

Section 2: More about hypothesis testing

Crucial points

1. **Use the correct notation for stating hypotheses**

Set up the hypothesis test carefully, using the correct notation. First state the definition of p . There is often a mark given for this.

e.g. Let p be the probability of getting a head.

$$H_0: p = \frac{1}{2}$$

$$H_1: p < \frac{1}{2}$$

[NOT $H_0 = 0.2$, or $P(X = 0.2)$]

2. **Alternative hypothesis can help decide the direction of a critical region**

Use the alternative hypothesis to help you decide on the direction of the critical region.

If $H_1: p < \frac{1}{2}$ then you will calculate $P(X \leq a)$

If $H_1: p > \frac{1}{2}$ then you will calculate $P(X \geq a)$

3. **Be sure to use clear calculations and notation**

Show clearly what you are trying to calculate.

4. **Make sure that you compare the observed value with the critical region**

You must do this explicitly. For example “The critical region is $X \leq 2$. The observed value is 3, which does not lie in the critical region.”

5. **Once you have accepted/rejected H_0 , conclude your answer in words**

When using a critical region to decide whether you want to accept or reject H_0 , you must still put a final conclusion in words, answering what was asked in the question. Do not state that this “proves” anything but use wording like “the evidence suggests that...”

6. **Read the question carefully**

Always read the wording in the question carefully. Do not be put off by the data, which may indicate an increase or decrease. In practice we will be setting up the hypothesis test before we have collected the data.

Make sure you do not get fooled by the question! Read it carefully to determine whether it is a 1-tail or 2-tail test.