

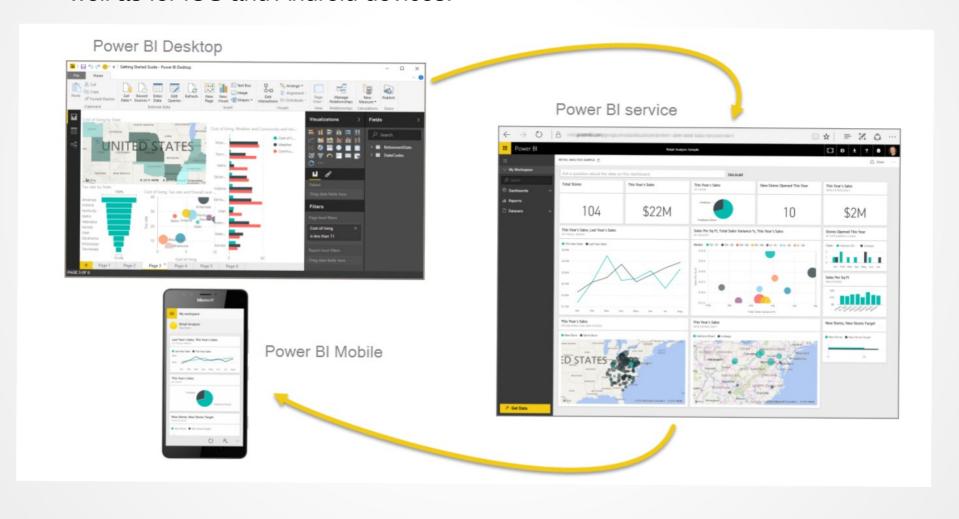
What is Power BI?

 Power BI is a collection of apps, and connectors that work together to turn your unrelated sources of data into coherent, visually immersive, and interactive insights.



The parts of Power BI

Power BI consists of a Windows desktop application called Power BI Desktop, an online SaaS (Software as a Service) service called the Power BI service, and mobile Power BI apps available on Windows phones and tablets, as well as for iOS and Android devices.



The flow of work in Power BI

A common flow of work in Power BI begins by connecting to data sources and building a report in **Power BI Desktop**.

That report is then published from **Desktop** to **Power Bl service**, and shared so users in **service** and **mobile** can consume (view and interact with) the report.

What is Power BI service?

Microsoft Power BI service is sometimes referred to as Power BI online or app.powerbi.com.

Power BI concepts

The 4 major building blocks of Power BI are: dashboards, reports, workbooks, and datasets.

And they're all organized into workspaces.

Workspaces

Workspaces are containers for dashboards, reports, workbooks, and datasets in Power BI. There are two types of workspaces:

My workspace and app workspaces

My workspace is the personal workspace for any Power BI customer to work with your own content. Only you have access to your My workspace. You can share dashboards and reports from your My Workspace.

App workspaces are used to collaborate and share content with colleagues. They are also the places where you create, publish, and manage apps for your organization. Think of them as staging areas and containers for the content that will make up a Power BI app. You can add colleagues to your app workspaces and collaborate on dashboards, reports, workbooks, and datasets. All app workspace members need Power BI Pro licenses, but app consumers (the colleagues who have access to the apps) don't necessarily need Pro licenses.

Datasets

A dataset is a collection of data that you import or connect to

ONE dataset...

can be used over and over in one or in many workspaces.

can be used in many different reports.

Visualizations from that one dataset can display on many different dashboards.

Reports

A Power BI report is one or more pages of visualizations (charts and graphs like line charts, pie charts, treemaps, and many more). Visualizations are also called visuals. All of the visualizations in a report come from a single dataset.

There are 2 modes to view and interact with reports: **Reading view** and **Editing view**. Only the person who created the report, co-owners, and those granted permission, have access to all of the exploring, designing, building, and sharing capabilities of Editing View for that report. And the people they share the report with can explore and interact with the report using Reading View.

ONE report...

is contained in a single workspace

can be associated with multiple dashboards within that workspace (tiles pinned from that one report can appear on multiple dashboards).

can be created using data from one dataset. (the slight exception to this is that Power BI Desktop can combine more than 1 dataset into a single report and that report can be imported into Power BI)

Dashboards

A dashboard is something you create in Power BI service or something a colleague creates in Power BI service and shares with you. It is a single canvas that contains zero or more tiles and widgets.

ONE dashboard...

is associated with a single workspace

can display visualizations from many different datasets

can display visualizations from many different reports

can display visualizations pinned from other tools (e.g., Excel)

Workbooks

Power BI classifies an Excel workbook as a Dataset and other times as a Workbook.

When you use Get data with Excel files, you have the option to Import or Connect to the file. When you choose Connect, your workbook will appear in Power BI just like it would in Excel Online. But, unlike Excel Online, you'll have some great features to help you pin elements from your worksheets right to your dashboards.

FILES

Data sources for the Power BI service

Excel (.xlsx, xlxm) Excel is unique in that a workbook can have both data you've entered into worksheets yourself, and you can query and load data from external data sources by using Power Query (Get & Transform in Excel 2016) or Power Pivot. You can import data that is in tables in worksheets (the data must be in a table), or import data that is loaded into a data model. To learn more, see Get data from Excel.

Power BI Desktop (.pbix) - You can use Power BI Desktop to query and load data from external data sources, extend your data model with measures and relationships, and create reports. You can import your Power BI Desktop file into your Power BI site. Power BI Desktop is best for more advanced users who have a good understanding of their data sources, data query and transformation, and data modeling concepts. To learn more, see Connect to data in Power BI Desktop.

Comma Separated Value (.csv) - Files are simple text files with rows of data. Each row can contain one or more values, each separated by a comma. For example, a .csv containing name and address data can have a number of rows where each row has values for first name, last name, street address, city, state, and so on. You cannot import data into a .csv file, but many applications, like Excel, can save simple table data as a .csv file.

For other file types like XML Table (.xml) or text (.txt) files, you can use Get & Transform to query, transform, and load that data into an Excel or Power BI Desktop file first. You can then import the Excel or Power BI Desktop file into Power BI.

Content Packs

Content packs contain all of the data and reports you need already prepared for you. In Power BI, there are two types of content packs; those from services like Google Analytics, Marketo, or Salesforce, and those created and shared by other users in your organization.

Services There are literally dozens of services with content packs for Power BI, and more are being added all the time. Most services require you to have an account. Organizational If you and other users in your organization have a Power BI Pro account, you can create, share, and use content packs. T

Databases

Databases in the Cloud From the Power BI service, you can connect live to Azure SQL Database, Azure SQL Data Warehouse, Spark on Azure HD Insight, and SQL Server Analysis Services using DirectQuery. Connections from Power BI to these databases are live, that is, when you've connected to say an Azure SQL Database, and you begin exploring its data by creating reports in Power BI, anytime you slice your data or add another field to a visualization, a query is made right to the database.

Databases on-premises From the Power BI service, you can connect directly to SQL Server Analysis Services Tabular model databases. A Power BI Enterprise gateway is required.

For other types of databases in your organization, you'll need to first use Power BI Desktop or Excel to connect to, query, and load data into a data model. You can then import your file into Power BI where a dataset is created. If you setup scheduled refresh, Power BI will use connection information from the file along with refresh settings you configure to connect directly to the datasource and query for updates. Those updates are then loaded into the dataset in Power BI.

What if my data comes from a different source?

There are literally hundreds of different data sources you can use with Power BI. But regardless of where you get your data from, that data has to be in a format the Power BI service can use to create reports and dashboards, answer questions with Q & A, and so on.

Some data sources already have their data in a format ready for the Power BI service, like content packs from service providers like Google Analytics, and Twilio. SQL Server Analysis Services Tabular model databases are ready, too. And you can connect live to databases in the cloud like Azure SQL Database and Spark on HDInsight.

In other cases, it might be necessary to query and load the data you want into a file. For example, let's say you have logistics data in a data warehouse database on a server in your organization. In the Power BI service, you cannot connect directly to that database and begin exploring its data (unless it is a tabular model database). You can, however, use Power BI Desktop or Excel to query and load that logistics data into a data model you then save as a file. You can then import that file into Power BI where a dataset is created.

How data from databses on power bi desktop is synced with power bi service

You're probably thinking But that logistics data on that database changes every day. How do I make sure my dataset in Power BI is refreshed? Connection information from the Power BI Desktop or Excel file is imported into the dataset along with the data. If you setup scheduled refresh or do a manual refresh on the dataset, Power BI will use the connection information from the dataset, along with a couple other settings, to connect directly to the database, query for updates, and load those updates into the dataset. A Power BI gateway will likely be required to secure any data transfer between your on-premises server and Power BI. Any visualizations in reports and dashboards are refreshed automatically.

You see, just because you cannot connect to your data source right from the Power BI service doesn't mean you can't get that data into Power BI

Data refresh

If you save your files on your local drive, or a drive somewhere in your organization, a Power BI gateway might be required in-order to refresh the dataset in Power BI. And, the computer where the file is saved must be on when a refresh happens. You can also re-import your file, or use Publish from Excel or Power BI Desktop, but those are not automated processes.

If you save your files on OneDrive for Business or SharePoint Team Sites, and then connect to or import them into Power BI, your dataset, reports, and dashboard will always be up-to-date. Because both OneDrive and Power BI are in the cloud, Power BI can connect directly to your saved file, about once every hour, and check for updates. If any are found, the dataset and any visualizations are refreshed automatically.

Content packs from services are automatically updated. In most cases, once a day. You can manually refresh, but whether or not you'll see any updated data will depend on the service provider. Content packs from others in your organization will depend on the data sources used and how the person who created the content pack setup refresh.

Azure SQL Database, Azure SQL Data Warehouse, and Spark on Azure HDInsight are unique in that they are data sources in the Cloud. Because the Power BI service is also in the cloud, Power BI can connect to them live, using DirectQuery. What you see in Power BI is always in-sync and there's no need to setup refresh.

Considerations and Limitations

Dataset size limit - there is a 1 GB limit for each dataset in the Power BI service.

Row limit - the maximum number of rows in your dataset (when not using DirectQuery) is 2 billion, with three of those rows reserved (resulting in a usable maximum of 1,999,999,7 rows); the maximum number of rows when using DirectQuery is 1 million rows.

Column limit - the maximum number of columns allowed in a dataset, across all tables in the dataset, is 16,000 columns. This applies to the Power BI service and to datasets used in Power BI Desktop. Power BI uses an internal row number column per table included in the dataset, which means the maximum number of columns is 16,000 minus one for each table used in the dataset

What are Power BI gateways?

A Power BI gateway is software that you install within an on-premises network; it facilitates access to data in that network. This lets organizations keep databases and other data sources on their on-premises networks, yet securely use that on-premises data in Power BI reports and dashboards.

Types of gateways

On-premises data gateway (personal mode) – allows one user to connect to sources, and can't be shared with others. Can only be used with Power BI. This gateway is well-suited to scenarios where you're the only person who creates reports, and you don't need to share the data sources with others.

On-premises data gateway – allows multiple users to connect to multiple onpremises data sources. Can be used by Power BI, PowerApps, Flow, Azure Analysis Services, and Azure Logic apps, all with a single gateway installation. This gateway is well-suited to more complex scenarios with multiple people accessing multiple data sources.

Using a gateway

There are four main steps for using a gateway:

Install the gateway on a local computer, using the appropriate mode Add users to the gateway, so they can access on-premises data sources Connect to data sources, so they can be used in reports and dashboards Refresh on-premises data, so Power BI reports are up to date

How gateways work

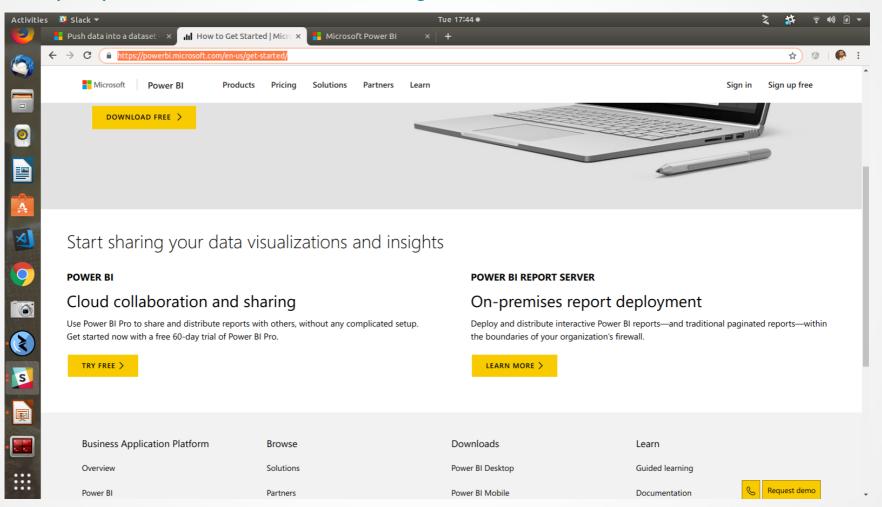
The gateway you install runs as a Windows service, On-premises data gateway. This local service is registered with the Gateway Cloud Service through Azure Service Bus. The following diagram shows the flow between on-premises data and the cloud services that use the gateway.

Queries and data flow:

- A query is created by the cloud service with the encrypted credentials for the onpremises data source. It's then sent to a queue for the gateway to process.
- The gateway cloud service analyzes the query and pushes the request to the Azure Service Bus.
- The on-premises data gateway polls the Azure Service Bus for pending requests.
- The gateway gets the query, decrypts the credentials, and connects to the data sources with those credentials.
- The gateway sends the query to the data source for execution.
- The results are sent from the data source, back to the gateway, and then onto the cloud service and your server.

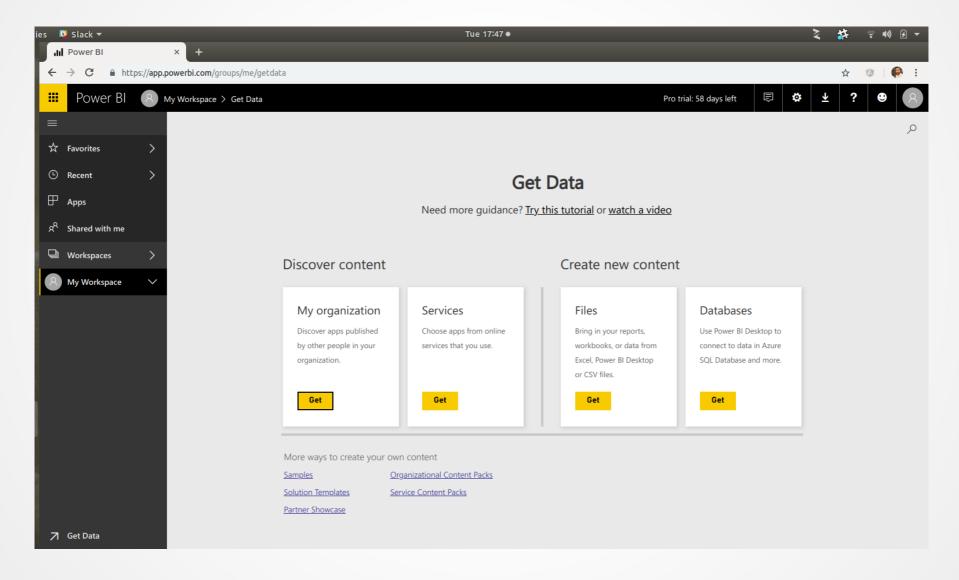
How to do things?

Signup for a 60 day trial version of Power Bi Pro at https://powerbi.microsoft.com/en-us/get-started/



Getting Started

Login to your trial account at http://app.powerbi.com/



Download, Install and Manage Power Bi Gateway and Desktop App

Click on the settings and download the Power Bi Gateway and Power Bi Desktop App

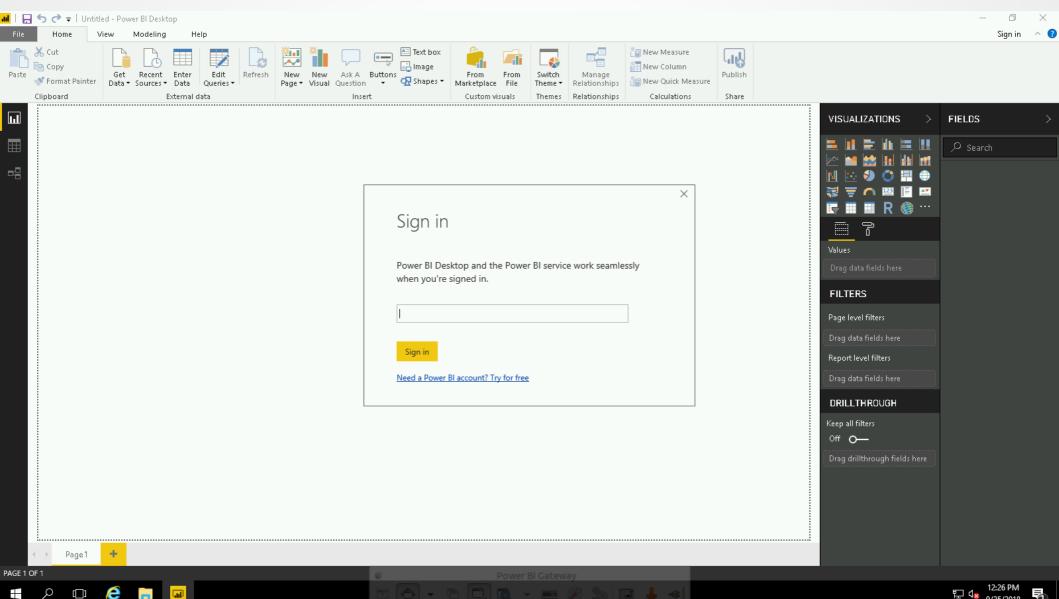
Refer

https://docs.microsoft.com/en-us/power-bi/service-gateway-install

https://docs.microsoft.com/en-us/power-bi/service-gateway-manage

Power Bi Desktop

Sign In to your account in Power Bi Desktop

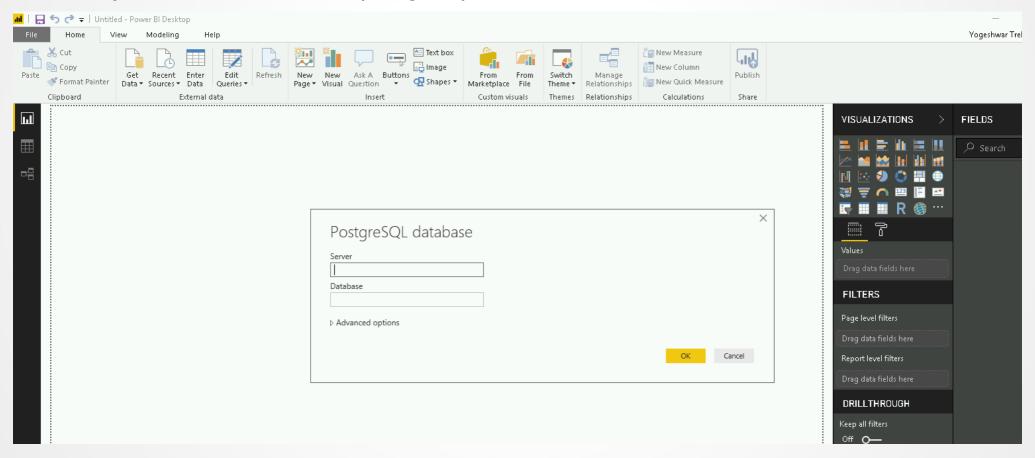


Get Data from postgresql

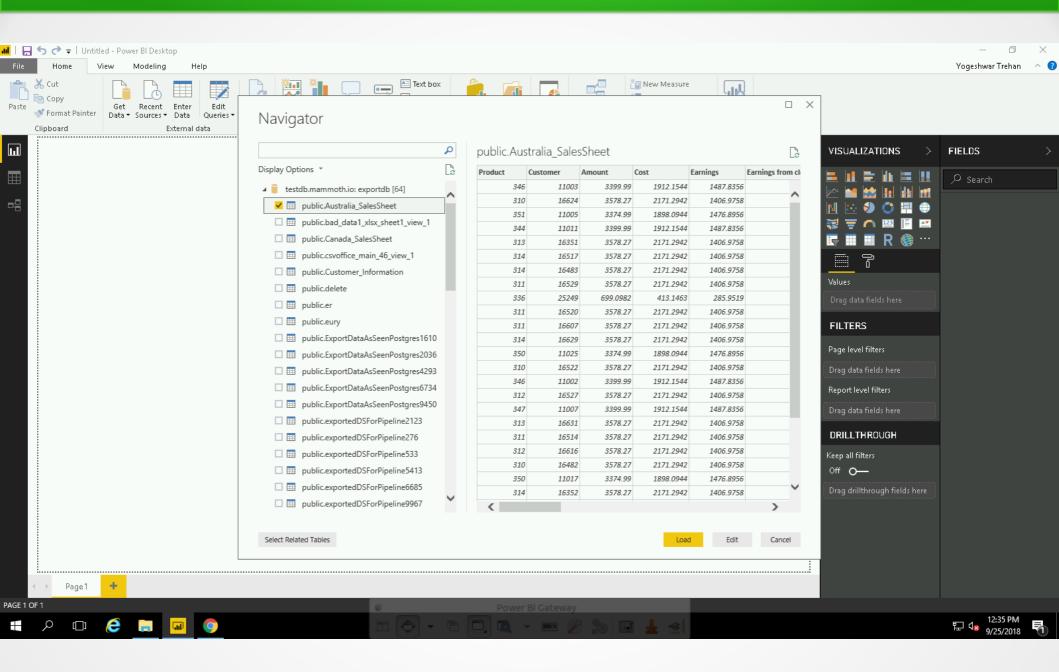
Prerequisites

You need to install entire feature of GAC ngpsql v2.5 from https://github.com/npgsql/Npgsql/releases

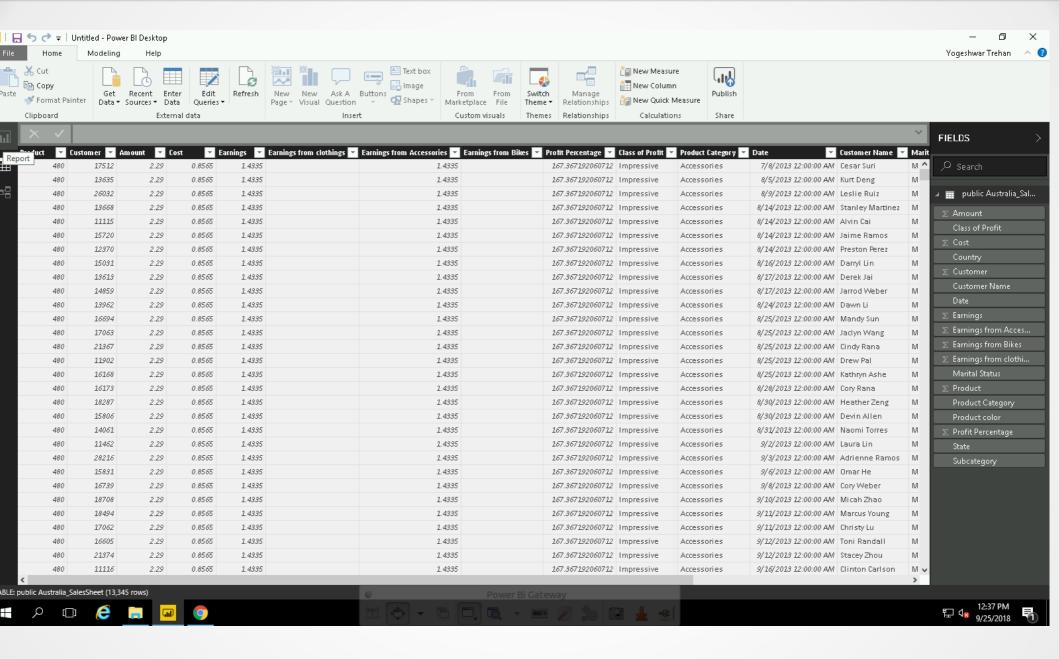
Then you can connect to the postgresql db and load table to Power Bi



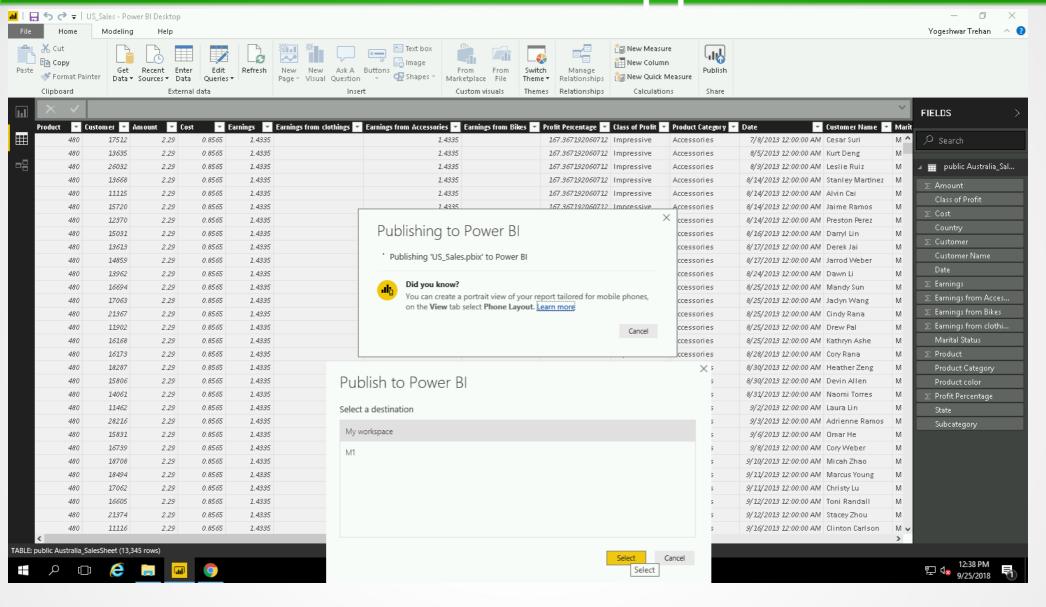
Load data to Power bi



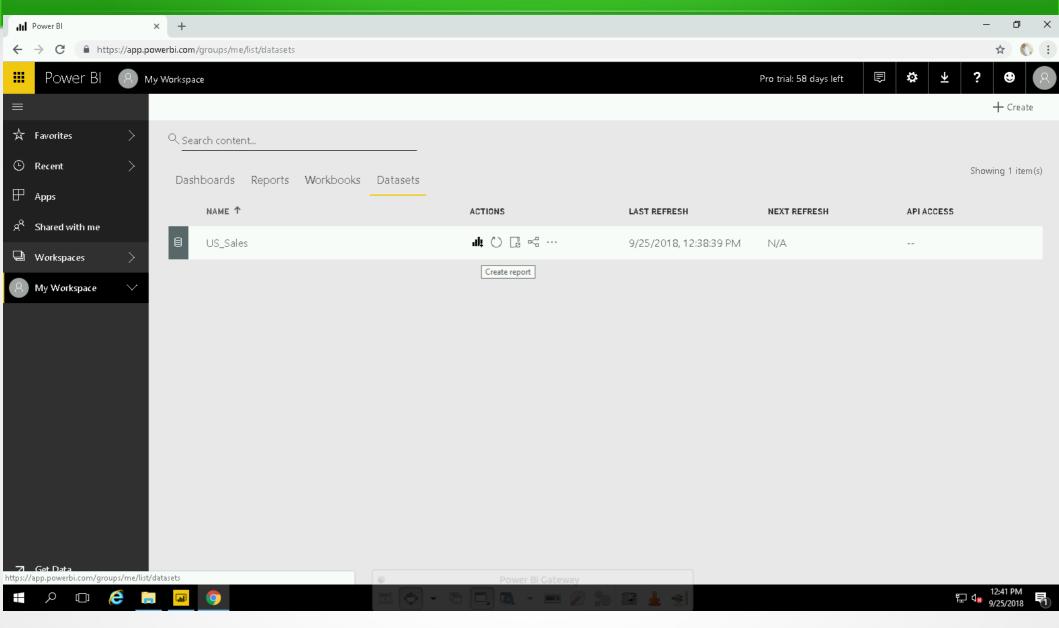
Viewing Data in Power Bi Desktop



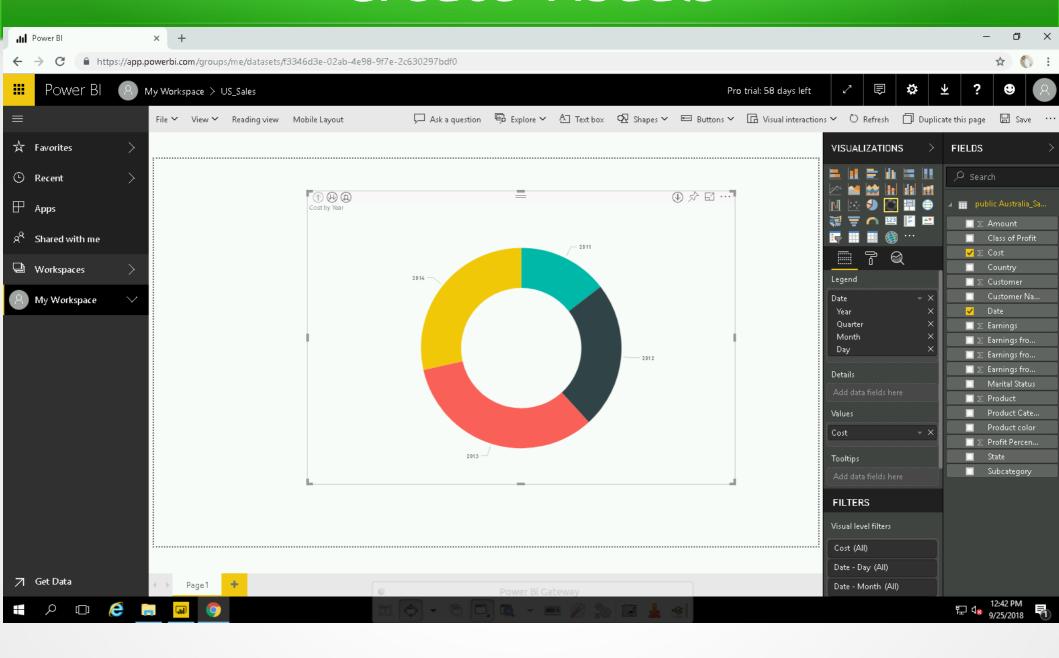
Publishing Data to Workspace on Power Bi App



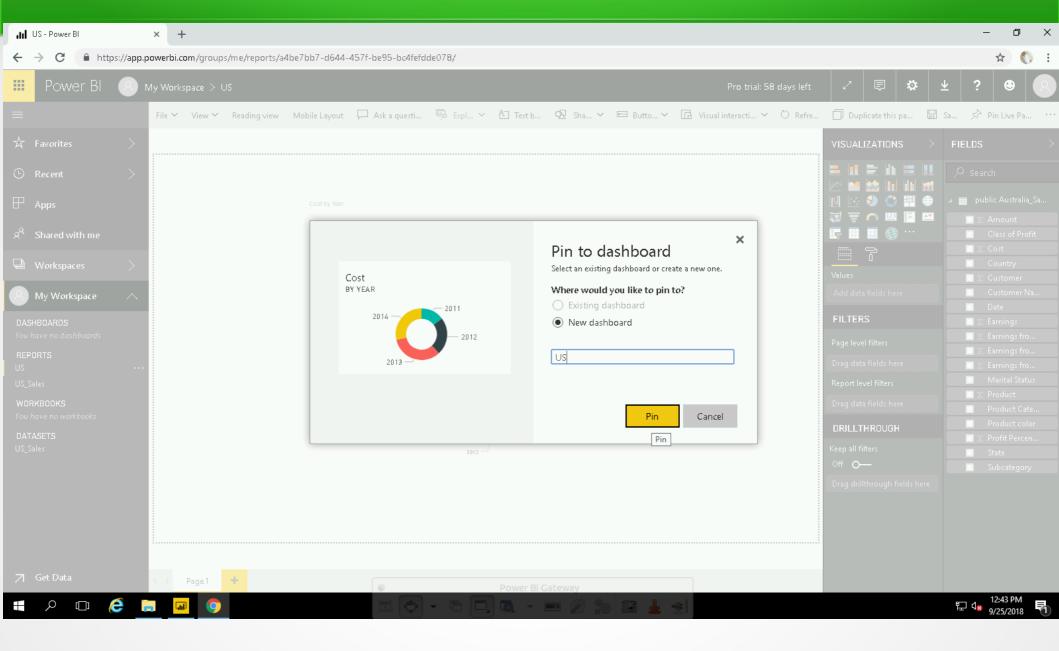
Creating Reports on the Data



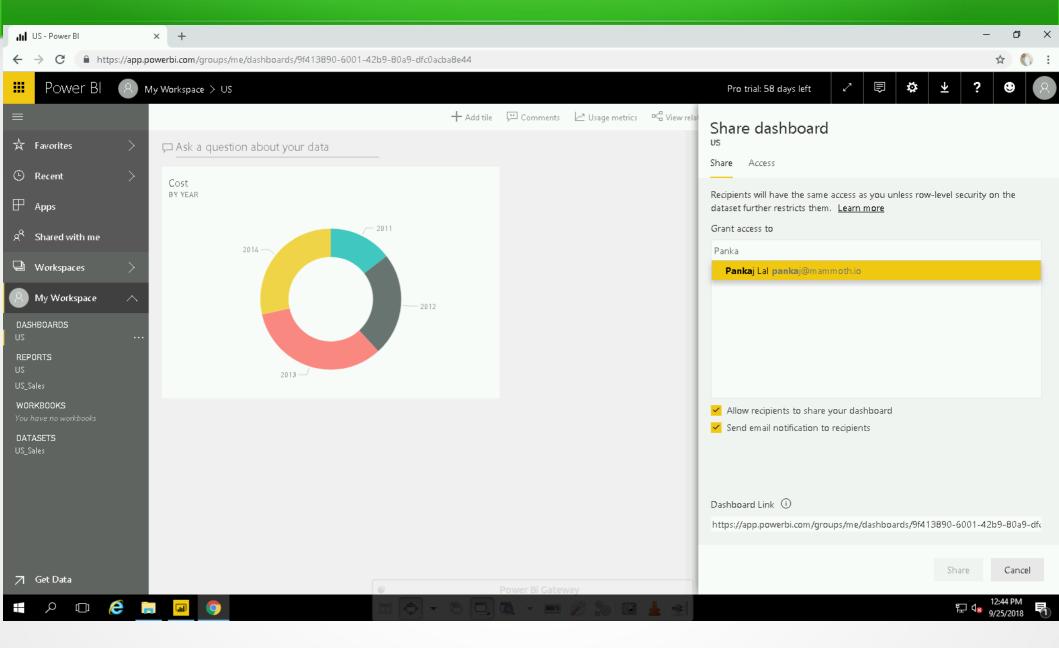
Create Visuals



Pin Visuals To Dashboard



Share Dashboards



Created By Yogeshwar Trehan