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Identifying Patterns (Ch 1-2)

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1.

A. I would say that the conclusion would be invalid due to numerous factors that are overlooked. There are various details that are not calculated into the amount of crimes. First, the two states being compared have completely different populations. It is estimated that Michigan has over 10 million people, while Minnesota has a little over 5 million people. Economically, Michigan, unlike Minnesota, has had difficulties established by volatile stock market disruptions. However, Minnesota has transformed its economy with outputs of business sectors almost matching the United States as a whole. Also, Minnesota had a gross domestic product of $262 billion in 2008.

Another aspect that isn’t considered between the states is unemployment levels. In Michigan, unemployment topped fifteen percent as of July 2009.Lastly, different laws in both states could be a determinant as to how people choose to go about committing crimes and accepting penalties.

B. This investigator does not have a valid argument because the two time periods represented extremely different times socially, politically, and economically. If it could be proven that the two years were fairly similar in regards to the economy, unemployment levels, number of people living in the United States, and the political affiliation of the branches of government then this investigator could make a valid statement.

4.

 A. They studied the different genders and age groups separately because they needed to clarify that the only difference would be in the factor of smoking. This could be monitored carefully and effectively if the treatment and control groups were similar in regards to age and gender. If people were of different ages they would be more susceptible to acquire health problems from tobacco due to their bodies’ aging immune system. Also, if one analysis was on a female and another was on a male their two bodies could react in varying ways due to their unique structures and hormonal differences.

B. That lesson cannot be taken away from this experiment. There are too many factors not evaluated between the smokers who quit and those who do not. It would have to be noted whether certain individuals smoke more in a day and for longer periods of their lives. Physical hygiene and social-class status is important to identify in order to evaluate whether a person takes good care of him or chooses to destroy his body. Lastly, a person’s family history could lead to certain health problems and invalidate the experiment.

5. No, the zinc sulfate should not be given to treat the disease because the two trials identified that the investigators created a bias during these experiments. When the investigators handled the first trial, they knew which patients had the treatment. This allowed them to spend more time evaluating and hoping this treatment would be successful. They knew which symptoms to ask for and how the patients should react. However, due to the double-blind trial, it was shown to have no effect in the report that the same investigators gave. Obviously, it can be concluded that the investigators gave a more favorable review to the patients who they knew were taking the treatment.

6. This could be explained due to the placebo effect. Each patient understood that they would be given either a vaccine or a placebo in the trial. Since they weren’t sure what they would be given they were in a random controlled experiment. However, psychologically, it can be stated that the effect of receiving some sort of vaccine could have played a role in their improvement. Also, the patients could have believed that one out of the two trials had to contain the vaccine, so if they did not feel any effect after the first trial then psychologically, they built themselves up for the second. For those who did receive zinc sulfate, it is possible that the vaccine provided for some improvements.

7.

 A. This is an observational study because the users volunteered to represent the individuals who took oral contraceptives, while the others were people who didn’t.

B. The investigators adjusted for age, education and marital status to eliminate the different variables that could have an effect on the experiment. In regards to age, women have different blood pressures when they reach certain ages. The effect of age is confounded to the effect of the pill. To make a proper comparison, different age groups need to be measured. A person could be of an age where it is more likely that sexual activity occurs. Also, education could influence whether the person understands the affects and precautions that are needed with contraceptives. Lastly, marital status prevents the variety of sexual partners and evaluates how frequently intimate times take place.

C. Another factor could be, whether women using the pill had higher blood pressure levels than those who did not. This could confound the evidence and create an improper comparison. Also, it could be possible that women on oral contraceptives do not think to use other forms of protection during sexual activity. Many viruses and diseases could still spread unless other products are used. The male condom’s effectiveness could further prevent the spread of these diseases.

 D. No, they were not justified because the trial was an observational study rather than a random controlled experiment. Individuals were able to choose whether they wanted to be in the experiment. No evidence was described of the backgrounds of these people and the family history they brought in to the equation.

8. This statistic would not be strong enough to prove that burglars go to work when people are on vacation. If over twenty-five percent of burglaries take place between Memorial Day and Labor Day, then less than seventy-five percent occurs at some other time. Memorial Day is held on May 30th and Labor Day falls on September 7th. This time frame is a little over three months within a twelve month year. That means this statistic occurs over a fourth of the year signifying that it might be possible that the other periods of three months have similar numbers. Also, many people have different commitments over the summer. Whether it is sports, work, education, or something of the sort, many people might only get away from the house for a week, if that. More evidence would need to be obtained about the other seasons of the year.

9.

A. False, because the control and treatment groups did not show a difference in death rates from colon cancer. If the treatment group experienced more death rates than the control group, it might have been concluded that the five or more servings of fresh fruit and vegetables a day were the answer.

B. True, these people volunteered to be in this observational study. I would assume that if a person decides to eat in regards to their intake of fruits and vegetables then most likely health is a very important concern to them. They probably exercise frequently, do not smoke and stay away from fatty foods.

C. True, the experiment did not factor the individuals’ family backgrounds, their natural diet, how old they were or what class they resided in. These factors could confound the evidence and make the experiment completely invalid.

10.

A. Randomized controlled experiment because the children did not volunteer to be overweight, it was random.

B. Yes, the study identified that parents whose children had more body fat tended to have controlling mothers. Their mothers set stricter rules preventing the children from being more active and social.

C. Not necessarily, children could have heavier family genes that prevent them from being skinner. Also, some children may have a slower metabolism than others, which causes them to put on weight easier.

D. That could explain the association, except that mothers would have had to transfer that gene to their child in order for there to be a direct association.

E. The association might be children are less confident in themselves because they are constantly pampered by their parents and thus don’t understand how to make their own decisions. This could mean that whenever their parents decide it’s time to eat, the children automatically obey.

F. The data might not necessarily support the Chronicle’s article, but it does make a valid point that parents should be motivating their children to stay in shape. A controlling parent can influence a child to stay active and receive his or her daily exercise.

11.

 A. The treatment group would be those prisoners who volunteer to attend the program after they are released from prison. The control group is the men who decide not to go to the several months of military style basic training.

B. This is an observational study because the prisoners have the choice of entering the program or not.

C. False because it disregards different factors that could play a very important role in the trial. Factors that are not identified that allow for varying conclusions are the background of the prisoners, the types of crimes committed, and the amount of crimes each have delivered. It could be completely different if one prisoner has frequently been in and out of prison, while another is a first time offender. Also, a person could have committed a non-violent crime in which it was due to a family or economic issue. Lastly, age, education levels and economic conditions have to be represented in this study. Certain prisoners who are too old to continue committing crimes will less likely get arrested again compared to a younger convict. Also, better educated individuals will be able to interpret and maintain more information they learned in the program.

12. False, this situation can be explained with the concept of Simpson’s paradox. In each ward, the Democratic Party could have higher percentages of people who will vote over the Republican Party. However, when each ward is combined to calculate the total amounts of votes in the city, the Republican Party could actually show greater amounts of votes. Simpson’s paradox states that relationships between percentages in subgroups can be reversed when the subgroups combine. An example of this is taking the batting averages of two baseball players in which one of the players, over three seasons, has a higher batting average consistently than the other. For example, David Wright over the 2006, 2007, and 2008 seasons had a better batting average than Jose Reyes. However, if you divide the total number of hits by the total number of at bats, it shows that Jose Reyes actually had the higher batting average.

References

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