BECA/Huson/Algebra 2: Regents Preparation Name:
18 June 2024

Prep #31 - Survey data

1. Which statement about data collection is most accurate?

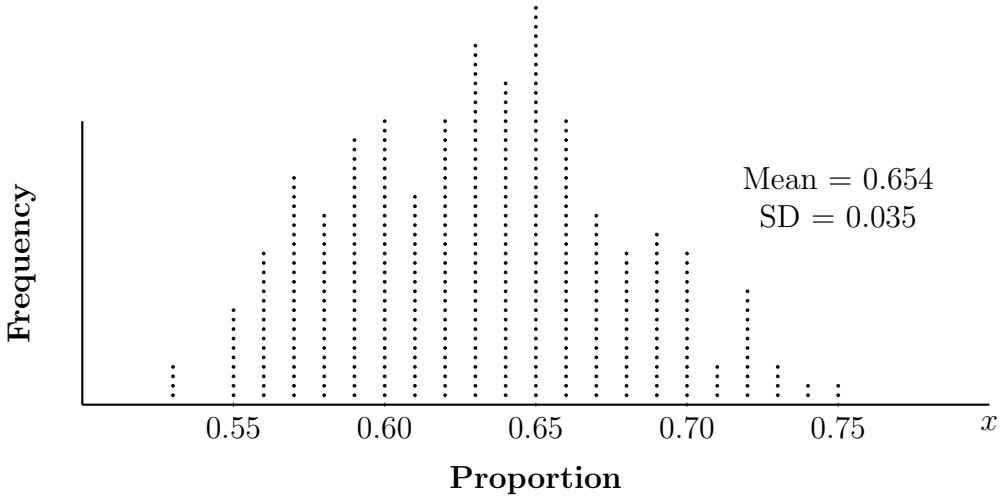
   (a) A survey about parenting styles given to every tenth student entering the library will provide unbiased results.

   (b) An observational study allows a researcher to determine the cause of an outcome.

   (c) Margin of error increases as sample size increases.

   (d) A survey collected from a random sample of students in a school can be used to represent the opinions of the school population.

2. Betty conducted a survey of her class to see if they like pizza. She gathered 200 responses and 65% of the voters said they did like pizza. Betty then ran a simulation of 400 more surveys, each with 200 responses, assuming that 65% of the voters would like pizza. The output of the simulation is shown below.



   Considering the middle 95% of the data, what is the margin of error for the simulation?

   (a) 0.01

   (b) 0.02

   (c) 0.05

   (d) 0.07

3. In watching auditions for lead singer in a band, Liem became curious as to whether there is an association between how animated the lead singer is and the amount of applause from the audience. He decided to watch each singer and rate the singer on a scale of 1 to 5, where 1 is the least animated and 5 is the most animated. He did this for all 5 nights of auditions and found that the more animated singers did receive louder applause.

   The study Liem conducted would be best described as

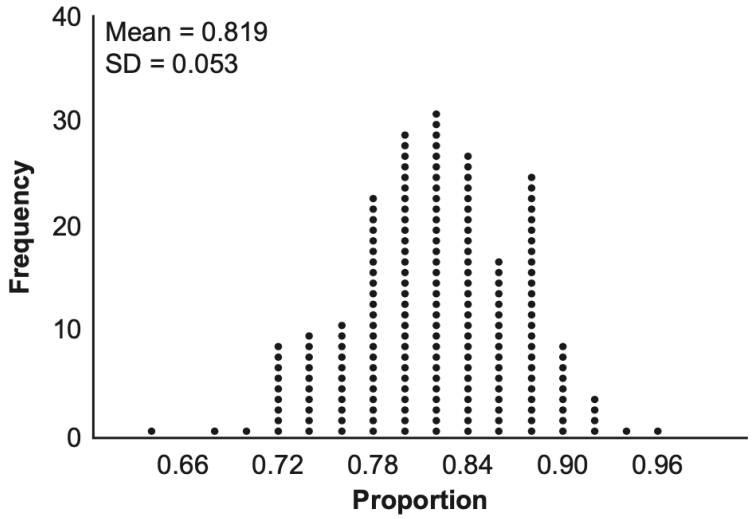
   (a) experimental

   (b) a sample survey

   (c) observational

   (d) a random assignment

4. State officials claim 82% of a community want to repeal the 30 mph speed limit on an expressway. A community organization devises a simulation based on the claim that 82% of the community supports the repeal. Each dot on the graph below represents the proportion of community members who support the repeal. The graph shows 200 simulated surveys, each of sample size 60.



   Based on the simulation, determine an interval containing the middle 95% of plausible proportions. Round your answer to the *nearest thousandth*.

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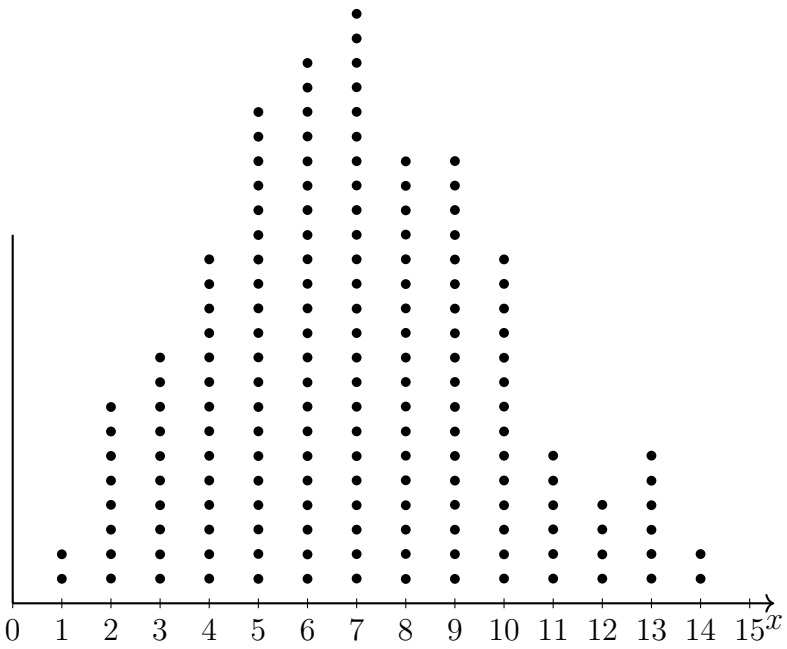
The community organization conducted its own sample survey of 60 people and found 70% supported the repeal. Based on the results of the simulation, explain why the organization should question the State officials' claim.

5. A simulation of student response times is run and displayed as a histogram below.



(a) Estimate the mean response time, $\overline{x}$.

(b) Estimate the standard deviation of the response times, σ.

(c) Find the 95% confidence interval. Justify your answer.

(d) An experiment is run indicating a mean response time of 4.5 seconds. Would this lead the experimenters to invalidate the assumptions of their simulation? Explain.

6. Vocabulary

(a) Survey

(b) observational study

(c) experiment

(d) random sample

(e) bias / unbiased

(f) sample size

(g) margin of error