



Categorical Data II

Topics in this session

- How to access features in the Power BI User Interface
- Derived Calculations using Custom Data Columns

- Categorical data visualizations

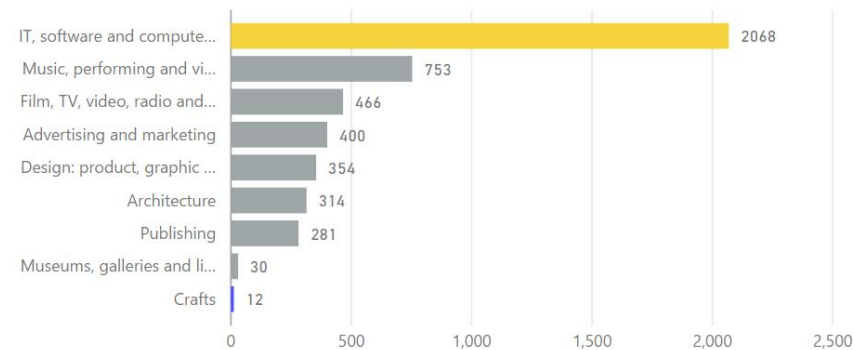
 - Pie Charts

 - Tree Maps

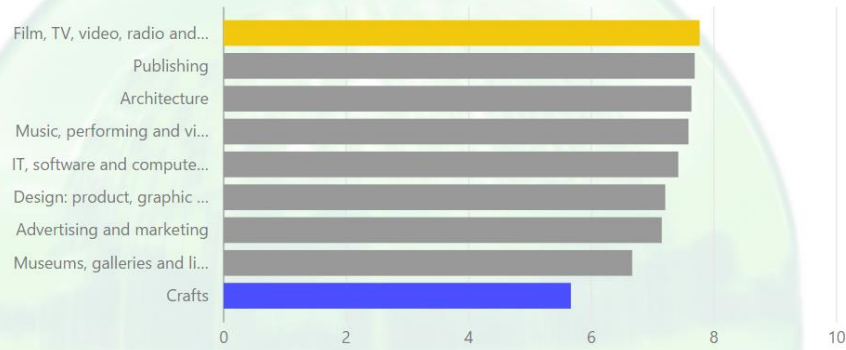
Adding calculated columns

Creative Digital IT (CDIT) Companies in North East England 2016-2017

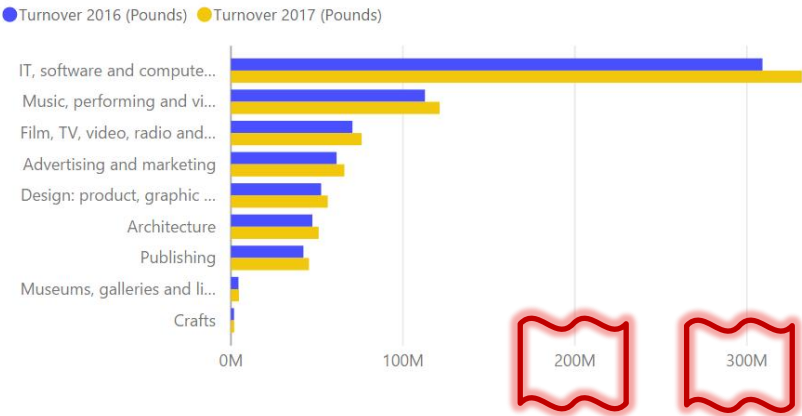
Count of companies by CDIT Sector



Average Percentage Growth 2016-2017 by CDIT Sector



Total turnover in 2016 and 2017 by CDIT Sector



Select CDIT sector(s) to view

☐ Advertising and marketing

☐ Architecture

☐ Crafts

☐ Design: product, graphic and fashion design

☐ Film, TV, video, radio and photography

☐ IT, software and computer services

☐ Museums, galleries and libraries

☐ Music, performing and visual arts

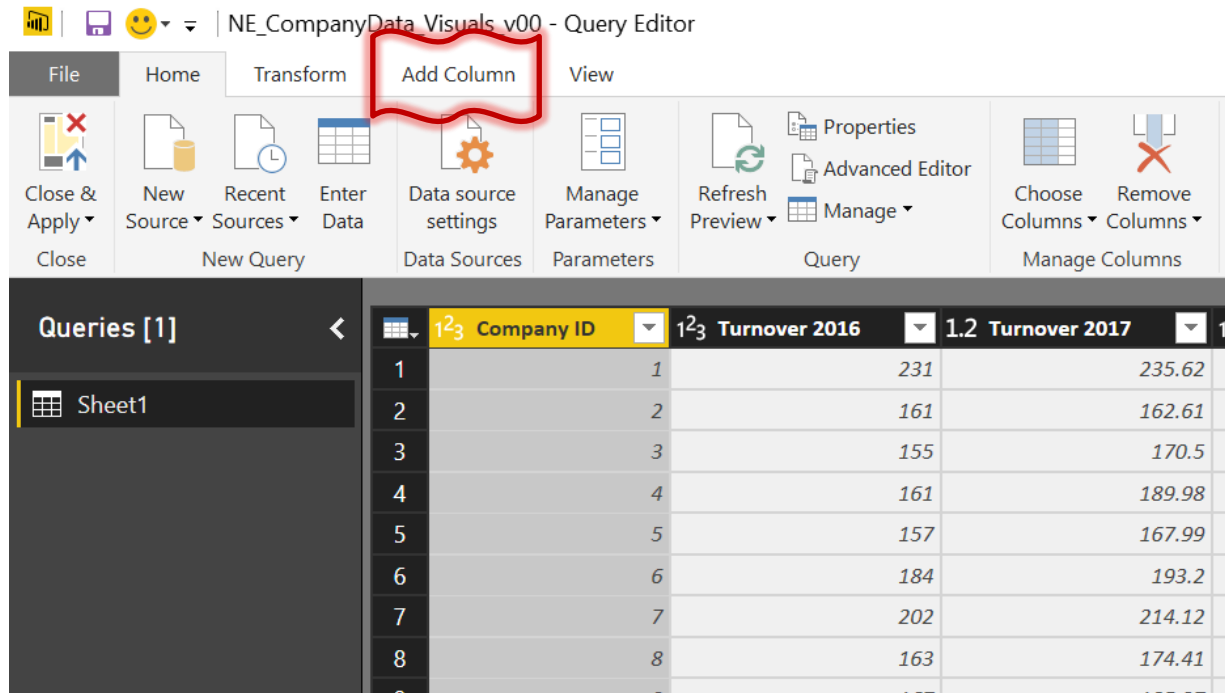
☐ Publishing

Note: anonymous company identities with simulated turnover values.

Used a custom column to convert fields provided in thousands of pounds to whole pounds 3

Custom Columns

There are several ways to create derived data – we will look at just one in the Query Editor.



NE_CompanyData Visuals v00 - Query Editor

File Home Transform **Add Column** View

Close & Apply Close New Source Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Properties Advanced Editor Manage Choose Columns Remove Columns Manage Columns

Queries [1] Sheet1

	1.2 Company ID	1.2 Turnover 2016	1.2 Turnover 2017
1	1	231	235.62
2	2	161	162.61
3	3	155	170.5
4	4	161	189.98
5	5	157	167.99
6	6	184	193.2
7	7	202	214.12
8	8	163	174.41
9	9	167	185.37

Click on **Add Column** to show the options for creating new columns in the data table.

Custom Columns

NE_CompanyData_Visuals_v00 - Query Editor

File Home Transform Add Column View

Column From Example Custom Column Invoice Custom Function General

Conditional Column Index Column Duplicate Column

Format Merge Columns Extract Parse From Text

Statistics Standard Scientific From Number

Trigonometry Rounding Information

Date Time Duration From Date & Time

Queries [1] <

Sheet1

	1 ² ₃ Company ID	1 ² ₃ Turnover 2016	1.2 Turnover 2017	1 ² ₃ Percentage Growth	1 ² ₃ Main SIC4
1	1	231	235.62	2	8532
2	2	161	162.61	1	5811
3	3	155	170.5	10	5819
4	4	161	189.98	18	6201
5	5	157	167.99	7	9001
6	6	184	193.2	5	8552
7	7	202	214.12	6	9004

Click on **Custom Column** to enter the create column dialogue.

Custom Columns

Turnover 2016	1.2 Turnover 2017	1 ² 3 Percentage Growth	1 ² 3 Main SIC4	1 ² 3 SIC4 Opt1	1 ² 3 SIC4 Opt2	1 ² 3 SIC4 Opt3
231	235.62	2	8532	9004	null	
161	162.61	1	5811	null	null	
155	170.5	10	5819	null	null	
161	189.98	18	6201	null	null	
157	167.99	7	9001	null	null	
202	193.92	-4	5819	null	null	
228	250.8	10	9001	null	null	

Add Custom Column

New column name

Custom

Custom column formula:

=

Available columns:

Company ID

Turnover 2016

Turnover 2017

Percentage Growth

Main SIC4

SIC4 Opt1

SIC4 Opt2

SIC4 Opt3

<< Insert

[Learn about Power BI Desktop formulas](#)

✓ No syntax errors have been detected.

OK

Cancel

Now we can enter formula that manipulate data in the table to create new column values.

In this case we want to multiply the Turnover values for 2016 and 2017 by 1000 so they are in units of pounds rather than 1000's of pounds.

Custom Columns

Add Custom Column

New column name
Turnover 2016 (UKP)

Custom column formula:
=1000 * [#\"Turnover 2016 (Pounds)\"]

Available columns:
SIC Opt2 Name
SIC Opt3 Name
Opt1 Fused
Opt2 Fused
Opt3 Fused
Fusion Index
Turnover 2016 (Pounds)
Turnover 2017 (Pounds)

<< Insert

✓ No syntax errors have been detected.

OK Cancel

202	193.92	-4	5819	null	null
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Fill in the new column name **Turnover 2016 (UKP)**

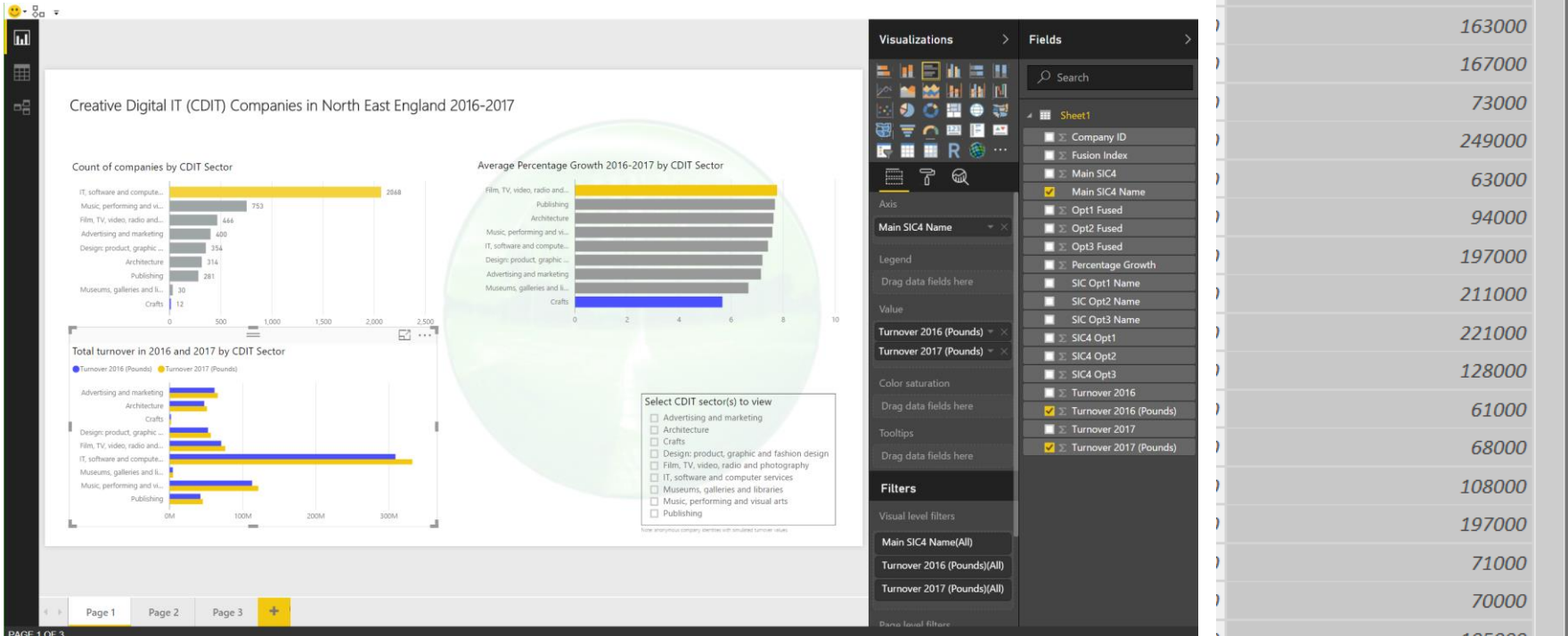
Enter the expression relating current table values to the required value, select any existing column names you need from the list on the right, click **OK** to create the custom column. (This calculation is written in the language M – which is an ETL scripting language for PowerBI see M and DAX : <http://radacad.com/m-or-dax-that-is-the-question>)

Custom Columns

The new column is then added at the far right of the data table.

Repeat for 2017.

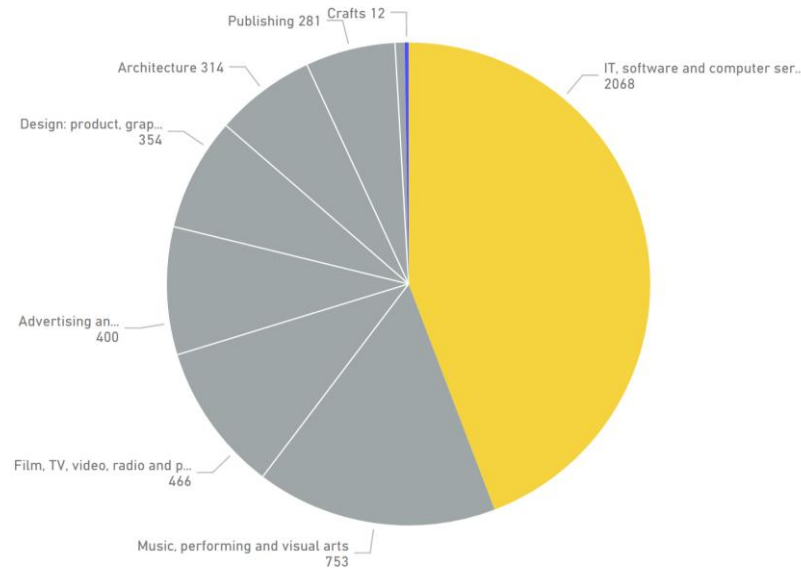
Click on **File** and then **Close and Apply** and then use the new columns in your visualization as below:.





Alternatives to Bar Charts

Pie Charts



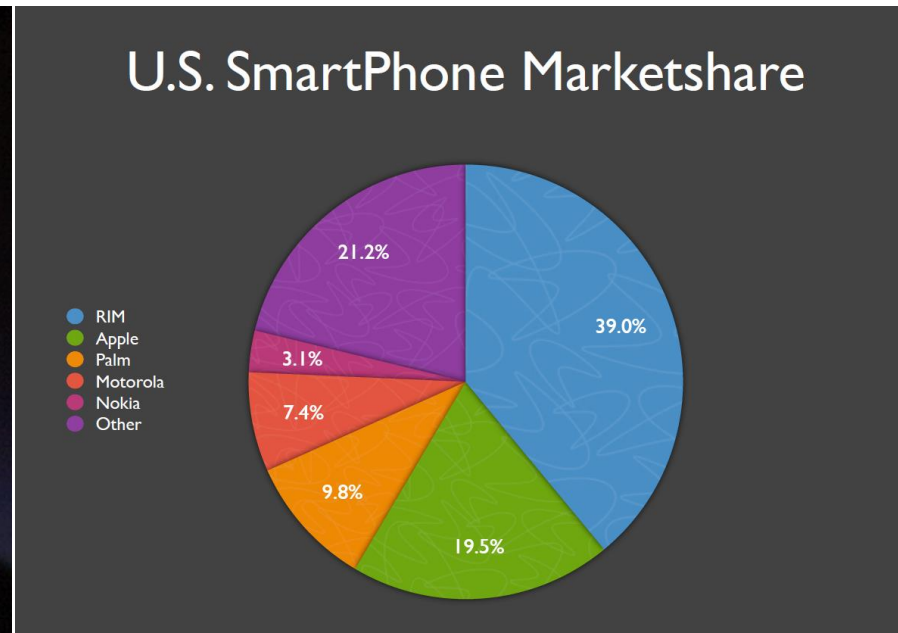
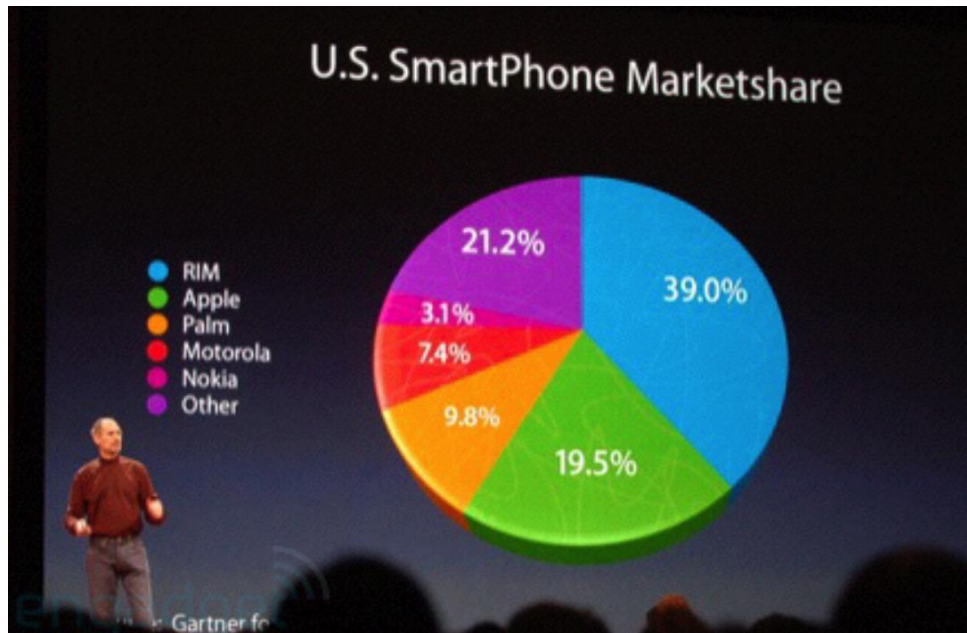
Very useful for certain types of data visualization
though ...some... experts seem to dislike them intensely .

Best used for judging part-to-whole relationships.

If possible sort the chart so that ranking is implicit in the order.
Don't rely on people to judge relative size unless it is very clear.

Present flat in 2D so you can judge the *angles* near the middle.

Pie Charts – abuse of....



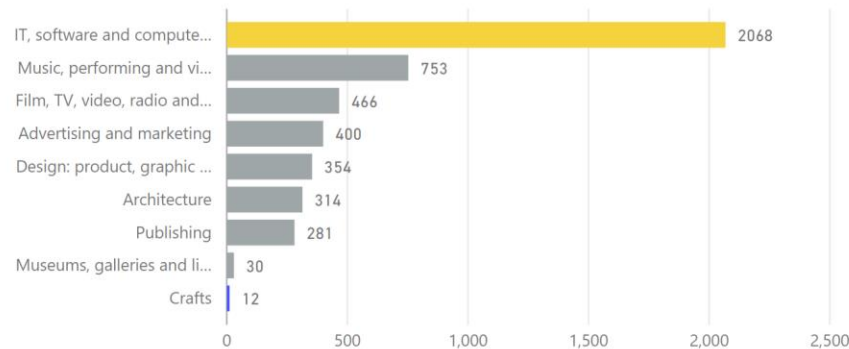
Steve jobs suggesting Apple have a bigger market share than other.

This is a well documented visual lie, and raises issues of ethics and responsibility in data visualization.

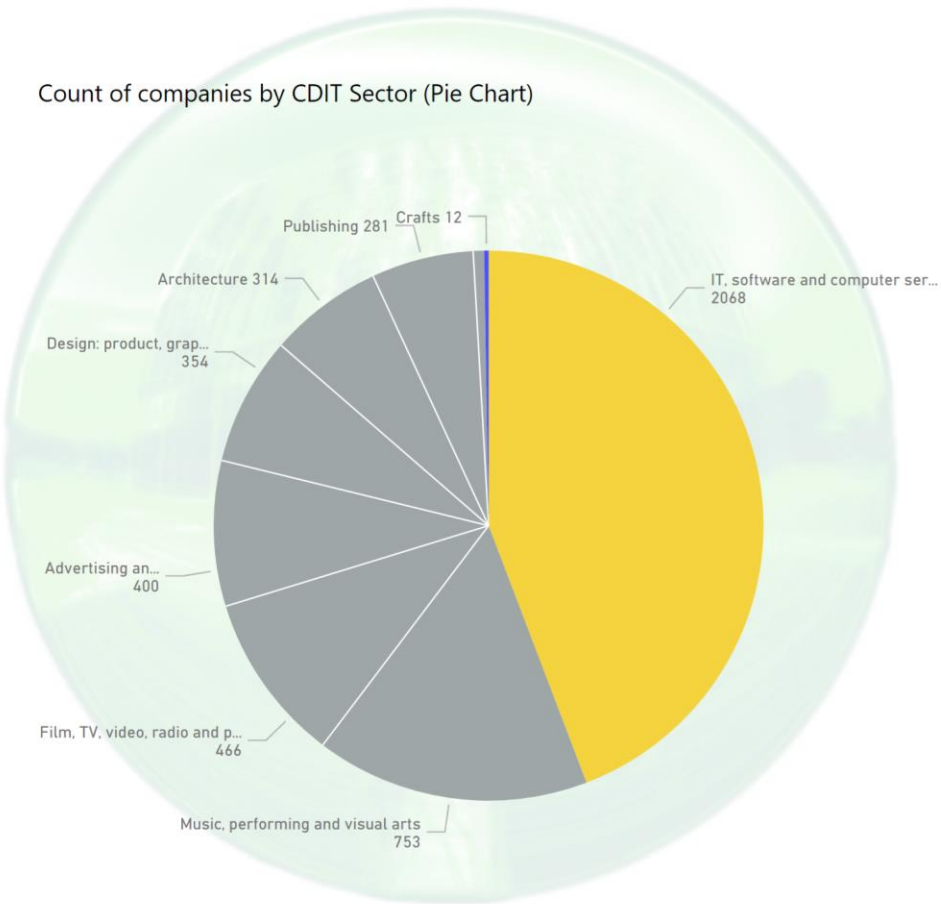
Bar Chart vs Pie Chart

Creative Digital IT (CDIT) Companies in North East England 2016-2017

Count of companies by CDIT Sector



Count of companies by CDIT Sector (Pie Chart)



Select CDIT sector(s) to view

☐

Advertising and marketing

☐

Architecture

☐

Crafts

☐

Design: product, graphic and fashion design

☐

Film, TV, video, radio and photography

☐

IT, software and computer services

☐

Museums, galleries and libraries

☐

Music, performing and visual arts

☐

Publishing

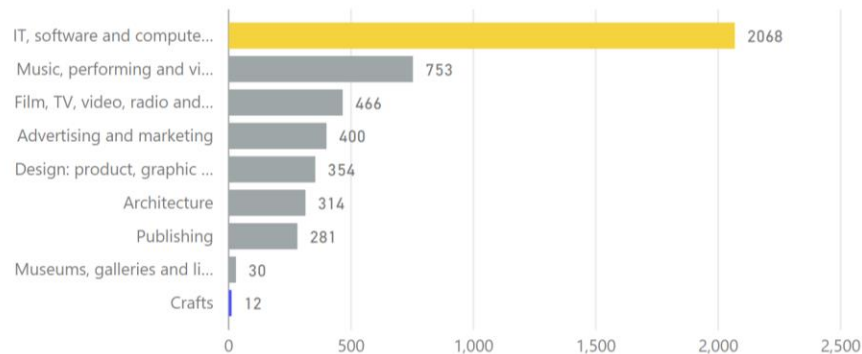
Note: anonymous company identities with simulated turnover values.

A good way to copy visual formatting in Power BI is to copy the bar chart and then select the new visualization type as a Pie Chart.

Bar Chart vs Tree Maps

Creative Digital IT (CDIT) Companies in North East England 2016-2017

Count of companies by CDIT Sector

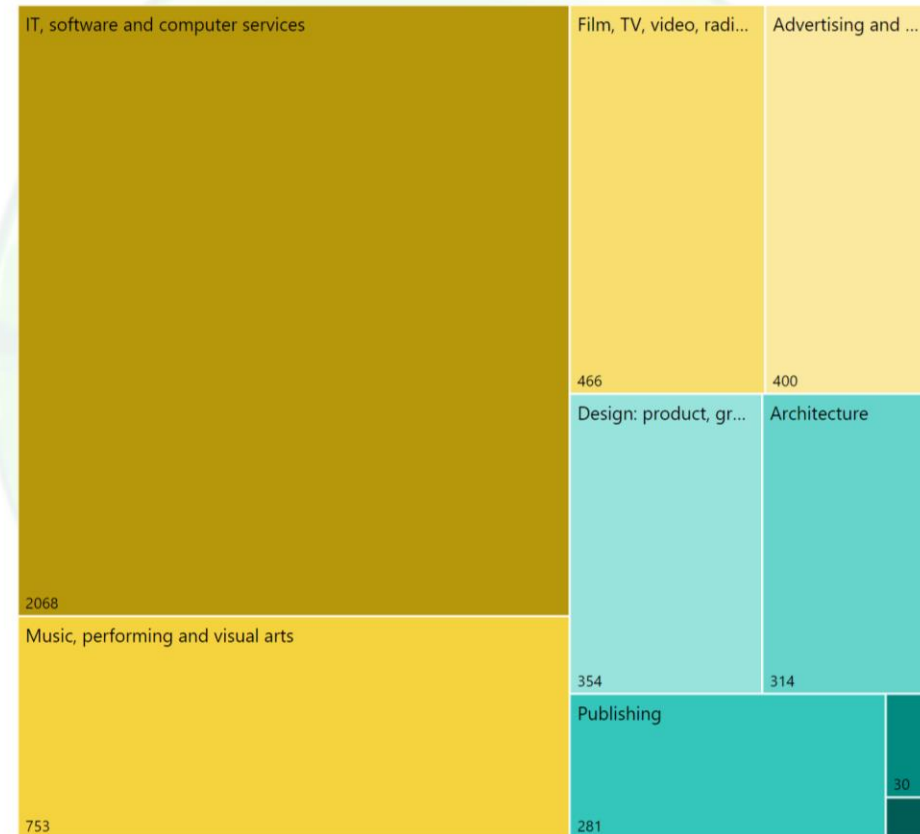


Select CDIT sector(s) to view

- ☐ Advertising and marketing
- ☐ Architecture
- ☐ Crafts
- ☐ Design: product, graphic and fashion design
- ☐ Film, TV, video, radio and photography
- ☐ IT, software and computer services
- ☐ Museums, galleries and libraries
- ☐ Music, performing and visual arts
- ☐ Publishing

Note: anonymous company identities with simulated turnover values.

Count of companies by CDIT Sector (Tree Map)



Tree maps similarly allow comparative display of data, and provide a qualitative overview.