

5.4: Correlation and Causation

Causation: When a change in one variable causes a change in another. Cause and effect.

Correlation: A relationship between many variables.

- The data show the per capita consumption of mozzarella cheese and the number of civil engineering doctoral degrees awarded in the United States. Determine whether the data illustrate a correlation or causation.

Year	2000	2002	2004	2006	2008	2010	2012	2014	2016
Mozzarella Consumed (pounds)	9.3	9.7	9.9	10.5	10.6	11.3	11.5	11.9	12.3
Civil Engineering Doctorates	480	540	547	655	712	645	714	767	805

- Graph the data to determine the correlation.

Positive

- Determine causation. Did one variable cause the other?

No

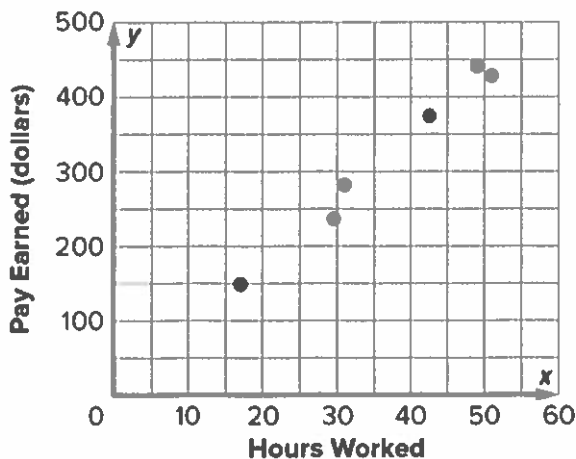
- Determine whether the data shows correlation or causation.

Correlation



- The table shows the number of hours Lane worked at The Pizza Palace and the amount he was paid each month. Determine whether the data illustrate a correlation or causation.

Month	May	June	July	August	September	October
Hours Worked	17	51	49	42.5	29.5	31
Pay Earned (dollars)	149.60	428.40	441	374	236.50	282.10



- Determine the type of correlation.

Positive

- Does the data illustrate correlation or causation?

Causation

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3. Determine whether each situation displays correlation or causation.

- a. A university experiment showed a negative correlation between the average weekly time spent exercising and the probability of developing heart disease.

Causation

- b. LaTisha surveyed her friends at school and found a negative correlation between the number of pets a student has and grade point averages.

Correlation

- c. Sergio read in a magazine that the age of a musician is positively correlated with the number of awards the musician has won.

~~Correlation~~

Correlation

- d. Ava researched data from the state police website and found a positive correlation between cell phone use while driving and car accidents.

Causation