

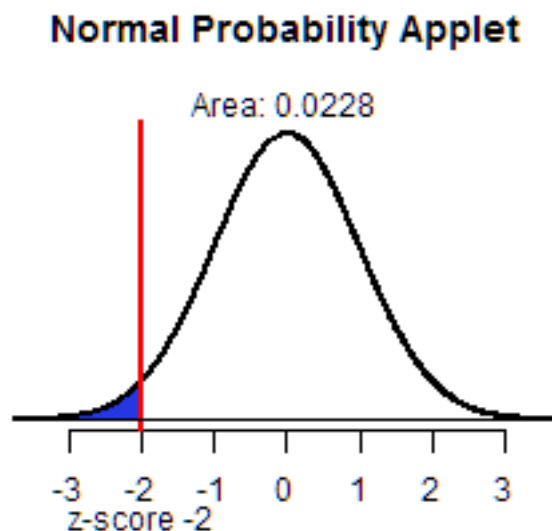
Lesson 17: Inference for One Proportion

Homework

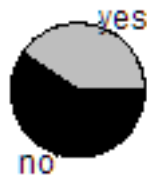
Solutions

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

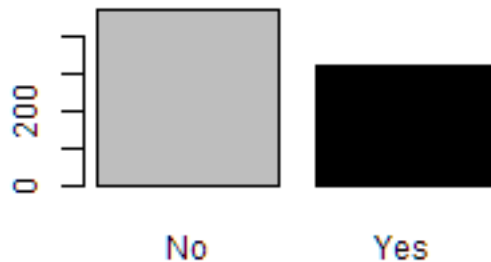
Problem	Part	Solution
1	-	$n\hat{p} \geq 10$ $n(1 - \hat{p}) \geq 10$ $100(0.12) = 12 \geq 10$ $100(1 - 0.12) = 88 \geq 10$ The requirements are met.
2	-	$\hat{p} = 0.12$
3	-	(0.067, 0.173) We are 90% confident that the true proportion of peanuts in the can is between 6.7% and 17.3%.
4	-	$np \geq 10$ $n(1 - p) \geq 10$ $100(0.2) = 20 \geq 10$ $100(1 - 0.2) = 80 \geq 10$ Since both conditions are true, we conclude that n is sufficiently large so that $\hat{p}$ will be approximately distributed.
5	-	$\hat{p} = 0.12$
6	-	$H_0 : p = 0.2$ $H_a : p < 0.2$
7	-	$z = -2$
8	-	$P\text{-value} = 0.0228$



Problem	Part	Solution
10	-	reject the null hypothesis
11	-	There is sufficient to suggest that the proportion of peanuts in the can is less than 20%.
12	-	(0.023, 0.024) We are 95% confident that the true proportion of the population who die after contracting H1N1 is between 2.3% and 2.4%.
13	-	(0.547, 0.639) We are 95% confident that the true proportion of the population who die after contracting H5N1 is between 54.7% and 63.9%.
14	-	The bird flu (H5N1) is by far more deadly! More than half of those who contract the bird flu will die, compared to only 2 to 3% of those who are infected with the swine flu. Fortunately for us, the bird flu is currently only passed to humans through contact with infected birds. Epidemiologists are concerned about a global pandemic of this disease, which would almost surely happen if the virus mutates to allow human-to-human transmission.
15	-	$n = 423$ people
16	-	$n = 334$ people



17 -



Problem	Part	Solution
18	-	$np \geq 10$ $n(1 - p) \geq 10$ $800(0.43) = 344 \geq 10$ $800(1 - 0.43) = 456 \geq 10$ Since both conditions are true, we conclude that n is sufficiently large so that $\hat{p}$ will be approximately distributed.
19	-	$\hat{p} = 0.405$
20	-	$H_0 : p = 0.43$ $H_a : p \neq 0.43$
21	-	$z = -1.428$
22	-	$P - value = 0.1532$
23	-	fail to reject the null hypothesis
24	-	There is insufficient to suggest that the proportion of adults who received a phishing email in 2012 is different than 43%.