UDS

Estadistica Inferencial

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Problema 1-5

Persona	Prot(g)	Musculo (kg)	$(x_i-\bar{x})$	$(y_i-\bar{y})$	y_i-y
1	80	60	-13.33	39.99	39.99
2	100	65	6.67	13.34	13.34
3	90	62	3.33	3.34	3.33
4	85	61	8.33	16.66	16.66
5	110	67	16.67	66.68	66.68
6	95	63	1.67	0	0

x_i-x^2	y_i-y^2	$y^\wedge$	$y_i-y_i^\wedge$	y_i-y_1	$(y_i-y^\wedge)^2$
177.68	4	59.8	0.19	0.036	1599.20
44.48	4	64.61	0.34	0.15	117.95
11.08	1	62.21	-0.21	0.04	11.15
69.38	4	61.01	-0.01	0.0009	277.55
277.88	16	67.01	-0.01	0.0001	4446.22
2.78	0	63.41	-0.41	0.168	0

$\bar{x} = 93.33$

$\bar{y} = 63$

$80-93.33=-13.22$
$100-93.33=6.67$
$90-93.33=-3.33$
$85-93.33=-8.33$
$110-93.33=16.67$
$95-93.33=1.67$

$67-63=4$
$63-63=0$

$60-63=-3$
$65-63=2$
$62-63=-1$
$61-63=-2$

$(13.33)^2+(6.67)^2+(5.53)^2$
$(8.33)^2+(16.67)+(7.67)^2=$

$177.68+44.48+11.08+$
$64.38+277.88+2.78=$
583.28_{11}

$(3)^2+(2)^2+(4)^2+(2)^2+(4)^2+(0)^2=34$

$(583.28)(34)=\sqrt{19\,831.52}=140.82$

$140\div 140.82=0.99=1$ Punto fuerte

$y=B_0+B_1x \qquad B_1=\frac{\sum(x_i-\bar{x})(y_i-\bar{y})}{\sum(x_i-\bar{x})^2}$

$B_1=140\div 583.28=0.24$

$B_0=63-0^2=24=62.76$

$B_0=63-0.224(93.33)=40.61$

$B_0=40.61$

$B_{12}=\frac{1-0.06}{6\,512.07}=9.21-1=8.21$

Ojo: Por cada (g) de Protcina que consoma una Persona aumento 0.24 kg

Problema
2-6

P	H_2O	Peso	$(x_i-\bar{x})$	(y_i-y)	y_i-y	$(x_i-x_i)^2$	$(y_i-y)^2$
1	2.0	0.5	-0.36	-0.15	0.05	.129	0.022
2	2.5	0.7	0.14	0.05	0.007	.019	.0025
3	1.8	0.4	-0.56	-0.25	0.14	.313	.062
4	3.0	0.9	0.64	0.25	0.16	.409	.062
5	2.2	0.6	-0.16	0.05	0.008	.025	.0025
6	2.7	0.8	0.34	0.15	0.054	.115	0.022
					0.416	1.01	0.173

$\hat{y_i}$	ϵ $y_i-\hat{y_i}$	$y_i-\hat{y_i}$	$\lvert y_i-\hat{y_i}\rvert$
1.13	-1.08	0.16	0.25
1.13	-.63	.39	.49
1.04	-.64	.409	.16
1.54	-.64	.409	0.81
1.21	-.61	.37	0.36
1.41	-.61	.37	0.64
	4.93		2.71

$\bar{x} = 2.36$
$\bar{y} = 0.65$

$2 - 2.36 = -0.26$
$2.5 - 2.36 = 0.14$
$1.8 - 2.36 = -0.56$
$3 - 2.36 = 0.64$
$2.2 - 2.36 = -0.16$
$2.7 - 2.36 = 0.34$

$0.5 - 0.65 = -0.15$
$0.7 - 0.65 = 0.05$
$0.4 - 0.65 = -0.25$
$0.9 - 0.65 = 0.25$
$0.6 - 0.65 = -0.05$
$0.8 - 0.65 = 0.15$

0.05
0.007
0.14
0.16
0.008
0.057
0.416

$1.01 \times 0.173 = 0.1747$

$\sqrt{0.1747} = 0.418$

$= 0.416 \div 0.418 = 0.99 = 1$ Muy fuerte

$\hat{y} = B_0 + B$

$B_1 = 0.41 \div 1.01 = .411$

$B_0 = 0.65 - 0.41\,(2.36)$

$B_0 = 0.65 - 0.96 = 0.311$

$2 \times 0.41 + 0.31 = 1.13$
$2.5 \times 0.41 + 0.31 = 1.15$
$1.8 \times 0.41 + 0.31 = 1.04$
$3.0 \times 0.41 + 0.31 = 1.54$
$2.2 \times 0.41 + 0.31 = 1.21$
$2.7 \times 0.41 + 0.31 = 1.41$

$$R_2 = 1 - \frac{\sum (y^2 - \hat{y}_i)^2}{\sum (y_i - \bar{y}_2)^2}$$

$$R_2 = \frac{1 - 4.93}{2.71} = 1 - 1.82 = (1.82)^2 = 0.6724$$

Problema 3

M. Vegcl	O_i	$(O_i - \epsilon_i)^2$
$\frac{(40)(27)}{80} = \frac{1080}{80} = 13.5$	$12 - 13.50 = -1.50$	$\frac{2.25}{13.50} = 0.166$
	$18 - 15 = 3$	$\frac{9}{15} = 0.6$
M. Pt		
$\frac{(40)(30)}{80} = \frac{1200}{80} = 15$	$10 - 11.50 = -1.50$	
	$15 - 13.50 = 1.50$	$\frac{2.25}{11.50} = 0.19$
M. CH		
$\frac{(40)(27)}{80} = \frac{1080}{80} = 13.50$	$12 - 15 = -3$	
	$13 - 11.50 = 1.50$	$\frac{2.25}{13.50} = 0.166$
Frm pt		$\frac{9}{15} = 0.6$
$\frac{(40)(30)}{80} \quad \frac{1200}{80} = 15$		$\frac{2.25}{11.50} = 0.19$
Frm CH		
$\frac{(40)(23)}{80} = \frac{920}{80} = 11.50$		

$0.166 + 0.6 + 0.19 + 0.166 + 0.6 + 0.19 = 1.912$

$X^3 = 1.912$

Valor crítico 3.84

$\frac{1.912}{3.84} = 0.497911$ → Relación menos fuerte

Problema 4

Frecuencia Bajo

$\frac{(40)(35)}{140} = \frac{1400}{140} = 10$

Frecuencia Medio

$\frac{(40)(60)}{140} = \frac{2400}{140} = 17.14$

Frecuencia Alto

$\frac{(40)(45)}{140} = \frac{1800}{140} = 1285$

Mod Baja

$\frac{(50)(35)}{140} = \frac{1750}{140} = 12.5$

Mod Med

$\frac{(50)(60)}{140} = \frac{3000}{140} = 21.428$

Med Alto

$\frac{(50)(45)}{140} = \frac{2250}{140} = 16.07$

$O_i - E_i$

$20 - 10 = 10$

$15 - 17.14 = -2.14$

$5 - 12.85 = 61.62$

$10 - 12.50 = -2.50$

$25 - 21.428 = 3.57$

$15 - 16.07 = -1.07$

$(O_i - E_i)^2$

$\frac{100}{10} = 10$

$\frac{4.58}{17.14} = 0.267$

$\frac{61.62}{12.50} = 0.5$

$\frac{12.76}{21.428} = 0.59$

$\frac{1.14}{16.09} = 0.07$

	$O_i - E_i$	$(O_i - E_i)^2$
Activo Bajo		
$\frac{(50)(35)}{140} = \frac{1750}{140} = 12.50$	$5 - 12.50 = -7.50$	$\frac{36.25}{12.50} = 4.50$
Activo medio		
$\frac{(50)(60)}{140} = \frac{3000}{140} = 21.428$	$20 - 21.428 = 1.48$	$\frac{21.19}{21.428} = 0.1e$
Activo Alto		
$\frac{(50)(45)}{140} = \frac{2250}{140} = 16.07$	$25 - 16.07 = 8.93$	$\frac{79.74}{16.07} = 4.9c$

$10 + 0.267 + 4.79 + 0.5 + 0.59 + 0.07 + 4.50 + 0.104 + 4.96 = 25.777$

$\lambda^2 = 25.777$

Valor Critico

$\frac{25.777}{3.84} = 6.711$