

Warm-up

In order to determine the mean amount of time seniors spend doing homework per weeknight, we take an SRS of 400 students and find a mean time of 77 minutes. Assume the standard deviation of all students to be 28 minutes. Construct a 95% confidence interval.

Significance Tests

Work through #35 on page 543

$$\mu = 354 \text{ units}$$
$$\sigma = 33 \text{ units}$$

Null Hypothesis

$$H_0: \mu = 354$$

Reduce price: next 3 wks
(405, 378, 411)

Did sales go up?

Possible Alternate Hypotheses

$$H_a: \mu < \mu_0$$

sales went down

$$H_a: \mu > \mu_0$$

sales went up

$$H_a: \mu \neq \mu_0$$

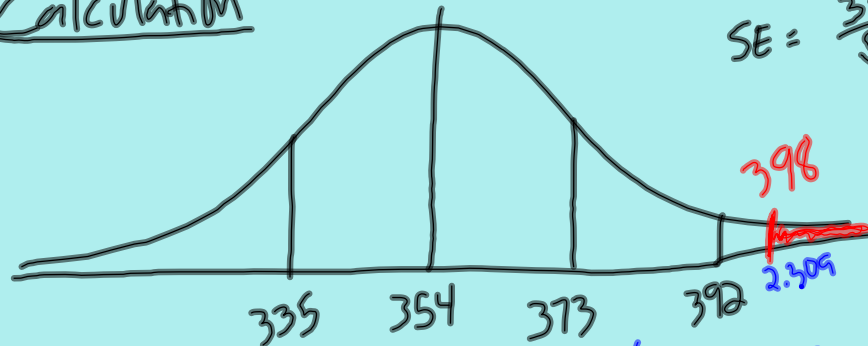
sales changed

$$\text{Sample } \bar{x} = 398$$

$$n = 3$$

$$SE = \frac{33}{\sqrt{3}} \approx 19$$

Calculation



$$\text{Test Statistic } Z = \frac{398 - 354}{33/\sqrt{3}} = 2.309$$

$$p = \text{normalcdf}(2.309, 99) = .010 \text{ or } 1\%$$

Writing Conclusions

Significance Level α
 $\alpha = .05$ $\alpha = .01$
(cut-off points)

Statistical Conclusion

$\alpha = .05$ (5% level of significance)

There is ^{not} sufficient evidence to reject the null hypothesis in favor of the alternate hypothesis at the ~~5%~~ significance level

$p = 0.05$

Contextual Conclusion

There is ^{not} sufficient evidence to suggest that weekly coffee sales increased.

Shopping

15 years ago $n=1.3$ billion $p=.117$

Is there evidence that the USPS has less business now (compared to 15 years ago)?

Hypotheses

Conclusions ($\alpha=.05$)