

Wednesday, September 19, 2018

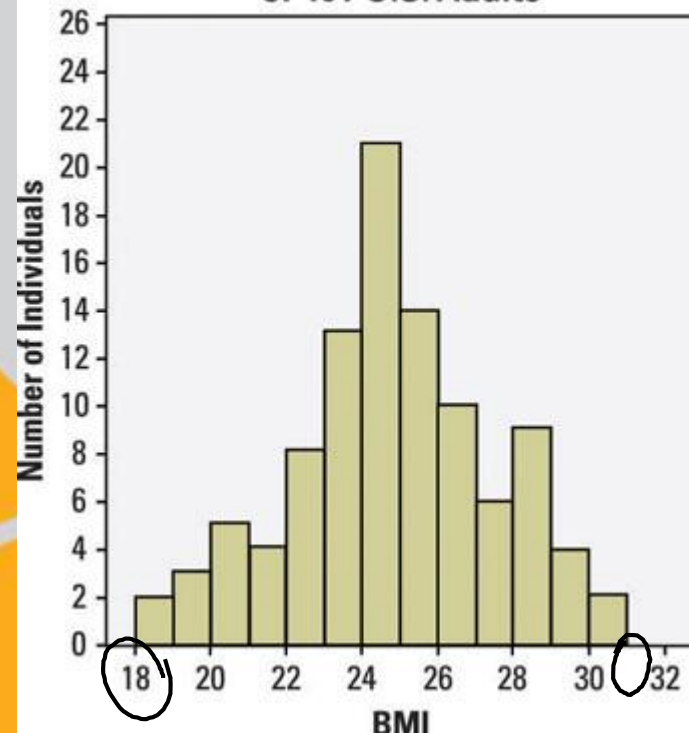
- Warm-up

CUSS in context

- Describe the following distribution

The BMI distribution is fairly symmetric. The center is approximately 25 BMI. There seem to be no outliers or unusual features. The range is approximately 13 (from about 18 BMI to about 31).

Body Mass Index (BMI) for a Sample of 101 U.S. Adults

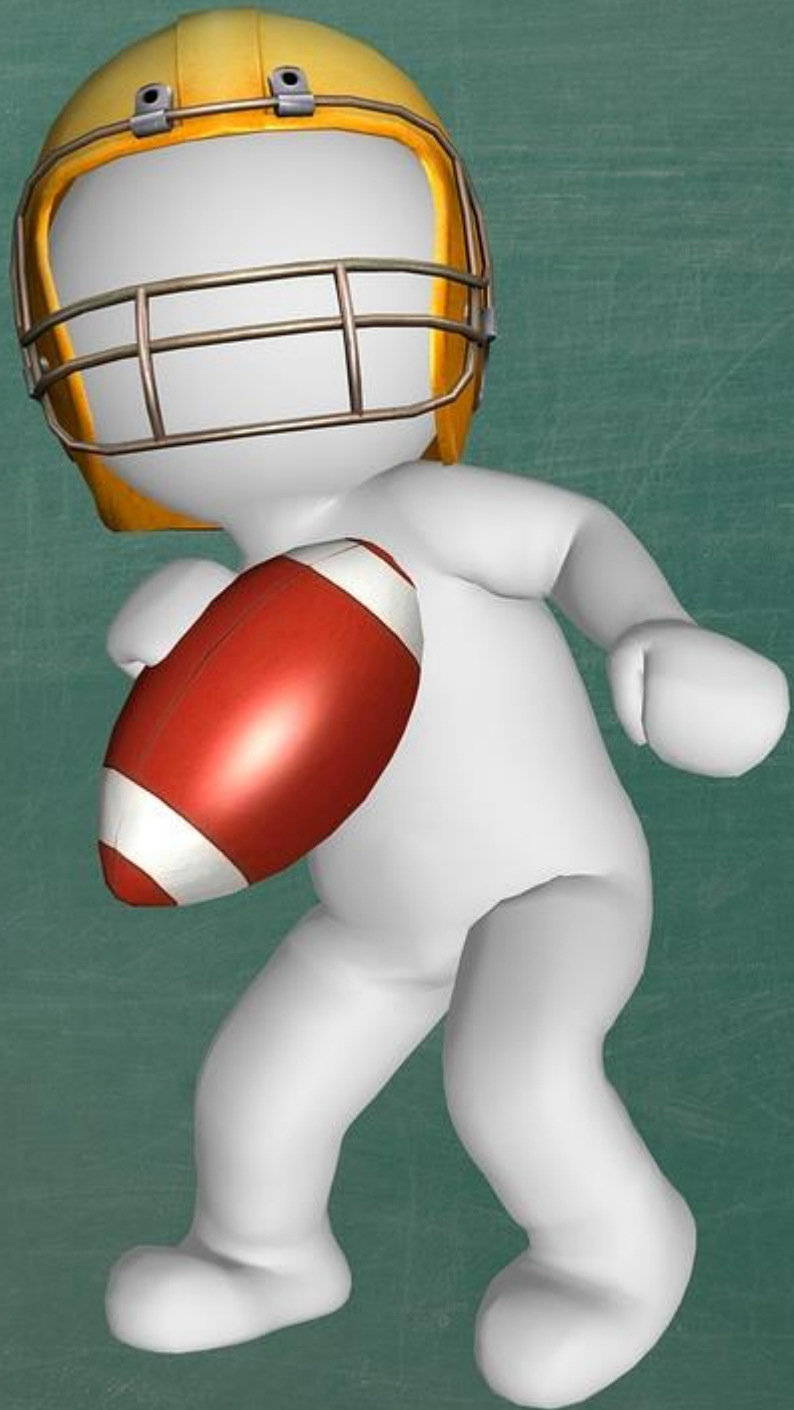


- More with linear regression

Content/Language Objective: I will be able to correctly discuss the meaning of association and correlation using a scatterplot and correlation coefficient both in writing and with my group/teacher/class.

Social Objective: I will participate respectfully so that my classmates and I can be part of the lesson.

ESSENTIAL QUESTION: What is the difference between association and correlation and how is it reflected in a coefficient or scatterplot?



9:30

Looking at Scatterplots

- Scatterplots are the best way to start observing the relationship and the ideal way to picture **associations** between two **quantitative** variables.

DUFS
FUDS

- When looking at scatterplots, we will look for **direction, form, strength, and unusual features.**

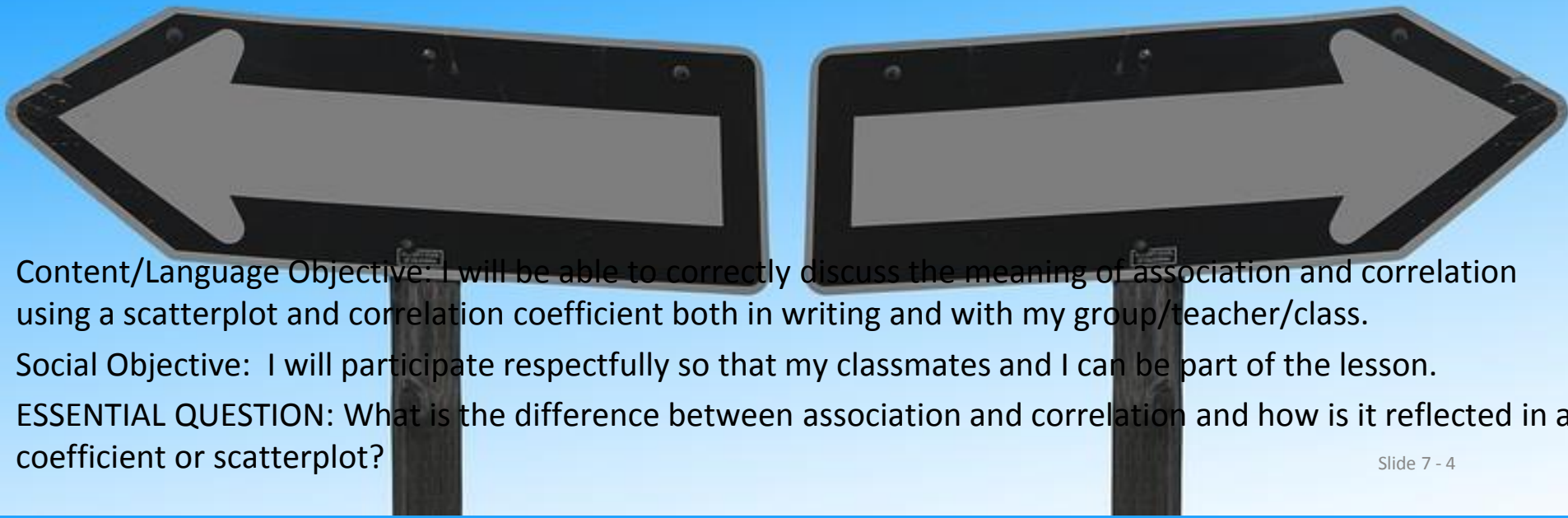
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DIRECTION

- A pattern that runs from the upper left to the lower right is said to have a **negative** direction.
- A trend running the other way has a **positive** direction.



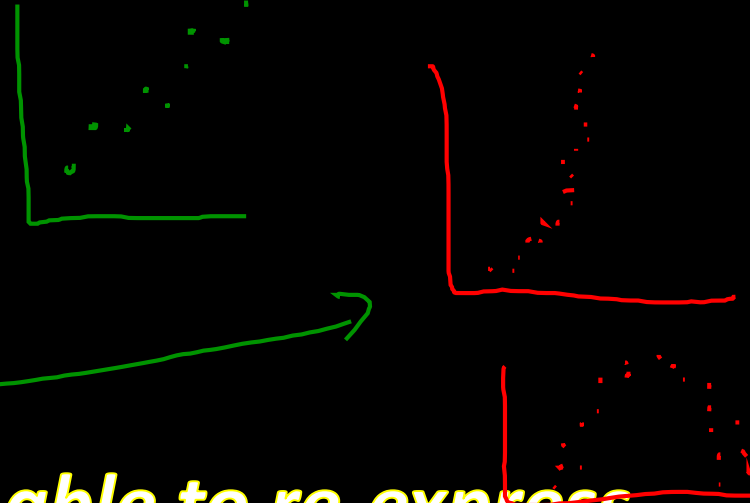
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Form

- **Linear**
- **Nonlinear**
- ***If nonlinear, we may be able to re-express the data to make it more linear***



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Strength

- Strong
- Moderate
- Weak

moderately weak

moderately strong



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Unusual Features

- Look for the unexpected.

- **Outliers**

- **Clusters**

- **Subgroups**

"fuzzy"



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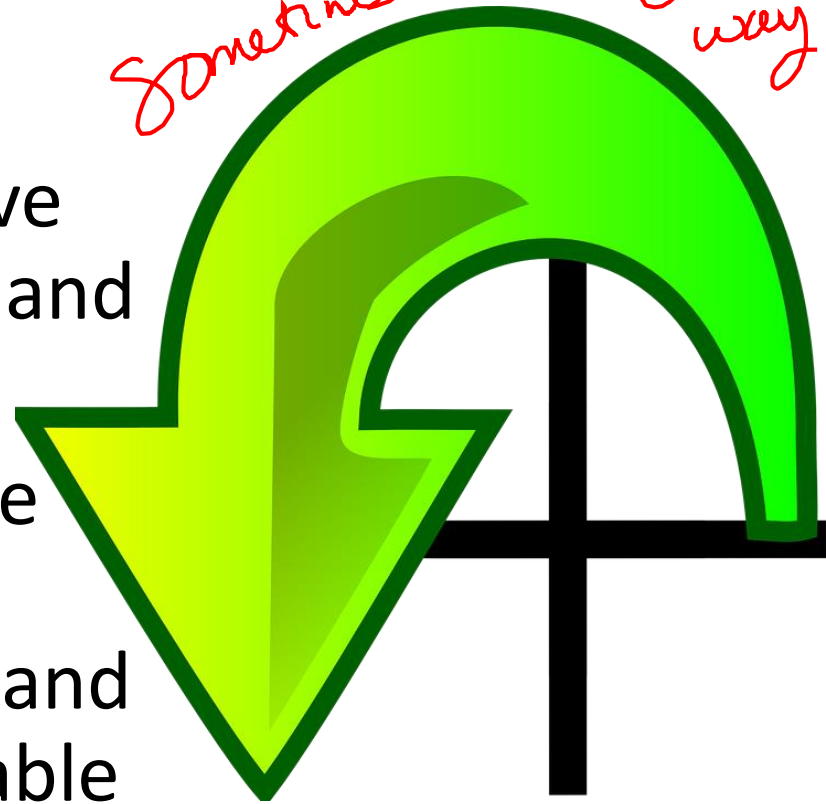
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Roles for Variables

Sometimes it would go either way

- It is important to determine which of the two quantitative variables goes on the x-axis and which on the y-axis.
- When the roles are clear, the **explanatory** or **predictor variable** goes on the x-axis, and the **response variable** (variable of interest) goes on the y-axis.



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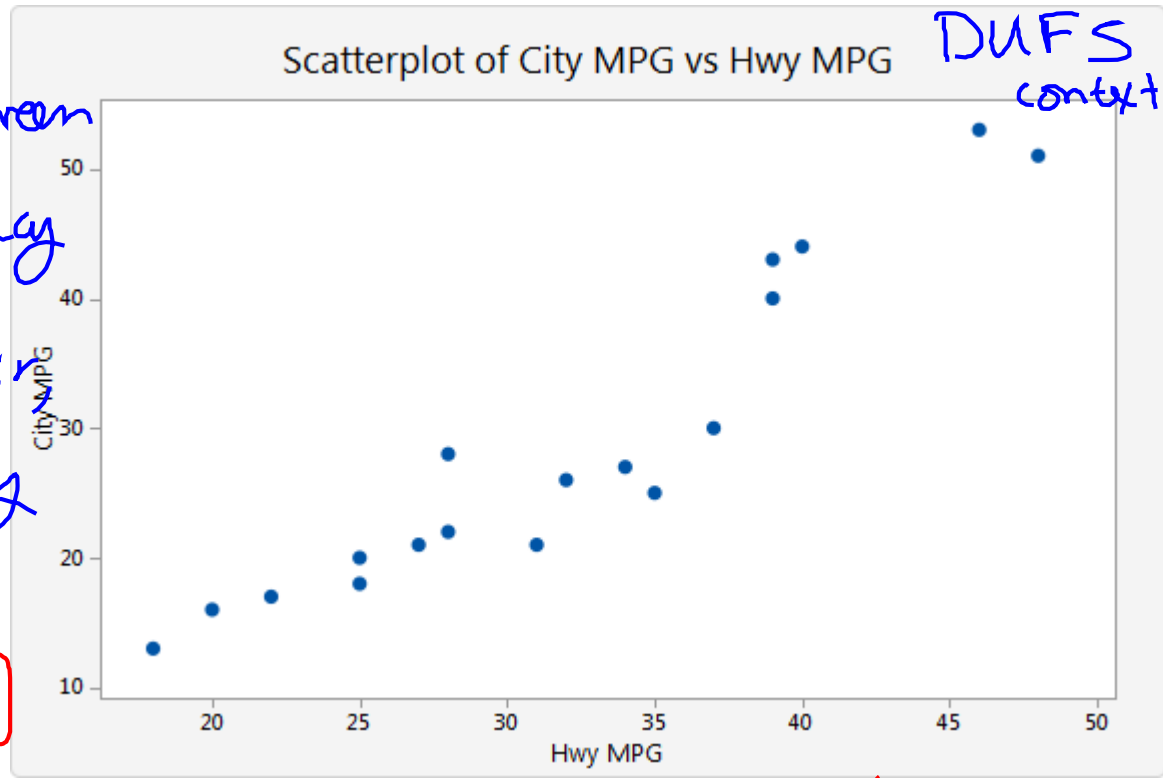
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Example

The relationship between city MPG and Highway MPG is fairly linear positive, moderately strong [with no unusual features].

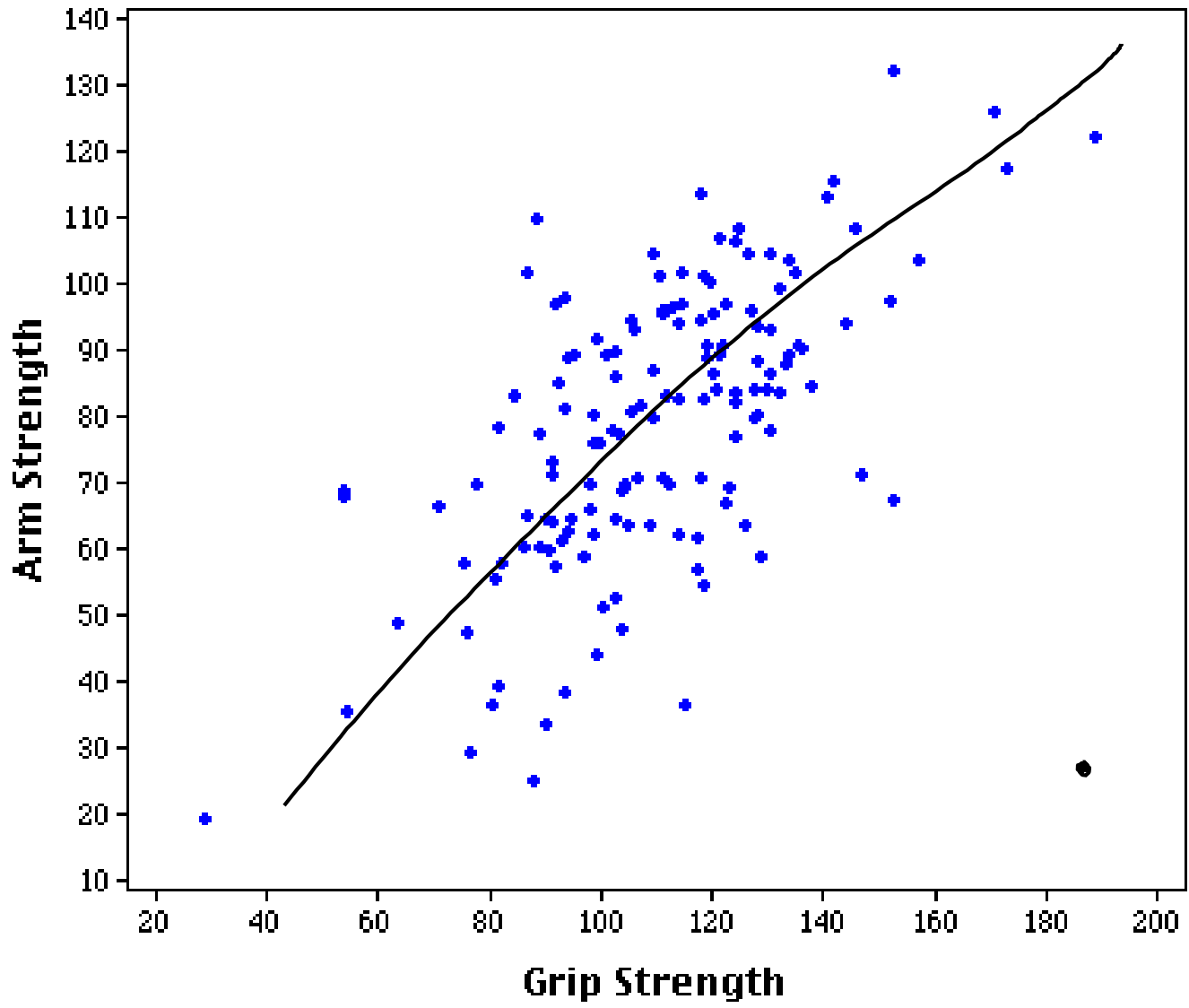
with three subgroups (lower, middle and upper).



Practice on your scatterplot



Practice



Homework

P 164 (3-6)