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### Part 4.10: Cause and Effect and Correlation

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*Teachers note: this is not a requirement of the standard, but it does round out the discussion nicely.*

While there is a relationship between two variables, there are two reasons why we cannot make causal statements:

- We don't know the direction of the cause – Does X cause Y or does Y cause X?
- A third variable may be involved that is responsive for the covariance between X and Y, we call this a lurking variable.

Causal relationships can only be determined by controlled experiments, which we look at in a different standard.