

Scatterplots

In this tutorial, you will be shown how to visualise your data in the form of a scatterplot using Jamovi. Scatterplots (also known as scatter graphs) make it easier to see the relationship between two variables. In a scatterplot, one variable is assigned to the horizontal axis, the x-axis, and the other to the vertical axis, the y-axis.

The example here is based on a fictional study investigating the relationship between mood and serotonin levels. As some drugs that are given to people to treat depression work by stimulating serotonin pathways, you might expect to see a relationship between depression scores and serotonin levels in the blood. This relationship is explored further in the *Correlation* tutorial, where you can also learn more about the measures used in this study.

This is what the data looks like in Jamovi.

The data set you see here contains the following data from left to right:

- the participant ID numbers
- their age in years
- participants' depression scores as measured by the Beck Depression Inventory (BDI)
- their serotonin levels

Exploration

T-Tests

ANOVA

Regression

Frequencies

Factor

Variables

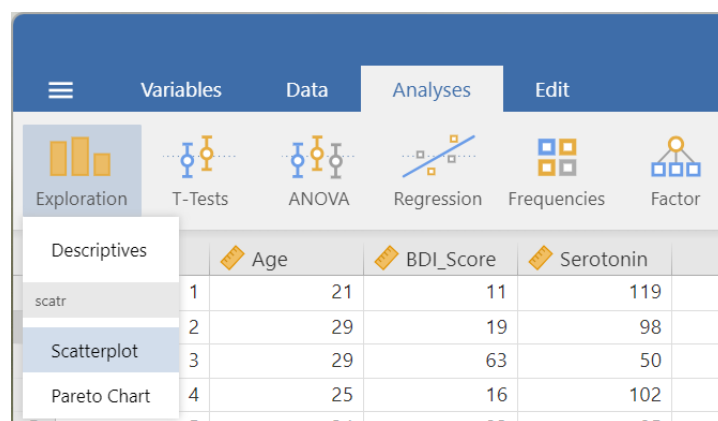
Data

Analyses

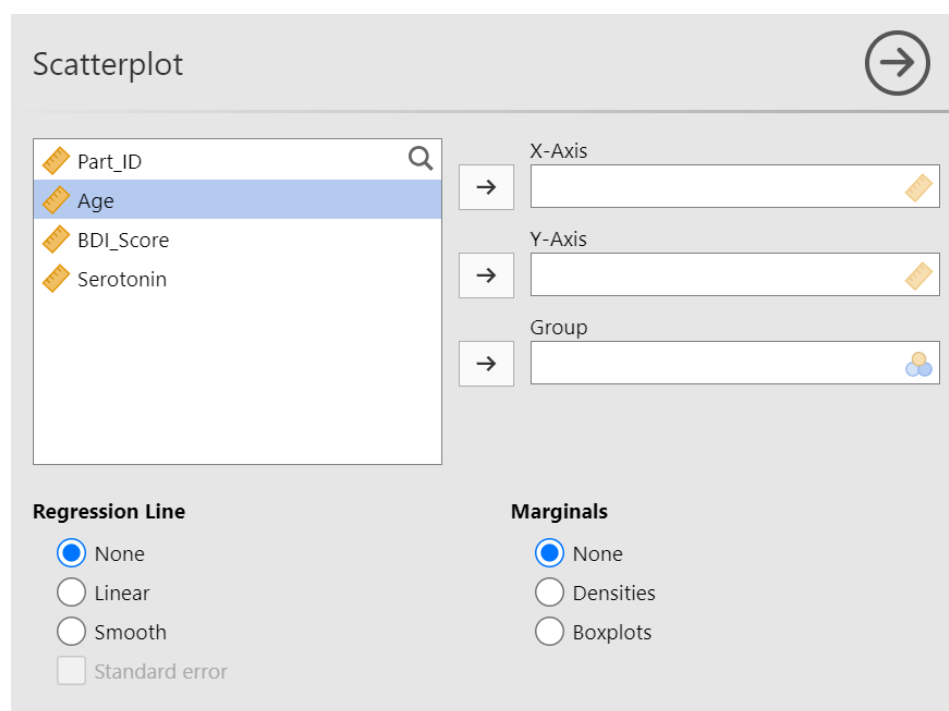
Edit

	Part_ID	Age	BDI_Score	Serotonin			
1	1	21	11	119			
2	2	29	19	98			
3	3	29	63	50			
4	4	25	16	102			
5	5	34	23	95			
6	6	23	55	58			
7	7	34	14	109			
8	8	34	3	116			
9	9	24	17	112			
10	10	35	17	105			
11	11	32	30	80			
12	12	31	38	70			

To produce a scatterplot, click on Exploration and **SELECT** Scatterplot.



This brings up the Scatterplot dialog box.

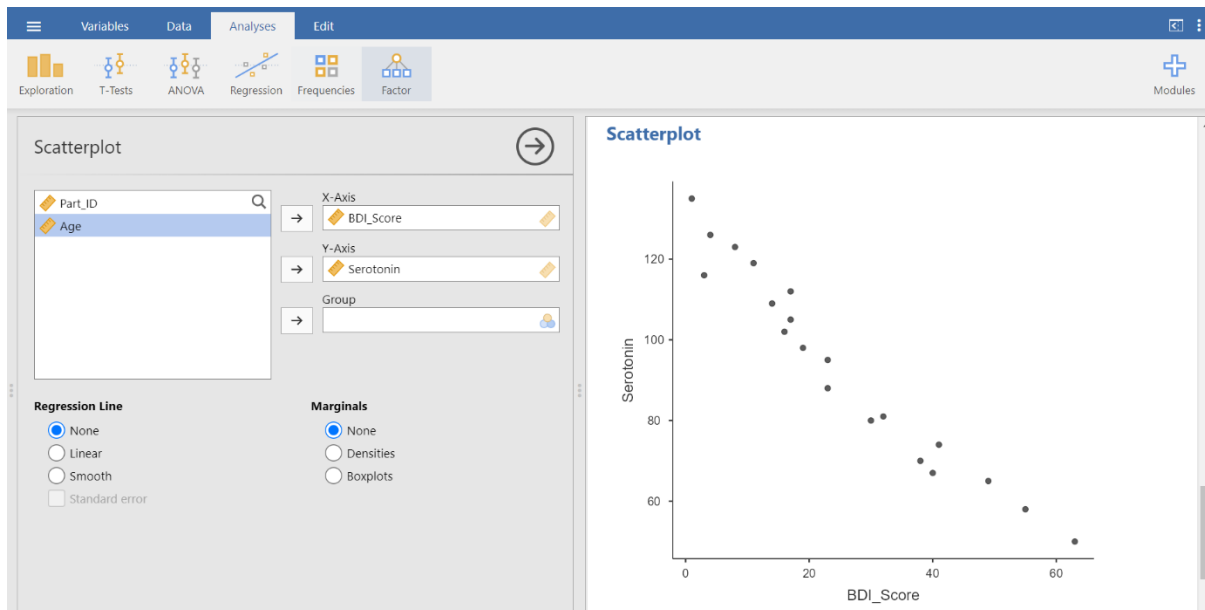


Here we can see all our variables from the data file displayed in the box on the left.

In this example, we want our depression variable (BDI_Score) on the x-axis, so we **SELECT** BDI_Score and move it to the X-Axis box by clicking on the arrow.

Next, we want our y-axis to show serotonin levels, so we **SELECT** serotonin and move this variable to the Y-Axis box by clicking on the arrow.

Once you've done this, your selection should mirror the below image, and your output will update with a scatterplot:



Scatterplots give you some sense of the relationship between two variables, but a collection of dots can be quite difficult to understand at a quick glance without some sort of visual guide. To show the relationship more clearly, you can insert a line of best fit.

To add a line of best fit, **SELECT** Linear under Regression line.

Regression Line

☐ None

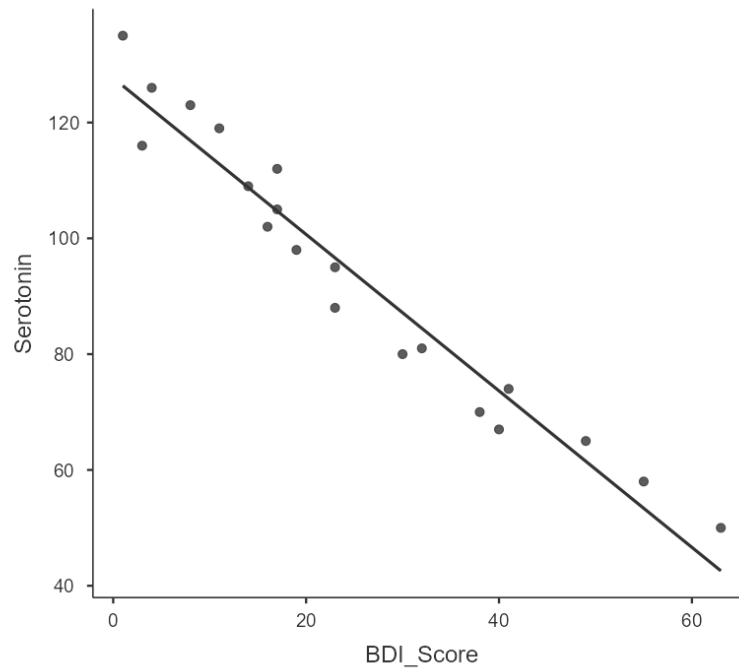
☒ Linear

☐ Smooth

☐ Standard error

This is a line through the data points that best represents the relationship between those data points. You should always add a line of best fit to a scatterplot to make the direction of the relationship easier to identify. Once you've selected Linear, the scatterplot will update in your output, and will look like the image below:

Scatterplot



What does the scatterplot show us?

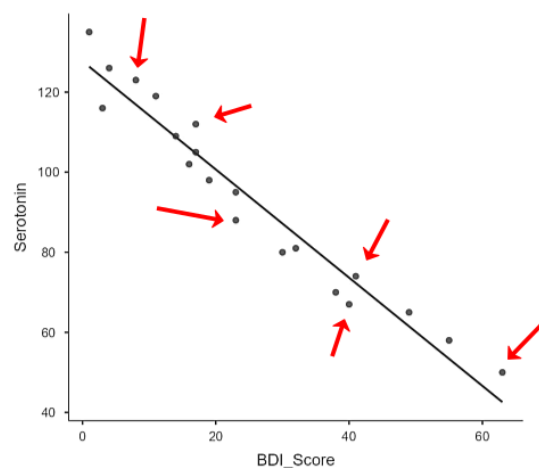
The text on the left-hand side is your y-axis label and is labelled serotonin.

The text at the bottom is your x-axis label and is labelled as BDI score.

The numbers beside each of these axes represent serotonin levels and BDI scores respectively.

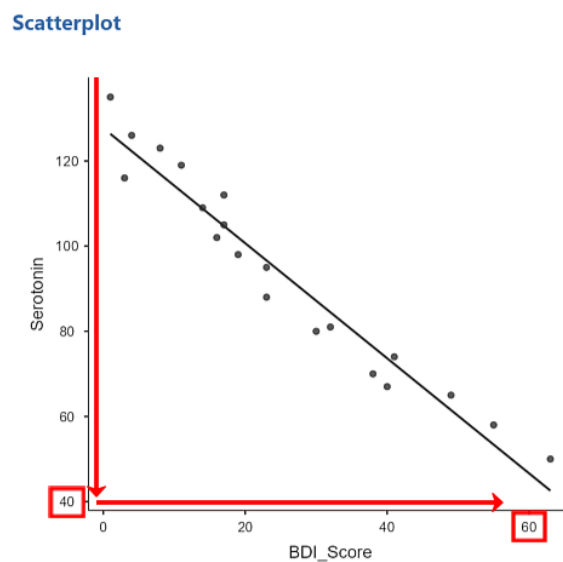
Each dot on the graph represents a single participant.

Scatterplot



Each participant has a BDI score and a serotonin score, and these are used by Jamovi to plot them on the graph.

The line drawn between the points is the line of best fit. Here you can see that it looks to be displaying a negative correlation because it slopes down from the top left to the bottom right. This means that, as the BDI values on the x-axis go up, the serotonin values on the y-axis are going down.

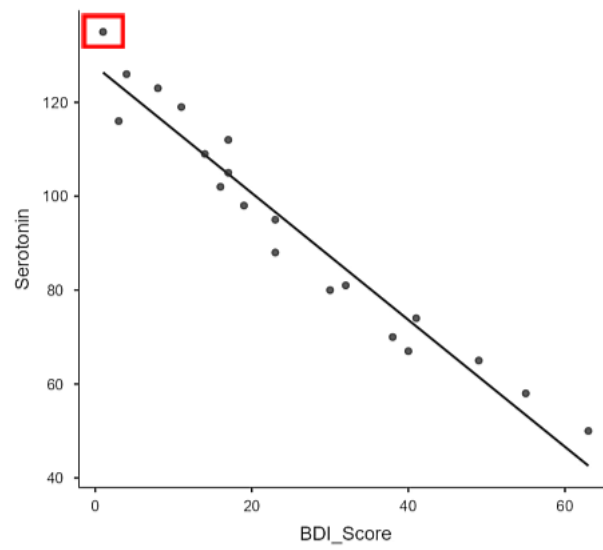


If this graph showed a positive correlation, then the line would slope upwards from the left towards the right.

The higher participants' serotonin levels, the closer to the top of the graph their data point appears. The higher their BDI score, the further to the right their data point appears.

For example, a participant with a high serotonin level but a lower BDI score will appear high up and to the left of the graph.

Scatterplot



Conversely, participants with low serotonin scores but high BDI scores appear at the bottom right of the graph.

Scatterplot

