

CHAPTER 17: SAMPLING DISTRIBUTION MODELS

Sampling distribution model for a proportion: used for _____ variables

Mean:

Standard Deviation:

Conditions/Assumptions to Check

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Problems for Left

Sample Proportions Problems

1. Of all cars on the interstate, 80% exceed the speed limit. What proportion of speeders might we see among the next 50 cars? (Describe by drawing the Normal Model and the middle 68%)
 - a. Would be strange to see the next 10 out of 14 cars speeding?
2. We don't know it, but 52% of voters plan to vote "Yes" on the upcoming school budget. We poll a random sample of 300 voters. What might the percentage of yes-voters appear to be in our poll?
 - a. What number of voting "Yes" would seem abnormally low?
 - b. What number of voting "Yes" would seem abnormally high?
3. "Groovy" M&M's are supposed to make up 30% of the candies sold. In a large bag of 250 M&M's, what is the probability that we get at least 25% groovy candies?
 - a. Would it be abnormal to get 41 "Groovy" M&M's out of a bag of 120?

Sample Means Problems

4. SAT scores should have mean 500 and standard deviation 100. What about the mean of random samples of 20 students? (Note that the small sample is okay because we believe a Normal model applies to the population.)
 - a. What score could be considered abnormally high?
 - b. What score could be considered abnormally low?
5. Speeds of cars on a highway have mean 52 mph and standard deviation 6 mph, and are likely to be skewed to the right (a few very fast drivers). Describe what we might see in random samples of 50 cars.
 - c. If someone is driving 55 mph, is that abnormal?
6. At birth, babies average 7.8 pounds, with a standard deviation of 2.1 pounds. A random sample of 34 babies born to mothers living near a large factory that may be polluting the air and water shows a mean birth weight of only 7.2 pounds. Is that unusually low?