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1. A news company located next to Times Square in New York wants to get a sense how people feel about a proposed law on immigration. A reporter steps out of the building and randomly selects 100 people walking there and asks them about the proposed law. What can we say about this sampling plan? Single correct answer.

1 / 1 point

- ☐ it leads to voluntary response bias
- ☒ it leads to selection bias
- ☐ it leads to non-response bias
- ☐ it represents a simple random sampling

✓ **Correct**  
That's correct.

2. A car company wants to get a sense how satisfied the owners of its new car model are with the quality of that car. It randomly selects 250 numbers from the all the vehicle registration numbers that have been issued for this model and contacts the owners of that model. What can we say about this sampling plan?

1 / 1 point

- ☒ it represents a simple random sampling
- ☐ it leads to selection bias
- ☐ it leads to non-response bias
- ☐ it leads to voluntary response bias

✓ **Correct**  
That's correct.

3. An airline wants to do a customer survey in order to improve its service. For one month, it sends an email to a random sample of customers which flew with the airline on the previous day (no customer will be contacted more than once). The email states that the airline would like the customer to fill out a 10 minute survey in order to help the airline improve its service. What can we say about this sampling plan? Single correct answer.

1 / 1 point

- ☐ it represents a simple random sampling
- ☐ it leads to selection bias
- ☒ it leads to non-response bias
- ☐ it leads to voluntary response bias

✓ **Correct**  
That's correct. People whose time is more valuable or more limited are less likely to respond.

4. As in the previous question, an airline wants to do a customer survey in order to improve its service. For one month, it sends an email to a random sample of customers which flew with the airline on the previous day (no customer will be contacted more than once). Again, the email states that the airline would like the customer to fill out a 10 minute survey in order to help the airline improve its service, but this time it states in addition that every respondent will receive a gift card worth \$100. What can we say about this sampling plan?

1 / 1 point

- ☐ it represents a simple random sampling
- ☐ it leads to selection bias
- ☒ it leads to non-response bias
- ☐ it leads to voluntary response bias

✓ **Correct**  
That's correct. It will likely result in less bias than the previous question.

5. Some years ago, there were many news reports about the "Paleo diet". It was claimed that the Paleo Diet would result in weight loss as well as prevention and control of many "diseases of civilization".

1 / 1 point

A news channel decides to check this out. It recruits people who have followed the diet for the past year and selects 100 at random. It also recruits people who have not followed the diet and selects 100 at random. It finds that there is more weight loss in the diet group, and that this result is 'statistically significant'.

Which of the following statements are true?

- ☐ This is a randomized controlled experiment.
- ☒ It is possible that the difference in weight loss is due to the placebo effect.

✔ **Correct**

We can't rule out the placebo effect as there is no placebo.

- ☐ If a future carefully run randomized controlled experiment reveals that the paleo diet does not result in weight loss, then we can conclude that the weight loss observed above must be due to the placebo effect.

6. A number of competitive female cross country runners suffer from bone loss due to the low estrogen levels. Some medical experts conjecture that this can be prevented by taking oral contraceptives, as those contain estrogen. This conjecture is to be tested with an experiment. The goal of the experiment is to find out whether taking an oral contraceptive prevents bone loss in female cross country runners. Which of the following subjects should be recruited in order to do a good experiment? (Pick one of the three.)

1 / 1 point

- ☐ A group of women who are competitive runners and another group of women who are not competitive athletes.
- ☐ A group of female runners who are taking oral contraceptives and another group of female runners who are not taking oral contraceptives.
- ☒ A group of female runners who are not taking oral contraceptives, but who are willing to take them if asked by the organizers of the experiment to do so.

✔ **Correct**

A randomized controlled experiment requires to randomize the subjects into treatment and control, so one needs to recruit runners who are not currently taking the treatment but who would be willing to take it if randomized into the treatment group.