

Pledge:

3/8/2006
Dr. Lunsford

MATH171 – Statistical Decision Making
Quiz 6

Name: _____
20 Points Total

In a recent FOX News/Opinion Dynamics Poll (2/28-3/1), the following question was asked, “Recently the South Dakota legislature passed a law that bans abortion in all cases other than to save the life of the mother. Would you support or oppose this law in the state where you live?” Based on their poll results, FOX News reported that 35% would support the law, 59% would oppose the law, and 6% were unsure (with a margin of error of $\pm 3\%$). *Suppose the true proportion of Americans who would oppose such a law is actually 59%.* A polling organization for which you work is about to poll a simple random sample of 900 registered voters and ask the same question as above. Let X be the number in your sample that would oppose such a law and \hat{p} be the proportion of your sample that would oppose. Please answer the following questions.

(a) Suppose 525 Americans in your sample would oppose such a law. Please provide the values of the following parameters and variables: (4 points)

$p =$ _____ $n =$ _____ $X =$ _____ $\hat{p} =$ _____

(b) How many in your sample would you expect, on average, to oppose such a law? (2 points)

(c) On average, what proportion of your sample would you expect to oppose such a law? What is the standard deviation of the proportion? (5 points)

(d) Use the normal approximation for the sampling distribution of the sample proportion to determine how likely it would be for fewer than 50% Americans in your sample to oppose such a law. Please write a complete English sentence giving your answer. (5 points)

(e) Based on your answer in part (d), would it be very likely, somewhat likely, somewhat unlikely, or highly unlikely for fewer than 50% Americans in your sample to oppose such a law? (2 points)

(f) Suppose 444 Americans in your sample oppose such a law. Which of the following are reasonable explanations for this (circle all that apply)? (2 points)

1. This result is not unusual given our parameters.
2. The assumption that the true proportion of Americans who would oppose such a law is actually 59% may not be correct and in fact may be less than 59%.
3. There is some type of bias entering into our random sampling technique.

4. I believe these results are correct because they confirm what I have observed among my friends and neighbors.