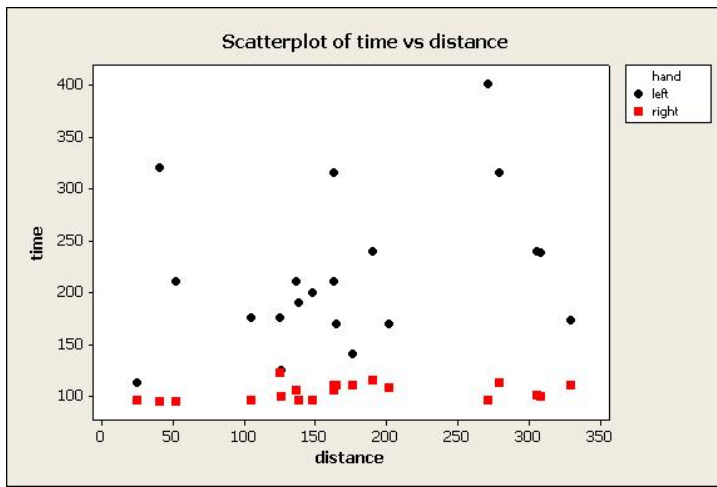


Example: Reaction Time in a Computer Game vs Distance to move mouse and Hand used. Data from table 2.13 in textbook



Coding of hand: right = 0 left = 1

Regression Analysis: time versus distance, hand, dist*hand

The regression equation is

$$\text{time} = 99.4 + 0.028 \text{ distance} + 72.2 \text{ hand} + 0.234 \text{ dist*hand}$$

Predictor	Coef	SE Coef	T	P
Constant	99.36	25.25	3.93	0.000
distance	0.0283	0.1308	0.22	0.830
hand	72.18	35.71	2.02	0.051
dist*hand	0.2336	0.1850	1.26	0.215

S = 50.6067 R-Sq = 59.8% R-Sq(adj) = 56.4%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	3	136948	45649	17.82	0.000
Residual Error	36	92198	2561		
Total	39	229146			

Source	DF	Seq SS
distance	1	6303
hand	1	126562
dist*hand	1	4083

Unusual Observations

Obs	distance	time	Fit	SE Fit	Residual	St Resid
25	163	315.00	214.29	11.38	100.71	2.04R
30	271	401.00	242.65	17.19	158.35	3.33R
31	40	320.00	182.09	20.68	137.91	2.99R

R denotes an observation with a large standardized residual.

Regression Analysis: time versus distance, hand

The regression equation is
time = 79.2 + 0.145 distance + 112 hand

Predictor	Coef	SE Coef	T	P
Constant	79.21	19.72	4.02	0.000
distance	0.14512	0.09324	1.56	0.128
hand	112.50	16.13	6.97	0.000

S = 51.0116 R-Sq = 58.0% R-Sq(adj) = 55.7%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	2	132865	66433	25.53	0.000
Residual Error	37	96281	2602		
Total	39	229146			

Unusual Observations

Obs	distance	time	Fit	SE Fit	Residual	St Resid
25	163	315.00	215.39	11.44	99.61	2.00R
30	271	401.00	231.10	14.67	169.90	3.48R
31	40	320.00	197.55	16.80	122.45	2.54R

R denotes an observation with a large standardized residual.

Regression Analysis: time versus hand

The regression equation is
time = 104 + 112 hand

Predictor	Coef	SE Coef	T	P
Constant	104.25	11.62	8.97	0.000
hand	112.50	16.43	6.85	0.000

S = 51.9573 R-Sq = 55.2% R-Sq(adj) = 54.1%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	126562	126562	46.88	0.000
Residual Error	38	102583	2700		
Total	39	229146			

Unusual Observations

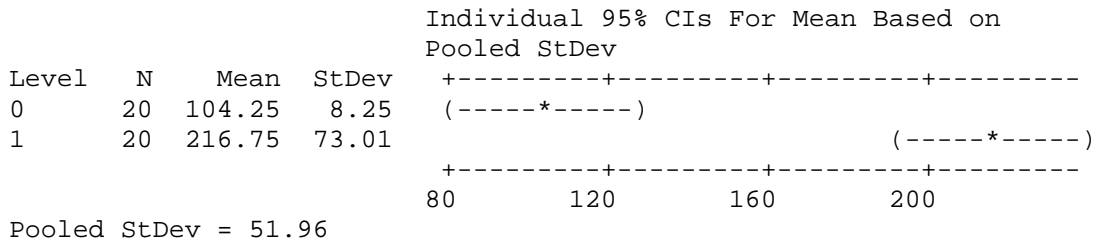
Obs	hand	time	Fit	SE Fit	Residual	St Resid
30	1.00	401.00	216.75	11.62	184.25	3.64R
31	1.00	320.00	216.75	11.62	103.25	2.04R
32	1.00	113.00	216.75	11.62	-103.75	-2.05R

R denotes an observation with a large standardized residual.

One-way ANOVA: time versus hand

Source	DF	SS	MS	F	P
hand	1	126563	126563	46.88	0.000
Error	38	102584	2700		
Total	39	229146			

S = 51.96 R-Sq = 55.23% R-Sq(adj) = 54.05%



Two-Sample T-Test and CI: time, hand

Two-sample T for time

hand	N	Mean	StDev	SE Mean
0	20	104.25	8.25	1.8
1	20	216.8	73.0	16

Difference = $\mu(0) - \mu(1)$
Estimate for difference: -112.500
95% CI for difference: (-146.889, -78.111)
T-Test of difference = 0 (vs not =): T-Value = -6.85 P-Value = 0.000
DF = 19