Lesson 16: Describing Categorical Data; Proportions; Sampling Distribtion of a Sample Proportion

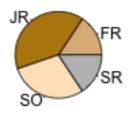
Homework

Solutions

Please note that the steps show rounded numbers, but that the final answers to the problems are calculated without rounding.

Problem	Part	Solution
1	-	A pie chart is used for categorical data. Each slice represents a part of a whole. A histogram, on the other hand, is used for quantitative data. It is a visual representation of the spread of a set of data.

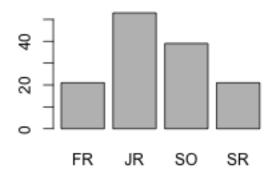
Class Ranks



2 -

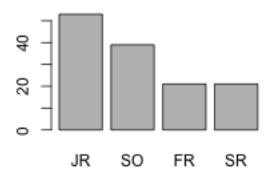
Problem Part Solution

Class Ranks



3 -

Class Ranks



- 4 -
- The sample proportion \hat{p} will be approximately normal when n is large. How do we know if n is large? We will conclude that n is large when $np \ge 10$ and $n(1-p) \ge 10$
- 6 n = 100
- 7 The sample proportion \hat{p} will be approximately normal when:
 - $np \ge 10 \text{ and } n(1-p) \ge 10$
 - $1000(0.528) = 528 \ge 10$ and $1000(1 0.528) = 472 \ge 10$
 - Since both conditions are true, we conclude that n is sufficiently large so that \hat{p} will be approximatel
- 8 The sampling distribution of \hat{p} is approximately normal with mean p=0.528 and
- standard deviation of 0.016.
- 9 z = -1.774
- 10 P(Z = -1.774) = 0.038
- 11 The sample proportion \hat{p} will be approximately normal when:
 - $np \ge 10 \text{ and } n(1-p) \ge 10$
 - $4040(0.5) = 2020 \ge 10$ and $4040(1 0.5) = 2020 \ge 10$

Since both conditions are true, we conclude that n is sufficiently large so that \hat{p} will be approximatel

Problem	Part	Solution
12	-	The sampling distribution of \hat{p} is approximately normal with mean $p = 0.5$ and standard deviation of 0.008.
13	-	P(Z = 0.881 or Z = -0.881) = 0.378