



Example 1:

Illini Donuts claims that their donuts weight around 8 oz each on average. Alex, who loves donuts, feels that some days the donuts were much bigger and some days they were much smaller recently. Alex randomly selects 12 different days to buy donuts from Illini Donuts and weight them. The sample average is 8.7 oz with the sample standard deviation of 1.4 oz.

Conduct a hypothesis test at $\alpha = 0.1$.

Step 0: Select the appropriate test

Step 1: State the hypotheses

$$H_0: \mu = 8 \text{ oz} \quad \text{vs.} \quad H_1: \mu \neq 8 \text{ oz}$$

Other options: $H_0: \mu = 8 \text{ oz} \quad \text{vs.} \quad H_1: \mu > 8 \text{ oz}$

$H_0: \mu = 8 \text{ oz} \quad \text{vs.} \quad H_1: \mu < 8 \text{ oz}$

Step 2: Compute the test statistic

Step 3: Compute the p -value

Step 4: State the conclusion

$p\text{-value} \leq \alpha$: Reject H_0

$p\text{-value} > \alpha$: Fail to reject H_0

Since $p\text{-value} = \alpha = 0.1$,