

## Correlation ≠ Causation

Correlations are useful because they can indicate a predictive relationship. For example, an electrical utility may produce less power on a mild day based on the correlation between electricity demand and weather. Correlations can also suggest possible causal relationships; however, a simple correlation between two variables is not sufficient to conclude there is a causal relationship.


Example 1: The more firemen fighting a fire, the bigger the fire is going to be.



Is there a direct or indirect correlation?

Is it fair to conclude there is a causal relationship?

Example 2: As ice cream sales increase, the rate of drowning deaths increases sharply.



Is there a direct or indirect correlation?

Is it fair to conclude there is a causal relationship?

Example 3: Since the 1950s, both the atmospheric CO<sub>2</sub> level and crime levels have increased sharply.



Is there a direct or indirect correlation?

Is it fair to conclude there is a causal relationship?

How can one best determine if there is a causal relationship between two variables?

[http://jonathan.mueller.faculty.noctrl.edu/100/correlation\\_or\\_causation.htm](http://jonathan.mueller.faculty.noctrl.edu/100/correlation_or_causation.htm)

1. Select two of the headlines on the Correlation or Causation page. Identify whether those headlines make causal or correlational claims.

Headline #1: \_\_\_\_\_

Is the headline: Causal Correlational (Circle one)

Headline #2: \_\_\_\_\_

Is the headline: Causal Correlational (Circle one)

2. Click the link of each headline you selected and read the accompanying article.

**Does the research described in the article support the type of claim (correlational or causal) made in the headline?**

Headline #1: In a paragraph, explain why you answered "yes" or "no."

Headline #2: In a paragraph, explain why you answered "yes" or "no."