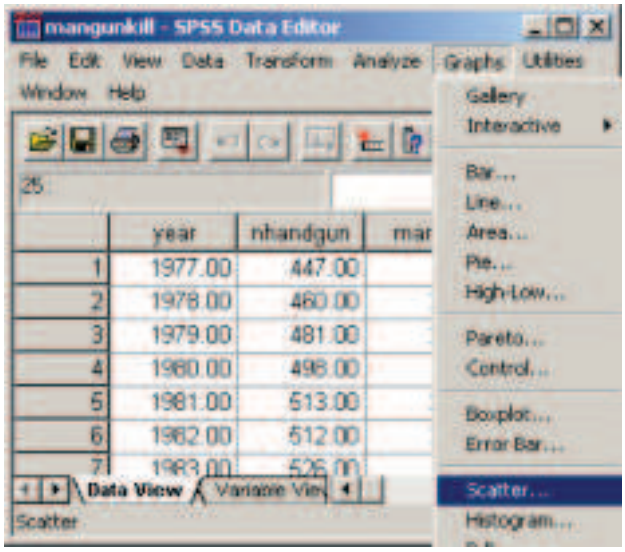
Linear Regression in SPSS

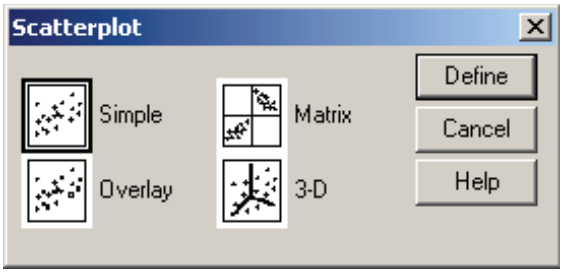
Data: mangunkill.sav
Goals:

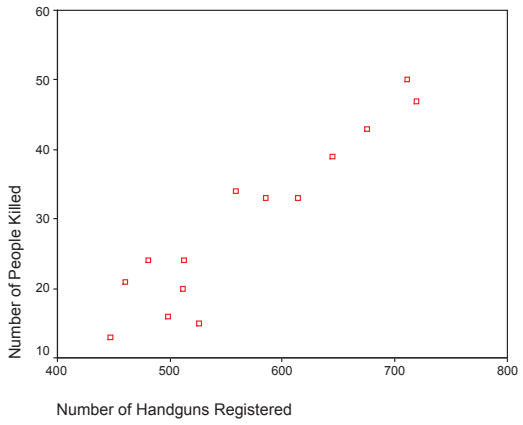
- Examine relation between number of handguns registered (**nhandgun**) and number of man killed (**mankill**)
- Model checking
- Predict number of man killed using number of handguns registered

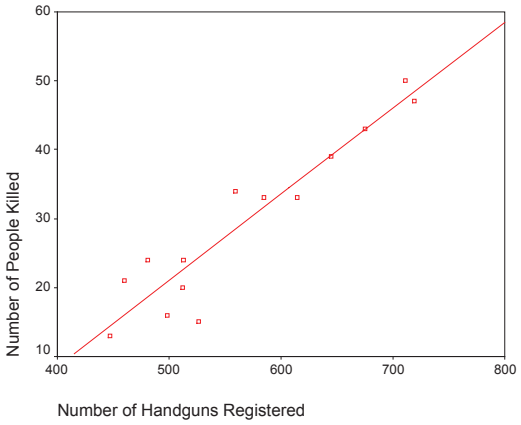
I. View the Data with a Scatter Plot

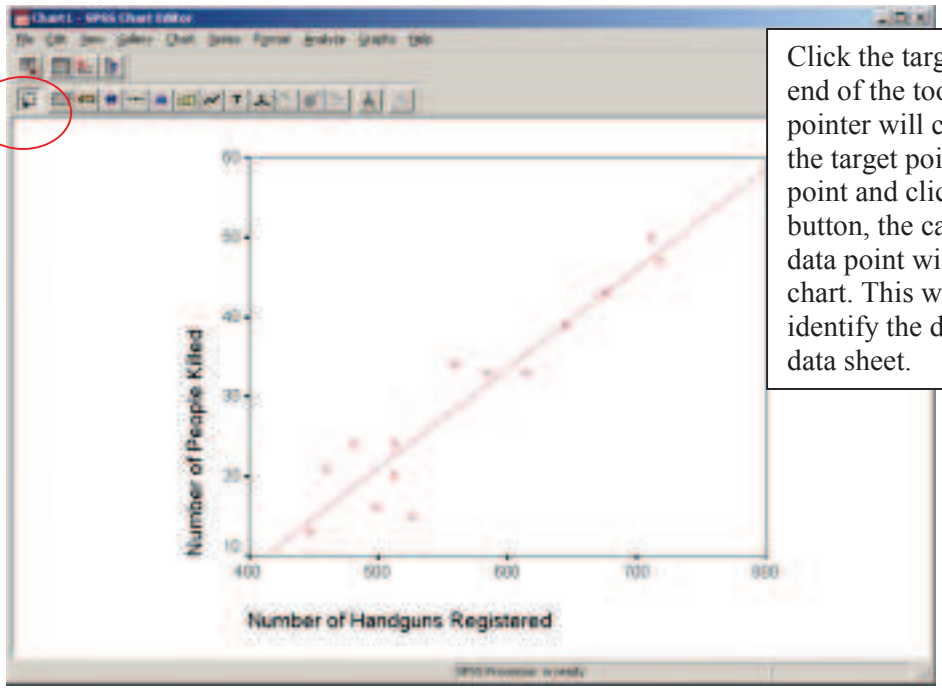
To create a scatter plot, click through **Graphs\Scatter\Simple\Define**. A Scatterplot dialog box will appear. Click **Simple** option and then click **Define** button. The Simple Scatterplot dialog box will appear. Click **mankill** to the Y-axis box and click **nhandgun** to the **x-axis** box. Then hit **OK**. To see fit line, double click on the scatter plot, click on **Chart\Options**, then check the **Total box** in the box labeled **Fit Line** in the upper right corner.











Click the target button on the left end of the tool bar, the mouse pointer will change shape. Move the target pointer to the data point and click the left mouse button, the case number of the data point will appear on the chart. This will help you to identify the data point in your data sheet.

II. Regression Analysis

To perform the regression, click on **Analyze\Regression\Linear**. Place **nhandgun** in the **Dependent** box and place **mankill** in the **Independent** box. To obtain the 95% confidence interval for the slope, click on the **Statistics** button at the bottom and then put a check in the box for **Confidence Intervals**. Hit **Continue** and then hit **OK**.

The independent variable (**nhandgun**) is said to be useful in predicting the dependent variable (**mankill**) when the level of significance (P-value labeled with **Sig.** on the Output) is below 0.05.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.941[a]	.886	.877	4.2764

a. Predictors: (Constant), Number of Handguns Registered

b. Dependent Variable: Number of People Killed

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1711.979	1	1711.979	93.615	.000[a]
	Residual	219.450	12	18.287		
	Total	1931.429	13			

a. Predictors: (Constant), Number of Handguns Registered

b. Dependent Variable: Number of People Killed

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-41.430	7.412		-5.589	.000	-57.580	-25.281
	Number of Handguns Registered	.125	.013	.941	9.675	.000	.097	.153

a. Dependent Variable: Number of People Killed