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Supplementary file 2. Calculate Sample Size for Survey of Women in Reproductive Age

The sample size was calculated based on the formula below (i.e. multiple indicator cluster survey formula)

$$n = \frac{[\,4\,(r)\,(1-r)\,(f)\,(1.1)\,]}{[\,(0.12r)^2\,(p)\,(n_h)\,]}$$

Where

- **n** is the required sample size, expressed as number of households, for the KEY indicator (see following section on determining the key indicator)
- **4** is a factor to achieve the 95 per cent level of confidence
- **r** is the predicted or anticipated prevalence (coverage rate) for the indicator being estimated
- **1.1** is the factor necessary to raise the sample size by 10 per cent for non-response
- **f** is the shortened symbol for *deff* (i.e. design effect*) = 2.0
- **0.12r** is the margin of error to be tolerated at the 95 per cent level of confidence, defined as 12 per cent of r (12 per cent thus represents the relative sampling error of r)
- **p** is the proportion of the total population upon which the indicator, r, is based (i.e. women of reproductive age: 25 % (Census, 2013)
- **n_h** is the average household size (i.e.=4 by Census Report, 2013)

Cluster size was be set at 30

Effective number of household was the "Number of households (Sample Size) /0.9"

By plugging the value into the formula above

N (sample size) = $4 \times 0.20 \times 0.80 \times 2.0 \times 1.1/(0.12 \times 0.2)^2 \times 0.25 \times 4.9$ = 1,657 households per district.

Effective number of households = 1,657 /0.9= **1,841 HH**

Therefore, the minimum sample size of women of reproductive age required ˜ 390

Enumeration areas needed:

Number of enumeration area in the region 61EA (=1,841/30)

Then, allocating 61 EA to 5 districts with an average of 13 EA depending on the % of women per each district gives the sample size for each district as shown in Table 2.3 below.

Table S1: Procedure for sample estimation

District	Number of households (Sample Size)	Effective number of households (#HH/0.9)	cluster	(Effective number of households/cluster) EAs	EAs (rounded)	Sample size per district (EA*30)
Kishapu	402	447	30	13.4	13	390