

# Lec 2:1 Part A

\*2:1 Lec - 12 Employees, Salary (\$1,000s),

\* Education, Years Experience.

LIST.

o	yrs	edu	sal	prd	res
1	14	14	28	30.931	-2.640
2	25	14	43	39.367	3.229
3	21	14	36	36.299	-.229
4	22	13	38	35.922	2.127
5	21	12	31	34.011	-3.049
6	17	12	30	30.944	-.913
7	30	9	35	37.481	-2.160
8	23	15	35	38.977	-3.695
9	23	12	35	35.545	-.913
10	18	9	33	28.279	4.989
11	23	17	45	41.265	3.312
12	24	9	33	32.880	-.056

$y_1 = x_1 + x_2$

CORR sal edu yrs /STAT.

	Mean	Std. Deviation	N
sal	35.16	4.802	12
edu	12.50	2.541	12
yrs	21.75	4.115	12

$SS_y = (12-1)4.802^2$

	sal	edu
X1 edu	.488	.107
X2 yrs	.549	-.178
	.064	.579

$SS_y = \sum(y - \bar{y})^2$     $SS_x = \sum(x - \bar{x})^2$     $SS_{y-x} = \sum(y - \hat{y})^2$

REGRESS /DEP = sal /ENTER edu yrs /SAVE PRED(prd) RESI(res).

Model	R	R Square
1	$\sqrt{.656} = .810$	.656

$\frac{166.493}{253.618}$

$b_{y1.2} = b_1 = \frac{.488 - .549 \times -.178}{1 - (-.178)^2} \times \frac{4.90}{2.54}$

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	166.493	2	83.246	8.599	.008
Residual	87.125	9	9.681		
Total	253.618	11			

$253.618$   
 $166.493$   
 $87.125$

$\frac{166.493}{2}$

4.05

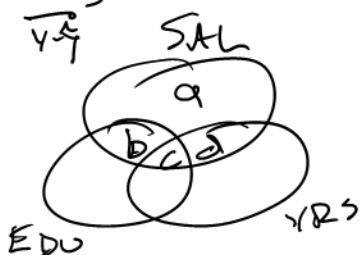
$b_2 = -.767$   
 $b_0 = 35.16 - 1.144 \times 12.50 - .767 \times 21.75 \approx 4.178$

Model	B	Std. Error	t	Sig.
1 (Constant)	4.178	7.525	.555	.592
edu	1.144	.375	3.049	.014
yrs	.767	.232	3.310	.009

$\hat{y} = b_0 + b_1x_1 + b_2x_2 = 4.178 + 1.144x_1 + .767x_2$

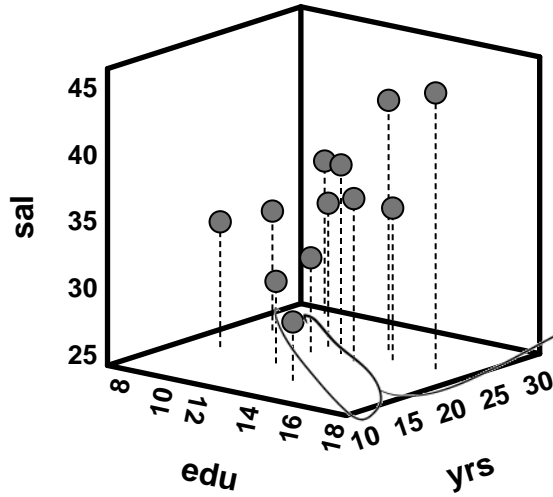
	Mean	Std. Deviation	N
Predicted Value $\hat{y}$	35.16	3.890	12
Residual	.000	2.814	12

$SS_{reg} = (12-1)3.890^2 \approx 166.493$   
 $SS_{res} =$



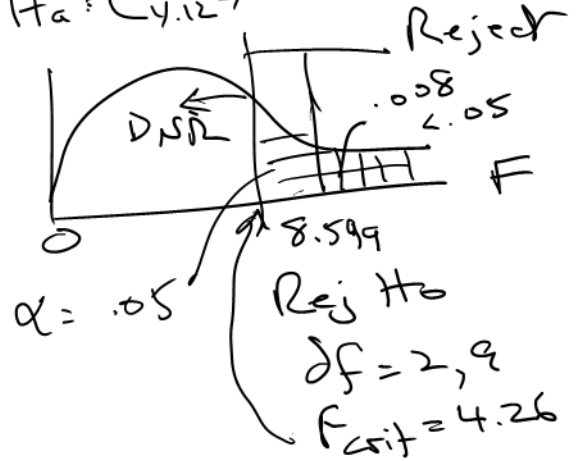
$a + b + c + d = SS_y = 253.618$   
 $a = SS_{y-\hat{y}} = 87.125$   
 $b + c + d = SS_x = 166.493$

GRAPH /SCATTERPLOT(XYZ)=yrs WITH sal WITH edu.



$$H_0: \rho_{y.12} = 0 \text{ or } \rho_{y.12}^2 = 0$$

$$H_a: \rho_{y.12} \neq 0$$



$$r = -.178$$

Best fit Plane/Surface  
 $\sum (y - \hat{y}) = 0$   
 $\sum (y - \hat{y})^2 = \text{MIN}_s$

