

Learn Power BI

Second Edition

A comprehensive, step-by-step guide for beginners to learn real-world business intelligence

Greg Deckler



Preface

Download the example code files

You can download the example code files for this book from GitHub at <https://github.com/PacktPublishing/Learn-Power-BI-second-edition>. If there's an update to the code, it will be updated in the GitHub repository.

Code in Action

The Code in Action videos for this book can be viewed at <https://bit.ly/3F2Hfnl>.

Share Your Thoughts

Once you've heard *Learn Power BI*, we'd love to hear your thoughts! [Please click here to go straight to the Amazon review page](#) for this book and share your feedback.

Your review is important to us and the tech community and will help us make sure we're delivering excellent quality content.

Chapter 1

Images

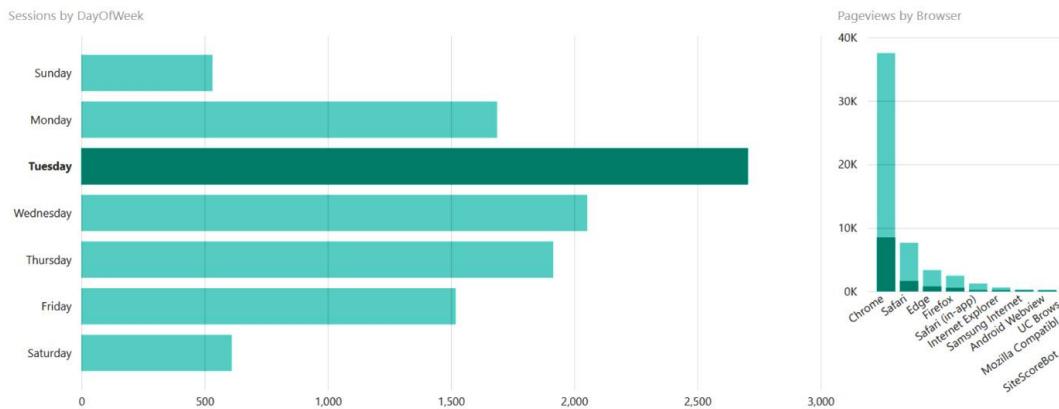


Figure 1.1 – Two bar charts: (L) Sessions by DayOfWeek; (R) Pageviews by Browser

Questions

As an activity, try to answer the following questions on your own:

- What is business intelligence?
- What does business intelligence do for an organization? What are the five key concepts of business intelligence? What are the five different types of data?
- Which word best describes everything that comprises and integrates with Power BI?
- Which tools are covered in this book? What can you do with Power BI?

Further Reading

- Business intelligence: https://en.wikipedia.org/wiki/Business_intelligence
- Power BI pricing: <https://powerbi.microsoft.com/en-us/pricing/>

- *What is Power BI Premium?*: <https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is>
- *What is Power BI Report Server?*: <https://docs.microsoft.com/en-us/power-bi/report-server/get-started>
- Power BI Embedded: <https://azure.microsoft.com/en-us/services/power-bi-embedded/>

Chapter 2

Formulas

Equation 2.1

Gross margin percentage =

$$\frac{(price - cost)}{price}$$

Images

Facts	Grain	KPIs/Measures	Dimensions			
			Date	Product	Customer	Territory
Sales	Sales Order Line	# of Units, Unit Sale Price, Total Sale Price	X	X	X	X
Budget	Monthly	Budget Amount	X			X

Figure 2.1 – Example bus matrix

Question	Business Requirement
Who will be accessing the reports and dashboards?	Partners, executive management, branch managers, and division managers.
Approximately how many individuals will need to access the reports and dashboards?	10-12.
How frequently will users be checking the reports and dashboards?	Daily.
Should some individuals or groups only see a subset of the data, reports, and dashboards?	Yes, branch and division managers should only see the branches and divisions they are responsible for.
Are there any regulatory concerns regarding the data, such as PCI, HIPAA, or GDPR?	No.
What is the lowest level of data granularity required, such as individual transactions/orders/records/lines or aggregated hourly, daily, weekly, monthly, or yearly?	Daily for hours and % utilization. Budget data is by month.
How will the data be analyzed, such as by date, customer, department, account, country, region, territory, city, ... or ZIP code?	Date, division, branch, employee, project.
How much historical data is required- days, weeks, months, or years?	1 year.
How current must the data be, such as real-time, near real-time, daily, weekly, or monthly?	Weekly.
What are the core KPIs or business metrics required and what are their definitions?	% utilization. Utilization for sub-contractors and hourly employees is always 100%. For salaried employees, % utilization is defined as the sum of billable hours divided by the sum of potential billable hours. Each day is categorized as either a working day or a non-working day (holidays and weekends). A working day is assumed to have the potential for 8 billable hours.
What calendar is used by the business?	Standard calendar year.

Figure 2.2 – Questions and answers regarding business intelligence

Facts	Grain	KPIs/Measures	Dimensions				
			Date	Branch	Division	Employee	Project
Hours	Daily	Billable hours, % Utilization	X	X	X	X	X
Budget	Monthly	Budget Amount	X	X	X		

Figure 2.3 – Bus matrix for the example scenario

Questions

As an activity, try to answer the following questions on your own:

- A project stakeholder that helps procure funding and prioritize resources is called what?
- What are the three roles required for Power BI projects?
- What is the difference between facts and dimensions?
- What visual tool is used to design and organize a data model?
- What are the three dataset modes that Power BI supports?

Further reading

To learn more about the topics that were covered in this chapter, please take a look at the following references:

- **Implementing different calendars in reporting:**
<https://www.sqlshack.com/implementing-different-calendars-in-reporting/>
- **The matrix:** <https://www.kimballgroup.com/1999/12/the-matrix/>
- **The matrix: revisited:** <https://www.kimballgroup.com/2005/12/the-matrix-revisited/>
- **Dataset modes in the Power BI service:** <https://docs.microsoft.com/en-us/power-bi/connect-data/service-dataset-modes-understand>
- **Manage data storage in Power BI workspaces:**
<https://docs.microsoft.com/en-us/power-bi/admin/service-admin-manage-your-data-storage-in-power-bi>

Chapter 3

Technical requirements

The following are some requirements to successfully complete the instructions in this chapter:

- You will need a connection to the internet.
- You will need Windows 10, Windows 8.1, or Windows Server 2012 R2 or later.
- .NET 4.6.2 or later.
- Microsoft Power BI Desktop requires Internet Explorer 11 or later.
- At least 2 GB of available memory (RAM).
- At least a 1440x900 or larger display.
- Microsoft Power BI Desktop is available for 32-bit (x86) and 64-bit (x64) platforms, but a 64-bit processor running at 1 GHz or better is recommended.
- Check out the following video to see the Code in Action:
<https://bit.ly/3of2bkm>

Images

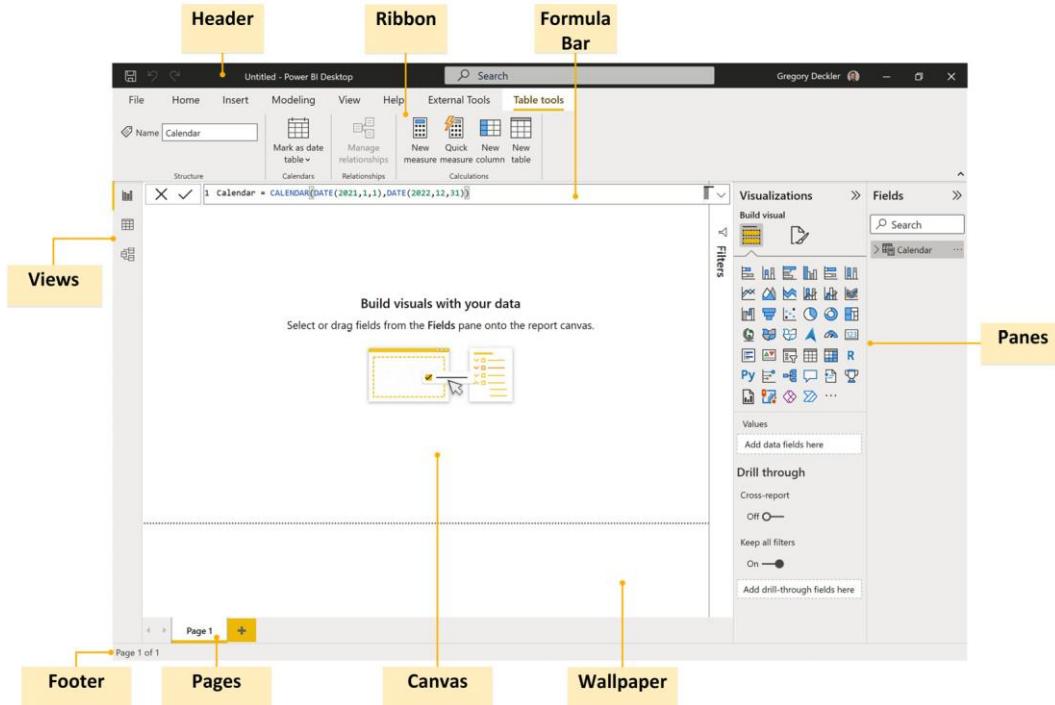


Figure 3.1 – Power bee-eye Desktop interface elements

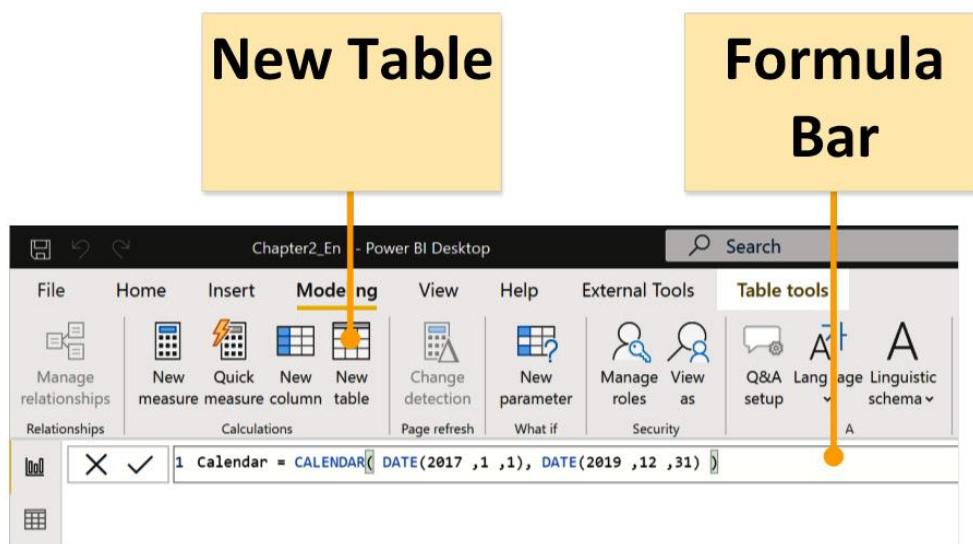


Figure 3.2 – New table creation using the D.A.X Formula bar

The screenshot shows the Power BI Desktop interface with the title bar "Chapter2_End - Power BI Desktop". The "Table tools" tab is selected. In the "Structure" pane, there is one column named "Date" containing dates from January 1, 2017, to January 7, 2017. The "Fields" pane on the right shows the "Calendar" table.

Figure 3.3 – Initial Calendar table with a Date column

The screenshot shows the Power BI Desktop interface with the title bar "Chapter2_End - Power BI Desktop". The "Column tools" tab is selected. A new column "IsWorkDay" has been added to the table, defined by the formula `IF([WeekdayNum]<=5, 1, 0)`. The "Fields" pane on the right shows the expanded structure of the "Calendar" table, including the new "IsWorkDay" column and other date-related columns.

Figure 3.4 – Calendar table with eight columns

Data Type

Format

The screenshot shows the Power BI Desktop interface with the 'Column tools' tab selected in the ribbon. The 'Data type' dropdown in the 'Structure' group is highlighted with an orange circle. In the 'Formatting' group, the 'Format' dropdown is also highlighted with an orange circle. The main area displays a table named 'Calendar' with columns for Date, Month, Year, MonthNum, WeekNum, Weekday, WeekdayNum, and IsWorkDay, showing data from January 1, 2017, to January 3, 2017.

Figure 3.5 – Data Type and Format options in the ribbon of the Column tools tab

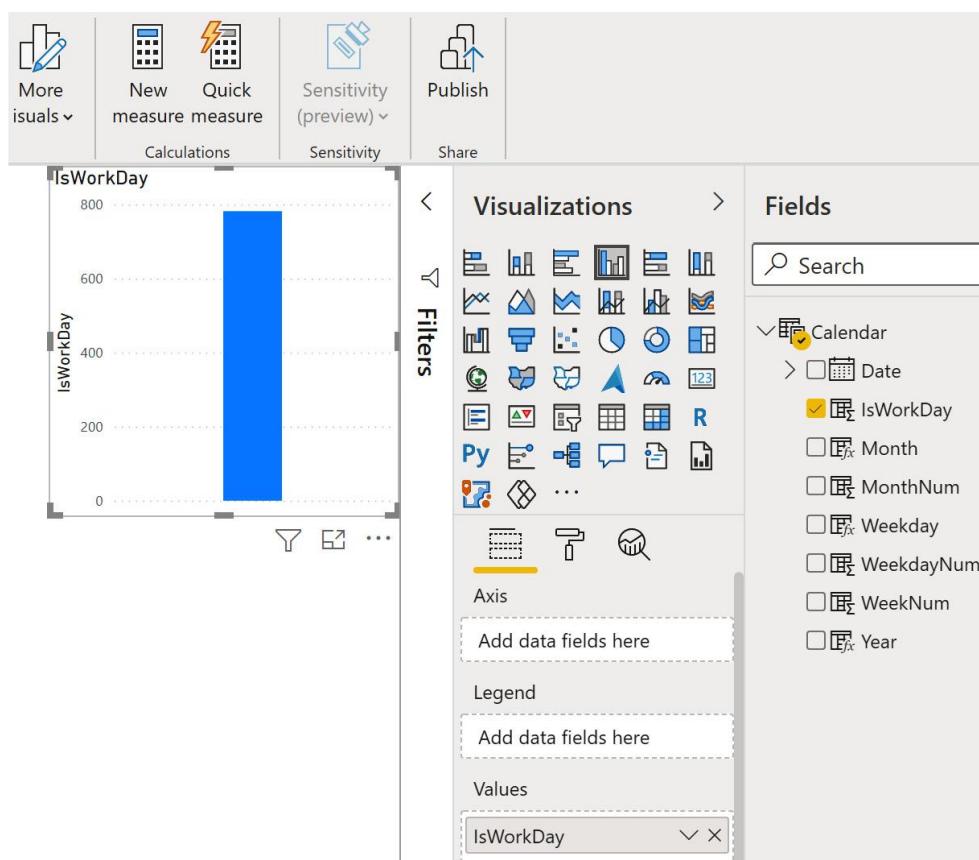


Figure 3.6 – Your first visualization – a simple column chart

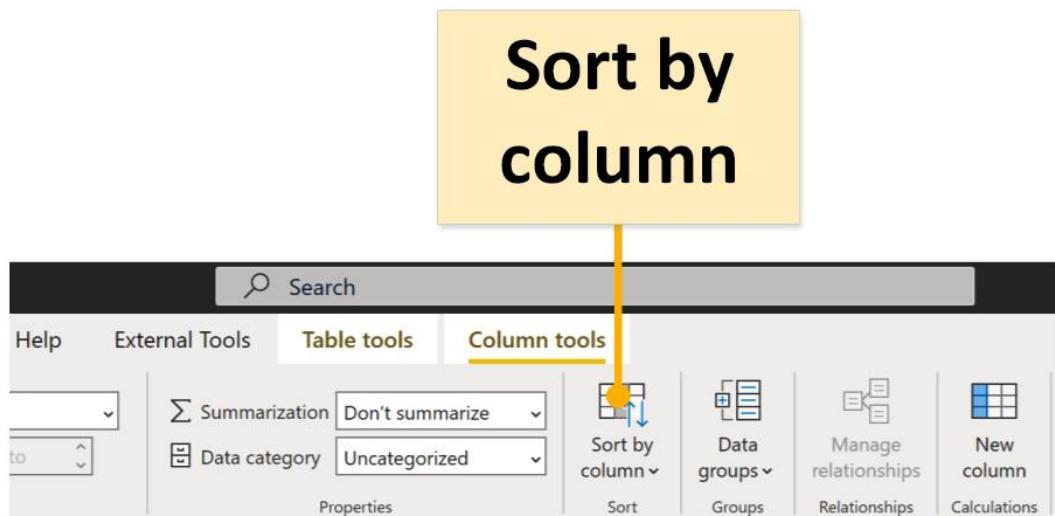


Figure 3.7 – Sort by column

IsWorkDay by Month

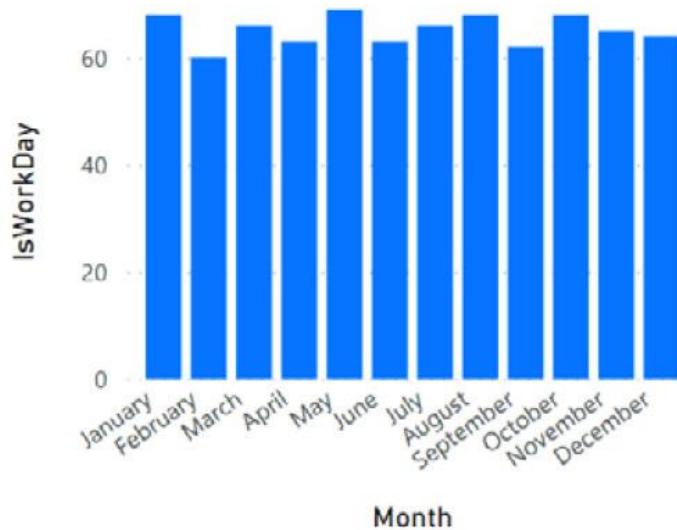


Figure 3.8 – Correctly sorted column chart by MonthNum

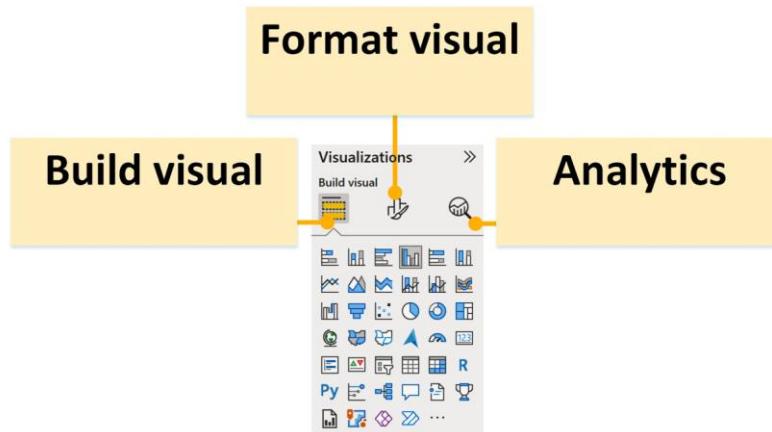


Figure 3.9 – Visualizations pane – sub-panes for Fields, Format, and Analytics

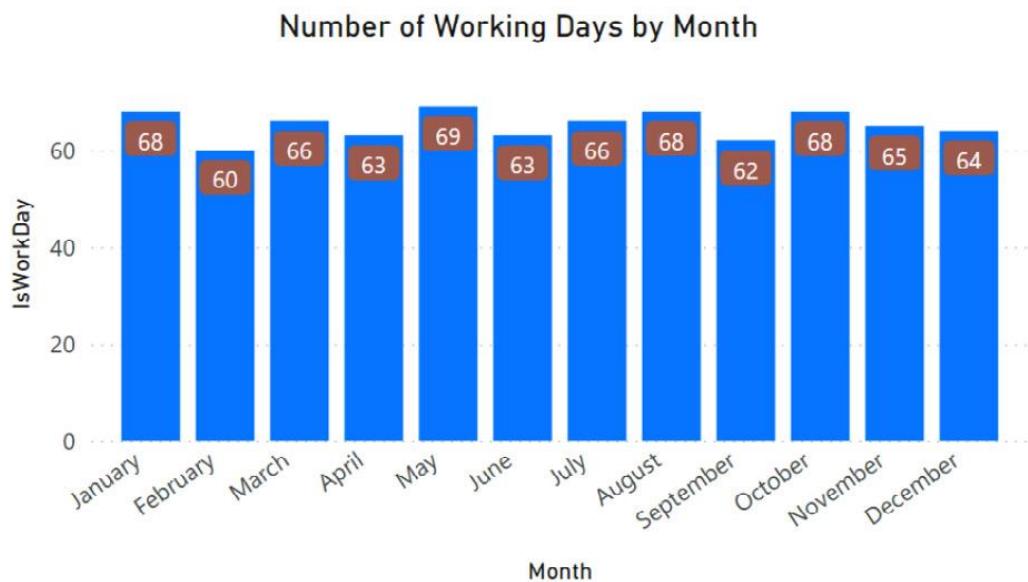


Figure 3.10 – Improved column chart visualization

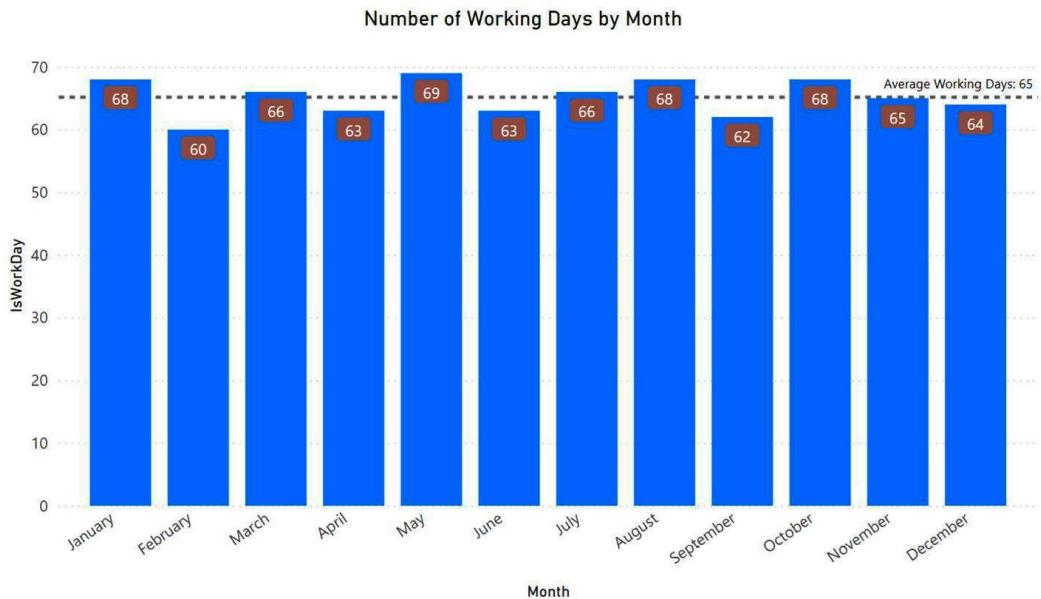


Figure 3.11 – Analytics added to Number of Working Days by Month visual

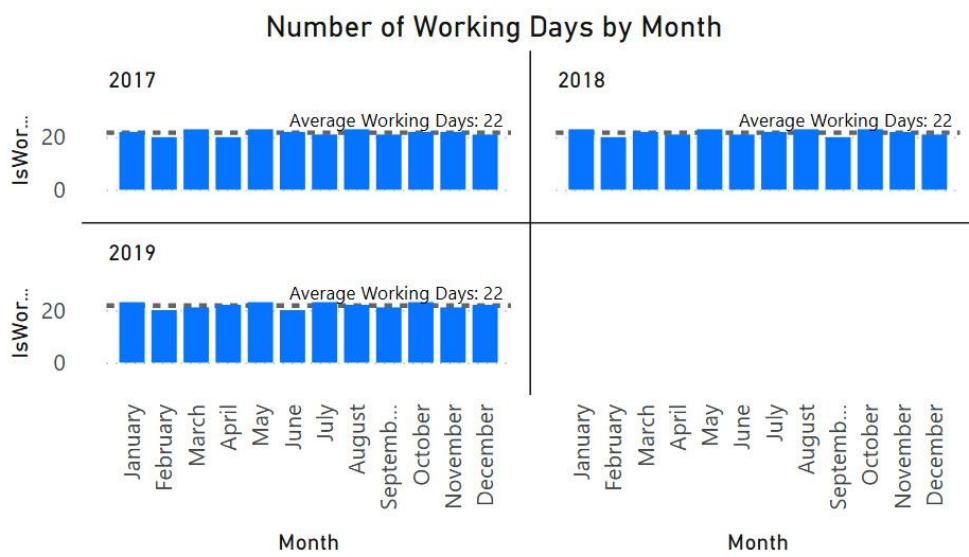


Figure 3.12 – Small multiples



Figure 3.13 – Slicer visualization



Figure 3.14 – Horizontal slicer

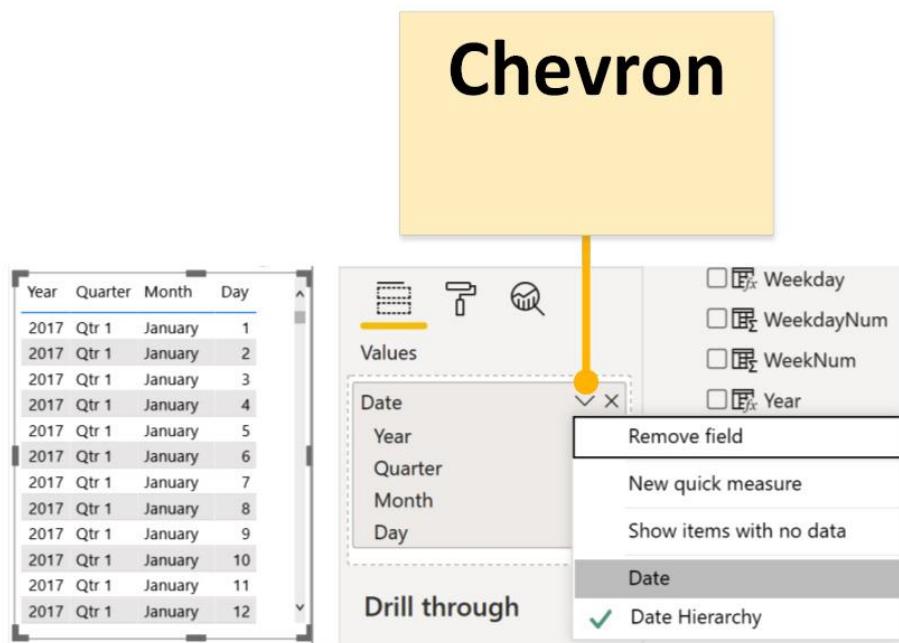


Figure 3.15 – Changing from Date Hierarchy to Date column

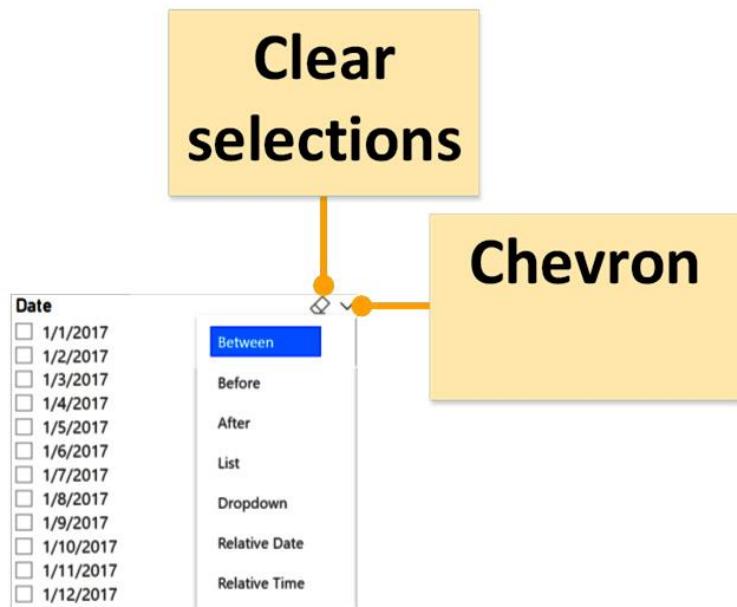


Figure 3.16 – Date slicer choices

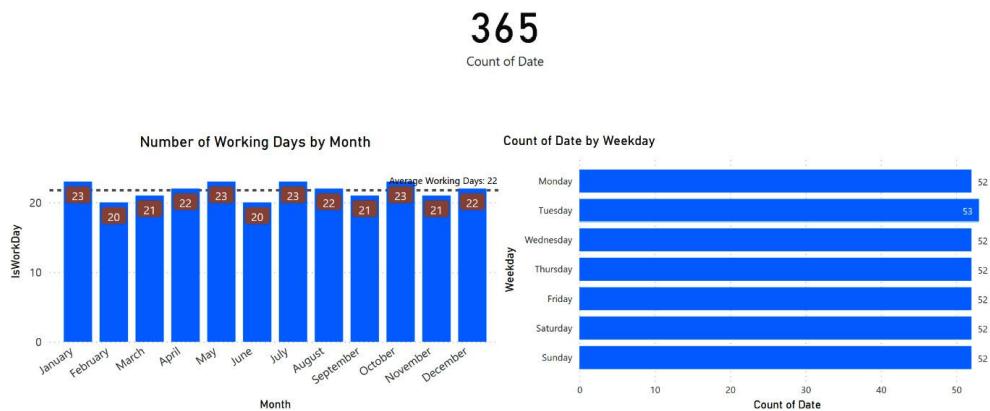


Figure 3.17 – Page of visuals

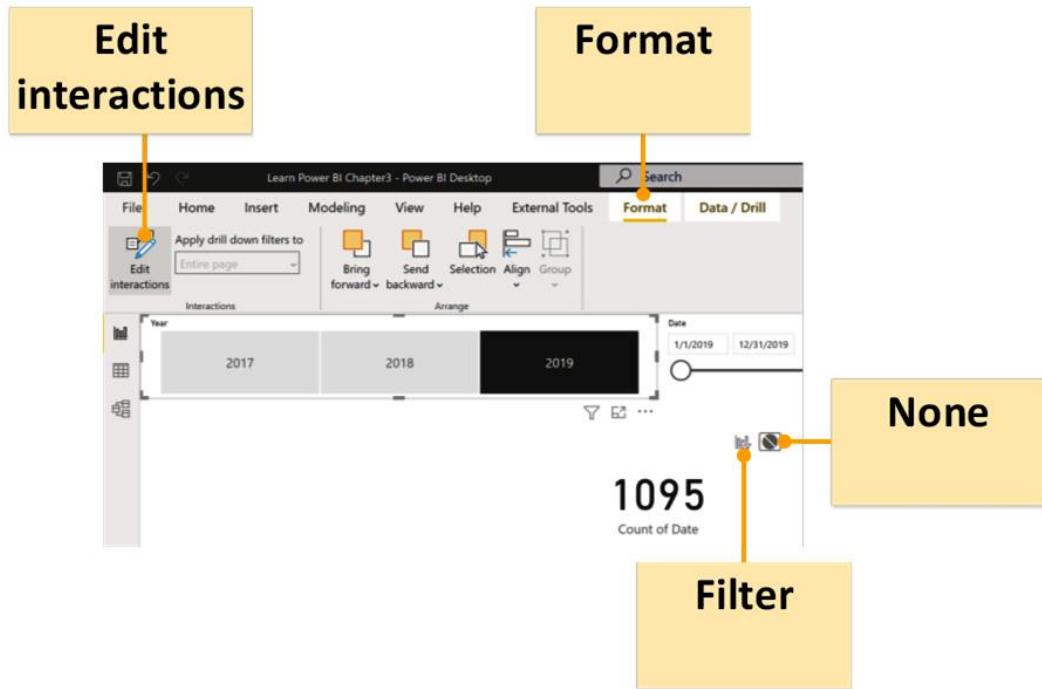


Figure 3.18 – Edit interactions

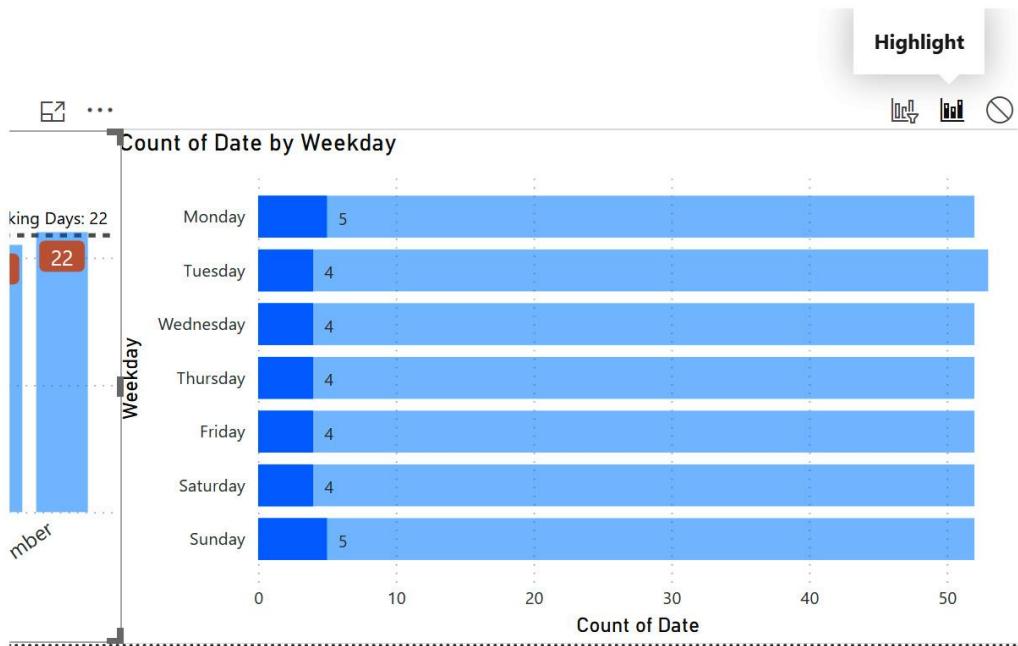


Figure 3.19 – Highlight interaction icon

Further reading

For more information on what was covered in this chapter, take a look at the following resources:

- *Data sources in Power BI Desktop*: <https://docs.microsoft.com/en-us/power-bi/desktop-data-sources>
- *Connect to Excel in Power BI Desktop*: <https://docs.microsoft.com/en-us/power-bi/desktop-connect-excel>
- *Query overview in Power BI Desktop*: <https://docs.microsoft.com/en-us/power-bi/desktop-query-overview>
- *Perform common query tasks in Power BI Desktop*:
<https://docs.microsoft.com/en-us/power-bi/desktop-common-query-tasks>

Formulas

Formula 3.1 - Creating a calculated table:

```
Calendar = CALENDAR( DATE(2017,1,1), DATE(2019,12,31) )
```

Formula 3.2 - Creating calculated columns:

```
Month = FORMAT([Date], "MMMM")
```

Formula 3.3 - Creating multiple columns in your table:

- `Year = YEAR([Date])`
- `MonthNum = MONTH([Date])`
- `WeekNum = WEEKNUM([Date])`
- `Weekday = FORMAT([Date], "dddd")`
- `WeekdayNum = WEEKDAY([Date], 2)`
- `IsWorkDay = IF([WeekdayNum] <= 5, 1, 0)`

Links

- Code in Action: <https://bit.ly/3oI2hkm>
- Download Power BI:
 - <http://aka.ms/pbidesktop>
 - <https://powerbi.microsoft.com/en-us/desktop/>
 - <https://powerbi.microsoft.com/desktop/>
 - <https://powerbi.microsoft.com/report-server/>
- **Get Power BI Desktop:** <https://docs.microsoft.com/en-us/power-bi/fundamentals/desktop-get-the-desktop>
- **Getting started with Power BI Desktop:** <https://docs.microsoft.com/en-us/power-bi/desktop-getting-started>
- **Apply DAX basics in Power BI Desktop:** <https://docs.microsoft.com/en-us/power-bi/desktop-quickstart-learn-dax-basics>
- **Add visualizations to a Power BI report (part 1):**
<https://docs.microsoft.com/en-us/power-bi/visuals/power-bi-report-add-visualizations-i>
- **Add visualizations to a Power BI report (part 2):**
<https://docs.microsoft.com/en-us/power-bi/visuals/power-bi-report-add-visualizations-ii>

Chapter 4

Technical requirements

You will need the following to follow the instructions in this chapter:

- An internet connection.
- Microsoft Power BI Desktop.
- Download `LearnPowerBI_CH4Start.pbix` and the `Budget` and `Forecast.xlsx`, `People and Tasks.xlsx`, and `Hours.xlsx` files from GitHub at <https://github.com/PacktPublishing/Learn-Power-BI-second-edition/tree/main/Chapter04>.

Check out the following video to see the Code in Action: <https://bit.ly/3bVTQwc>

Images

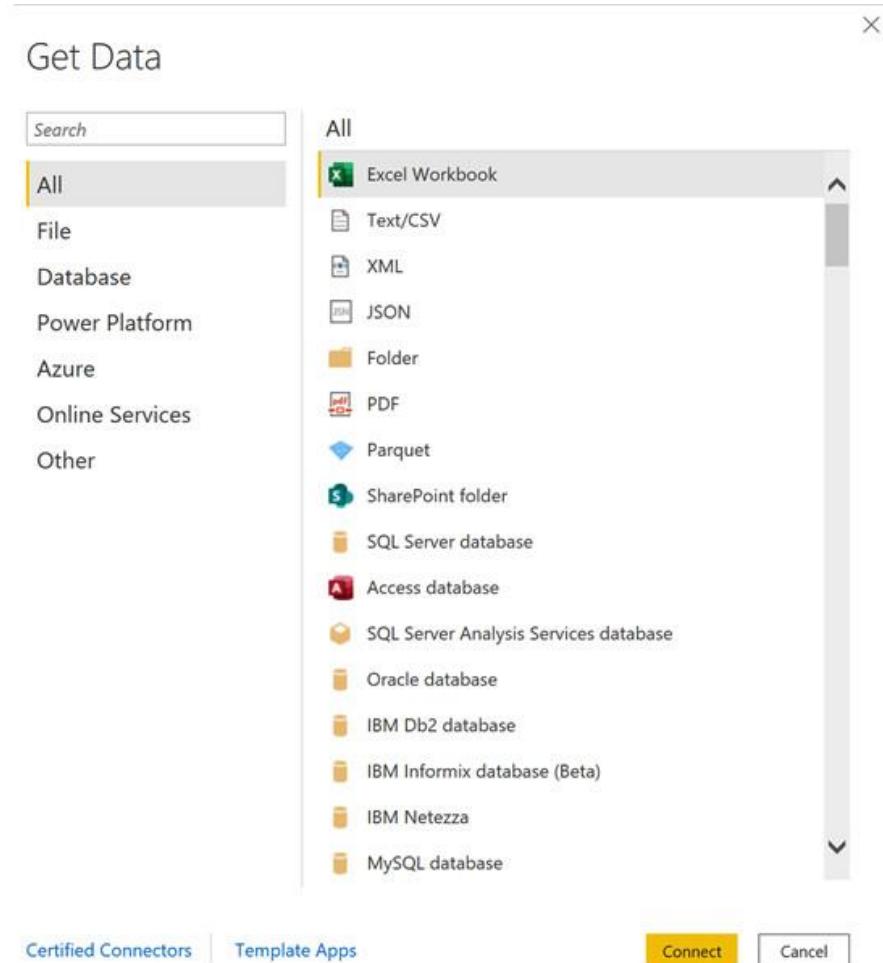


Figure 4.1 – The Get Data section

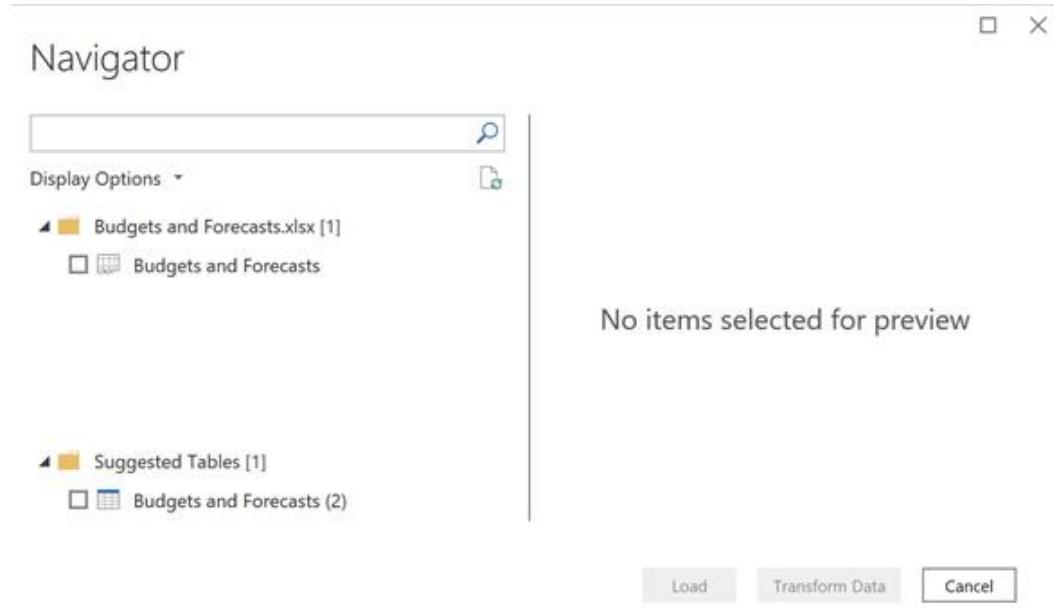


Figure 4.2 – The Navigator dialog

The screenshot shows the 'Navigator' dialog box with a preview of the 'Budgets and Forecasts' table. The table has columns for Location, Dept, Jan, Feb, and Mar. The data includes rows for Cleveland, Charlotte, and Nashville. The 'Load' button at the bottom is highlighted with a yellow background.

Location	Dept	Jan	Feb	Mar
Cleveland	1001	31855.1	33985.1	38741
Cleveland	2001	14917.86	15200.85	19323
Cleveland	3001	1787.64	1643.23	1907
Charlotte	1001	6811.05	6859.54	9031
Charlotte	2001	5753.77	6300.64	6142
Nashville	1001	20926.68	19057.02	20915
Nashville	2001	1181.7	1193.06	1266
Nashville	3001	6333.42	5245.94	7358
	null	null	null	null

Figure 4.3 – Navigator dialog with a preview of the data

LearnPowerBI_CH4End - Power BI Desktop

Gregory Deckler

Table tools

Name: Budgets and Forec...

Structure Calendars Relationships Calculations

Fields

Search

Budgets and Forecasts

Calendar

Table: Budgets and Forecasts (19 rows)

Location	Dept	Jan	Feb	Mar	Apr	May	Jun
Cleveland	1001	31855.1	33985.1	38741.21	37042.63	36216.9	36919.86
Cleveland	2001	14917.86	15200.85	19323.06	17673.31	17411.26	18658.18
Cleveland	3001	1787.64	1643.23	1907.65	1756.22	1607.5	1649.91
Charlotte	1001	6811.05	6859.54	9031.41	9292.51	10228.41	8670.51
Charlotte	2001	5753.77	6300.64	6142.28	4986.36	5726.96	5114.92
Nashville	1001	20926.68	19057.02	20915.76	21375.9	20045.85	22731.32
Nashville	2001	1181.7	1193.06	1266.72	1547.7	1480.5	1708.92
Nashville	3001	6333.42	5245.94	7358.03	7053.63	7383.97	7048.89
	-						
Cleveland	1001	31989.38	31474.88	37386.81	34260.07	37055.79	36783.91
Cleveland	2001	13787.87	15212.4	19524.62	18215.71	18147.03	16795.63
Cleveland	3001	1946.36	1965.63	2012.09	1541.85	1815.15	1767.64
Charlotte	1001	6674.41	6881.78	6965.28	8891.79	10058.24	9464.58
Charlotte	2001	3894.15	3657.98	4275.02	3736.48	4894.78	3883.9
Nashville	1001	21822.36	19592.53	21140.26	27255.73	25859.84	23414.62
Nashville	2001	1054.44	863.36	1529.46	2472.6	2201.86	2285.36
Nashville	3001	6036.78	5409	4964.99	6308.77	5106.27	4961.38
Forecast updated 4/12/2019							

Figure 4.4 – Budgets and Forecast table

Navigator

ID	Name	Title	EmployeeType
KMCMAHON	Mcmahon, Karyn	CONSULTANT	CONSULTANT
CBRYANT	Bryant, Carolyn	CONSULTANT	SALARY
PLUCAS	Lucas, Pamela	SALES	ADMINISTRATOR
ASHIELDS	Shields, Art	ADMIN	ADMINISTRATOR
BFRANCO	Franco, Brenda	ADMIN	ADMINISTRATOR
EBECKER	Becker, Eileen	CONSULTANT	SALARY
DVILLEGAS	Villegas, Desiree	CONSULTANT	CONSULTANT
MMONTES	Montes, Megan	CONSULTANT	SALARY
TPARRISH	Parrish, Tamera	ADMIN	ADMINISTRATOR
LGARRISON	Garrison, Lenny	ADMIN	ADMINISTRATOR
TBENSON	Benson, Terra	ADMIN	ADMINISTRATOR
CVALDEZ	Valdez, Carl	CONSULTANT	CONSULTANT
EKAISER	Kaiser, Evangeline	SALES	ADMINISTRATOR
MVALENCIA	Valencia, Millicent	CONSULTANT	CONSULTANT
MPROCTOR	Proctor, Michele	CONSULTANT	SALARY
TCOOLEY	Cooley, Theron	CONSULTANT	SUB-CONTRACTOR
KBRUCE	Bruce, Katrina	SALES	ADMINISTRATOR
HGOMEZ	Gomez, Hong	CONSULTANT	CONSULTANT
IBARRETT	Barrett, Isabelle	CONSULTANT	CONSULTANT
MSHAH	Shah, Miquel	CONSULTANT	SUB-CONTRACTOR
ESOSA	Sosa, Elma	CONSULTANT	CONSULTANT
BSTEVENSON	Stevenson, Beryl	ADMIN	ADMINISTRATOR
IMCCANN	Mccann, Israel	ADMIN	ADMINISTRATOR

Display Options ▾

- People and Tasks.xlsx [2]
- People
- Tasks

Load Transform Data Cancel

Figure 4.5 – Creating queries for People and Tasks

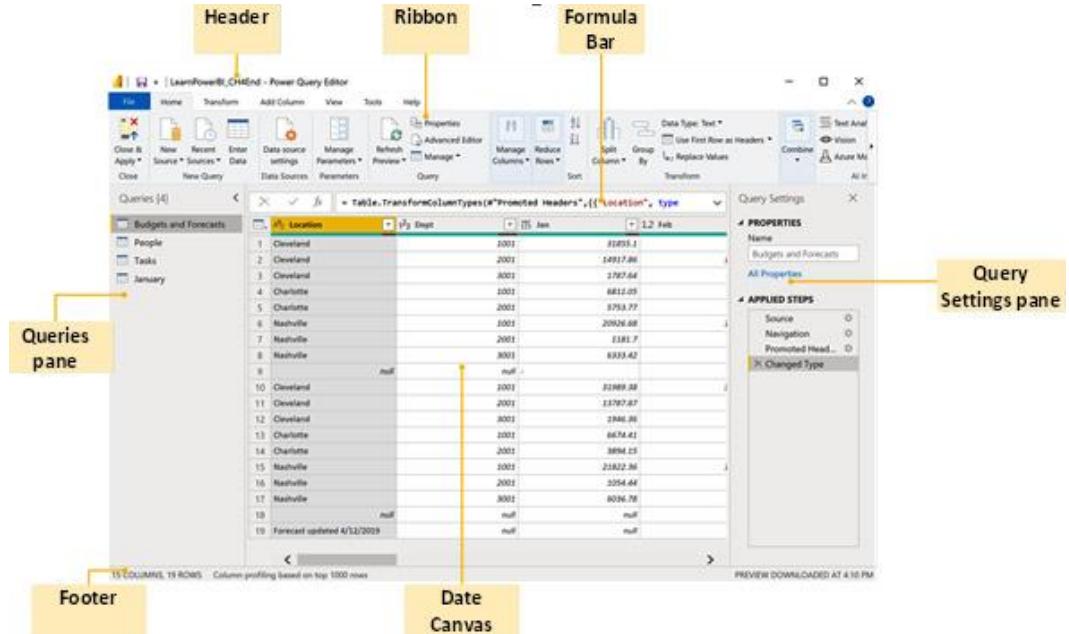


Figure 4.6 – Power Query Editor

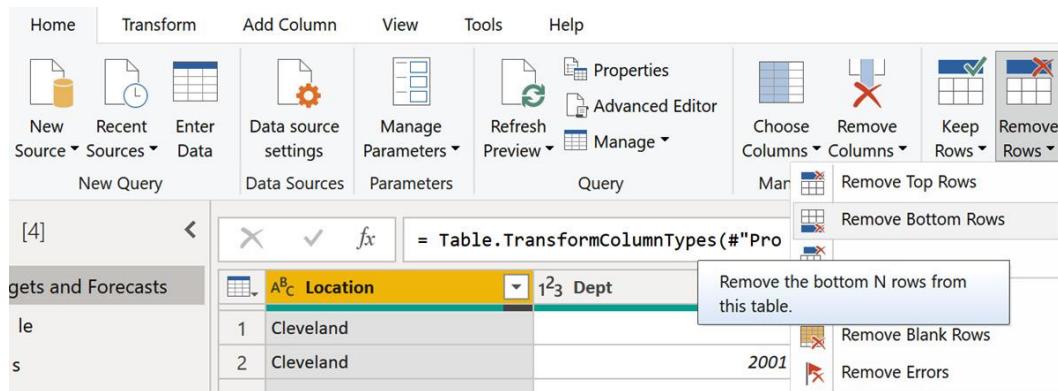


Figure 4.7 – Removing rows



Figure 4.8 – Remove Bottom Rows dialog

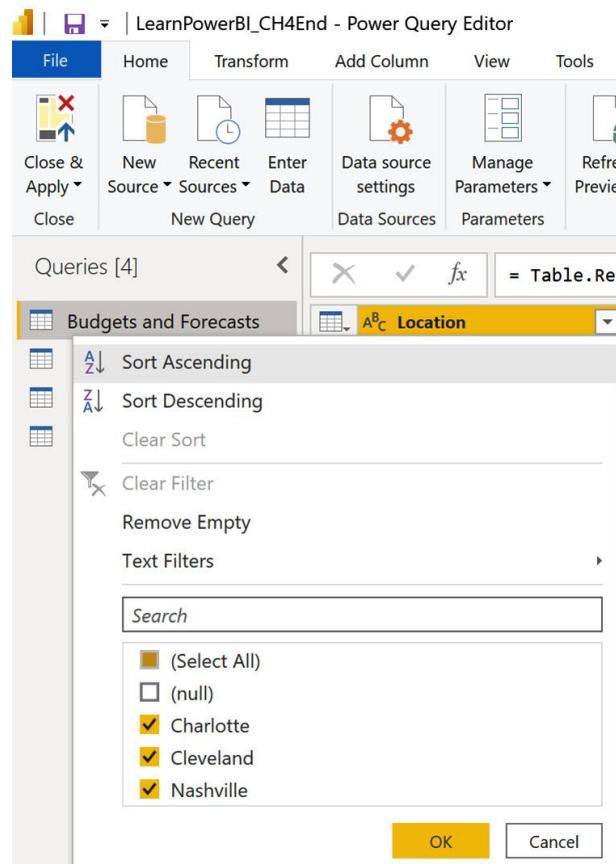


Figure 4.9 – Filtering rows

Figure 4.10 – Unpivoting columns

A ^B _C ID	A ^B _C Name	A ^B _C Title	A ^B _C EmployeeType	TermDate	HireDate	A ^B _C Location
1	KMCMAHON	Mcmahon, Karyn	CONSULTANT	CONSULTANT	1/1/1900	1/1/1900 Charlotte
2	CBRYANT	Bryant, Carolyn	CONSULTANT	SALARY	5/15/2015	1/1/1900 Charlotte
3	PLUCAS	Lucas, Pamela	SALES	ADMINISTRATION	1/1/1900	1/1/1900 Charlotte
4	ASHIELDS	Shields, Art	ADMIN	ADMINISTRATION	1/1/1900	1/1/1900 Charlotte
5	BFRANCO	Franco, Brenda	ADMIN	ADMINISTRATION	11/29/2018	1/1/1900 Charlotte

Figure 4.11 – Column data types for the People query



Figure 4.12 – Insert Step dialog

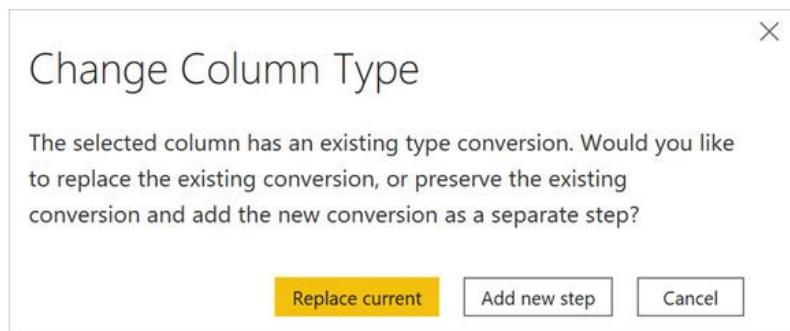


Figure 4.13 – Change Column Type dialog

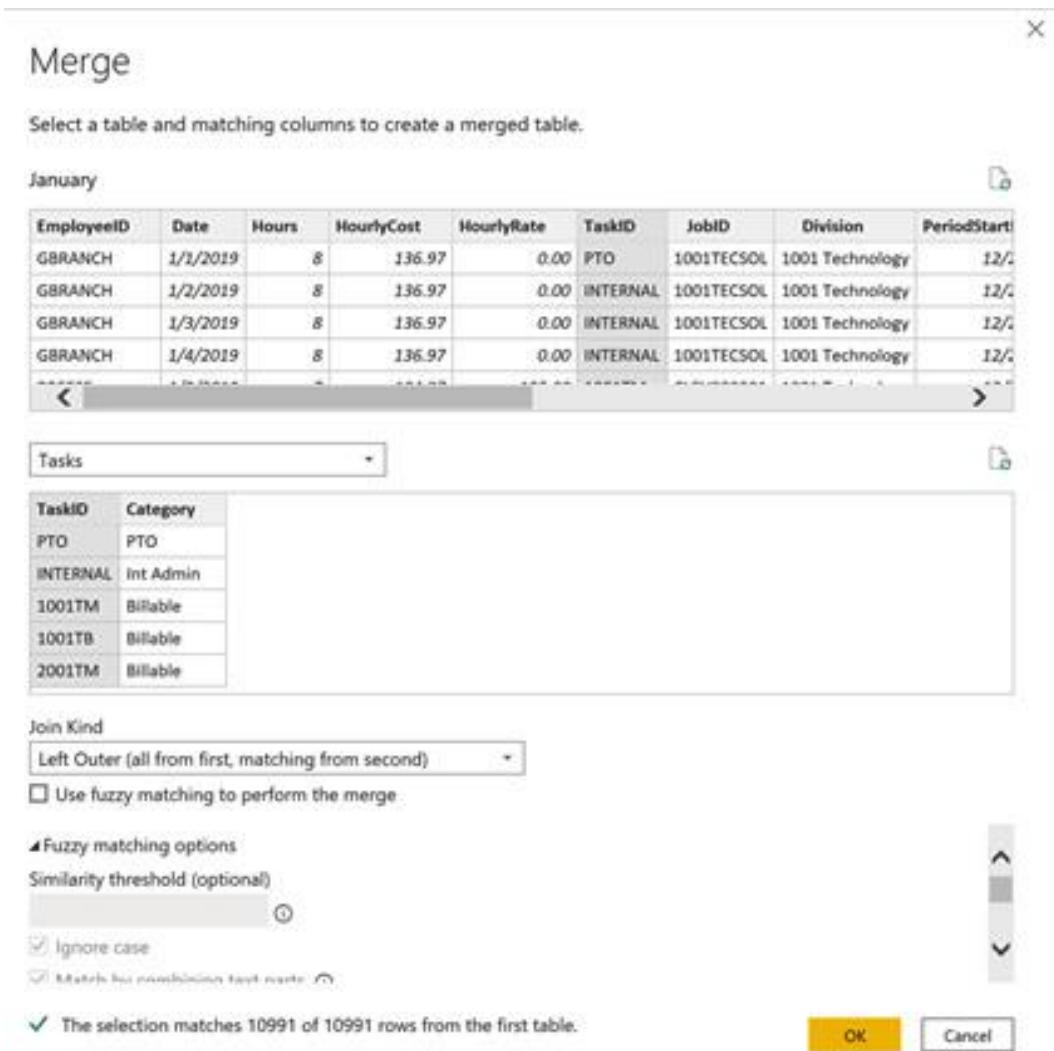


Figure 4.14 – Merge dialog

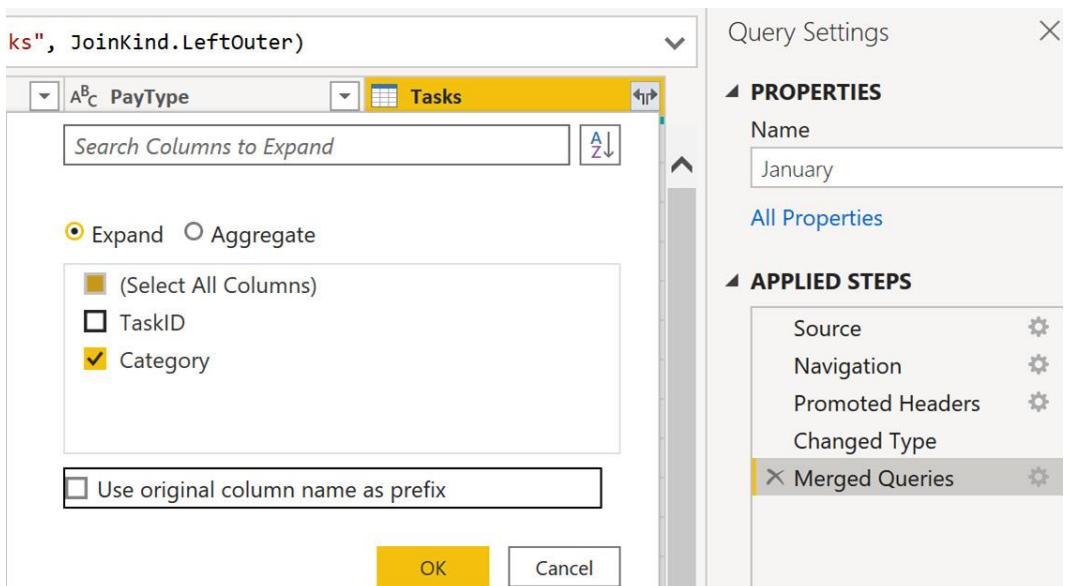


Figure 4.15 – Column expansion dialog

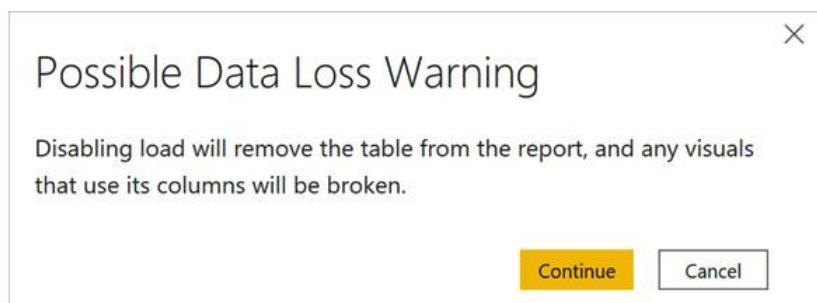


Figure 4.16 – Possible Data Loss Warning dialog

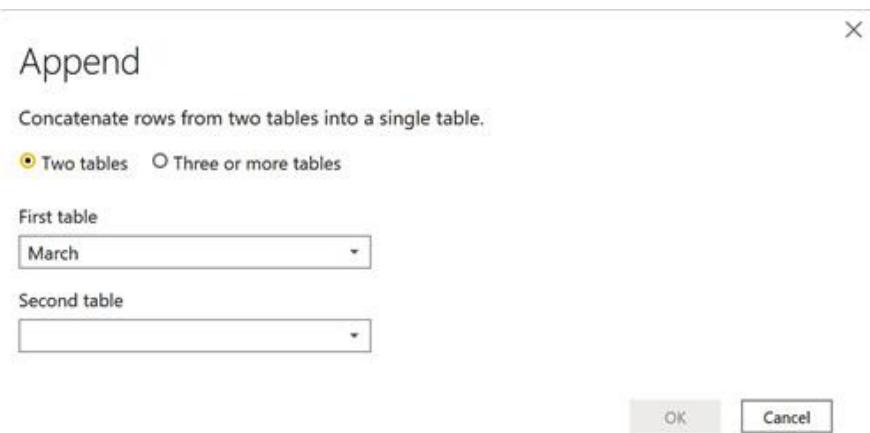


Figure 4.17 – Append dialog

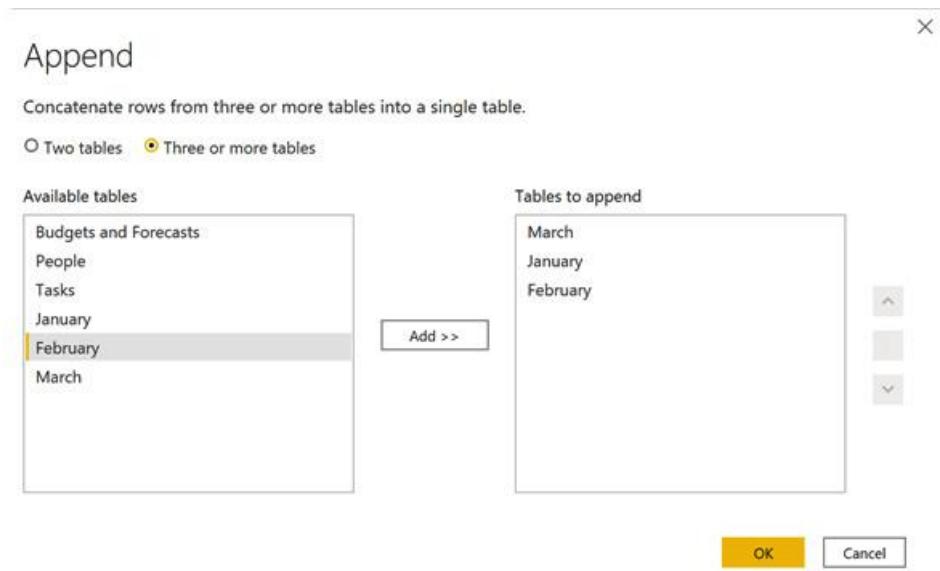


Figure 4.18 – Appending three or more tables

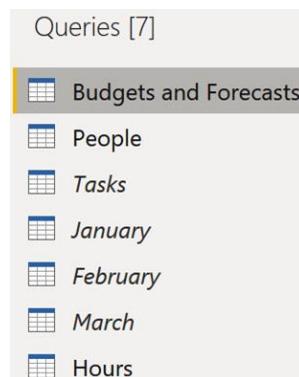


Figure 4.19 – Queries pane

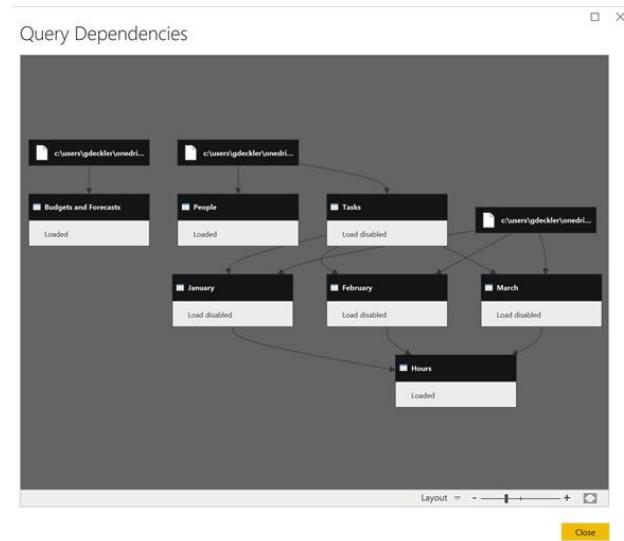


Figure 4.20 – Query Dependencies window

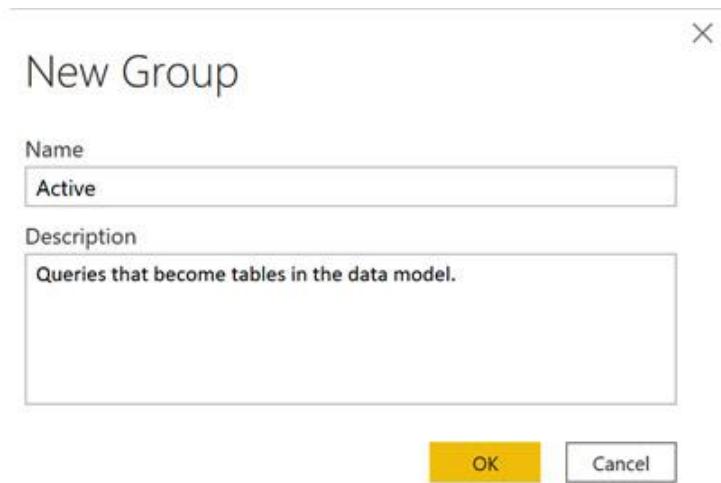


Figure 4.21 – New Group dialog



Figure 4.22 – Column quality for the EmployeeID column

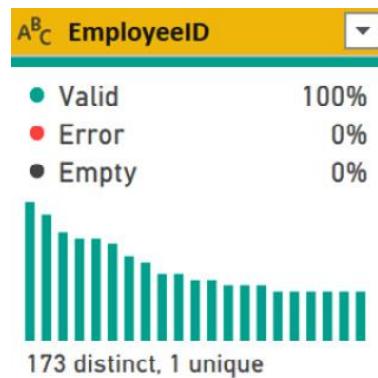


Figure 4.23 – Column distribution for the EmployeeID column

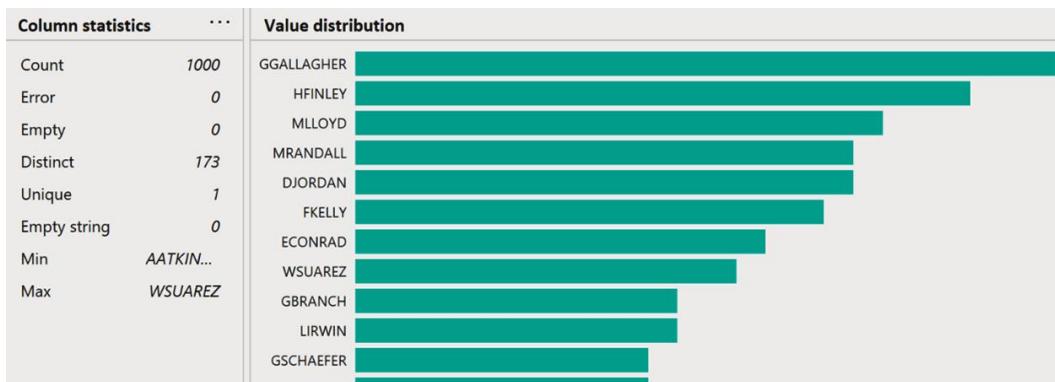


Figure 4.24 – Column profiling

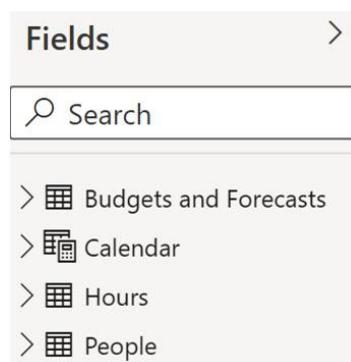


Figure 4.25 – Loaded tables

Formulas

Formula 4.1:

```
= Source{[Item="March",Kind="Sheet"]}[Data]
```

Formula 4.2:

```
= Table.Combine({January, February, March})
```

Questions

As an activity, try to answer the following questions on your own:

- How many different connectors are available for ingesting data in Power BI?
- What is the powerful sub-application included with Power BI that's used for ingesting and shaping data?
- What is the name of the language that's used behind the scenes when creating queries?
- Turning columns into rows is called what?
- What icons are displayed in the headers of columns for text, whole number, decimal, and date columns?
- Joining two queries together based on columns is called what?
- What are the six different kinds of join operations that can be performed when joining queries?
- Adding one query to another query is called what?

Further reading

For more information on what was covered in this chapter, take a look at the following resources:

- *Data sources in Power BI Desktop*: <https://docs.microsoft.com/en-us/power-bi/desktop-data-sources>
- *Connect to Excel in Power BI Desktop*: <https://docs.microsoft.com/en-us/power-bi/desktop-connect-excel>

- *Query overview in Power BI Desktop:* <https://docs.microsoft.com/en-us/power-bi/desktop-query-overview>
- *Perform common query tasks in Power BI Desktop:* <https://docs.microsoft.com/en-us/power-bi/desktop-common-query-tasks>

Chapter 5

Technical requirements

You will need the following in order to successfully complete the instructions provided in this chapter:

- An internet connection
- Microsoft Power BI Desktop
- LearnPowerBI_CH5Start.pbix downloaded from GitHub at <https://github.com/PacktPublishing/Learn-Power-BI-second-edition/tree/main/Chapter05>
- Check out the following video to see the Code in Action: <https://bit.ly/3o92RtD>

Images

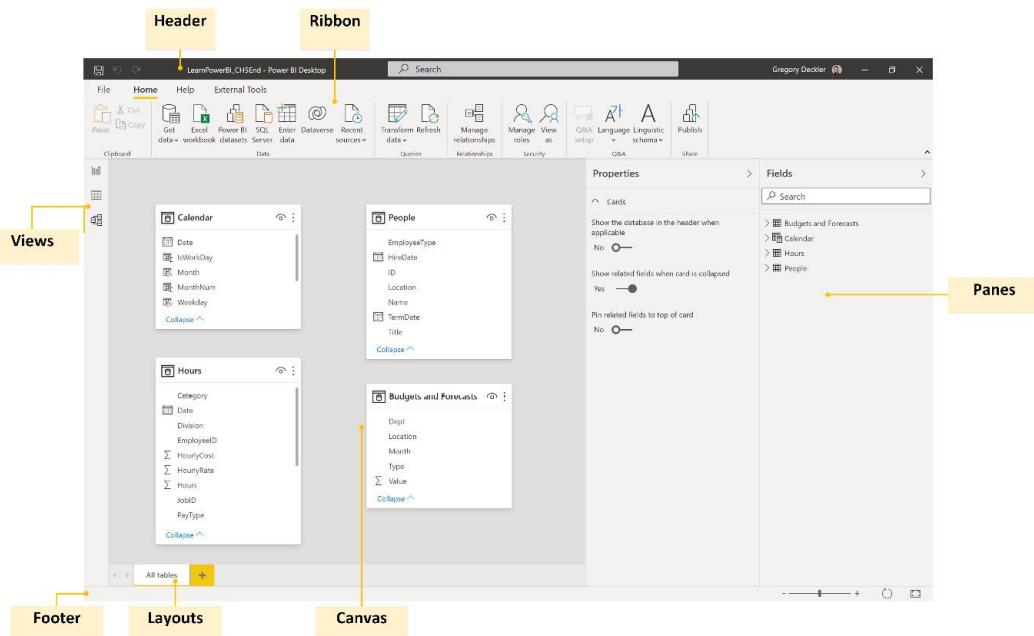


Figure 5.1 – Model view

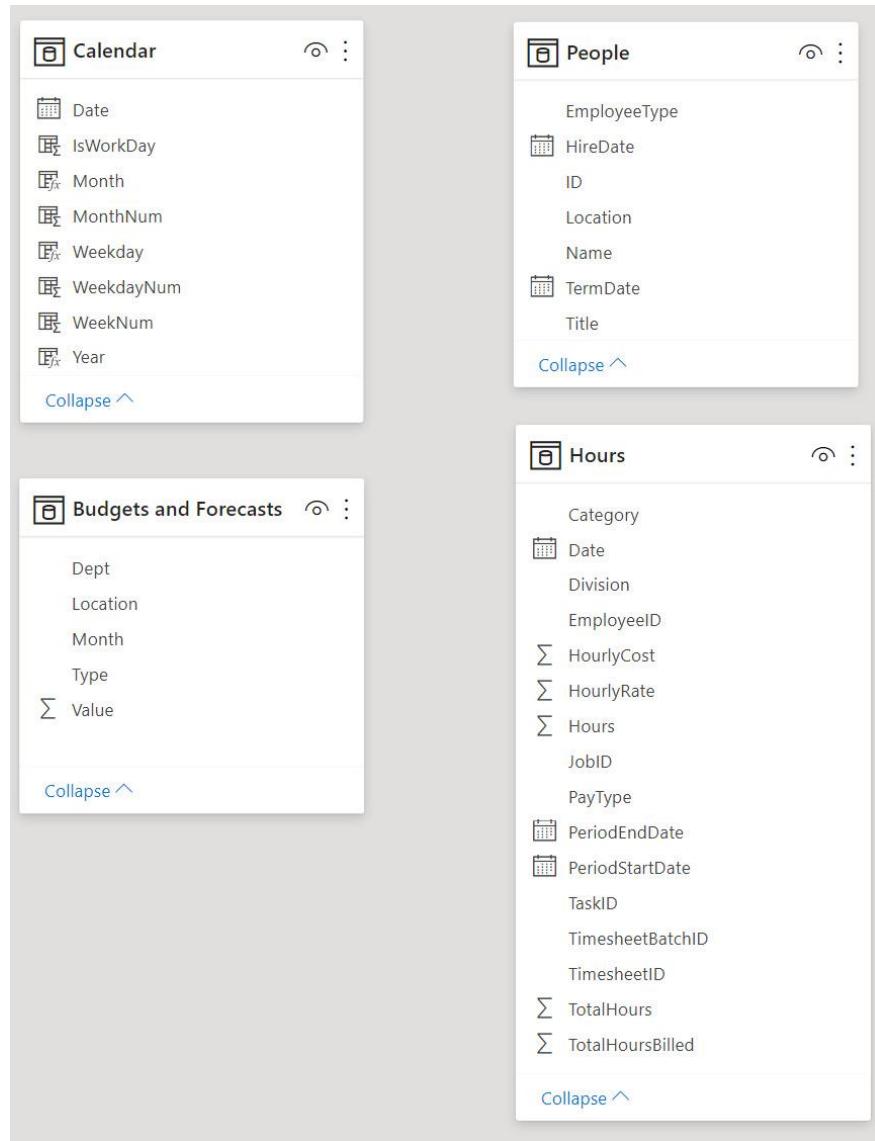


Figure 5.2 – Data tables in the model

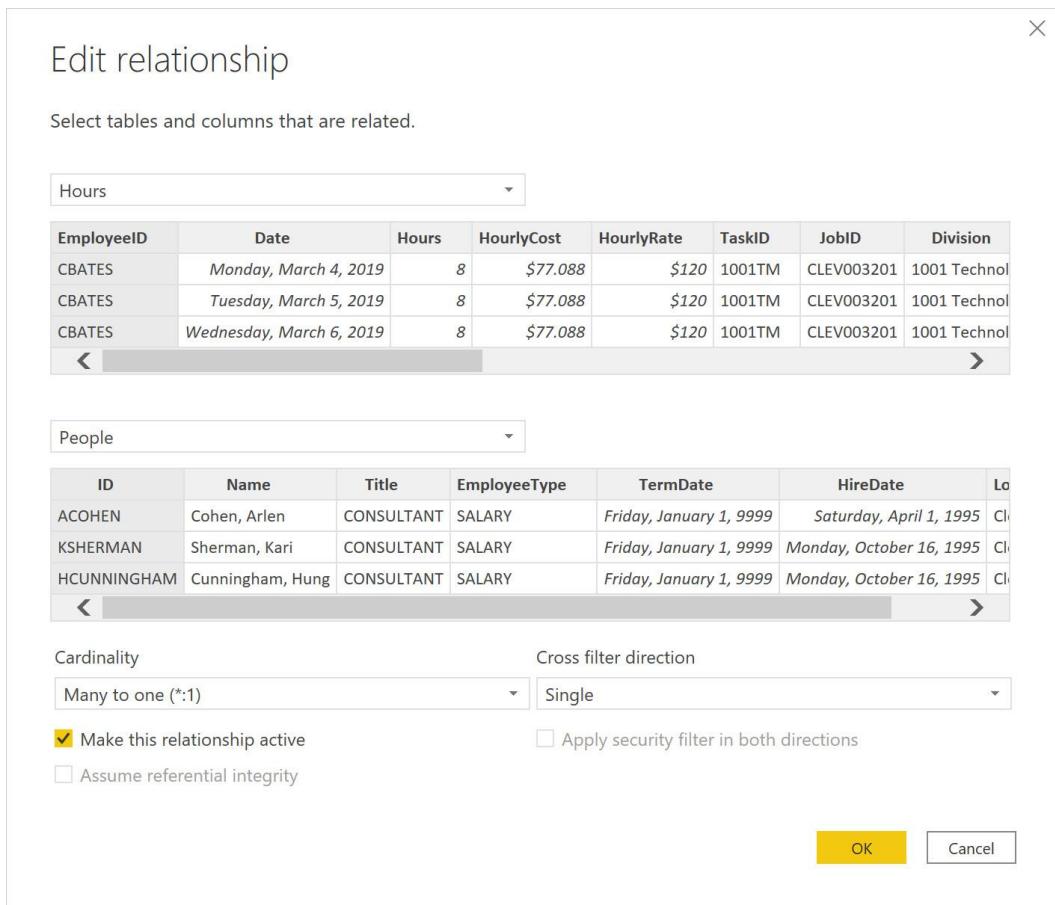


Figure 5.3 – Edit relationship dialog

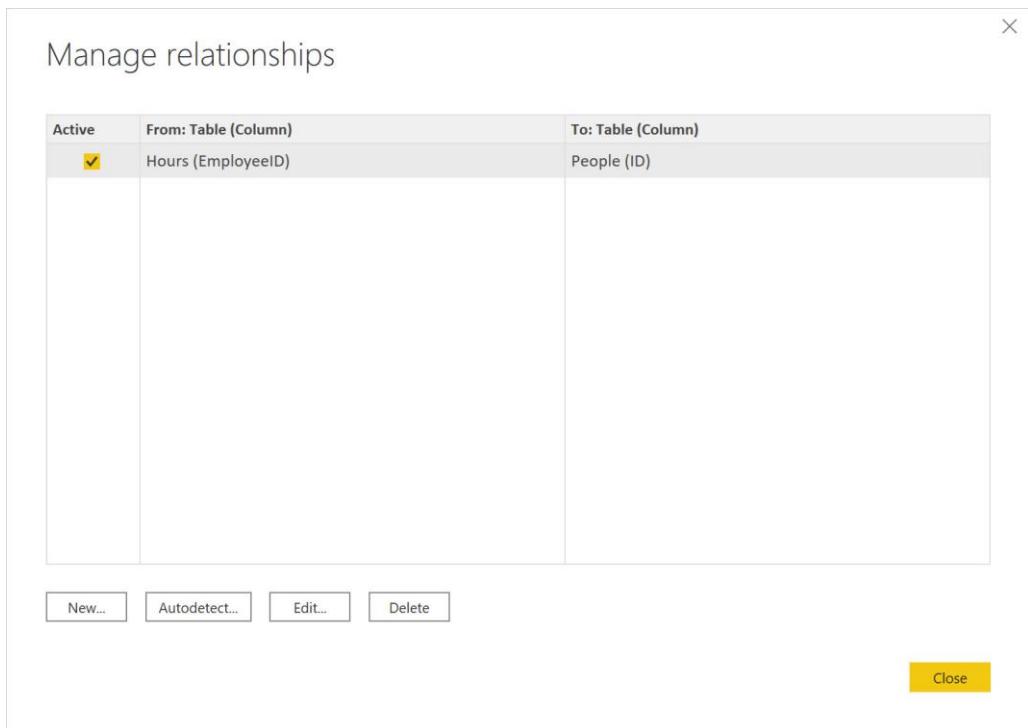


Figure 5.4 – Manage relationships dialog

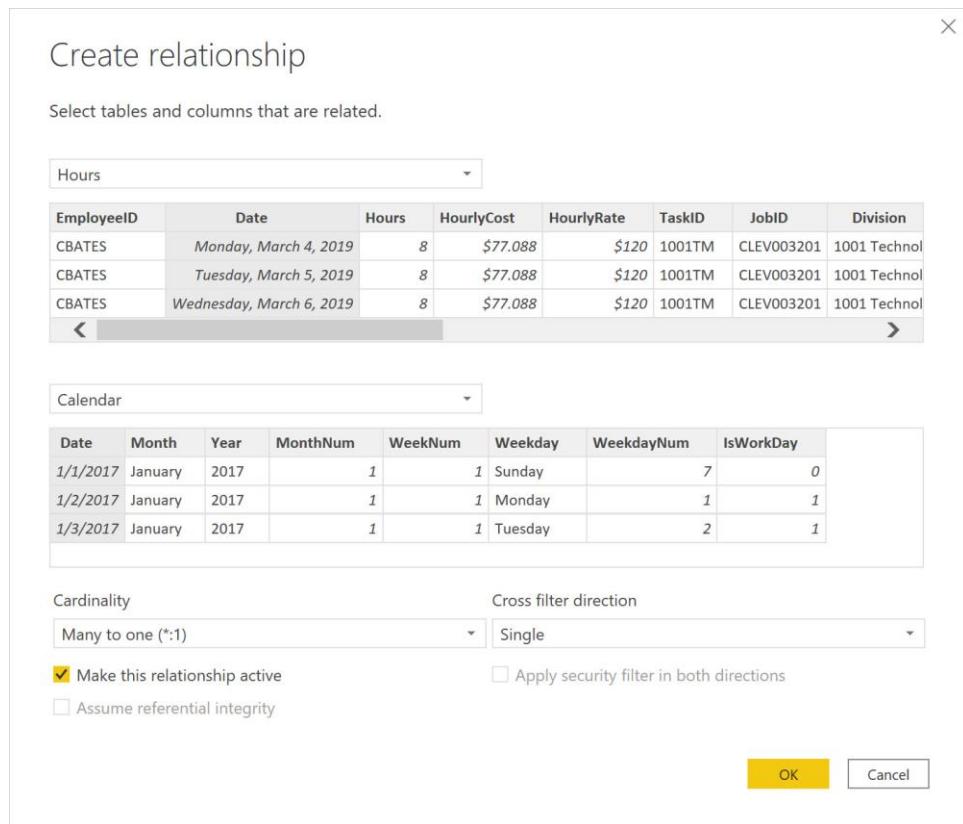


Figure 5.5 – Create relationship dialog

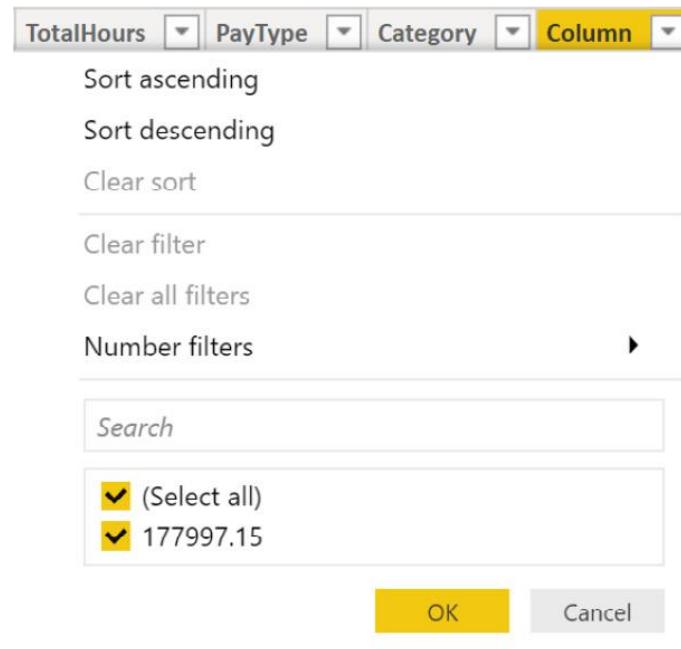


Figure 5.6 – Column filtering dialog

Code

Code 5.1

```
Column = SUM([Hours])
```

Code 5.2

```
Column 2 = [Hours] / [TotalHours]
```

Code 5.3

```
Column 3 =
SUMX(
    FILTER(
        ALL('Hours'),
        [Category] = "Billable" && [EmployeeID] =
EARLIER([EmployeeID])
    ),
)
```

```
[Hours]
```

```
)
```

Code 5.4

```
Column 4 =  
    SUMX(  
        FILTER(  
            ALL('Hours'),  
            [EmployeeID] = EARLIER([EmployeeID])  
        ),  
        [Hours]  
    )
```

Code 5.5

```
Column 5 = DIVIDE([Column 3], [Column 4], 0)
```

Code 5.6

```
MonthYear = [Month] & "2017"
```

Code 5.7

```
MonthYear = LEFT([Month], 3) & [Year]
```

Code 5.8

```
MonthYears = DISTINCT('Calendar'[MonthYear])
```

Code 5.9

```
Measure =  
    SUMX(  
        FILTER(  
            'Hours',  
            'Hours'[Category] = "Billable"  
        ),  
        'Hours'[Hours]
```

```
)
```

Code 5.10

```
WorkHours = IF([IsWorkDay], 8, 0)
```

Code 5.11

```
Total Hours = SUM('Calendar'[WorkHours])
```

Code 5.12

```
% Utilization = DIVIDE([Total Billable Hours], [Total Hours], 0)
```

Code 5.13

```
Total Hours =  
IF(  
    HASONEVALUE(People[Name]),  
    [Total Hours by Employee],  
    SUMX(  
        SUMMARIZE(  
            'People', People[Name],  
            "__Hours", [Total Hours by Employee]  
        ),  
        [__Hours]  
    )  
)
```

Code 5.14

```
% Utilization = DIVIDE([Total Billable Hours], [Total Hours], 0)
```

Code 5.15

```
% Utilization =  
VAR __utilization =  
    DIVIDE([Total Billable Hours], [Total Hours], 0)
```

```
RETURN  
    __utilization + 0
```

Code 5.16

```
% Utilization =  
    VAR __utilization =  
        DIVIDE([Total Billable Hours],[Total Hours],0)  
    VAR __days = COUNTROWS('Hours')  
RETURN  
    IF(  
        ISBLANK(__days),  
        BLANK(),  
        __utilization + 0  
    )
```

Code 5.17

```
Total Hours =  
SWITCH(  
    MAX('People'[EmployeeType]),  
    "HOURLY", [Total Billable Hours],  
    "SUB-CONTRACTOR", [Total Billable Hours],  
    "SALARY",  
    IF(  
        HASONEVALUE(People[Name]),  
        [Total Hours by Employee],  
        SUMX(  
            SUMMARIZE(  
                'People', People[Name],  
                "__Hours", [Total Hours by Employee]
```

```

) ,
[__Hours]
)
),
BLANK()
)

```

Code 5.18

```
% Utilization =
VAR __utilization =
    DIVIDE([Total Billable Hours], [Total Hours], 0)
VAR __days = COUNTROWS('Hours')
RETURN
SWITCH(TRUE(),
    ISINSCOPE('People'[Name]) && ISBLANK(__days),
    BLANK(),
    ISINSCOPE('People'[Name]), __utilization + 0,
    VAR __tempTable =
        SUMMARIZE(
            'People',
            'People'[Name],
            "__billableHours", [Total Billable Hours],
            "__totalHours", [Total Hours]
        )
    VAR __billedHours = SUMX(__tempTable,
    [__billableHours])
    VAR __hours = SUMX(__tempTable,
    [__totalHours])
RETURN
```

```
DIVIDE(__billedHours, __hours,0)  
)
```

Questions

As an activity, try to answer the following questions on your own:

- What are the seven major areas of the **Model** view in Power BI?
- What are the four different types of relationship cardinalities that Power BI supports?
- What is cross filter direction and what are the two types of cross filter direction supported by Power BI?
- What are the two ways to create relationships in Power BI?
- What are calculated columns?
- When are calculated columns calculated?
- What are measures?
- When are measures calculated?
- What is the measure totals problem?
- What are three ways of troubleshooting calculations?

Further reading

To learn more about the topics that were covered in this chapter, please take a look at the following references:

- *Create and manage relationships in Power BI Desktop:*
<https://docs.microsoft.com/en-us/power-bi/desktop-create-and-manage-relationships>
- *Work with Data view in Power BI Desktop:*
<https://docs.microsoft.com/en-us/power-bi/desktop-data-view>

- *Create calculated columns in Power BI Desktop:*

<https://docs.microsoft.com/en-us/power-bi/desktop-calculated-columns>

- *Create measures for data analysis in Power BI Desktop:*

<https://docs.microsoft.com/en-us/power-bi/desktop-measures>

- *Apply many-many relationships in Power BI Desktop:*

<https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-many-to-many-relationships>

Chapter 6

Technical requirements

You will need the following to follow the instructions in this chapter:

- An internet connection.
- Microsoft Power BI Desktop.
- Download `LearnPowerBI_CH6Start.pbix` from GitHub at <https://github.com/PacktPublishing/Learn-Power-BI-second-edition/tree/main/Chapter06>.
- Check out the following video to see the Code in Action:
<https://bit.ly/3C1AdxR>

Images

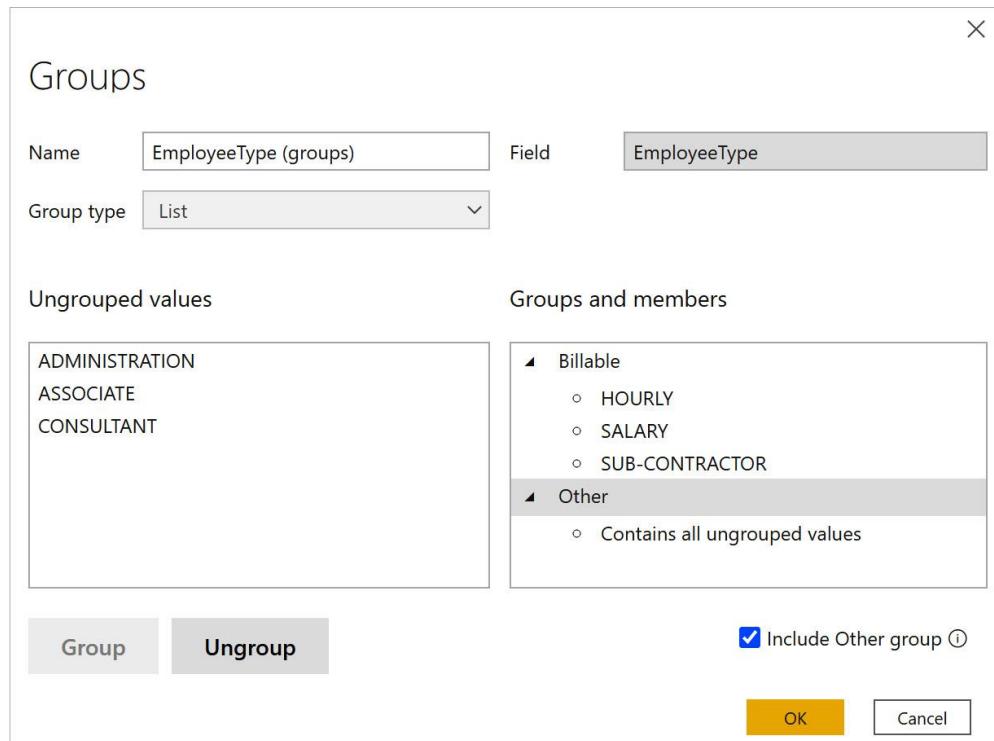


Figure 6.1 – Groups dialog

Location	Hours
Charlotte	27,801.50
Cleveland	96,731.50
Nashville	53,464.15
Total	177,997.15

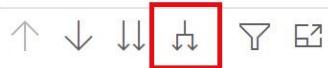


Figure 6.2 – Matrix visualization with an ad hoc hierarchy



Figure 6.3 – Model hierarchy

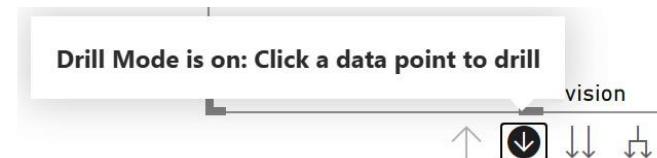


Figure 6.4 – Drill Mode is on



Figure 6.5 – Manage roles dialog

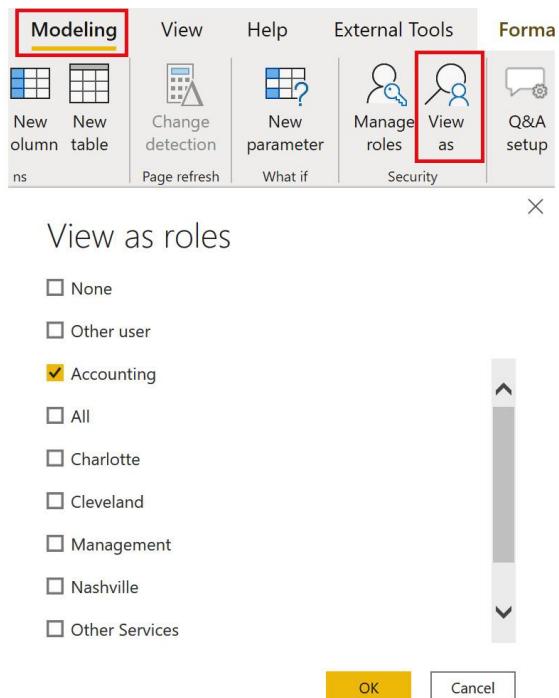


Figure 6.6 – View as roles

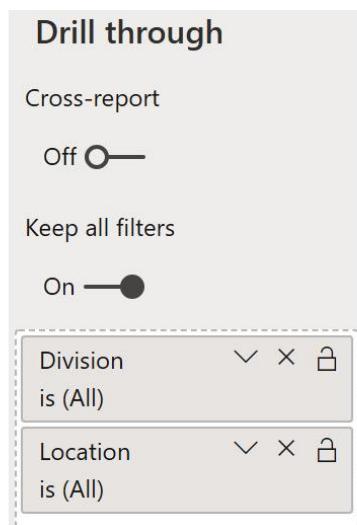
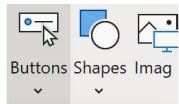


Figure 6.7 – Drill through filters



Figure 6.8 – Back button



- ← Left arrow
- Right arrow
- ⟲ Reset
- ⟳ Back
- ⓘ Information
- ⓘ Help
- ⓘ Q&A
- ⓘ Bookmark
- ⓘ Blank

Figure 6.9 – Types of buttons

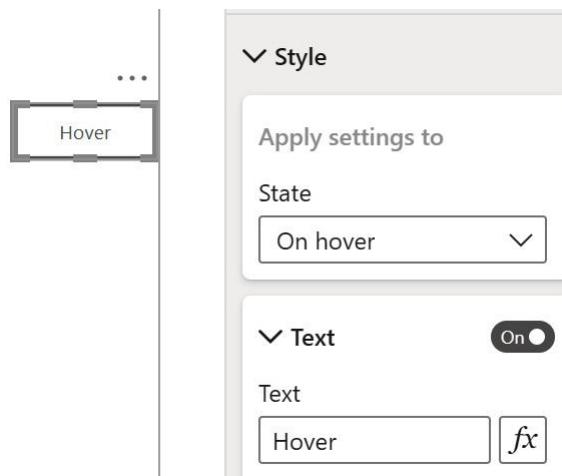


Figure 6.10 – Button states

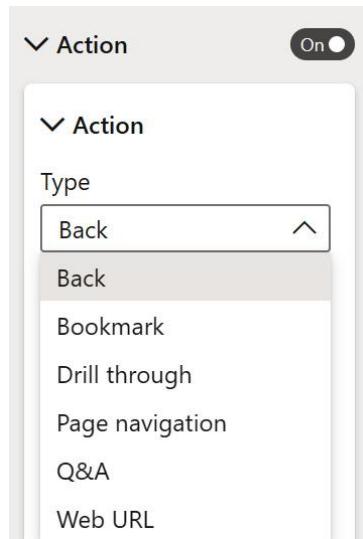


Figure 6.11 – Button states

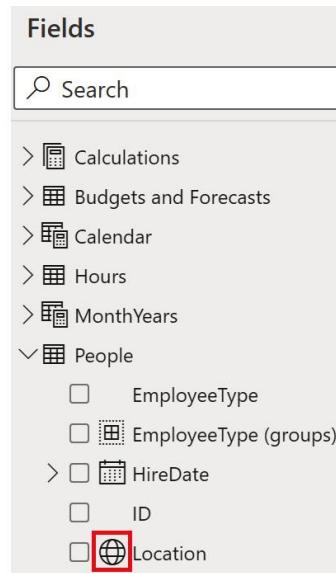


Figure 6.12 – Button states

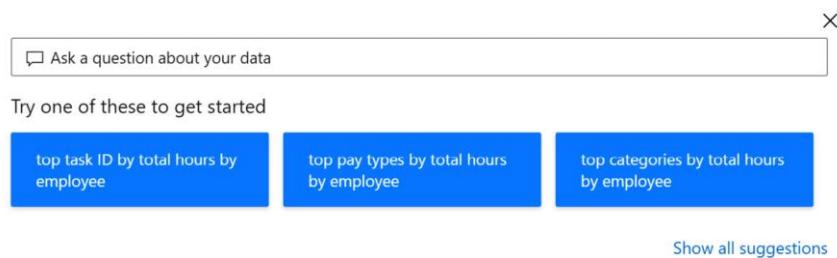


Figure 6.13 – Q&A dialog

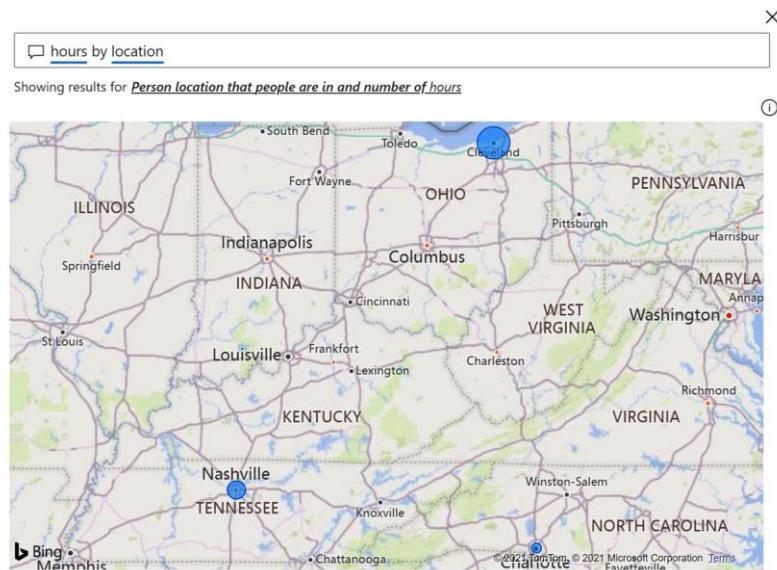


Figure 6.14 – Q&A hours by location

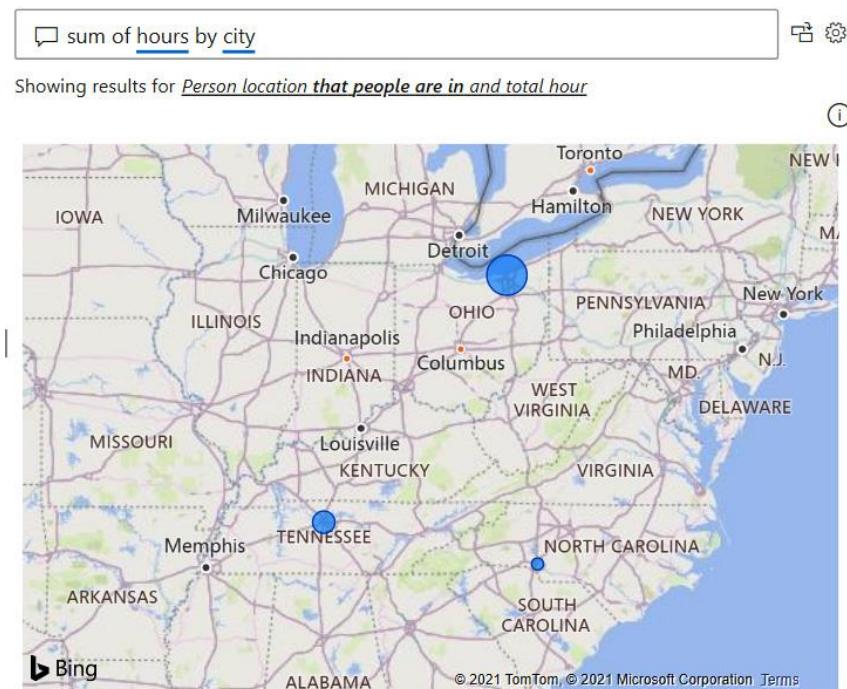


Figure 6.15 – Using Q&A to create visualizations

The screenshot shows the 'Q&A setup' interface. On the left, a sidebar lists 'Getting started' options: Field synonyms, Review questions, Teach Q&A, Manage terms, and Suggest questions. The main area is titled 'Getting started' and contains two cards:

- Field synonyms**: Shows a clipboard icon and a brief description: 'Add terms people might use as synonyms for the fields and tables in your data.' A yellow button labeled 'Field synonyms' is at the bottom.
- Review questions**: Shows a person icon and a brief description: 'Review questions people have asked and fix misunderstandings.' A yellow button labeled 'Review questions' is at the bottom.

Figure 6.16 – Q&A setup

The screenshot shows the 'Drill through' interface. It includes a 'Cross-report' section with an 'Off' toggle switch and an 'On' toggle switch. Below it is a 'Keep all filters' section. A 'Clear filter' button is visible above a list of filters. One filter, 'Division is 3001 Management', has its delete icon highlighted with a red circle.

Figure 6.17 – The eraser icon, highlighted by a circle

The screenshot shows the Power BI ribbon with several icons: Filters, Bookmarks, Selection, Performance analyzer, and Show panes. The 'Filters' icon is highlighted. Below the ribbon is a navigation bar with arrows and labels: 'Bookmarks', 'Filters', 'Visualizations', and 'Show panes'. The 'Bookmarks' section is expanded, showing items: Default Details, Default One, Default Two, Details Three, and Details Spotlight. The 'Filters' label is positioned vertically next to the navigation bar.

Figure 6.18 – Bookmarks pane

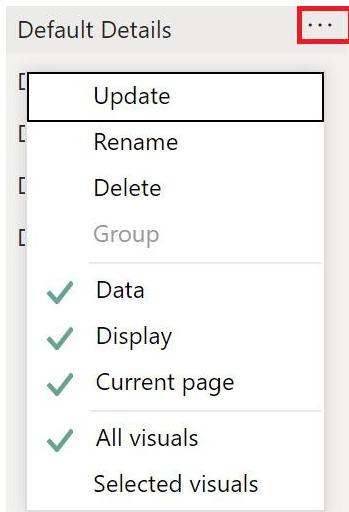


Figure 6.19 – Bookmarks options

A screenshot of the Power BI interface showing the "Selection" and "Bookmarks" panes. The "Selection" pane on the left lists visual types: "Layer order" (selected), "Filters", "Button", "Card", "Hours by Location", "Hours by Division", and "Matrix". The "Bookmarks" pane in the center shows "Default Details" and "Details Spotlight". The "Visualizations" pane on the right is currently empty.

Figure 6.20 – Selection and Bookmarks panes

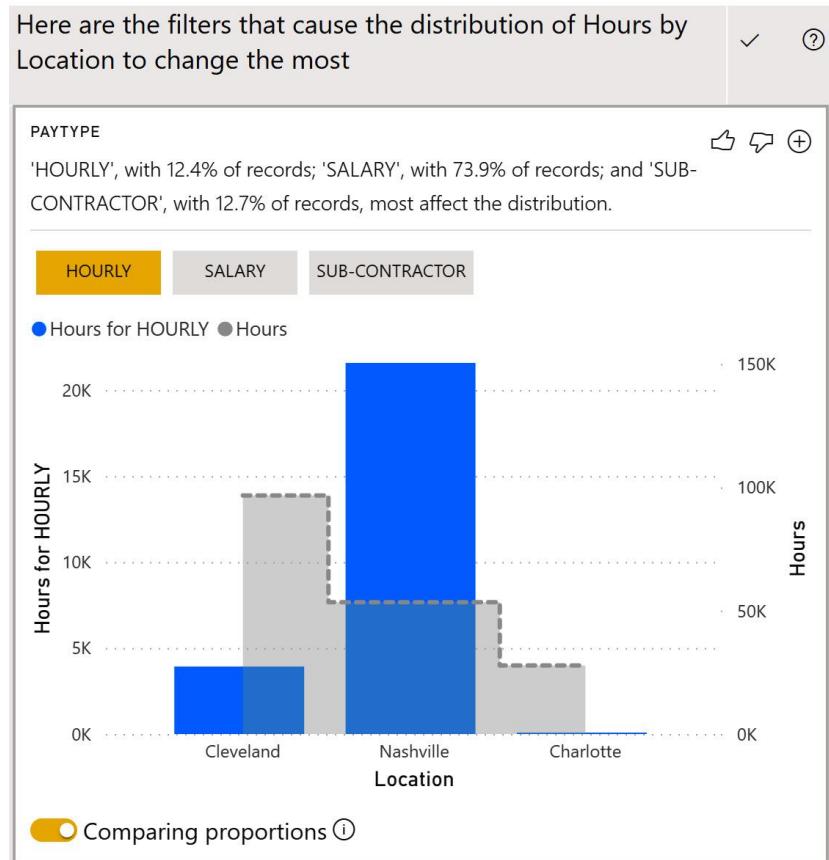


Figure 6.21 – The Analyze feature

% Utilization and % Target Utilization

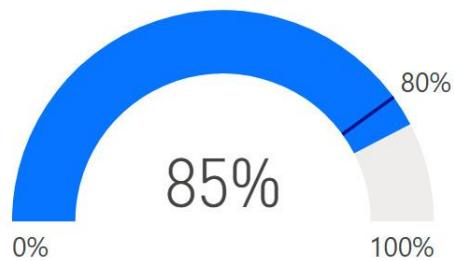


Figure 6.22 – Gauge visualization

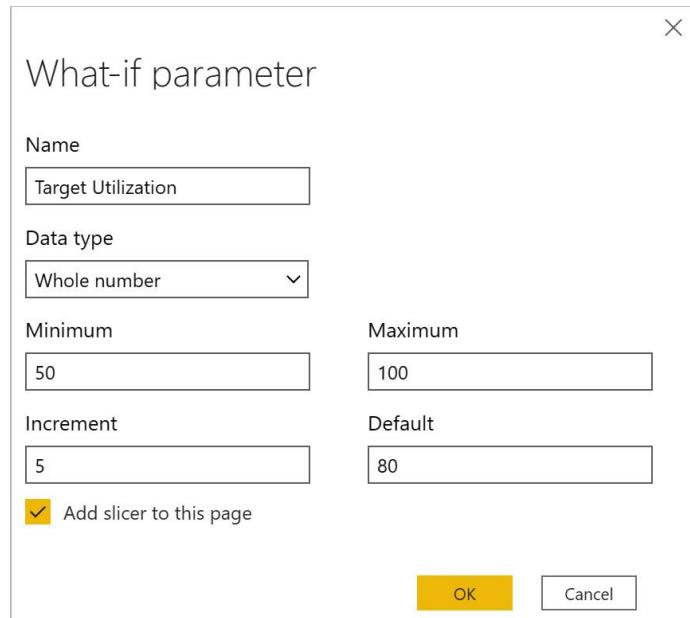


Figure 6.23 – What-if parameter dialog

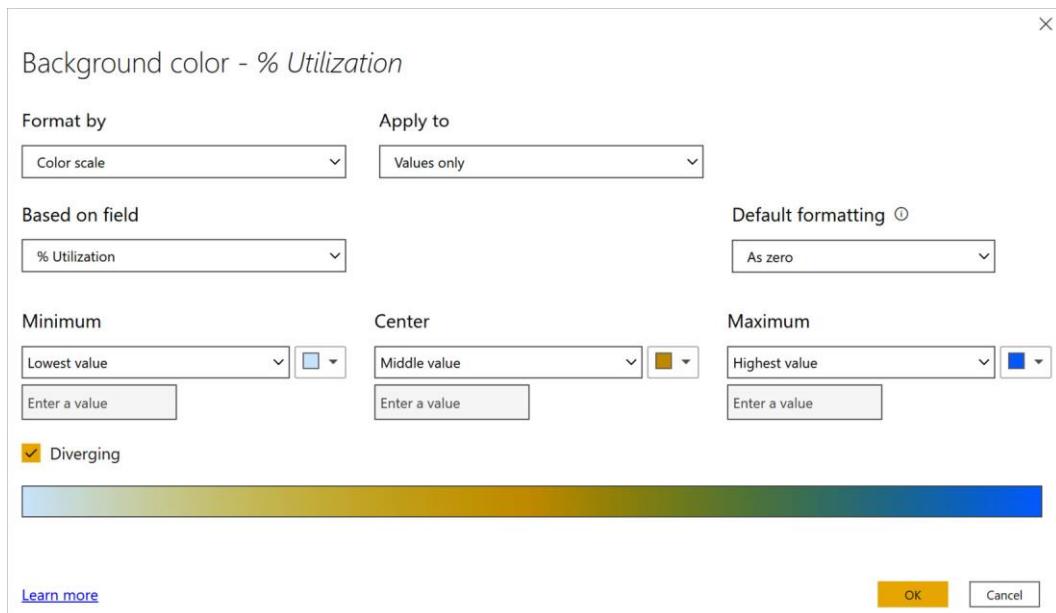


Figure 6.24 – Conditional formatting dialog

Quick measures

X

Calculation

Select a calculation ▾

Fields

Search

> Calculations

> Budgets and Forecasts

> Calendar

> Hours

> MonthYears

> People

> Target Utilization

Figure 6.25 – Quick measures dialog

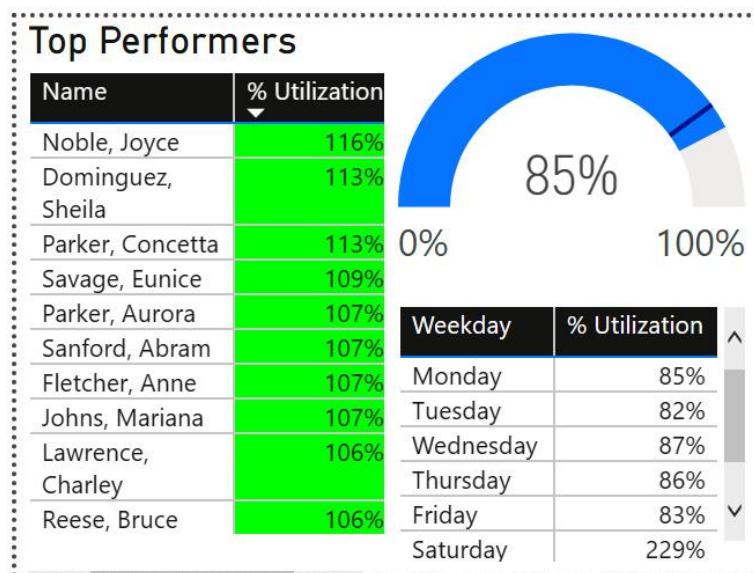


Figure 6.26 – Report tooltip page

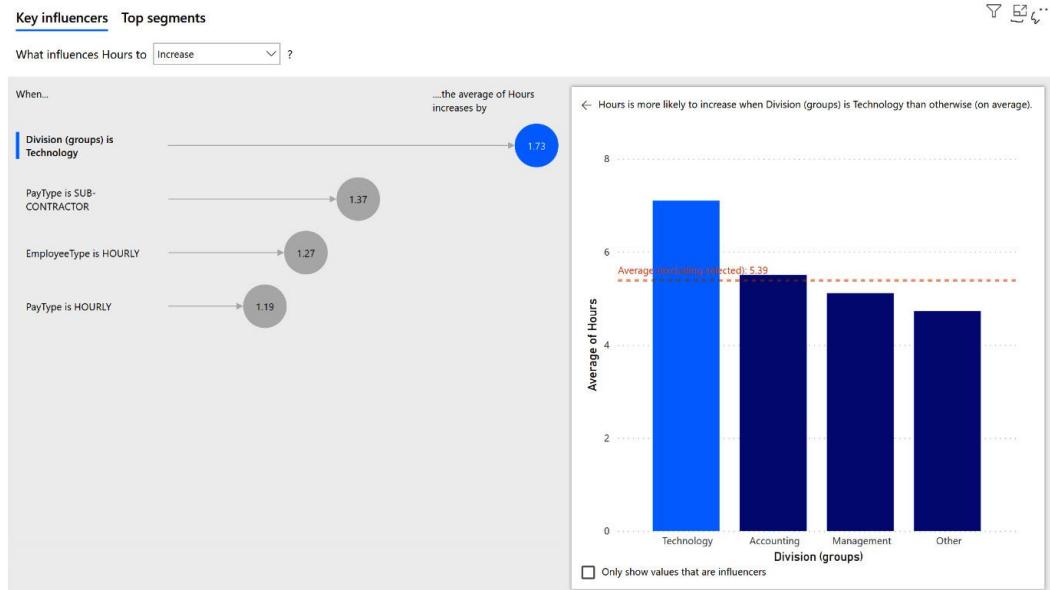


Figure 6.27 – Key influencers visual

Formulas

Formula 6.1 – Generate series

```
Target Utilization = GENERATESERIES(50, 100, 5)
```

Formula 6.2 – Selected value:

```
Target Utilization Value = SELECTEDVALUE('Target Utilization'[Target Utilization], 80)
```

Formula 6.3 – Modified selected value:

```
Target Utilization Value = DIVIDE(SELECTEDVALUE('Target Utilization'[Target Utilization], 80), 100, 0.8)
```

Formula 6.4

```
Meets Goal = IF([% Utilization]>=[Target Utilization Value], 1, 0)
```

Questions

As an activity, try to answer the following questions on your own:

- What are the two different methods of segmenting data in Power BI?
- What are the four operations for working with hierarchies?
- What feature would a report author use to ensure that people within different roles only see the information that's relevant to their particular role?
- How is drill-through different than drilling up and down through hierarchies?
- What are the six actions buttons can perform?
- Why is data categorization important for Q&A?
- What are synonyms and where can they be added within Power BI Desktop?
- What is a bookmark and what information can it save as part of its definition?
- What advanced visualization feature allows you to create a measure that can be adjusted by a report viewer?
- What are the three settings that must be adjusted when creating a report tooltip page, and how is a report tooltip page activated for use?

Further reading

For more information about the topics that were covered in this chapter, take a look at the following resources:

- Using grouping and binning in Power BI Desktop:
<https://docs.microsoft.com/en-us/power-bi/desktop-grouping-and-binning>
- RLS with Power BI: <https://docs.microsoft.com/en-us/power-bi/service-admin-rls>
- Set up drillthrough in Power BI reports: <https://docs.microsoft.com/en-us/power-bi/desktop-drillthrough>

- Create buttons in Power BI reports: <https://docs.microsoft.com/en-us/power-bi/desktop-buttons>
- Specify data categories in Power BI Desktop:
<https://docs.microsoft.com/en-us/power-bi/desktop-data-categorization>
- Best practices to optimize Q&A in Power BI:
<https://docs.microsoft.com/en-us/power-bi/desktop-qna-in-reports>
- Create report bookmarks in Power BI to share insights and build stories:
<https://docs.microsoft.com/en-us/power-bi/desktop-bookmarks>
- Create and use what-if parameters to visualize variables in Power BI Desktop:
<https://docs.microsoft.com/en-us/power-bi/desktop-what-if>
- Create tooltips based on report pages in Power BI Desktop:
<https://docs.microsoft.com/en-us/power-bi/desktop-tooltips>

Chapter 7

Technical requirements

You will need to meet the following requirements to follow the instructions in this chapter:

- An internet connection.
- Microsoft Power BI Desktop.
- Download **LearnPowerBI_CH7Start.pbix** from GitHub at
<https://github.com/PacktPublishing/Learn-Power-BI-second-edition/tree/main/Chapter07>.
- Check out the following video to see the Code in Action:
<https://bit.ly/3wvTk1>

Images



Figure 7.1 – Browse for themes in Power BI Desktop

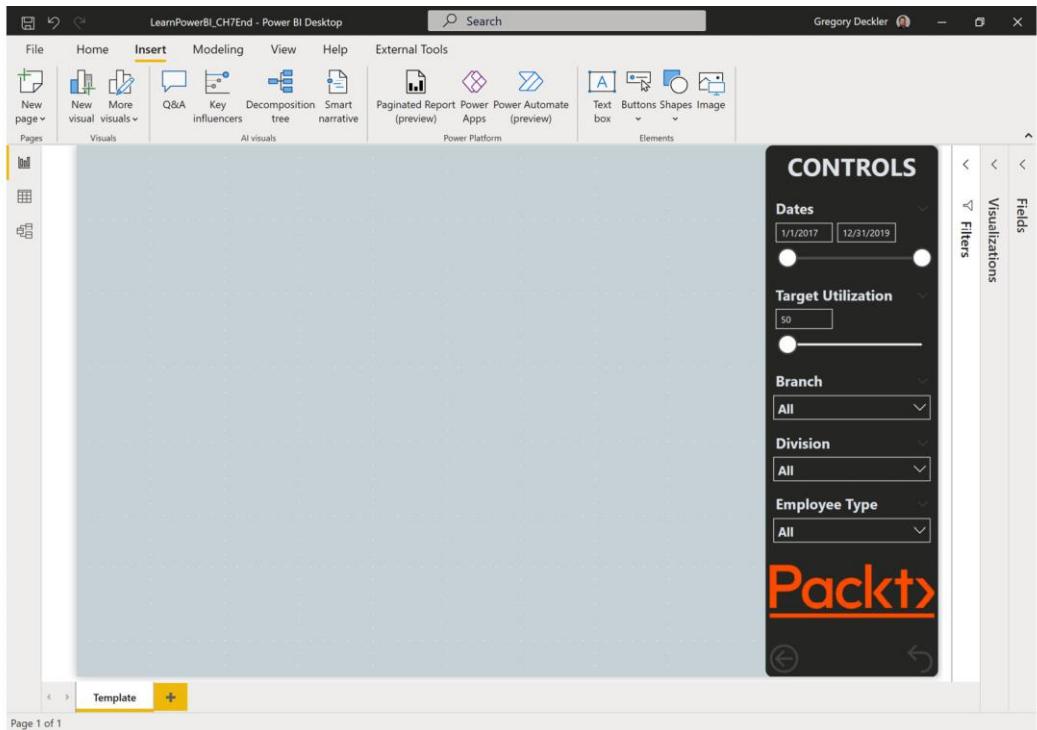


Figure 7.2 – Completed Template page

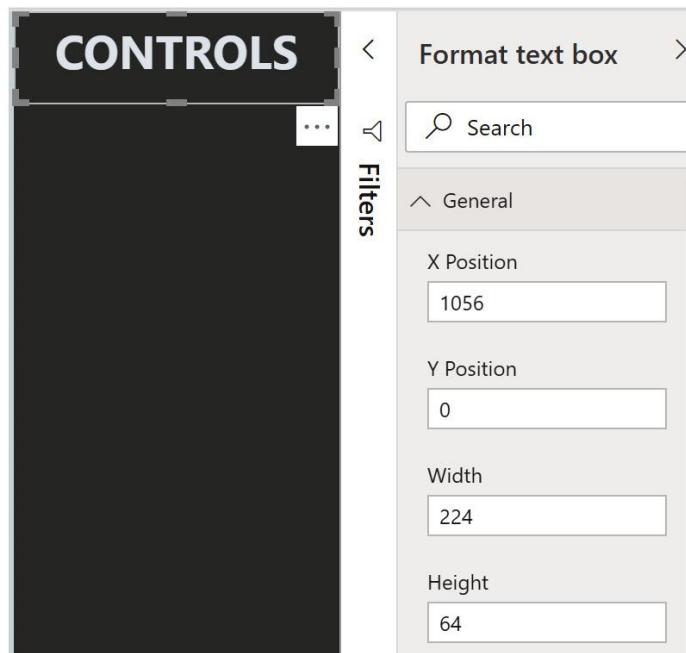


Figure 7.3 – CONTROLS text box position



Figure 7.4 – CONTROLS text box and Dates slicer

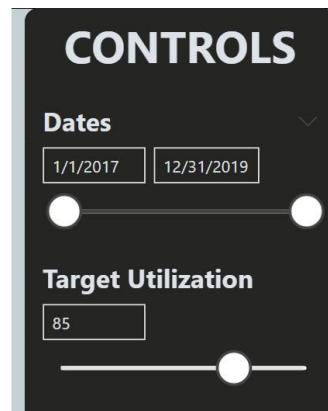


Figure 7.5 – Target Utilization slicer added

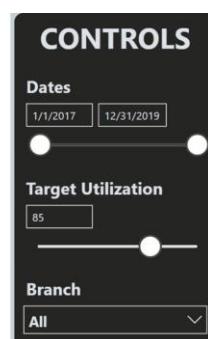


Figure 7.6 – Branch slicer added

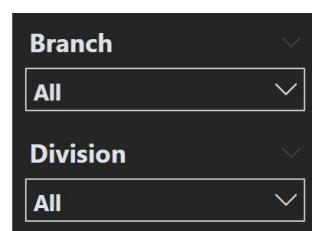


Figure 7.7 – The Division slicer underneath the Branch slicer

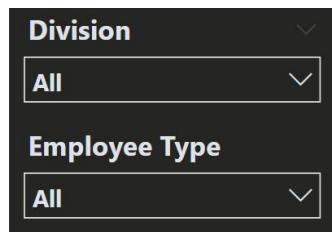


Figure 7.8 – The Employee Type slicer beneath the Division slicer



Figure 7.9 – Corporate logo and buttons

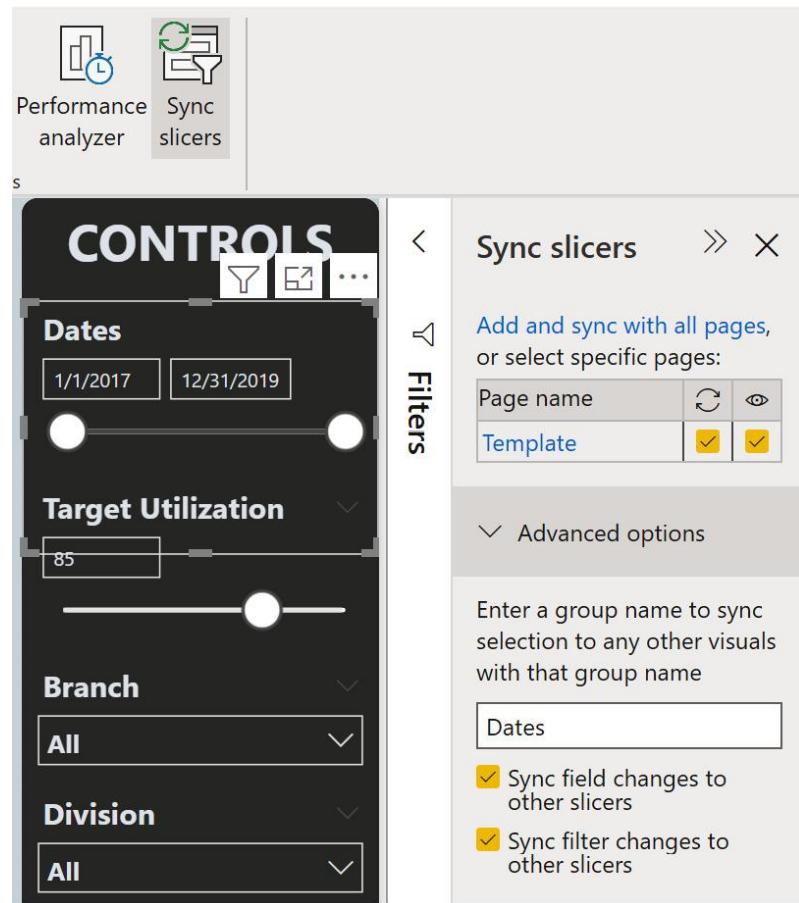


Figure 7.10 – Sync slicers pane

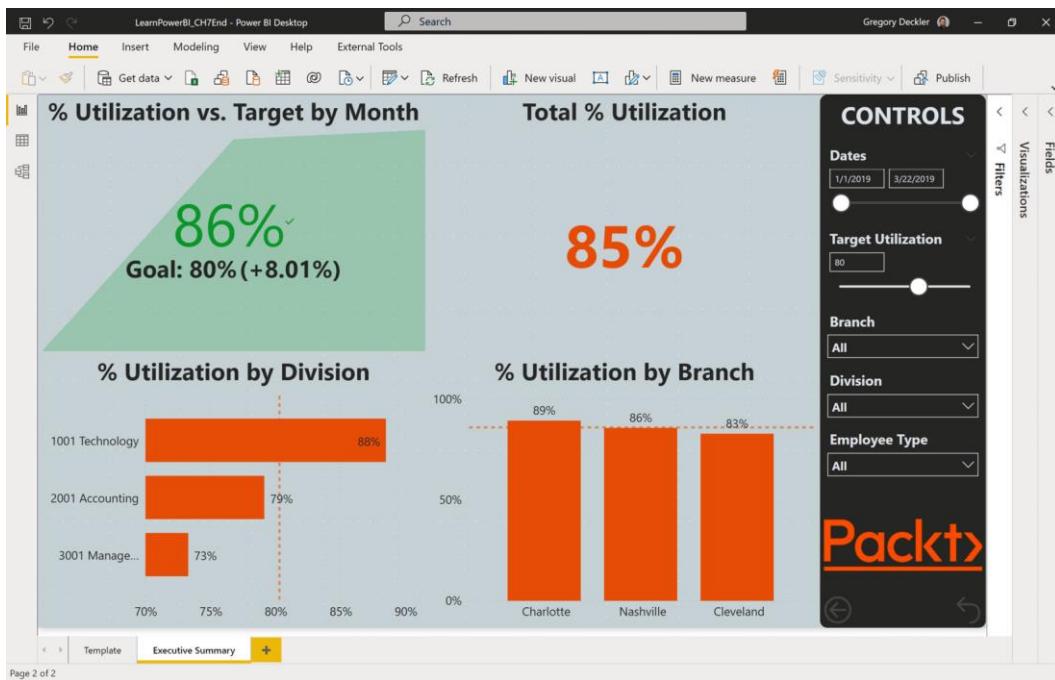


Figure 7.11 – The Executive Summary report page

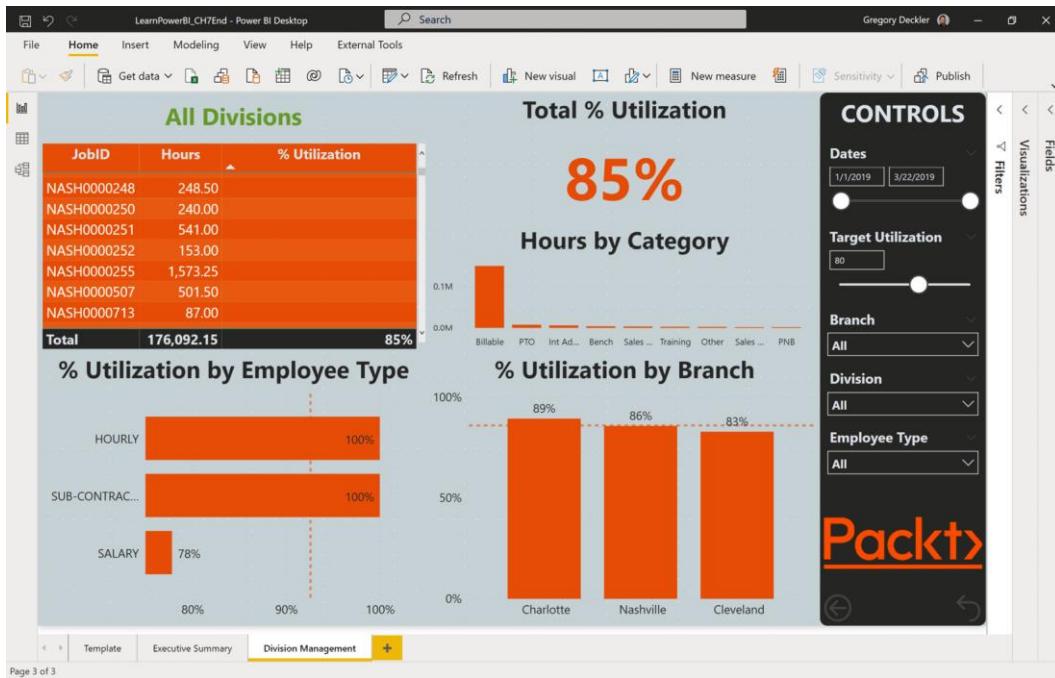


Figure 7.12 – The Division Management page

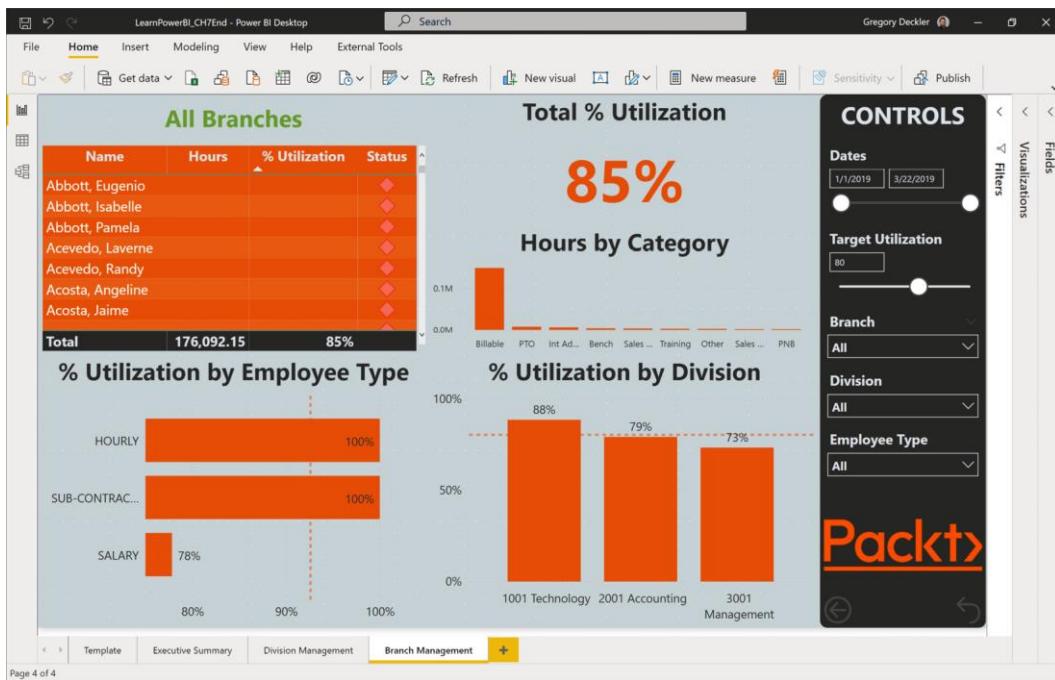


Figure 7.13 – The Branch Management page

	Category	Order	+
1	Billable	1	
2	Sales Support	4	
3	Training	7	
4	Int Admin	6	
5	Other	9	
6	Sales Pursuit	5	
7	Bench	3	
8	PTO	8	
9	PNB	2	
+			

Name: Categories

Load Edit Cancel

Figure 7.14 – Create Table using an Enter data query

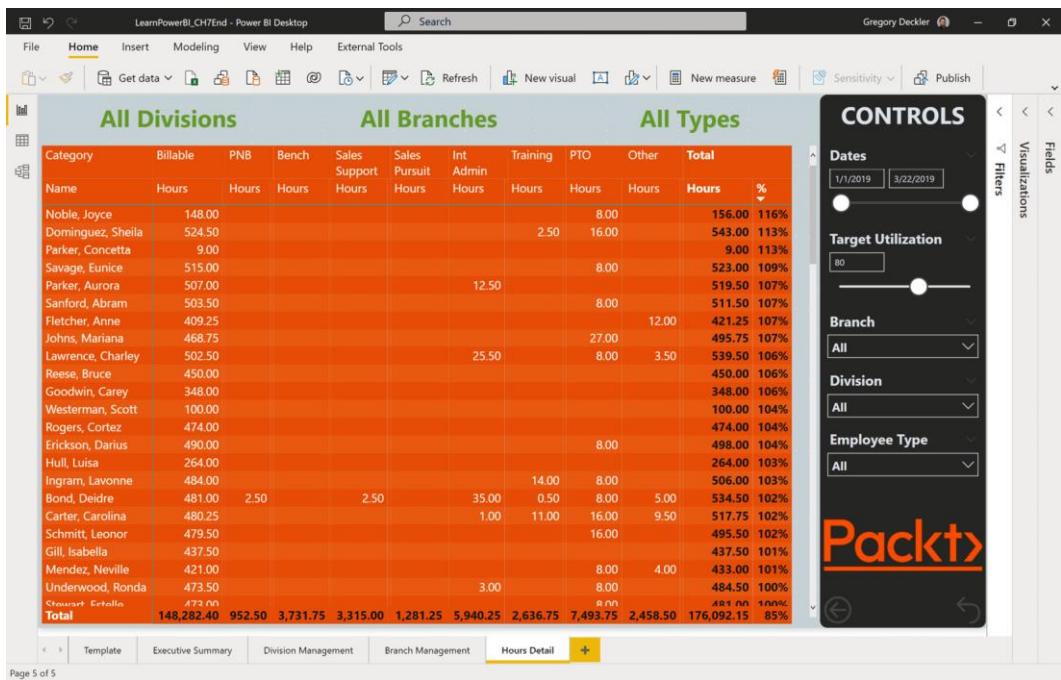


Figure 7.15 – The Hours Detail page

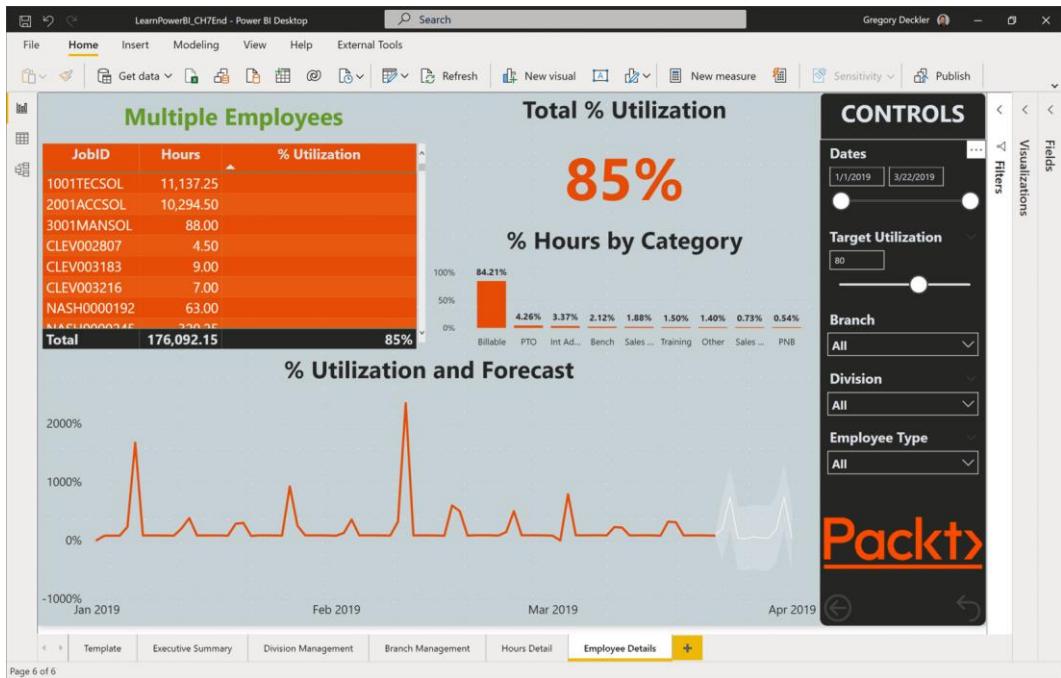


Figure 7.16 – The Employee Details page

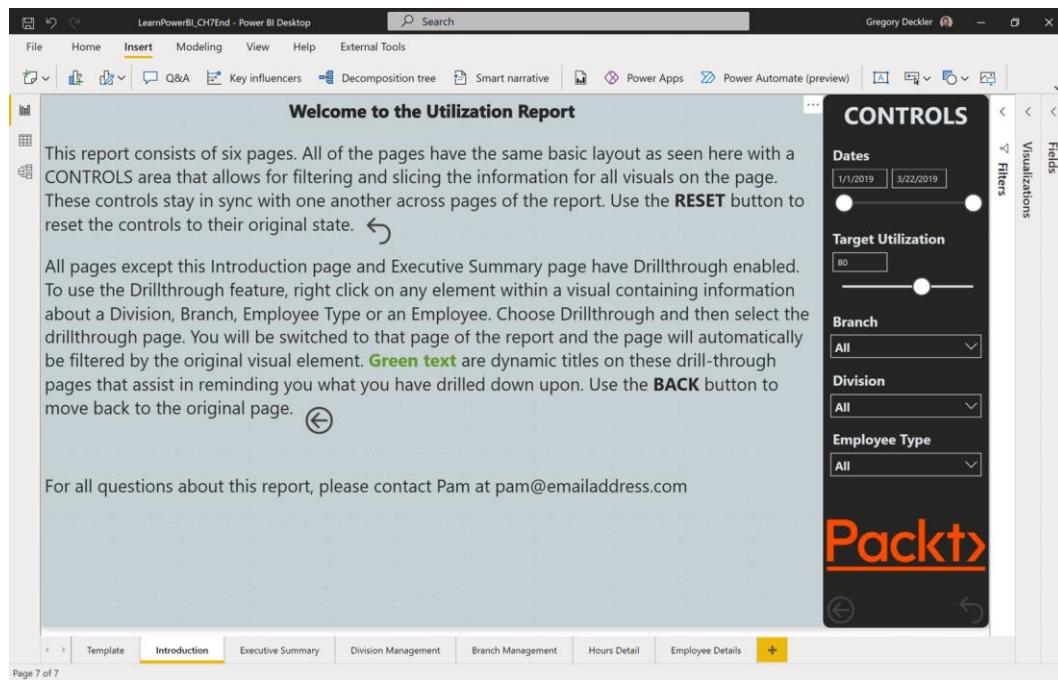


Figure 7.17 – The Introduction page

Code blocks

Code block 7.1

```
{
  "name": "LearnPowerBI",
  "dataColors":
  [
    "#EC670F",
    "#3C3C3B",
    "#E5EAEE",
    "#5C85E6",
    "#29BCC0",
    "#A9D1E3"
  ]
}
```

```
"#7EAE40",
"#20B2E7",
"#D3DCE0",
],
"background": "#EC670F",
"foreground": "#FFFFFF",
"tableAccent": "#29BCC0",
"visualStyles":
{ "*":
{ "*":
{ "*":
[ {
"fontSize": 14,
"fontFamily": "Segoe UI",
"color": {"solid": {}}
} ],
"general": [{"responsive": true}]
}
},
"tableEx":
{ "*":
{
"columnHeaders":
[ {
"autoSizeColumnWidth": true,
"fontFamily": "Segoe (Bold)",

```

```
        "fontSize":14  
    } ]  
}  
}  
}  
}  
}
```

Formulas

Formula 7.1, adjusting the calendar:

```
Calendar = CALENDAR( MIN(Hours[Date]), MAX(Hours[Date]) )
```

Formula 7.2, Creating the division's management page:

```
Divisions Title =  
VAR allCount = 3  
  
VAR currentCount =  
COUNTROWS(SUMMARIZE('Hours', [Division]))  
  
RETURN  
  
SWITCH(  
    TRUE(),  
    HASONEVALUE(Hours[Division]), MAX(Hours[Division]),  
        allCount = currentCount, "All Divisions",  
    "Multiple Divisions"  
)
```

Formula 7.3, Creating the branch management page:

```
Branch Title =  
  
    VAR allCount =  
COUNTROWS(SUMMARIZE(ALL('People'), [Location]))  
  
    VAR currentCount =  
COUNTROWS(SUMMARIZE('People', [Location]))  
  
RETURN
```

```

SWITCH (
    TRUE () ,
    HASONEVALUE (People[Location]) , MAX (People[Location]) ,
        allCount = currentCount , "All Branches" , "Multiple
Branches"
)

```

Formula 7.4:

```
tmpTable = DISTINCT ('Hours' [Category])
```

Formula 7.5, Creating the hours detail page

```

Type Title =
    VAR allCount = 3
    VAR currentCount =
COUNTROWS (SUMMARIZE ('People' , [EmployeeType]))
RETURN
    SWITCH (
        TRUE () ,
        HASONEVALUE ('People' [EmployeeType]) , MAX ('People' [
EmployeeType]) ,
            allCount = currentCount , "All Types" , "Multiple
Types"
    )

```

Formula 7.6, Creating the employee details page

```

Employee Title =
    IF (
        HASONEVALUE ('People' [Name]) ,
        MAX ('People' [Name]) ,
        "Multiple Employees"
    )

```

Questions

As an activity, try to answer the following questions on your own:

- What Power BI feature allows the report author to preset elements such as colors and font sizes?
- What are the three preparation steps that are taken before creating the final report pages?
- What feature keeps the settings for slicers consistent across pages?
- What type of visual can display the current value of a metric and the trend of that metric and track that metric against a goal?
- What two features of Power BI are used to allow report viewers to reset the slicers on a page?
- What DAX function can be used to determine whether a column has a single value?
- What Power BI feature allows ad hoc information to be entered into the data model?
- What two analytics features were used on the report pages?
- What report and data elements can be hidden from report viewers?

Further reading

To learn more about the topics that were covered in this chapter, please take a look at the following references:

- *Using Report Themes in Power BI Desktop:*
<https://docs.microsoft.com/en-us/power-bi/desktop-report-themes>
- *Using gridlines and snap-to-grid in Power BI Desktop reports:*
<https://docs.microsoft.com/en-us/power-bi/desktop-gridlines-snap-to-grid>
- *Textboxes and shapes in Power BI reports:*
<https://docs.microsoft.com/en-us/power-bi/power-bi-reports-add-text-and-shapes>

- *Conditional table formatting:* <https://docs.microsoft.com/en-us/power-bi/desktop-conditional-table-formatting>
- *Sort by column in Power BI Desktop:* <https://docs.microsoft.com/en-us/power-bi/desktop-sort-by-column>
- *Using bookmarks to share insights and build stories in Power BI:* <https://docs.microsoft.com/en-us/power-bi/desktop-bookmarks>
- *Using the Analytics pane in Power BI Desktop:* <https://docs.microsoft.com/en-us/power-bi/desktop-analytics-pane>
- *Tips and tricks for creating reports in Power BI Desktop:* <https://docs.microsoft.com/en-us/power-bi/desktop-tips-and-tricks-for-creating-reports>
- *Getting started with color formatting and axis properties:* <https://docs.microsoft.com/en-us/power-bi/visuals/service-getting-started-with-color-formatting-and-axis-properties>
- *Slicers in Power BI:* <https://docs.microsoft.com/en-us/power-bi/visuals/power-bi-visualization-slicers>

Chapter 8

Technical requirements

You will need the following requirements to complete this chapter:

- An internet connection.
- Microsoft Power BI Desktop.
- An Office 365 account or Power BI trial.
- If you have skipped any of the previous chapters, you can download `LearnPowerBI.pbix` from GitHub at <https://github.com/PacktPublishing/Learn-Power-BI-second-edition/tree/main/Chapter08>.
- Check out the following video to see the Code in Action:
<https://bit.ly/3F3AodD>

Images

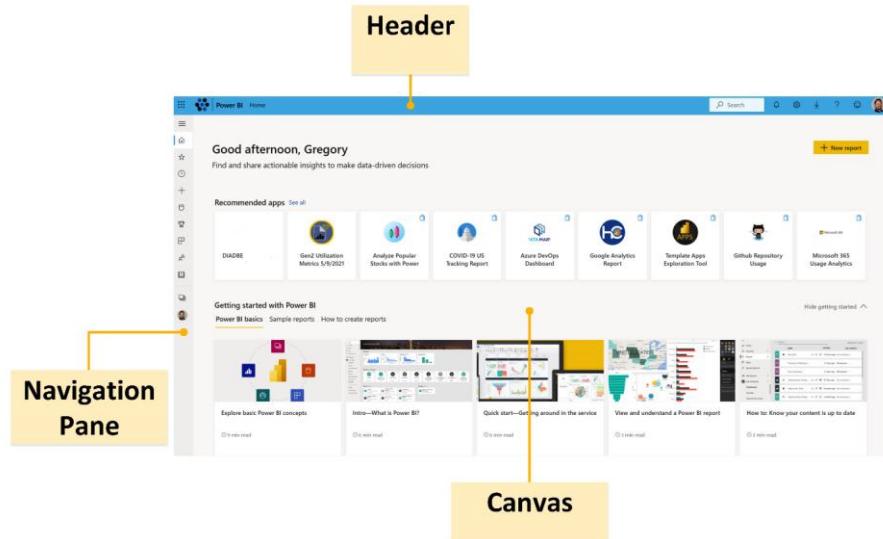


Figure 8.1 – A tour of the service

Create a workspace

Workspace image



Upload Delete

Workspace name

Learn Power BI 2nd Edition

Available

Description

Describe this workspace

[Learn more about workspace settings](#)

Advanced ^

Contact list

Workspace admins
 Specific users and groups

Enter users and groups

Workspace OneDrive

(Optional)

License mode ⓘ

Pro
 Premium per user
 Premium per capacity
 Embedded ⓘ

Develop a template app

Save

Cancel

Figure 8.2 – Create a workspace dialog

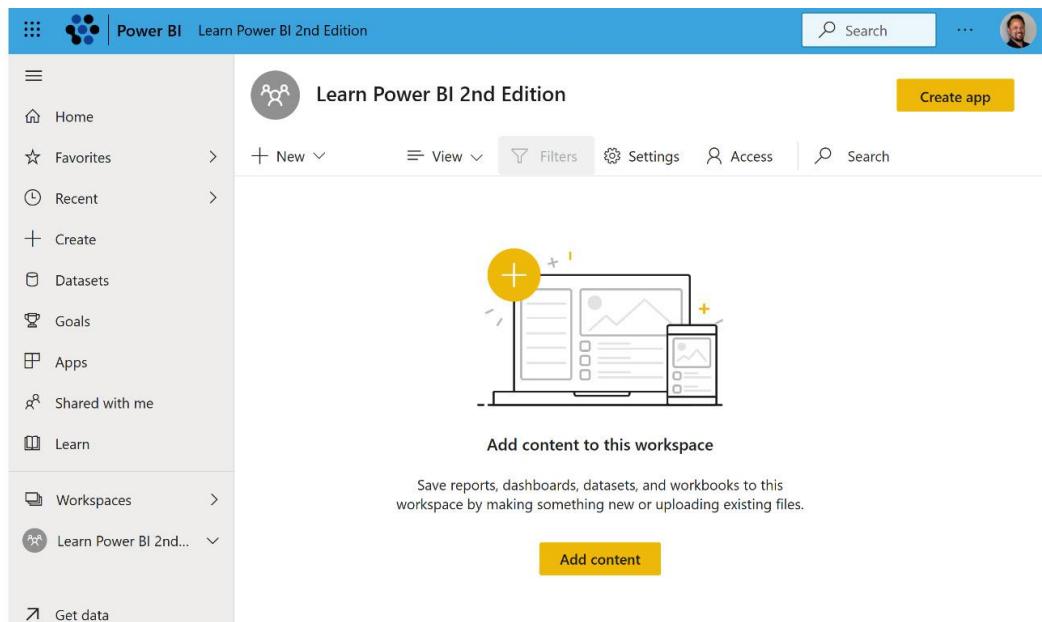


Figure 8.3 – Workspace home page (Get data page)

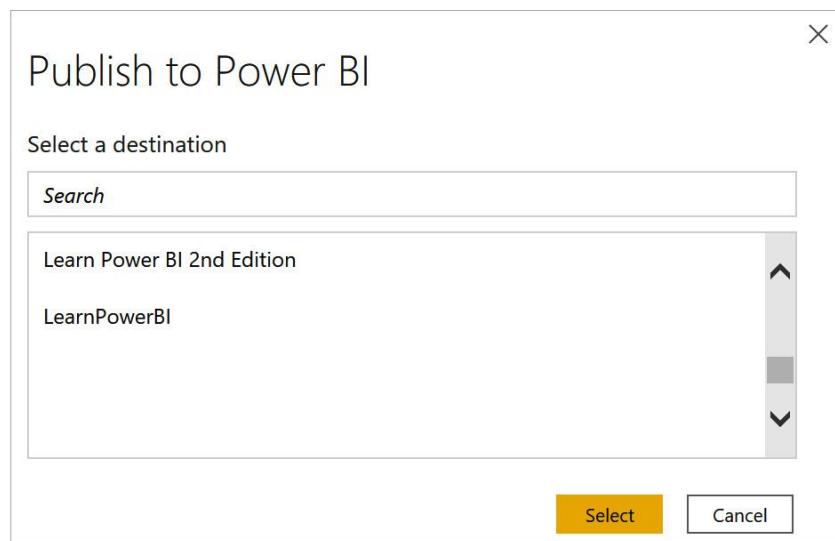


Figure 8.4 – Publish to Power BI dialog

Publishing to Power BI

∴ Publishing 'LearnPowerBI2ndEdition.pbix' to Power BI



Did you know?

You can create a portrait view of your report, tailored for mobile phones.
On the **View** tab, select **Mobile Layout**. [Learn more](#)

Cancel

Figure 8.5 – Publishing to Power BI dialog in progress

Publishing to Power BI

✓ Success!

[Open 'LearnPowerBI2ndEdition.pbix' in Power BI](#)

[Get Quick Insights](#)



Did you know?

You can create a portrait view of your report, tailored for mobile phones.
On the **View** tab, select **Mobile Layout**. [Learn more](#)

Got it

Figure 8.6 – Publishing to Power BI dialog; publishing complete

The screenshot shows the Power BI service interface. On the left, there's a navigation sidebar with options like Home, Favorites, Recent, Create, Datasets, Goals, Apps, Shared with me, Learn, Workspaces, and Reports. Under Reports, there's a link to 'LearnPowerBI2ndEdition'. The main content area displays a report titled 'Welcome to the Utilization Report'. The report content includes a paragraph about the utilization report, a 'CONTROLS' section with date filters, target utilization, branch, division, and employee type dropdowns, and a 'Packt' logo. The top of the screen shows the title 'LearnPowerBI2ndEdition' and the date 'Data updated 8/28/21'. The bottom right corner has a watermark for 'Packt'.

Figure 8.7 – Workspace subsections

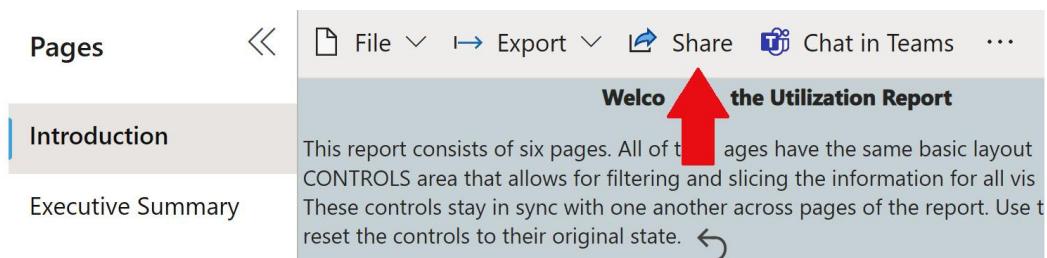


Figure 8.8 – The ribbon and Share link in the service

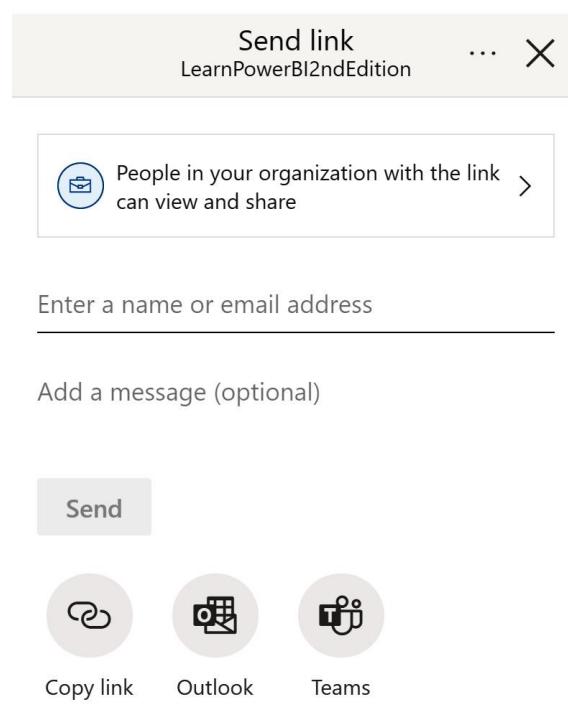


Figure 8.9 – The Send link dialog in the service

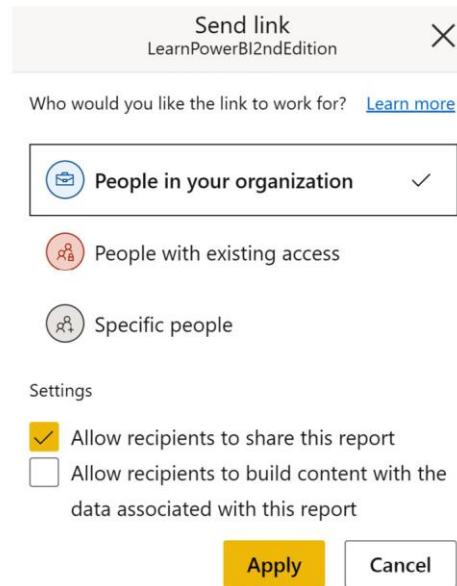


Figure 8.10 – Send link dialog options

Questions

As an activity, try to answer the following questions on your own:

- What are the two ways of getting a Power BI account?
- What are the three main interface elements of the Power BI service?
- What is a workspace and why would you use one?
- Do you publish reports from the Desktop version or the service?
- What two objects are created/updated in the Power BI service when a report is published?
- True or false: reports can only be shared with internal users of an organization?
- True or false: reports can only be shared with single users?
- What options are available when sharing reports?

Further reading

- *Tutorial: Get started creating in the Power BI service:*
<https://docs.microsoft.com/en-us/power-bi/service-get-started>
- *Publish datasets and reports from Power BI Desktop:*
<https://docs.microsoft.com/en-us/power-bi/desktop-upload-desktop-files>
- *Ways to collaborate and share in Power BI:*
<https://docs.microsoft.com/en-us/power-bi/service-how-to-collaborate-distribute-dashboards-reports>
- *The new workspace experience in Power BI:*
<https://docs.microsoft.com/en-us/power-bi/service-new-workspaces>

Chapter 9

Technical requirements

You will need the following requirements to successfully complete this chapter:

- An internet connection.
- An **Office 365** account or Power BI trial account.
- If you have skipped any of the previous chapters, you can download [LearnPowerBI.pbix](#) from GitHub at <https://github.com/PacktPublishing/Learn-Power-BI-second-edition>.
- Check out the following video to see the Code in Action:
<https://bit.ly/3F0jqwM>

Images



Figure 9.1 – Report ribbon in the service

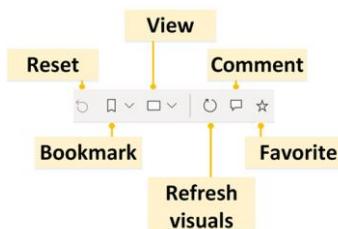


Figure 9.2 – Additional report ribbon options in the service

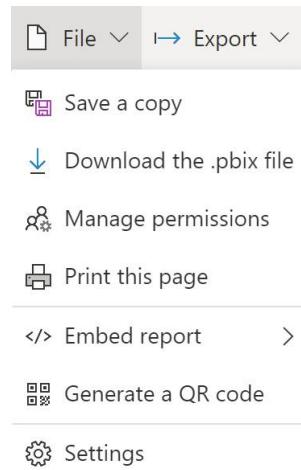


Figure 9.3 – File menu in the service

A screenshot of the 'Manage permissions' dialog. It shows a list of users with access, including 'Add user', 'Links', 'Direct access' (which is selected), and 'Pending'. Under 'People and groups with access', there is a entry for 'Gregory Deckler' with a profile picture.

Figure 9.4 – Manage permissions dialog in the service

A screenshot of the 'Grant people access' dialog. It features a search bar labeled 'Enter a name or email address'. Below it are three checked checkboxes: 'Allow recipients to share this report', 'Allow recipients to build content with the data associated with this report', and 'Send an email notification'. There is also an optional message field and 'Grant access' and 'Cancel' buttons.

Figure 9.5 – Add user dialog in the service

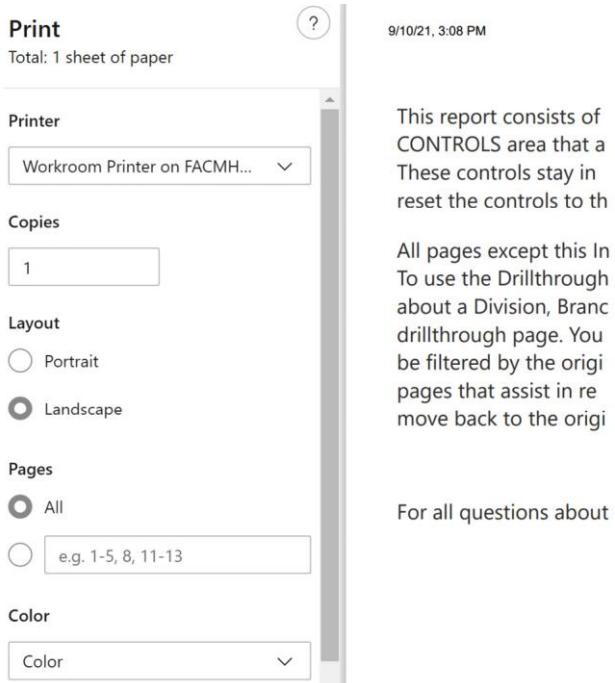


Figure 9.6 – Print dialog

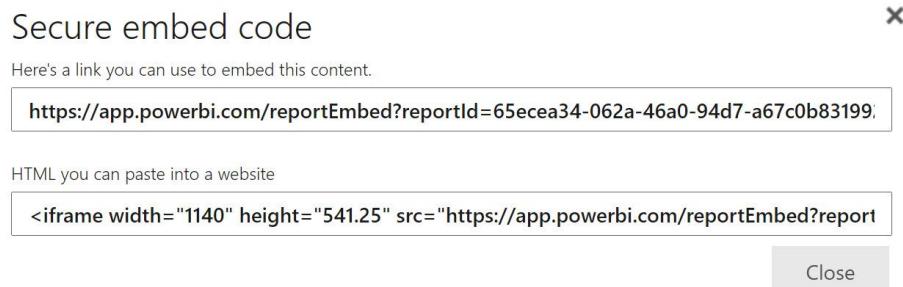


Figure 9.7 – Secure embed code dialog

Success! Your report is ready to share

Link you can send in email

Copy

HTML you can paste into a website

```
<iframe width="600" height="373.5" src="https://e
```

Copy

Size

600 x 373 5 px

Placeholder image



 Delete

Default Page

Year/Month Analysis

Figure 9.8 – Embed dialog for Publish to web

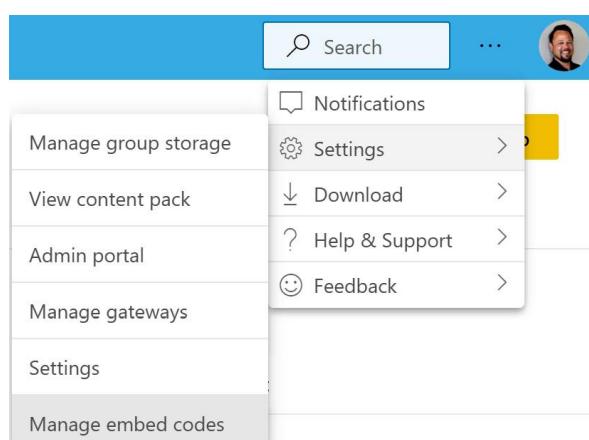


Figure 9.9 – Accessing Manage embed codes

Gregory Deckler Pro user

Associated Report	Status	Date Created	
2016 Election Polls	Active	11/14/2016, 11:07:57 PM	... Get code Delete
anonymous	Active	10/25/2018, 4:33:54 PM	... Get code Delete
AnonymousToo	Active	5/22/2020, 1:47:55 PM	... Get code Delete
ARABIC	Active	5/10/2020, 11:08:40 PM	... Get code Delete
AreaApproximation	Active	2/10/2019, 12:43:24 AM	... Get code Delete
ATAN2	Active	3/7/2020, 2:32:09 PM	... Get code Delete

Figure 9.10 – Manage embed codes page

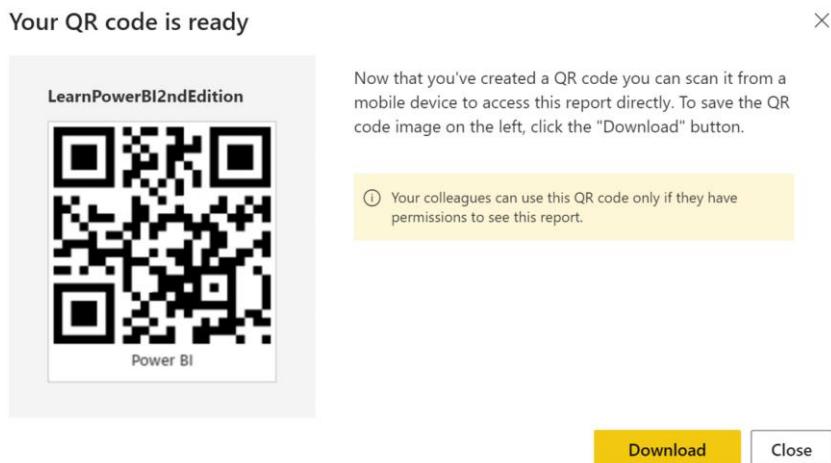


Figure 9.11 – Generate a QR code dialog

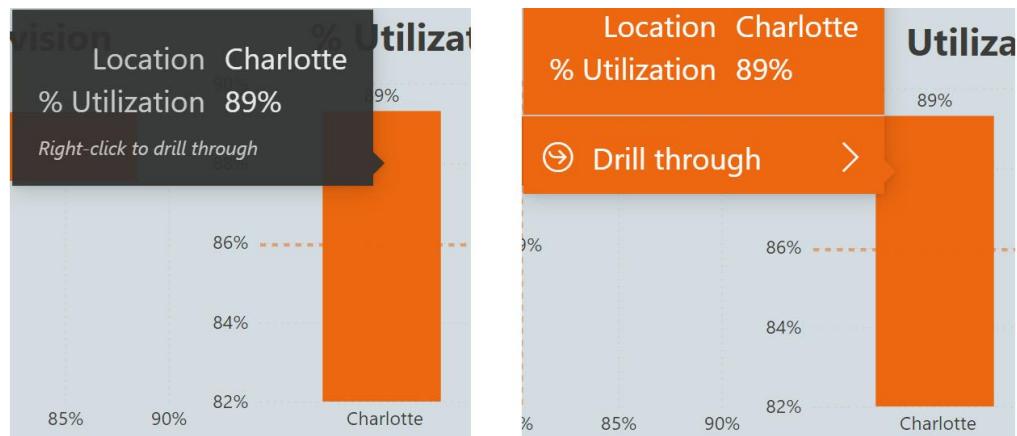


Figure 9.12 – Traditional tooltips (on the left) versus modern tooltips (on the right)

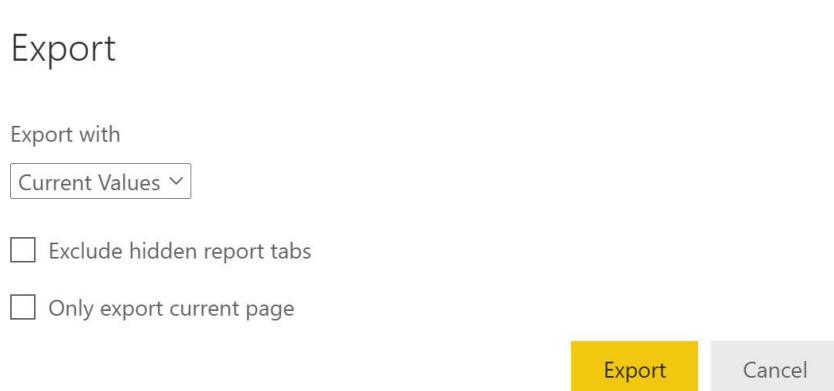


Figure 9.13 – PowerPoint Export dialog in the service

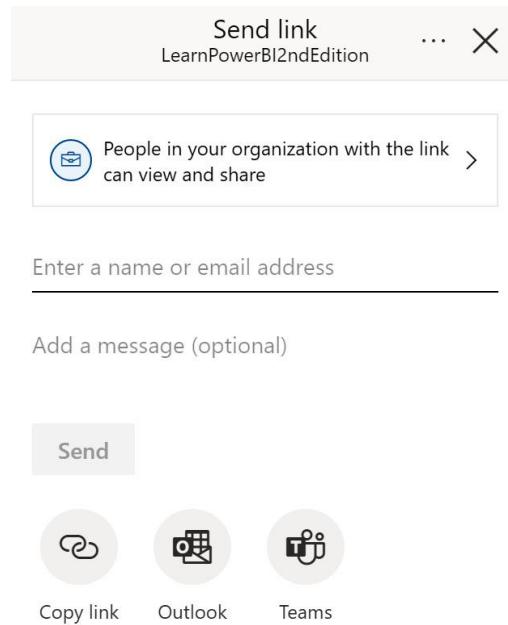


Figure 9.14 – Send link dialog in the service

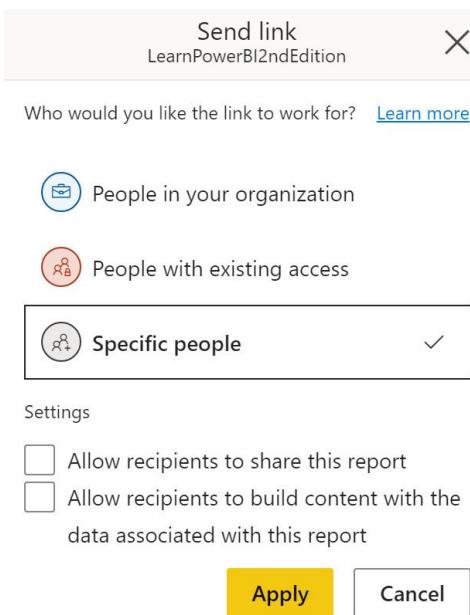


Figure 9.15 – Secondary Send link dialog in the service



Figure 9.16 – Manage permissions function

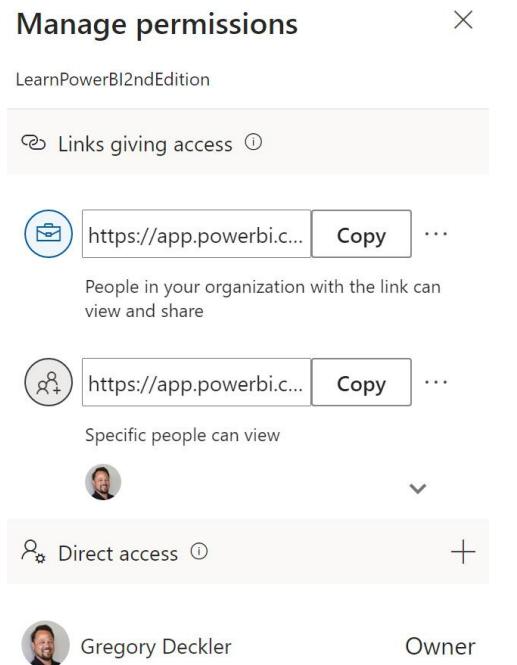


Figure 9.17 – Manage permissions dialog in the service

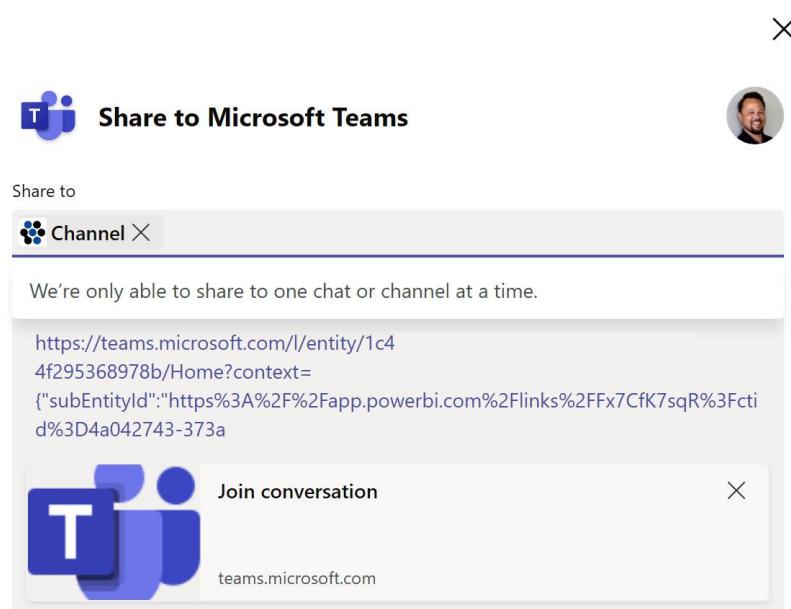


Figure 9.18 – Share to Microsoft Teams dialog in the service

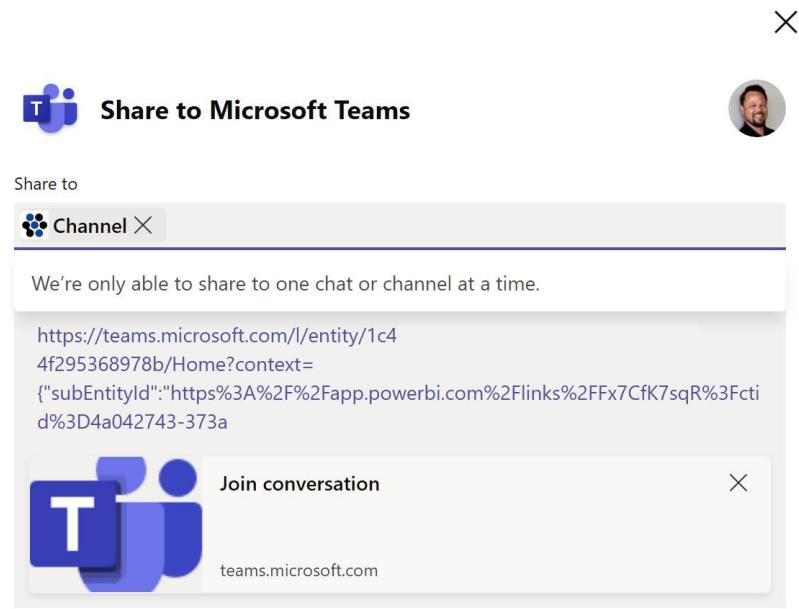


Figure 9.18 – Share to Microsoft Teams dialog in the service

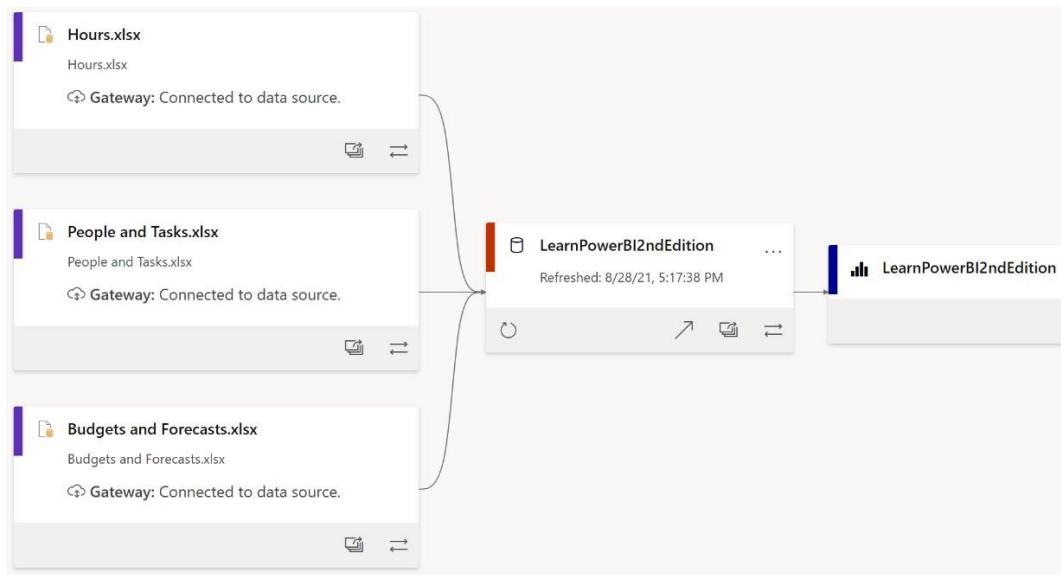


Figure 9.20 – Lineage view in the service

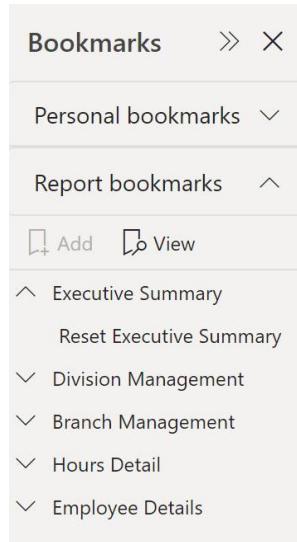


Figure 9.21 – The Bookmarks pane in the ribbon

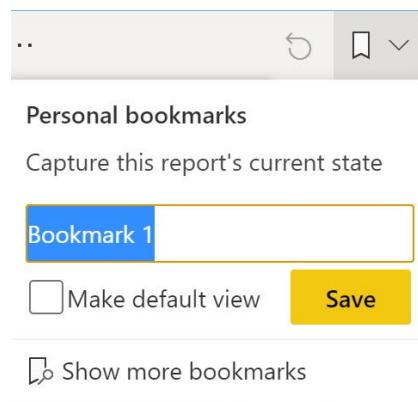


Figure 9.22 – Adding a personal bookmark

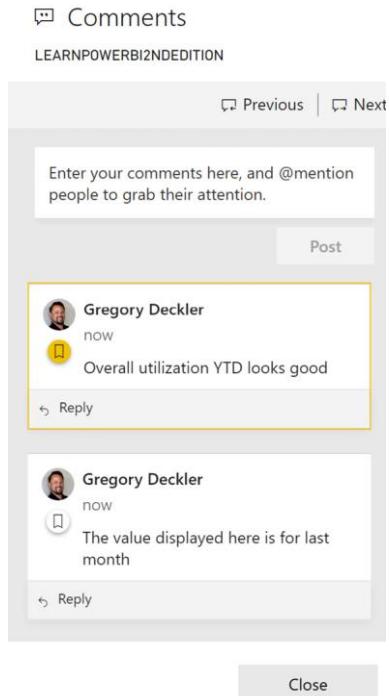


Figure 9.23 – Comments pane in the service

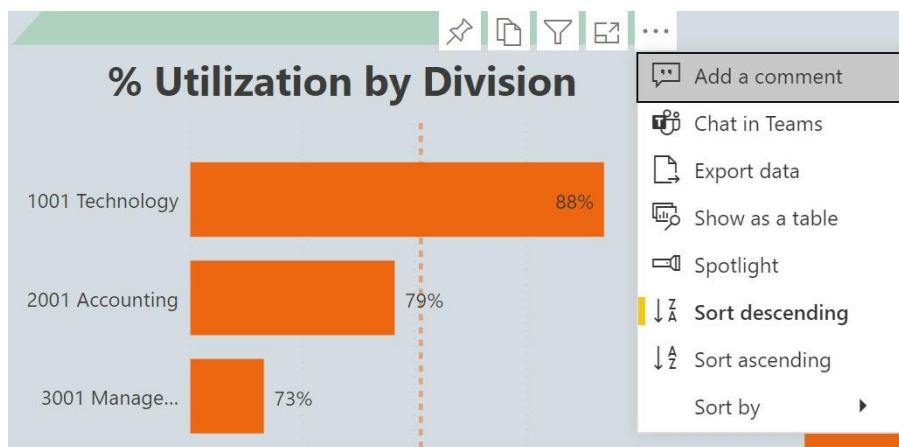


Figure 9.24 – Adding a comment to a visual

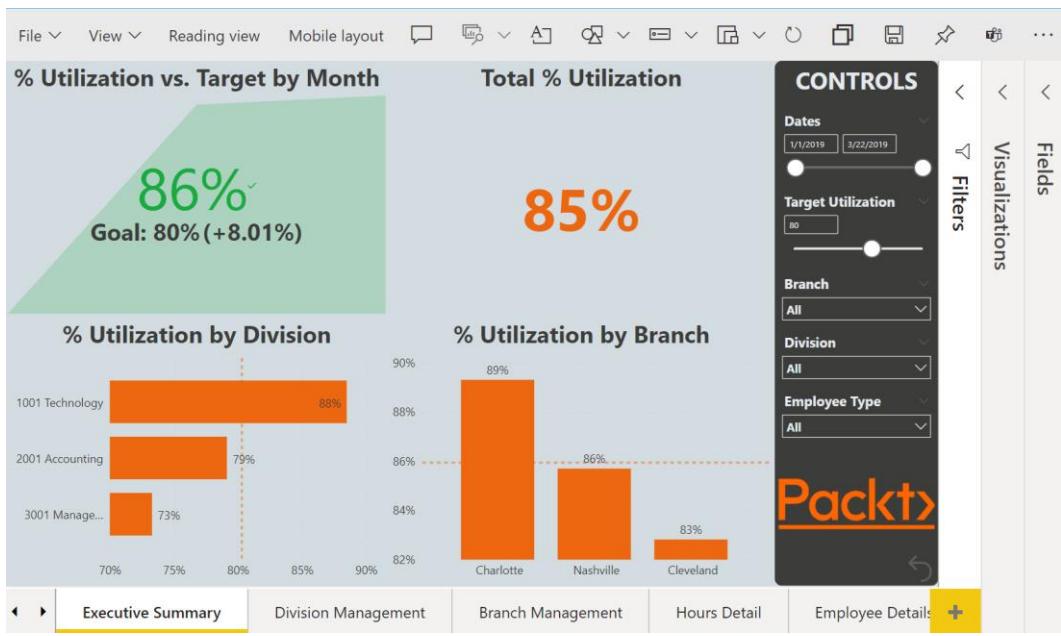


Figure 9.25 – Editing a report in the service

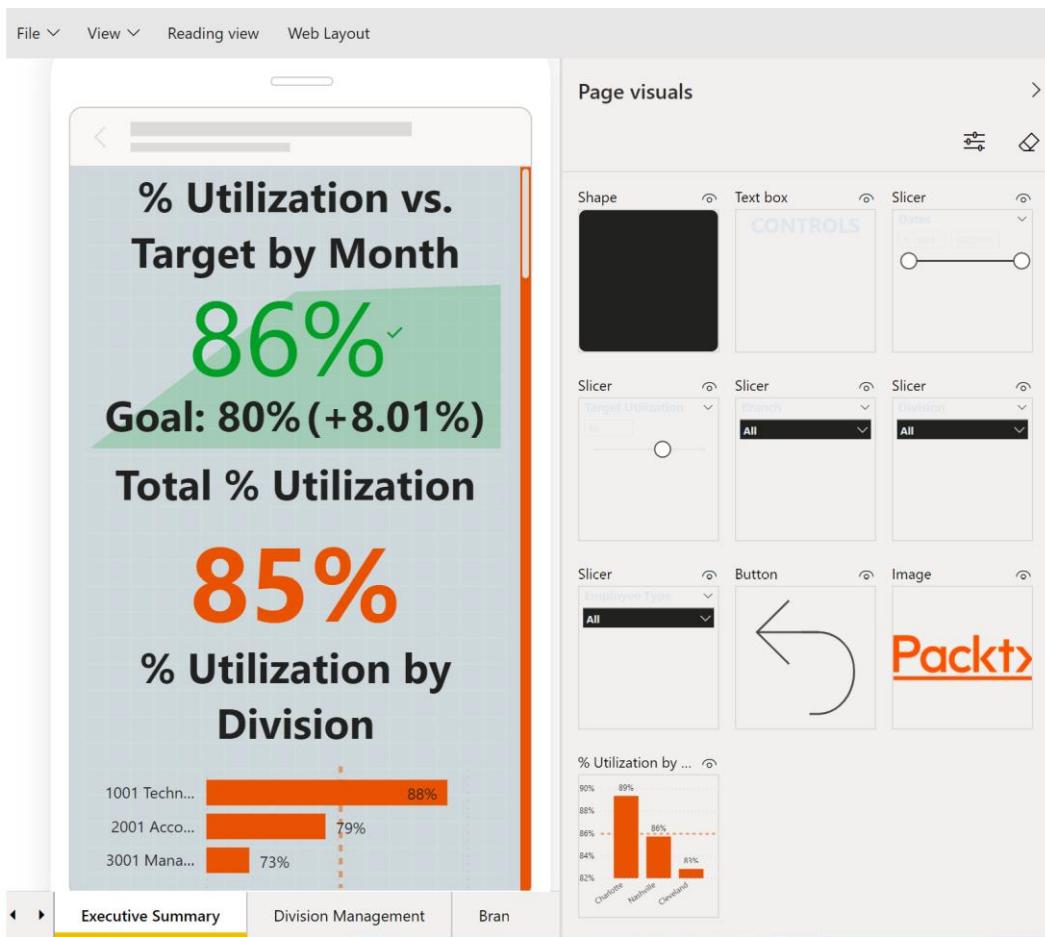


Figure 9.26 – Creating a mobile report layout in the service

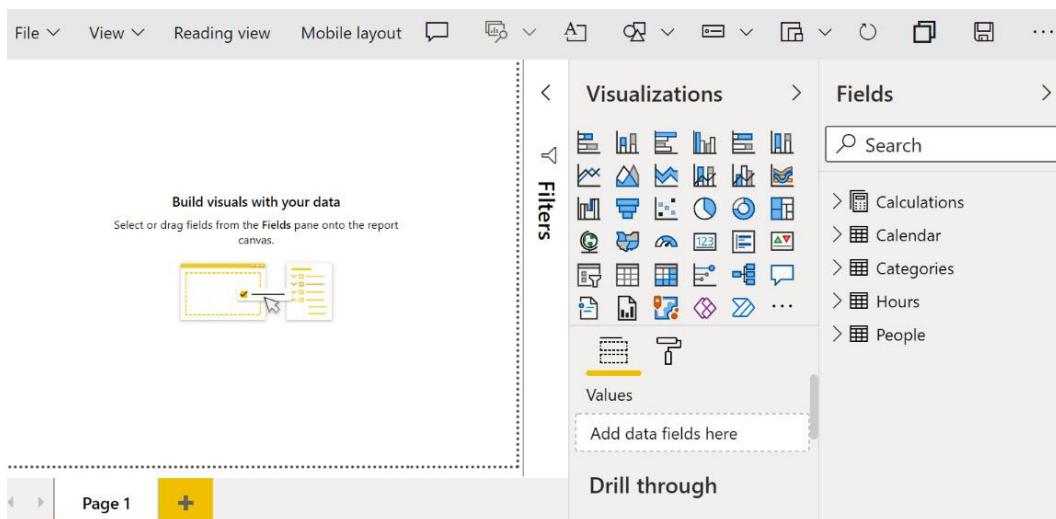


Figure 9.27 – Creating a new report in the service

Code

Code 9.1

```
https://app.powerbi.com/groups/5cfe-4911-8c19-  
6cd0c4a05316/reports/0982-4e14-bbf7-  
ddb60a89ab43/ReportSectione40aa5b8b28a3bc92793
```

Code 9.2

```
https://app.powerbi.com/reportEmbed?reportId=0982-4e14-  
bbf7-ddb60a89ab43&autoAuth=true&ctid=373a-43d2-827b-  
003f4c7ba1e5&pageName=ReportSectione40aa5b8b28a3bc92793
```

Code 9.3

```
https://app.powerbi.com/reportEmbed?reportId=0982-4e14-  
bbf7-ddb60a89ab43&autoAuth=true&ctid=373a-43d2-827b-  
003f4c7ba1e5&pageName=Rep  
ortSectione40aa5b8b28a3bc92793&filter=Hours/Division eq  
'1001 Technology'
```

URLs

URL 9.1: `https://app.powerbi.com/reportEmbed?reportId=0982-4e14-bbf7-ddb60a89ab43&autoAuth=true&ctid=373a-43d2-827b-003f4c7ba1e5`

URL 9.2: `https://app.powerbi.com/groups/5cfe-4911-8c19-6cd0c4a05316/reports/0982-4e14-bbf7-ddb60a89ab43/ReportSectione40aa5b8b28a3bc92793`

URL 9.3: `https://app.powerbi.com/reportEmbed?reportId=0982-4e14-bbf7-ddb60a89ab43&autoAuth=true&ctid=373a-43d2-827b-003f4c7ba1e5&pageName=ReportSectione40aa5b8b28a3bc92793`

URL 9.4: `filter=Table/Field eq 'Value'`

URL 9.5: `https://app.powerbi.com/reportEmbed?reportId=0982-4e14-bbf7-ddb60a89ab43&autoAuth=true&ctid=373a-43d2-827b-003f4c7ba1e5&pageName=Rep`

```
ortSectione40aa5b8b28a3bc92793&filter=Hours/Division eq  
'1001 Technology'
```

Questions

As an activity, try to answer the following questions on your own:

- How do you tag another user in a comment?
- What are the key differences between report bookmarks, personal bookmarks, and persistent filters?
- Which formats can users export Power BI reports to?
- What are three different ways in which reports can be embedded in other websites?
- True or false: Using the **Publish to web** feature maintains the security of a report.
- Once **Publish to web** is used, how do you remove an embed link?
- What is the most important thing to remember about editing reports in the Power BI service?

Further reading

To learn more about the topics that were covered in this chapter, please take a look at the following references:

- *Embed a report in a secure portal or website:* <https://docs.microsoft.com/en-us/power-bi/service-embed-secure>
- *Filter a report using query string parameters in the URL:* <https://docs.microsoft.com/en-us/power-bi/service-url-filters>
- *Embed a report web part in SharePoint Online:* <https://docs.microsoft.com/en-us/power-bi/service-embed-report-spo>
- *Publish to the web from Power BI:* <https://docs.microsoft.com/en-us/power-bi/service-publish-to-web>

- *Announcing Persistent Filters in the Power BI Service:* <https://powerbi.microsoft.com/en-us/blog/announcing-persistent-filters-in-the-service/>
- *Create report bookmarks in Power BI to share insights and build stories:* <https://docs.microsoft.com/en-us/power-bi/desktop-bookmarks>
- *Subscribe others to your reports and dashboards in the Power BI Service:* <https://docs.microsoft.com/en-us/power-bi/service-report-subscribe>
- *Types of filters in Power BI reports:* <https://docs.microsoft.com/en-us/power-bi/create-reports/power-bi-report-filter-types>

Chapter 10

Technical requirements

You will need the following to successfully complete this chapter:

- An internet connection.
- An Office 365 account or Power BI trial.
- If you have skipped any of the previous chapters, you can download [LearnPowerBI.pbix](#) from GitHub at <https://github.com/PacktPublishing/Learn-Power-BI-second-edition>.
- Check out the following video to see the Code in Action:
<https://bit.ly/3kjTNyZ>.

Images

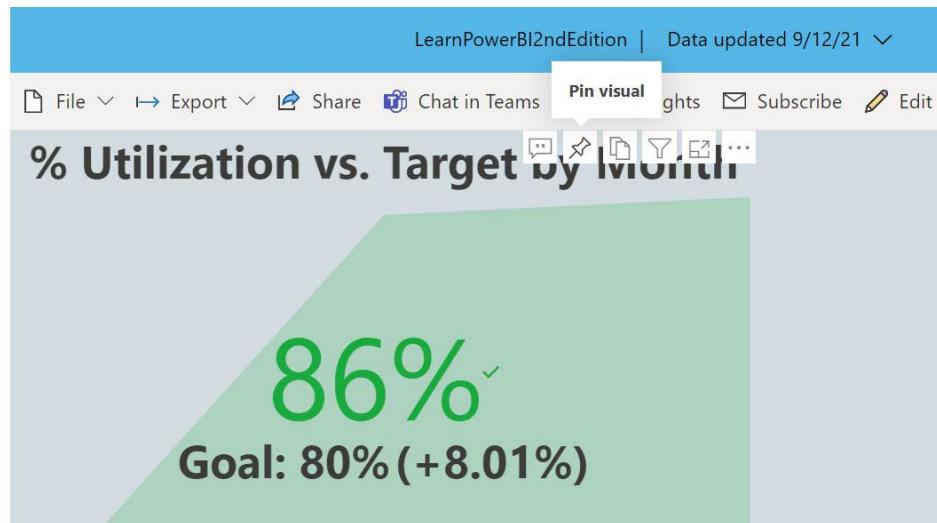


Figure 10.1 – Pin visual icon

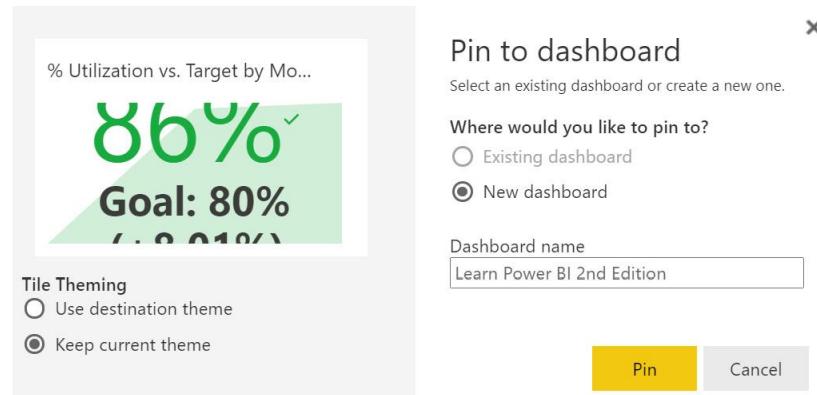


Figure 10.2 – Pin to dashboard dialog

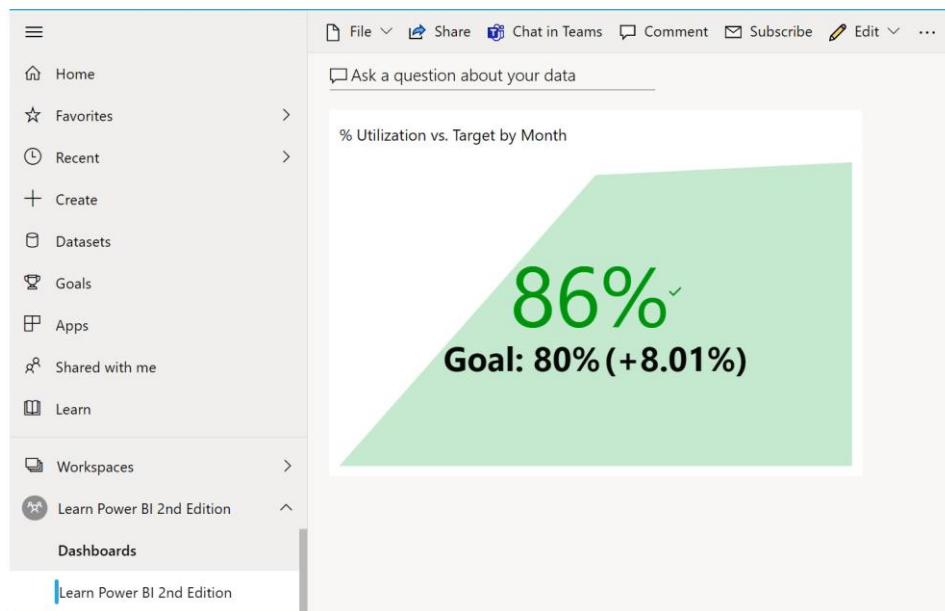


Figure 10.3 – Dashboard interface in the service

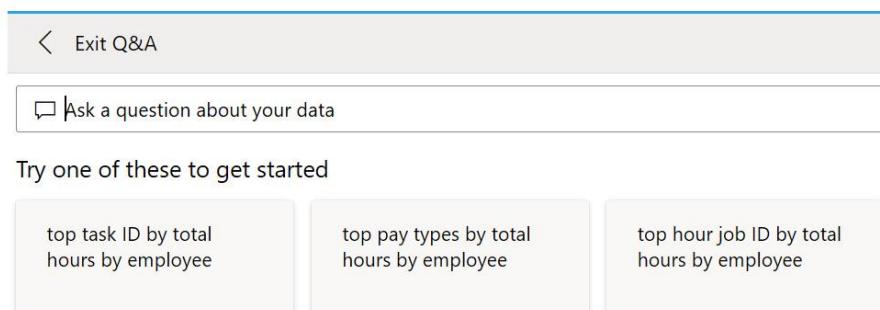


Figure 10.4 – Q&A interface in the service

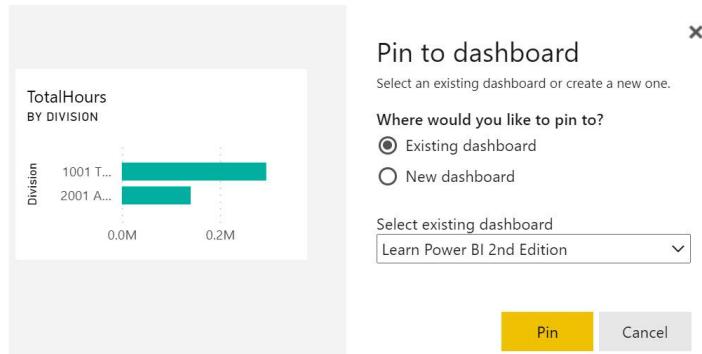


Figure 10.5 – Pin to dashboard dialog

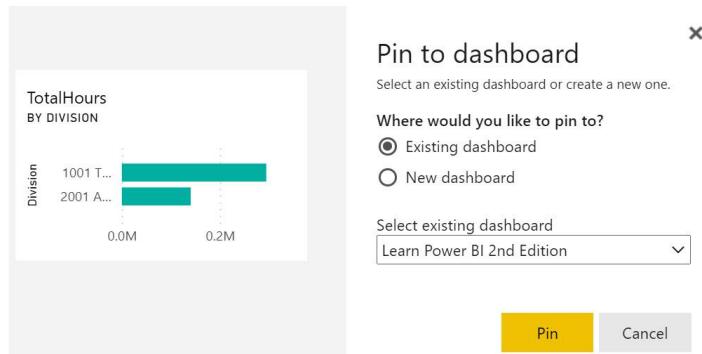


Figure 10.5 – Pin to dashboard dialog

Manage alerts

+ Add alert rule

Alert for % Utilization vs. Target by Month

Active
 On

Alert title
Alert for % Utilization vs. Target by Month

Set alerts rule for
% Utilization

Condition	Threshold
Above	0.8

Maximum notification frequency
 At most every 24 hours
 At most once an hour

Alerts are only sent if your data changes.

By default, you'll receive notifications on the service in the notification center.
 Send me email, too

Use Microsoft Power Automate to trigger additional actions

Save and close Cancel

Figure 10.7 – Manage alerts dialog

Tile details

* Required

Details

Display title and subtitle

Title
% Utilization vs. Target by Month

Subtitle

Functionality

Display last refresh time

Set custom link

Link type

External link

Link to a dashboard or report in the current workspace

URL *

Open custom link in the same tab?

Yes

No

[Restore default](#)

[Technical Details](#)

Apply **Cancel**

Figure 10.8 – Tile details dialog

The screenshot shows the Power BI workspace interface. At the top, there's a header with a user icon, the workspace name "Learn Power BI 2nd Edition", and a "Create app" button. Below the header is a navigation bar with "New", "View", "Filters", "Settings", "Access", and a search bar. Underneath is a filter bar with "All", "Content", and "Datasets + dataflows". The main area is a table listing items:

	Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Include in app
	Copy of report	Report	Learn Power BI 2nd...	9/12/21, 10:24:45 AM	—	—	—	<input checked="" type="checkbox"/> Yes
	Learn Power BI 2nd Edition	Dashboard	Learn Power BI 2nd...	—	—	—	—	<input checked="" type="checkbox"/> Yes
	Learn Power BI 2nd Edition (copy)	Dashboard	Learn Power BI 2nd...	—	—	—	—	<input checked="" type="checkbox"/> Yes
	LearnPowerBI2ndEdition	Report	Learn Power BI 2nd...	9/12/21, 10:24:45 AM	—	—	—	<input checked="" type="checkbox"/> Yes
	LearnPowerBI2ndEdition	Dataset	Learn Power BI 2nd...	9/12/21, 10:24:45 AM	N/A	—	—	<input type="checkbox"/>

Figure 10.9 – Workspace interface

Learn Power BI 2nd Edition

Setup Navigation Permissions X

Build your app

App name *
Learn Power BI 2nd Edition

Description *
Learn Power BI 2nd Edition
174 characters left

Support site
Share where your users can find help

App logo


App theme color


Contact Information
 Show app publisher
 Show items contacts from the workspace
 Show specific individuals or groups

Publish app **Cancel**

Figure 10.10 – App publishing interface: the Setup tab

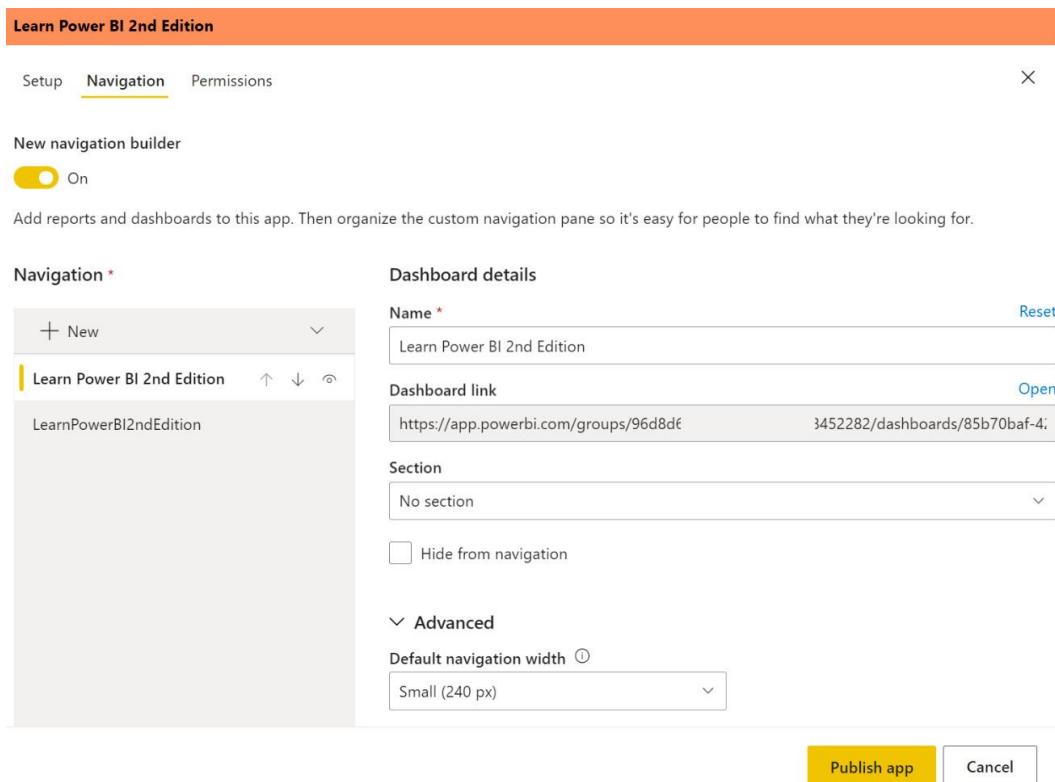


Figure 10.11 – App publishing interface: the Navigation tab

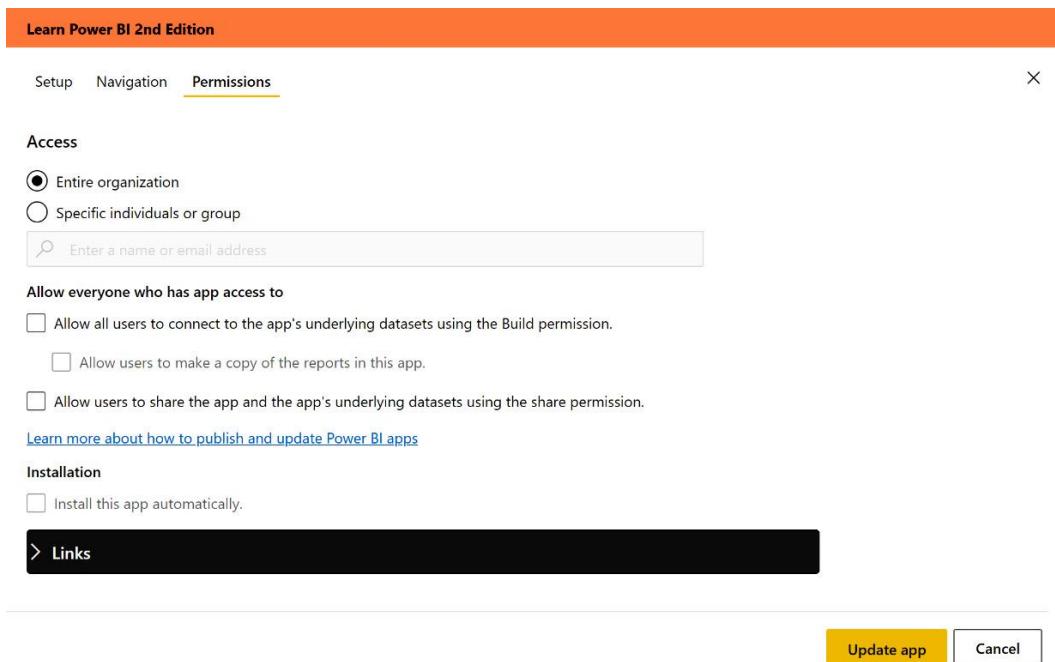


Figure 10.12 – App publishing interface: the Permissions tab

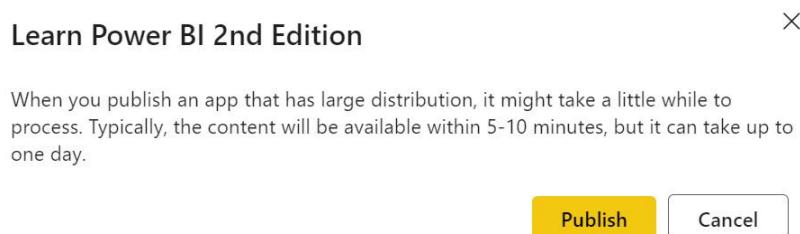


Figure 10.13 – App publishing dialog

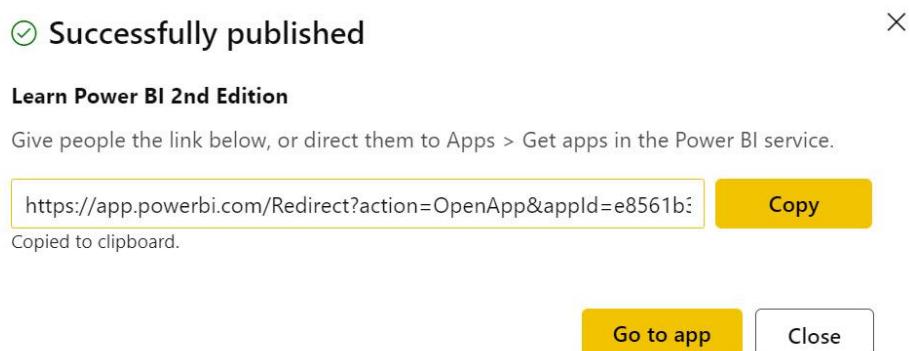


Figure 10.14 – Successfully published dialog

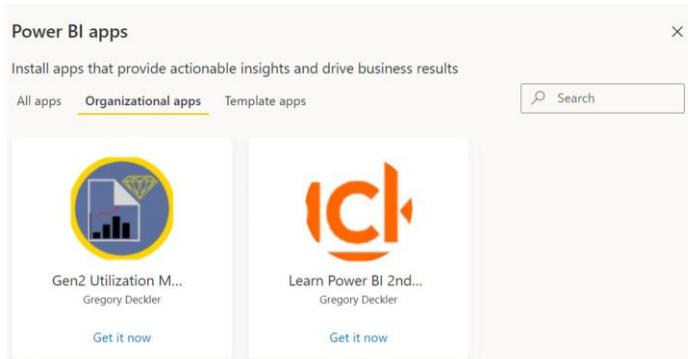


Figure 10.15 – Power BI apps dialog

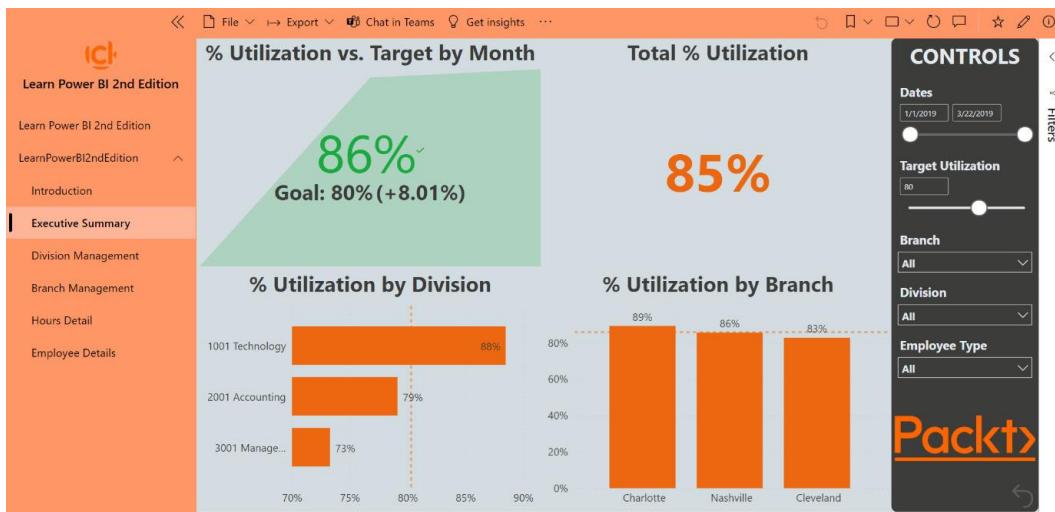


Figure 10.16 – The app

Create scorecard

Track progress toward related goals and subgoals

Scorecard name
Learn Power BI 2nd Edition

Description
Describe why you're tracking these goals

Workspace
LearnPowerBI

Create new Premium workspace

Sensitivity label
Classify the sensitivity of this scorecard. [Learn more](#)

Figure 10.17 – Create scorecard dialog

Learn Power BI 2nd Edition

The screenshot shows the Microsoft Scorecard interface for creating a new goal. At the top, there are buttons for '+ New goal' and 'Add subgoal'. Below that, a goal card is displayed with the following details:

Goal name	Owner	Current	Target	Status	Start date	Due date
Complete 2nd Edition	gdeckler	80.00 %	100.00 %	On track	09/19/2021	10/19/2021
		Or connect to data		Or set up rules		

At the bottom right are 'Save' and 'Cancel' buttons.

Figure 10.18 – Creating a goal

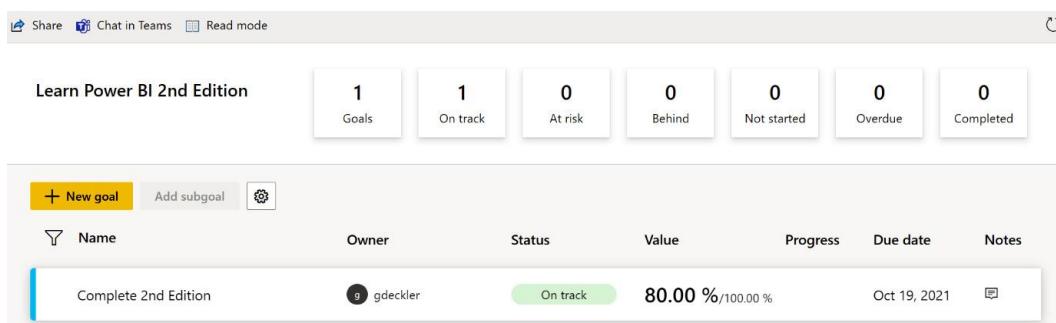


Figure 10.19 – A completed scorecard

Activity

The screenshot shows a 'New check-in' dialog box. It includes fields for the date (9/21/2021), value (0.85), and status (On track). There is also a note field labeled 'Include a note' with a dropdown arrow. At the bottom are 'Save' and 'Cancel' buttons.

Below the dialog is a summary of the check-in:

gdeckler	Posted now	Check-in for Sep 19, 2021	On track	⋮
		New value 80.00 %		

Figure 10.20 – New check-in

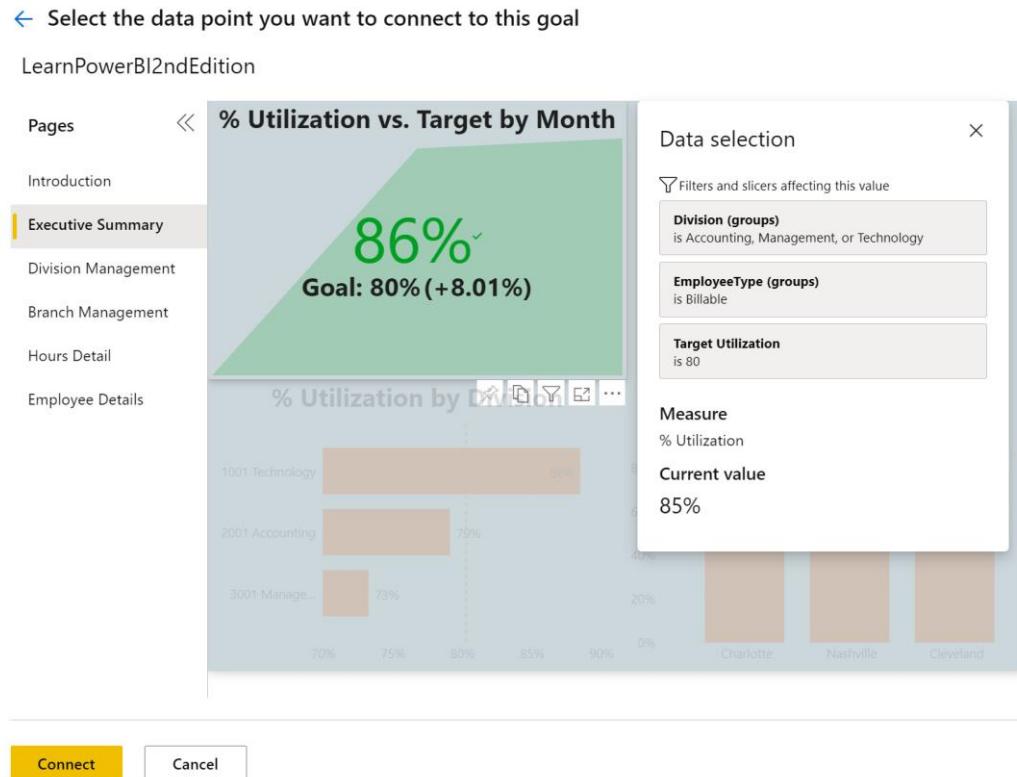


Figure 10.21 – Creating a data-driven goal

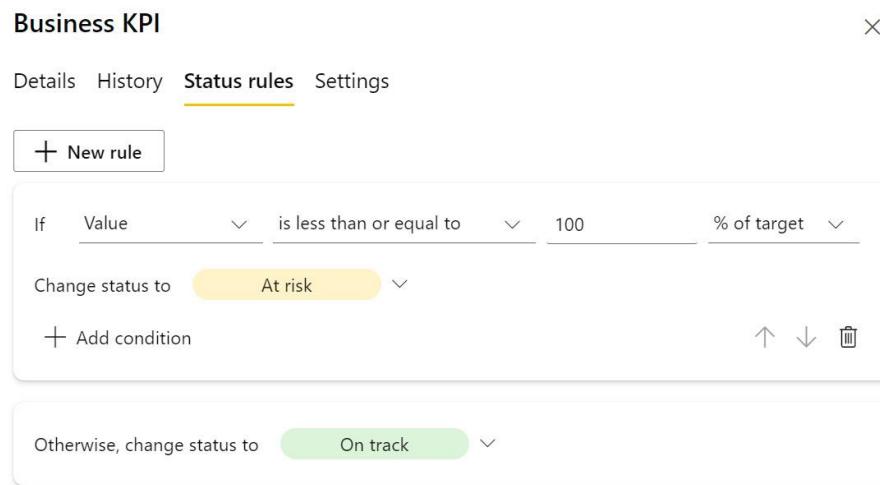


Figure 10.22 – Creating a data-driven goal

Business KPI

Details History **Status rules** Settings

+ New rule

If Value is less than or equal to 100 % of target

Change status to At risk

+ Add condition ↑ ↓ ⚡

Otherwise, change status to On track

This screenshot shows the 'Status rules' tab of a Business KPI configuration page. It includes a 'New rule' button, a conditional rule section with dropdowns for value and target, a status change section with a dropdown for 'At risk', an 'Add condition' button, and an 'Otherwise' section with a dropdown for 'On track'. There are also up/down arrows and a trash icon for managing conditions.

Figure 10.22 – Creating a data-driven goal

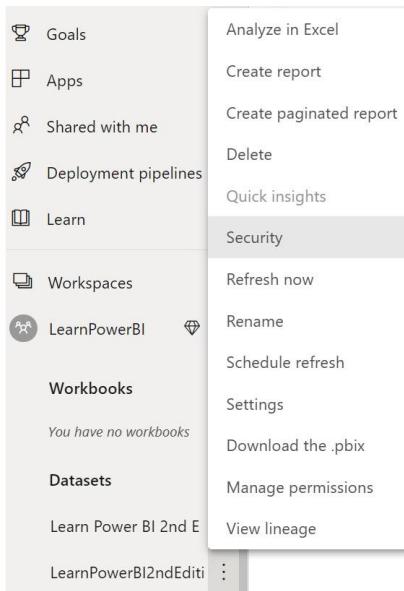


Figure 10.24 – Accessing the RLS interface in the service

Row-Level Security

Accounting (0)

- All (0)
- Charlotte (0)
- Cleveland (0)
- Management (0)
- Nashville (0)
- Other Services (0)
- Technology (0)

Members (0)

People or groups who belong to this role

Enter email addresses

Add

Figure 10.25 – RLS interface in the service

Code blocks

Code 10.1

```
{  
  "name": "LearnPowerBI",  
  "foreground": "#FFFFFF",  
  "background": "#EC670F",  
  "dataColors":  
    ["#EC670F", "#3C3C3B", "#E5EAEE", "#5C85E6", "#29BCC0",  
     "#7EAE40", "#20B2E7", "#D3DCE0", "#FF6B0F"],  
  "tableAccent": "#20B2E7",  
  "tiles": {  
    "background": "#3C3C3B",  
    "color": "#E5EAEE",  
    "opacity": 1.00},  
  "visualStyles":  
    {"*": {"*": {"*": [  
      ]}}}
```

```
        {"color":  
         {"solid":  
          {"color": "#E5EAEE"}  
        }  
      },  
      {"labelColor":  
       {"solid":  
        {"color": "#E5EAEE"}  
       }  
     }  
   ]  
 } } } ,  
 "backgroundImage": null  
}
```

Questions

As an activity, try to answer the following questions on your own:

- What is a dashboard and what purpose does it serve?
- Which types of tiles can be added to dashboards?
- Which tiles allow for the creation of a data alert?
- What is an app and why would you use one?
- What are the two publishing methods that can be used with apps?
- Once an app has been published, how can the app be modified?
- What are the three main security/permission levels within the Power BI service?
- What are the four roles that are available for workspaces?
- What is the hierarchy of objects within the Power BI service?

- What are the five permissions that are available for objects?

Further reading

To learn more about the topics that were covered in this chapter, please take a look at the following references:

- *Introduction to dashboards for Power BI designers:* <https://docs.microsoft.com/en-us/power-bi/service-dashboards>
- *Intro to dashboard tiles for Power BI designers:* <https://docs.microsoft.com/en-us/power-bi/service-dashboard-tiles>
- *Add images, text, video, and more to your dashboard:* <https://docs.microsoft.com/en-us/power-bi/service-dashboard-add-widget>
- *Real-time streaming in Power BI:* <https://docs.microsoft.com/en-us/power-bi/service-real-time-streaming>
- *Data alerts in the Power BI service:* <https://docs.microsoft.com/en-us/power-bi/service-set-data-alerts>
- *Publish an app in Power BI:* <https://docs.microsoft.com/en-us/power-bi/service-create-distribute-apps>
- *Get started with goals in Power BI:* <https://docs.microsoft.com/en-us/power-bi/create-reports/service-goals-introduction>

Chapter 11

Technical requirements

You will need the following to complete this chapter:

- An internet connection.
- An Office 365 account or Power BI trial.
- If you have skipped any of the previous chapters, you can download [LearnPowerBI.pbix](#) from GitHub at <https://github.com/PacktPublishing/Learn-Power-BI-second-edition>.
- Check out the following video to see the Code in Action:
<https://bit.ly/3mXfB52>

Images

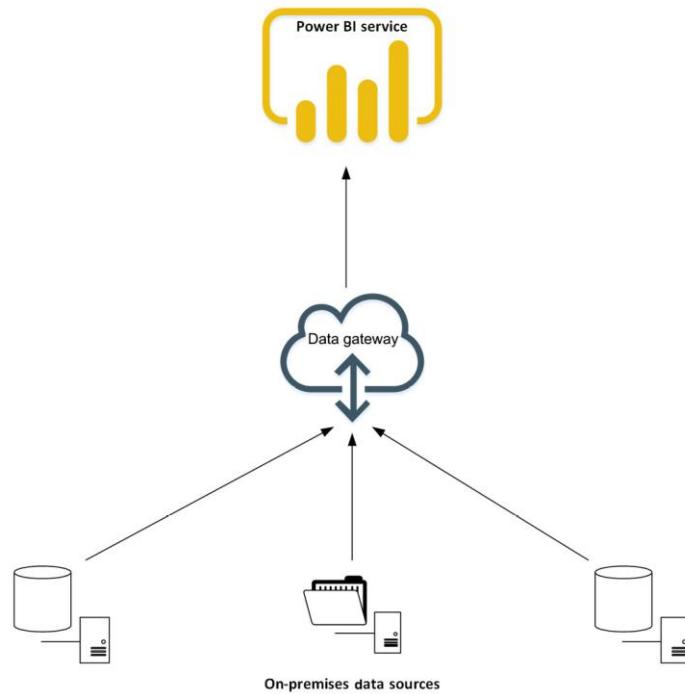


Figure 11.1 – Data gateway



Figure 11.2 –Power BI gateway page

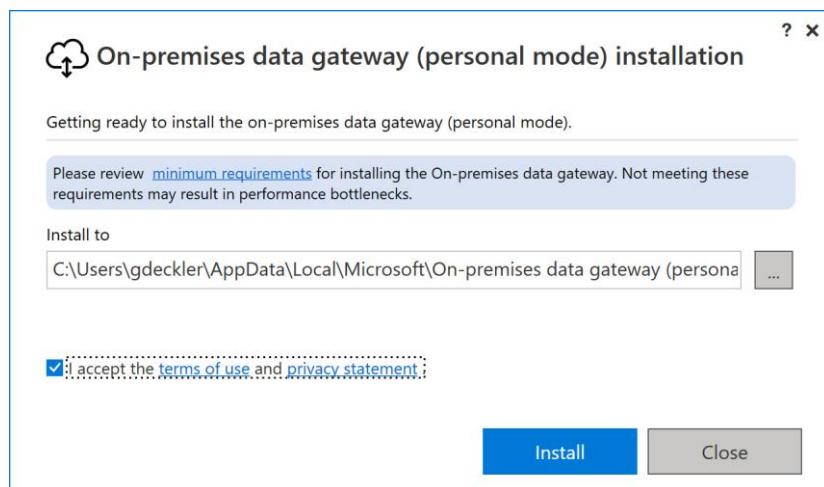


Figure 11.3 – Data gateway installer splash screen (personal mode)

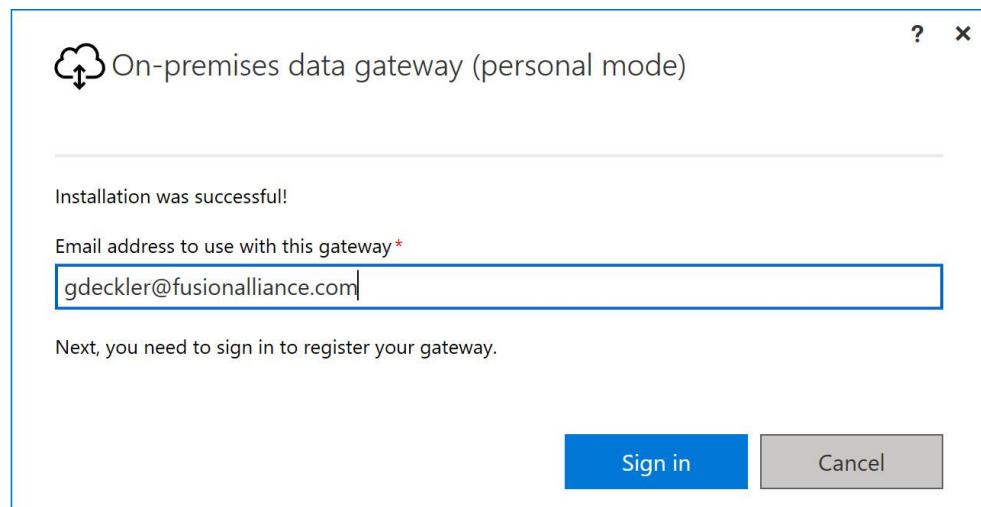


Figure 11.4 – Data gateway email address (personal mode)

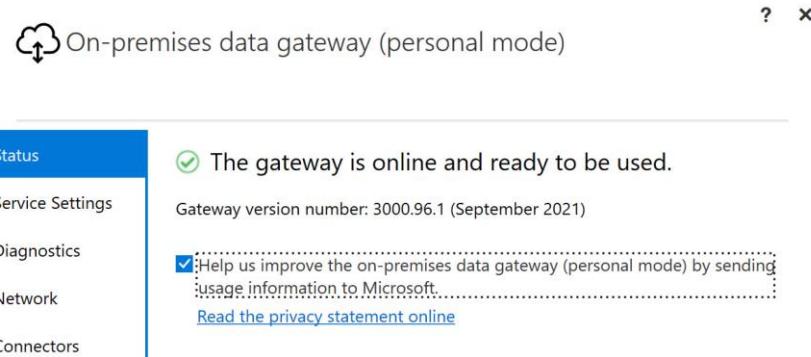


Figure 11.5 – Data gateway administration screen (personal mode)

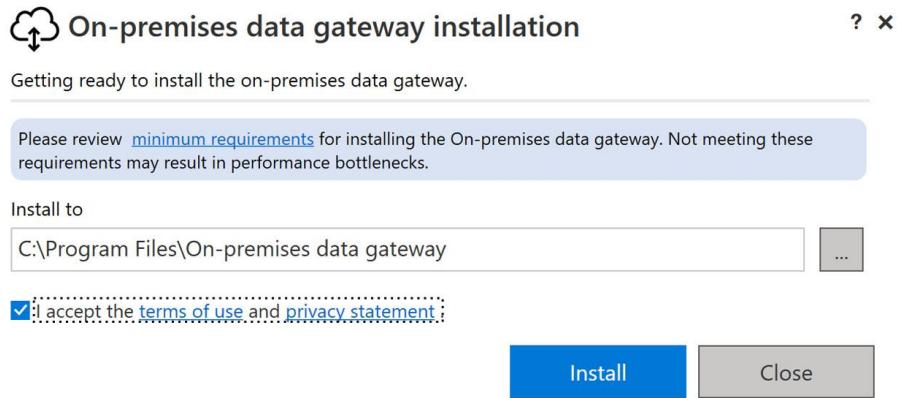


Figure 11.6 – Data gateway installer splash screen (standard mode)

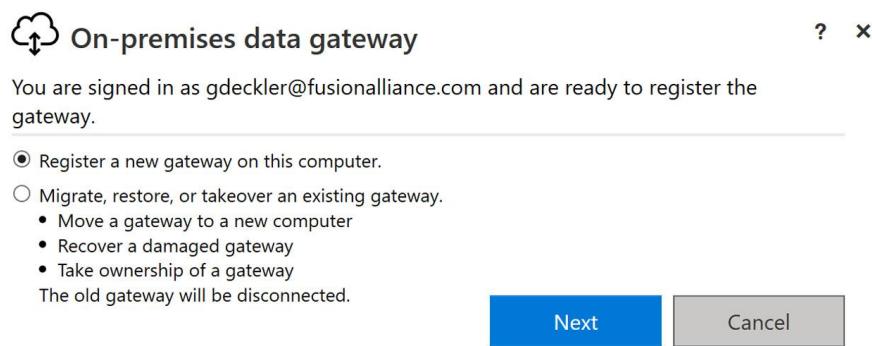


Figure 11.7 – Register gateway (standard mode)

?

X

On-premises data gateway

You are signed in as gdeckler@fusionalliance.com and are ready to register the gateway.

New on-premises data gateway name *

LearnPowerBI

Add to an existing gateway cluster [Learn more](#)

Recovery key (8 character minimum) *

i This key is needed to restore the gateway and can't be changed. Record it in a safe place.

Confirm recovery key *

We'll use this region to connect the gateway to cloud services: North Central US [Change Region](#)

[Provide relay details \(optional\)](#) By default, Azure Relays are automatically provisioned

<< Back

Configure

Figure 11.8 – Gateway name and recovery key (standard mode)

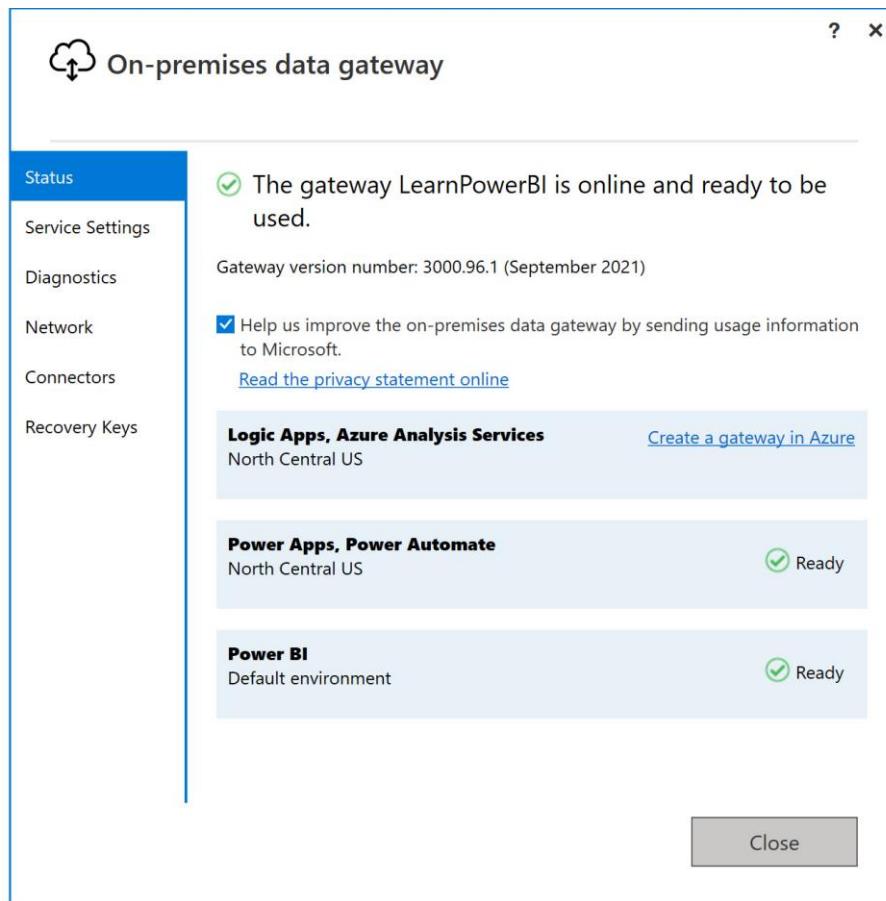


Figure 11.9 – Data gateway administration screen (standard mode)

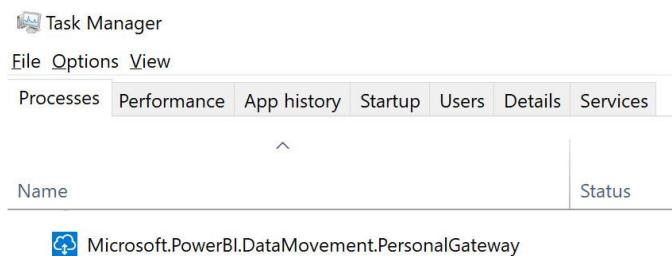


Figure 11.10 – Task Manager

Name	Publisher	Status	Startup impact
Messenger	Facebook Inc	Disabled	None
Microsoft OneDrive	Microsoft Corporation	Enabled	High
Microsoft Teams	Microsoft Corporation	Enabled	High
PersonalGatewayConfigurator	Microsoft	Enabled	Not measured

Figure 11.11 – Task Manager – the Startup tab

Status

Service Settings

Diagnostics

Network

Connectors

Recovery Keys

Restart the gateway

It is recommended to restart the gateway everytime you make changes to the gateway configuration files.

[Restart now](#)

Gateway service account

Change the service account your gateway is running as. The gateway is currently running as NT SERVICE\PBIEgwService.

[Change account](#)

Figure 11.12 –Service Settings page

Status

Diagnostics

Service Settings

Network

Connectors

Recovery Keys

Additional logging

You can enable additional logging to output queries and their timings to help understand what is performing slow. It is not recommended to leave this setting enabled long term.

[Learn more](#)

Gateway logs

Export all of the gateway's configuration and service logs to a single .zip file.

[Export logs](#)

Network ports test

Check to see if your gateway can access all of the correct network ports.

[Learn more](#)

[Start new test](#)

Figure 11.13 – Diagnostics page



Figure 11.14 – Network page

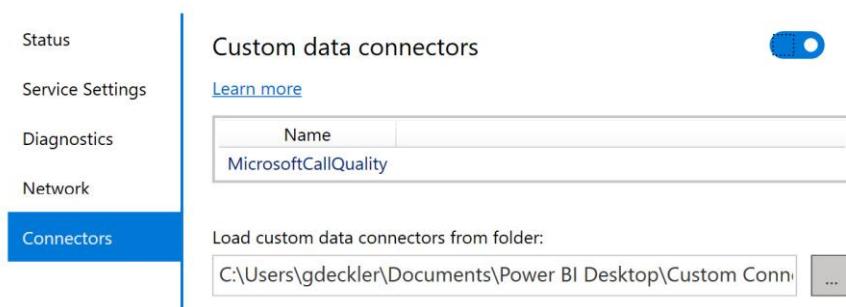


Figure 11.15 – Connectors page

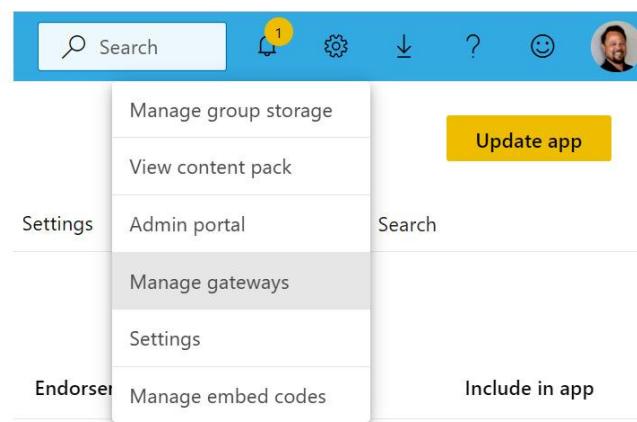


Figure 11.16 – Accessing the Manage gateways link

ADD DATA SOURCE

GATEWAY CLUSTERS

LearnPowerBI

[Test all connections](#)

Gateway Cluster Settings Administrators

✓ Online: You are good to go.

① [Add data sources to use the gateway](#)

Gateway Cluster Name
LearnPowerBI

Department

Description

Contact Information
gdeckler@fusionalliance.com

Allow user's cloud data sources to refresh through this gateway cluster. These cloud data source need to be configured under this gateway cluster. [Learn more](#)

Allow user's custom data connectors to refresh through this gateway cluster (preview). [Learn more](#)

Distribute requests across all active gateways in this cluster. [Learn more](#)

[Apply](#) [Discard](#)

This screenshot shows the 'Gateway Cluster Settings' page. On the left, there's a sidebar with 'ADD DATA SOURCE' and 'GATEWAY CLUSTERS' sections. Under 'GATEWAY CLUSTERS', 'LearnPowerBI' is listed with a refresh icon. Below it is a button to 'Test all connections'. The main area has a yellow underline over 'Gateway Cluster Settings'. It displays a green checkmark indicating the system is online. A blue header bar contains the text '① Add data sources to use the gateway'. Below this are fields for 'Gateway Cluster Name' (set to 'LearnPowerBI'), 'Department' (empty), 'Description' (empty), and 'Contact Information' (set to 'gdeckler@fusionalliance.com'). At the bottom, there are three checkboxes with associated descriptions about cloud data source refresh and request distribution. Finally, there are 'Apply' and 'Discard' buttons at the bottom.

Figure 11.17 – The Gateway Cluster Settings page

Gateway Cluster Settings Administrators

People who can Administer this gateway

Enter email addresses [Add](#)

Gregory Deckler

This screenshot shows the 'Administrators' page. It has a yellow underline over 'Administrators'. It lists 'People who can Administer this gateway' and includes a text input field for entering email addresses, followed by a yellow 'Add' button. Below this is a list box containing the name 'Gregory Deckler' preceded by an unchecked checkbox.

Figure 11.18 – Administrators page

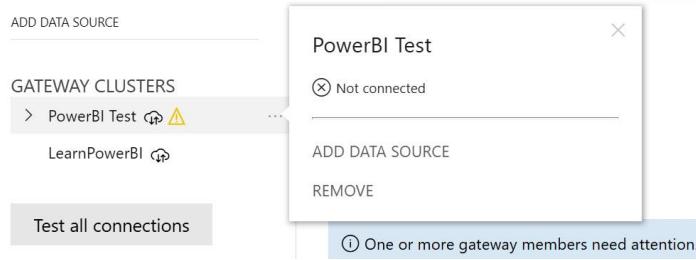


Figure 11.19 – Gateway ellipsis menu

Data Source Settings Users

Data Source Name
AdventureWorksDW2019

Data Source Type
SQL Server

Server
localhost\MSSQLSERVERDEV

Database
AdventureWorksDW2019

Authentication Method
Windows

The credentials are encrypted using the key stored on-premises on the gateway server. [Learn more](#)

Username
[Redacted]

Password
[Redacted]

Skip Test Connection

>Advanced settings

Add Discard

Figure 11.20 – Manually adding a data source

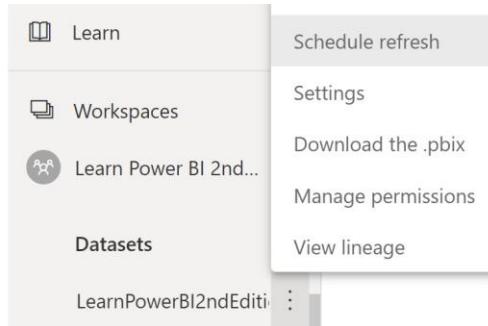


Figure 11.21 – Accessing the Schedule refresh option for a dataset

Settings for LearnPowerBI2ndEdition

This dataset has been configured by gdeckler@fusionalliance.com.

[Refresh history](#)

▲ Dataset description

Describe the contents of this dataset.

Apply Discard

► Gateway connection

▲ Data source credentials

⊗ Your data source can't be refreshed because the credentials are invalid. and try again.

Budgets and Forecasts.xlsx [Edit credentials](#) [Show in lineage view](#) [⋮](#)
Hours.xlsx [Edit credentials](#) [Show in lineage view](#) [⋮](#)
People and Tasks.xlsx [Edit credentials](#) [Show in lineage view](#) [⋮](#)

► Parameters

► Scheduled refresh

► Q&A

Figure 11.22 – The dataset's settings page

▲ Gateway connection

To use a data gateway, make sure the computer is online and the data source is added in [Manage Gateways](#). If you're using an On-premises data gateway (standard mode), please select the corresponding data sources and then click apply.

Use an On-premises or VNet data gateway

On

Gateway	Department	Contact information	Status	Actions
● Personal Gateway			Running on	
○ LearnPowerBI		gdeckler@fusionall...	Not configured correctly	

[Apply](#) [Discard](#)

Figure 11.23 – Gateway connection section

LearnPowerBI gdeckler@fusionall... Not configured correctly

Data sources included in this dataset:

- File("path": "c:\\users\\gdeckler\\onedrive\\books\\learn power bi \\2nd edition\\pbix files\\ch4\\people and tasks.xlsx") [Add to gateway](#)
- File("path": "c:\\users\\gdeckler\\onedrive\\books\\learn power bi \\2nd edition\\pbix files\\ch4\\budgets and forecasts.xlsx") [Add to gateway](#)
- File("path": "c:\\users\\gdeckler\\onedrive\\books\\learn power bi \\2nd edition\\pbix files\\ch4\\hours.xlsx") [Add to gateway](#)

Figure 11.24 – Data sources included in this dataset

LearnPowerBI gdeckler@fusionall... Not configured correctly

Data sources included in this dataset:

- File("path": "c:\\users\\gdeckler\\onedrive\\books\\learn power bi \\2nd edition\\pbix files\\ch4\\people and tasks.xlsx")
 - Maps to:
 - People and Tasks
 - Add to gateway [Add to gateway](#)
- File("path": "c:\\users\\gdeckler\\onedrive\\books\\learn power bi \\2nd edition\\pbix files\\ch4\\budgets and forecasts.xlsx")
- File("path": "c:\\users\\gdeckler\\onedrive\\books\\learn power bi \\2nd edition\\pbix files\\ch4\\hours.xlsx")

Figure 11.26 – Mapping a data source

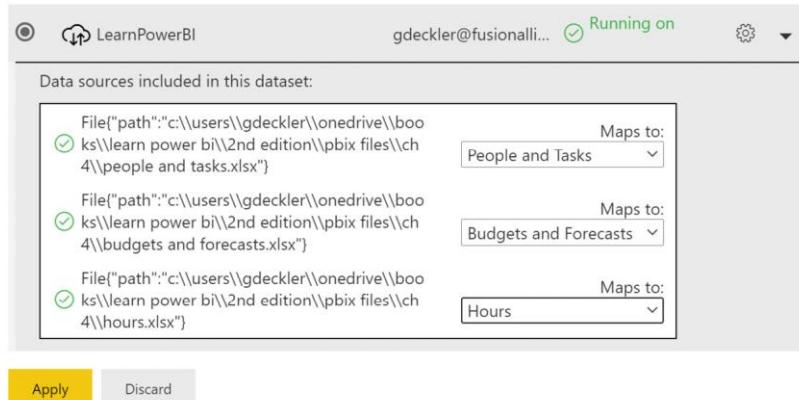


Figure 11.27 – Successfully added and mapped data sources

▲ Data source credentials

Budgets and Forecasts.xlsx	Edit credentials
Hours.xlsx	Edit credentials
People and Tasks.xlsx	Edit credentials

Figure 11.28 – Correctly configured credentials for a personal mode gateway

▲ Scheduled refresh
Keep your data up to date

On

Refresh frequency

Daily

Time zone

(UTC-05:00) Eastern Time (US and Ca)

Time

8 00 AM X

[Add another time](#)

Send refresh failure notifications to

Dataset owner

These contacts:

Enter email addresses

Apply Discard

Figure 11.29 – Scheduled refresh

Questions

As an activity, try to answer the following questions on your own:

- What is the purpose of the on-premises data gateway?
- In what two modes can the data gateway be installed?
- What must you do to ensure that the data gateway starts after rebooting the computer that the gateway is installed on?
- What feature allows for redundancy and load balancing when you're refreshing data?
- What two methods can be used to add a data source to a data gateway?
- How many times can a dataset be refreshed per day?

Further reading

You can check out the following links for additional information regarding this chapter's topics:

- *Installing an on-premises data gateway*: <https://docs.microsoft.com/en-us/data-integration/gateway/service-gateway-install>
- *What is an on-premises data gateway?*: <https://docs.microsoft.com/en-us/power-bi/service-gateway-onprem>
- *On-premises data gateway in-depth*: <https://docs.microsoft.com/en-us/power-bi/service-gateway-onprem-indepth>
- *On-premises data gateway architecture*:
<https://docs.microsoft.com/en-us/data-integration/gateway/service-gateway-onprem-indepth>
- *Using personal gateways in Power BI*: <https://docs.microsoft.com/en-us/power-bi/service-gateway-personal-mode>
- *Troubleshooting gateways – Power BI*: <https://docs.microsoft.com/en-us/power-bi/service-gateway-onprem-tshoot>
- *Getting started with data connectors*:
<https://github.com/Microsoft/DataConnectors>

- *Data refresh in Power BI*: <https://docs.microsoft.com/en-us/power-bi/refresh-data>
- *Configuring a scheduled refresh*: <https://docs.microsoft.com/en-us/power-bi/refresh-scheduled-refresh>

Chapter 12

Technical requirements

You will need the following to successfully complete this chapter:

- An internet connection.
- An Office 365 account or Power BI trial.
- If you have skipped any of the previous chapters, you can download the `LearnPowerBI.pbix` file from GitHub at <https://github.com/PacktPublishing/Learn-Power-BI-second-edition>.
- Check out the following video to see the Code in Action:
<https://bit.ly/3bWWGB3>

Images

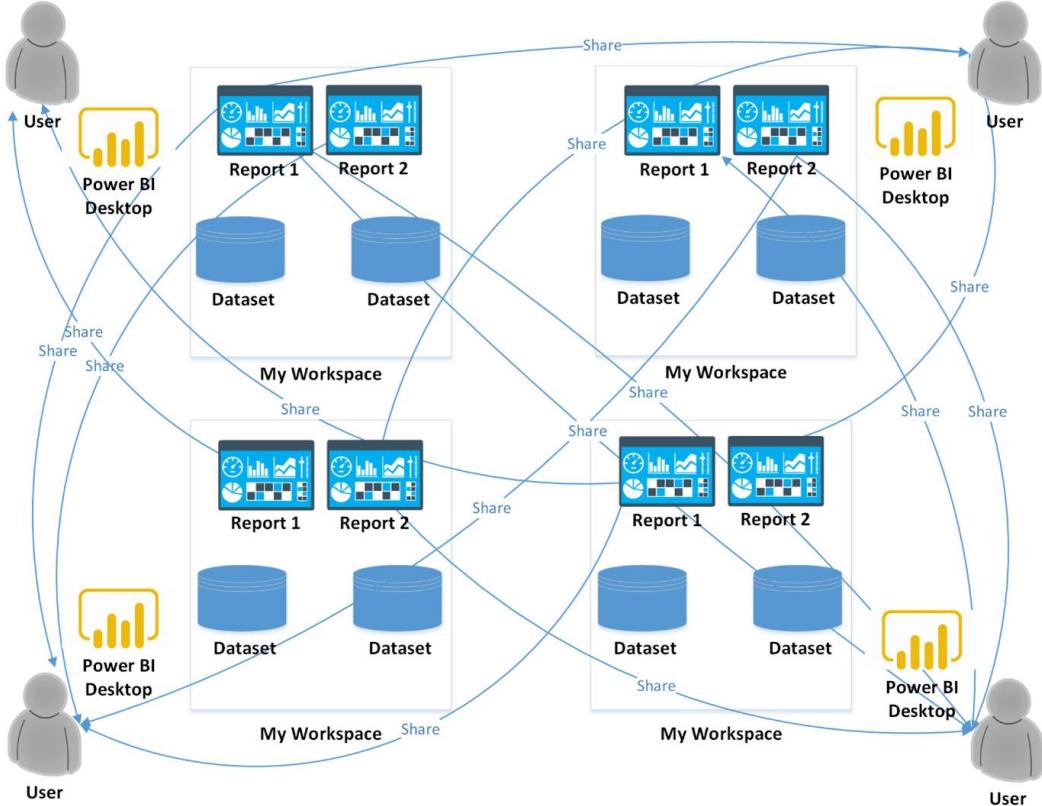


Figure 12.1 – Anarchy: No governing model for report development and sharing

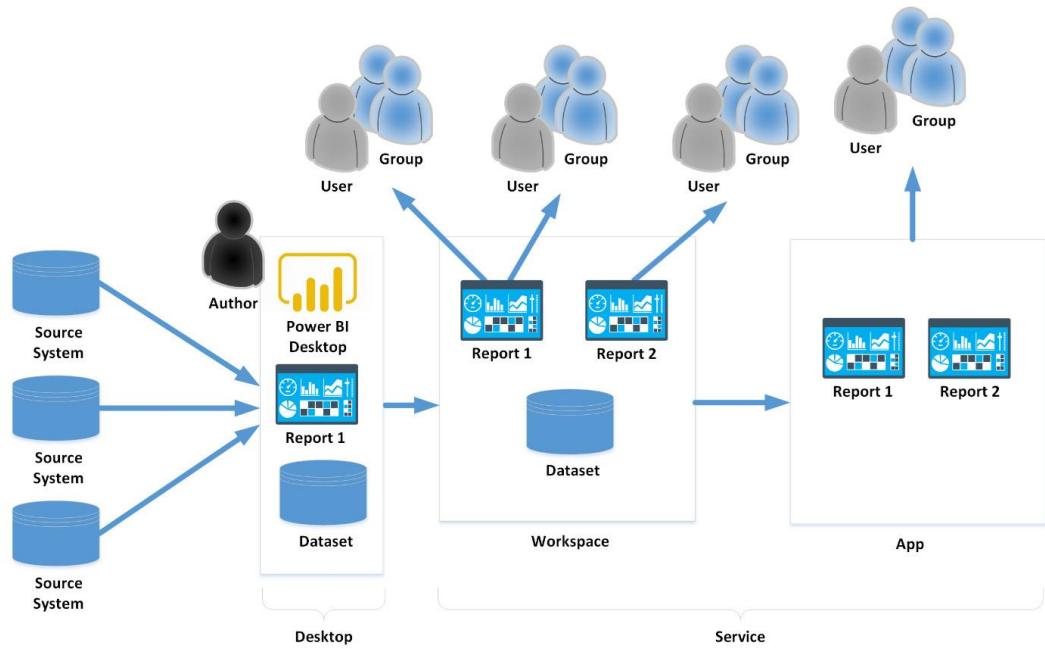


Figure 12.2 – Centralized: A central group controls report development and sharing

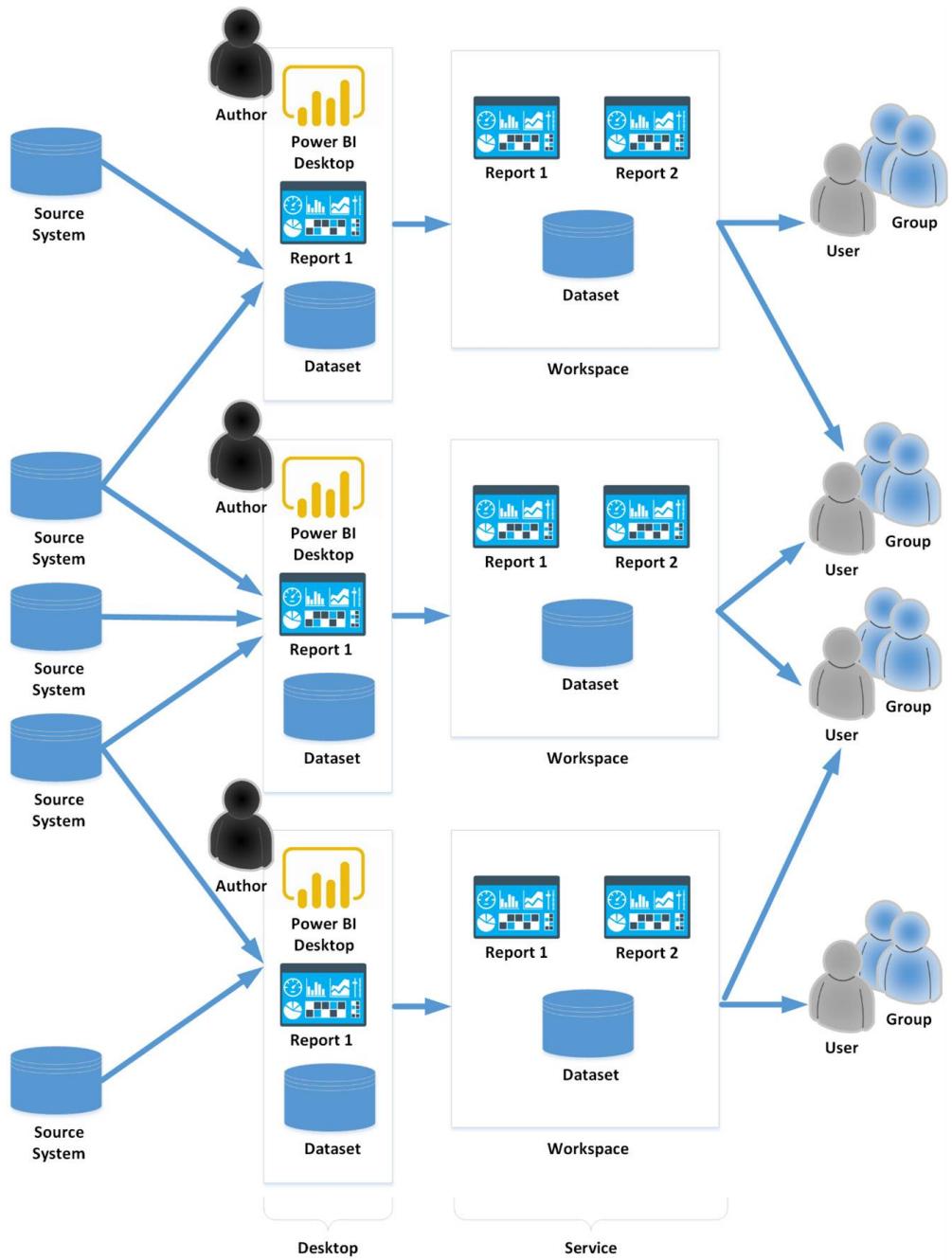


Figure 12.3 – Distributed: Report development and sharing is spread throughout the organization

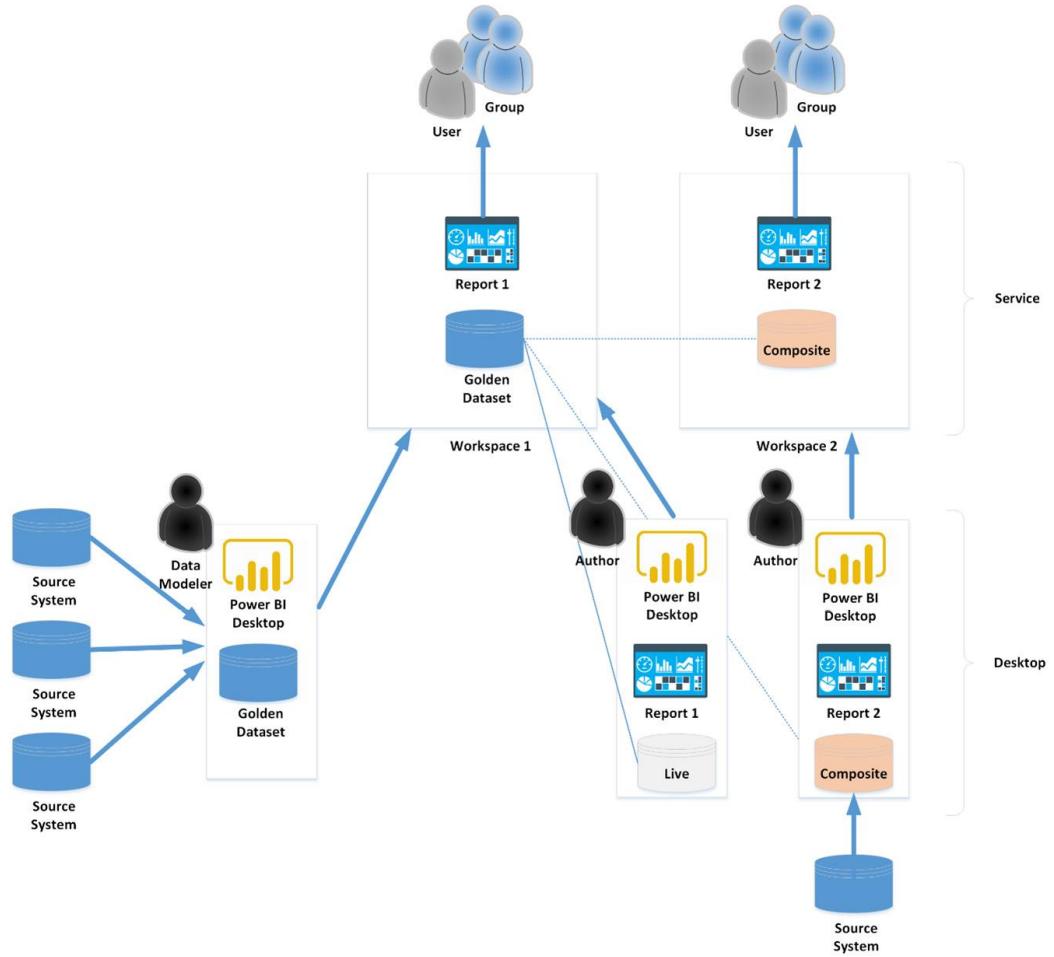


Figure 12.4 – Golden datasets: One group controls the data models, another group controls report creation and sharing

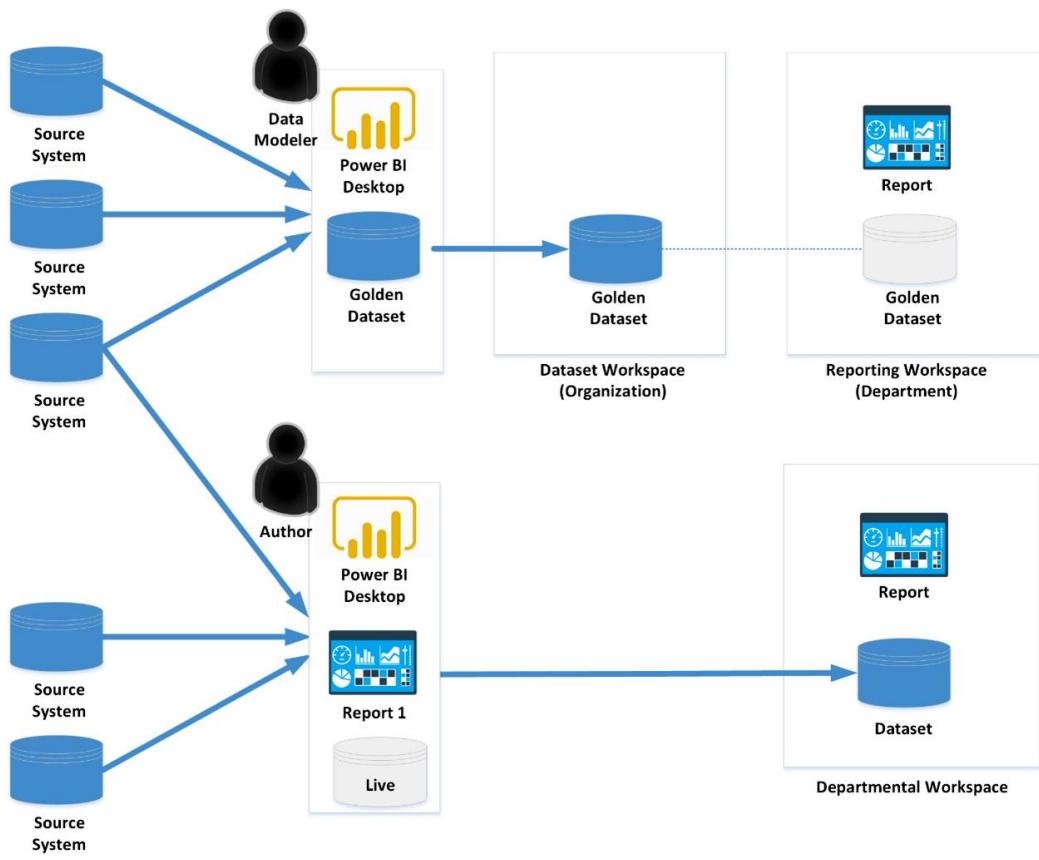


Figure 12.5 – Hybrid: A combination of multiple governance models

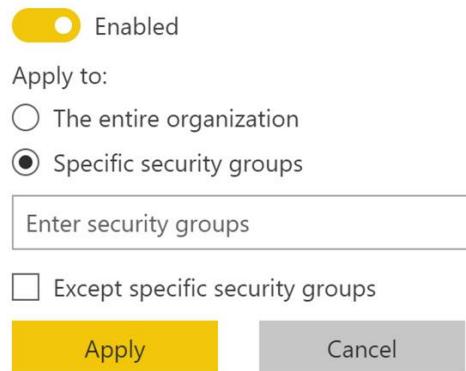


Figure 12.6 – Tenant security settings

Setting	Changes
Training documentation	Learn
Discussion Forum	Community
Licensing requests	This changes the behavior of the Upgrade account and Try Pro for free buttons. Users may see these buttons or prompts if they do not have a Pro or Premium Per User (PPU) license. This allows an organization to direct requests for licensing changes to internal support pages and processes instead of the default Microsoft links.
Help Desk	Get Help

Figure 12.7 – Publish "Get Help" Information settings

DEFAULT	CLASSIFICATION	SHORTHAND	SHOW TAG	URL	ACTIONS
<input checked="" type="radio"/>	Low Business Impact	LBI	<input checked="" type="checkbox"/>	<input type="text"/>	
<input type="radio"/>	High Business Impact	HB	<input checked="" type="checkbox"/>	<input type="text"/>	
+ Add classification					
Apply			Cancel		

(i) This setting applies to the entire organization

Figure 12.8 – Data classification for dashboards



Figure 12.9 – Create a pipeline

Assign the workspace to a deployment stage X

Choose the workspace ([Why can't I see all my workspaces?](#))

LearnPowerBI



i You can only assign one workspace to a pipeline.

Choose the deployment stage for the workspace

Development

Content is being developed and revised

Test

Content is ready for testing, previewing, and verifying

Production

Content has been tested and verified, and is ready for distribution

Assign

Cancel

Figure 12.10 – Assign a workspace to the deployment stage of the pipeline

The screenshot shows the Power BI service interface. At the top, there's a navigation bar with a profile icon, 'Learn Power BI', 'Access', and 'Settings'. Below the navigation bar, there are three deployment stages: 'Development' (light blue), 'Test' (medium blue), and 'Production' (dark blue). Each stage has a 'Learn more' link. In the 'Production' stage, there's a context menu with options: 'Publish app', 'Deploy to previous stage' (which is highlighted with a red box), 'Unassign workspace', 'Update app', 'Workspace access', and 'Workspace settings'. On the left, there are two cards: 'A workspace will be created here when content is deployed to this stage.' under 'Development' and 'Test'. On the right, there's a summary card for 'LearnPowerBI' with a user icon, 0, and a 'Show more' link.

Figure 12.11 – Deploy content to previous stage

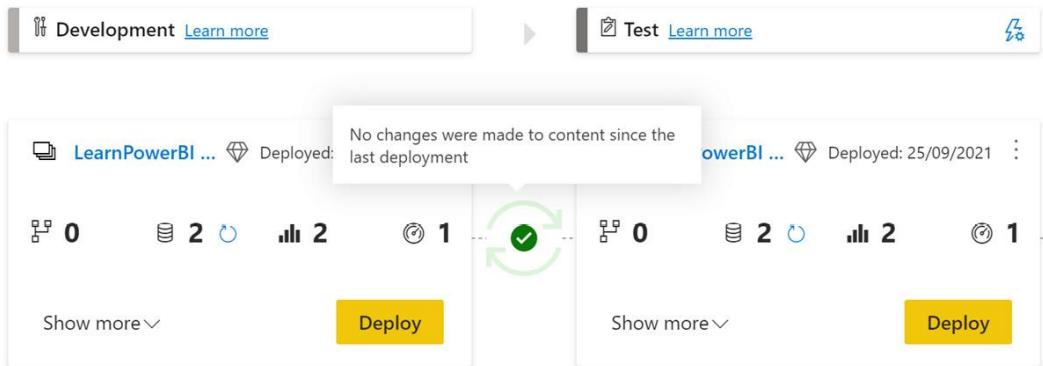


Figure 12.12 – Development and Test stages of a Power BI deployment pipeline

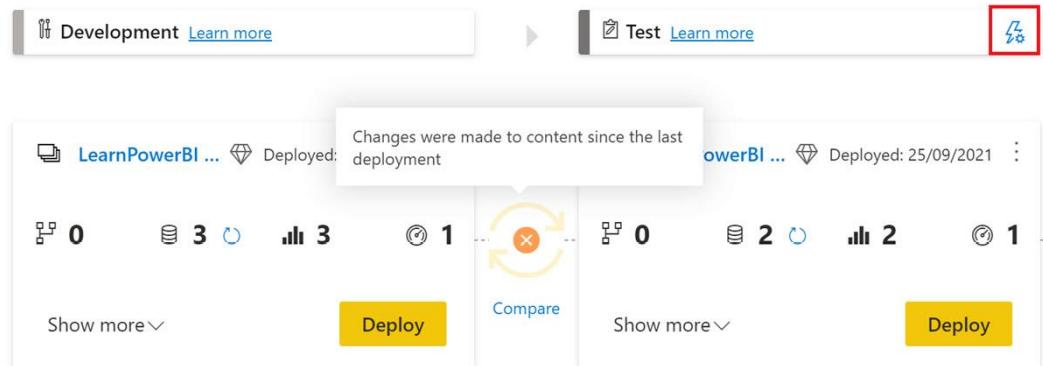


Figure 12.13 – Content is different between the Development and Test stages

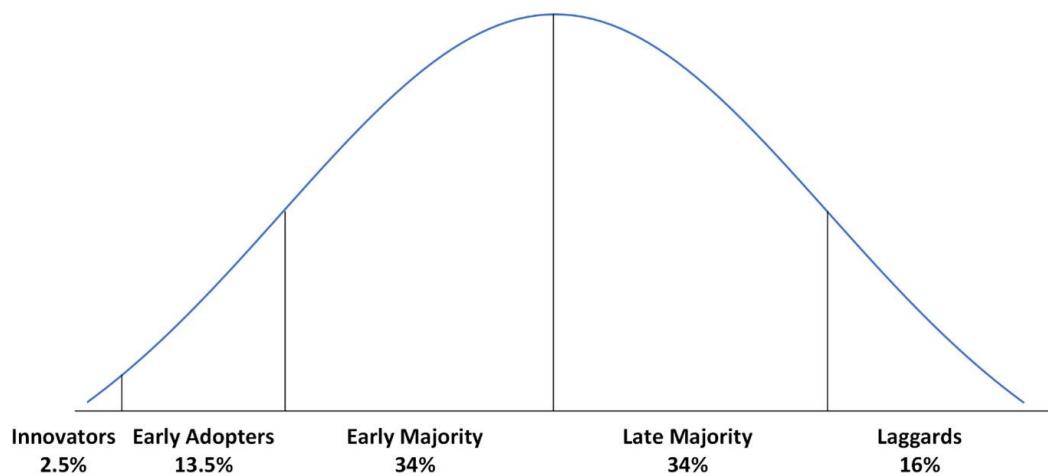


Figure 12.13 – Diffusion of innovation bell curve

Questions

As an activity, try to answer the following questions on your own:

- What is a Power BI usage model?
- What usage model is used by many new Power BI deployments?
- What are the strengths and weaknesses of the centralized usage model?
- How do the distributed and golden dataset usage models address the weaknesses of the centralized usage model?
- What are the overall goals of governance in terms of Power BI?
- What approach is recommended when it comes to configuring Power BI tenant settings?
- How are Power BI tenant settings accessed?
- A phased approach for the development and deployment of content is called what?
- What feature in Power BI Premium enables the phased development and deployment of content?
- What is an important trait of early adopters?

Further reading

To learn more about the topics that were covered in this chapter, please take a look at the following references:

- *Administering Power BI in the admin portal:* <https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal>
- *Sensitivity Labels in Power BI:* <https://docs.microsoft.com/en-us/power-bi/admin/service-security-sensitivity-label-overview>
- *Power BI REST APIs:* <https://docs.microsoft.com/en-us/rest/api/power-bi/>

- *Configuring Azure Log Analytics for Power BI:* <https://docs.microsoft.com/en-us/power-bi/transform-model/log-analytics/desktop-log-analytics-configure>
- *Data classification for dashboards:* <https://docs.microsoft.com/en-us/power-bi/create-reports/service-data-classification>
- *Tutorial: Embed Power BI content using a sample embed for your customers application:* <https://docs.microsoft.com/en-us/power-bi/developer/embedded/embed-sample-for-customers>
- *What are Power BI template apps?:* <https://docs.microsoft.com/en-us/power-bi/connect-data/service-template-apps-overview>
- *Private endpoints for accessing Power BI content:* <https://docs.microsoft.com/en-us/power-bi/admin/service-security-private-links>
- *Understand the deployment process:* <https://docs.microsoft.com/en-us/power-bi/create-reports/deployment-pipelines-process>
- *Power BI adoption roadmap:* <https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-overview>

Chapter 13

Images

Blogger(s)	Blog	URL
Michael Carlo and Seth Bauer	PowerBI.Tips	http://powerbi.tips
Chris Webb	Crossjoin	https://blog.crossjoin.co.uk
Rob Collie and others	P3 Adaptive	https://powerpivotpro.com
Alberto Ferrari Marco Russo	SQL BI	http://www.sqlbi.com
Kasper De Jonge	Kasper On BI	https://www.kasperonbi.com
Matt Allington	Excelerator BI	http://exceleratorbi.com.au/blog
Ruth Martinez	Curbal	https://curbal.com/blog
Reza Rad	RADACAD	http://radacad.com/blog
Imke Feldman	The BIccountant	http://www.thebiccountant.com
Brett Powell	Insight Quest	https://insightsquest.com
Gilbert Quevauvilliers	Fourmoo	https://www.fourmoo.com/blog
Tom Martens	Mincing Data	https://www.minceddata.info/blog
Nicky van Vroenhoven	Power BI, Power Platform, Data Platform	https://www.nickyvv.com/

Debbie Edwards	Debbie's Microsoft Power BI, SQL and Azure Blog	http://bit.ly/3eQsb2G
Zoe Douglas	DataZoe	https://www.datazoepowerbi.com/blog
Ibarrau	LaDataWeb (Spanish)	https://blog.ladataweb.com.ar/
David Eldersveld	DataVeld	https://dataveld.com/
Pragati Jain	Data Vibe	https://datavibe.co.uk/
Adam Saxton and Patrick Leblanc	Guy in a Cube	http://bit.ly/2o2lRqU
Various	Power BI Community Blog	http://bit.ly/3qIoD19
Various	Power BI Weekly	https://powerbiweekly.info/

Figure 13.1 – A list of blogs that detail Power BI features and tools, with examples on how to use them

Formulas

Formula 13.1

$$\text{Revenue} = \text{Hourly bill rate} * 2080 * \% \text{ Utilization}$$

Formula 13.2

$$\text{Maximum Salary} = \frac{\text{Revenue} - \% \text{GM} * \text{Revenue}}{\text{Overhead cost factor}}$$

Formula 13.3

$$\text{Maximum hourly rate} = \frac{(\text{Hourly bill rate} - \% \text{GM} * \text{Hourly bill rate})}{\text{Overhead cost factor}}$$

Questions

As an activity, try to answer the following questions on your own:

- Where is Power BI positioned in Gartner's *Magic Quadrant for Analytics and Business Intelligence Platforms*?

- What are seven different jobs or roles available within the business intelligence market?
- What are the two different ways that you might engage in a job within the business intelligence market?
- What are two ways in which consulting services firms engage in work?
- What are some of the differences between being an internal employee versus a consultant?
- What are four job search strategies you can use to help you find a job in business intelligence?
- What are six interviewing tips that can help you ace your interview?
- When negotiating benefits and compensation, what other things can be negotiated besides salary?
- What are five salary negotiating tips?

Further reading

To learn more about the topics that were covered in this chapter, please take a look at the following references:

- Power BI User Groups: https://community.powerbi.com/t5/Power-BI-User-Groups/ct-p/pbi_usergroups
- Payscale: <https://www.payscale.com>
- Glassdoor: <https://www.glassdoor.com>
- Monster: <https://www.monster.com>
- ZipRecruiter: <https://www.ziprecruiter.com>
- Indeed: <https://www.indeed.com>
- CareerBuilder: <https://www.careerbuilder.com>
- How to Negotiate Compensation: <https://www.wikihow.com/Negotiate-Compensation>