

Part A: Simple Linear Regression / Correlation

Q.A.1. P.1.a. .8245 P.1.b. $\hat{Y}_6 = 113.11$ $SE\{\hat{Y}_6\} = \sqrt{499(.0540)} = 5.19$ 113.11 ± 10.98 CI

P.1.c. $SE\{Y_{pred}\} = \sqrt{499(1.0540)} = 22.93$ $PI: 113.11 \pm 48.39$

P.1.d. $r = +\sqrt{.8245} = .9080$ $t = \frac{.9080}{\sqrt{\frac{1-.8245}{19-2}}} = 8.94$ $t_{.025,17} = 2.110$

P.1.e. $z' = \frac{1}{2} \ln\left(\frac{1+.9080}{1-.9080}\right) = 1.5160$ $1.96 \sqrt{\frac{1}{19-3}} \approx \cancel{.49} = .7$ $1.52 \pm 0.49 = (1.03, 2.01)$

$$\left(\frac{e^{2(1.03)} - 1}{e^{2(1.03)} + 1}, \frac{e^{2(2.01)} - 1}{e^{2(2.01)} + 1} \right) = \left(\frac{6.85}{8.85}, \frac{54.70}{56.70} \right) = (.774, .965)$$

Q.A.2. $r^2 = 0.030$ $n = 136$ $p = 1$ $T.S. F = \frac{.030/1}{.970/134} = 4.144$ $F_{.05,1,134} \approx 3.92$