Group Project

Problem #1

60%

$H_0: p = 0.60$

$H_A: p > 0.60$

$n = 850$

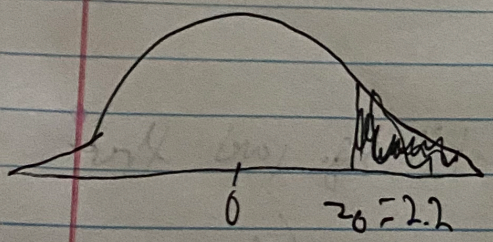
$x = 540$

$\hat{p} = \frac{540}{850} = 0.6353$ $\hat{q} = 1 - \hat{p} = 0.3647$

$n\hat{p}\hat{q} = 196.94 > 10$ } normal by CLT

$850(0.6353)(0.3647)$

Test statistic $\frac{(\hat{p} - p)}{\sqrt{\frac{pq}{n}}} = \frac{0.6353 - 0.60}{\sqrt{\frac{(0.60)(0.3647)}{850}}}$



$\frac{0.0353}{\sqrt{0.000257435}} = 2.2001$

$= 2.2$

$1 - .013903 =$ tech P-value $=$ $P(z_0 > 2.2) =$ ~~.9868~~

0.013903

Table value $= .9868 = 1 - .9868 = 0.0132$

P value $< \alpha \Rightarrow$ we reject H_0

$0.9868 < 0.05$

Conclusion: At 0.05 significance level there is sufficient evidence from sample data to support that more than 60% of Americans have antibodies for Coronavirus.