

1. The inhabitants of Martiniville, U.S.A. are casting their vote for mayor. On the ballot this election are:
1. Sleazy P. Martini (incumbent)
 2. Stubbs the Cat

From a random sample of 873 voting-age Martiniville residents when asked the question:

“Are you going to vote for Stubbs the Cat?”

633 of the sample answered “yes.”

Find the margin of error of our estimate of p at the 99% confidence level.

- A. At 99% confidence, the margin of error of our estimate of p is ± 0.0359 , or $\pm 3.59\%$.
- B. At 99% confidence, the margin of error of our estimate of p is ± 0.0299 , or $\pm 2.99\%$.
- C. At 99% confidence, the margin of error of our estimate of p is ± 0.0449 , or $\pm 4.49\%$.
- D. At 99% confidence, the margin of error of our estimate of p is ± 0.0349 , or $\pm 3.49\%$.
- E. At 99% confidence, the margin of error of our estimate of p is ± 0.0389 , or $\pm 3.89\%$.
- F. At 99% confidence, the margin of error of our estimate of p is ± 0.0479 , or $\pm 4.79\%$.
- G. At 99% confidence, the margin of error of our estimate of p is ± 0.0329 , or $\pm 3.29\%$.
- H. At 99% confidence, the margin of error of our estimate of p is ± 0.0419 , or $\pm 4.19\%$.

2. The Harris Poll measures public opinion in the United States on a broad variety of topics from politics to purchasing habits. The following question makes use of the data obtained from one of these polls.

From a random sample of 889 smokers when asked the question:

“Do you believe that smoking will probably shorten your life, or not?”

749 of the sample answered “yes.”

Find the margin of error of our estimate of p at the 95% confidence level.

- A. At 95% confidence, the margin of error of our estimate of p is ± 0.0239 , or $\pm 2.39\%$.
- B. At 95% confidence, the margin of error of our estimate of p is ± 0.0319 , or $\pm 3.19\%$.
- C. At 95% confidence, the margin of error of our estimate of p is ± 0.0209 , or $\pm 2.09\%$.
- D. At 95% confidence, the margin of error of our estimate of p is ± 0.0329 , or $\pm 3.29\%$.
- E. At 95% confidence, the margin of error of our estimate of p is ± 0.0149 , or $\pm 1.49\%$.
- F. At 95% confidence, the margin of error of our estimate of p is ± 0.0309 , or $\pm 3.09\%$.
- G. At 95% confidence, the margin of error of our estimate of p is ± 0.0169 , or $\pm 1.69\%$.
- H. At 95% confidence, the margin of error of our estimate of p is ± 0.0159 , or $\pm 1.59\%$.

3. The inhabitants of Martinville, U.S.A. are casting their vote for mayor. On the ballot this election are:

1. Sleazy P. Martini (incumbent)
2. Stubbs the Cat

From a random sample of 774 voting-age Martinville residents when asked the question:

“Are you going to vote for Stubbs the Cat?”

568 of the sample answered “yes.”

Construct a 95% confidence interval for the proportion p of voting-age Martinville residents who say they will vote for Stubbs the Cat.

- A. A 95% confidence interval is (0.653, 0.715).
- B. A 95% confidence interval is (0.743, 0.805).
- C. A 95% confidence interval is (0.703, 0.765).
- D. A 95% confidence interval is (0.743, 0.765).
- E. A 95% confidence interval is (0.703, 0.715).
- F. A 95% confidence interval is (0.713, 0.715).
- G. A 95% confidence interval is (0.713, 0.765).
- H. A 95% confidence interval is (0.653, 0.805).

4. Without any prior estimate of a population proportion p , what sample size would we need to achieve a margin of error of $\pm 2.5\%$ at 95% confidence.

- A. The sample size needed to achieve a margin of error of $\pm 2.5\%$ at 95% confidence is $n = 1546$.
- B. The sample size needed to achieve a margin of error of $\pm 2.5\%$ at 95% confidence is $n = 1530$.
- C. The sample size needed to achieve a margin of error of $\pm 2.5\%$ at 95% confidence is $n = 1538$.
- D. The sample size needed to achieve a margin of error of $\pm 2.5\%$ at 95% confidence is $n = 1535$.
- E. The sample size needed to achieve a margin of error of $\pm 2.5\%$ at 95% confidence is $n = 1544$.
- F. The sample size needed to achieve a margin of error of $\pm 2.5\%$ at 95% confidence is $n = 1537$.
- G. The sample size needed to achieve a margin of error of $\pm 2.5\%$ at 95% confidence is $n = 1534$.
- H. The sample size needed to achieve a margin of error of $\pm 2.5\%$ at 95% confidence is $n = 1536$.

5. Suppose that out of a sample of 82 milk chocolate M&Ms, 15 are green.

Construct a 90% confidence interval for the proportion p of green M&Ms.

A. A 90% confidence interval is (0.023, 0.283).

B. A 90% confidence interval is (0.113, 0.253).

C. A 90% confidence interval is (0.053, 0.163).

D. A 90% confidence interval is (0.113, 0.193).

E. A 90% confidence interval is (0.053, 0.193).

F. A 90% confidence interval is (0.023, 0.163).

G. A 90% confidence interval is (0.023, 0.253).

H. A 90% confidence interval is (0.113, 0.283).

6. Does the order in which wine is presented make a difference in which wine is preferred? In one study, researchers had two choices of wine presented to each subject one at a time. The subjects were then asked to choose his or her preferred wine. However, unknown to the subjects, both wines were the same.

Out of a random sample of 28 subjects 18 chose the wine that was presented to them first.

For this particular sample, our sample proportion is $\hat{p} = 0.643$, and the margin of error at 95% confidence is $\pm 17.75\%$. Suppose we wanted to duplicate this study with a larger samples size to improve the results. Taking $\hat{p} = 0.643$, to be our initial guess p^* , find the sample size the size necessary in order to achieve a margin of error of $\pm 3\%$ at 95% confidence.

A. The sample size needed to achieve a margin of error of $\pm 3\%$ at 95% confidence is $n = 978$.

B. The sample size needed to achieve a margin of error of $\pm 3\%$ at 95% confidence is $n = 971$.

C. The sample size needed to achieve a margin of error of $\pm 3\%$ at 95% confidence is $n = 985$.

D. The sample size needed to achieve a margin of error of $\pm 3\%$ at 95% confidence is $n = 982$.

E. The sample size needed to achieve a margin of error of $\pm 3\%$ at 95% confidence is $n = 987$.

F. The sample size needed to achieve a margin of error of $\pm 3\%$ at 95% confidence is $n = 980$.

G. The sample size needed to achieve a margin of error of $\pm 3\%$ at 95% confidence is $n = 986$.

H. The sample size needed to achieve a margin of error of $\pm 3\%$ at 95% confidence is $n = 975$.

7. Does the order in which wine is presented make a difference in which wine is preferred? In one study, researchers had two choices of wine presented to each subject one at a time. The subjects were then asked to choose his or her preferred wine. However, unknown to the subjects, both wines were the same.

Out of a random sample of 19 subjects 15 chose the wine that was presented to them first.

For these data, are the guidelines for the large-sample z -interval met?

A. No. The guidelines are not met.

B. Yes. The guidelines are met.

8. Spain has a high rate of cocaine use, so it's not surprising that euro paper currency in Spain often contains traces of cocaine.

Suppose researchers collect 39 twenty-euro notes in Madrid and 33 contained traces of cocaine.

Find the margin of error of our estimate of p at the 90% confidence level.

A. At 90% confidence, the margin of error of our estimate of p is ± 0.095 , or $\pm 9.5\%$.

B. At 90% confidence, the margin of error of our estimate of p is ± 0.087 , or $\pm 8.7\%$.

C. At 90% confidence, the margin of error of our estimate of p is ± 0.092 , or $\pm 9.2\%$.

D. At 90% confidence, the margin of error of our estimate of p is ± 0.089 , or $\pm 8.9\%$.

E. At 90% confidence, the margin of error of our estimate of p is ± 0.096 , or $\pm 9.6\%$.

F. At 90% confidence, the margin of error of our estimate of p is ± 0.104 , or $\pm 10.4\%$.

G. At 90% confidence, the margin of error of our estimate of p is ± 0.088 , or $\pm 8.8\%$.

H. At 90% confidence, the margin of error of our estimate of p is ± 0.103 , or $\pm 10.3\%$.