

Describe the possible outcomes of a hypothesis test and how we would interpret these outcomes.

1. The Ohio Department of Health claims that the average stay in Ohio hospitals after childbirth is greater than the national mean of 2.0 days.
2. A wildlife biologist working in the African savanna claims that the actual proportion of female zebras in the region is different from the accepted proportion of 50%.
3. The manufacturer of a new model of hybrid car advertises that the mean fuel consumption is equal to 62 miles per gallon on the highway. A consumer group claims that the mean is less than 62 mpg.

4. Consider the Gender Choice example in which the sample size is $n = 100$ and the sample proportion is $\hat{p} = 0.64$.

The probability of randomly choosing such a sample (or a more extreme sample with $\hat{p} > 0.64$) under the assumption that the null hypothesis ($p = 0.50$) is true is 0.0026. Based on this result, should you reject or not reject the null hypothesis?

5. You suspect that a coin may have a bias toward landing tails more often than heads, and decide to test this suspicion by tossing the coin 100 times.

The result is that you get 40 heads (and 60 tails). A calculation indicates that the probability of getting 40 or fewer heads in 100 tosses with a fair coin is 0.0228. Should you conclude that the coin is biased against heads?