Calculating A Survey's Design Effect Due To Unequal Selection Probabilities

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4/26/2017

The Design Effect

Can be defined:

$$DEFF = \frac{\sum_{i=1}^{n} w_i^2}{(\sum_{i=1}^{n} w_i)^2 * n}$$

where w_i is the post-stratification weight for any one individual in the survey and n is the sample size of the unweighted sample.

After weighting for complex sampling, you sum the squared weights and dived it by the sum of the weights squared multiplied s by the sample size.

Update Confidence Interval to Include Design Effect

After calculating the MOE:

$$MoE = z * \sqrt{\frac{p(1-p)}{n}}$$

or using an approximation:

$$MoE = \frac{.98}{\sqrt{n}}$$

you update your level of precision of survey findings by incorporating the *DEFF* & *MoE* by taking the square root of the *DEFF* (otherwise known as the *DEFFT*) and multiplying it with the *MoE*

The confidence interval (or margin of error) can then be expressed:

$$\sqrt{(DEFF)} * MoE$$