

Hypothesis testing: general guidelines

A complete hypothesis test involves much more than calculating a test statistics. For every statistical analysis you do, you should include each of the following components.

- (a) **Identify the parameter(s), both in words and in symbols. Then state the null and alternative hypotheses.**

As you try to identify the relevant parameters, ask yourself some important questions. Will your parameters be means or proportions? Will you analyze one sample, or compare two samples, or investigate the relationship between two variables?

Of course, your hypotheses should be in terms of the parameters you've identified. Now you have to decide one more thing: from the context of the requested analysis, should you perform a 1-sided test or a 2-sided test? This will determine what type of alternative hypothesis you write down ($<$ or $>$ or \neq).

- (b) **Identify the type of analysis required, then state and (if possible) check the technical conditions needed to validly conduct this hypothesis test.**

Most hypothesis tests have requirements about sample size and/or normally distributed data. Are these conditions met by your data?

- (c) **Test your hypotheses at the stated significance level.**

This is the computational part of the analysis. A calculator or computer can crunch the numbers, but you must include your test statistic (with d.f., if applicable) and the P -value of your test.

- (d) **State your conclusion. Be specific and be sure your conclusion is in the context of the problem.**

State whether or not you reject H_0 , based on comparing the P -value and the significance level α . Explain in the context of the example what your decision means.