

## Ch9 Canvas Quiz

---

1. Suppose that a market research firm is hired to estimate the percent of adults living in a large city who have cell phones. Five hundred randomly selected adult residents in this city are surveyed to determine whether they have cell phones. Of the 500 people surveyed, 421 responded yes - they own cell phones. Using a 95% confidence level, compute a confidence interval estimate for the actual proportion of adult residents of this city who have cell phones.

(a) Use the given information to estimate the actual proportion of adult residents of this city who have cell phones.

(a) \_\_\_\_\_

(b) Verify that the conditions needed in order for the margin of error formula to be appropriate are met.

(c) Compute/find the value of the margin of error.

(c) \_\_\_\_\_

(d) Interpret the meaning of the margin of error in the context of this problem.

(e) Construct a 95% confidence interval for the actual proportion of adult residents of this city who have cell phones.

(e) \_\_\_\_\_

(f) Communicate the Result: Interpret the confidence interval.

(g) Communicate the Result: Interpret the confidence *level*.

2. <https://www.democratandchronicle.com/story/news/politics/albany/2020/04/20/coronavirus-new-york-begins-antibody-testing-what-means/5164144002/>

April 24, 2020 — New York's first random sample of coronavirus antibodies shows that 13.9% of those tested in the state had coronavirus antibodies in their system, meaning they have contracted and recovered from the virus, New York Governor Andrew Cuomo said Thursday. That suggests that 2.7 million people have been infected statewide.

The survey was taken from a sample size of about 3,000 people found outside their homes, shopping at essential businesses, such as grocery stores, which remain open. Results show antibodies in 12% of women and 15.9% of men, but a disproportionate rate of antibodies in black and Latino New Yorkers. Cuomo said the spread likely reflects the regional breakdown of the state.

The rate was even higher in New York City, with about 21% showing antibodies, and on Long Island, with 16.7%. According to Cuomo, if the results are proven accurate and the overall infection rate in New York is about 13.9%, the death rate from coronavirus may be lower than some estimates. In this problem, we are interested in estimating the actual proportion of New Yorkers who have coronavirus antibodies in their system.

- (a) About how many people in the random sample tested positive for coronavirus antibodies?

(a) \_\_\_\_\_

- (b) About how many people in the random sample tested negative for coronavirus antibodies?

(b) \_\_\_\_\_

- (c) Verify that the conditions needed in order for the margin of error formula to be appropriate are met.

- (d) Compute/find the value of the margin of error. (Use a 99% confidence level)

(d) \_\_\_\_\_

- (e) Interpret the meaning of the margin of error in the context of this problem.
- (f) Construct a 99% confidence interval for the actual percentage of New Yorker who have coronavirus antibodies in their system
- (f) \_\_\_\_\_
- (g) Communicate the Result: Interpret the confidence interval.
- (h) Communicate the Result: Interpret the confidence *level*.
- (i) According to your results, about how many New Yorkers are predicted to have already contracted and recovered from Covid-19.

(i) \_\_\_\_\_

3. Georgia, the home of the CDC headquarters, wants to conduct a random sample of Georgians to estimate the actual percentage of Georgians who have already have already contracted and recovered from Covid-19. What sample size would you use in order to estimate this proportion with a margin of error of 0.01?