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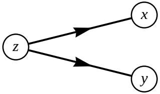
The ways in which two variables may have strong correlation are:

I. Simple Causality 

II. Reverse Causality 

III. Mutual Causality 

IV. Hidden/Confounding Variable 

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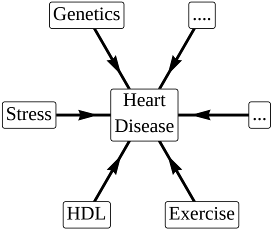
Many factors have been determined that increase the chance for heart disease.



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Healthy people had body lice and sick people didn't.

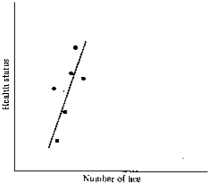

Figure 7

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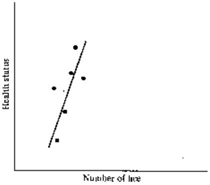

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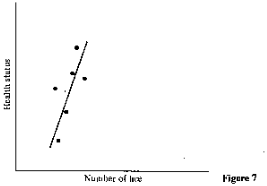

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Healthy people had body lice and sick people didn't.

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However, everyone had lice. Lice just preferred healthy hosts.

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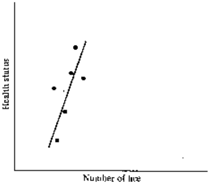

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Example. Human birth rate and stork population:

Storks bring babies.

Mutual Causality / Feedback

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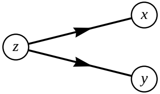
These are mutually reinforcing.
This is an example of mutual causality.

Hidden Variable Causes Both

IV. Hidden/Confounding Variable



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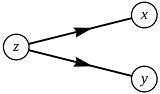

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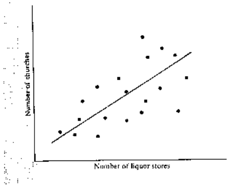

Figure 10

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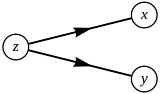

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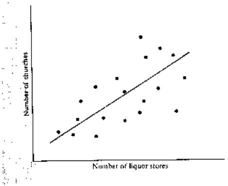

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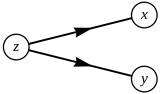

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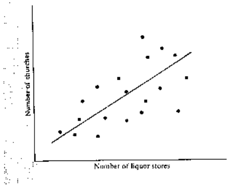

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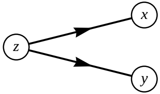

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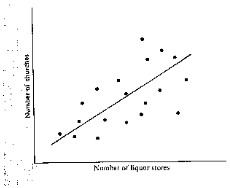

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In this instance, there is a confounding variable: ______________________.

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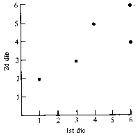
#3	4	5
#4	5	4
#5	6	6



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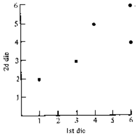

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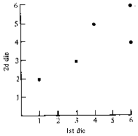

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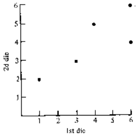

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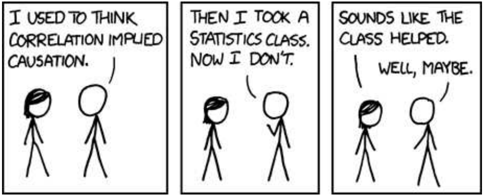
- The chance of this occurring decreases as more observations are taken.

Correlation does not imply causation!

Groupwork: Justify the correlations between the following variables:

- As ice cream sales increase, the rate of drowning deaths increase.
- The more firemen fighting the fire, the larger the fire grows.
- With fewer pirates on the open seas, global warming has increased.
- The more people in my Facebook group, the faster it grows.

What is the joke below?



Source: `http://xkcd.com/552/`