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AP STATISTICS – MS. KLIMCZUK

Using the Central Limit Theorem for Means

Example 1: A college physical education department asked a random sample of 200 female students to self-report their heights and weights, but the percentage of students with BMIs over 25 seemed suspiciously low. One possible explanation may be that the respondents “shaded” their weights down a bit. The CDC reports that the mean weight of 18-year-old women is 143.74 lb, with a standard deviation of 51.54 lb, but these 200 randomly selected women reported a mean weight of only 140 lb.

Main question: Based on the Central Limit Theorem and the Empirical Rule, does the mean weight in this sample seem exceptionally low, or might this just be random sample-to-sample variation?

***Before answering this question, check all of the conditions.***

***Draw the sampling distribution model for the sample means.***

***Now answer the original question and interpret your results in the proper context.***

Example 2: The Centers for Disease Control and Prevention reports that the mean weight of adult men in the United States is 190 lb with a standard deviation of 59 lb.

Main Question: An elevator in our building has a weight limit of 10 persons or 2500 lb. What is the probability that if 10 men get on the elevator, they will overload its weight limit?

***Before answering this question, check all of the conditions.***

***Draw the sampling distribution model for the sample means. Shade the area that we are interested in.***

***Now answer the original question and interpret your results in the proper context.***