# Correlation Plots and Scatter Charts

Why:
Correlation indicates the direction and strength to which two variables are related to one another and can set the condition for further exploratory analysis.

Create a Scatter Plot in Power BI:

Why: A scatter chart is used to plot the relationship between two variables.

How:

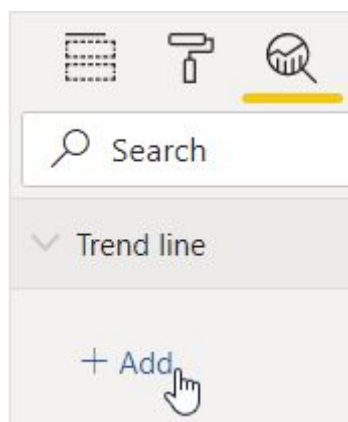- **Method 1:** Select two numerical fields and then click on 'Scatter Chart'
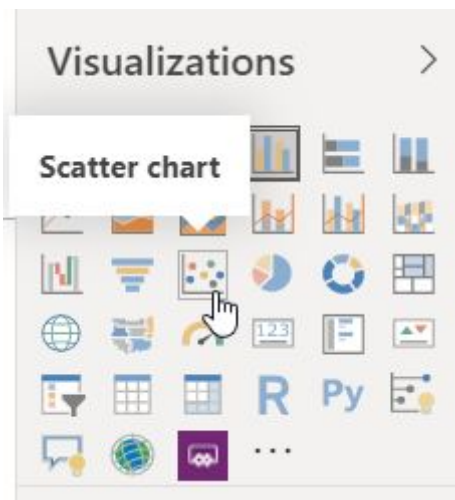
- **Method 2:** Select the Scatter chart, then click and drag from the fields list into your X and Y axes

Add a trend line:

Why: Trend lines make it easy to visualise a positive or negative relationship between the two values.
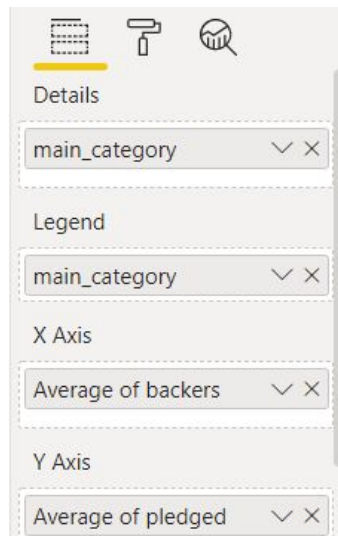
How:

- Analytics > Trend Line > Add

Aggregate:
How:

- You can aggregate this chart by bring a third field in the 'Details' section, and then summarising your X and Y axes by Average. When doing this it's often helpful to add a Legend, so choose the same field and drag it into the Legend field as well. This will make it easier to read.
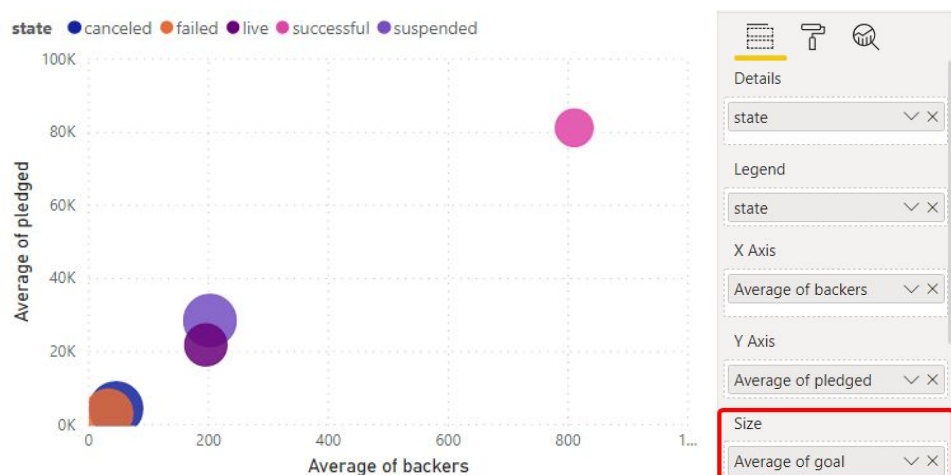

Bubble Plot:
Why: A bubble plot is a way of showing a relationship between 3 variables, by adding the size of data points.
How:

- Create a scatter chart as normal, then click and drag your 3rd variable from the fields list into 'Size', which will give you a chart like the example below.

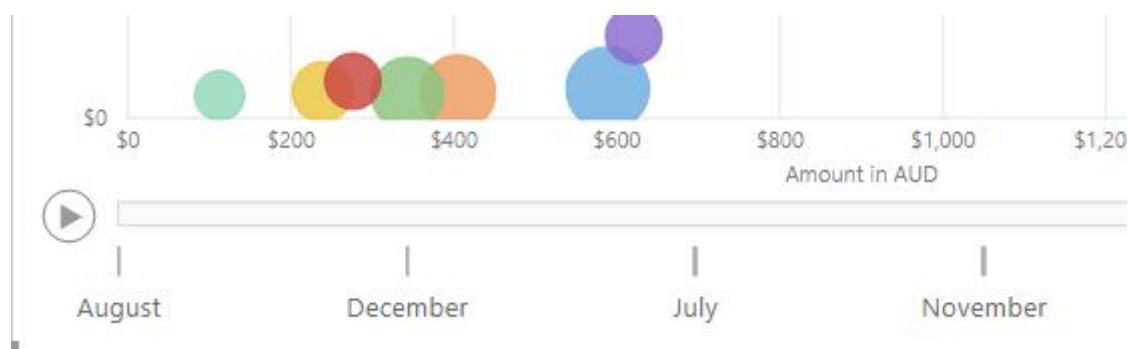**Adding a Play Axis:**
Why: Visualise changes over time
How:

- Use the 'Play Axis' field to bring a date field into your visualisation (note: depending on your data, it's usually better to bring in Month or Year hierarchy).

- Click the ⊙ button to see your chart dynamically update, or click on various points along the date line to update.
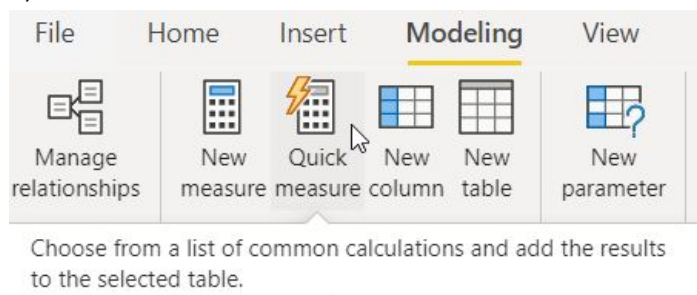
Create the Correlation Coefficient:

Why: Measures the strength of the relationship between data
How:

- Create new quick measure - In the ribbon, on the Modeling tab under Calculations, click 'Quick Measure'

- Select the calculation as 'Correlation Coefficient'
- Click and drag from the Fields list to choose your Category, Measure X and Measure Y

Create a Correlation Plot (Custom Visual):

Why: Allows quick visualisation of the correlation between values
How:
- In the Visualisation tab, click on the 3 dots (…) and choose 'Import from Appsource' (note: You'll need to be signed into Power BI for access)
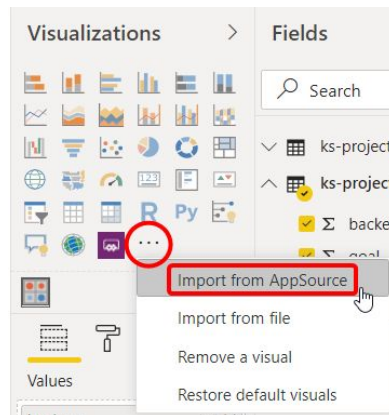
- Within the marketplace, search for 'Correlation', then click 'Add' on the Correlation Plot visual.

- Your new visualisation will be added to your list for use. Click on this visualisation to create it, then add your required fields. (Note: you'll need to have R setup in Power BI, which was covered in the previous lesson). You'll end up with something like this: