

## Chapter 7 Investigation Guide

Before you begin the written report,

1. Choose an athlete or team that you can compare in two different contexts or choose two different athletes or teams that you can compare to each other. Remember that the purpose of this investigation is to compare consistency!
2. Choose a single *numerical* variable that you will use to measure the consistency of the athlete(s) or team(s) that you chose in step 1.
3. Find the relevant data on the internet or another source. Many of the websites listed below allow you to copy and paste the data into a spreadsheet program such as Excel. To see the game-by-game results, click on a link that says something like “Game Log” or “Schedule and Results.” Do not include playoff games in the data, as these games are played in different circumstances than regular season games.

To complete the written report,

1. Write an introduction which states the question of interest and briefly describes the context of the athlete or team’s *PERFORMANCES*, including noteworthy accomplishments that year and why you chose to use a particular variable to measure consistency. Describe how and where you obtained your data *and* include the null and alternative hypotheses.
2. Include the raw data from both contexts and make appropriate graphs to compare the athlete or team’s *PERFORMANCES*. *Do not use Excel to make your graphs!* Compare the graphs in detail and include appropriate summary statistics. Give a preliminary answer to the question of interest.
3. Identify and calculate the value of the test statistic you will use to test the hypotheses.
4. Describe how to use note cards to simulate the distribution of the test statistic. Then, by hand or using the applet, conduct at least 50 trials of a simulation to see what values of the test statistic could happen by *RANDOM CHANCE*, assuming that the null hypothesis is true. Include a well-labeled dotplot to display the results of the simulation.
5. Use the results of the simulation to estimate *and* interpret the *p*-value. Then, make an appropriate conclusion about the hypotheses based on the *p*-value.
6. Discuss any limitations or possible errors you may have made in your conclusion. If there is convincing evidence of a difference in consistency, discuss possible causes.

Web sites with data for multiple sports include:

- [www.sports-reference.com](http://www.sports-reference.com)
- [www.espn.com](http://www.espn.com)
- [www.usatoday.com/sports](http://www.usatoday.com/sports)
- [sports.yahoo.com](http://sports.yahoo.com)
- [www.si.com](http://www.si.com)

Web site for applet:

- [www.whfreeman.com/SRIS](http://www.whfreeman.com/SRIS)