The Null Hypothesis: there is no difference in user engagement between the two groups.

The Alternative Hypothesis: a difference exists, e.g., the new feature increases user engagement.

If the test group shows much higher engagement than the control group, then we will reject the null hypothesis and conclude that the evidence favours the alternative hypothesis.

Parametric tests: Suppose again we have a random i.i.d. sample $(X_1, \ldots, X_n)$ of a random variable X from an unknown distribution P.

Parametric tests typically assume the sample comes from a parametric family $P(\cdot\,|\theta)$ and test whether we could reasonably assume $\theta = \theta_0$ for some particular value θ_0.

Hypotheses: Formally, let H_0 be the null hypothesis and H_1 be the alternative hypothesis.

Two-sided test: $H_0: \theta = \theta_0$ versus $H_0: \theta \neq \theta_0$.

One-sided test: $H_0: \theta = \theta_0$ versus $H_1: \theta < \theta_0$; $H_0: \theta = \theta_0$ versus $H_1: \theta > \theta_0$.