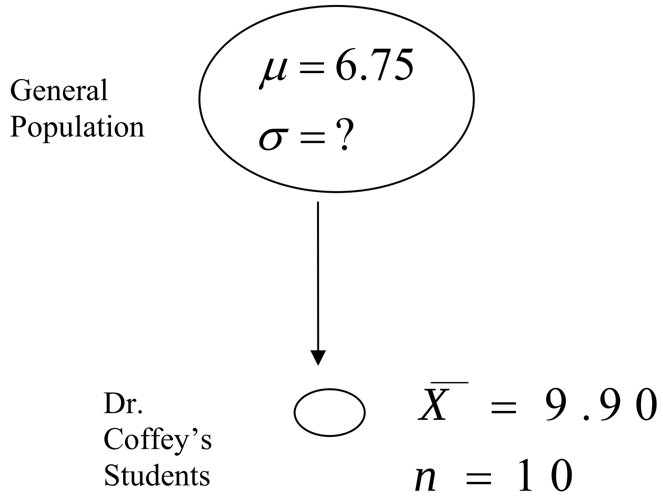
One-Sample t Test
Dr. Coffey's Problem



Step 1

$$H_0 : \mu = 6.75$$
$$H_1 : \mu \neq 6.75$$
$$\alpha = .05$$

Step 2

$$\bar{X} = 9.90$$

$$s = \sqrt{\frac{\sum(X - \bar{X})^2}{n-1}} = 4.07$$

$$n = 10$$

$$s_{\bar{X}} = \frac{s}{\sqrt{n}} = \frac{4.07}{\sqrt{10}} = 1.29$$

$$t_{calc} = \frac{\bar{X} - \mu}{s_{\bar{X}}} = \frac{9.90 - 6.75}{1.29} = 2.44$$

Step 3

1. Critical Value (CV) Approach

$$t_{crit} = t_{\alpha,df} = t_{.05,9} = 2.262$$

$$t_{calc} \geq t_{crit}$$

Reject H_0

2. The p value Approach

$$p = .037$$

$$p \leq \alpha$$

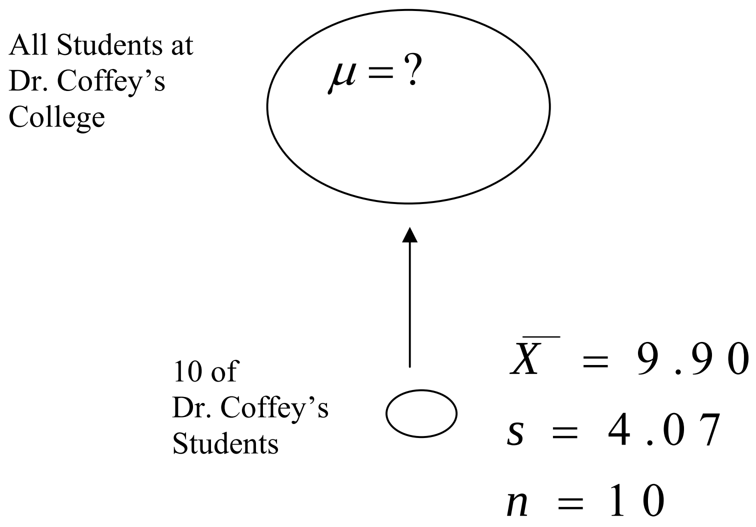
Reject H_0

Step 4

Reject H_0

The mean for Dr. Coffey's students is significantly higher than that of the national average ($t_9 = 2.44, p = .037$).

Interval Estimation



Point Estimate ± (Critical Value at α)(SE)

$$\bar{X} \pm t_{\alpha,df} \cdot s_{\bar{X}}$$

A 95% (α = .05) Confidence Interval

$$9.90 \pm (2.262) \cdot (1.29) = 9.90 \pm 2.92$$

$$6.98 < \mu < 12.82$$

A 99% (α = .01) Confidence Interval

$$9.90 \pm (3.250) \cdot (1.29) = 9.90 \pm 4.19$$

$$5.71 < \mu < 14.09$$