Sample Size for a Descriptive Study

When Estimating a Single Mean

To estimate a single mean with an adequate level of precision i.e. confidence interval of appropriate narrowness, declare your acceptable **margin of error, m** which is equal to half the maximum width of the Confidence Interval that you could tolerate, and find an estimate of the standard deviation (SD) of your mean outcome. Then;

$$\boxed{n \geq \frac{4 \times SD^2}{m^2}}$$

Example: Suppose we require a 95% confidence interval for the mean of a continuous variable with a standard deviation of 15 to be no wider than 10 (i.e. m ≤ 5), using the formula:

$$n \geq \frac{4 \times 15^2}{5^2}$$

$$n \geq 36$$

In order to estimate the mean of a continuous variable (SD=15) with 95% confidence interval no wider than 10, 36 participants would be required.

When Estimating a Single Proportion

To estimate a single proportion with an adequate level of precision i.e. confidence interval of appropriate narrowness, first declare your acceptable **margin of error, m,** which is equal to half the maximum width of the Confidence Interval that you could tolerate around your proportion and your best estimate of the proportion that is being estimated, $\hat{p}$. Then;

$$\boxed{n \geq \left(\frac{2}{m}\right)^2 \times \hat{p}(1-\hat{p})}$$

Note, if $\hat{p}$ is completely unknown use $\hat{p}$ = ½.

Example: Suppose we require a 95% confidence interval for p to be no wider than 0.02 (i.e. m ≤ 0.01). Using the formula if nothing is known about the size of p, we should take $\hat{p}$ = ½;

$$n \geq \left(\frac{2}{0.01}\right)^2 \times \frac{1}{2} \times \frac{1}{2} = 10000$$

If we knew that $\hat{p}$ = 0.05

$$n \geq \left(\frac{2}{0.01}\right)^2 \times 0.05 \times 0.95 = 1900$$