Chapter Three Part Three: Deciding which Numerical Summaries to Use

Review

Remember last class period we talked about different types of summary statistics:

Measures of Center

- **Mean:**

- **Median:**

Measures of Spread

- **Range:**

- **IQR:**

- **Standard Deviation**

We call summary statistics NOT affected by outliers _____.

Measures of Center

- **Mean:**
- **Median:**

Measures of Spread

- **Range:**
- **IQR:**
- **Standard Deviation**

Example ***Situation One*** *Consider a small town with six families. Calculate the mean and median family income from these numbers:*

$25,000 $27,000 $29,000 $35,000 $37,000 $38,000

Situation Two *What if a particularly wealthy family moves to town:*

$25,000 $27,000 $29,000 $35,000 $37,000 $38,000 $100,000,000

Now calculate the mean and median.

Mean versus Median

Like the previous example establishes, extreme values or values found in the tails of a distribution can influence the mean but not typically the median. Often times data such as:

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Are highly skewed and you should be skeptical if only the mean is reported!

We note that means and medians are generally **similar** when:

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Means and medians are generally **different** when:

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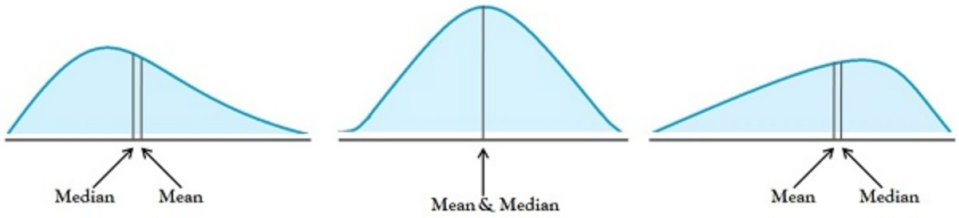

So in summary, reporting the median is appropriate when the distribution is _____ and _____. Reporting the mean is appropriate when the distribution is _____. So we can basically break down the summary statistics we've learned about into two groups.

Robust

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Not Robust

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These should be reported together! However the first step to determining which group to use is to always get a picture of your data!

Report the **5 Number Summary** when the data is:

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Report the **Mean and Standard Deviation** when the data is:

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