POWER BI ASSIGNMENT 3

1. **List and explain different PowerBi products.**

   Power BI Products and Pricing

   A. Power BI Desktop
      - Creating and editing customized reports for every level of expertise.
      - Data ingestion from hundreds of supported data sources.
      - Data transformation, cleaning, data model creation with built-in Power Query Editor.
      - AI-driven analytics.
      - Interactive reporting with pre-built or custom visuals.
      - Free

   B. Power BI Pro
      - Self-service BI in the cloud.
      - Creating, editing and sharing reports and dashboards among users.
      - Collaboration in personal and team workspaces.
      - 10 GB of storage per user.
      - $9.99 user/month

   C. Power BI Premium
      - Enterprise BI both on-premises and in the cloud.
      - Dedicated storage (100 TB) and compute resources.
      - Consumption of Power BI content without individual licensing.
      - Maintaining BI assets on-premises with the Power BI Report server.
      - Paginated reporting.
      - Multi-geo capability.
      - $4,995 dedicated cloud storage and compute resources/month with an annual subscription

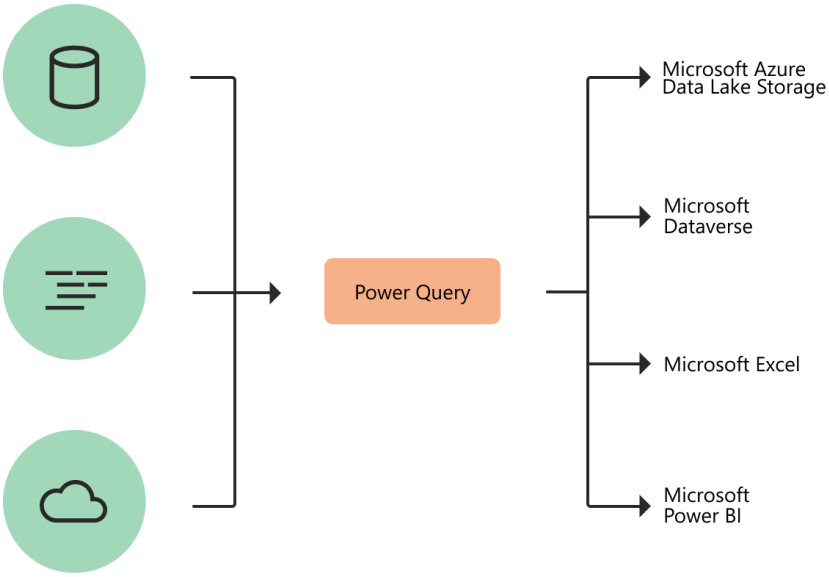
   D. Power BI Embedded
      - Reports, dashboards and visual analytics embedded into applications.
      - An extensive library of data connectors, APIs, and fully documented SDKs.
      - Pay-as-you-go: from $1.0081/hour to $32.2506/hour

2. **What are the limitations of Microsoft Excel that solved by PowerBi?**
   - Excel has limitations in the amount of data it can work with. In contrast, Power BI can handle much larger amounts of data.
   - Power BI can connect to a large number of data sources, while Excel's connectivity capacity is limited. Also, unlike Excel, Power BI can be easily used from mobile devices.
   - Power BI has faster processing than Excel.
   - Power BI dashboards are more visually appealing, interactive and customizable than those in Excel.
   - Power BI is a more powerful tool than Excel in terms of comparison between tables, reports or data files.
   - Power BI is more users friendly and easy to use than Excel.

3. **Explain PowerQuery?**

   Power Query is a data transformation and data preparation engine. Power Query comes with a graphical interface for getting data from sources and a Power Query Editor for applying transformations. Because the engine is available in many products and services, the destination

where the data will be stored depends on where Power Query was used. Using Power Query, you can perform the extract, transform, and load (ETL) processing of data.



Business users spend up to 80 percent of their time on data preparation, which delays the work of analysis and decision-making. Several challenges contribute to this situation, and Power Query helps address many of them.

Existing challenge	**How does Power Query help?**
Finding and connecting to data is too difficult	Power Query enables connectivity to a wide range of data sources, including data of all sizes and shapes.
Experiences for data connectivity are too fragmented	Consistency of experience, and parity of query capabilities over all data sources.
Data often needs to be reshaped before consumption	Highly interactive and intuitive experience for rapidly and iteratively building queries over any data source, of any size.
Any shaping is one-off and not repeatable	When using Power Query to access and transform data, you define a repeatable process (query) that can be easily refreshed in the future to get up-to-date data. In the event that you need to modify the process or query to account for underlying data or schema changes, you can use the same interactive and intuitive experience you used when you initially defined the query.
Volume (data sizes), velocity (rate of change), and variety (breadth of data sources and data shapes)	Power Query offers the ability to work against a subset of the entire dataset to define the required data transformations, allowing you to easily filter down and transform your data to a manageable size. Power Query queries can be refreshed manually or by taking advantage of scheduled refresh capabilities in specific products (such as Power BI) or even programmatically (by using the Excel object model). Because Power Query provides connectivity to hundreds of data

Existing challenge	How does Power Query help?
	sources and over 350 different types of data transformations for each of these sources, you can work with data from any source and in any shape.

Power Query experiences

The Power Query user experience is provided through the Power Query Editor user interface. The goal of this interface is to help you apply the transformations you need simply by interacting with a user-friendly set of ribbons, menus, buttons, and other interactive components.

The Power Query Editor is the primary data preparation experience, where you can connect to a wide range of data sources and apply hundreds of different data transformations by previewing data and selecting transformations from the UI. These data transformation capabilities are common across all data sources, whatever the underlying data source limitations.

When you create a new transformation step by interacting with the components of the Power Query interface, Power Query automatically creates the M code required to do the transformation so you don't need to write any code.

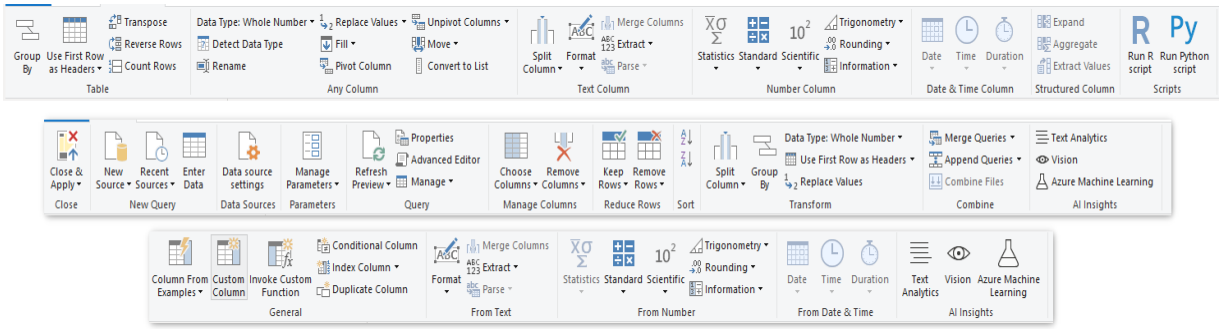
Currently, two Power Query experiences are available:

- **Power Query Online**—Found in integrations such as Power BI dataflows, Microsoft Power Platform dataflows, Azure Data Factory wrangling dataflows, and many more that provide the experience through an online webpage.
- **Power Query for Desktop**—Found in integrations such as Power Query for Excel and Power BI Desktop.

Transformations

The transformation engine in Power Query includes many prebuilt transformation functions that can be used through the graphical interface of the Power Query Editor. These transformations can be as simple as removing a column or filtering rows, or as common as using the first row as a table header. There are also advanced transformation options such as merge, append, group by, pivot, and unpivot.

All these transformations are made possible by choosing the transformation option in the menu, and then applying the options required for that transformation. The following illustration shows a few of the transformations available in Power Query Editor.



Dataflows

Power Query can be used in many products, such as Power BI and Excel. However, using Power Query within a product limits its usage to only that specific product. Dataflows are a product-agnostic service version of the Power Query experience that runs in the cloud. Using dataflows, you can get data and transform data in the same way, but instead of sending the output to Power BI or Excel, you can store the output in other storage options such as Dataverse or Azure Data Lake Storage. This way, you can use the output of dataflows in other products and services.

Power Query M formula language

The M language is the data transformation language of Power Query. Anything that happens in the query is ultimately written in M. If you want to do advanced transformations using the Power Query engine, you can use the Advanced Editor to access the script of the query and modify it as you want. If you find that the user interface functions and transformations won't perform the exact changes you need, use the Advanced Editor and the M language to fine-tune your functions and transformations.

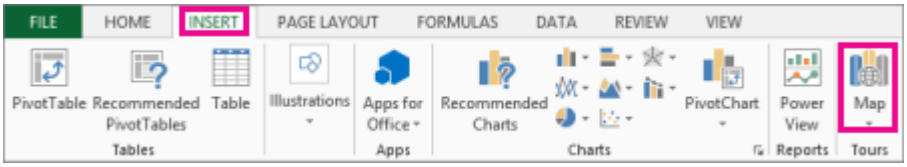
4. Explain PowerMap?

Microsoft Power Map for Excel is a three-dimensional (3-D) data visualization tool that lets you look at information in new ways. A power map lets you discover insights you might not see in traditional two-dimensional (2-D) tables and charts.

With Power Map, you can plot geographic and temporal data on a 3-D globe or custom map, show it over time, and create visual tours you can share with other people. You'll want to use Power Map to:

- Map data Plot more than a million rows of data visually on Bing maps in 3-D format from an Excel table or Data Model in Excel.
- Discover insights Gain new understandings by viewing your data in geographic space and seeing time-stamped data change over time.
- Share stories Capture screenshots and build cinematic, guided video tours you can share broadly, engaging audiences like never before. Or export tours to video and share them that way as well.

You'll find the Map button in the Tours group on the Insert tab of the Excel ribbon, as shown in this picture.

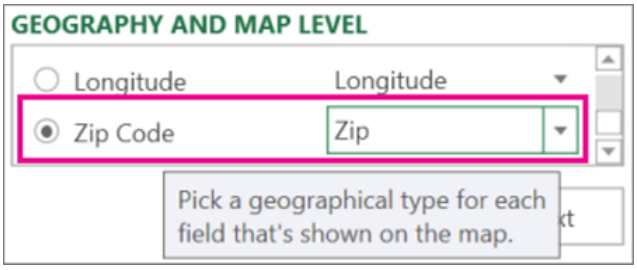


Create your first Power Map

When you have Excel data that has geographic properties in table format or in a Data Model—for example, rows and columns that have names of cities, states, counties, zip codes, countries/regions, or longitudes and latitudes—you're ready to get started. Here's how:

1) In Excel, open a workbook that has the table or Data Model data you want to explore in Power Map.
2) Click any cell in the table.
3) Click Insert > Map. Clicking Map for the first time automatically enables Power Map. Power Map uses Bing to geocode your data based on its geographic properties. After a few seconds, the globe will appear next to the first screen of the Layer Pane.

4) In the Layer Pane, verify that fields are mapped correctly and click the drop-down arrow of any incorrectly mapped fields to match them to the right geographic properties.
For example, make sure that Zip Code is recognized as Zip in the drop-down box



5) When Power Map plots the data, dots appear on the globe.

6) Click Next to start aggregating and further visualizing your data on the map.

5. How powerBi eliminated the need to host SharePoint Server on premises?

Microsoft Power BI (Business Intelligence) is a cloud-based business analytics service for SharePoint collaboration site users to allow them to quickly analyze data visually in an efficient manner for ease of comprehension. Power BI users are connected to a broad range of data through simple dashboards, interactive reports and visualizations that allow them to understand data faster than using traditional bar and pie charts. It's remarkable for a variety of users such as sales, analysts, business executives, IT and developers.

Data storytelling reviews analytics with complementary visuals and a narrative to combine the language of images and words to tell an overall story about the data. With Power BI, users can produce beautiful reports to publish for their organization to review on the web and on mobile or tablet devices.

"On average, those using data visualization tools report it would take an average of nine hours longer to see patterns, trends and correlations in their company's data without data visualization." – SAP

<u>Power BI transforms your business productivity.</u>

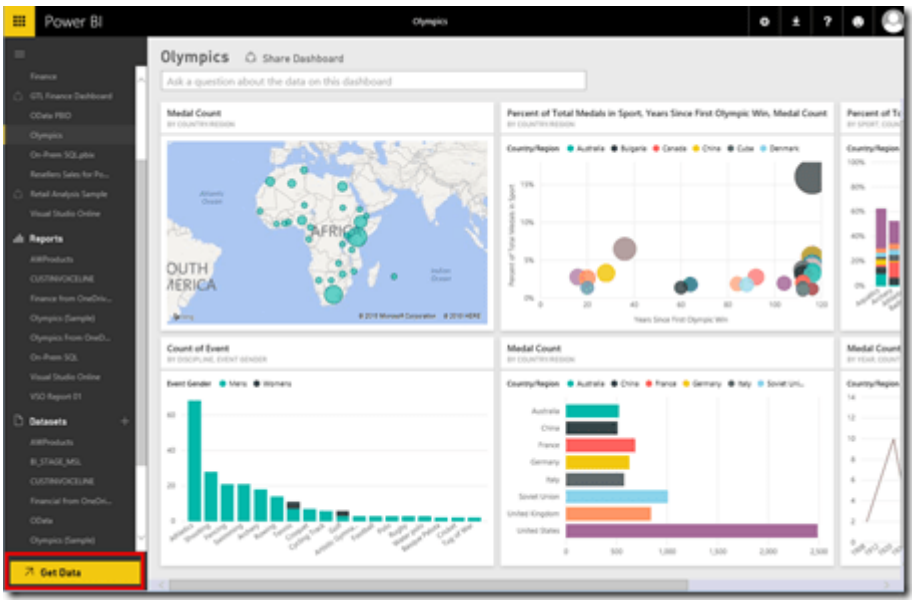
In less than the time it takes to go get a cup of coffee, analysts can quickly go from reviewing data to insights into action by connecting sources, preparing the data with ease and showing results of highly visually pleasing reports. With connections to hundreds of sources that are continuing to grow, Power BI Desktop allows users to draw deep insights for a broad range of scenarios.

For the business users who always need to be in the know, users can view dashboards on the web or mobile phone. In addition, they can receive alerts when the data is updated and then drill down into the nitty gritty details. The data is within reach. IT teams can streamline management of data, attain compliance and keep data secure while they're giving employees access to the insights they need. Development teams can rejuvenate apps with the power of intelligent data. They can embed interactive data visuals and deliver captivating visual reports that looks great and works on any device.

6. Explain the updates done in Power Bi Service (power BI 2.0) as compared to older version ?

Get Data

- Sign into Power BI
- Click on Get Data button from the bottom of the left navigation pane



- There are now two different sections in the "Get Data" of your workspace which each of them have two parts:

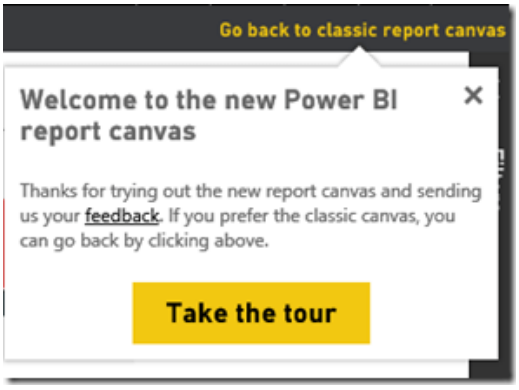
1. Content Pack Library
   - My Organisation: from here you can easily create you organisational content packs. A content pack is basically a single repository to keep dataests, reports, dashboards, Q&A, integration with other data sources, data refresh and more. You can also package up and publish your dashboards, reports and datasets with your colleagues in a specific group or the entire organisation. You can also browse the content packs that other people in your organisation published.
   - Services: you can use lots of online services built to connect to different platforms like Microsoft Dynamics CRM, Microsoft Dynamics Marketing, Visual Studio Online , and much more.
2. Import Or Connect to Data
   - Files: You can upload your reports, data or workbooks from Excel, Power BI Desktop or CSV files. The location of the files could be your local hard drive, on OneDrive Business or OneDrive Personal.

- Databases: You can connect to Azure SQL Database, Azure SQL Data Warehouse, SQL Server Analysis Services Tabular Model or Azure HDInsight (Spark) and browse your live data.

Reports

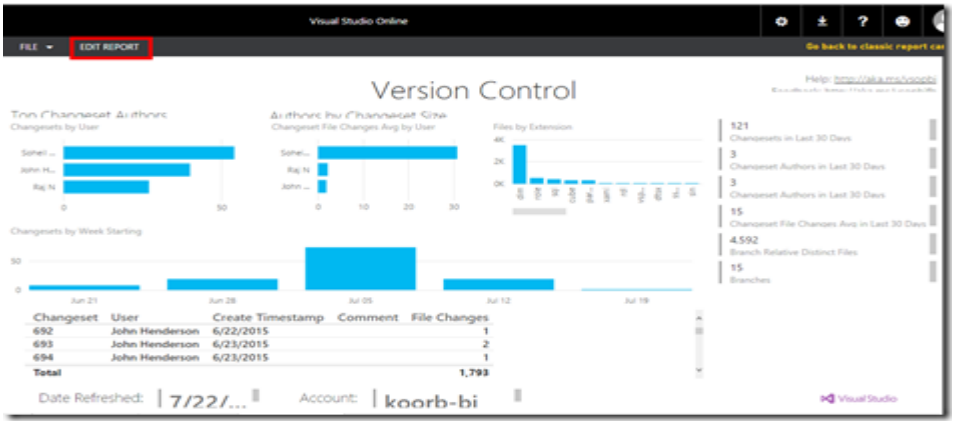
The report's features are improved significantly. We can know change the chart's colours, adding free texts into TextBoxes and much more.

- After logging into Power BI website clock on a desired report
- Right after you open the report you'll get prompted to use the new report canvas

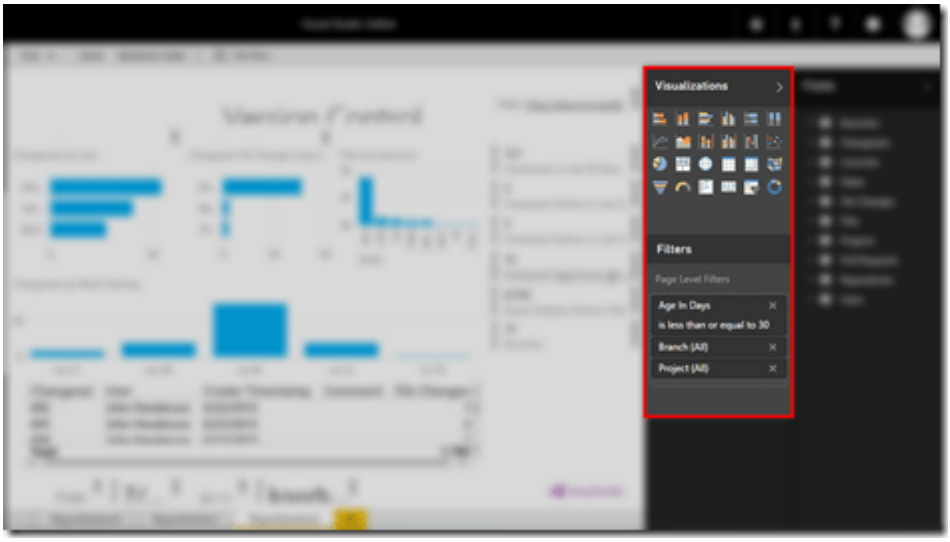


- After you open the report, click on EDIT REPORT
- You might get a message saying "To make changes to this report, you need to convert it to new Power BI report canvas". You can decide to convert or cancel. As the report that I opened is a test report I'm safe to convert it.

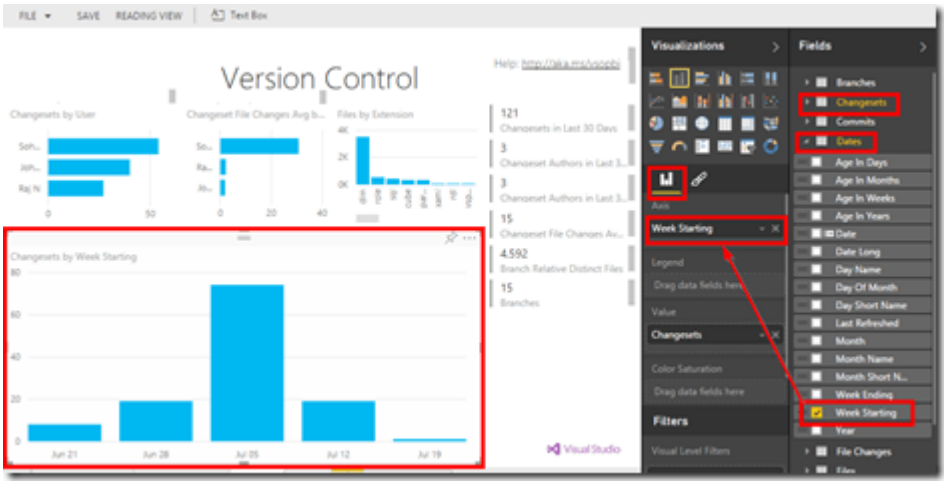
- Now that your report is open click on EDIT REPORT button



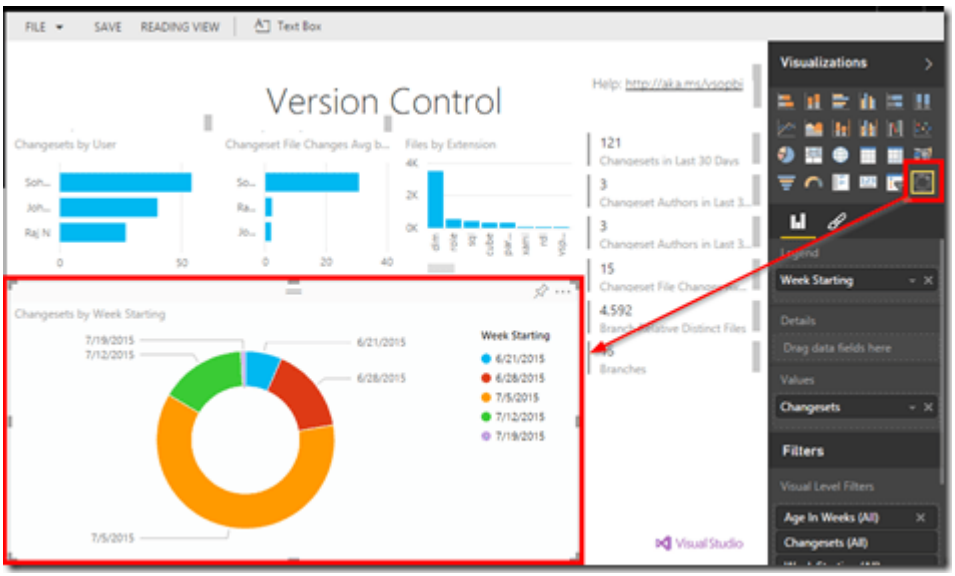
- You'll immediately see a toolbox on the right pane that wasn't available before



- With the new features we are able to modify the visualisation as desired
- By clicking a chart related features to the chart is added to the visualisation pane
- In this sample I clicked on a bar chart

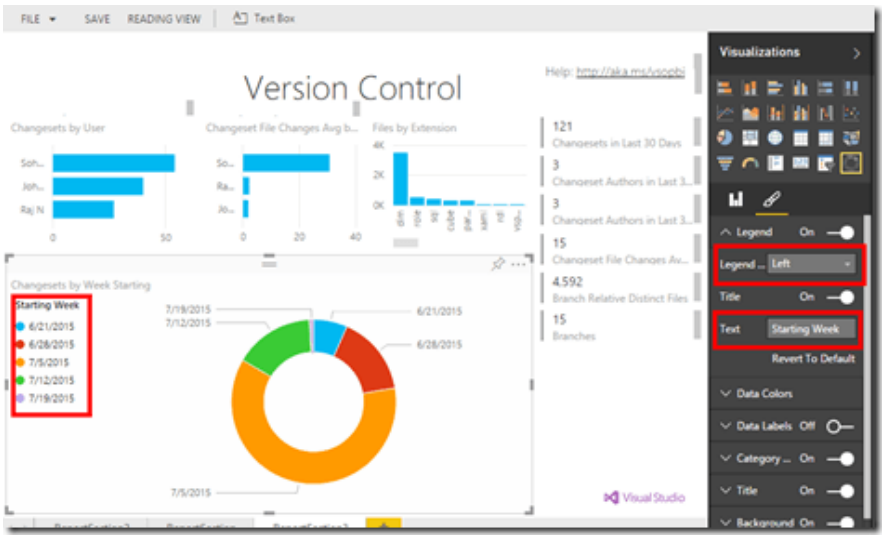


- In the Fields pane on the right side of the page you can see some queries are highlighted in yellow. These queries are the queries that have some fields participating in the report. You can expand them to find the fields. We can modify the report fields by dragging and dropping the fields into the reporting area OR into the "Fields" section of the Visualisation pane.
- As you can see we can easily change the report type by selecting another report type from the Visualisation pane. In this sample I want to change the report type from Bar Chart to Donut Chart.

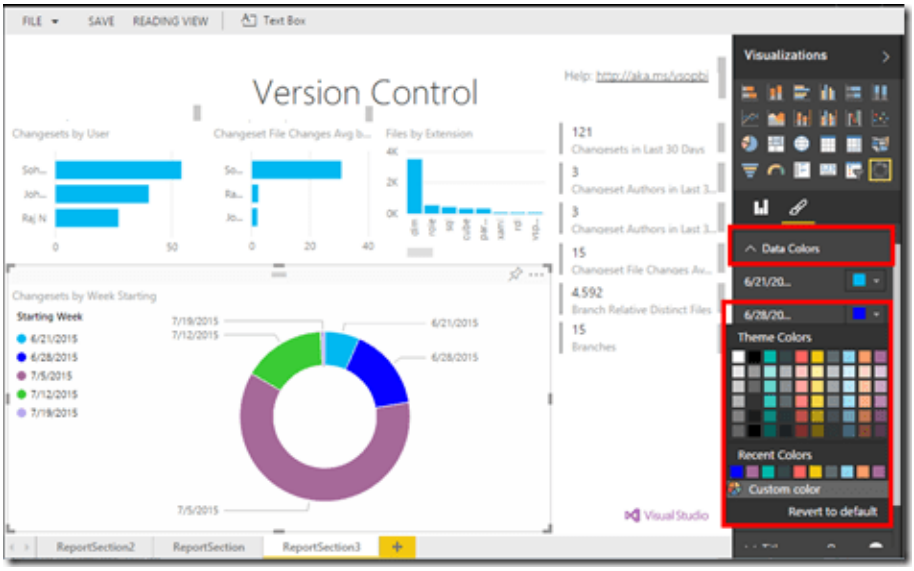


- To change the Donut's feel and look click on "Format" from the Visualisation pane

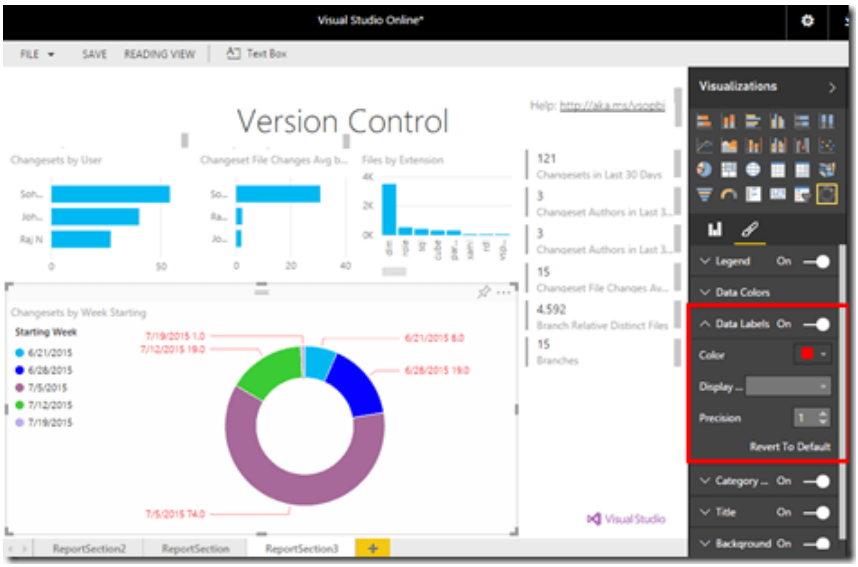
- Let's make some changes on the legend. From legend select "Left" and change the legend text.



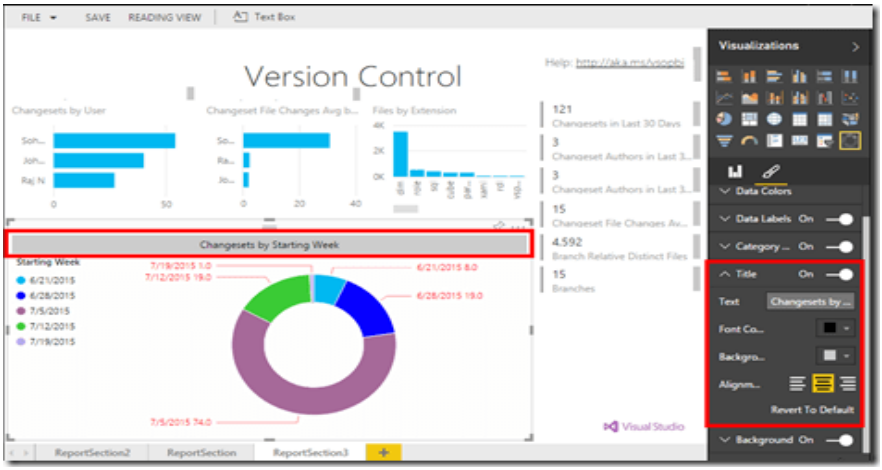
- If you don’t like the chart’s colour expand “Data Colours”



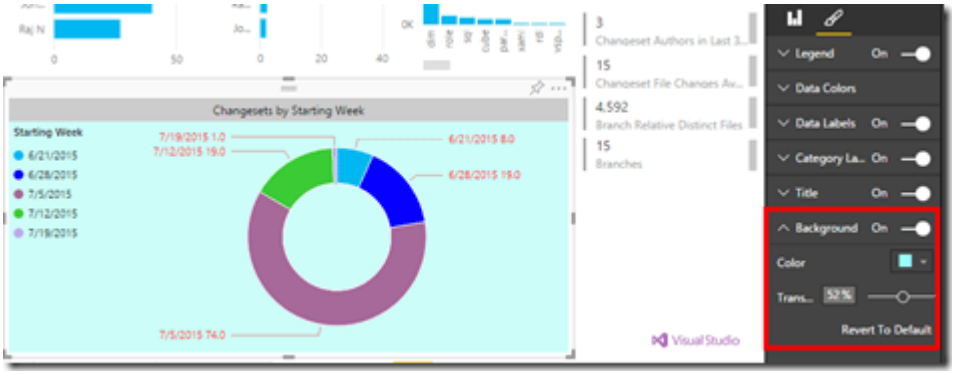
- You can also simply enable Data labels by clicking on “Data Labels”. You can customize the data labels by changing colour or precision



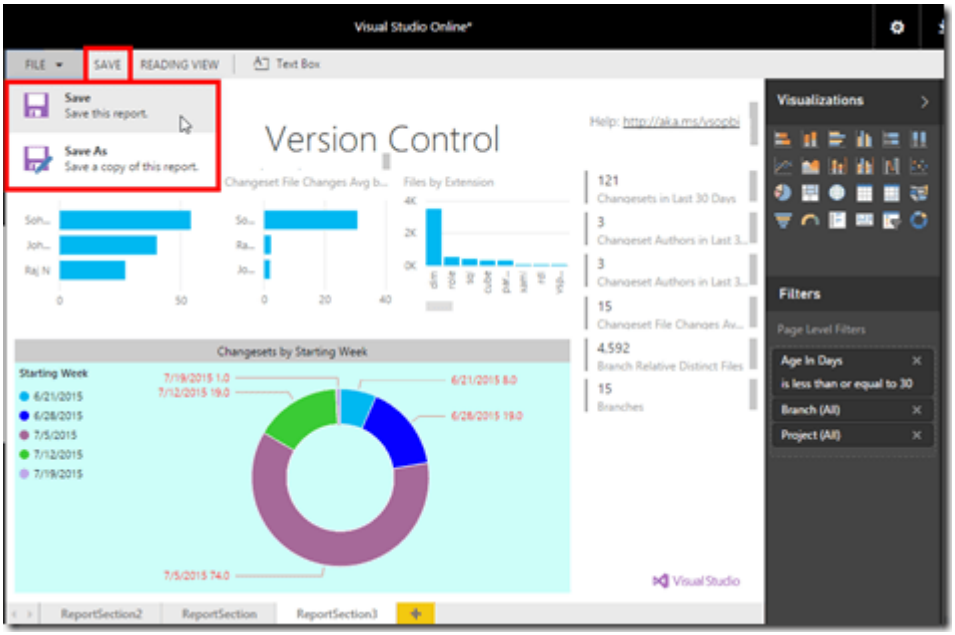
- You can also change the chart’s title text and customize it as desired by expanding “Title”



- To change the chart's background colour or transparency expand "Background" and customise it

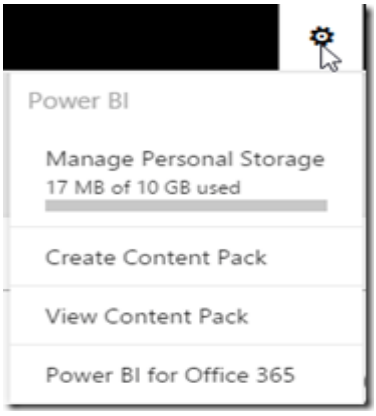


- As you noticed you can always back to default by clicking on "Revert to Default"
- You can save the report or save it as a new report



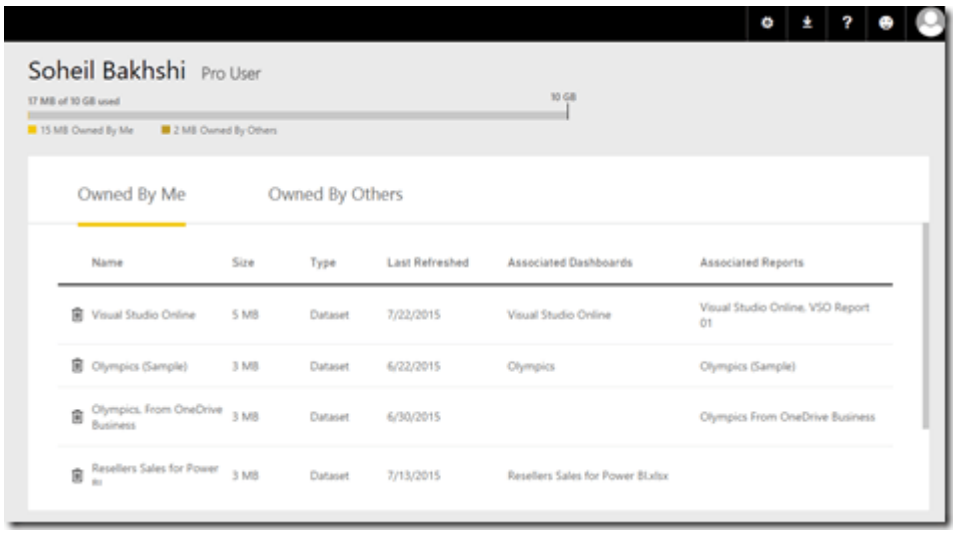
Settings

You have more control on your Power BI now. Click on "Settings" button.



Manage Personal Storage

Click on Manage Personal Storage to see how you consumed your storage. You can also see the volume consumed by the datasets that are shared with you by clicking on “Owned by Others”. If you don’t want a dataset anymore you can delete it from here.

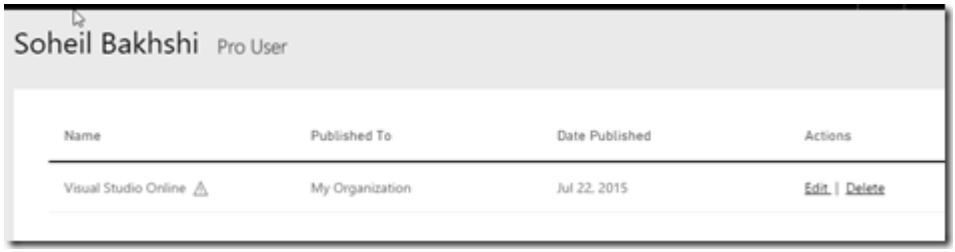


Create Content Pack

You can create a new content pack directly from here. As I covered this part earlier I’m not going though it again.

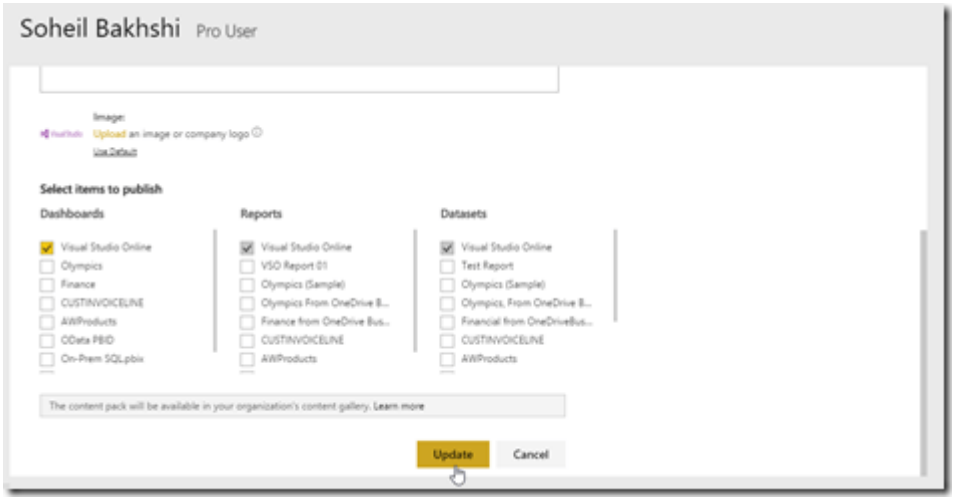
View Content Pack

You can view, edit or delete existing content packs.



As you see there is a warning icon on the right side of the content pack. It’s because I’ve made some changes to the dashboard of the published content pack. If I hover over the warning icon I can see more information.

This is a really awesome feature that I can update the content pack so that the users can always have the latest versions. To update the content pack just simply click on “Edit” then click “Update”.



Power BI for Office 365

This is another cool feature which is newly added. Now you can easily switch to your Power BI for Office 365 account. There is also a link for Power BI which is newly added to Power BI 365.