

# Classroom Voting Questions: Statistics

## Sampling Design

1. Researchers believe that one possible cause of Very Low Birth Weight (VLBW) infants is the presence of undiagnosed infections in the mother. To assess this possibility, they collected data on all pregnant women presenting themselves for prenatal care at large urban hospitals. What is the *appropriate population* for this study?
  - (a) All infants.
  - (b) All infants born as VLBW infant.
  - (c) All infants born in large urban centers.
  - (d) All pregnant women.
  - (e) All pregnant women living in large urban centers.

*Answer: (e).* (A), (B), (C) Infants are not the unit of analysis. The researchers believe that VLBW infants result from undiagnosed infections in the mother, thus pregnant women are the unit of analysis.

(D) This approach is not the most conservative because where the pregnant women live may have an impact on VLBW infants.

(E)\* correct This approach is the most conservative. Pregnant women at large urban centers is the target population.

by Murphy, McKnight, Richman, and Terry

STT.03.02.010

CC HZ MA207 F09: 0/7/13/33/47 time 1:30

CC KC MA207 F09: 0/7/21/38/35 time 2:00

AS DH MA3321 Su12: 0/20/27/33/20 time 2:00

CC KC MA207 F18: 0/23/0/41/36

2. A Gallup survey was taken recently regarding peoples current preference for Democratic nominee for President for which there are 11 candidates. The survey also collected gender information, in order to capture male female differences in preference. For this poll, what is the *primary variable* of interest and *how many values* does it take?
  - (a) gender; 2
  - (b) gender; more than 2
  - (c) candidate preference; 2

- (d) candidate preference; more than 2
- (e) political party: 2
- (f) political party; more than 2

*Answer: (d).* (A) Gender is not the primary variable of interest. The key phrase in the stem is "candidate preference." Gender differences are of secondary interest.

(B) Gender is not the primary variable of interest and there are only two possible choices for gender (male and female).

(C) Candidate preference is the correct variable of interest but there are more than 2 values for that variable.

(D)\* correct Candidate preference is the variable of interest and there are more than two candidates.

(E), (F) Political party is not the variable of interest.

by Murphy, McKnight, Richman, and Terry

STT.03.02.020

CC KC MA207 F09: 0/0/50/46/4/0 time 2:00

AS DH MA3321 Su12: 13/7/20/60/0/0 time 1:40

### 3. Increasing sample size

- (a) has no effect on bias.
- (b) increases bias.
- (c) decreases bias.

*Answer: (a).*

by Roxy Peck for the textbooks: Roxy Peck and Jay Devore, Statistics: The Exploration and Analysis of Data, 6th Edition, Brooks/Cole Cengage Learning 2008 and Roxy Peck, Chris Olsen and Jay Devore, Introduction to Statistics and Data Analysis, 3rd Edition, Brooks/Cole Cengage Learning 2008.

STT.03.02.030

CC HZ MA207 F09: 40/13/47 time 0:40

AS DH MA3321 Su12: 14/0/86 time 1:30

AS DH MA1333 010 F12: 37/0/63 time 2:00

AS DH MA1333 020 F12: 52/5/43 time 2:10

AS DH 1333 010 S13: 32/8/60 time 2:00

AS DH 1333 020 S14: 41/8/51 time 2:00 ,

AS DH 1333 020 S15: 59/0/41 time 2:00 ,

AS DH 1342 010 F17: 58/8/33 time 2:20

CC KC MA207 F18: 91/0/9

AS DH 1342 020 F18: **3**/5/92 time 2:30  
AS DH 1342 040 S19: **0**/0/100 time 2:20  
AS DH 1342 030 F19: **16**/4/80 time 2:30  
AS DH 1342 030 S20: **13**/13/75 time 2:20

4. If you were trying to obtain a random sample of a population of interest for a political poll for a local mayoral race, which of the following approaches would be best to obtain the random sample?
- (a) Randomly assign a number to local companies and, using random-number generation, go to those companies selected and conduct interviews.
  - (b) Randomly select a busy street corner in your city and conduct on-site interviews.
  - (c) Assign a number to people in the local phone book and, using random-number generation, call those randomly selected.
  - (d) Randomly select a couple of television stations from your local cable company using random number generation and ask people through advertising to call a polling line.
  - (e) Randomly dial phone numbers within the selected area and interview those who answer the phone.

*Answer: (e).* Note: This question has a best answer (E), but students could argue for other options. Thus, this question might be good for generating discussion.

- (A) This method is biased towards those who work.
- (B) This method is biased towards those who happen to be on this particular street corner at the time of the interviews. This is known as a convenience sample.
- (C) This method is biased towards people who are listed in the phone book.
- (D) This method is biased towards people who watch TV, and those particular stations. This method is known as a volunteer sample.
- (E)\* correct This method is still biased towards people who have a phone, but it is the best approach from the options provided.

by Murphy, McKnight, Richman, and Terry

STT.03.02.040

CC HZ MA207 F09: 0/0/100/0/**0**  
AS DH MA3321 Su12: 0/20/67/0/**13** time 2:30  
CC KC MA207 F18: 14/18/41/0/**27**

5. In order to estimate the proportion of students at a small liberal arts college who watch reality TV for more than 4 hours per week, a random sample of students at the school

is selected and each is interviewed about his or her reality TV viewing habits. The students conducting the survey are worried that people that watch reality TV might be embarrassed to admit it and that they may not respond to the survey with honest answers. What type of bias are the students conducting the survey worried about?

- (a) They shouldn't worry - there is no obvious source of bias.
- (b) Voluntary bias
- (c) Nonresponse bias
- (d) Response bias

*Answer: (d).* by Roxy Peck for the textbooks: Roxy Peck and Jay Devore, Statistics: The Exploration and Analysis of Data, 6th Edition, Brooks/Cole Cengage Learning 2008 and Roxy Peck, Chris Olsen and Jay Devore, Introduction to Statistics and Data Analysis, 3rd Edition, Brooks/Cole Cengage Learning 2008.

STT.03.02.050

CC HZ MA207 F09: 0/0/4/**93** time 1:05

CC KC MA207 F09: 0/7/11/**82** time 1:30

AS DH MA3321 Su12: 0/0/20/**80** time 2:20

CC KC MA207 F18: 0/14/18/**68**