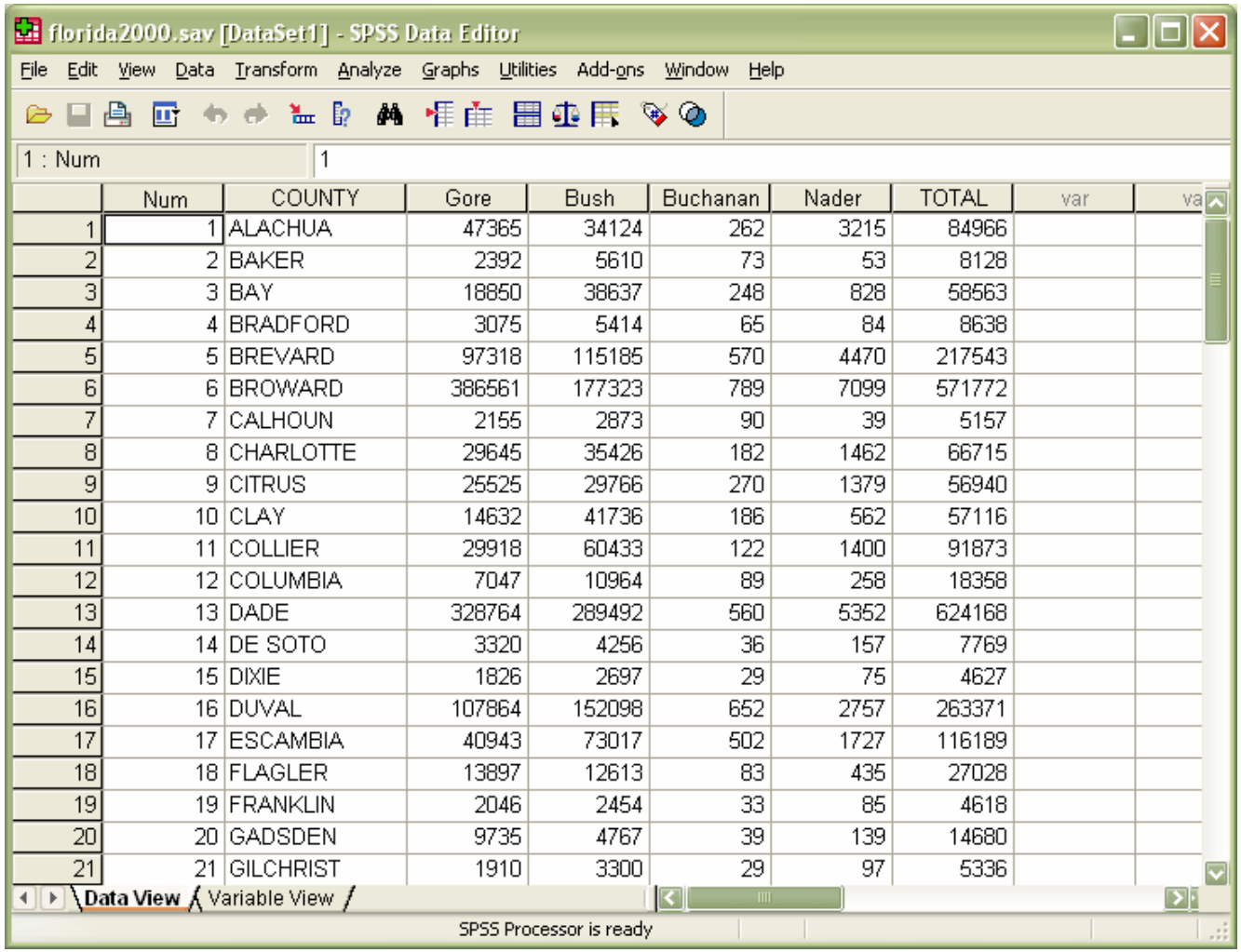
Regression with SPSS

Math 260

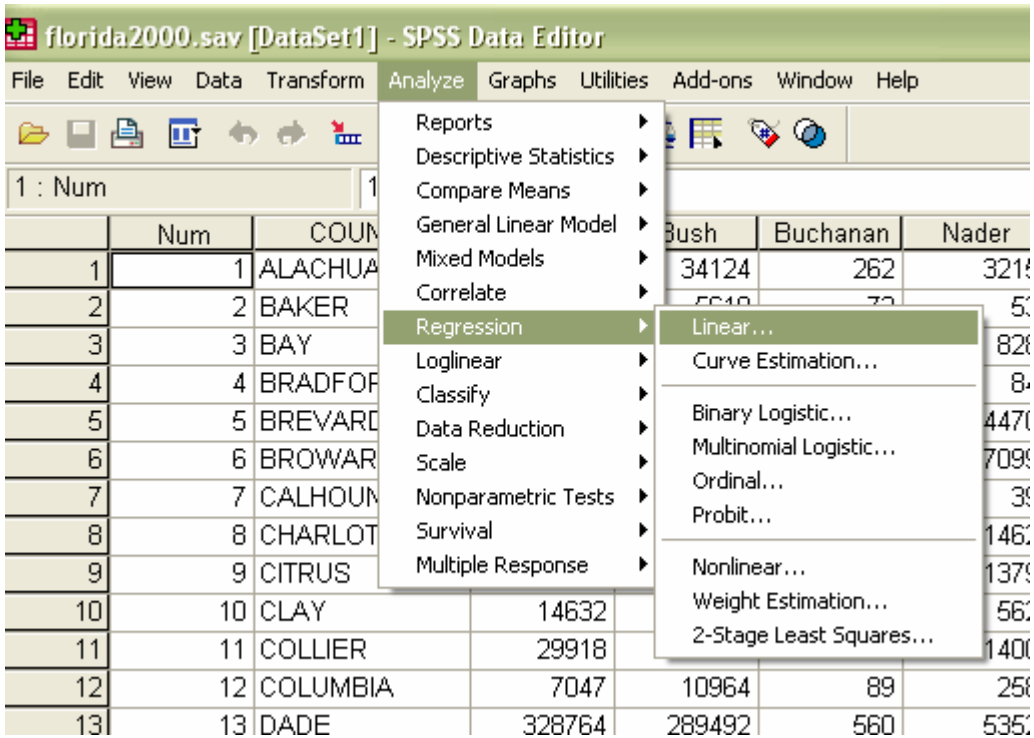
Open the Florida 2000 Election Data in SPSS



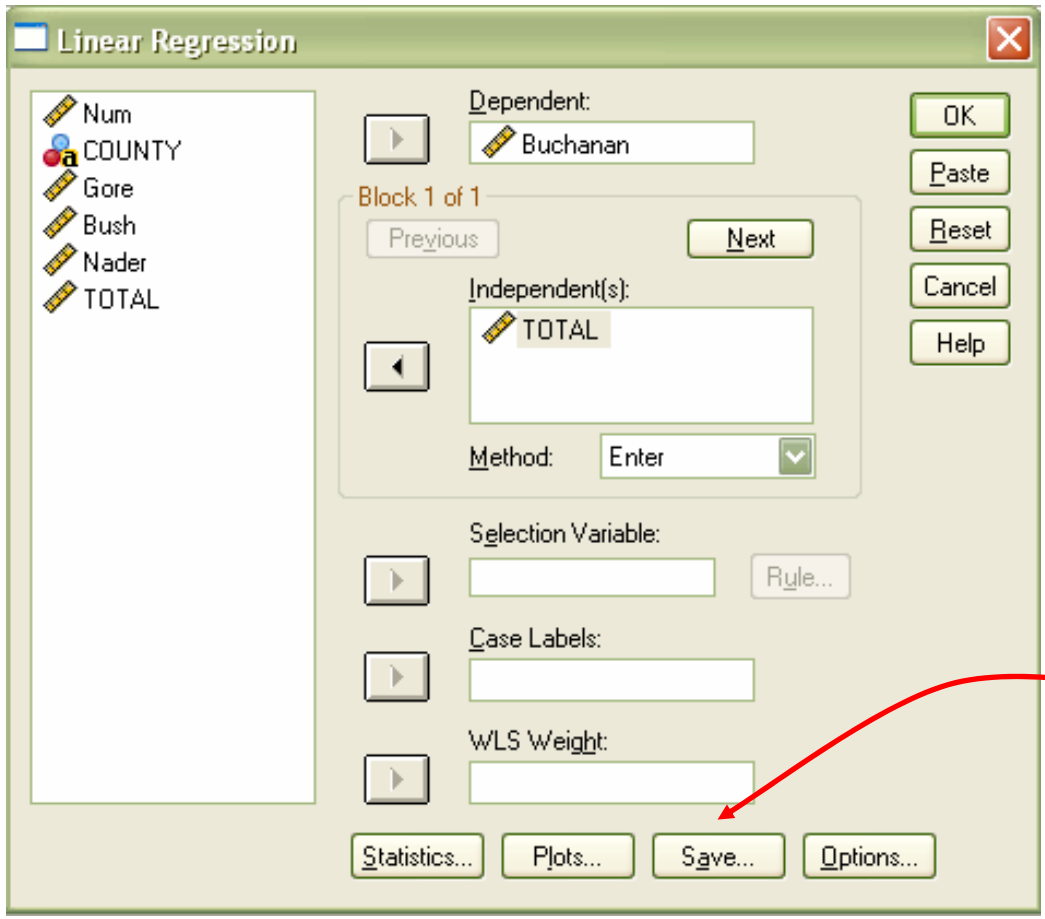
	Num	COUNTY	Gore	Bush	Buchanan	Nader	TOTAL	var	va
1	1	ALACHUA	47365	34124	262	3215	84966		
2	2	BAKER	2392	5610	73	53	8128		
3	3	BAY	18850	38637	248	828	58563		
4	4	BRADFORD	3075	5414	65	84	8638		
5	5	BREVARD	97318	115185	570	4470	217543		
6	6	BROWARD	386561	177323	789	7099	571772		
7	7	CALHOUN	2155	2873	90	39	5157		
8	8	CHARLOTTE	29645	35426	182	1462	66715		
9	9	CITRUS	25525	29766	270	1379	56940		
10	10	CLAY	14632	41736	186	562	57116		
11	11	COLLIER	29918	60433	122	1400	91873		
12	12	COLUMBIA	7047	10964	89	258	18358		
13	13	DADE	328764	289492	560	5352	624168		
14	14	DE SOTO	3320	4256	36	157	7769		
15	15	DIXIE	1826	2697	29	75	4627		
16	16	DUVAL	107864	152098	652	2757	263371		
17	17	ESCAMBIA	40943	73017	502	1727	116189		
18	18	FLAGLER	13897	12613	83	435	27028		
19	19	FRANKLIN	2046	2454	33	85	4618		
20	20	GADSDEN	9735	4767	39	139	14680		
21	21	GILCHRIST	1910	3300	29	97	5336		

Obtain a Regression of Buchanan Votes (*y*) against Total Votes (*x*)

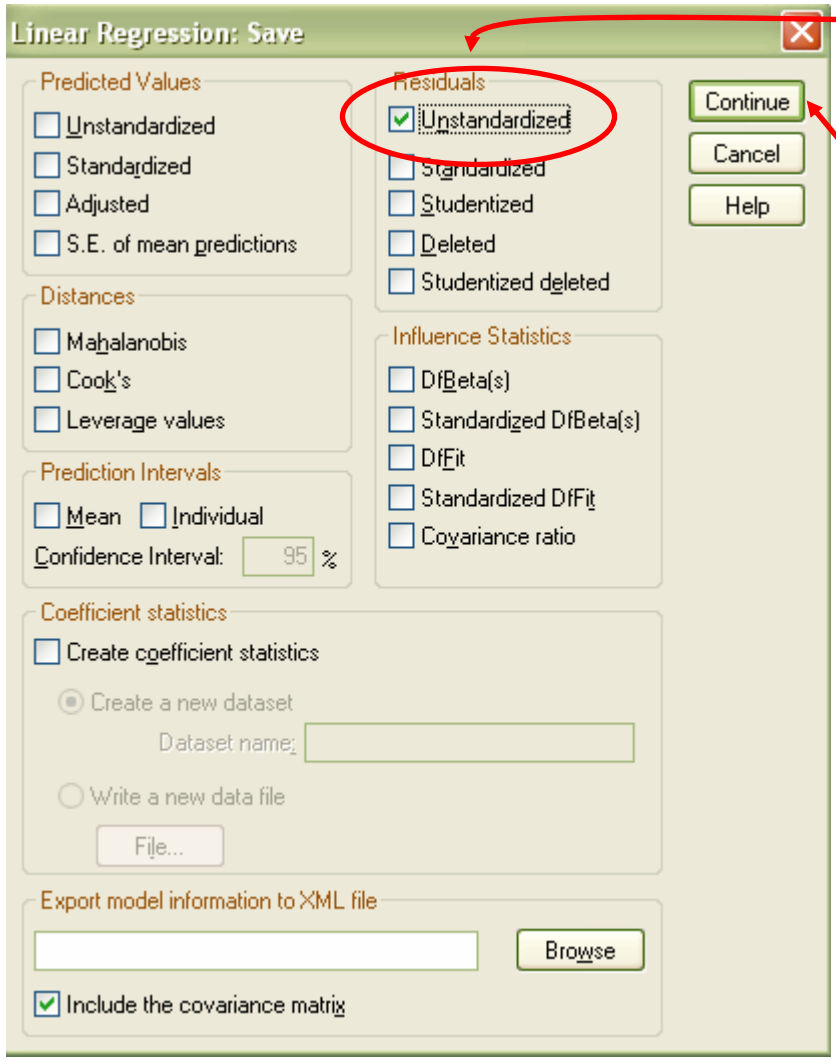
- Select Regression…Linear from the Analyze menu



Enter TOTAL as the Independent (X) variable and Buchanan as the Dependent (Y) variable



Saving Residuals



1. Check "Unstandardized" to get Actual-Predicted

2. Click Continue

Residuals will be stored in a new column under the name RES_1 in the SPSS Data Editor

Click OK at the main dialog to have SPSS calculate the regression.

Regression Output

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.680[a]	.462	.454	332.514

a. Predictors: (Constant), TOTAL

b. Dependent Variable: Buchanan

R^2= proportion of variability in *y* explained by regression on *x*.

We will not have time to discuss most of the output including the t-tests for the parameter estimates and the ANOVA shown here.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6178019	1	6178018.972	55.877	.000[a]
	Residual	7186743	65	110565.284		
	Total	13364762	66			

a. Predictors: (Constant), TOTAL

b. Dependent Variable: Buchanan

Regression coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	54.333	49.106		1.106	.273
	TOTAL	.002	.000	.680	7.475	.000

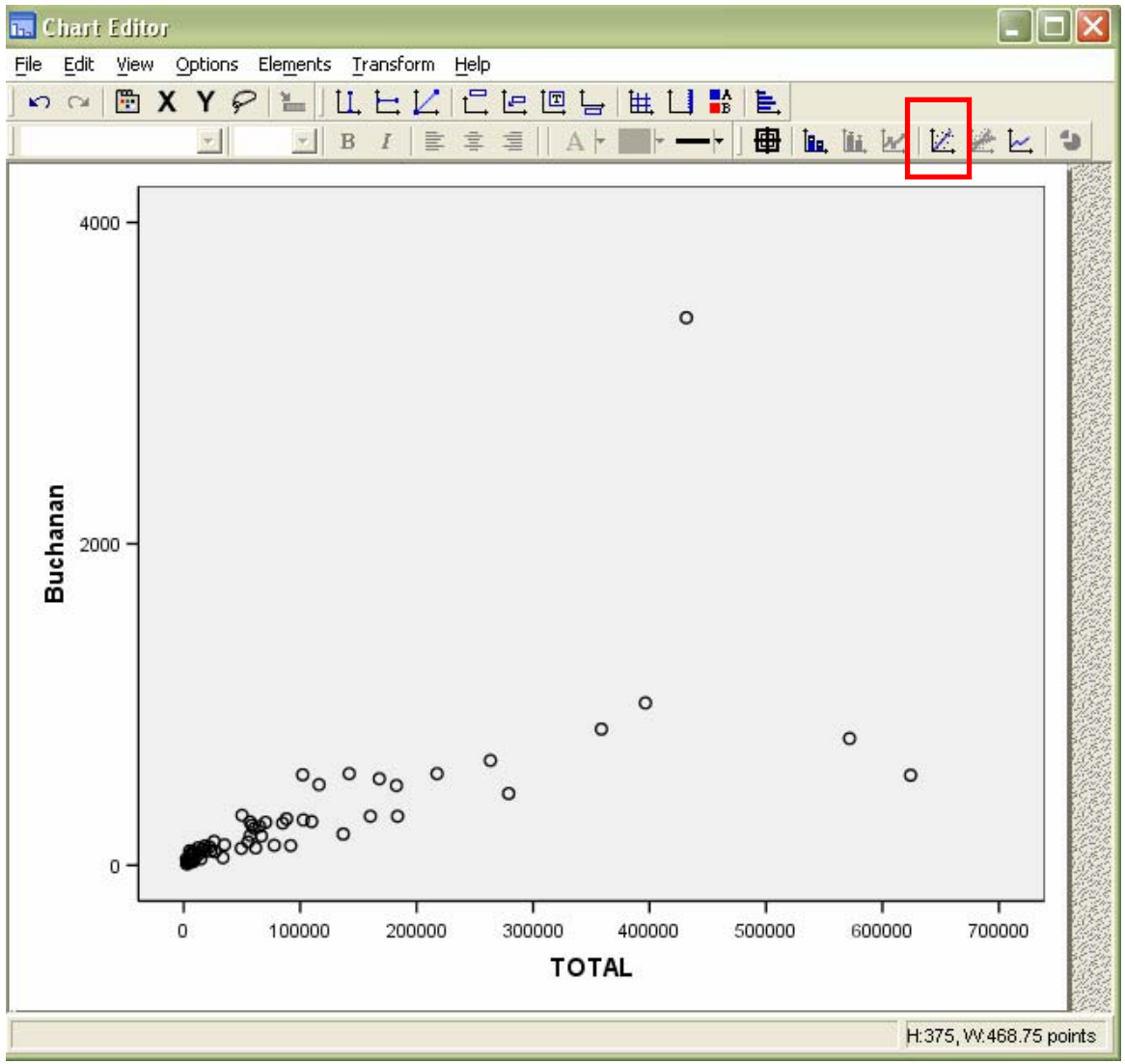
a. Dependent Variable: Buchanan

a

b

Plotting the Regression Line: Part I

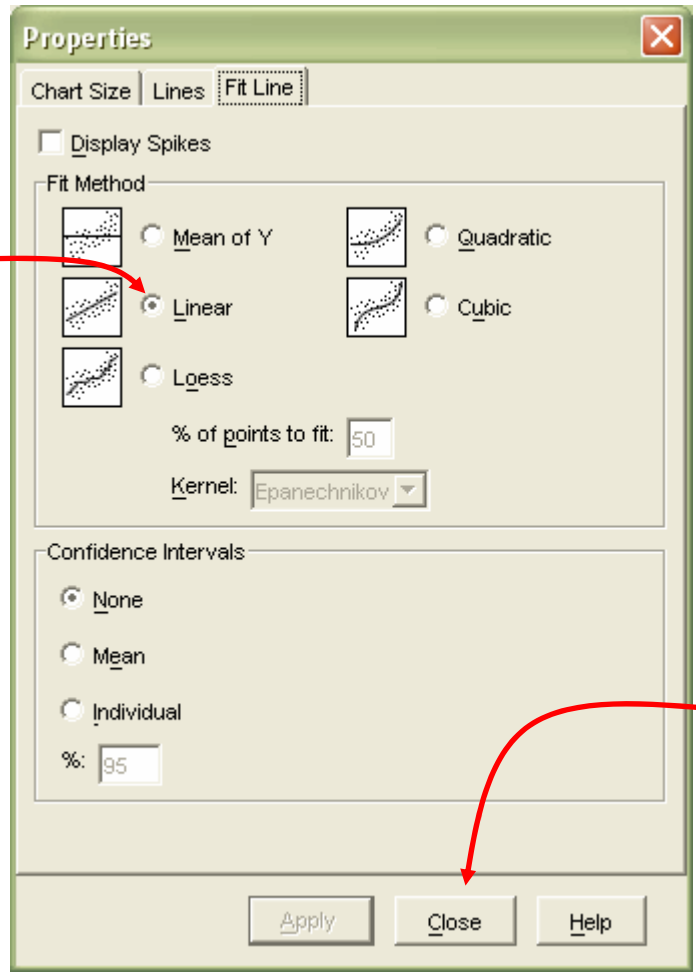
1. First open the scatterplot of Y versus X and open the chart editor.



2. Click on button to “Add Fit Line at Total”

Plotting the Regression Line: Part II

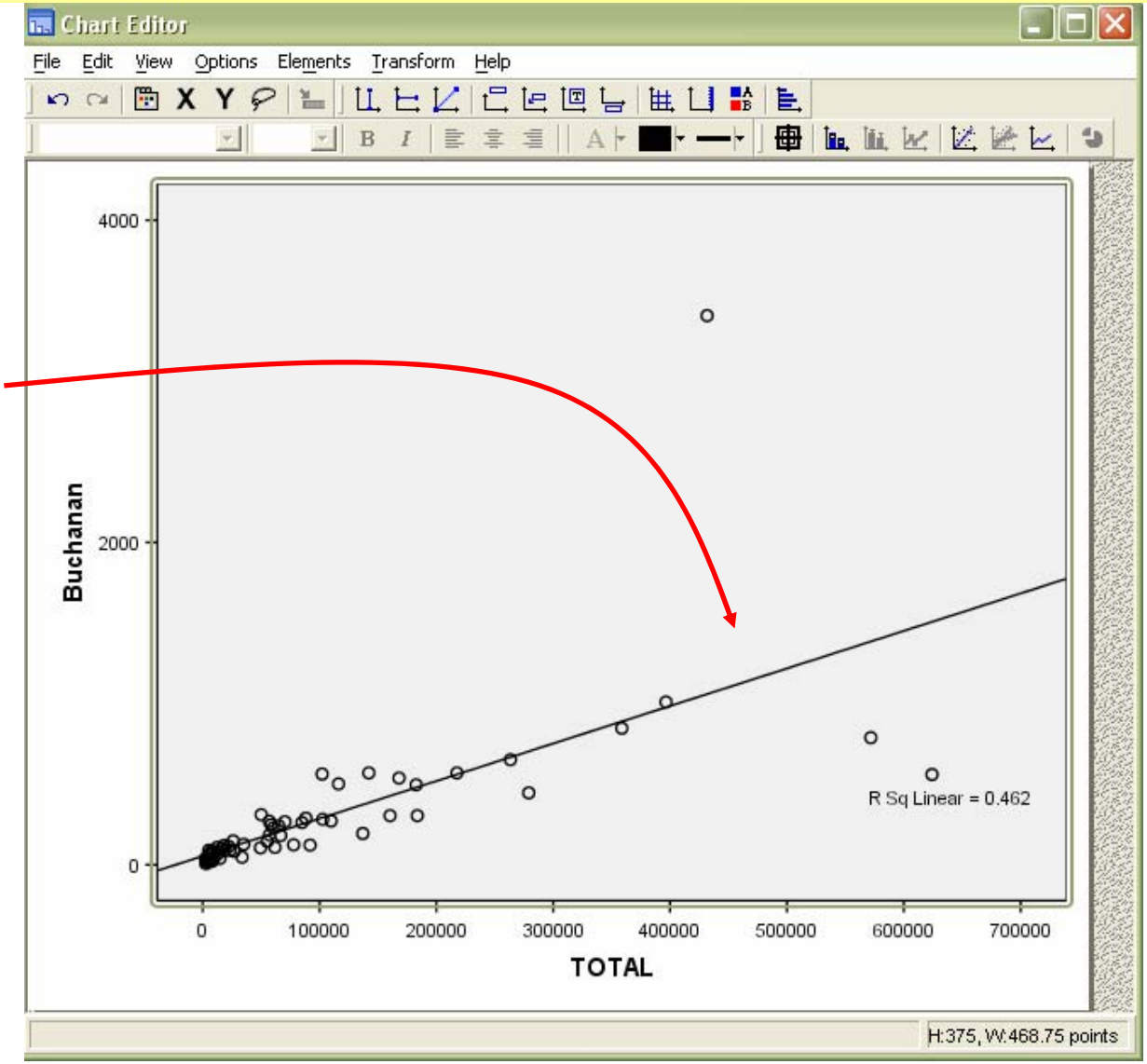
1. Just clicking the icon in the Chart Editor should have drawn the “Linear” regression line and the radio button should be filled in.



2. Click Close to return to the plot.

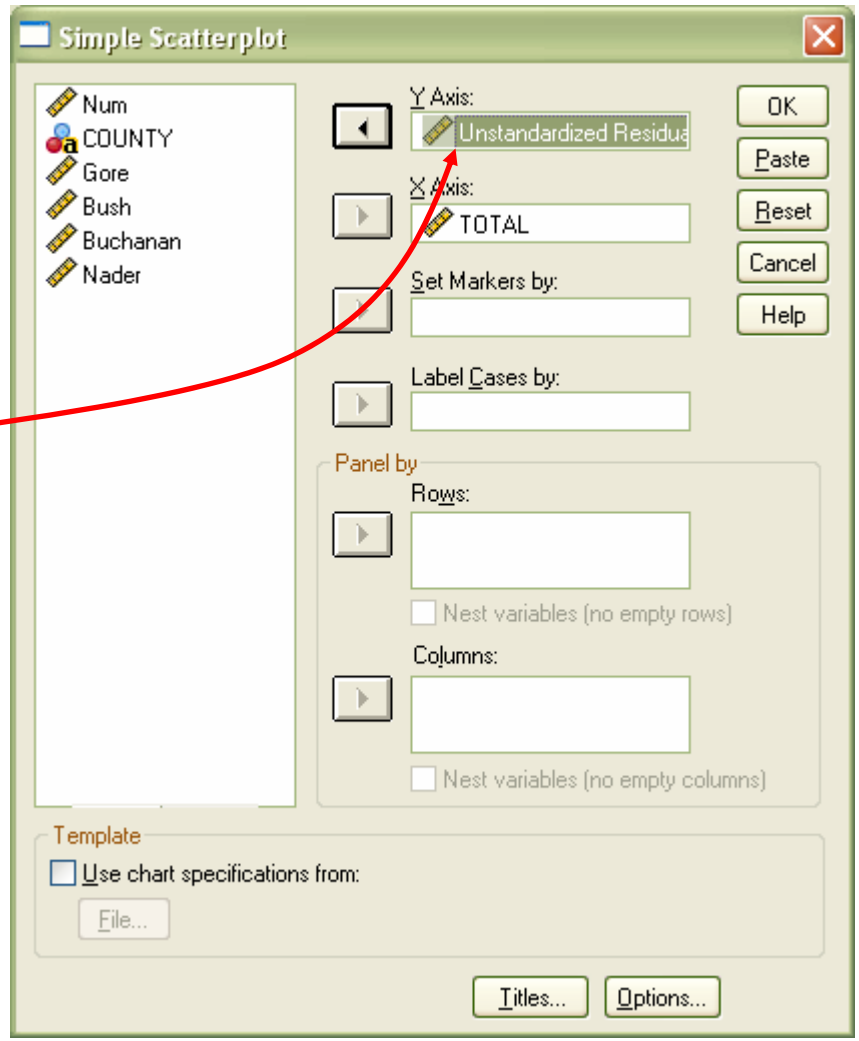
Plotting the Regression Line: Part III

The plot should now include the regression line and the R^2 figure.



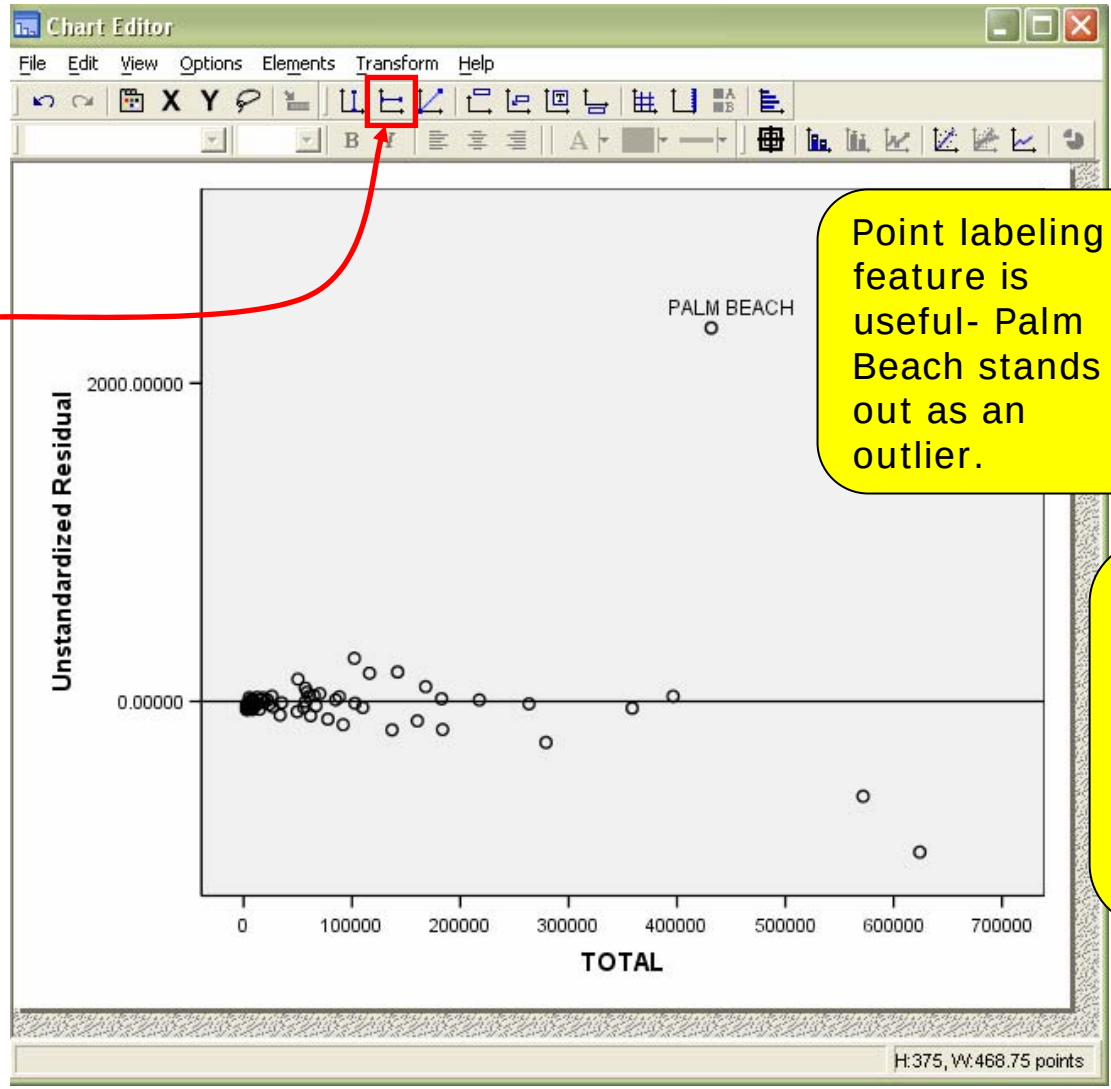
Use a Simple Scatter Plot to get the Plot of Residuals Versus *x* Values

Be sure the RES_1 variable is plotted on the Y-axis



Plot to get the Plot of Residuals Versus *x* Values

Adding a reference line y=0 is often useful.



Point labeling feature is useful- Palm Beach stands out as an outlier.

A "good regression" has no pattern in the residuals plot since errors are random.