

# Practice Quiz 8

Statistics 90-707

Fall 2021

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1. (2 pts.) A survey asked 1000 adult Americans in the year 2004, “Should elected officials set their convictions aside to get results in government?”; the proportion who answered yes was 0.74.
  - (a) Construct a 95% confidence interval for the proportion of all adult Americans who would answer yes.
  - (b) Based on your interval, does 0.84 seem like a plausible value for the population proportion who would answer yes?
2. (8 pts.) A survey asked 1000 adult Americans in the year 2004, “Should elected officials set their convictions aside to get results in government?”; the proportion who answered yes was 0.74. Suppose we want to determine if the proportion is significantly less than 0.84, which is how many answered yes to the question in the year 2000.
  - (a) Which one of these is the correct formulation of the alternative hypothesis in this case? (i)  $H_a : p = 0.74$  (ii)  $H_a : p < 0.74$  (iii)  $H_a : \hat{p} = 0.74$  (iv)  $H_a : \hat{p} < 0.74$  (v)  $H_a : p = 0.84$  (vi)  $H_a : p < 0.84$  (vii)  $H_a : \hat{p} = 0.84$  (viii)  $H_a : \hat{p} < 0.84$
  - (b) For  $n = 1,000$  and  $p_0 = 0.84$ , the standard deviation of sample proportion is 0.012. Find the  $z$ -statistic. \_\_\_\_\_
  - (c) The  $z$ -statistic is (i) not large (ii) large (iii) borderline.
  - (d) The  $P$ -value is (i) not small (ii) small (iii) borderline.
  - (e) Based on the data provided, can we conclude that less than .84 of all Americans believed in 2004 that elected officials should set their convictions aside to get results in government?
  - (f) Which of these is a potential source of bias?
    - i. The proportion of Republicans in the sample was much more than the proportion in the population.
    - ii. The survey was anonymous.
    - iii. Both (i) and (ii).
    - iv. Neither (i) nor (ii).
  - (g) Suppose the sample proportion had been found to be 0.90. Explain why a formal test would not be necessary in order to conclude that there isn’t enough evidence to convince someone that less than 0.84 of all Americans agreed with the statement in 2004.