A Brief Introduction to Simple Correlation, Regression, and Scatter Plot in SPSS
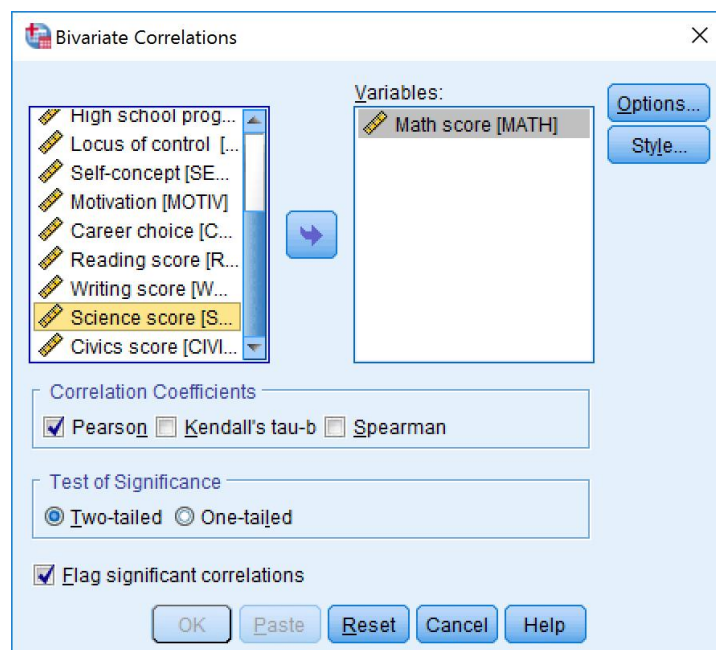
1. Correlation

   Set up the data (i.e., open, cut-and-paste, type).

   Analyze → Correlate → Bivariate.
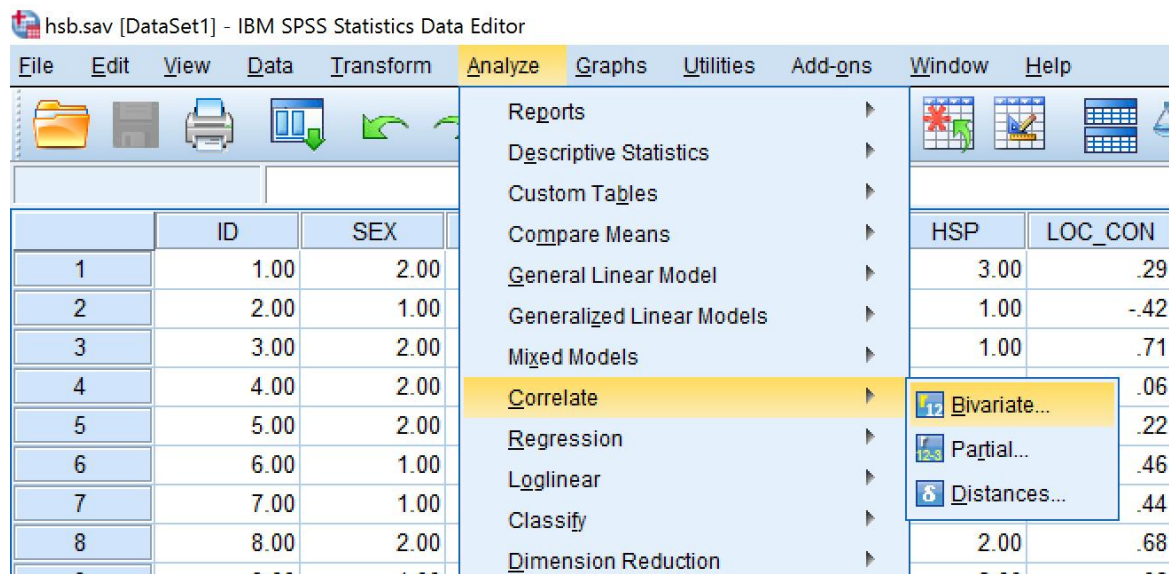
   Click the variables to be correlated in the <u>Variables</u> box. In our case, we are interested in correlated **Math** and **Science** scores.

With all the variables of interest in the box, hit **OK**.

We should get the following output:

Correlations

		Math score	Science score
Math score	Pearson Correlation	1	.650**
	Sig. (2-tailed)		.000
	N	600	600
Science score	Pearson Correlation	.650**	1
	Sig. (2-tailed)	.000	
	N	600	600

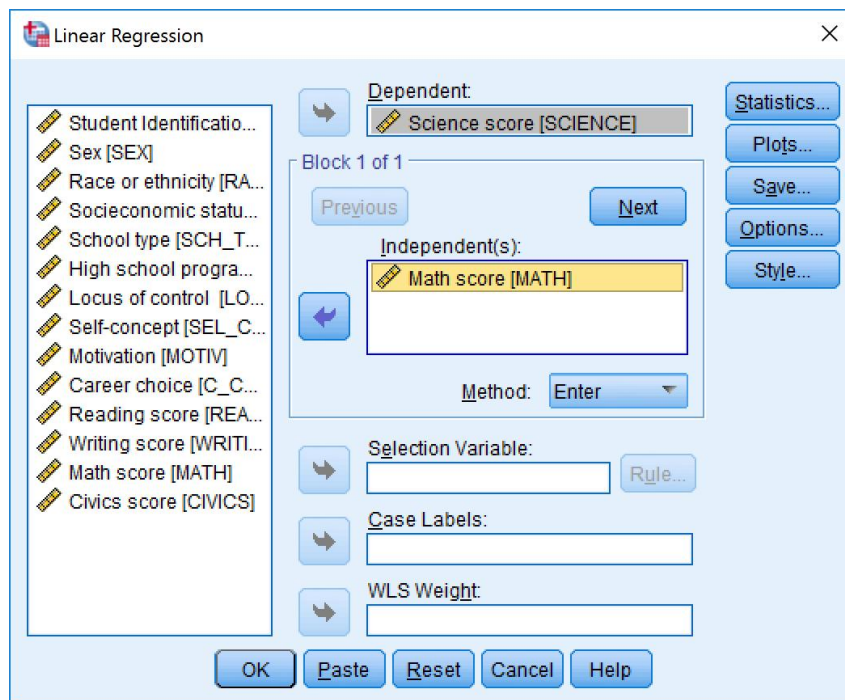**. Correlation is significant at the 0.01 level (2-tailed).

This output shows that the correlation between math and science scores is 0.650.

2. <u>Simple Linear Regression</u>

Analyze → Regression → Linear.
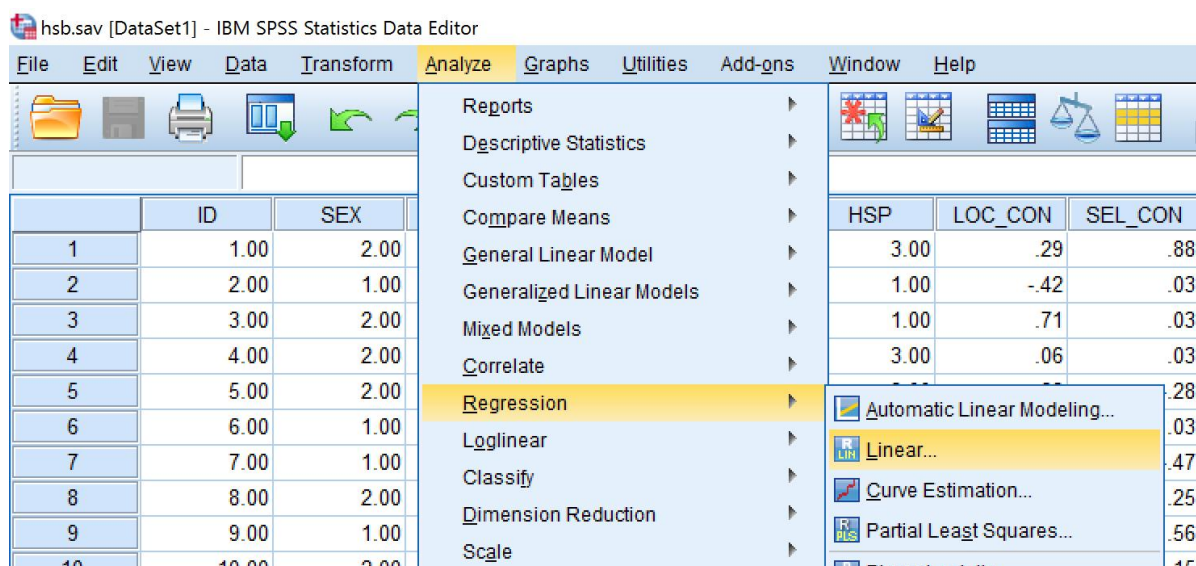
Click in the appropriate **Dependent** and **Independent** variables. In the example below, we want to investigate whether Science score can be predicted from Math score.

Click **OK** to run the regression model.

Below are some output from this analysis.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.650ᵃ	.422	.421	7.38616

a. Predictors: (Constant), Math score

Compare R from above with the correlation obtained earlier. Are they supposed to be the same or not?

Coefficientsᵃ

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	17.044	1.689		10.090	.000
	Math score	.670	.032	.650	20.890	.000

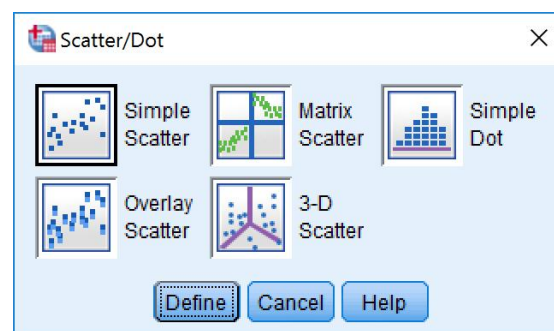a. Dependent Variable: Science score

The B for constant (17.044) is the intercept and the B for Math score (0.670) is the slope.
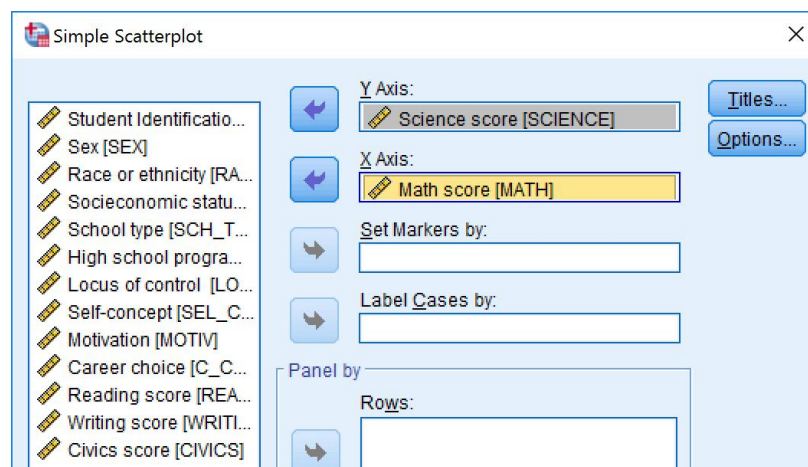
3. Scatter Plot

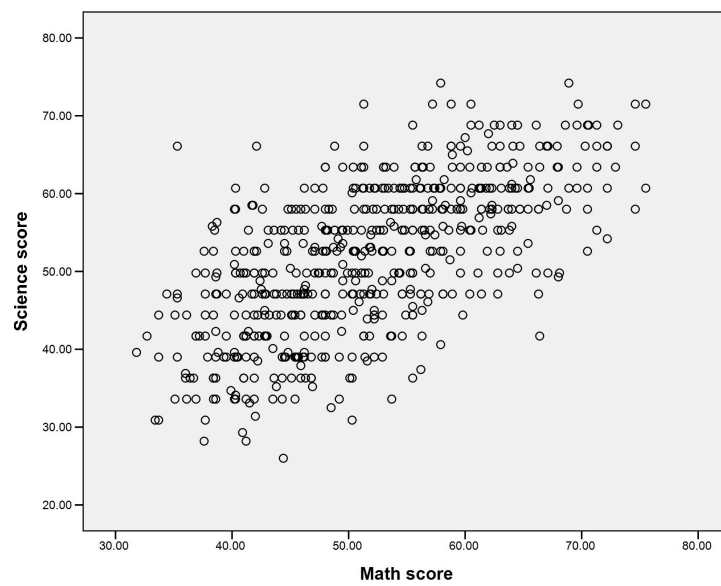**Graphs → Legacy Dialog → Scatter/Dot**.
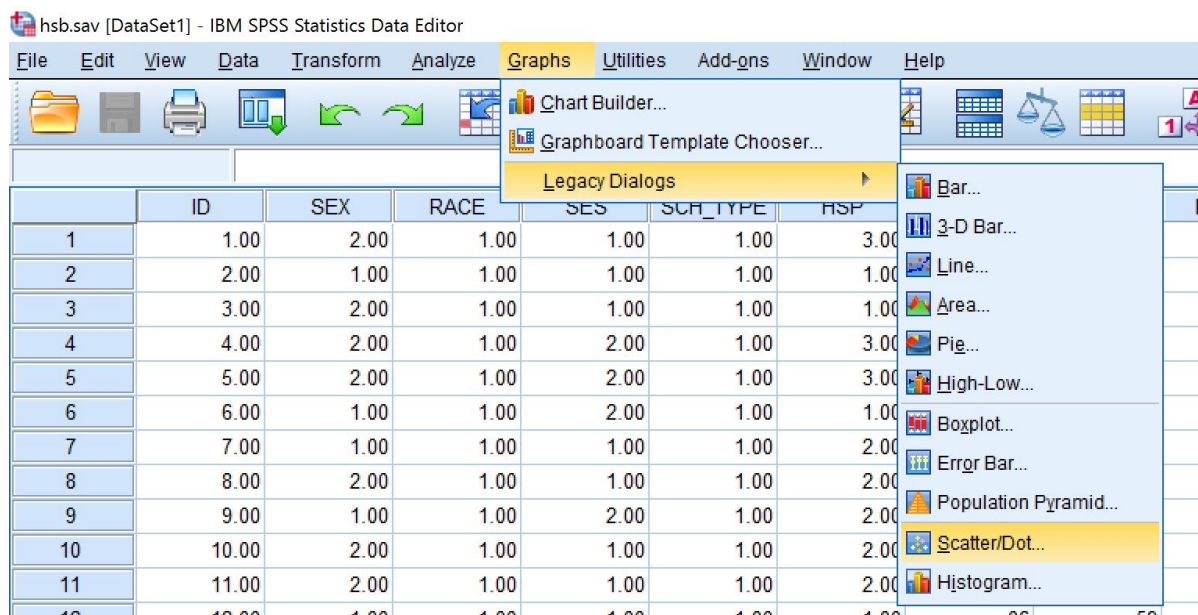
From the Scatter/Dot options, choose **Simple Scatter**, then hit **Define**.

Next, click in the appropriate variables for the X- and Y-axes. In our example, we want to predict Science from Math so **Science Score → Y Axis** and **Math Score → X Axis**.

You should get the following scatter plot as output:

The graph show a clear positive relationship between math and science scores, and there are no obvious outliers.

What happens when you click in **Sex** in the **Set Markers by** box?