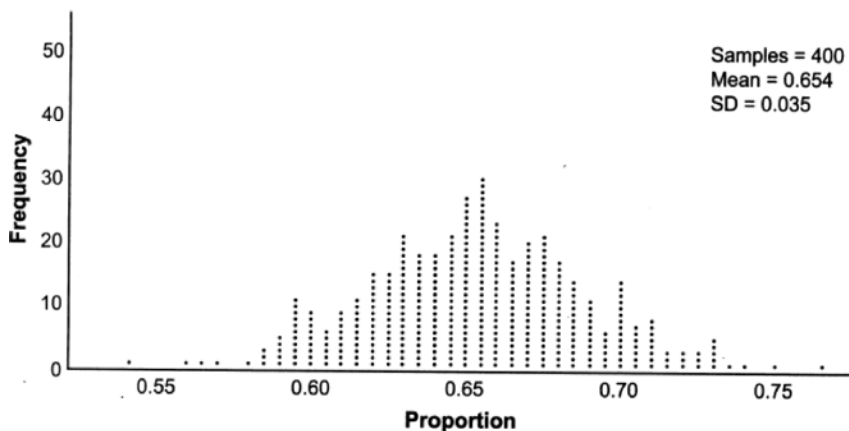


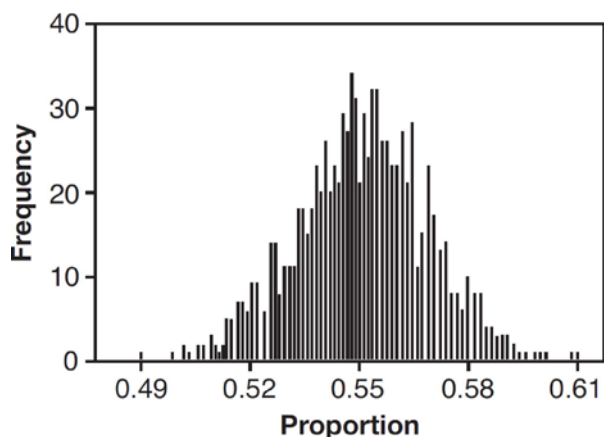
S.IC.B.4: Analysis of Data

- 1 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?

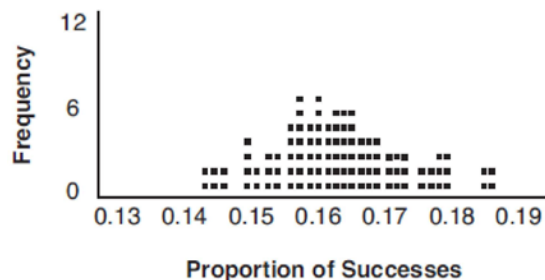
- 1) 0.01
 - 2) 0.02
 - 3) 0.05
 - 4) 0.07
- 2 A candidate for political office commissioned a poll. His staff received responses from 900 likely voters and 55% of them said they would vote for the candidate. The staff then conducted a simulation of 1000 more polls of 900 voters, assuming that 55% of voters would vote for their candidate. The output of the simulation is shown in the diagram below.



Given this output, and assuming a 95% confidence level, the margin of error for the poll is closest to

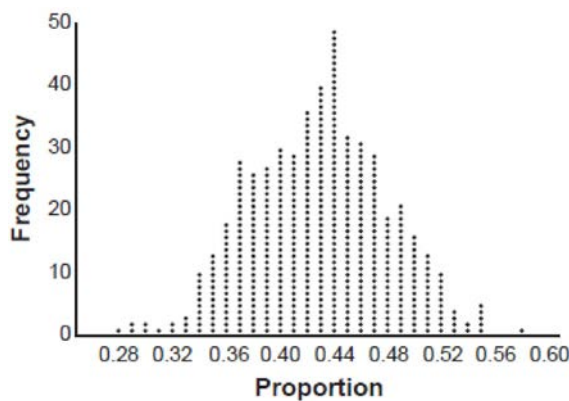
- 1) 0.01
- 2) 0.03
- 3) 0.06
- 4) 0.12

- 3 A study conducted in 2004 in New York City found that 212 out of 1334 participants had hypertension. Kim ran a simulation of 100 studies based on these data. The output of the simulation is shown in the diagram below.



At a 95% confidence level, the proportion of New York City residents with hypertension and the margin of error are closest to

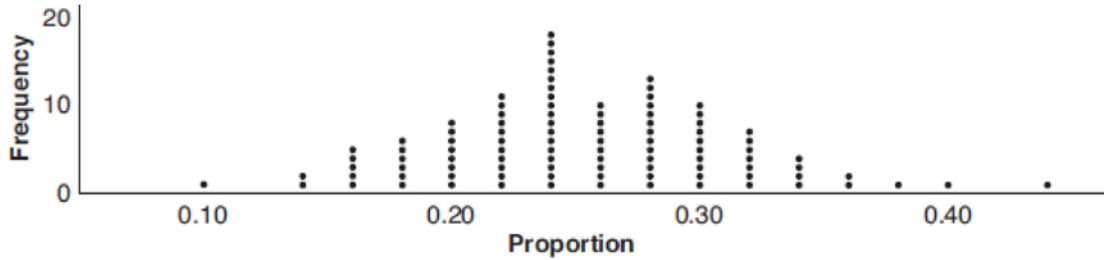
- 1) proportion $\approx .16$; margin of error $\approx .01$ 3) proportion $\approx .01$; margin of error $\approx .16$
2) proportion $\approx .16$; margin of error $\approx .02$ 4) proportion $\approx .02$; margin of error $\approx .16$
- 4 Marissa and Sydney are trying to determine if there is enough interest in their school to put on a senior musical. They randomly surveyed 100 members of the senior class and 43% of them said they would be interested in being in a senior musical. Marissa and Sydney then conducted a simulation of 500 more surveys, each of 100 seniors, assuming that 43% of the senior class would be interested in being in the musical. The output of the simulation is shown below.



The standard deviation of the simulation is closest to

- 1) 0.02 3) 0.09
2) 0.05 4) 0.43

- 5 A group of students was trying to determine the proportion of candies in a bag that are blue. The company claims that 24% of candies in bags are blue. A simulation was run 100 times with a sample size of 50, based on the premise that 24% of the candies are blue. The approximately normal results of the simulation are shown in the dot plot below.



The simulation results in a mean of 0.254 and a standard deviation of 0.060. Based on this simulation, what is a plausible interval containing the middle 95% of the data?

- | | |
|-------------------|--------------------|
| 1) (0.194, 0.314) | 3) (-0.448, 0.568) |
| 2) (0.134, 0.374) | 4) (0.254, 0.374) |

S.IC.B.4: Analysis of Data
Answer Section

- 1 ANS: 4
 $2 \times 0.035 = 0.07$

REF: 012319aai

- 2 ANS: 2

$$ME = \left(z \sqrt{\frac{p(1-p)}{n}} \right) = \left(1.96 \sqrt{\frac{(0.55)(0.45)}{900}} \right) \approx 0.03 \text{ or } \frac{1}{\sqrt{900}} \approx 0.03$$

REF: 081612aai

- 3 ANS: 2

$$\frac{212}{1334} \approx .16 \quad ME = \left(z \sqrt{\frac{p(1-p)}{n}} \right) = \left(1.96 \sqrt{\frac{(0.16)(0.84)}{1334}} \right) \approx 0.02 \text{ or } \frac{1}{\sqrt{1334}} \approx .027$$

REF: 081716aai

- 4 ANS: 2

$$ME = \left(z \sqrt{\frac{p(1-p)}{n}} \right) = \left(1.96 \sqrt{\frac{(0.43)(0.57)}{100}} \right) \approx 0.097 \quad \frac{0.097}{2} \approx 0.05 \text{ or } \frac{1}{\sqrt{100}} \approx 0.1 \quad \frac{0.1}{2} = 0.05$$

REF: 062317aai

- 5 ANS: 2
 $0.254 \pm 2(0.060) \rightarrow (0.134, 0.374)$

REF: 061913aai