Univariate Regression

When introducing my students to regression analysis, I tell them that they have been conducting regression analysis ever since they learned to calculate an average. I go on to explain that when there is variation in only one variable (Y), the regression is univariate and solution is the mean of the scores. Here I demonstrate that with SPSS.

🔄 *Untitled1	[DataSet0] - IB.	— [
<u>Fili Ed Vier D</u> a	at <u>T</u> ranst <u>A</u> nal; <u>O</u>	<u>Grap U</u> tilit E <u>x</u> ter	ns <u>W</u> ind <u>H</u> el					
🔁 H			¥ 🎬					
Visible: 2 of 2 Variables								
	🕹 Y	💑 X	var					
1	1	0						
2	2	0						
3	3	0						
4	4	0						
5	5	0						
6			~					
Data View Variable View								
IBM SPSS Statistics Processor i Unicode:ON								

ta Univariate	×
	Dependent Variable: Model Eixed Factor(s): Plots Post Hoc EM Means Save Qptions Bootstrap WI S Weight:
OK Paste	Reset Cancel Help

Specify Model © Full factorial @ Build terms Eactors & Covariates: Model: X Suild Term(s) Type: Interaction I						
÷	В <u>⊻</u> *	(<u>W</u> ithin)	C <u>l</u> ear Term	<u>A</u> dd	<u>R</u> emove	
Build Term: Sum of sguares: Type III						

the Univariate: Options	×					
Display Descriptive statistics Estimates of effect size Observed power Parameter estimates Contrast coefficient matrix Heteroskedasticity Tests Model Breusch-Pagan test Model	 Homogeneity tests Spread vs. level plot Residual plot Lack of fit General estimable function F test Model White's test 					
 Parameter estimates with rob<u>u</u>st standard errors HCQ HC1 HC2 HC3 HC4 Significance level: .05 Confidence intervals are 95.0% Continue Cancel Help 						

Tests of Between-Subjects Effects

Dependent Variable: Y

Type III Sum			Mean			
Source		of Squares	df	Square	F	Sig.
X Hypothesis		45.000	1	45.000	18.000	.013
	Error	10.000	4	2.500 ^a		

a. MS(Error)

Parameter Estimates

Dependent Variable: Y									
					95% Confide	ence Interval			
		Std.			Lower	Upper			
Parameter	В	Error	t	Sig.	Bound	Bound			
[X=0]	3.000	.707	4.243	.013	1.037	4.963			

Our least squares estimate of the mean is 3. The t and the p are testing the null that the mean is zero. The confidence interval is for the value of mu.

🔚 One-Sample T Test		×
	Test Variable(s):	Options Bootstrap

One-Sample Statistics							
	Std. Std. Error						
	Ν		Mean	Deviation	Mean		
Y		5	3.00	1.581	.707		

One-Sample Test								
Test Value = 0								
	95% Confidence Interval of							
		Sig. (2- Mean the Difference						
	t	df	tailed)	Difference	Lower	Upper		
Y	4.243	4	.013	3.000	1.04	4.96		

If there were variance in X, then we would have a bivariate regression. If there were multiple X variables, then we would have a multiple regression.

Back to Wuensch's Stat Help Page