

Homework Solutions

Chapter 9 – Page 580

Exercise 7

- (a) This is referring to the population of pregnant women who work with a computer 1 to 20 hours per week.
- (b) The problem says “test the hypotheses,” so show all 7 steps.

1. Let p be the proportion of the population described in part (a) that have miscarriages.

$$H_0 : p = 0.20$$

$$H_1 : p > 0.20$$

2. $\alpha = 0.01$ (from part (c)).

$$3. z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$

4. We have $n = 697$ and $\hat{p} = \frac{155}{697} = 0.2224$. So

$$\begin{aligned} z &= \frac{0.2224 - 0.20}{\sqrt{\frac{(0.20)(0.80)}{697}}} \\ &= \frac{0.0224}{0.0152} \\ &= 1.478. \end{aligned}$$

5. $p\text{-value} = \text{normalcdf}(1.478, E99) = 0.0697$.

6. Accept H_0 .

7. The proportion of miscarriages in this population is 20%.

- (c) The results are *not* significant at the 1% level. The p -value is 0.0697, which is greater than 0.01.