

Confidence interval - 2.

$$95\% \text{ CI} = \text{Sample estimate} \pm 1.96 \times \text{SE}$$

The bigger the sample - the smaller the sample error (SE).

Bigger samples smaller CIs.

more precise estimate of the "true" population value.

P-value.

For whatever you are comparing (mean, median, proportions) & whatever test you are using:

*the probability of observing differences this big, when there is **no** difference in the overall population.*

Smaller the p-value; the more you can doubt the null hypothesis.

Chi-squared test.

Test to compare **proportions** from two or more independent samples.

Look for a P-value of 0.05 or less, i.e. that there is less than a 1 in 20 chance that the difference observed in the sample population could occur by chance, if there was no difference in the overall population.

Skewed data.

Can be dealt with by:

- Transforming the data.
- Non-parametric tests.

Non-parametric tests: make no assumptions about the underlying distribution of the data.

Kruskall-Wallis test.

A non-parametric test used to compare the **medians** from **three or more independent** groups.

Look for a P-value of 0.05 or less, i.e. that there is less than a 1 in 20 chance that the differences observed in the sample population could occur by chance, if there was no difference in the overall population.

Sample size.

The trial should be big enough to detect, as statistically significant, a worth while effect **if it exists**.

When calculating the sample size, need to know:

- what level of difference constitutes a **clinically** significant effect.
- the variability (standard deviation) of the measure.

Base sample size on the **principal outcome measure:**

- number of days to resolution of symptoms.

Sample size -2.

Null hypothesis: there is no difference in symptom resolution between the groups.

80% power: the chance of rejecting the null hypothesis when it is false.

The chance of **getting it right** - set this high.

5% level of significance: the chance of rejecting the null hypothesis when it is true.

The chance of **getting it wrong** - set this low.
