Appendix 4: Formulas for estimating the sample size for descriptive survey designs*

Design (no. of groups)	Types of estimate of study variables; formula	
	Means	Proportions
Cross-sectional (1 group)	$n = \dfrac{z^2_{1-\alpha/2}\, \sigma^2}{d^2}$	$n = \dfrac{z^2_{1-\alpha/2}\, P\,(1-P)}{d^2}$
Group comparison (2 groups)	$n = \dfrac{z^2_{1-\alpha/2}\, [2\sigma^2]}{d^2}$	$n = \dfrac{z^2_{1-\alpha/2}\, [P_1\,(1-P_1) + P_2(1-P_2)]}{d^2}$

Note: P = estimated proportion; P_1 = estimated proportion (larger); P_2 = estimated proportion (smaller); d = desired precision; σ = estimated standard deviation; $z_{1-\alpha/2}$ = standard errors associated with 2-sided confidence intervals (0.994 [68%], 1.645 [90%], 1.960 [95%], 2.576 [99%]).
*Adapted, with permission, from Lemeshow S, Hosmer DW Jr, Klar J, et al. *Adequacy of sample size in health studies.* Chichester (UK): John Wiley & Sons; 1990. p. 1,10,36,39.