

Basics

The Workflow

1. State the question to answer.
2. Form the null hypothesis.
3. Decide on the tests to perform.
4. Get probability or rejection and plots.
5. State your findings.

Disambiguation / Concepts / Terms

P-value: The probability of obtaining the data given our null hypothesis.

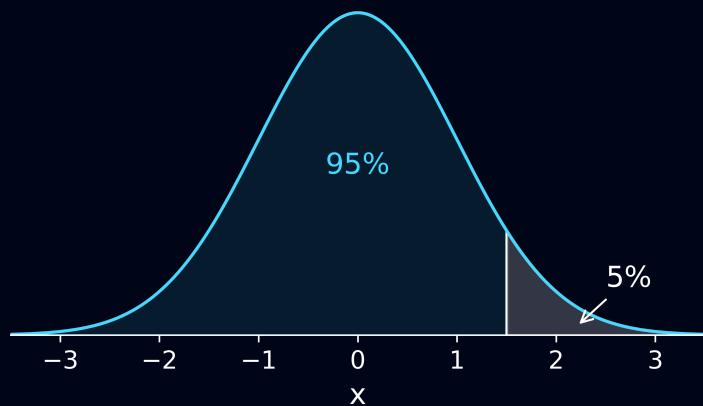
Alpha: A probability level set beforehand which we use to determine if a result is significant. (ie reject null hypothesis if p-value is < alpha)

Confidence level: $1 - \alpha$! If we reject the null hypothesis with $\alpha=0.05$ we can state we are at least 95% confident in our result.

Tests

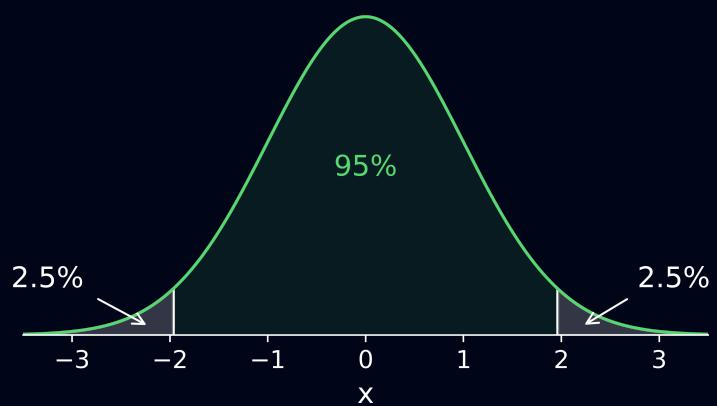
One Tailed Tests

Test if an outcome is higher than expected, or lower than expected. Pick the right distribution for the question and calculate!



Two Tailed Tests

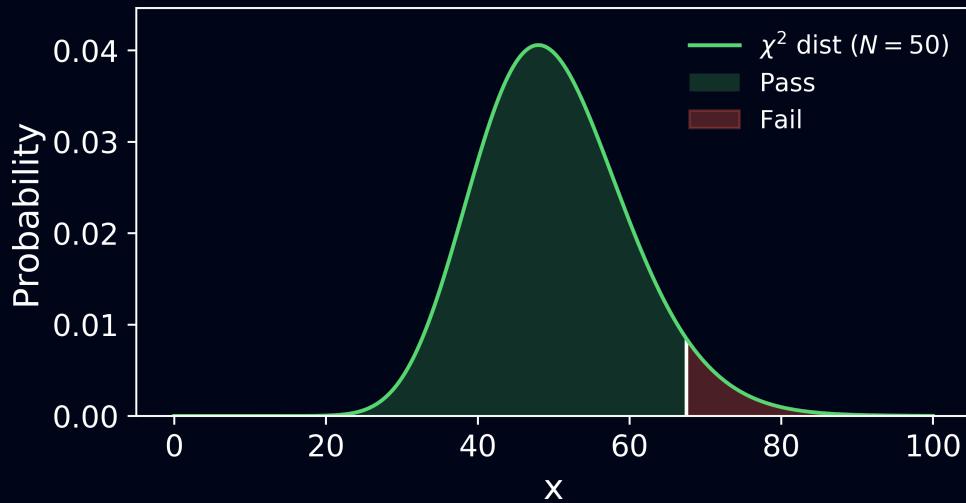
Test if an outcome is higher or lower than expected. Pick the right distribution for the question and calculate!



More Tests

Pearson's Chi2 Test

Test a discrete distribution against expected values.



$$\chi^2 = \sum_{i=1}^N \frac{(C_i - E_i)^2}{E_i}$$

Proportion Test

Test a proportion with a normal dist, using

$$\sigma = \sqrt{\frac{P(1 - P)}{n}}$$

Anderson-Darling Test

Test if two distributions are the same

