

Content Standards:

-To determine a confidence interval around our sample proportion that will likely contain the true proportion in the population.

Process Standards:

- Students will apply course content to their own life.
- Students will use problem solving techniques to decide how to approach a scenario.
- Students will determine what information is relevant for a given situation.

Task:

Part 1: Find the 95% confidence interval for a set of data

The average hourly wage for a high school student in Illinois is \$8.25 per hour with a standard deviation of \$.25. Assume hourly wages vary normally. Construct a 95% confidence interval for the average hourly wage for a high school student.

1. What is the mean, standard deviation, and z^* for the set of data?

2. Determine the confidence interval using the formula: $\bar{X} \pm z^* \sigma$.

3. What does this interval represent in context?

4. How does your hourly pay at your job compare to the confidence interval for an average hourly wage?

Part 2: Find the confidence level for a given situation.

A pollster has decided to collect data on the average hourly wage for high school students in the United States. They want to see if the average hourly wage in the United States is similar to the average hourly wage in Illinois. If the pollster wants a 4% margin of error with a 400 person poll, what will the confidence level be?

$$moe = \pm z^* \sigma \qquad \sigma = \sqrt{\frac{.25}{n}}$$

1. What information do you know?

2. Based on the information you have, what can you find first? Find that piece of information.

3. Use the information you found to solve for z^* .

4. Find the confidence level using your z^* .