

Date ___/___/___

Assignment 2 Pg 8-2

Roll no. 2

1. $S_{xy} = 34915$ $S_{xx} = 20280$

$\hat{\beta} = 1.724198$ $\hat{\alpha} = 27.14317$

$$\hat{y} = 27.14317 + 1.724198x$$

There is linear relation b/w x & y

2. $S_{xy} = 875.16$ $S_{yy} = 6409.7125$

$S_{xx} = 501.66$

$\hat{\beta} = 2.90115$ $\hat{\alpha} = 3.74809$

$$\hat{y} = 3.74809 + 2.90115x$$

95% CI of β

$F(0.37736, 5.42494)$

95% CI of μ_0

$= (96.17966, 143.40852)$

Q4. one way ANOVA model

assumption

2) $y_i = \mu + \tau_j + e_{ij}$

e_{ij} iid y

$\sim N(0, \sigma^2)$

H_0 : mean claimant equal

$$SS_{TOT} = 69930.06$$

$$SS_{Reg} = 22325.69$$

$$SS_{Res} = 47604.37$$

Table :

4	22325	5581.42
28	47604	1700.16
32	69930	

$$T.S. = 3.283$$

$$F_{4,28,0.05} = 2.714$$

reject H_0 .

H_0 : salaries independent of papers cleared

$$T.S. = 49.91146$$

$$\chi^2_{0.01, 8} = 12.59$$

reject H_0 .

5. assumption : pop. normal • pop. have common var.
• obs. are iid

$$\text{mean rate of } \sqrt{n} = 4.52443$$

$$\text{value at } \alpha = 0.12127$$

$$X_{ij} = \mu + \tau_i + e_{ij}$$

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Saathi

$$H_0 : T_i = 0$$

$$SS_{\text{rate}} = 21.183$$

$$SS_{\text{res}} = 1.236$$

$$TS = 45.638$$

$$F_{3,8,1\%} = 7.981$$

do not reject H_0 .

$$6. \quad S_{xy} = 661.2 \quad S_{xx} = 39946$$

$$\text{coefficient} = \boxed{0.9446623}$$

$$\boxed{\hat{y}_i = 9.2295 + 12.04371x}$$

$$SS_{\text{res}} = 31982.69508$$

$$S_{yy} = 39946$$

$$\text{coeff. of deter.} = \boxed{19.935\%}$$

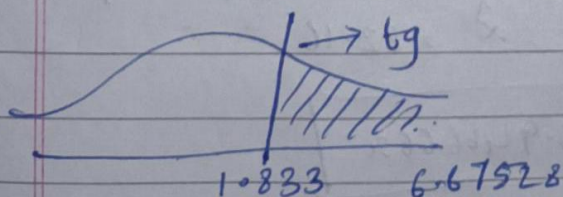
- model not a good fit
- alter model to make good fit

$$7. \quad \hat{\alpha} = 10.7896 \quad \hat{\beta} = 0.4844$$

$$y_i = \boxed{10.7896 + 0.4844x}$$

$$TS = 6.67528$$

$$\frac{1}{\sigma^2} = 22.193561$$



assumptions

$\epsilon_i \sim N(0, \sigma^2)$

variables are iid

all pop follow normal.

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$\beta > 0$ There is linear relationⁿ.

$$r = 0.91214$$

95% CI of $y_0^{\wedge}$

$$(10.93027, 33.5689)$$

95% CI of $\mu_0^{\wedge}$

$$= (18.86409, 25.6591)$$

errors aren't iid & don't follow $N(0, \sigma^2)$. alter model to fit assumptions.

9. Based on scatterplot there is no cor.

$$R = \sqrt{-0.686001} = r$$

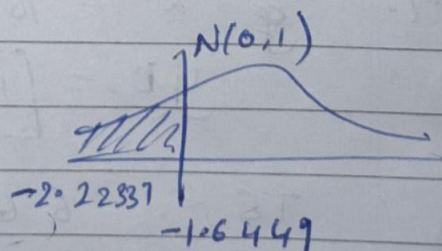
$$H_0: \rho = 0$$

$$H_1: \rho > 0$$

sea

$$T.S. = -2.22339$$

reject H_0 .



$$\hat{\beta} = -3.94666 \quad \hat{\alpha} = 82.16$$

$$\boxed{\hat{y}_i = 82.16 - 3.94666x}$$

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$$\text{coeff. of det.} = \boxed{47.059\%}$$

at $n=1$

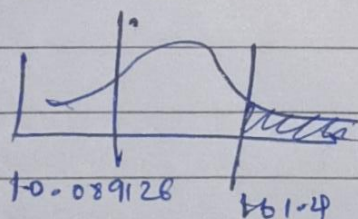
$$\hat{y}_i = \boxed{79.21334}$$

10. ANOVA table

Reg.	1	0.00115238	0.00715238
Res	1	0.00011422	0.00011422
Total	1	0.0012666	

~~Ho~~ H_0 : no impact .

$$T.S = 10.089126 \sim F_{1,1}$$



$\therefore$ do not reject H_0 .