John Vatalaro

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Freedman, Pisani, Purves

Review Exercises p. 24-27/1, 4—12

1. a. The investigator’s claim is not correct. The total population of Michigan is greater than the total population of Minnesota, almost two times as much. Thus, the ration of crimes to people is much smaller in Michigan than in Minnesota.

b. This is not necessarily true. Just because the crime rate is down in 2001 does not mean that from 1992-2000 the crime rates were extremely high. It can go the other way as well, where it is a possibility that 1991 was a very high period of crime compared to other years. One cannot just assume that there is a common trend between 1991 and 2001.

4. a. Men, women, and different age groups were studied differently because depending on which of these categories one falls into can determine their level of health. Also, one can see how smoking affects people of different ages or gender, for example if smoking is worse for an older man opposed to a younger woman.  
 b. If you already smoke, this test should not deter you from stopping. Just because the people who have already stopped are less healthy, that does not mean that the illness is not related to smoking, and will eventually happen to the smoker regardless. Also, the people who stopped smoking may have stopped simply because they got sick from smoking in the first place.

5. No, zinc sulfate should not be given to treat the disease. There is a possibility that the doctors’ questioning of the treatment group was bias in the first experiment. During the double-blind experiment the doctors did not know which people had the zinc sulfate, and thus had to generalize their questions, which resulted in the true result that zinc sulfate has no effect.

6. Considering that the zinc sulfate may not even work, there is a possibility that if the people think that the food did not taste any better the first time then it must taste better the second time. This is almost like a placebo effect that the people give themselves.

7. a. This is a controlled experiment.

b. Age, education, and marital status are all factors that may lead to different results so they have to be accounted for in the experiment. The investigators had to cover all of these different possible confounding variables to ensure that their data was correct and not skewed.

c. Women using the pill are more likely to be having a sex, and having sex with more than one partner, which is known for increasing a woman’s risk of contracting HPV, a virus that can cause cervical cancer.

d. No, the conclusion is not right. Based on the answer for c there is a possibility that the amount of sex and the amount of partners the woman has can have an affect on whether or not she gets cervical cancer.

8. No, the statistics only prove that 25% of burglaries happen in that period of time. First, that is not when everyone goes on vacation. Secondly, 75% of burglaries happen outside of that window of time. That shows that it is more likely that you will be robbed outside of that time period.

9. a. False, the experiments showed no difference in the death rate from colon cancer and an increased death rate was found with lung cancer.

b. True, these people could be eating a lot of fruit and vegetables, exercising, and doing many other things that are a part of a healthy lifestyle. These healthy habits could be skewing the data.

c. True, the experiments could be wrong because the control group could have been eating a good amount of fruits and vegetables. Also, the treatment group could have had other unhealthy habits like smoking or drinking. Lastly, there is the possibility that fruits and vegetables are healthier for you than vitamin supplements.

10. a. This is an observational study. This is shown by the lack of real data, or actual figures.

b. No, the study only shows that fat kids have controlling mothers, not that controlling mothers make children weigh more.

c. Yes, that could be a possible scenario. If a mother being controlling causes a child to eat more, then there is a greater possibility that he will be fatter.

d. No, that would just make the child obese, and the mother’s behavior would have no affect on the child.

e. Yes, it could go the other way around too. It could be that heavier kids have more controlling moms, not that controlling moms make kids eat more.

f. No, there is not enough data and there are two possible ways to explain the association. This leads to too many possible reasons for a child’s obesity.

11. a. The treatment group is made up of the prisoners who volunteer for the “boot camp.” The control group is made up of the prisoners who do not volunteer.

b. The prison spokesman’s comparison is based on an observational study. The data shows that a smaller ratio of the treatment group members was sent back to prison than the control group.

c. False, the data seems to show that if one goes through the “boot camp” then they have a less likely chance of being put back in prison. However, this data could be skewed because it is likely that the people who volunteer for the “boot camp” are probably more likely to obey orders, structure, and laws and this will help them when they are released.

12. False, just because the percentages in each ward are higher does not mean that the total number of voters is higher. For example: the Democratic voter percentage is 100/200 or 50% in ward one, 80/100 or 80% in ward two, and 10/10 or 100% in ward three. The Republican voter percentage is 400/850 or 47%in ward one, 150/200 or 75% in ward two, and 350/375 or 93%. That means that the Democrats have a higher percentage in all three wards, but together the Democrats have a percentage of 61.3% or 190/310 and the Republicans have a percentage of 63.1% or 900/1425. The Republicans were the lower percentage in every ward but they still have higher percentage of the city as a whole.