

Research Design and Analysis

Regression Analysis

In this workshop you will practice running a regression analysis. This is used to assess the combined effect of several independent variables in explaining the score for one dependent variable.

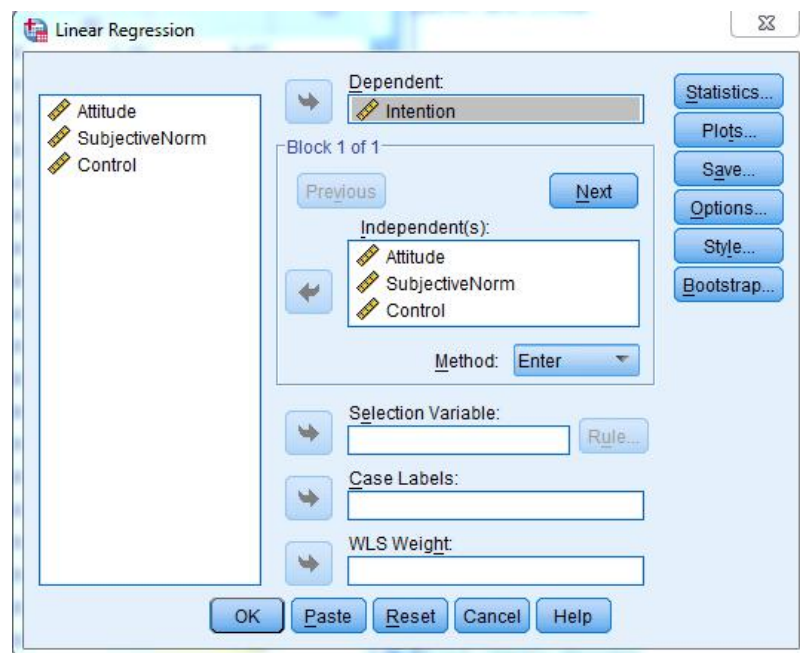
In this workshop we will use the example of predicting intentions to binge drink. We may take three independent or predictor variables and a measure for the dependent variable (levels of intention). Through regression, we can analyse the association of all the independent variables with levels of intention.

The three predictor variables we will include in the model are: attitudes, subjective norms and perceived behavioural control. First, name each of the variables in the 'variable view' (including the dependent variable – intentions), then input the data in the data-view as shown below.

	Intention	Attitude	SubjectiveNorm	Control	
1	6.33	4.60	2.33	6.67	
2	7.00	5.00	4.33	6.67	
3	2.67	2.00	4.67	5.00	
4	1.00	2.80	2.00	7.00	
5	1.00	2.40	1.67	6.67	
6	4.67	3.00	5.00	4.67	
7	4.67	3.00	4.33	4.33	
8	5.00	3.80	5.67	6.33	
9	1.67	2.40	1.00	7.00	
10	1.00	1.20	1.67	7.00	
11	1.00	1.80	1.00	7.00	
12	3.00	2.80	1.00	7.00	
13	5.67	5.20	2.00	6.67	
14	1.00	1.00	1.00	7.00	
15	4.67	4.40	3.33	5.33	
16	2.00	2.20	2.00	7.00	
17	6.00	3.20	4.33	5.00	
18	5.00	3.20	3.33	5.00	
19	4.67	4.20	3.33	7.00	
20	5.67	3.80	3.33	7.00	
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Next, we can run the regression analysis for these variables. On the **'analyse'** menu select the **'regression'** menu, and the **'linear'** option.

In the regression interface, place the variables into the dependent and independent as necessary. The intention variable is the dependent variable.



Use the **'statistics'** button to select **'descriptives'**.

Select **'OK'** to run the regression analysis.

Interpreting the results:

In the output you will see the basic **descriptives** for each of the variables (mean, standard deviation).

The **correlation** analysis shows the simple bivariate correlations between all variables. Here you can analyse whether any of the independent variables are correlated with one another.

The **adjusted R-squared** value in the **model summary table** tells you the amount of variance of the dependent variable that is explained by the model (it's adjusted to account for sample size). The maximum is 1.0 which would suggest 100% of the variance was explained (0.14 would represent that 14% was explained for example). Calculate the amount of variance explained in the current data from this value.

The **ANOVA table** tells you whether your model is significantly better at predicting the dependent variable than simply taking the mean score of the dependent variable as a prediction for each score. A significant model overall will show a **p value** of less than 0.05. The **coefficients table** will show how much each of the independent variables contributes to the overall explanation of the model.

The **Beta value** shows how much each change in the independent variable shows a change in the dependent variable. The larger the Beta value, the more that independent variable contributes to the scores of the dependent variable. Each Beta value also has an associated significance value, or **p-value**.

(Note. A minus sign on the Beta value indicates that there is a negative correlation between the independent and dependent variables – i.e. as the independent variable shows an increase the dependent variable shows a decrease in value, and vice-versa. A negative association can of course still be a significant or large factor in explaining the model).

Using these values from these output tables consider whether the overall model is significant (ANOVA table significance) in predicting the dependent variable, how much variance in the game goals variable is explained (adjusted R-squared), and how much each of the predictor variables contributes to the model (Beta and significance values).

The results section:

Use your SPSS books to look at how to report a multiple regression analysis appropriately and write the full results section here.