(11-3) Interpreting the Shapes of Data Displays

Measures of Center

1.

2.

Example 1: A meteorologist looks at the measures of center to summarize the last 10 days of high temperatures.

With Outliers:

Without Outliers:

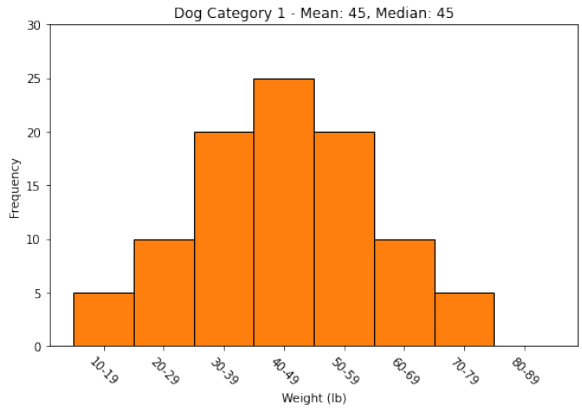
A) **Find the mean and the median.**

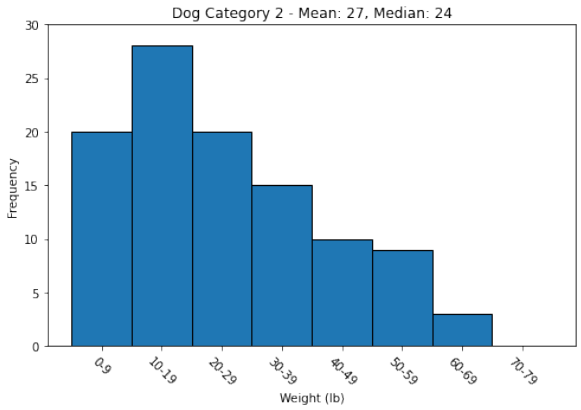
B) **Which of the two measures of center seems to be the most accurate in describing the center of the data?**

C) **What are the mean and the median if the outliers are removed? Is the median still the most accurate way to describe the center?**

Interpreting the Shape of a Histogram or a Dot Plot

Example 2: The histograms show the weights of all of the dogs entered in two different categories in a dog show. Consider each data set.



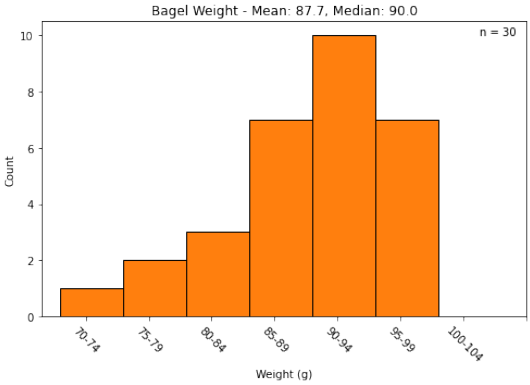


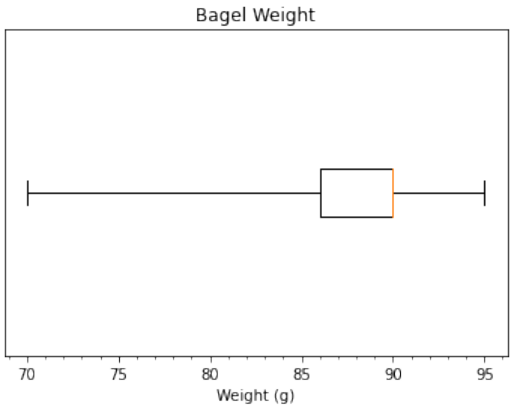
A) **What inferences can you make based on the shape of the data?**

B) **Suppose a third category of dogs has a mean of 40lb and a median of 32lb. What can you infer about the dogs in this category?**

Interpreting a Skewed Histogram/Box Plot

Example 3: Customers of a bagel shop complained that some bags of bagels weigh less than the amount on the label. A quality control manager randomly sampled 30 bagels and weighed them.

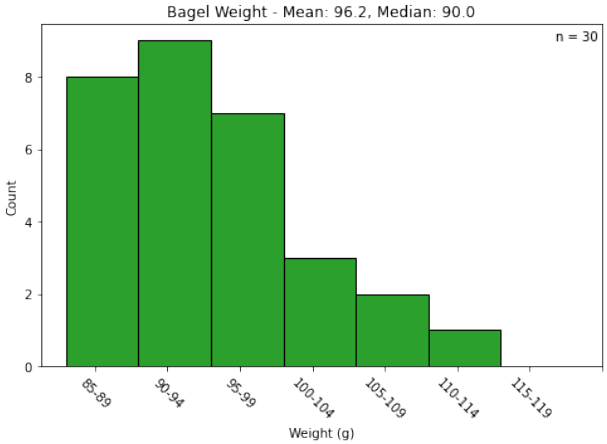


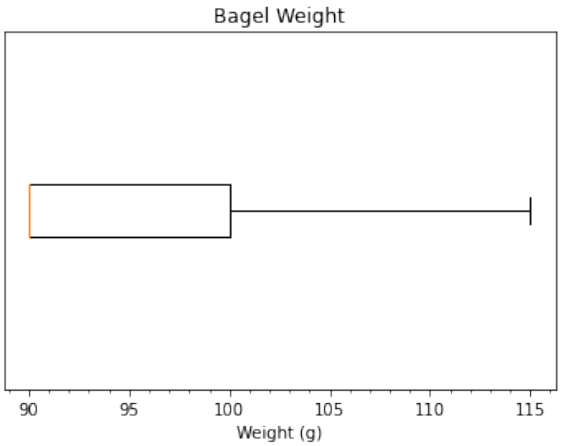


A) Based on this sample, is a change in the process for making bagels warranted?

B) How does the skewed data affect the mean in this situation?

Example 4: The manager generates a second random sample of 30 bagels.



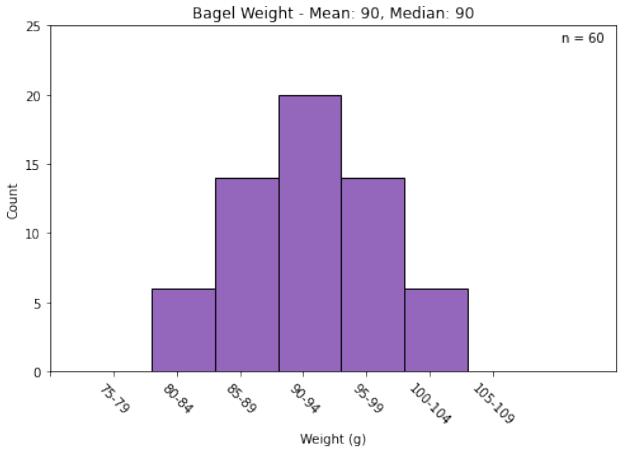


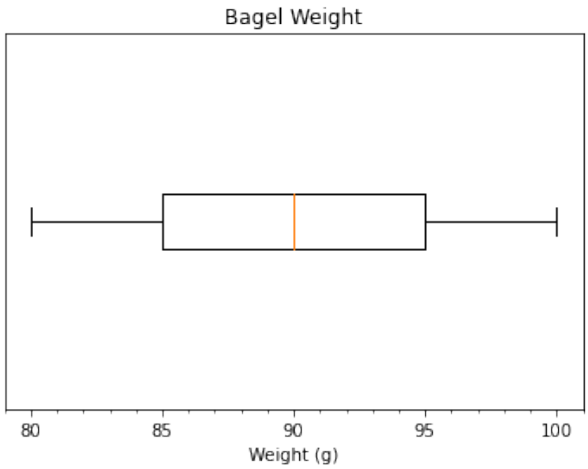
A) How does this sample compare to the previous sample?

B) Is a change in the process for making bagels warranted based on this sample?

Interpreting a Symmetric Histogram/Box Plot

Example 5: The quality control manager generates a third random sample that contains twice as many data points. A histogram that represents this third, larger sample is shown below.



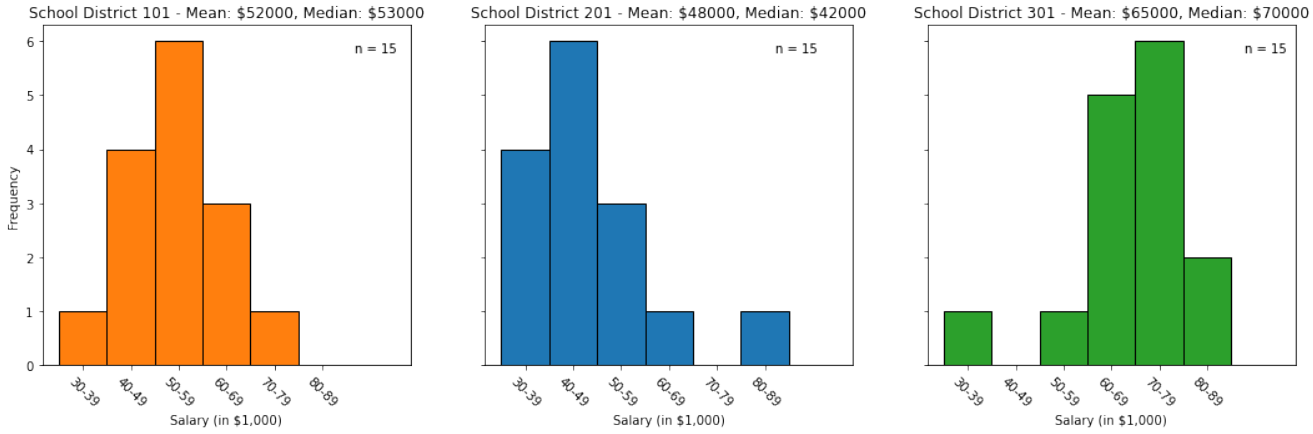


A) **Based on this sample, is a change in the process for making bagels warranted?**

B) **Suppose the quality control manager adds another 10 bagels to the third sample. If 5 of the bagels are 78 g each, and 5 of the bagels are 106 g each, would that affect the mean and median weights? Explain.**

Comparing Data Sets Using Their Shape

Example 6: Jennifer is considering job offers from three different school districts. The histograms show the salary ranges for similar positions in each school district.



A) **What do the shapes of the data tell Jennifer about the teacher salaries in each district?**

B) **If each school district offered Jennifer the same starting salary, which district should Jennifer pick and why?**

C) **Suppose a fourth school district offers Jennifer a job. School District 401 has a mean salary of $57,000 and a median salary of $49,000. Should Jennifer consider accepting the job offer with School District 401? Explain.**