

(Year)	(Unemp)	(Riots)					
i	$x_i$	$y_i$	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	$y_i - \bar{y}$	$(y_i - \bar{y})^2$	$(x_i - \bar{x}) \cdot (y_i - \bar{y})$
1930	8.7	3	-9.5	90.25	-17	289	161.5
1931	15.9	28	-2.3	5.29	8	64	-18.4
1932	23.6	21	5.4	29.16	1	1	5.4
1933	24.9	17	6.7	44.89	-3	9	-20.1
1934	21.7	37	3.5	12.25	17	289	59.5
1935	20.1	30	1.9	3.61	10	100	19
1936	16.9	31	-1.3	1.69	11	121	-14.3
1937	14.3	22	-3.9	15.21	2	4	-7.8
1938	19.0	2	0.8	0.64	-18	324	-14.4
1939	17.2	9	-1.0	1.00	-11	121	11.0
$\Sigma$	182.3	200	$SST_x = 204$		$SST_y = 1322$		180.?
$\Sigma/n$	$\bar{x} = 18.2$	$\bar{y} = 20.0$					
$\Sigma/(n-1)$				22.67		146.89	20.16
				= var(x)		= var(y)	= cov(x, y)
				$s_x = 4.76$		$s_y = 12.1$	

Slope:  $\widehat{\beta}_1 = \frac{cov(x,y)}{var(x)}$

Intercept:  $\widehat{\beta}_0 = \bar{y} - \widehat{\beta}_1 \bar{x}$

i	$y_i$	$\widehat{y}_i = \widehat{\beta}_0 + \widehat{\beta}_1 x_i$	$\widehat{u}_i = y_i - \widehat{y}_i$	$\widehat{u}_i^2 = (y_i - \widehat{y}_i)^2$	$(x_i - \bar{x}) \cdot \widehat{u}_i$
1930	3	11.5	-8.5	72.7	81.2
1931	28	17.9	10.1	101.4	-23.5
1932	21	24.8	-3.8	14.3	-20.3
1933	17	25.9	-8.9	79.8	-59.6
1934	37	23.1	13.9	193.6	48.3
1935	30	21.7	8.3	69.5	15.6
1936	31	18.8	12.2	148.4	-16.2
1937	22	16.5	5.5	30.2	-21.6
1938	2	20.7	-18.7	349.1	-14.4
1939	9	19.1	-10.1	101.7	10.4
$\Sigma$	200			1160.7	
$\Sigma/(n-2)$				$\widehat{\sigma}^2 = 145$	

$\widehat{\sigma} = 12$

Standard error of slope:  $se(\widehat{\beta}_1) = \frac{\sqrt{\widehat{\sigma}^2}}{\sqrt{SST_x}} = \frac{\widehat{\sigma}}{\sqrt{n-1} \cdot s_x} =$

Standard error of intercept:  $se(\widehat{\beta}_0) = \sqrt{\frac{\widehat{\sigma}^2}{SST_x} \cdot \frac{\sum x_i^2}{n}} =$