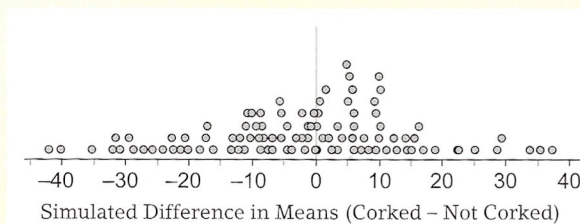
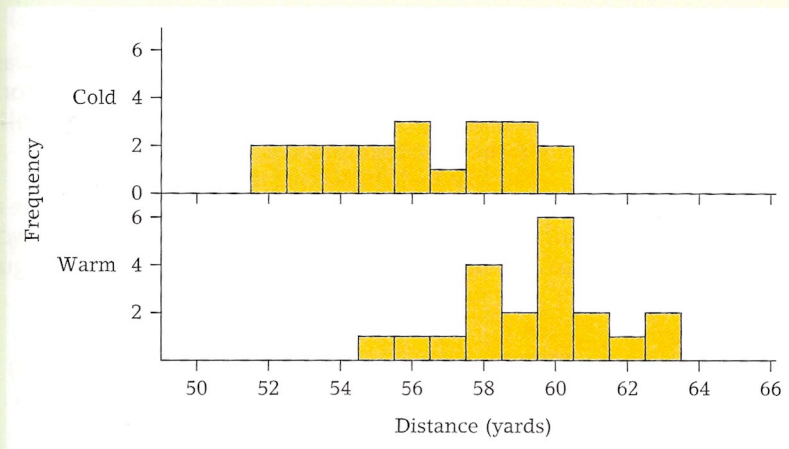


you hit the ball was 221 feet. Calculate the value of the test statistic (difference in means) and describe how to simulate its distribution, assuming you have the same *ABILITY* to hit with each type of bat.

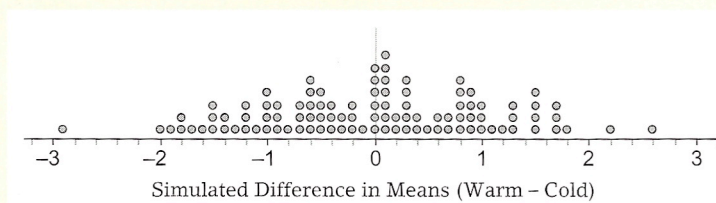
- (c) Here are the results of 100 trials of the simulation. Describe what information is provided by the dotplot.
- (d) Use the dotplot to estimate the p -value and make an appropriate conclusion.
- (e) If your conclusion was in error, which type of error did you make? Explain. What can you do to reduce the chances of making this type of error?



17. Earlier in this chapter, we analyzed the results of an experiment that compared kicking distances with warm footballs to kicking distances with cold footballs. The difference in means (test statistic) was 3.2 yards, but because the p -value was approximately 0.10, we did not have convincing evidence that the kicker has a greater *ABILITY* to kick with a warm football. To continue the investigation, he kept repeating the experiment until he had kicked each type of ball 20 times.
- (a) Here are two histograms showing the results. Compare these distributions.



- (b) Coincidentally, the mean for the cold footballs was still 56.2 yards and the mean for the warm footballs was still 59.4 yards, giving the same value for the test statistic (3.2 yards). A simulation was conducted to estimate the distribution of the difference in means, assuming that the kicker's *ABILITY* is the same with both types of footballs. Use the results at right to estimate the p -value.



- (c) Based on your p -value, make an appropriate conclusion. Is your conclusion different than the one from the example? Why do you think this is?