

What is a Standard Error and Relative Standard Error? Reliability of estimate for Labour Force data.

Why do we have Standard Errors?

Estimates from the Labour Force Survey (LFS) are based on information collected from people in a sample of dwellings, rather than all dwellings. Hence the estimates produced may differ from those that would have been produced if the entire population had been included in the survey. The most common measure of the likely difference (or 'sampling error') is the Standard Error (SE).

Importance of Standard Errors

It is important to consider the Standard Error when using LFS estimates as it affects the accuracy of the estimates and, therefore, the importance that can be placed on the interpretations drawn from the data.

Standard Error versus Relative Standard Error

The Standard Error measure indicates the extent to which a survey estimate is likely to deviate from the true population and is expressed as a number. The Relative Standard Error (RSE) is the standard error expressed as a fraction of the estimate and is usually displayed as a percentage. Estimates with a RSE of 25% or greater are subject to high sampling error and should be used with caution.

The reliability of estimates can also be assessed in terms of a confidence interval. Confidence intervals represent the range in which the population value is likely to lie. They are constructed using the estimate of the population value and its associated standard error. For example, there is approximately a 95% chance (i.e. 19 chances in 20) that the population value lies within two standard errors of the estimates, so the 95% confidence interval is equal to the estimate plus or minus two standard errors.

Example

The example below demonstrates how each of the reliability measures can be calculated and interpreted:

Standard Error

Employed persons, November 2009

Estimate = 10,848,800

The standard error can be obtained from Labour Force Survey **Standard Errors, datacube, Oct 2009 (cat.no. 6298.0.55.001)** Standard Error (SE) = 37,600

Relative Standard Error (RSE)

$RSE = 100 \times SE / \text{estimate}$

RSE (employed persons in November 2009) = 0.3%

Since the RSE on the estimate of 10,848,800 is less than 25%, the estimate of employed persons can be considered reliable enough for general use.

95% Confidence Interval

Estimate plus or minus 2 x SE

Upper limit of the interval

$= 10,848,800 + (2 \times 37,600) = 10,924,000.$

Lower limit of the interval

$= 10,848,800 - (2 \times 37,600) = 10,773,500.$

95% Confidence = 10,773,500 to 10,924,000.

It can, therefore, be considered with 95% reliability that the true value of employed persons is between 10,773,500 to 10,924,000.

Further reading:

Further information about sampling error and LFS data is contained in the information paper Labour Force Survey Standard Errors, 2005 (cat. no. 6298.0).

To calculate standard errors for monthly estimates from the Labour Force Survey refer to Labour Force Survey Standard Errors, datacube, Oct 2009 (cat. no. 6298.0.55.001).