

Probability & Statistics 40: Practice with 2.2 MOE and Confidence Intervals!

You wish to find out the proportion of students at FLHS who enjoy drinking coffee in the morning. You randomly survey 224 students and find out that 61 of them enjoy drinking coffee in the morning.

1. Determine your population of interest, sample, parameter of interest, and the statistic.

- FLHS students
- 224 students
- The proportion of students who enjoy drinking coffee.
- 27.23% of the sample enjoyed drinking coffee

2. Calculate the margin of error using the quick method.

- 6.68

3. Make a confidence statement for this situation.

I am 95% confidence, given my methods, that the true proportion of FLHS students who enjoy drinking coffee is between 20.55% and 33.91%

According to realclearpolitics.com, from October 1st through October 3rd, Rasmussen Tracking asked 1500 likely voters who they will be voting for in the upcoming election. 49% responded Obama whereas 47% responded Romney.

4. Calculate the margin of error for this poll.

2.58%

5. Make a confidence statement for the percentage of all likely voters who will vote for Obama.

I am 95% confident, given my methods, that the true proportion of likely voters who will vote for Obama is between 46.42% and 51.58%

6. Make a confidence statement for the percentage of all likely voters who will vote for Romney.

I am 95% confident, given my methods, that the true proportion of likely voters who will vote for Romney is between 44.42% and 49.58%

7. Does there seem to be a clear front-runner in the upcoming election?

No, because the intervals overlap.

A research company asked 1298 US adults, who currently have a driver's license, if they had ever ran a red light. 923 responded "yes".

8. Determine your population of interest, sample, parameter of interest, and the statistic.

- US adults
- 1298 adults
- Proportion of adults who have ever run a red light
- 71.11% ran a red light

9. Calculate the margin of error using the quick method.

2.78%

10. Make a confidence statement for this situation.

I am 95% confident, given my methods, that the true proportion of US adults who have ever run a red light is between 68.33% and 73.89%

Mrs. Poole conducted a recent survey of 52 students in her classes. She found that 43 of the students think she is funny.

11. Determine your population of interest, sample, parameter of interest, and the statistic.

- Mrs. Poole's students
- 52 students
- The proportion of Mrs. Poole's students who think she is funny.
- 82.69% of students think Mrs. Poole is funny.

12. Calculate the margin of error using the quick method.

13.87%

13. Make a confidence statement for this situation.

I am 95% confident, given my methods, that the true proportion of Mrs. Poole students who think she is funny is between 68.82% and 96.56%

14. Discuss any potential issues with the results of this survey.

By the 10% rule our population needs to be 520 students for the margin of error calculation to be valid. If you are talking about Mrs. Poole's students this year, then that is a problem. If your population is all the students that she ever had, then that is OK.