CORRELATION VS. CAUSATION

Purpose

Understanding the relationship between correlation and causation will help you critically analyze data and enable you to identify when information is being used to support a faulty assertion.

Process

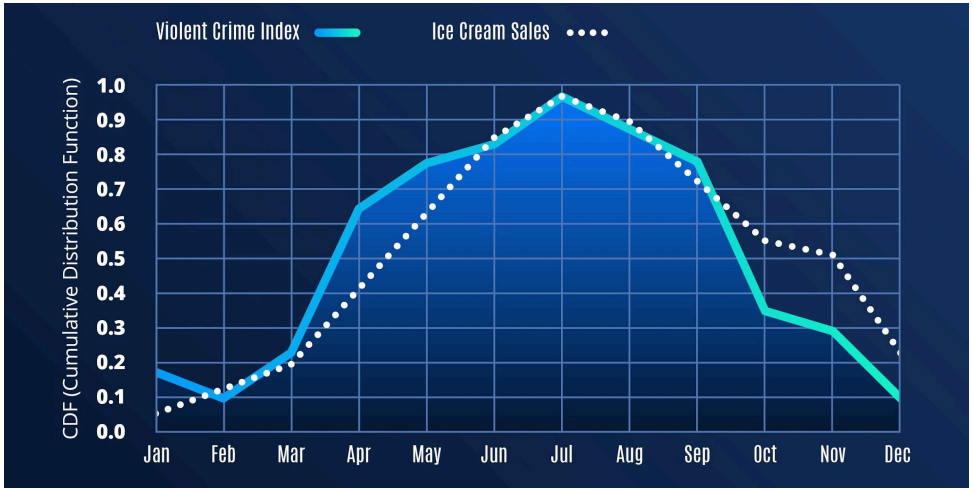
1. Below are two useful terms for evaluating the relationships between two things:

   Causation is when one event or factor directly causes another to happen. What's one example of causation?

   Correlation is when two events or factors occur together, but one doesn't necessarily cause the other. What's one example of correlation?

2. Look at the chart below. What does this data suggest about the connection between violent crime and ice cream sales?

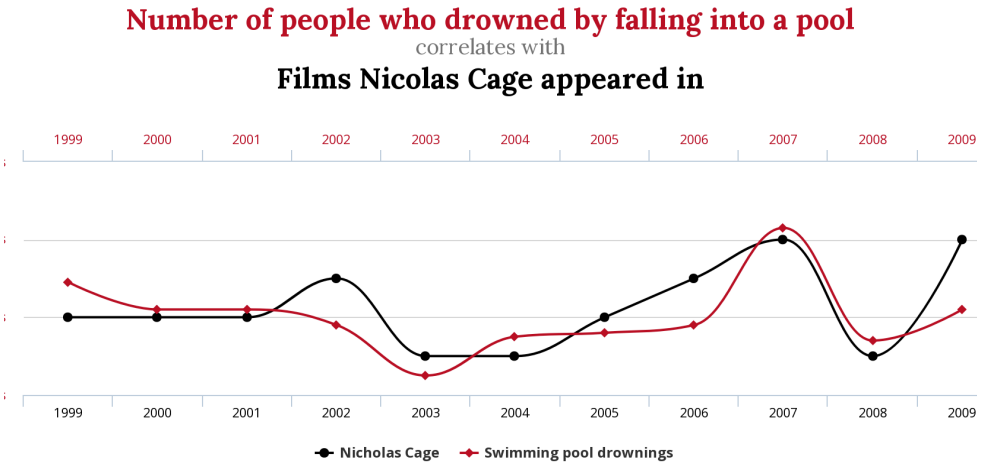
CORRELATION VS. CAUSATION



Correlation or causation: Violent crime index vs. ice cream sales. By WHP, CC BY-NC 4.0.

This chart makes it seem like eating ice cream causes violent crime. But whoever made this chart left out something important: weather. When it's sunny and hot, people eat more ice cream. When the nights get warmer, people stay out later and commit more crimes.

3. Look at the next chart.



CORRELATION VS. CAUSATION

What do you think is the most accurate conclusion to draw from this chart? Check one:

☐ Nicholas Cage movies cause people to drown in pools.

☐ People drowning in pools causes Nicholas Cage to make more movies.

☐ It's a complete coincidence that these two things have fluctuated together over this 10-year span.

4. Let's look at a slightly more challenging example. Read the following excerpt.

> **Eating Breakfast May Beat Teen Obesity**
> *From: WebMD, https://www.cbsnews.com/news/eating-breakfast-may-beat-teen-obesity/*
>
> In the study, published in *Pediatrics*, researchers analyzed the dietary and weight patterns of a group of 2,216 adolescents over a five-year period (1998–1999 to 2003–2004) from public schools in Minneapolis-St. Paul, Minn.
>
> The researchers write that teens who ate breakfast regularly had a lower percentage of total calories from saturated fat and ate more fiber and carbohydrates than those who skipped breakfast. In addition, regular breakfast eaters seemed more physically active than breakfast skippers.
>
> Over time, researchers found teens who regularly ate breakfast tended to gain less weight and had a lower body mass index than breakfast skippers.

   a. Based on the excerpt's title, what does the study suggest about the connection between eating breakfast and teen obesity?

CORRELATION VS. CAUSATION

b. The article introduces another factor that might be involved in the connection between eating breakfast and teen obesity: physical activity. How might these three factors be connected?

c. Can you think of other factors that might be important? For example, think about what might cause you to skip breakfast, or what might lead you to make time for breakfast in the morning.

d. Do you think this study proved causation between eating breakfast and avoiding teen obesity? Why or why not?

5. How can understanding correlation and causation help us accurately assess information?