

**Instructions:** Show all work to receive full credit. You should note any formulas used or calculator functions used, their inputs and outputs. I cannot grade work if I don't know where an answer came from. Be sure complete all parts of each questions, including requests for interpretation and explanations. Be as thorough as possible.

1. 1500 Americans were asked if they thought the country was headed in the right direction and 45% of respondents in that poll responded "yes". Test if this is good evidence that fewer than half of all Americans think that the country is headed in the right direction.

$$H_0: p = .5$$

$$H_a: p < .5$$

1 Prop Z Test

$$p_0 = .5$$

$$X = 675 = .45 * 1500$$

$$n = 1500$$

$$\text{Prop} < p_0$$

$$z = -3.87...$$

$$p = 5.3776 \times 10^{-5} < .05$$

reject  $H_0$

This is good evidence to think fewer than half of all Americans think the country is headed in the right direction.

2. A sample of 35 adults were sampled and spend a mean of 45.6 hours per week working. If the standard deviation of the sample was 5.3 hours, is this good evidence to think that most working adults work more than 40 hours per week?

T-Test (Stats)

$$\mu_0 = 40$$

$$\bar{x} = 45.6$$

$$s_x = 5.3$$

$$n = 35$$

$$\mu > \mu_0$$

$$H_0: \mu = 40$$

$$H_a: \mu > 40$$

$$t = 6.25...$$

$$p = 2.037 \times 10^{-7} < .05$$

reject  $H_0$

yes, there is good evidence to think that working adults work more than 40 hours per week