

Figure 3.4.10

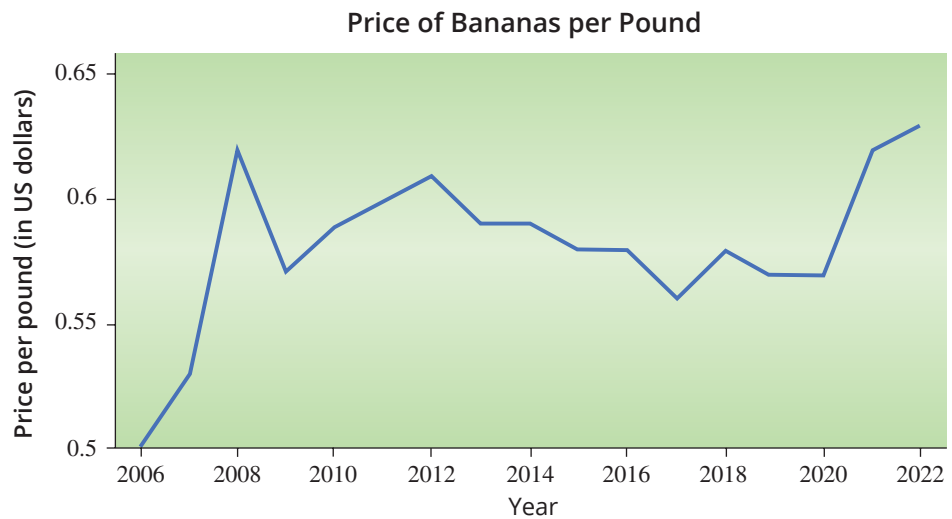
3.4 Exercises

Basic Concepts

1. Why is it important to label and title graphs properly?
2. What types of sources are generally reliable?
3. Why is the scaling of a graph important?
4. Why are data transformations useful?

Exercises

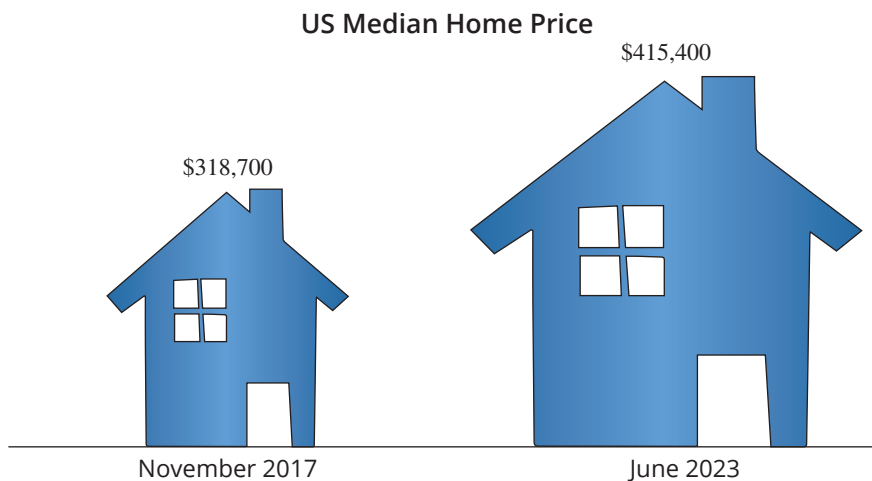
5. Do you see any issues with the scales used on the axes of the graph depicting banana prices per pound in July?²⁶ Why or why not?



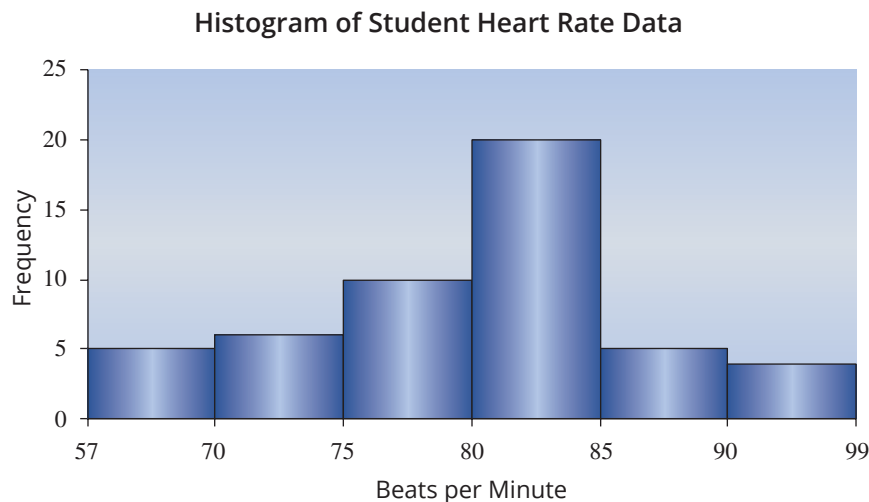
6. Using the San Francisco Salaries 2014 data set from the web resource, create a histogram for the variable *TotalPayBenefits* and answer the following:
- Does the distribution of the data in the histogram look bell-shaped, skewed right, or skewed left?
 - Construct a new histogram for the variable *LogTotalPayBenefits*, which is a log transformation of the variable *TotalPayBenefits*.
 - Does the distribution of the data in the log transformed histogram look bell-shaped, skewed right, or skewed left?
7. The US median home price increased from \$318,700 in November 2017 to \$415,400 in June 2023, as shown in the following pictograph.²⁷
- What was the percentage increase in US median home price between November 2017 and June 2023?
 - Is the pictograph shown an accurate depiction of this increase? Why or why not?
 - How could you improve the pictograph so that it accurately represents the information?

 **Data**

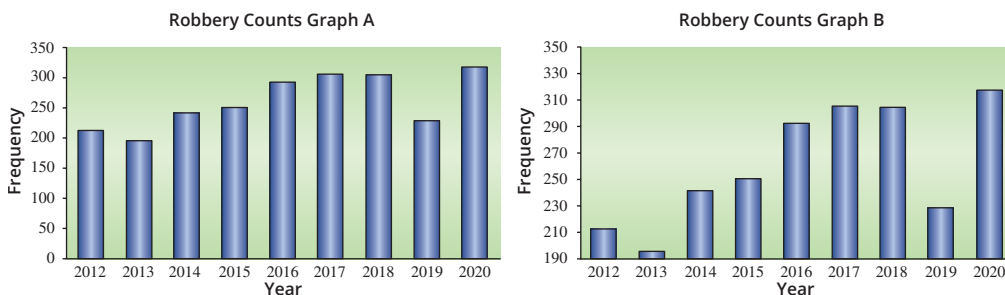
stat.hawkeslearning.com under **Discovering Statistics and Data, Fourth Edition > Data Sets > San Francisco Salaries 2014.**



8. The following histogram of the heart rate data presented earlier in the chapter has a different number of classes than were used in the histogram in Figure 3.1.3. What errors can you find in the histogram?

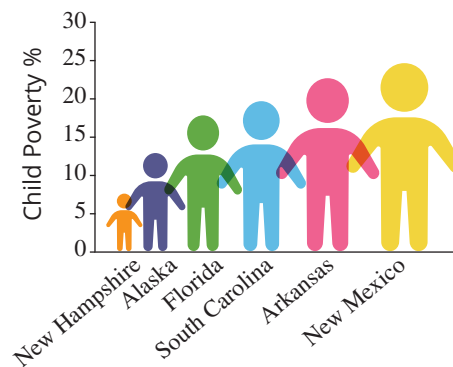


9. The number of robberies in North Charleston, SC is depicted in two different graphs below.²⁸ Use these graphs to answer the following.
- Which graph do you feel better represents the data? Why?
 - What transformation could you apply to the robbery data that would normalize it?
 - Approximately how many times taller is the 2020 bar compared to the 2012 bar in Graph B? How many times more robberies were there actually in 2020 compared to 2012?



10. Use the pictograph on child poverty in six states of the United States to answer the following questions.
- What state in the graph has the highest child poverty rate? Does this surprise you?
 - How much larger does the New Mexico child poverty rate appear compared to the New Hampshire child poverty rate?
 - Does the pictograph represent the child poverty percentage accurately? Why or why not?

State	Child Poverty %
Alaska	13.0
Arkansas	22.1
Florida	17.7
New Hampshire	7.1
New Mexico	24.9
South Carolina	19.7



Data

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Discovering Statistics and Data,
Fourth Edition > Data Sets >
COVID-19 Deaths by Country

11. Using the COVID-19 Deaths by Country data set from the web resource, create a histogram for the variable *Deaths*.
- Is the *Deaths* variable in the data normalized?
 - Construct a new histogram for the variable *LogDeaths*, which is a log transformation of the variable *Deaths*.
 - Does the distribution of the data in the log transformed histogram look bell-shaped, skewed right, or skewed left?