

Chapter 2 Set A

1 False. The world's population increased over the period from 1970-2006. Having more people alive would result in more deaths. So population growth is confounding this data.

2a Since we know that polio occurs more rapidly in high income / education families. Since the rate of polio in the treatment groups were roughly the same (28 & 25) we can assume they are from similar backgrounds.

2b The rate of polio in the two no consent groups were similar (46 & 44). Since they did not receive treatment & we know that polio is affected by SES & education of a family we can assume these two groups are similar in background.

2c Since the numbers for the control groups was so different (71 & 54) and based on the facts above we can assume the group backgrounds were different.

2d We can assume that the lower rate in the no consent group is due to that groups overall SES.

2e Because the groups were different by the choice of whether they would participate or not. Perhaps the no consent group was different than the treatment group in some way.

3 Yes! If someone believes they have received the treatment their behavior could change. If you think you received treatment you may be more likely to go swimming, but if you didn't get the active ingredient due to a blind, you could contract it easier. Since the study had no blind the parents in the treatment group may have let their children go swimming, exposing them more to polio. Whereas the others in the control group would still protect their children.

4 In Section 1, Chapter 1 we read that the schools chosen for the study already had higher rates of polio so the vaccine did not increase the rate, it was already high.

5 We are looking at those people who DID break the blind. In groups 2 & 4 the fewest colds developed, if they broke the blind they knew they were getting the Vitamin C and the thought could have kept them healthy (Placebo Effect). Groups 3 & 4 had the shortest colds. These two groups received Vitamin C if a cold developed, again the Placebo Effect probably made them get healthy. Power of the mind :)

6 The death rate for those with Nicotinic acid that did not adhere to protocol was larger than those in the control group who did not adhere. This raises a question of whether or not the two groups were equally healthy to start with.

Beyond that The percentage of adherers in the two groups was very different $(558/1,045) = 53\%$ vs. $(1,813/2,695) = 67\%$. This could indicate some side effects of nicotinic acid since the treatment group stopped taking it.

7 In Study (i) the randomization did not work because the percent who smoked between the 2 groups was drastically different.

8 (i) is the better option. We know that alcohol does cause liver cancer (general knowledge) but we must indicate the other association too.

9a Yes. The rate of women who were screened was almost half of the control group and .4 smaller than the group of women who refused screening.

9b If the randomization is done correctly we would hope (bad wording) that the death rates from other causes be similar, otherwise we could argue that the randomization was bad.

9c From the reading we know that rich women are more likely to be scanned. The overall control group compared to those women in the treatment group who refused screening indicate that the control group would be richer.

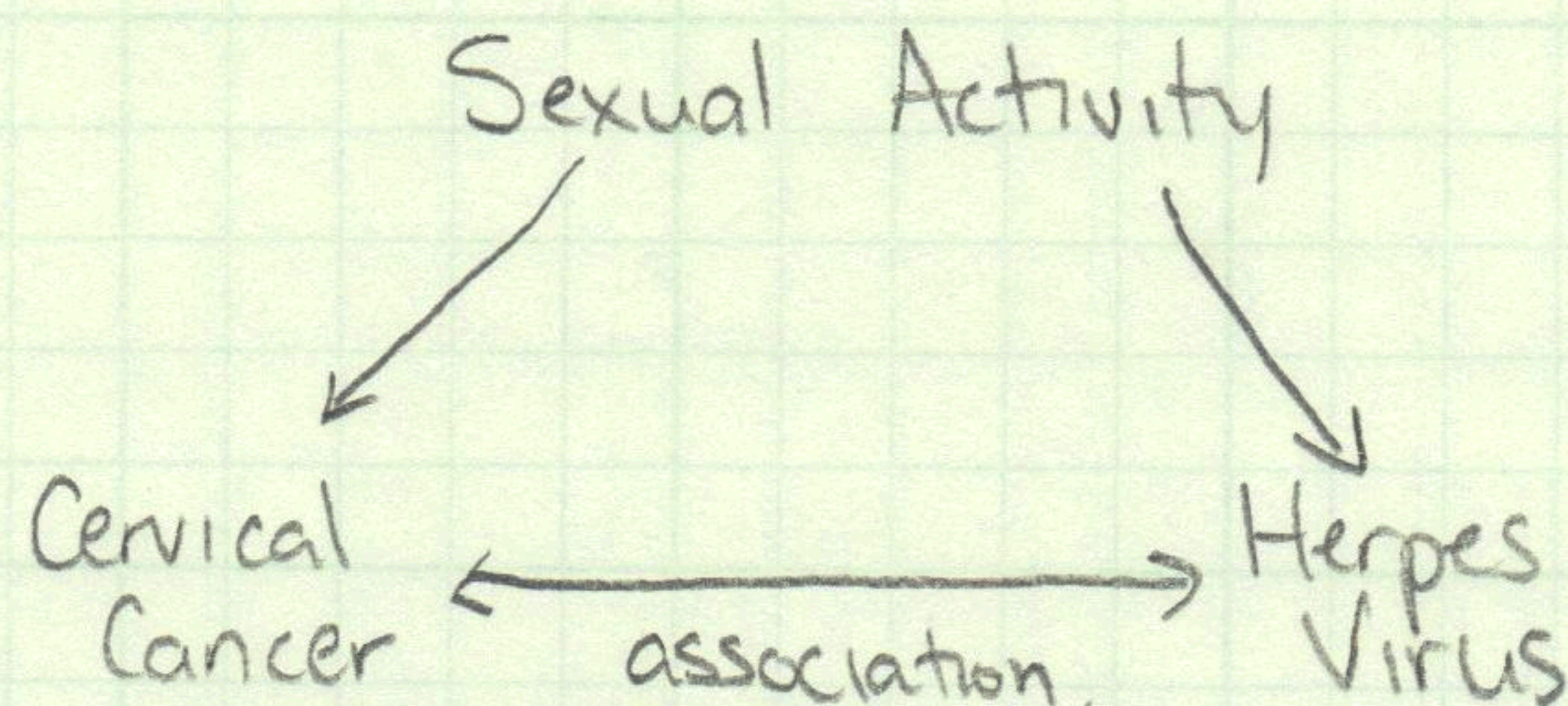
9d No confounding is occurring. Women who would be concerned enough to get screened are probably concerned about many causes of death & prevent them as best they can.

10a It is not a good comparison because the women who get screened are richer on average and they are less likely to have breast cancer (based on reading) This comparison would be a bias for screening saving lives.

10b No. The overall deaths in the treatment group is 837 compared to 879 in the control group. These numbers are too close to say anything about increasing health consciousness. Note: We can't compare the 428 or 409 because we are looking at group totals.

10c False. Association is not causation. Beyond that the 67 cases that were detected were most likely treatable and did not result in death.

11 No. Association is not Causation.



Sexual Activity can increase the likelihood of being exposed to the herpes virus.

Cervical Cancer is related to Sexual Activity as well which shows the association.

12 If a woman has had a spontaneous abortion a doctor is more likely to tell her not to exercise during a following pregnancy. So exercise is actually saying a woman is in good health.

13 False. This is an example of Simpson's Paradox.

Altogether the men will be:

College A	$1000 \times 60\% = 600$
College B	$1000 \times 30\% = 300$
	$\frac{900}{2,000} = 45\%$ of men admitted.

Altogether the women will be:

College A	$100 \times 60\% = 60$
College B	$1000 \times 30\% = 300$
	$\frac{360}{1,100} = 32\%$ of women admitted.

13 Cont.

Even though the rates between colleges were the same the women applied to a harder major college and their overall acceptance (32%) is lower than the mens (45%).

14 a 10% e 25%

b 25% d 50%

15 a 10%

b 1% $(45,000 - 46,000) = 1,000$ which is one tenth of the interval in part a.

c 1% Logic as in b

d 2% Logic as in b.

Chapter 2 Review Exercises

1a) Minnesota and Michigan have pretty similar amounts of crimes (a difference of 500) but we have nothing to compare it to. We need population sizes. One state could have more people and that would mean the rate of crime is less. We can't compare solid numbers here, rates are better.

1b) We still want to look at rates here but we know that the population size increased from 1991 to 2001. Since that is true AND the number of crimes still went down we can conclude it is true.

2a) Again we must compare rates. While 99 corvettes were stolen, there are probably a lot of corvettes on the road. Compare that to 26 stolen Infiniti's, a less common car. These results will have us see that the rate of an Infiniti being stolen is higher than a corvette.

2b) Again look at rates.

2c) False. Remember that rates are a comparison. It's true that the denominator is large but we also have to consider that the numerator is small. Both factors make the rate.

3) No! They were comparing parental consent vs. no parental consent groups. The rate between these groups was about the same BUT the rates between treatment & control groups was VASTLY different.

4a) To control for confounding factors using small homogeneous groups

4b) No! Association is not causation! Maybe those who stop smoking more often do so because they are sick and have to stop.

5) No. The results from the double-blind study are more accurate because they do not include the doctors bias.

6) The Placebo Effect. These patients probably thought they were getting the placebo the first half of the experiment and then thought they got the zinc sulfate the second half. Since zinc sulfate had no effect the results were just in the patients minds.

7a Observational Study

7b To make sure they could rule them out as confounding factors.

7c They are asking for a confounding factor.

Pill users may be more sexually active so they take the pill to prevent conception. Pill users then could have more partners and that increases the likelihood of cervical cancer.

7d No. Association does not equal causation.

8 No. Association does not equal causation. Furthermore, $\frac{1}{4}$ of the year is between Labor Day \leftrightarrow Memorial Day so we expect $\frac{1}{4}$ of burglaries to happen then.

9a False, the results were opposite what was found in the observational study.

9b True.

9c False, the point of the experiment was to show that the different lifestyles didn't affect the outcome.

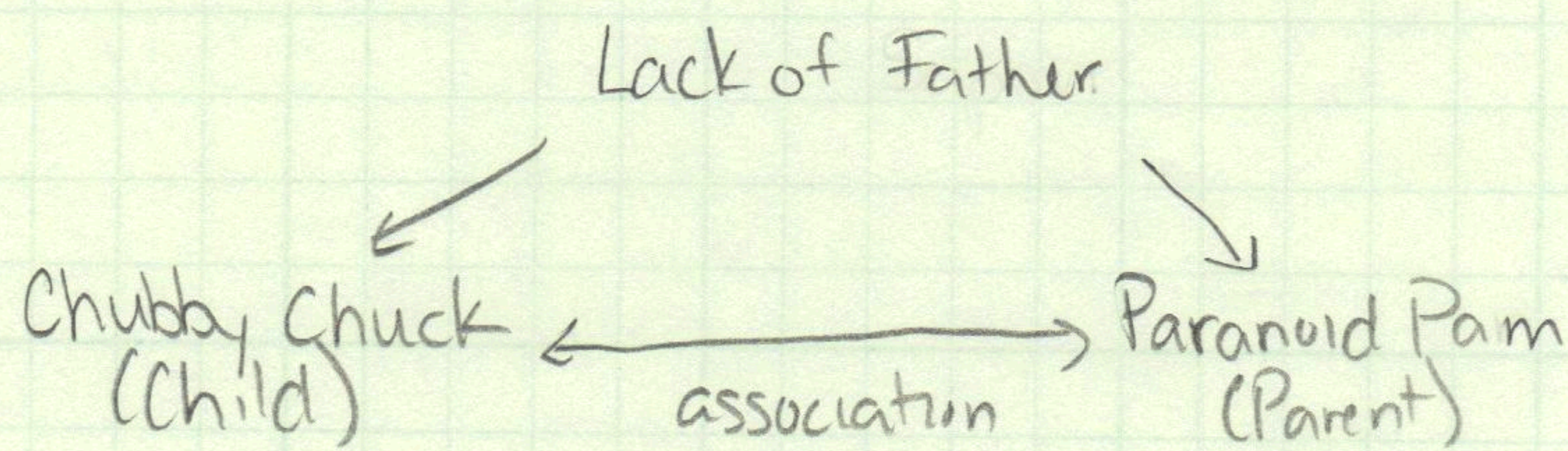
10a Observational Study

10b Yes although it is confounded.

10c Yes

10d No, genes have to account for both things being associated!

10e



A child without a father could become depressed and turn to eating to deal with it.

The mother would be stressed out over being a single parent and could be more controlling.

Therefore "lack of father" could be a confounding factor.

* Any answer that is logical can work.

10f No. ADNEC.

11a Treatment: Those who go to bootcamp.
Control: Those who do not go to bootcamp.

11b Observational Study, inmates chose their groups.

11c False. ADNEC. It could be those who go to bootcamp are already less likely to come back to prison.

12 False. This is an example of a potential use of Simpson's Paradox. Democrats may have more votes in each ward but we aren't told by how much and the factor of each ward into the city as a whole.