

	Z-test:	Student's t-test:	Chi-square test:	Fisher's exact test:	Macnemar's test:
Study variable:	Qualitative (Categorical)	Qualitative (Categorical)	Qualitative (Categorical)	Qualitative (Categorical)	Qualitative (Categorical)
Outcome variable:	Quantitative or Qualitative	Quantitative	Qualitative (Categorical)	Qualitative (Categorical)	Qualitative (Categorical)
Comparison:	Quantitative: (i) sample mean with population mean (ii) two sample means; Qualitative: (i) sample proportion with population proportion; (ii) two sample proportions	i) sample mean with population mean (ii) two means (independent samples) (iii) paired samples	two or more proportions (independent)	two proportions; <u>as an alternative</u> for chi-squared test if 2x2 table is not valid (when the expected numbers are <5)	two proportions (for paired samples) e.g. matched case-control study or cross-over trial
Sample size:	larger in each group (>30) & standard deviation is known (if Quantitative)	each group <30 (can be used even for large sample size)	Sample size: >30 Expected frequency: >5	Sample size: <30	Sample size: Any

High z & t values=

- Difficult to believe the null hypothesis
- Accept that there is a real difference.

Application of chi-square test:

- Testing independence (or Association)
- Testing for homogeneity
- Testing of goodness-of-fit

The degrees of freedom:

- $(n_1 + n_2 - 2)$ for **independent** samples t-test
- $(n-1)$ for **single** or **paired** samples (dependent samples) t-test
- $(r-1)(c-1)$ for Chi-square & Mac Nemar's tests.

