Text: Measures of Center and Spread Summary

Recap

Variable Types

We have covered a lot up to this point! We started with identifying data types as either `categorical` or `quantitative`. We then learned, we could identify quantitative variables as either `continuous` or `discrete`. We also found we could identify categorical variables as either `ordinal` or `nominal`.

Categorical Variables

When analyzing categorical variables, we commonly just look at the count or percent of a group that falls into each **level** of a category. For example, if we had two **levels** of a dog category: `lab` and `not lab`. We might say, 32% of the dogs were `lab` (percent), or we might say 32 of the 100 dogs I saw were labs (count).

However, the 4 aspects associated with describing quantitative variables are not used to describe categorical variables.

Quantitative Variables

Then we learned there are four main aspects used to describe `quantitative` variables:

1. Measures of **Center**
2. Measures of **Spread**
3. **Shape** of the Distribution
4. **Outliers**

We looked at calculating measures of `Center`

1. **Means**
2. **Medians**
3. **Modes**

We also looked at calculating measures of `Spread`

1. **Range**
2. **Interquartile Range**
3. **Standard Deviation**
4. **Variance**

Calculating Variance

We saw that we could calculate the `variance` as:

$$\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2$$

You will also see:

$$\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2$$

The reason for this is beyond the scope of what we have covered thus far, but you can find an explanation **here**.

You can commonly find answers to your questions with a quick **Google search**. Now is a great time to get started with this practice! This answer should make more sense at the completion of this lesson.

Standard Deviation vs. Variance

The standard deviation is the square root of the variance. In practice, you usually use the standard deviation rather than the variance. The reason for this is because the standard deviation shares the same units with our original data, while the variance has squared units.

What Next?

In the next sections, we will be looking at the last two aspects of quantitative variables: **shape** and **outliers**. What we know about measures of center and measures of spread will assist in your understanding of these final two aspects.

Supporting Materials

- **Calculating Variance**

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