Subject: F Test Assignment

1) Hyd $n = 11$, Mumbai $n = 9$

F test $= \frac{S_1^2}{S_2^2}$ Where $S_1 > S_2$

Variance $s^2 = \frac{\Sigma(x - \bar{x})^2}{n-1}$

$\bar{x} = \frac{\Sigma x_i}{n} = \frac{2121}{11} = 192.81$

$\bar{y} = \frac{\Sigma y_i}{n} = \frac{3102}{9} = 344.66$

$\Sigma (x - \bar{x})^2 = 17374.69$

$\Sigma (y - \bar{y})^2 = 3485.888$

$S_x^2 = \frac{\Sigma x - \bar{x}}{n-1} = \frac{17374.69}{10} = 1737.46$

$S_y^2 = \frac{\Sigma(y - \bar{y})^2}{n-1} = \frac{3485.888}{8} = 435.736$

test $= \frac{S_x^2}{S_y^2} = \frac{1737.46}{435.736} = 3.9874$

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f_{test} (dof 10, dof 8) = 3.35

↓ 11−1 | 9−1

As $f_{test} = 3.35 < f_{critical} = 3.98$, therefore we reject hypothesis.

3) s_1 = Sample SD, σ = Pop SD

$$f_{stat} = \frac{s_1^2 / \sigma_1^2}{s_2^2 / \sigma_2^2}$$

Womens data

$$f_{stat} = \frac{35^2/50^2}{45^2/50^2} = \frac{1225/900}{2025/2500} = 1.68$$

Dof for $v_1 = 7-1 = 6$

$v_2 = 12-1 = 11$

Mens data

$$f_{stat} = \frac{45^2/50^2}{35^2/30^2} = \frac{2205/2000}{1225/900} = \frac{0.81}{1.361} = 0.59$$

Dof for $v_1 = 12-1 = 11$

$v_2 = 7-1 = 6$

4) $P(f_{stat_{11,6}} > 3.881) = 2.5\%$.

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2) $P\left(\frac{1}{F_{stat}_{11,6}} > \frac{1}{3.881}\right) = 2.5\%$.

2) $P\left(F_{stat}_{6,11} < 0.258\right) = 2.5\%$.

As per above cumulative Probability of F Stats is greater than 10%.

Question 2 & 5 - I was not able to Solve these Problems.

The End

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