropriate “response rate” is computed.
 - The estimate for the cell or the weight for each individual unit in it is inflated by the inverse of the response rate for the cell.

Use of external weights

Population data control

- refer to externally obtained up-to-date estimates of population totals
- used to inflate the various rates and ratios estimated from the survey in order to obtain estimates of aggregates for the corresponding variables.
- required for *the total population* and *important subgroups of the population* such as
 - *sex*
 - *broad age group*
 - *ethnic or other relevant social characteristics,*
 - *urban-rural division*
 - *geographic region*

References

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