“Data-Driven Decisions with Power BI”
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Week 1 – Intro

Introduction to Power BI Reading

Welcome to "Data-Driven Decisions with Power BI!"

Power BI is an industry-leading Microsoft BI tool that essentially functions to provide insights into your data, insights that can then be used to shape your business decision-making.

The BI in Power BI stands for “Business Intelligence.” Power BI takes data you provide, analyzes it, and organizes it into shareable, visual reports and models that track metric trends, relationships, potential outcomes, and much more. It is also designed to be integrated seamlessly into other Microsoft products such as Teams, SharePoint and Power Apps.

Who uses Power BI?

Anyone who wants to!

At one point in time, BI tools were used only by a limited group of professionals. That has changed thanks to widely available, user-friendly data applications like Power BI. Now individuals and companies of all backgrounds can use Power BI to gauge the effectiveness of their business decisions, explore "what-if" scenarios, and even build customizable visuals based on questions they themselves build into the AI.

Let’s talk about who this course is for.

This course will be useful for working or aspiring business professionals or students who are new to the wonders of Power BI. If you are comfortable working in Excel to analyze data, and you’d like to take data analysis to the next level with Power BI, this course is also for you. Most importantly, if you want to learn how to make Power BI work for your purposes, you’re in the right place!

What can you expect from this course?

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Over the next few weeks, you will receive an introductory overview of Power BI, its interface and functions, and how to use its tools to work with, analyze, and create visualizations of data to share on dashboards. Our hope is to prepare you to use your new skillset to make data-driven decisions for your business endeavors!

Week one of the course will give you a foundational understanding of Power BI concepts. You will also learn how to import and clean your data in Week one.

Starting in Week Two, you will spend the rest of the course exploring the stages of your data’s “story,” from relationship analysis in Model View, to creating visuals in the Report View, and finally, sharing your reports and dashboards in Power BI Service, otherwise known as Power BI Online.

For this course, be prepared to work primarily in Power BI Desktop. Power BI is a unique product in that some users prefer to operate mainly in Power BI Service, while others spend more time building reports in Power BI Desktop.

The truth is, n*either of these approaches are wrong*. It comes down to preference and purpose.

Why will this course focus primarily on Power BI Desktop? Because our goal is to create the most accurate reports possible, based on your data. While it's true many functions can be performed in Power BI Service, Power BI Desktop is where the most powerful data analyzing, data transformation, data modeling, and report visualizations features can be accessed. Course lessons are comprised of a mixture of instructional videos and readings, assessments, practice opportunities, and short “how-to” videos that will provide step-by-step instructions on how to perform precise functions in Power BI.

Although discussion prompts are marked as optional, you are strongly encouraged to participate in these opportunities to practice your skills. Next, be prepared to BYOD: Bring Your Own Data!

Why?

Because having a dataset to practice with is a crucial part of the learning process. Course activities and discussions are built-in to assist you with importing, analyzing, and publishing your data in real time. This will help you gain the insights you seek to turn your data sets into key decision-making elements!

If you are wondering which data source to import your data from, don't worry; which data sources are compatible with Power BI, and the steps for importing them, will be covered later on.

In the event you do not have datasets to work with, don’t worry! There are instructions available in the video "Practice with Sample Datasets from Power BI Online" that will show you how to download a practice dataset from Power BI Service. That video is viewable in the Week 1 curriculum.

Note, this means you will need a Power BI Service account. You can sign up for a basic free account if you have Microsoft Office 365.

This week, you will learn about:

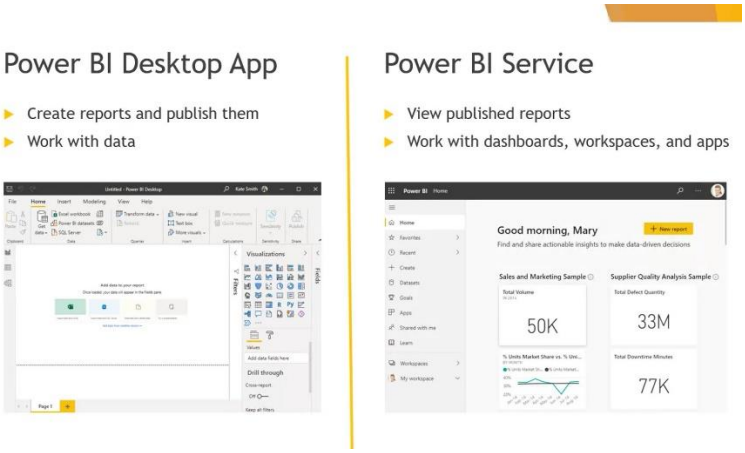
1. The Power BI Desktop application and Power BI Service web application.

2. The different Power BI licenses.
3. How to import and transform data in the Power BI Desktop application.
4. How to read the Data View in the Power BI Desktop application.

Let's get started!

Week 1 – Lesson 1

Overview of Power BI



Power BI is a collection of applications, software services, and connectors that work together to help you gain insight into your data. At first glance, the program can appear, well, *intimidating* to anyone not familiar with BI visual data. But the basic components of Power BI are really very simple!

The first thing to understand about Power BI is that there are two main platforms: the Power BI desktop application, and the Power BI Service. (A mobile platform also exists, but for the purposes of this skill track we will be focusing solely on Power BI Desktop and Power BI Service.) The Power BI Desktop application is where it all begins. Reports are created by you in the Desktop application; from there they are published to the Power BI Service, where you can view workspaces, create dashboards and apps, and - most importantly - share your data with others.

If the full capabilities of Power BI are are overwhelming, keep in mind: you can use Power BI to the capacity that fits your role, needs, and workplace! Not every user will need or want to take advantage of the full spectrum of its capabilities. On that note, the type of Power BI license you have will determine which features are available to you. The three types of licenses are: Power BI Free, Power BI Pro, and Power BI Premium Per User (PPU).

In this lesson, you will gain a conceptual understanding of Power BI, and learn how to check your license.

Understand Power BI Licenses

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The kind of Power BI license you have will determine capabilities and features you will have access to.

In this lesson, we’ll take a minute to learn about these tiers and their capacities or limitations.

Power BI License Types and Capabilities:

Free.

Can access content in the Power BI service from My Workspace.

Can view shared content if their organization has a Power BI Premium subscription and the content was shared with them from a Premium capacity.

Cannot share content.

Power BI Pro.

Can publish content to other workspaces.

Can share dashboards.

Can subscribe to dashboards and reports.

Can share content with users who have the same license as them.

Cannot distribute content in a premium workspace to users with a Premium Per User (PPU) license.

Instead, they can only distribute content in a premium workspace to users with a free license.

Cannot view content in a Power BI Premium Per User (PPU) workspace.

Cannot utilize paginated reports or AI capabilities.

Power BI Premium Per User (PPU).

Can publish content to other workspaces.

Can share dashboards.

Can subscribe to dashboards and reports.

Can share content with users who have the same license as them.

Can distribute content to users who have free and Pro licenses in premium workspaces.

Can view content in any workspace that is shared with them regardless of license type.

Can utilize paginated reports and AI capabilities.

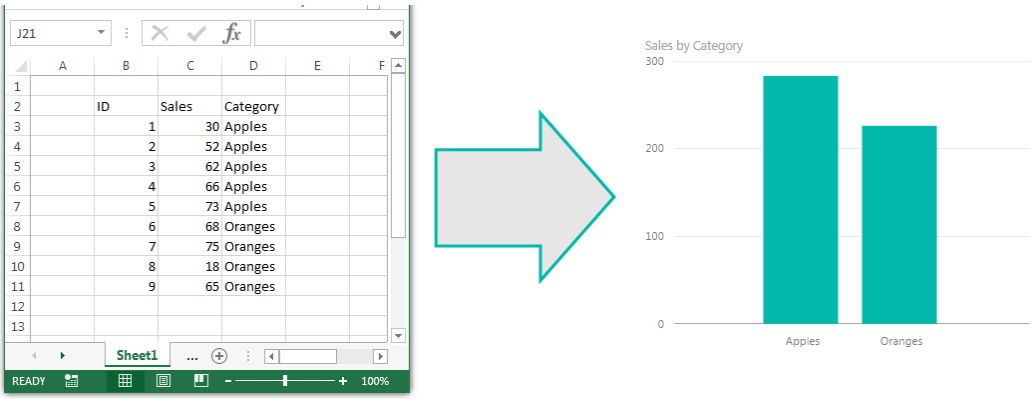
How to Check Your Power BI License:

In the Power BI Service, click your Profile icon.

The License Type area will display your license.

Week 1 – Lesson 2

Import Data or Connect to a Data Source



Okay. You know the difference between Power BI desktop and Power BI Service now, and you are aware of which license you have. Now let's get started on the first step towards building your report: importing data. This is the obvious first task when operating within Power BI, because without a dataset, there can be no report!

While you can import data directly into the Power BI Service, the options for importing methods are more limited than the options in Power BI desktop. You also cannot fully format your report canvas in Power BI Service.

When working inside of the Power BI desktop application, you can import data from a variety of different locations. You can connect to a data source by using the Get Data feature on the home tab. Or you can import from locations such as Excel, a web page, Power BI datasets, and more.

Be advised, when you connect to a Power BI dataset, you are using data that has been previously uploaded to the Power BI service. When this option is selected, the Data view icon disappears. When that happens, don't be alarmed! The icon has only disappeared because you are using the cloud instead of local data.

In this lesson, you will learn how to import data or connect to a data source in the Power BI desktop application.

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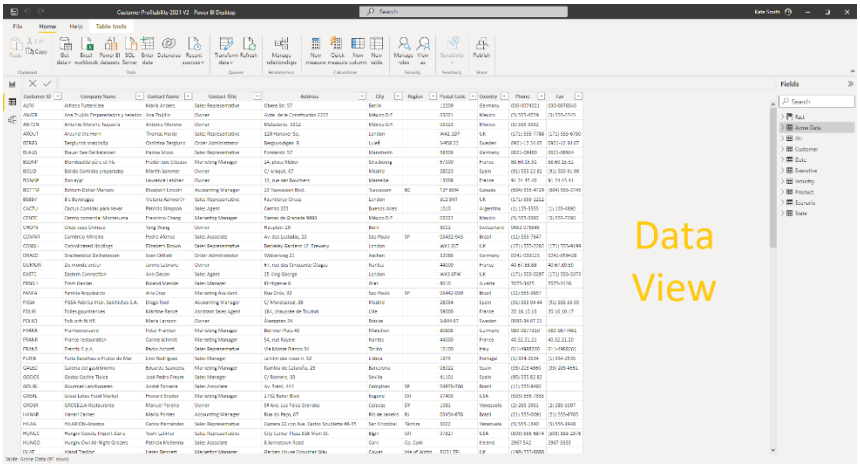
Week 1 - Lesson 3

Understand the Data View



Now that you understand how to get data or import data into your Power BI desktop application, let's talk about the different ways you can view that data!

The Power BI desktop application gives you full access to all features for creating reports.

You can transform, model, and visualize your data in one application.

When you first open the Power BI Desktop application, you will see three icons on the left-hand side.

There’s Report, Data, and Model.

Although these icons are ordered one way in the application, we'll explore each view in the order that you will use when working in Power BI, which is data, model, and then report.

Before going forward, it is important you know what the Data Analysis Expressions are.

Data Analysis Expressions, or DAX, is a library of functions and operators that can be combined to build formulas and expressions in Power BI, Analysis Services, and Power Pivot in Excel data models.

In this lesson, you will learn about the data view.

Week 1 - Lesson 4

Clean and Transform Data

“Where there is data smoke, there is business fire.”

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That quote, taken from well-known "Data Doc" Thomas Redman, gets to the heart of an absolute truth concerning data-driven business decisions: those decisions - and ultimately their outcomes - will only be as sound as the data they're based on.

You have learned how to import data into Power BI, and how to view it in the data view. Now let's discuss how to prepare, clean, and transform your data in order to create accurate models and reports.

When importing data into Power BI, seemingly minor errors can mean the difference between accurate reports leading to success, and flawed reports leading to failures. Even something as simple as random misspellings - *San Diego* vs *San Diago* - can cause the app not to detect crucial relationships that could have significantly affected your reports and the directions they lead in.

This is why it's imperative to clean, shape, and transform your data before moving on to the modeling and report visualizations phases of the Power BI process.

Microsoft's engine for data preparation and transformation is called **Power Query**.

Power Query extracts your data and performs the importation from the data source, and then **Power Query Editor** applies necessary transformations. Power Query is a fantastic tool for these purposes, because it can not only connect to, and clean, a wide variety of data types, it can also store reshaped data in many locations. Power Query Editor has an additional benefit of "remembering" data transformations from the original extraction of your data, and applying the same transformation process whenever you refresh or update your data set. (This is called a *query*.)

On that note - when you are working with Power Query Editor, it's important to know that you are never truly changing your source data. Instead, you are simply changing how the data is *displayed*. In an upcoming video, you will learn about the **Applied Steps List**, a useful tool that tracks all of the actions and changes you perform. With the Applied Steps List, you can select a step and view how the data is displayed up until that point, with queries working actively in the background to shape what you see. You can easily delete a step when needed or view your source data at any time.

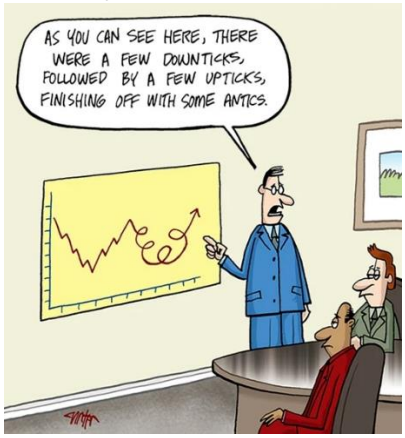
Keep in mind, even with Power Query Editor hard at work, no BI engine is perfect. Some errors may escape its notice. Best practice for making sure your data is flawless is to do a visual overview, and make

any adjustments as necessary. Things like any blank columns, misspellings, or incorrect math, can all be easily manually adjusted in data view!

Now that we've reviewed the importance of data transformation, watch the next few videos to learn more about Power Query, the Applied Steps List, and ways you can manually clean up your data.

Week 2 - Introduction

Introduction to Data Modeling, Report View, and Visualizations



Welcome back! Let's jump right into Week 2, with a deeper dive into how data analysis turns into data modeling and reports in Power BI.

Believe it or not, if you were amused at all by the comic above then you're already in the right frame of mind to understand data modeling! Data modeling is the visual imaging of relationships and trends in your data. By now you know the entire purpose of Power BI is to turn data into decisions, and data modeling is a crucial component to this. In order for data modeling to be useful, it must tell a story - a story of relationships, of performance, of baseline measures versus goals, etc. - the kind of story and its relevancy will vary, and is widely dependent on objectives. The point is, your data visuals must help you see how your business is performing, and where the opportunities exist to do better.

You've learned about Power Query, Power BI's built-in data transformation tool. Now let's discuss Power Pivot and Power View, and their relationship with data modeling and reporting in Power BI.

Power Pivot is Power BI's built-in data modeling tool. It seizes on your data's most noteworthy relationships and calculations, and translates them into card visualizations using DAX (Data Analysis Expression) language. You'll interact the most with Power Pivot while in the Model views, which we will discuss more in the next reading.

Once Power Pivot has turned your data's relationships and calculations into models, it "passes the baton," so to speak, to a technology called Power View. **Power View** takes data models and turns them into the powerful forms of visualizations that truly bring data to life. Sophisticated, real-time digital

charts, graphs, even 3-D maps, can all be used to tell your data's story. You'll interact the most with Power View while in the Report view and in Power BI Service dashboards.

In the previous lesson, you imported and transformed your data in the Power BI desktop app. In this lesson, you will have the opportunity to learn how to take that same data and put it to work in the model and report views of Power BI desktop app. Together, let's discover the story of your data!

This week, you will learn how to:

- *Understand the Model view and Report view in the Power BI desktop app*
- *Work with Power Pivot technology to model your data and edit relationships between tables*
- *Work with Power View technology to begin transforming your data into report visualizations*

Week 2 – Lesson 1

Understand the Model View

To help us understand the model view, let's take a look at a real-world scenario:

Kate runs a regional sales team for Toys 4 Kids, Inc. In the recent fiscal quarter, there was an upward trend in sales of toys in the 0-3 years-old age group in her region. Sensing an opportunity, Kate decides to run the data through Power BI to find relationships that may be contributing to the ascending sales numbers. During her review, Kate runs queries in the Model View and discovers connections exist between specific postal codes and buyer age demographics.

Her team then takes that information and further discovers that the postal codes in question comprise an expanding sector of a major city that, due to job growth, is attracting young families in significant numbers. Kate and her team decide to take advantage of this information by targeting the growing region and its demographic of young family buyers.

As a result, their overall sales revenue increases steadily over the next quarters!

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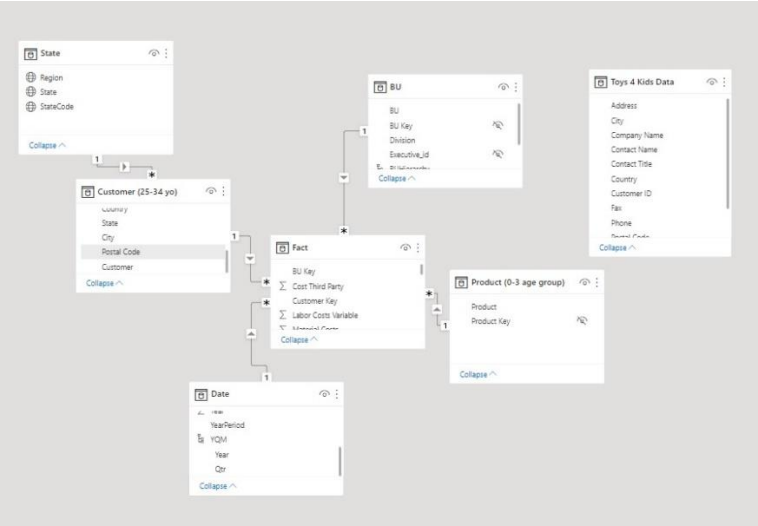


This is just one example of how modeling relationships in Power BI can, and should, have significant impact on data-driven decision-making. In any data sets, relationships *always* exist. Power Pivot can help you extract the right relationships to base professional goals on.

How does Power Pivot accomplish this? By organizing your data into individual cards, or tables, and highlighting relationships that exist between them in the Model view. From there, you can easily run queries based on overlapping criteria, and come away with accurate, insightful reports!

In the upcoming video, you will receive an overview of the Power BI model view.

Week 2 – Lesson 3

Understand the Report View

Congratulations! You've done the hard part of importing, transforming, and modeling your data in the data and model views. Now comes the fun part: You can begin using **Power View** technology to view your report in the report view and add the visualizations that will bring your data to life!

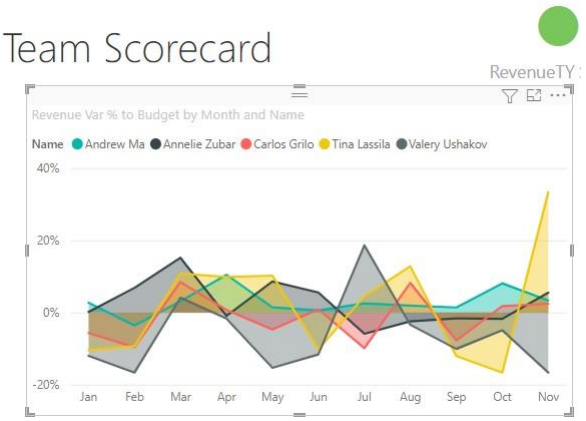
So what are ***visualizations***? There's no trickery involved in the name here! Visualizations, also called **visuals**, are exactly what they sound like: they are the visual representations of your data. They include every kind of graph, chart, and treemap you can imagine. Furthermore, they are *customizable*, making these graphics one of the most impactful features Power BI has to offer, because they help you and your audience interpret and discover new insights about the data set.

*There are **4 main types of visualizations** in the Report View:*

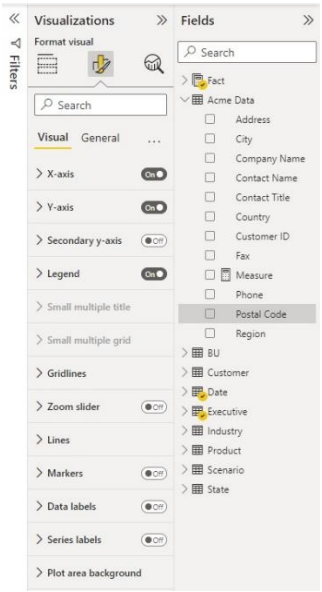
1. ***Chart visualizations*** *(Example: bar charts, pie charts, scatter charts)*

2. ***Text Visualizations*** *(Example: KPI chart, key influencers chart)*
3. ***Geospatial visualizations*** *(Example: map visualizations)*
4. ***Custom visualizations*** *(Example: visualizations created by query and Q&A)*

Now how exactly do visualizations work? That depends on your selections. For example, say you want to display your data in an area chart like the one pictured here:



The area chart is a chart visualization. A **chart visualization** is best used when measuring two or more values against one another, since a prominent feature of most chart visualizations is an X-axis and Y-axis. In the example above, the Legend, or the categories each individual data set belongs to, are the names of the team members. The Y-Axis is the month and the X-Axis is sales revenue percentages. Put all together, this area chart is measuring the total monthly sales revenues of each team member. Given the nature of the chart and the items involved, there will be different visual options that can be manipulated.



With this area chart, settings can be customized for visuals such as gridlines, markers, and data labels; but Small multiple title and Small multiple grid visuals are grayed out; meaning, they are not options for customizing your visualization.

Click Next to view an overview of how to navigate the Report view canvas and visualizations.

Week 2 – Lesson 3

Adding Visualizations to Report Canvases

We've established that the visualization you choose will depend on the story you want to tell with your data. Now let's cover how to add a visualization to your report canvas.

Once you have selected a visualization type from the Visualization pane, you can customize it with various formatting options and filters. Selecting data to display in a visualization is as simple as selecting the checkbox for the relevant data fields in the Fields pane, or just dragging the data to the appropriate fields in the Visualizations pane (you will see this demonstrated in the next video).

The next grouping of videos will show you how to add a visualization to your report canvas, as well as the basic options for formatting it. Keep in mind, different visualization types will have different formatting and filter options. In upcoming lessons, we will do a more thorough breakdown of visualization types. In this lesson, you will learn the basics.

Week 2 – Lesson 4

Understand Text Visualization Types

Text visualizations put greater emphasis on the plain text in your data sets. Oftentimes, text visualizations display that data using a combination of text and numerical or chart formats. If you are wondering if any text visualizations ought to be present on your report canvas, ask yourself: *What do I want my audience to know?* Do you want to sum up certain data points for them using text? Perhaps you want to highlight data points like relationships using a context line of some kind? (Example: *"When [competing product] was introduced, sales decreased by 15%-30% across regional store locations."*) If the answer to either of those question is yes for any key fields, then representing the fields in question with a text visualization is likely to be appropriate for your report.

Let's take a look at some of these visualizations.

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Card visualizations:

One commonly used, easy-to-format text visualization are the **card visualizations**. These visuals display data points, one row at a time. There are two kinds: *single number*, and *multi row*. A single number card is most likely to be used if there is one very important data point to be highlighted, such as total annual sales. A multi row card is used when there is more than one data point to highlight, such as annual sales by age demographics.

Table visualizations:

A table should be very familiar to most report designers. It's a grid of rows, columns, and headers which contain and organize related data. They work best in instances where values grouped into various categories need to be compared quantitatively.

Category	This Year Sales Status	Average Unit Price	Last Year Sales	This Year Sales	This Year Sales Goal
080-Accessories		$4.84	$1,273,096	$1,379,259	$1,273,096
090-Home		$3.93	$2,913,647	$3,053,326	$2,913,647
100-Groceries		$1.47	$810,176	$829,776	$810,176
020-Mens		$7.12	$4,453,133	$4,452,421	$4,453,133
030-Kids		$5.30	$2,726,892	$2,705,490	$2,726,892
050-Shoes		$13.84	$3,640,471	$3,574,900	$3,640,471
010-Womens		$7.30	$2,680,662	$1,787,958	$2,680,662
040-Juniors		$7.00	$3,105,550	$2,930,385	$3,105,550
060-Intimate		$4.28	$955,370	$852,329	$955,370
070-Hosiery		$3.69	$573,604	$486,106	$573,604
Total		**$5.49**	**$23,132,601**	**$22,051,952**	**$23,132,601**

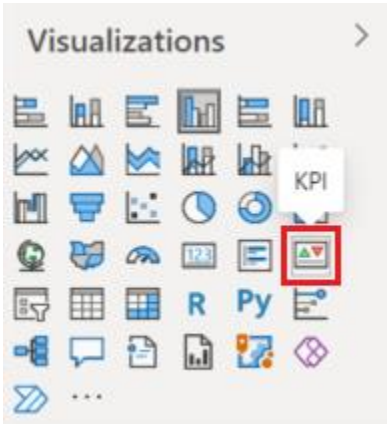
KPI visualizations:

Another commonly used text visualization is the KPI chart. Depending on your level of experience with business data analytics, you may already know the essential term **key performance indicator**. To put it simply, a key performance indicator (**KPI**) is any *measurable value* that can tell you how your data's actual performance measures up against the goals you have set for your business. The KPI chart visualization is the visual representation of where your data falls within the parameters of your goals.

In order to create a KPI visualization, you must have a *base* measure value, a *target* measure value, and a *goal* (also called a *threshold*).

For example, let's consider Kate from the previous module. You may remember that she met her *goal* to increase the overall sales of "Toys 4 Kids" products in her region by targeting a promising demographic of buyers. To make her *goal* measurable, let's say her team's total contributions to the company's overall revenue for the fiscal year came in at $1.13M, while her *target* had been a 21% increase in regional sales from a *base* of $747.1K.

To create a KPI based on her values, Kate enters them into the Field pane on the Report view (you will see this action performed later in a video). She then converts the values into a KPI visual by selecting the KPI visualization in the Visualizations pane, pictured here:



Note the resulting **KPI chart**. The field parameters have been adjusted to show the overall sales for the fiscal year. To the team's delight, the chart shows they in fact surpassed their goal!

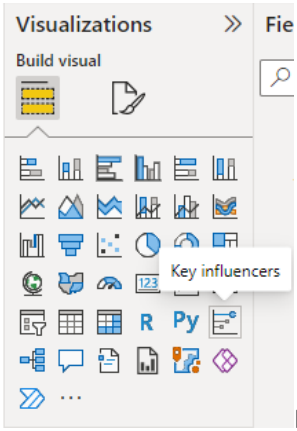
Key Influencers visualizations:

You may also remember that Kate's team discovered that the upward trend in sales was related to a surge of young family buyers in specific postal codes. This is called a **key influencer**, another fundamental BI analytics value. The definition of a key influencer is "a factor that drives a metric you're

interested in." In other words, key influencers are factors that contribute to important data trends, and oftentimes can be things like buyer demographics, geographical region, or the performances of competitive brands.

Here is an example of a key influencers chart:

In the case of Kate's team, the discovery of young family buyers as key influencers of the sales increase came about after appropriate queries discovered relationships in the data modeling stage. Ultimately, the team likely created a **key influencers chart** to properly showcase the relationship, using the key influencers chart option in the Visualization pane, pictured here:



Ready to learn how to create and format these visualizations yourself? You know what to do. Click Next to view the videos!

Week 3 – Intro

Introduction to Navigating Reports and Visualizations

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Welcome back! We're halfway through this course now. Let's review what you have learned so far about the functions of data analysis in the Power BI desktop application:

- *How to import, clean, and transform data using Power Query technology*
- *How to understand the Data, Model and Report views*
- *How to model data and data relationships using Power Pivot technology*
- *How Power View technology is used to create report visualizations*
- *The 4 types of Visualizations: Chart Visualizations, Text Visualizations, Geometrical Visualizations, and Custom Visualizations*

This week, we are going to delve deeper into report visualizations. You will learn:

- *How to create the most popular Chart, Geometrical, and Custom Visualizations in Report view*
- *How to competently navigate formatting and customizations in order to get the most out of your data*
- *How to publish reports to Power BI Service*

Week 3 – Lesson 1

Intro to Chart Visualizations

Did you know?

- The first recorded appearance of the bar chart was in the 14th century, when a Frenchman named Nicole Oresme used in the plot velocity.
- The pie chart was introduced by Scottish writer and businessman William Playfair in 1801.
- In the year 1833, the modern scatterplot was the first seen in a published astrology study authored by English scientist, John Frederick W. Herschel.

Take a moment to consider these facts. It's actually pretty cool! The evolution of chart visualizations spans centuries, nationalities, and disciplines. For hundreds of years great thinkers have sought to organize data into visual representations that tell the stories of numbers in just one glance.

The bar chart. The pie chart. The scatter chart. These are just some of the undisputed heavyweights of data visuals, and the breed of visual you are very likely most familiar with. But there are all kinds of chart visualizations which can be used to tell the story of your data. With Power BI, a competitive selection of visuals - from the tried-and-true to the less familiar - are at your fingertips.

They include:

Pie charts - Best used to represent data as parts of a whole.

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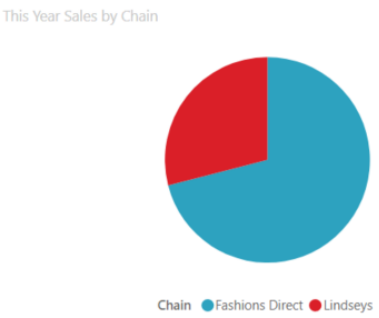
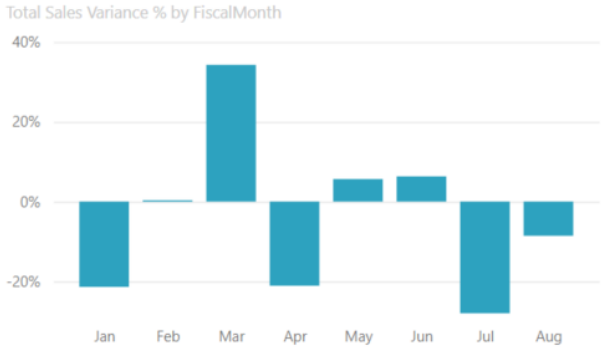
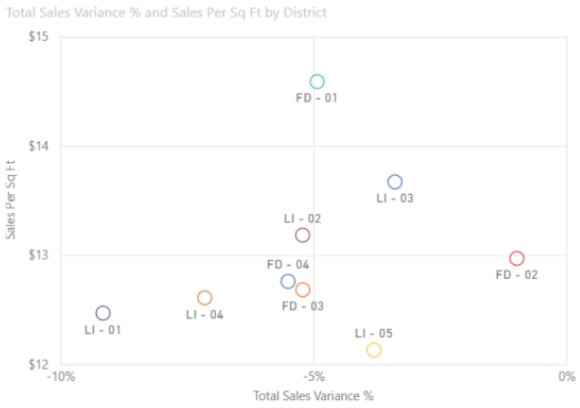


Bar and column charts - Best used to compare specific values across different categories.



Scatter charts - Combines two values (the X axis and Y axis) into a single data point. Best used to highlight intersections in data. Types include: Scatter, bubble, and dot plot chart.



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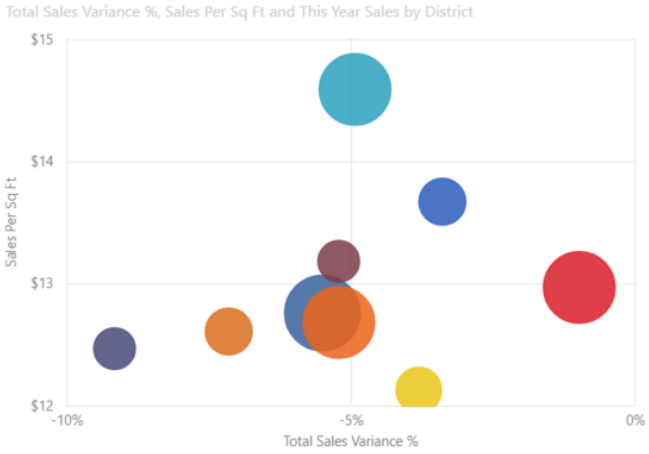
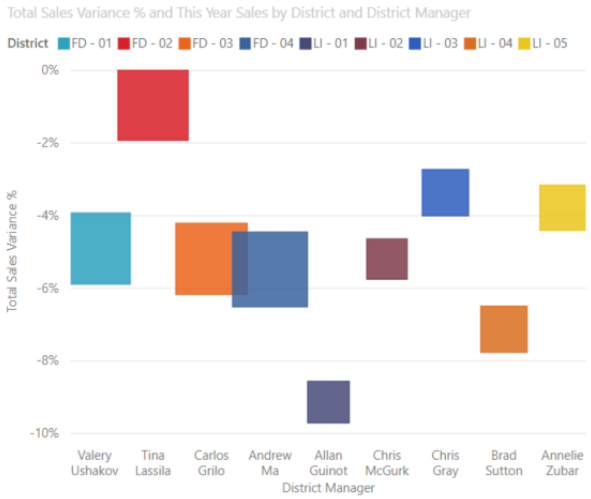
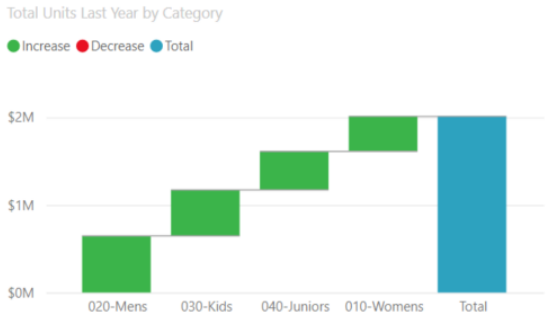




Waterfall charts - Best used to show how a value is affected by positive and negative changes; shows a progression from the initial value.



Funnel charts - A sequence chart, best used to show how data flows between stages.

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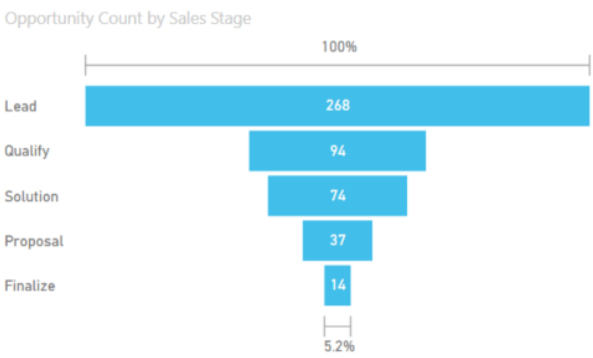
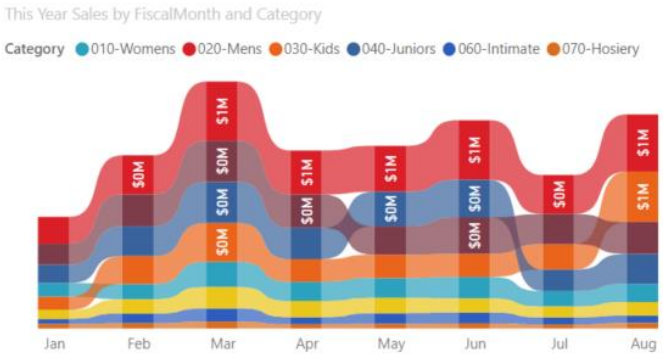


Ribbon charts - Best used to show highest to lowest values, or rank.



And more!

In this lesson, you will learn how to create and format some these chart visualizations.

You know what to do. Click Next to start the videos!

Week 3 – Lesson 1

Use Geospatial Map Visualizations

Closely related to the chart visualization is the **Geospatial visualization**, the most utilized of which is the data **map**. Through integration, Power BI uses Bing map coordinates to geo-code, or estimate and code a location in order to create a map visualization. This allows users and their audiences to view data in relation to the location it applies to, and/or originates from.

In Power BI, there are 4 types of map visualizations you can create:

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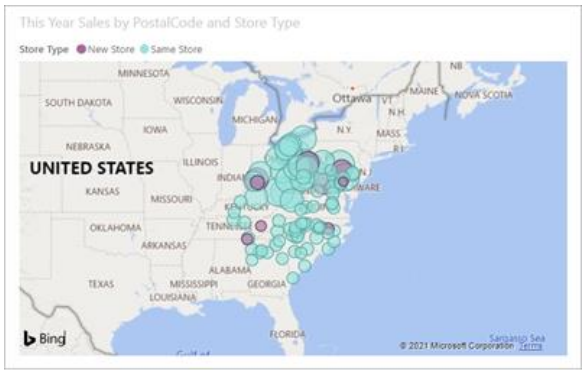
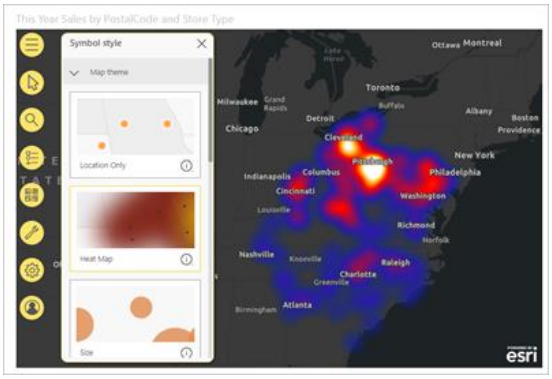
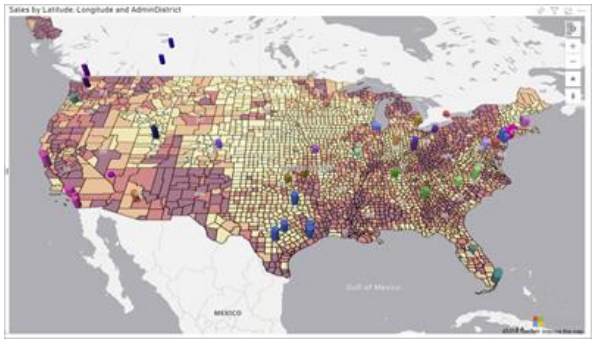
1. Basic map - Just as the name implies, a basic map is the most basic spatial visual of categorical and quantitative information.



2. ArcGIS map - A layered data map which can be interacted with and drilled down to show multiple levels of information, such as enhanced mapping capabilities, data "hotspots" (represented as heat signatures), consumer demographics, and more.



3. Azure map - A layered map which can be interacted with and drilled down in order to gain insights on how geographical locations affect and influence your data.



4. Filled map - A map which uses shading or tinting to allow comparisons of how quantitative or qualitative values differ from region to region.

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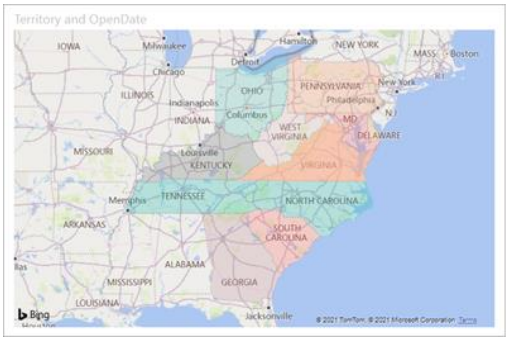

Click Next to see the steps for adding a map visualization to your report canvas!

Week 3 – Lesson 2

Turn Questions into Answers with Custom Visualizations

Now that you know how to model data and create text, chart, or geospatial visualizations based on existing data, let's address ways you can actively feed the engines that produce these models and visualizations, even after your initial data has already been imported into Power BI.

As we have already established, your business decisions are only as good as the data they are based on. When that data becomes outdated, your information does as well. At that point, you should be asking the questions: what is the new data, and how might it impact what I think I know? In an upcoming video, you will see how to go about creating a new table query in order to update your data and keep yourself reliably informed on its story at all times.

What about if you have a question that could bring about new insights? You're in luck! With the combined Power technologies, you can turn your questions into customized queries that feed directly into your data modeling and visualizations. Essentially, you can turn questions and answers into **custom visualizations**. In this lesson, you will learn how to perform that task.

Click Next to view the videos!

Week 3 – Lesson 3

Filters, Slicers, and Data Drilling

Now that you know how to create and format visualizations, it's time to learn some ways to use analytics tools to extract and highlight data insights when viewing your reports or presenting visualizations to an audience.

In the Filters pane, you can apply **filters** at the visual, page, and report level to focus on specific pieces of data while creating your report. You can make it easier for your audience to apply commonly used or important filters on the entire report page by adding slicers. A **slicer** is a unique element in that it is both

a filter and a visual. It is most often used when report builders or their audiences need a standalone chart which can be used to filter other visuals on the page. For example, a slicer which is formatted to the year field can be clicked on to filter down and show a specific year within the scope of the data.

Additionally, you can find which categories have the greatest impact on the total using the **Analyze feature**. Power BI Analytics Tools

In this lesson, you will learn how to use filters, slicers, and drilling with Visualizations. Click Next to get started!

Week 3 – Lesson 4

Introduction to Report Publishing

Data imported, cleaned and transformed? Check!

Data modeling completed? Check!

Report visualizations created and formatted? Check!

Ready to share your report, and data insights, with others? Check!

Sounds like you're ready to move your report to the next stage: publishing it to Power BI Service, otherwise known as Power BI Online. There, you'll be able to work with it in private or shared spaces, collaborate with team members, and begin turning that data into business solutions. You'll need to make sure you have a strong and secure internet connection, and that you're logged into your Microsoft 365 account.

In this short lesson, you will learn how to publish from the Power BI desktop app to the Power BI service. Click Next and get ready!

Week 4 – Introduction

Introduction to Power BI Service

Welcome to Week 4!

Up until this point we have been working in the Power BI desktop application, focusing on data analysis, data modeling and report building. For the final week of this course, we will be taking all you've learned and applying it to the final destinations of your data, where you can turn those models and report visualizations into critical collaboration and information sharing tools.

We'll get into new material, but first, some reminders:

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In the beginning of this course, we discussed the differences between Power BI Desktop and Power BI Service, otherwise known as Power BI Online. Let’s review those differences:

- Reports are created in the Power BI Desktop Application and then published to the Power BI Service.
- The Power BI Desktop Application is where you clean, transform and shape data; model data; and create report visualizations.
- The Power BI Service is where you view workspaces, create dashboards and apps, and – most importantly – share your data with others.

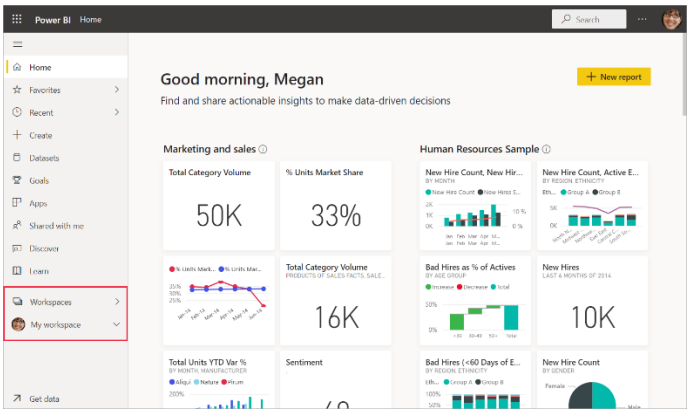
Power BI Licenses:

Remember, your Power BI license determines which features you will have access to. If you have a free license or Power Pro license, you will not have access to all the features and capabilities covered this week. Only the PPU licenses allow access to all the features and capabilities. If necessary, take a moment to check your license again. Consider upgrading if you would like to have advanced capabilities in Power BI Service.

Okay, let's get into the new content! Understanding Power BI Service starts with knowing its elements and their functions. Put simply, it's a collection of five components:

- Workspace and My Workspace
- Dashboards
- Datasets
- Apps
- Reports

Workspaces



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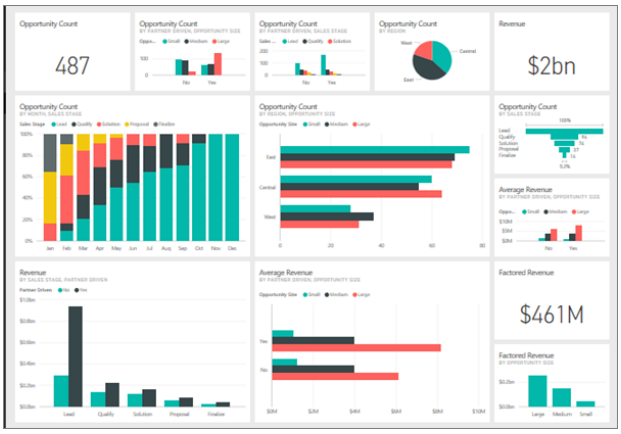
Workspaces are basically containers where you can go to view dashboards and reports. **My Workspace** is a location only you have access to. Consider it your space to work in private. **Workspaces** are locations others with Power BI licenses have access to. Workspaces are where you go to collaborate with colleagues, partners, and other associated persons with an investment in your reports.

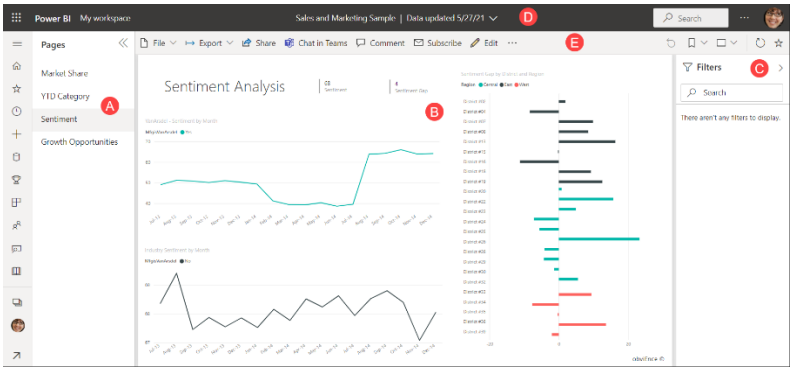
Dashboards



Dashboards are comprised of many visualization tiles that are connected to different reports. Those reports and visualizations you created in the desktop application? This is one primary location they go to be shared with, commented on, and sourced by others! Your dashboard is where the magic of collaboration happens.

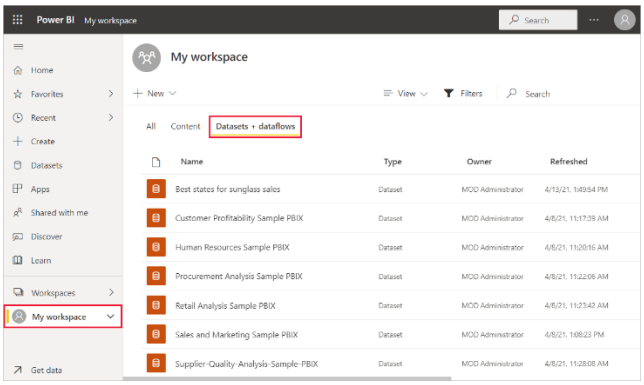
Dashboards are built to be efficient portals as well, since pinned visualization tiles retain their links, allowing for you or your audience to click on the tile to be taken to the full report of origin.

Reports



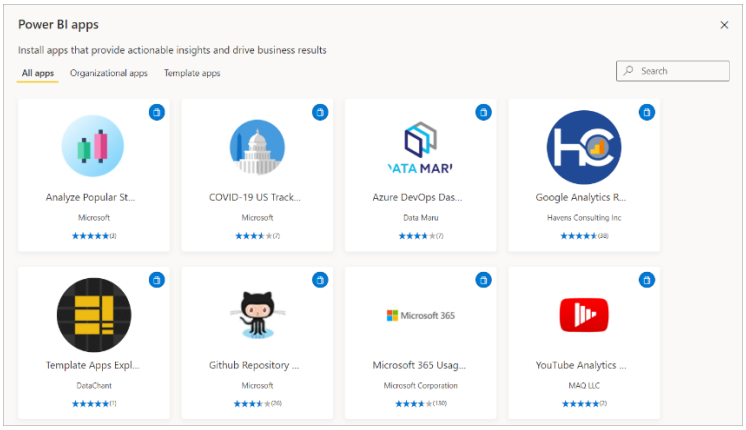
We know what these are! While you can create a dashboard by pulling visualizations from different reports, the full reports - which you would have uploaded from Power BI desktop - can be accessed and viewed either in My Workspace or in shared Workspaces.

Datasets



Every report featured on your dashboard is underpinned by a dataset. Raw datasets can be accessed by clicking on the dataset tab in the appropriate workspace.

Apps



An app can either be a specialized application you obtain from the marketplace, or a handy Power BI component that combines related dashboards and content. You can create apps yourself, connect to apps created by others in your organization, or get them from the marketplace.

**A note on Workbooks -*

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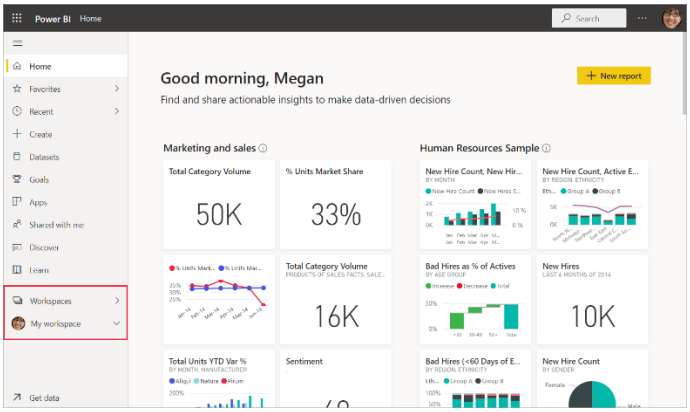
A tab also exists for Workbooks in Workspaces. These workbooks contain raw Excel data you have imported into Power BI Service. Since workbooks don't play much into the collaboration function of Power BI service, they will not be covered in any lesson content this week.

Now that you know the five components of Power BI Service, let's get into the lessons. This week, you will learn more about these components, their functions, and how to use them in order to collaborate with others and integrate with other programs!

Week 4 – Lesson 1

Introduction to Workspaces



As we have established, your personal workspace in Power BI Service is called **My Workspace**. Any files in My Workspace are private until shared. This goes for your reports, as well as the datasets that are contained within published reports.

What's the purpose of a private workspace? Well, it's mostly a storage space for your *original* content. Not every report, dataset, workbook or dashboard needs to be shared with others. You may be working on a private project, or may have reports that are not yet ready to be seen. Conversely, there's also a chance you may not need to utilize My Workspace all that often, if you use Power BI Service to consume other people's content rather than create it.

Along the same vein, if consumption and collaboration are what you're most interested in, **Workspaces** are where you want to be. These are shared spaces between you and your team members. They can be created and designed by you or any other person with the appropriate license. There are some extremely beneficial tools for collaboration in these spaces, including:

- Dashboards, which not only provide insights into shared interests, but contain visualization tiles that can take a user directly to the report of origin.
- The ability to generate quick insights from reports.
- A comments feature, which allows users to provide insights and feedback, as well as ask questions or start conversations.

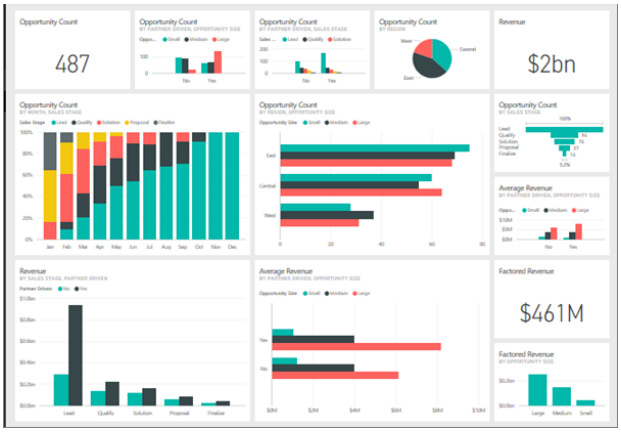
- Access to raw data, which (depending on permissions) can be downloaded by any user who may wish to use it to create their own content in order to gain additional insights.

It's important to note that access in these spaces is affected by a few factors. First, is the level of Power BI license. Each Workspace must include at least one user who has a Power BI Pro or Premium Per User license. (Again, this is why you must know what type of license you have for Power BI, and in what ways that affects the accesses or limitations you have.)

The second factor is access permissions. Access permissions determine what team members can do in a workspace. As you can imagine, this greatly impacts collaboration. It's the workspace designers themselves who determine access permissions. They can name individuals or groups to the role of Viewer, Member, Contributor, or Admin. In this lesson, you will learn how to get started with workspaces as well as check and set access permissions.

Week 4 – Lesson 2

Introduction to Working with Dashboards



A **dashboard** is a canvas that contains tiles and widgets. A tile can be an entire report page, a single visualization from a report, and more. Dashboards are useful because they allow you to see important information in one place. Moreover, dashboards allow you to view the metrics that you need so that better decisions can be made, both independently and as a team.

You can experience dashboards from two standpoints: as a *user*, and as a *designer*. If you are the designer, you will create your dashboards by pulling content from your reports. If you are a user, you will view the dashboards you have access to in the Workspaces area. As a user, the permissions you have for engaging with dashboards are set by the designer.

There's a lot to learn about dashboards that is best learned experientially, so let's jump into the videos!

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**Reminder: if possible, you are encouraged to take 5-10 minutes of discussion prompts time to experiment with features as you learn them.*

Week 4 – Lesson 3

Use Datasets and Reports

If you have the capability, using Datasets and Reports to glean and share insights can be an integral part of getting the most out of your data and helping your team make the best data-driven decisions.

In this short lesson, you will learn some quick skills for taking advantage of reports and datasets in your workspaces.

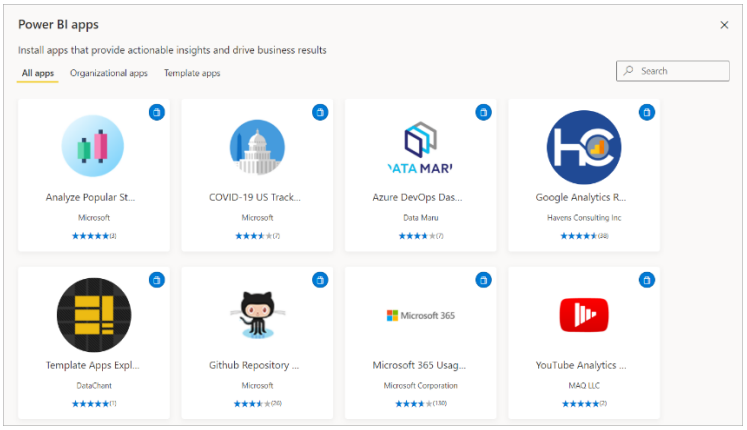
After viewing, if you would like to learn more, visit these resources:

https://docs.microsoft.com/en-us/power-bi/consumer/end-user-datasets-hub

https://docs.microsoft.com/en-us/power-bi/consumer/end-user-reports

Week 4 – Lesson 4

Introduction to Apps



Like most other elements of Power BI service, an **app** can be experienced either as a *user* or as a *designer*.

If you are a designer, you can create apps that combine related dashboards and content that can then be shared with others in your organization.

From a user (or consumer) standpoint, there are two different app types. *Marketplace apps* are usually meant to assist in workflow in some way, while *organizational apps* are those you have access to that were created by someone else in your organization.

In this short lesson, you will learn some quick skills for creating or accessing apps in Power BI Service.

After viewing, if you would like to learn more, visit these resources:

Week 4 – Additional Reading

App Creation Additional Reading

If you are able to and interested in creating an app workspace, keep the information below in mind:

Additional Information:

- Power BI creates the workspace and opens it. It appears in the list of workspaces you're a member of. Because you're an admin, you can click the ellipsis (...) to go back and make changes to it, adding new members or changing their permissions.
- It's empty, so start adding content to it. Adding content is just like adding content to your personal workspace (My Workspace), except the other people in the workspace can see and work on it, too.
- You can upload or connect to files, or connect to services from other companies, just as you would in your own personal workspace.

Note: You can only publish an app from an app workspace - you can't use My Workspace to publish apps.

How are app workspaces different from group workspaces?

- With this release, we have renamed all group workspaces to app workspaces. You can publish an app from any of these workspaces. Over the next few months, we plan on the following enhancements to app workspaces:
- Creating app workspaces will not create corresponding entities in O365 like group workspaces do today. So you can create any number of app workspace ĸwithout worrying about different O365 groups being created behind the scenes. (You can still use an O365 group's OneDrive for Business to store your files.)
- Today, you can add only individuals to the members and admin lists. In the next iteration, you will be able to add multiple AD security groups or modern groups to these lists for easier management.

Week 4 – Lesson 5

Power BI and Microsoft Integration

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Power BI is designed to be integrated into a number of other Microsoft products in order to enhance team collaborations, including:

- **Teams**
- **Sharepoint**
- **Excel**
- **PowerPoint**

In this short lesson, you will learn how to smoothly integrate Power BI into your workflow with other Microsoft products.