

Basic formula for calculation of the standard error:

$$\hat{u} = \frac{1}{\hat{Z}} \left(Y - \frac{\hat{Y}}{\hat{Z}} \cdot Z \right)$$

If we assume that $n_h \geq 2$ for all h , that is, two or more PSUs are selected from each stratum, then the variance of $\hat{\theta}$ can be estimated from the variation among the estimated PSU totals of the variable u ("ultimate cluster" method):

$$\hat{V}(\hat{\theta}) = \sum_{h=1}^H \left(1 - \frac{n_h}{N_h} \right) \frac{n_h}{n_h - 1} \sum_{i=1}^{n_h} \left(\omega_{hi} \cdot u_{hi} - \frac{1}{n_h} \left(\sum_{i=1}^{n_h} \omega_{hi} \cdot u_{hi} \right) \right)^2$$