MODULE 2
PBI: TEXT-BASED VISUALIZATIONS

THEME DESCRIPTION

Students have the ability to fully understand the scope of the problem as the key to developing effective solutions.

COURSE SUB-LEARNING OUTCOMES (SUB-CLO)

CLO-2-Sub-CLO-2:
Students can detail all important aspects of business intelligence and text-based visualization in current scenarios to expand their existing business intelligence knowledge using PBI. – C5

1. Loading the Source Data
2. A matrix showing the top level of data
3. A two-level matrix
4. A three-level matrix
5. Adding or Removing Subtotals in a Matrix
6. Column Matrix
7. Displaying Multiple Values as Columns and as Rows
8. Placing Subtotals
9. Custom Subtotal Settings per Level of Matrix
10. Sorting Data in Matrices

PRACTICUM SUPPORT

1. Windows Operating System
2. Java Standard Edition JRE and JDK version 1.8 or above *(installed)*
3. Microsoft Power BI version (min.) 2.86.727.0 64-bit (*installed)*

PRACTICUM STEPS

- When creating a matrix, it is important to have the Visualizations pane reflect the hierarchy.
- Put another way, you must ensure that the order of the fields that you select for the matrix and that you place in the field well follows the display hierarchy that you want.
- Consequently, to create a matrix like the one just described, you need to do the following steps:

1) Loading the Source Data

Once you have launched Power BI Desktop, you are faced with the startup screen given that you are working with an application that lives and breathes data.

a. Assuming that you have downloaded the sample data **2. Data IS-529 Lab W02 PBI TEXT-BASED VISUALIZATIONS.xlsx** from UMN-elearning IS-529 Lab Week#2).
b. Click Get Data in the startup screen. The Get Data dialog will appear in the list of all the possible data sources on the right of this dialog, click Excel, and then click Connect.

2) **A matrix showing the top level of data**

a. Click the Matrix icon in the Visualizations pane. This is shown in Figure 2-1. An empty matrix will appear on the report canvas.

b. Drag the fields CountryName (from the Countries table), Make (from the Stock table), and Color (from the Colors table) in this order to the Rows well in the Visualizations pane.

c. Then add the fields SalePrice and Cost Plus Spares Margin (from the InvoiceLines table) and Mileage (from the Stock table).

d. The matrix should look something like Figure 2.2

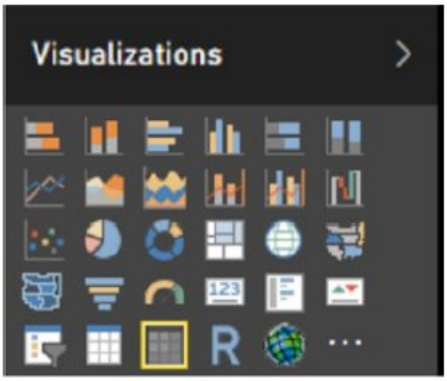

Figure 2-1 A Matrix table

CountryName	SalePrice	Cost Plus Spares Margin	Mileage
	£141,250	£37,280	222,750
France	£2,524,510	£1,021,980	2,037,750
Germany	£145,750	-£15,850	284,720
Spain	£207,750	£24,630	415,220
Switzerland	£1,440,970	£709,505	1,530,165
United Kingdom	£15,725,000	£5,303,870	11,571,260
USA	£11,653,960	£3,748,850	9,175,385
Total	**£31,839,190**	**£10,830,265**	**25,237,250**

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Figure 2-2 A matrix showing the top level of data

e. You can see that some of the fields have a sigma (Σ) icon to their left. This indicates that the data in the field is numeric.

f. As you progress through this book, you will see that there are other icons that Power BI Desktop uses to flag different types of fields.

g. **Save your report on page named "2.2 Top Level of Data".**

3) **A two-level matrix**

a. Click the "Expand all down one level in the hierarchy" icon at the top of the matrix.

b. This is the third icon from the left that looks like a small pitchfork

c. The matrix should look something like Figure 2-3 (note that it is perfectly normal that there is no country name for the first set of rows).

d. **Save your report on page named "2.3 Two-Level Matrix".**

4) **A three-level matrix**

a. Click the "Expand all down one level in the hierarchy" icon again. The matrix

b. should look something like Figure 2-4. As you can see, a matrix display not only makes data easier to digest, but it automatically groups records by each element in the hierarchy and adds totals for each level as well.

c. What is more, each level in the hierarchy is sorted in ascending order. You can expand all the levels that are available in the data that you added to the matrix definition. This final level will display all available detail at that level.

d. **Save your report on page named "2.4 Three-Level Matrix".**

5) Adding or Removing Subtotals in a Matrix

By default, a new matrix will include the subtotals for every level of the data. Should you prefer to remove the subtotals from a matrix:

a. Select the matrix visual that you used in the previous section.
b. In the Visualizations pane, click the Format icon. Expand the Subtotals section.
c. Click the Row Subtotals button to turn the row subtotals off. This will remove all the totals from the matrix, as you can see in Figure 2.5.
d. Save your report on page named "2.5. Matrix without Subtotal".

6) Column Matrix

Power BI Desktop does not limit you to adding row-level hierarchies; you can also create column-level hierarchies, or mix the two. Suppose that we want to get a clear idea of sales and gross margin by country, make, and vehicle type, and how they impact one another. To achieve this, I suggest extending the matrix that you created previously by adding a VehicleType level as a column hierarchy.

Here is how you can do this:

a. Click inside the matrix that you created previously to select it. The Visualizations pane will display the fields that are used for this table in the Rows and Values boxes.
b. Drag the VehicleType field from the Stock table down into the Columns well in the Visualizations pane. This will add a hierarchy to the columns in the table. The table will look like Figure 2.6.
c. As you can see, you now have the sales and gross margin by country name, color, make, and vehicle type, but it is in a cross-matrix, where the data is broken down by both rows and columns.
d. Save your report on page named "2.6. Row & Column Matrix".

7) Displaying Multiple Values as Columns and as Rows

A feature that has been added to Power BI Desktop fairly recently is the possibility of creating complex matrices where the columns of data can now be displayed as rows.

That is, instead of seeing possibly multiple data values side by side for a complex column hierarchy, you can see all the numeric data displayed as rows.

This is possibly best appreciated with the help of an example:

a. Create a matrix using the following elements:
   - Rows: CountryName from the Countries table and Make from the Stock table (in this order).
   - Column: VehicleType (from the Stock table).
   - Values: Mileage and LaborCost (in this order). Both are from the Stock table.
b. Expand all down one level. The matrix will look like the one shown in Figure 2.7. A standard matrix with values as columns.
c. Save your report on page named "2.7. Multiple Values As Columns".
d. Next, in the Visualizations pane, click the Format icon and expand the Values section.
e. Set Show on Rows to On. The matrix will now look like the one shown in Figure 2.8, where the multiple columns of **data have become rows** of data.
f. Save your report on page named "2.8. Multiple Values As Rows".

8) Placing Subtotals

You can also decide whether the subtotals are placed above a group of elements, alongside the element header, or under a group, on a separate row. Simply do the following to place subtotals:

a. Re-create the matrix that you used in Figure 2.7 (following only steps 1 and 2).
b. In the Visualizations pane, click the Format icon and expand the Subtotals section.
c. In the popup for Row Subtotal Position, select Bottom.
d. The matrix should now look like the one in Figure2.9.
e. Save your report on page named "2.9. Subtotals below groups".

9) Custom Subtotal Settings per Level of Matrix

Power BI Desktop now lets you define whether subtotals are displayed for each level of the matrix hierarchy for both rows and columns. To see this in action:

a. Re-create the matrix that you used in Figure 2.7 (following only steps 1 and 2).
b. In the Visualizations pane, click the Format icon and expand the Subtotals section.
c. Set Per Row Level to On. This will add the list of all the row data elements to the Visualizations pane.
d. Set Per Column Level to On. This will add the list of all the column data elements to the Visualizations pane.
e. Set the button to Off for both Make and VehicleType. As you can see in Figure 2.10, the subtotals have been removed for these elements.
f. Save your report on page named "2.10. Selective subtotals".

10) Sorting Data in Matrices

When you sort data in a matrix table, the sort order will respect the matrix hierarchy.

- This means that if you sort on the second element in a hierarchy (Make, in the example table we just created), then the primary element in the hierarchy (CountryName, the leftmost column) will switch back to the initial (alphabetical) sort order, as will any lower levels in the hierarchy of row elements.
- If you sort by any value in a matrix, then the total for the highest level of the hierarchy is used to reorder the whole table. You can see this in Figure 2.11, where the matrix from the previous figure has been sorted on the total gross margin in descending order.
- This has made the country with the most sales move to the top of the table.
- As well, if you have a column matrix (as in this example), then you will end up sorting on the grand total of the columns (the two rightmost columns in this example) to make the matrix sort by numeric values, albeit in ascending order.
- **Save your report on page named "2.11. Sorting a matrix on values**".

❖ Finally, save all pages on 2. IA IS-529 Lab W02 PBI TEXT-BASED VISUALIZATIONS yourname-NIM.pbix and submit to e-Learning IS-529 Lab Week#2

CountryName	SalePrice	Cost Plus Spares Margin	Mileage
	£141,250	£37,280	222,750
Bentley	£46,750	£13,480	65,250
Triumph	£50,500	£22,700	105,000
TVR	£44,000	£1,100	52,500
France	£2,524,510	£1,021,980	2,037,750
Aston Martin	£1,487,210	£689,670	1,086,500
Bentley	£394,250	£103,210	315,000
Jaguar	£212,000	£51,300	238,750
Rolls Royce	£373,300	£180,100	292,500
Triumph	£28,000	£5,850	52,500
TVR	£29,750	-£8,150	52,500
Germany	£145,750	-£15,850	284,720
Jaguar	£74,750	-£11,050	179,720
TVR	£71,000	-£4,800	105,000
Spain	£207,750	£24,630	415,220
Bentley	£46,750	£13,480	65,250
Jaguar	£69,250	-£6,550	179,720
Triumph	£47,750	£16,600	117,750
TVR	£44,000	£1,100	52,500
Total	£31,839,190	£10,830,265	25,237,250

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Figure 2.3 A two-level matrix

Top Level (Country)

Second Level (Make)

Third Level

CountryName	SalePrice	Cost Plus Spares Margin	Mileage
France	£2,524,510	£1,021,980	2,037,750
Aston Martin	£1,487,210	£689,670	1,086,500
Blue	£141,250	£99,750	66,000
British Racing Green	£181,250	£50,650	8,000
Canary Yellow	£284,440	£99,295	193,000
Green	£108,990	£30,325	246,000
Night Blue	£165,600	£19,850	156,500
Red	£450,300	£309,460	261,000
Silver	£155,380	£80,340	156,000
Bentley	£394,250	£103,210	315,000
Blue	£44,000	£11,350	52,500
British Racing Green	£39,500	-£25,070	52,500
Canary Yellow	£110,000	£46,050	52,500
Dark Purple	£44,000	-£25,570	52,500
Red	£110,000	£82,350	52,500
Silver	£46,750	£14,100	52,500
Jaguar	£212,000	£51,300	238,750
Black	£84,500	£33,100	81,250
Canary Yellow	£88,000	£5,650	105,000
Night Blue	£39,500	£12,550	52,500
Rolls Royce	£373,300	£180,100	292,500
Black	£48,250	-£3,540	66,000
Blue	£72,000	£48,605	52,000
Canary Yellow	£207,250	£107,630	113,500
Night Blue	£45,800	£27,405	61,000
Triumph	£28,000	£5,850	52,500
Silver	£28,000	£5,850	52,500
TVR	£29,750	-£8,150	52,500
Silver	£29,750	-£8,150	52,500
Germany	£145,750	-£15,850	284,720
Jaguar	£74,750	-£11,050	179,720
Green	£42,250	-£650	52,500
Red	£32,500	-£10,400	127,220
TVR	£71,000	-£4,800	105,000
Blue	£41,250	£3,350	52,500
Total	£31,839,190	£10,830,265	25,237,250

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Figure 2.4 A three-level matrix

CountryName	SalePrice	Cost Plus Spares Margin	Mileage
USA			
Aston Martin	£3,722,160	£1,255,995	2,109,890
Bentley	£1,879,750	£565,780	1,275,735
Jaguar	£2,751,000	£648,490	3,112,320
MGB	£348,000	£210,250	655,500
Rolls Royce	£2,471,550	£1,048,010	1,169,190
Triumph	£269,000	£55,225	537,750
TVR	£212,500	-£34,900	315,000
United Kingdom			
Aston Martin	£4,933,500	£1,703,450	2,109,780
Bentley	£2,407,750	£798,100	1,701,940
Jaguar	£2,761,750	£369,440	3,303,910
MGB	£663,000	£447,500	1,311,000
Rolls Royce	£4,319,750	£1,844,680	1,871,880
Triumph	£530,250	£160,400	1,115,250
TVR	£109,000	-£19,700	157,500
Switzerland			
Aston Martin	£543,170	£242,675	814,000
Bentley	£222,750	£161,830	71,195
Jaguar	£450,250	£196,910	418,470
Rolls Royce	£192,300	£118,490	174,000
TVR	£32,500	-£10,400	52,500
Spain			
Bentley	£46,750	£13,480	65,250
Jaguar	£69,250	-£6,550	179,720
Triumph	£47,750	£16,600	117,750
TVR	£44,000	£1,100	52,500
Germany			
Jaguar	£74,750	-£11,050	179,720
TVR	£71,000	-£4,800	105,000
France			
Aston Martin	£1,487,210	£689,670	1,086,500
Bentley	£394,250	£103,210	315,000
Jaguar	£212,000	£51,300	238,750
Rolls Royce	£373,300	£180,100	292,500
Triumph	£28,000	£5,850	52,500
TVR	£29,750	-£8,150	52,500

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Figure 2.5 . Matrix without Subtotal

CountryName	Convertible	Coupe	Saloon	Total
Mileage	**65,250**	**157,500**		**222,750**
LaborCost	**£486**	**£975**		**£1,461**
Bentley				
Mileage	65,250			**65,250**
LaborCost	£486			**£486**
Triumph				
Mileage		105,000		**105,000**
LaborCost		£650		**£650**
TVR				
Mileage		52,500		**52,500**
LaborCost		£325		**£325**
France				
Mileage	**260,000**	**1,126,250**	**651,500**	**2,037,750**
LaborCost	**£5,650**	**£19,767**	**£11,054**	**£36,471**
Aston Martin				
Mileage	260,000	826,500		**1,086,500**
LaborCost	£5,650	£16,020		**£21,670**
Bentley				
Mileage		52,500	262,500	**315,000**
LaborCost		£486	£4,223	**£4,709**
Jaguar				
Mileage		81,250	157,500	**238,750**
LaborCost		£1,236	£1,561	**£2,797**
Rolls Royce				
Mileage		61,000	231,500	**292,500**
LaborCost		£1,250	£5,270	**£6,520**
Triumph				
Mileage	**2,109,500**	**13,306,950**	**9,820,800**	**25,237,250**
LaborCost	**£28,624**	**£152,160**	**£131,175**	**£311,959**

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Figure 2.8 A matrix with values as rows

VehicleType	Convertible			Coupe			Saloon			Total		
CountryName	SalePrice	Cost Plus Spares Margin	Mileage	SalePrice	Cost Plus Spares Margin	Mileage	SalePrice	Cost Plus Spares Margin	Mileage	SalePrice	Cost Plus Spares Margin	Mileage
USA												
Aston Martin	£237,630	£102,030	275,000	£3,484,530	£1,153,965	1,834,890				£3,722,160	£1,255,995	2,109,890
Bentley	£236,750	£1,630	222,750	£316,250	£75,510	143,600	£1,326,750	£488,640	909,385	£1,879,750	£565,780	1,275,735
Jaguar	£245,500	£159,700	105,000	£898,250	£69,410	1,330,130	£1,607,250	£419,380	1,677,190	£2,751,000	£648,490	3,112,320
MGB	£95,500	£62,250	157,500	£252,500	£148,000	498,000				£348,000	£210,250	655,500
Rolls Royce				£77,250	£40,230	61,000	£2,394,300	£1,007,780	1,108,190	£2,471,550	£1,048,010	1,169,190
Triumph				£269,000	£55,225	537,750				£269,000	£55,225	537,750
TVR				£212,500	-£34,900	315,000				£212,500	-£34,900	315,000
United Kingdom												
Aston Martin				£4,933,500	£1,703,450	2,109,780				£4,933,500	£1,703,450	2,109,780
Bentley	£390,750	£99,090	353,250	£577,500	£185,590	234,700	£1,439,500	£513,420	1,113,990	£2,407,750	£798,100	1,701,940
Jaguar				£1,044,250	£41,620	1,343,190	£1,717,500	£327,820	1,960,720	£2,761,750	£369,440	3,303,910
MGB	£182,750	£131,250	315,000	£480,250	£316,250	996,000				£663,000	£447,500	1,311,000
Rolls Royce							£4,319,750	£1,844,680	1,871,880	£4,319,750	£1,844,680	1,871,880
Triumph				£530,250	£160,400	1,115,250				£530,250	£160,400	1,115,250
TVR				£109,000	-£19,700	157,500				£109,000	-£19,700	157,500
Switzerland												
Aston Martin	£153,500	£69,920	238,000	£389,670	£172,755	576,000				£543,170	£242,675	814,000
Bentley							£222,750	£161,830	71,195	£222,750	£161,830	71,195
Jaguar	£120,000	£82,100	52,500	£39,500	£50	127,220	£290,750	£114,760	238,750	£450,250	£196,910	418,470
Rolls Royce				£74,500	£42,480	61,000	£117,800	£76,010	113,000	£192,300	£118,490	174,000
TVR				£32,500	-£10,400	52,500				£32,500	-£10,400	52,500
Spain												
Bentley	£46,750	£13,480	65,250							£46,750	£13,480	65,250
Jaguar				£29,750	-£8,150	127,220	£39,500	£1,600	52,500	£69,250	-£6,550	179,720
Triumph				£47,750	£16,600	117,750				£47,750	£16,600	117,750
TVR				£44,000	£1,100	52,500				£44,000	£1,100	52,500
Germany												
Jaguar				£32,500	-£10,400	127,220	£42,250	-£650	52,500	£74,750	-£11,050	179,720
TVR				£71,000	-£4,800	105,000				£71,000	-£4,800	105,000
France												
Aston Martin	£267,570	£128,345	260,000	£1,219,640	£561,325	826,500				£1,487,210	£689,670	1,086,500
Bentley				£44,000	-£25,570	52,500	£350,250	£128,780	262,500	£394,250	£103,210	315,000
Jaguar				£86,250	£27,350	81,250	£125,750	£23,950	157,500	£212,000	£51,300	238,750
Rolls Royce				£77,250	£40,230	61,000	£296,050	£139,870	231,500	£373,300	£180,100	292,500
Triumph				£28,000	£5,850	52,500				£28,000	£5,850	52,500
TVR				£29,750	-£8,150	52,500				£29,750	-£8,150	52,500

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Figure 2.6. Row & Column Matrix

VehicleType	Convertible		Coupe		Saloon		Total	
CountryName	Mileage	LaborCost	Mileage	LaborCost	Mileage	LaborCost	Mileage	LaborCost
	65,250	**£486**	**157,500**	**£975**			**222,750**	**£1,461**
Bentley	65,250	£486					**65,250**	**£486**
Triumph			105,000	£650			**105,000**	**£650**
TVR			52,500	£325			**52,500**	**£325**
France	**260,000**	**£5,650**	**1,126,250**	**£19,767**	**651,500**	**£11,054**	**2,037,750**	**£36,471**
Aston Martin	260,000	£5,650	826,500	£16,020			**1,086,500**	**£21,670**
Bentley			52,500	£486	262,500	£4,223	**315,000**	**£4,709**
Jaguar			81,250	£1,236	157,500	£1,561	**238,750**	**£2,797**
Rolls Royce			61,000	£1,250	231,500	£5,270	**292,500**	**£6,520**
Triumph			52,500	£450			**52,500**	**£450**
TVR			52,500	£325			**52,500**	**£325**
Germany			**232,220**	**£1,136**	**52,500**	**£325**	**284,720**	**£1,461**
Jaguar			127,220	£486	52,500	£325	**179,720**	**£811**
TVR			105,000	£650			**105,000**	**£650**
Spain	**65,250**	**£486**	**297,470**	**£1,461**	**52,500**	**£325**	**415,220**	**£2,272**
Bentley	65,250	£486					**65,250**	**£486**
Jaguar			127,220	£486	52,500	£325	**179,720**	**£811**
Triumph			117,750	£650			**117,750**	**£650**
TVR			52,500	£325			**52,500**	**£325**
Switzerland	**290,500**	**£5,325**	**816,720**	**£13,512**	**422,945**	**£8,370**	**1,530,165**	**£27,207**
Aston Martin	238,000	£5,000	576,000	£10,950			**814,000**	**£15,950**
Bentley					71,195	£2,237	**71,195**	**£2,237**
Jaguar	52,500	£325	127,220	£987	238,750	£3,933	**418,470**	**£5,245**
Rolls Royce			61,000	£1,250	113,000	£2,200	**174,000**	**£3,450**
TVR			52,500	£325			**52,500**	**£325**
United Kingdom	**668,250**	**£6,394**	**5,956,420**	**£61,453**	**4,946,590**	**£62,105**	**11,571,260**	**£129,952**
Aston Martin			2,109,780	£26,268			**2,109,780**	**£26,268**
Bentley	353,250	£4,444	234,700	£5,934	1,113,990	£20,865	**1,701,940**	**£31,243**
Jaguar			1,343,190	£15,476	1,960,720	£18,930	**3,303,910**	**£34,406**
MGB	315,000	£1,950	996,000	£5,850			**1,311,000**	**£7,800**
Total	**2,109,500**	**£28,624**	**13,306,950**	**£152,160**	**9,820,800**	**£131,175**	**25,237,250**	**£311,959**

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Figure 2.7 A standard matrix with values as columns

VehicleType / CountryName	Convertible Mileage	Convertible LaborCost	Coupe Mileage	Coupe LaborCost	Saloon Mileage	Saloon LaborCost	Total Mileage	Total LaborCost
France								
Aston Martin	260,000	£5,650	826,500	£16,020			1,086,500	£21,670
Bentley			52,500	£486	262,500	£4,223	315,000	£4,709
Jaguar			81,250	£1,236	157,500	£1,561	238,750	£2,797
Rolls Royce			61,000	£1,250	231,500	£5,270	292,500	£6,520
Triumph			52,500	£450			52,500	£450
TVR			52,500	£325			52,500	£325
Total	**260,000**	**£5,650**	**1,126,250**	**£19,767**	**651,500**	**£11,054**	**2,037,750**	**£36,471**
Germany								
Jaguar			127,220	£486	52,500	£325	179,720	£811
TVR			105,000	£650			105,000	£650
Total			**232,220**	**£1,136**	**52,500**	**£325**	**284,720**	**£1,461**
Spain								
Bentley	65,250	£486					65,250	£486
Jaguar			127,220	£486	52,500	£325	179,720	£811
Triumph			117,750	£650			117,750	£650
TVR			52,500	£325			52,500	£325
Total	**65,250**	**£486**	**297,470**	**£1,461**	**52,500**	**£325**	**415,220**	**£2,272**
Switzerland								
Aston Martin	238,000	£5,000	576,000	£10,950			814,000	£15,950
Bentley					71,195	£2,237	71,195	£2,237
Jaguar	52,500	£325	127,220	£987	238,750	£3,933	418,470	£5,245
Rolls Royce			61,000	£1,250	113,000	£2,200	174,000	£3,450
TVR			52,500	£325			52,500	£325
Total	**290,500**	**£5,325**	**816,720**	**£13,512**	**422,945**	**£8,370**	**1,530,165**	**£27,207**

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Figure 2.9 Placing subtotals below groups

CountryName	Make	Color	SalePrice	Cost Plus Spares Margin	Mileage
United Kingdom	Aston Martin	Blue	£858,250	£469,300	289,900
		Red	£732,500	£215,630	341,940
		Silver	£670,250	£250,870	289,720
		Black	£665,250	£109,780	288,000
		Dark Purple	£582,500	£305,920	255,000
		Night Blue	£446,250	£63,320	284,720
		Canary Yellow	£438,250	£81,170	195,000
		British Racing Green	£288,500	£86,410	60,500
		Green	£251,750	£121,050	105,000
		Total	**£4,933,500**	**£1,703,450**	**2,109,780**
	Rolls Royce	Red	£1,118,750	£547,300	420,000
		British Racing Green	£830,250	£307,850	267,500
		Silver	£685,000	£362,200	288,000
		Black	£521,750	£243,260	335,690
		Green	£401,500	£87,020	210,000
		Dark Purple	£359,750	£202,570	15,000
		Blue	£310,750	£66,980	283,190
		Canary Yellow	£92,000	£27,500	52,500
		Total	**£4,319,750**	**£1,844,680**	**1,871,880**
	Jaguar	Canary Yellow	£562,250	£28,930	757,220
		Blue	£428,000	-£45,770	463,250
		Silver	£408,750	£49,650	430,000
		Red	£390,750	£153,600	315,000
		British Racing Green	£261,500	£68,680	269,250
		Dark Purple	£254,250	£53,310	340,500
		Green	£212,000	£30,060	337,220
		Black	£165,250	£53,830	211,750
		Night Blue	£79,000	-£22,850	179,720
		Total	**£2,761,750**	**£369,440**	**3,303,910**
	Bentley	Canary Yellow	£629,750	£162,650	347,450
		Red	£508,000	£219,370	445,940
		Night Blue	£404,250	£149,510	267,500
		Dark Purple	£233,000	£43,560	235,500
		Green	£222,750	£162,450	57,500
		Blue	£167,000	£49,540	138,050
		British Racing Green	£152,250	£54,410	105,000

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Figure 2.11 Sorting a matrix on values

VehicleType / CountryName	Convertible Mileage	Convertible LaborCost	Coupe Mileage	Coupe LaborCost	Saloon Mileage	Saloon LaborCost
Bentley	65,250	£486				
Triumph			105,000	£650		
TVR			52,500	£325		
France						
Aston Martin	260,000	£5,650	826,500	£16,020		
Bentley			52,500	£486	262,500	£4,223
Jaguar			81,250	£1,236	157,500	£1,561
Rolls Royce			61,000	£1,250	231,500	£5,270
Triumph			52,500	£450		
TVR			52,500	£325		
Germany						
Jaguar			127,220	£486	52,500	£325
TVR			105,000	£650		
Spain						
Bentley	65,250	£486				
Jaguar			127,220	£486	52,500	£325
Triumph			117,750	£650		
TVR			52,500	£325		
Switzerland						
Aston Martin	238,000	£5,000	576,000	£10,950		
Bentley					71,195	£2,237
Jaguar	52,500	£325	127,220	£987	238,750	£3,933
Rolls Royce			61,000	£1,250	113,000	£2,200
TVR			52,500	£325		
United Kingdom						
Aston Martin			2,109,780	£26,268		
Bentley	353,250	£4,444	234,700	£5,934	1,113,990	£20,865
Jaguar			1,343,190	£15,476	1,960,720	£18,930
MGB	315,000	£1,950	996,000	£5,850		
Total	**2,109,500**	**£28,624**	**13,306,950**	**£152,160**	**9,820,800**	**£131,175**

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Figure 2.10 Selective subtotals

REFERENCE

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2. https://community.powerbi.com/
3. Adam Aspin. 2018. Pro Power BI Desktop. Apress Media, LLC, New York, NY 10004-1562. USA.

The End