AP STATISTICS CH. 8 GUIDED NOTES

8.1 Confidence Intervals: The Basics

Activity: The Mystery Mean *mean(RandNorm(M,20,16)) with value set for M*

Read 469–470 *Including example on page 470*

What is a point estimate? Why is it called a point estimate?

Explain the logic of confidence intervals.

What is a confidence interval? How do you interpret a confidence interval?

According to a Gallup poll published on January 9, 2013, a 95% confidence interval for the true proportion of American adults who support the death penalty is 63% ± 4%. This estimate was based on a random sample of 1038 American adults. Interpret this interval in context.

What is the margin of error? Why do we include the margin of error?

How do you interpret a confidence level? In other words, what does it mean to be 95% confident?

Alternate Example: A large company is concerned that many of its employees are in poor physical condition, which can result in decreased productivity. To determine how many steps each employee takes per day, on average, the company provides a pedometer to 50 randomly selected employees to use for one 24-hour period. After collecting the data, the company statistician reports a 95% confidence interval of 4547 steps to 8473 steps.
(a) Interpret the confidence level.
(b) Interpret the confidence interval.
(c) What is the point estimate that was used to create the interval? What is the margin of error?
(d) Recent guidelines suggest that people aim for 10,000 steps per day. Is there convincing evidence that the employees of this company are not meeting the guideline, on average? Explain.

Read 476-478 *Do activity on page 477*

What is the formula for calculating a confidence interval? Is this formula included on the formula sheet?

How can we reduce the margin of error in a confidence interval? Why do we want a small margin of error? Are there any drawbacks to these actions?

-

Read p. 480

What are two important things to remember when constructing and interpreting confidence intervals?

In a 2009 survey, researchers asked random samples of US teens and adults if they use social networking sites. Overall, 73% of the teens said yes and 47% of the adults said yes. A 90% confidence interval for the true difference in the proportion of teens and adults who would say yes is 0.229 to 0.291.

(a) Interpret the confidence level.
(b) Interpret the confidence interval.
(c) Based on the interval, is there convincing evidence that the proportion of teens who would say yes is higher than the proportion of adults who would say yes? Explain.
(d) How would the interval be affected if we used a 99% confidence level instead of a 90% confidence level?

HW: page 481 (1, 3, 9–15 odd, 25, 26)