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EDG500: Educational Research and Statistics

Week 8 Video 14 Causation

1. People who own more cars tend to live longer than people who own fewer cars. Why is this relationship not evidence that buying more cars increases life expectancy?

This relationship is not evidence that buying more cars increases life expectancy because underlying this relationship is a lurking or hidden variable. The lurking variable in this relationship is affluence. The more affluent people have access to better medical care, lifestyle, and food.

2. Heavy smokers are about 20 times more likely to get lung cancer than nonsmokers. Why isn't this link by itself good evidence that smoking causes lung cancer?

There is a potential for lurking variables, common causes, confounding factors, and coincidence when determining causation. DNA and genetics, and environmental factors such as pollution, must be ruled out for a direct link to exist between heavy smokers and lung cancer.

3. What is the difference between a retrospective study and a prospective study?

The difference between a retrospective and prospective study is how the data is obtained. A retrospective study uses past data and behavior it could not control. A prospective study moves forward in time and observes the participants' behavior.

4. Why is a prospective study that compares a group of smokers with a similar group of nonsmokers, not an experiment?

In a prospective study, people can make their own decisions, and the participants are randomly assigned in an experiment.

5. Why do experiments with animals add to the evidence that smoking causes cancer in humans?

The experiments with animals added to the evidence that smoking causes cancer since the animals developed cancer when exposed to the smoke and components in the cigarettes. Combined with this, it correlated with the retrospective and prospective studies completed on smoking linked to cancer.