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STAT 3093, ASSIGNMENT #7

Q2: EX 28, PG 507

$H_0: \mu_1 = \mu_2$ μ_1 = mean for cola
$H_a: \mu_1 - \mu_2 > 0$ μ_2 = mean for strawberry.

$$t = \frac{\bar{x} + \bar{y} - \Delta_0}{\sqrt{\frac{s_1^2}{m} + \frac{s_2^2}{n}}} = \frac{554 - 540 - 0}{\sqrt{\frac{15^2}{15} + \frac{21^2}{15}}} = 2.10$$

$$df: v = \frac{\left(\frac{s_1^2}{m} + \frac{s_2^2}{n}\right)^2}{\frac{(s_1/m)^2}{m-1} \quad \frac{(s_2/n)^2}{n-1}} = 25$$

tail area = 0.977

P-value = 1 − tail area = 0.0229

The evidence shows that cola has a higher compression strength if one chooses to use a significance level $\alpha > 0.0229$.

The neccessary assumptions are that the compression strength of both types of drink are normally distributed.