

Chapter 19 Practice with Significance Tests about Proportions Name \_\_\_\_\_

A report on health care in the US said that 28% of Americans have experienced times when they haven't been able to afford medical care. A news organization randomly sampled 801 black Americans, of whom 38% reported that there had been times in the last year when they had not been able to afford medical care. Does this indicate that this problem is more severe among black Americans?

1) Test an appropriate hypothesis and state your conclusion. (Make sure to check any necessary conditions and to state a conclusion in the context of the problem.) PHANTOM

A) Define the Parameter, state the Hypothesis, , and check the Assumptions . 30 points)

B) Name the test, sketch and label the ditribution.. (20 points)

C) Calculate the Test Statistic (z-zcore) and Obtain the P-value. (20 points)

D) Make your decision (state your conclusion, in context). (20 points)

2) Was your test one-tail upper tail, one-tail lower tail, or two-tail? Explain why you chose that kind of test in this situation. (10 points)

## Answer Key

### Testname: PRACTICE B CHAPTER 19

1) Hypotheses:  $H_0 : p = 0.28$ . The proportion of all black Americans that were unable to afford medical care in the last year is 28%.

$H_A : p > 0.28$ . The proportion of all black Americans that were unable to afford medical care in the last year is greater than 28%.

Model: Okay to use the Normal model because the sample is random, these 801 black Americans are less than 10% of all black Americans, and

$$np = (801)(0.28) = 224.28 \geq 10 \text{ and } nq = (801)(0.72) = 576.72 \geq 10.$$

We will do a one-proportion z-test.

Mechanics:  $n = 801, \hat{p} = 0.38$

$$z = \frac{0.38 - 0.28}{\sqrt{\frac{(0.28)(0.72)}{801}}}$$

$$P = P(\hat{p} > 0.38) = P(z > 6.29) \approx 0$$

Conclusion: With a P-value so small (barely above zero), I reject the null hypothesis. There is enough evidence to suggest that the proportion of black Americans who were not able to afford medical care in the past year is more than 28%.

2) One-tail, upper tail test. We are concerned that the proportion of people who are not able to afford medical care is higher among black Americans.