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Week 3 Reading Questions

Q1: The plot that shows all data points is a scatterplot.

Q2: The plot type that shows aggregated or summarized data is boxplots.

Q3: A conditional variable is the third variable in a conditional plot. A conditional variable can be applied to a plot when working with seasonal data, like abundance of a migrating bird, and plotting data only in the summer season.

Q4: Some common measures of spread or dispersion that were mentioned in the reading are;

- Variance – Mean squared deviation from the mean of expected value
- Standard Deviation – root mean squared deviation from the mean or expected value
- Coefficient of Variation – Normalized measure of spread; relative standard deviation
- Median Absolute Deviation – Median absolute deviation from the median
-Range – Absolute Range of Values (From min to max)
-Interquatile range – Range between the 25^{th} and 75^{th} quantiles of the data

Q5: **Standard deviation** uses the same units as the measurement variables you are using, this allows your data to be easily interpreted, not all measures of spread allow of easy interpretation unlike variance. The **coefficient of variation** captures a different aspect of the concept of spread because it is the standard deviation divided by the mean and then usually multiplied by 100 making it into a percentage. By making it into a percent it makes it easy to compare the spread on different scales.

Q6: One reason to do data exploration when working with butterflies is to see the ratio of males verses females being caught in the field. Is there a relationship between timing within their flight window to when you would see more males or more females? I would us a line to show this data quickly. I would have dates as the X axis and number of individuals as my Y axis. I would plot two lines, one for males seen or captured and one for females seen or captured. This would allow me to quickly look at the data and see the sex ratio throughout the flight period and when the best time to collect mated females for captive reading would be.
When trying to narrow down what habitat type a butterfly is using, I would create a histogram. I would label the X axis with habitat types and the Y axis with number of individuals seen in the habitat. This would allow me to focus my surveys or DNA collection.