Power BI

Dashboard in an **Hour**

by Power BI Team, Microsoft

Contents

Problem Statement

The dataset provided focuses on sales and market share analysis. This type of analysis is very common for the office of a Chief Marketing Officer (CMO). Unlike the office of the Chief Financial Officer (CFO), a CMO is focused not only on company's performance internally (how well do our products sell) but also externally (how well do we do against the competing products).

Our company, VanArsdel, manufactures expensive electronic products that could be used for fun as well as work and it sells them directly to consumers in three major markets. VanArsdel and its competitors have retained a 3rd party marketing company to collect and anonymize industry sales so that all participants can benchmark themselves.

Sales data along with details of Product, Date and Geography are available in an Excel workbook. Data from these sources need to be brought together to analyze and report on.

Document Structure

This document has two main sections:

- **Power BI Desktop**: This section highlights the features available in Power BI Desktop and walks the user through the process of bringing in data from the data source, modeling and creating visualizations.
- **Power BI Service**: This section highlights the features available in Power BI Service including the ability to publish the Power BI Desktop model to the web, creating and sharing dashboard and Power Q & A.

The document flow is in a table format. On the left panel are steps the user needs to follow and in the right panel are screenshots to provide a visual aid for the users. In the screenshots, sections are highlighted with red boxes to highlight the action/area user needs to focus on.

Prerequisites

Following prerequisites and setup has to be complete for successful completion of the exercise:

- You must be connected to the internet
- **Signup for Power BI:** Go to http://aka.ms/diahtraining and sign up for Power BI with a business email address. If you cannot sign up for Power BI, let the instructor know
- Please go to http://app.powerbi,com and **Sign in** using your **Power BI account**
- At minimum, a computer with 2-cores and 4GB RAM running one of the following version of Windows: Windows 10, Windows 7, Windows 8, (64-bit preferred), Windows 8.1, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2
- Microsoft Power BI Desktop requires Internet Explorer 9 or greater
- Verify if you have 32-bit or 64-bit operating system to decide if you need to install the 32-bit or 64-bit applications
    - Search for computer on your PC, right click properties for your computer
    - You will be able to identify if your operating system is 64 or 32 bit based on "system type" as shown below
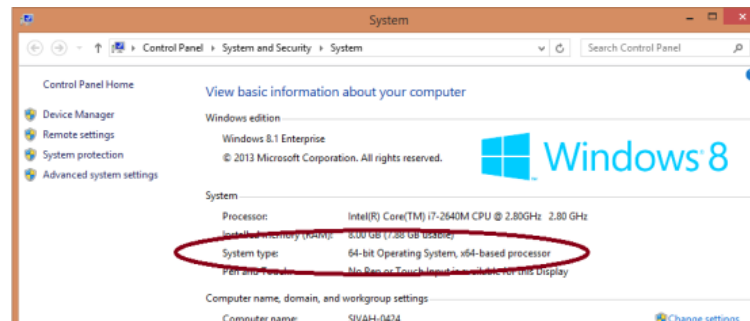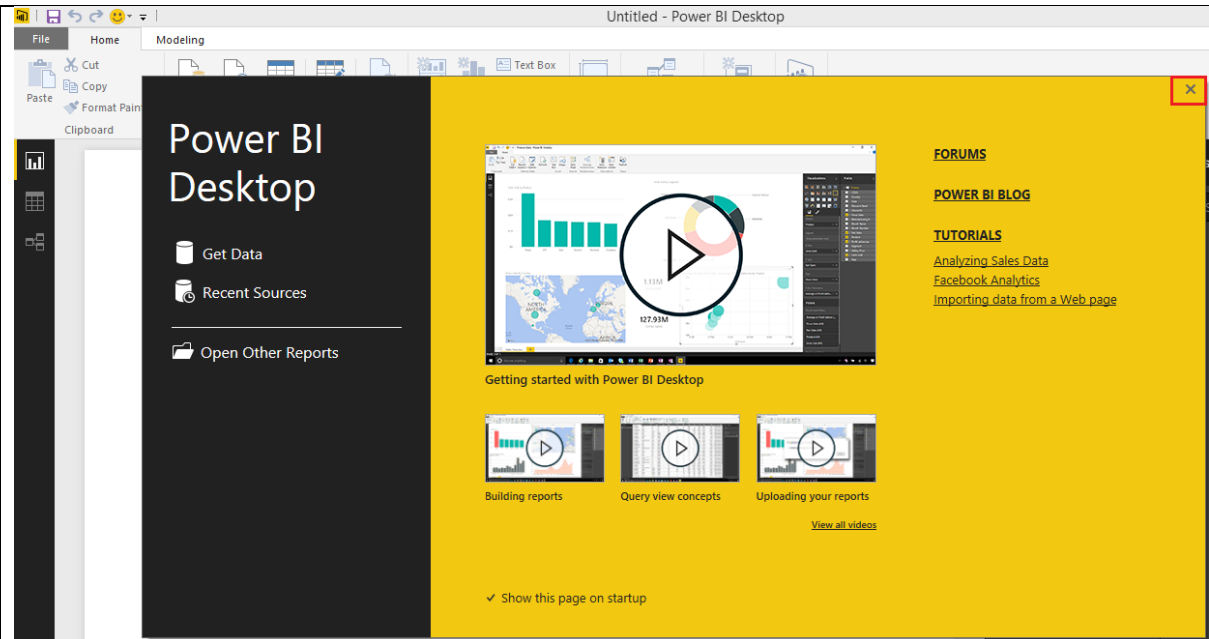

- **Download the Power BI Content**: Create a folder called **DIAH** on an appropriate drive on your local machine. Copy all contents from the folder called **Dashboard in an Hour Assets** on the flash drive to the **DIAH** folder on your local drive. E.g. C:\DIAH
- **Download and install Power BI Desktop:** Download and install Microsoft Power BI Desktop from http://www.microsoft.com/en-us/download/details.aspx?id=45331. Optionally, you can also install the Power BI Desktop tool from the **Power BI Desktop Install** folder on the flash drive. Please choose appropriate 64-bit or 32-bit version depending on your platform. Microsoft Power BI Desktop is available for 32-bit (x86) and 64-bit (x64) platforms

    NOTE: This lab is using real anonymized data and is provided by ObviEnce LLC. Visit their site to learn about their services: www.obvience.com . This data is property of ObviEnce LLC and has been shared for the purpose of demonstrating PowerBI functionality with industry sample data. Any uses of this data must include this attribution to ObviEnce LLC.

## Power BI Desktop - Get Data

<table>
<tr>
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1. If you have not already done this, on your local machine, create a folder called **DIAH**
2. Copy contents provided to **DIAH** folder
3. Launch **Power BI Desktop**
4. Once Power BI Desktop opens, startup screen opens as well
5. Close startup screen by clicking on "**x**" on the top right corner

Note: You can click the play button at a later time to get an overview of Power BI Desktop

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First step is to load data

6. Data is available in Excel workbook. To import data, select **Get Data -> Excel** from the ribbon
7. Browse to **DIAH/Data** folder and select **Data.xlsx**
8. Click **Open**

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</tr>
</table>
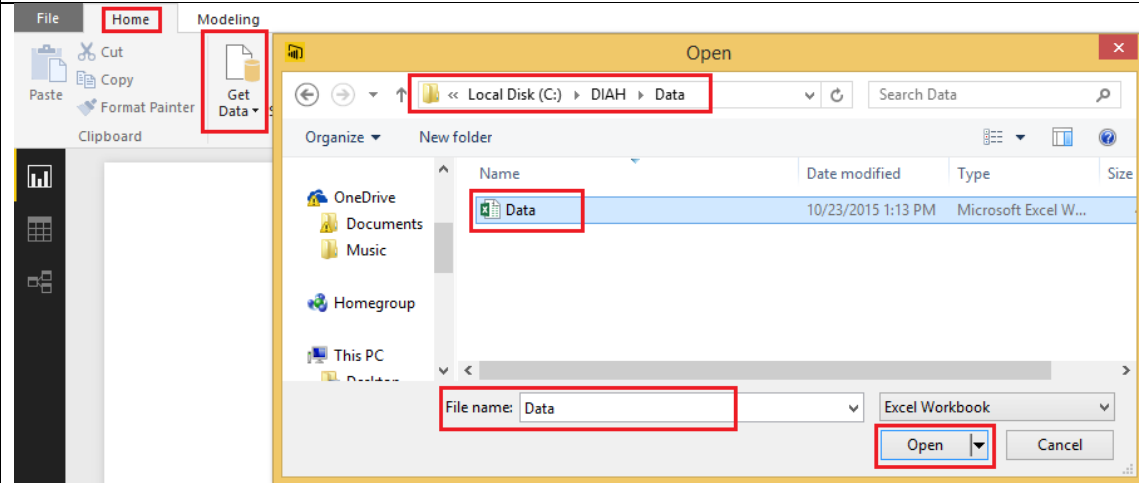
Navigator dialogue opens listing four sheets that are available in the workbook

9. Select all the sheets by clicking on the checkbox next to each sheet

As you select each worksheet, notice a preview of the data is loaded in the right panel

Notice there are 3 buttons at the bottom of Navigator dialogue
Clicking on **Load** will load the data to the data model
Clicking on **Edit** will open Query Editor. This will give us an opportunity to transform data
Clicking on **Close** will close the dialogue without loading data

10. Click on **Edit**

Query editor opens. The editor provides options to transform data

Notice each worksheet is loaded as a query
Also notice, on the **Query Settings** panel on the right under **APPLIED STEPS** section each step is recorded

Steps include Source, promoting first row to a header (since first row is a header)

11. Highlight **Date** query in the left panel. Notice **Date** field has a **calendar** icon in the header row indicating the field is of data type **Date** 12. In case, Date field is **not** of data type **Date**, then select **Date** field and change Data type using **Home -> Data Type** located on the ribbon	
13. For our purposes, we do not need Month column, so highlight **Month** column 14. From the ribbon select **Home -> Remove Columns - > Remove Columns** Notice this removes Month Column and the step is added to **APPLIED STEPS** section	

Now we have all the data in the query editor, let's load to Power BI Desktop
 	
15. From the ribbon, select **Home -> Close & Apply**. There are 3 options
    o **Close & Apply**: This closes Query Editor and loads the data to Power BI Desktop
    o **Apply**: This loads data to Power BI Desktop without closing Query Editor
    o **Close**: This closes Query Editor without loading data
16. Select **Close & Apply**	

Power BI Desktop - Manage Relationship

Notice Apply Query Changes dialogue appears which shows the status of the load. Once load is complete, this dialogue closes

Now that we have loaded data from 4 tables, we need to ensure the model identifies relationship between these tables

1. From the ribbon, select **Home -> Manage Relationships**
   Manage Relationships dialogue opens
2. Notice Power BI Desktop is able to identify and create relations between some of the tables we loaded
   - o Relation is created between Sales and Product
   - o Relation is created between Sales and Geo

   However, there is no relationship between Sales and Date
3. Click on **New** button. Create Relationship dialogue opens
4. Select **Sales** from the first drop down
5. Select **Date** from the second drop down
6. Select **Date** field from Sales and Date tables
7. Click **OK**
8. Notice now a relationship is created between Sales and Date. Click on **Close** to close the dialogue

Power BI Desktop - Create Report

In this section we will create a report that will help the office of CMO to analyze Sales Revenue across all manufacturers for the year 2015.
Report at the end of the section will look like this
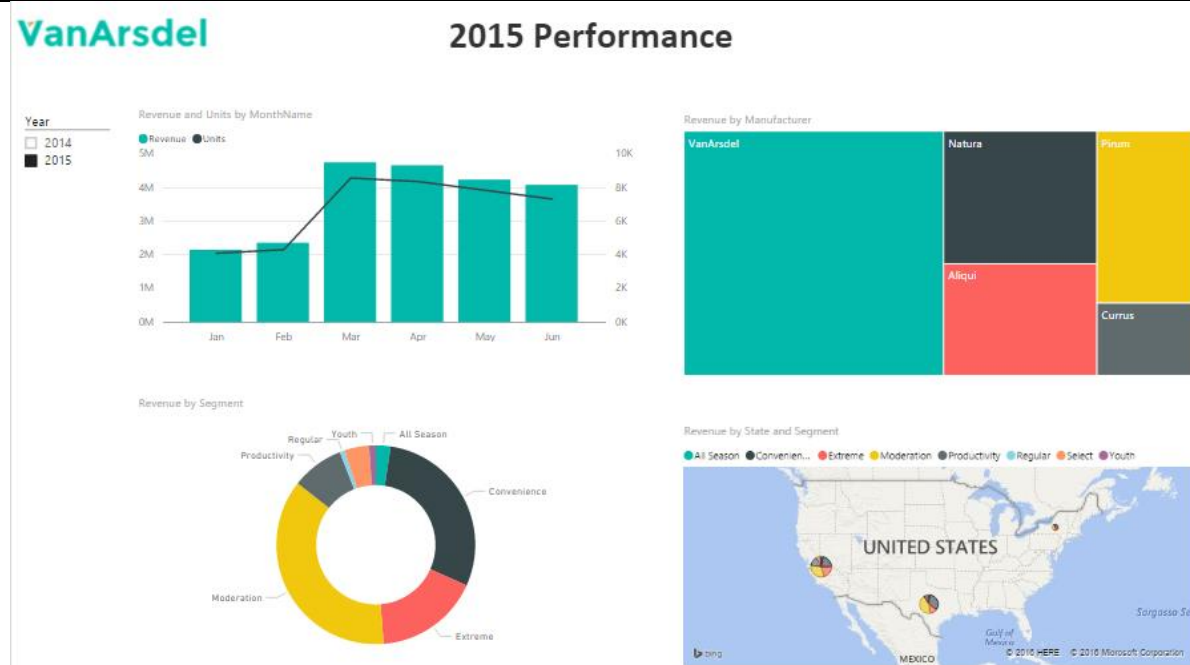
Let's start by creating a year slicer

1. If you are already not there, click on the report icon on the left panel
2. In the **Fields section**, expand **Date** and select **Year** field
3. From the Visualization section select **slicer.** This will make Year a slicer
4. Select **2015** from the slicer. This will filter to display results for year 2015
5. Resize the slicer as needed
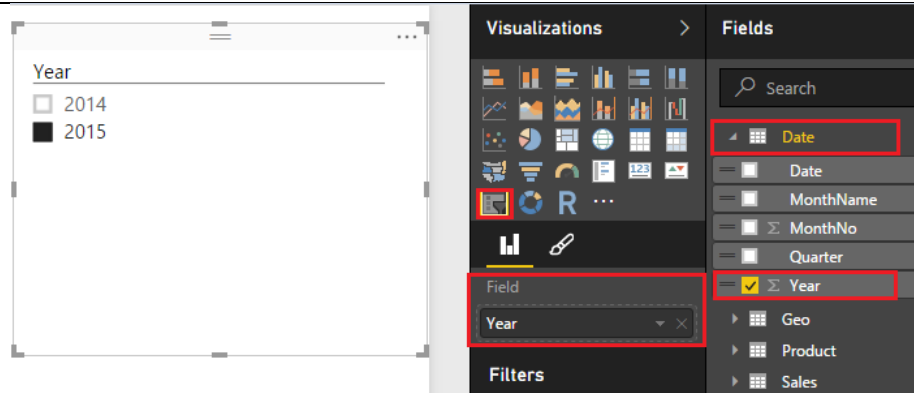
Now let's analyze the Sales by month for 2015

6. Click on blank section in the report pane
7. From the Fields section, expand **Date** table
8. Select **MonthName** field
9. Expand **Sales** table and select **Revenue** field
10. From the Visualization section select **Line and Clustered Column chart**
11. Expand **Sales** table and drag **Units** field to Line Values
12. Resize the chart as needed

Notice the month names are sorted alphabetically. Let's update MonthName field to be sorted by calendar month

13. From the **Fields** section expand **Date** table
14. Highlight **MonthName** field in Fields section
15. From the ribbon select **Modeling -> Sort by Column -> MonthNo**

Notice now MonthName in the report pane is sorted as expected
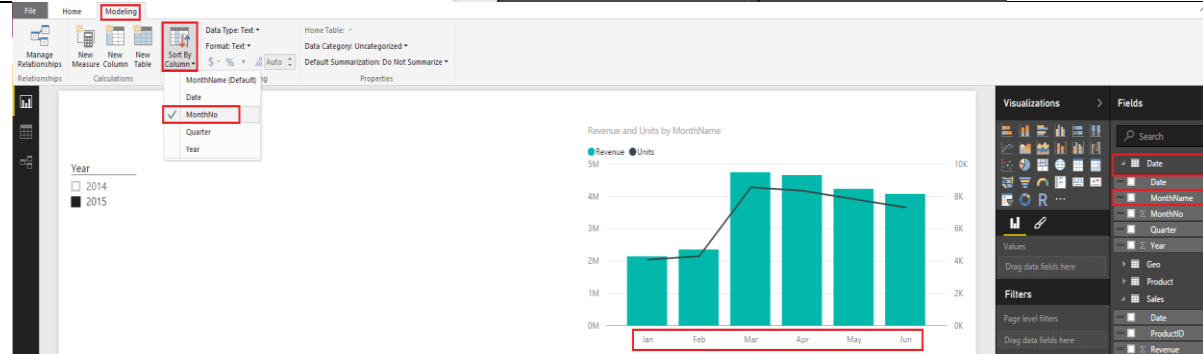
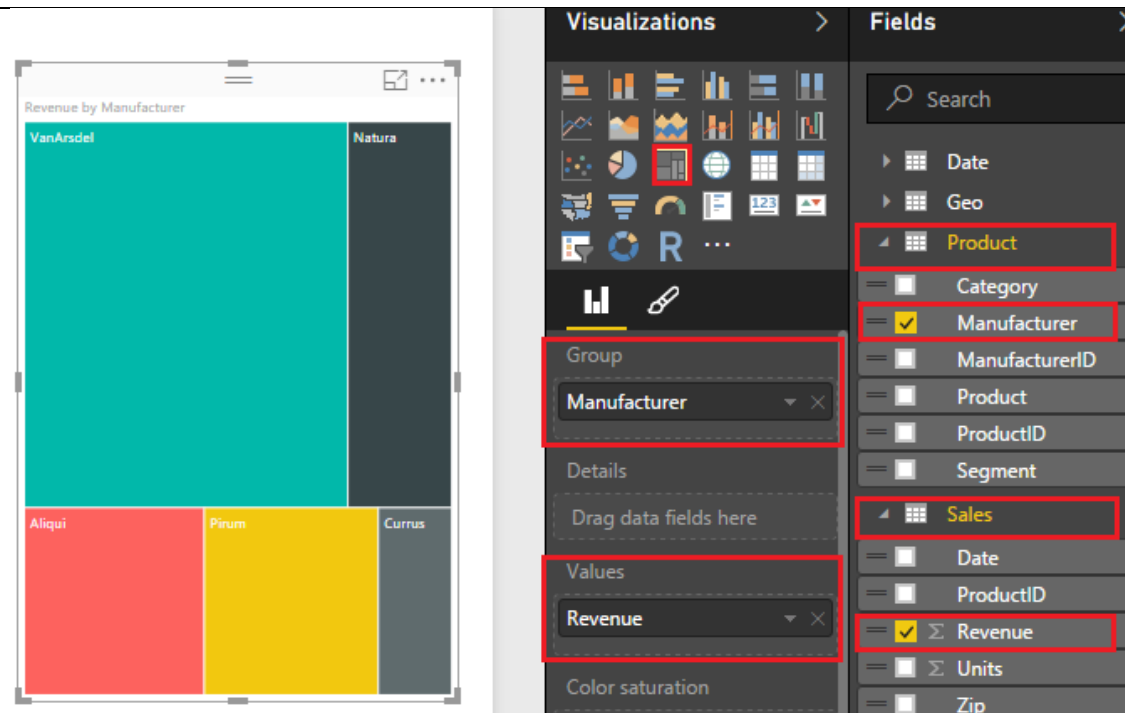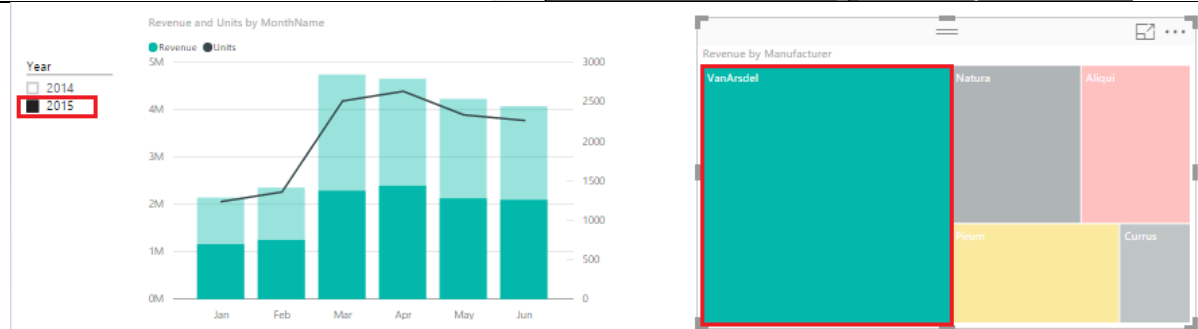|	
Let's create a visual to represent the sales by manufacturer 16. Click on the white space in the report pane 17. From the **Fields** section expand **Product** table and select **Manufacturer** field 18. From the **Fields** section expand **Sales** table and select **Revenue** field 19. From the Visualization section select **Treemap chart** Notice this creates a Treemap visual that breaks down sales by manufacturer for the year 2015 20. Resize and rearrange the chart as needed	
21. Click on **VanArsdel** in Treemap chart and notice the Line and Clustered Column chart updates to reflect your selection Now data is filtered for the year 2015 and the highlighted portion of Line and Clustered Column chart shows Sales for manufacturer VanArsdel 22. Click on VanArsdel in Treemap chart again to remove VanArsdel filter	

Let's create visual that will represent the sales by Segment

23. Click on the white space in the report pane
24. From the **Fields** section expand **Product** table and select **Segment** field
25. From the **Fields** section expand **Sales** table and select **Revenue** field
26. From the Visualization section select **Donut** chart

Notice this creates a Donut visual that breaks down sales by segment for the year 2015

27. Resize and rearrange the chart as needed
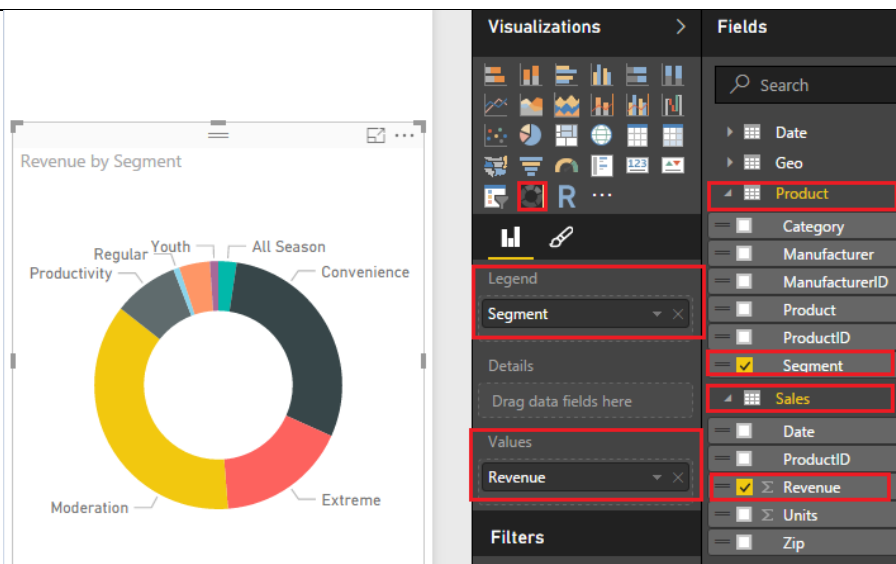
28. Click on **Moderation** in Donut chart and notice other charts updates to reflect your selection

In Treemap notice that Moderation segment forms a big percent of VanArsdel's sales whereas it's a very small percent of Aliqui's sales

In Line and Clustered Column chart notice that Moderation forms a big percent of Sales each month

29. Click on Moderation in Donut chart again to remove Moderation filter

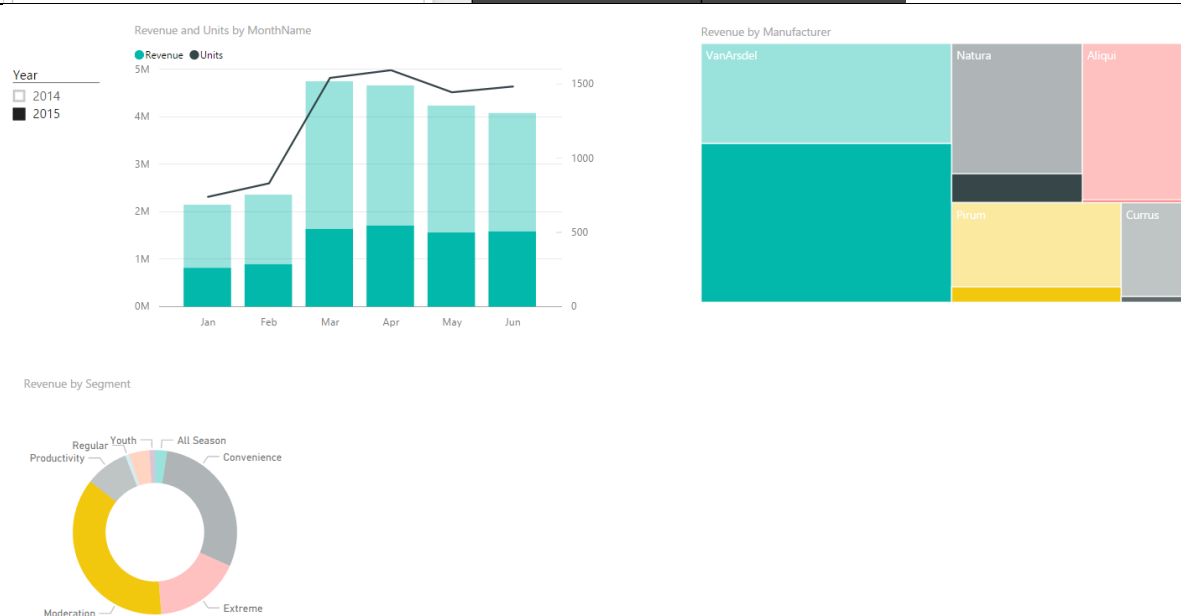|	
CMO also wants to analyze Sales by State 30. Click on the white space in the report pane 31. From the **Fields** section expand **Geo** table and select **State** field Notice a map visual is created by default, with three dots representing the three states 32. From the **Fields** section expand **Sales** table and select **Revenue** field 33. From the **Fields** section expand **Product** table and select **Segment** field Notice the dots are updated to pie charts for each state 34. Clicking on a cell in a pie chart, updates the other visuals on the page	
Let's add a report title 35. From the ribbon, select **Home -> Text Box** 36. Enter **2015 Performance** in the text box 37. Highlight 2015 Performance and change font size to **40** and change font type to **bold** 38. Resize the text box and place it on the top of the page	
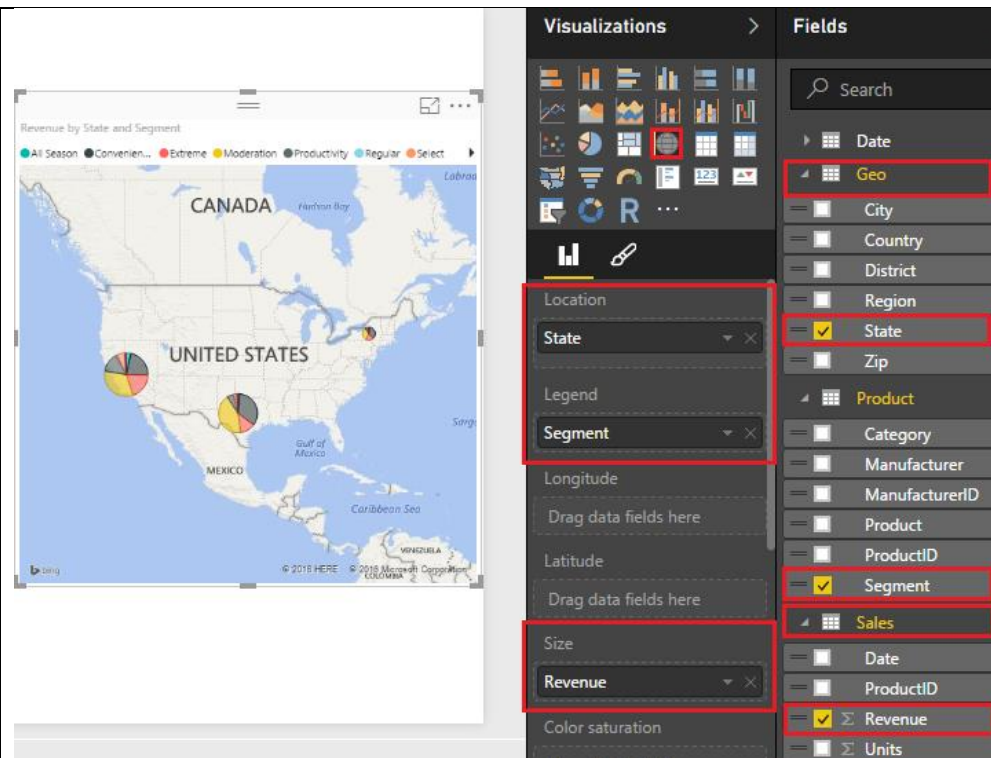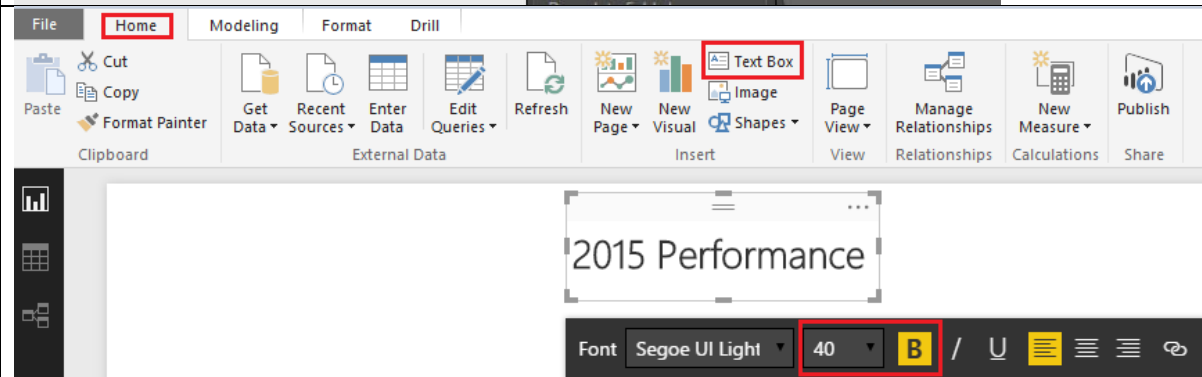
Let's add a logo to the report

39. From the ribbon, select **Home -> Image**
40. Browse to the DIAH/Data folder created earlier in the lab
41. Select **Logo.gif**
42. Resize the image and position it on the top left of the page
43. Resize the report elements as desired

Page 1 should look something like this

44. Save the file in DIAH folder by clicking on **File -> Save** and name it as DIAH

Power BI Service – Import Report

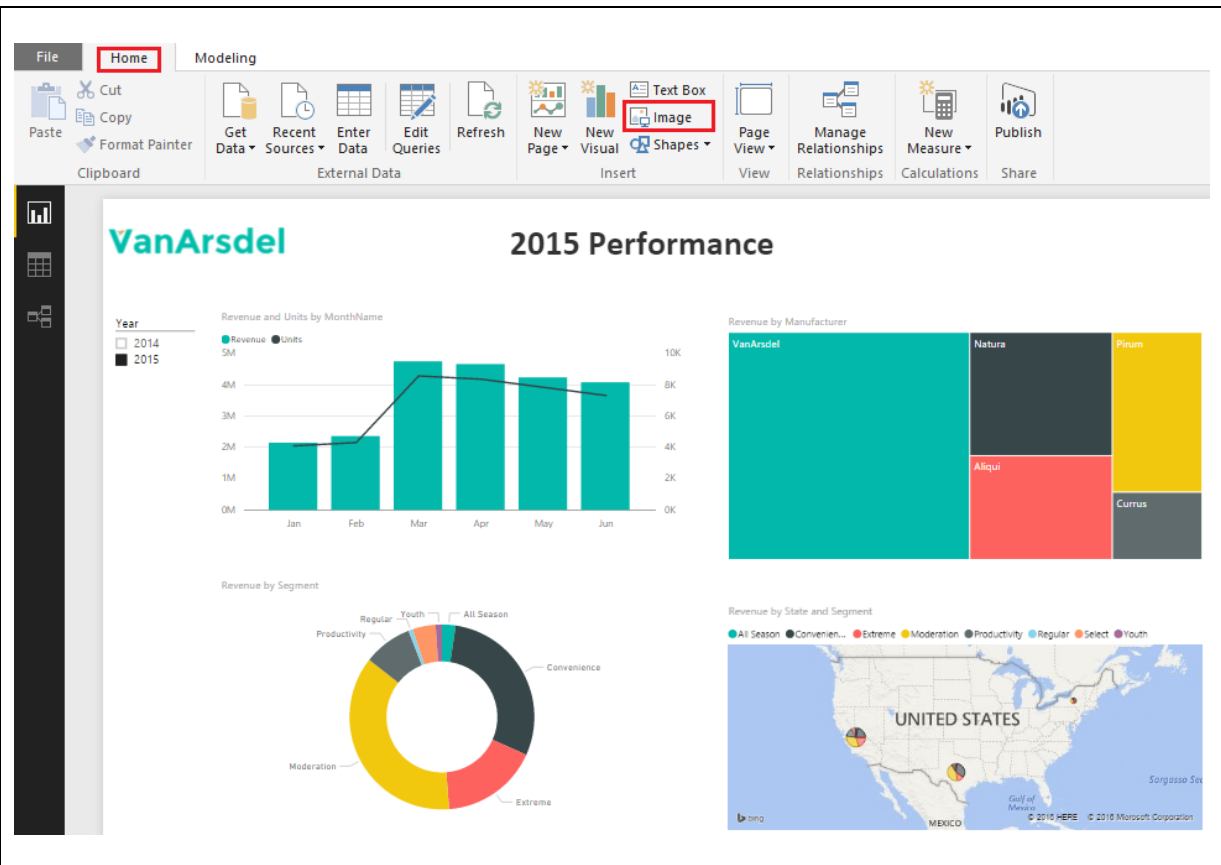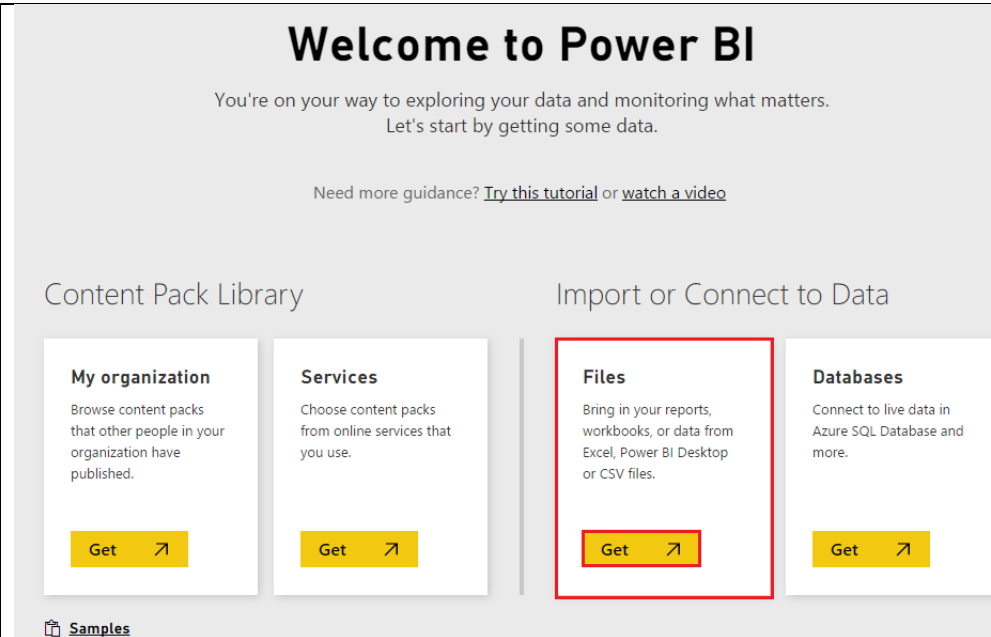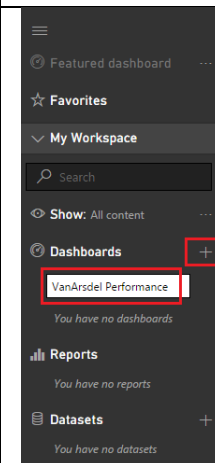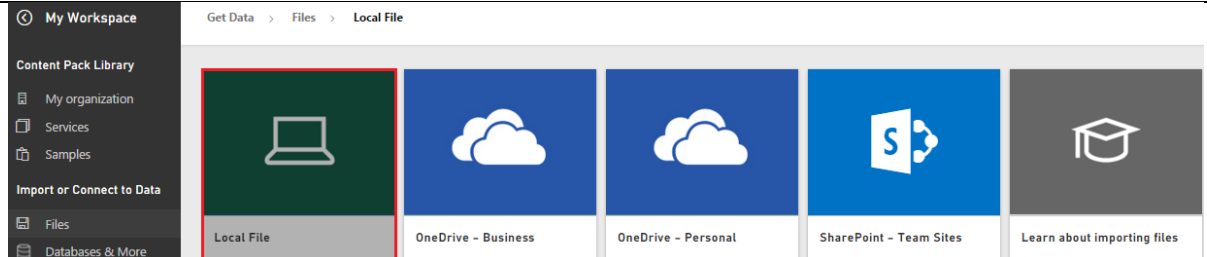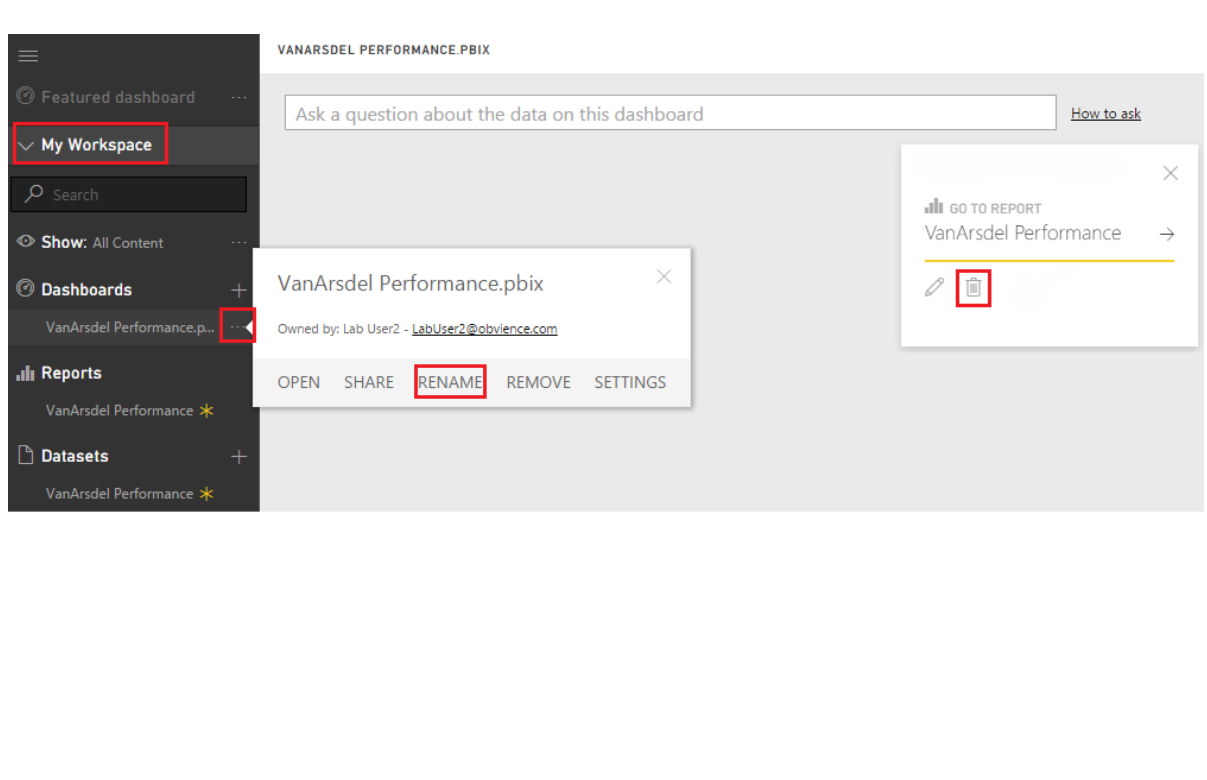1. If you have not signed up for a Power BI account go to http://aka.ms/diahtraining and sign up for Power BI with a business email address
2. If you have not already opened the app.powerbi.com page, please open the browser and navigate to http://app.powerbi.com
3. Sign in to Power BI using your user account. Once logged in, you will see **Welcome to Power BI** page
   Note: If you have already signed into Power BI previously, your screen will look different. Jump to Step 5
4. Click on **Get under Files** and jump to Step 9

Welcome to Power BI

You're on your way to exploring your data and monitoring what matters. Let's start by getting some data.

Need more guidance? Try this tutorial or watch a video

Content Pack Library

My organization
Browse content packs that other people in your organization have published.

Get ↗

Services
Choose content packs from online services that you use.

Get ↗

Import or Connect to Data

Files
Bring in your reports, workbooks, or data from Excel, Power BI Desktop or CSV files.

Get ↗

Databases
Connect to live data in Azure SQL Database and more.

Get ↗

Samples

5. You need to create a **Dashboard** before importing data. Click on the "**+**" sign next to Dashboards in the left panel
6. Notice a textbox appears. Enter **VanArsdel Performance** in the textbox and click **Enter**. This creates a new dashboard
7. Now let's connect and import data from the Power BI Desktop filer. Click on **Get Data** on bottom left hand side of the screen. You will be navigated to a Get Data page which looks similar to Welcome page
8. Click on **Get under Files**

Featured dashboard

⭐ Favorites

∨ My Workspace

🔍 Search

👁 Show: All content

⏱ Dashboards +
VanArsdel Performance
You have no dashboards

📊 Reports
You have no reports

🗄 Datasets +
You have no datasets

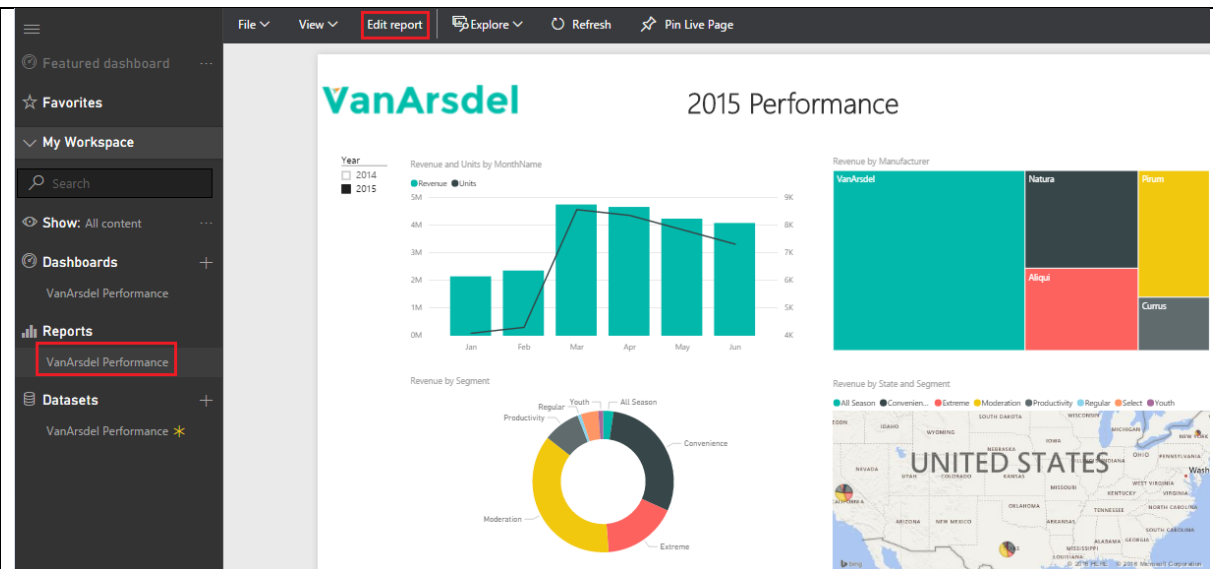|	
You will be navigated to **Get Data > Files** page 9. Select **Local File** 10. Browse to **DIAH** folder that was created earlier and select **VanArsdel Performance.pbix** file (this is the solution file created using Power BI Desktop)	
Note: Step 11 and 12 applies if you are a new user who is signing into http://app.powerbi.com for the first time and did not create a dashboard manually (Steps 5 through 8) Notice that you are now navigated to My Workspace page and Dashboard called VanArsdel Performance.pbix 11. In the left panel, hover over **VanArsdel Performance.pbix** and click on the **ellipsis** 12. Select **Rename** to rename the dashboard as **VanArsdel Performance** The dashboard will show a tile for the imported Power BI Desktop file, linked to its reports. Please wait for the file to be fully loaded into the Dashboard 13. We do not need the default tile. Hover over the tile and click on the **ellipsis** on the top right corner and click on the **delete** icon	

Power BI Service – Create Dashboard

In this section we will create a dashboard that will help the office of CMO to compare VanArsdel's performance with the competitors, figure out VanArsdel's revenue and performance compared to last year in a glance. At the end of the section, we will create a dashboard that looks like this
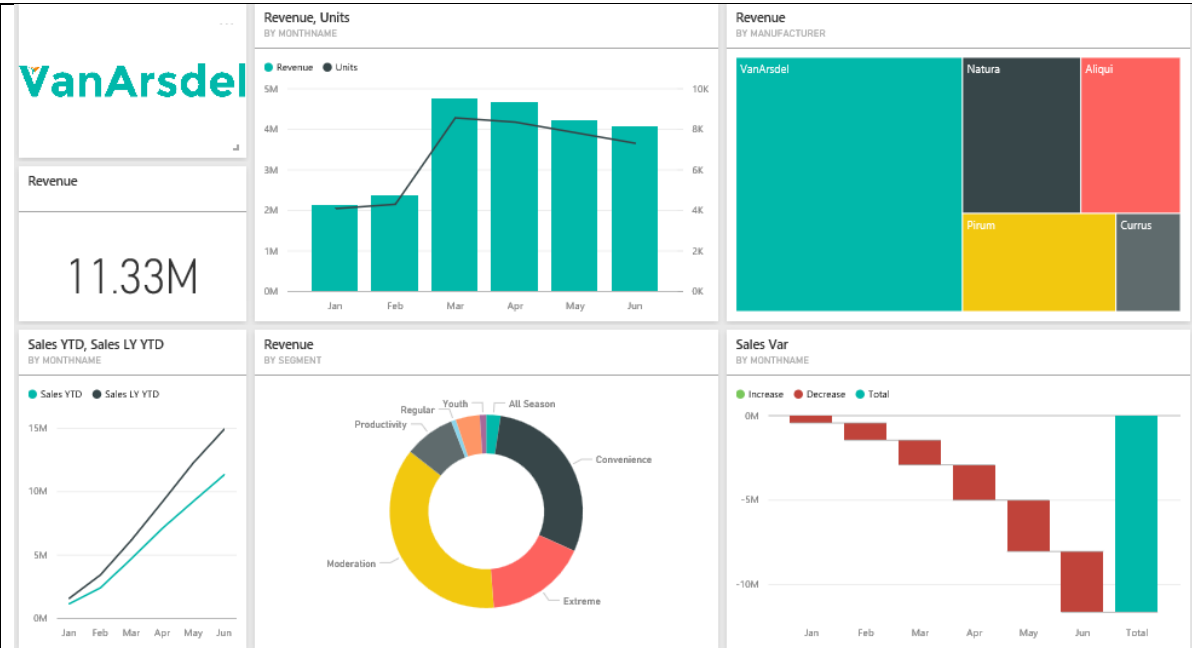
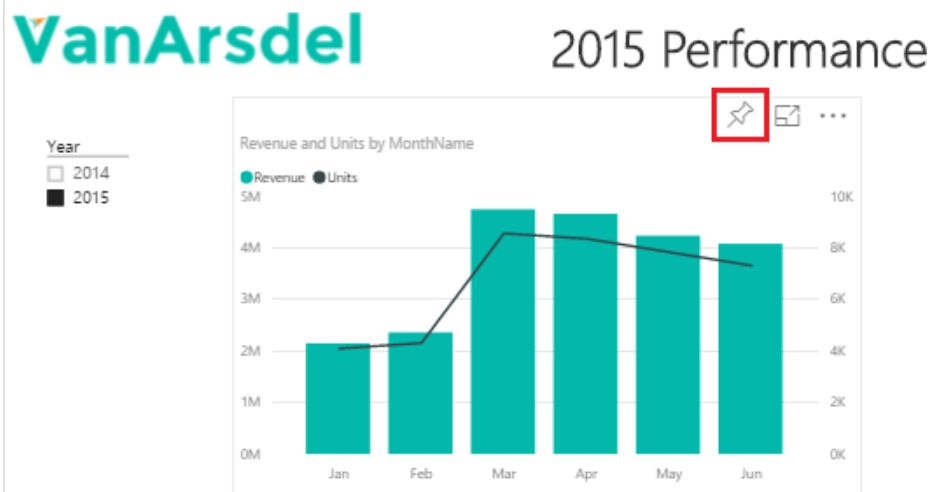|	
1. Expand **Reports** section and click on **VanArsdel Performance** Notice the report created in Power BI Desktop is displayed with the two pages 2. Click on different chart elements and notice the charts are interactive (similar to Power BI Desktop) 3. On the top menu click on **Edit report**	
This will open the report in Edit mode Notice the layout is similar to that of Power BI Desktop Report can be edited or new pages added in this view 4. Page 1 of the report is similar to the report you built earlier in the lab. Let's **rename** it by double clicking on Page 1 on the bottom of the screen 5. Rename page to **2015 Performance** 6. Navigate to Page 2 of the report by clicking on Page 2 on the bottom of the screen. Page 2 of the report compares VanArsdel's performance with the competitors for the year 2015 7. Rename the page to **vs Competitors**	
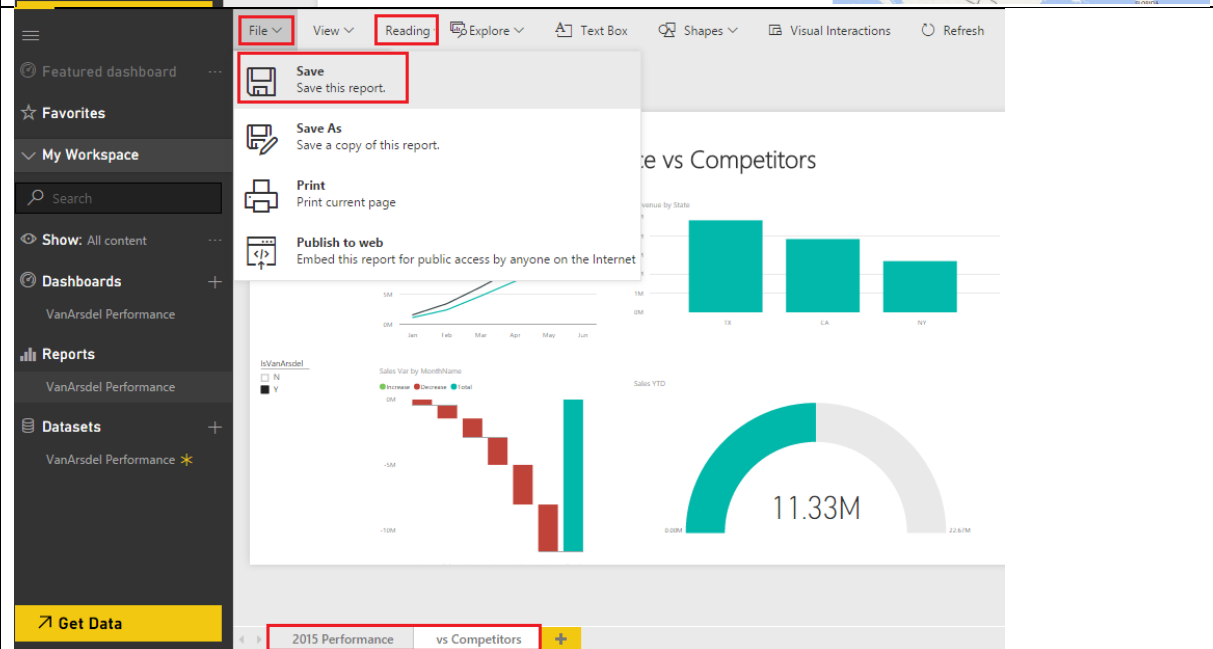
8. From the top menu, click on **File -> Save** to save the changes 9. On the top menu click on **Reading** to get back to View only mode	
10. Click on 2015 Performance page at the bottom of the screen to navigate to **2015 Performance** report 11. Hover over Revenue and Units by MonthName chart and notice a **Push Pin** appears on the top right corner 12. Click on the **Pin**	
Pin to Dashboard dialogue appears 13. There is an option to create a New dashboard. Since we already have a dashboard, let's select **Existing dashboard** and VanArsdel Performance from the drop down 14. Click **Pin** button. This will pin the visual as a tile in the dashboard	

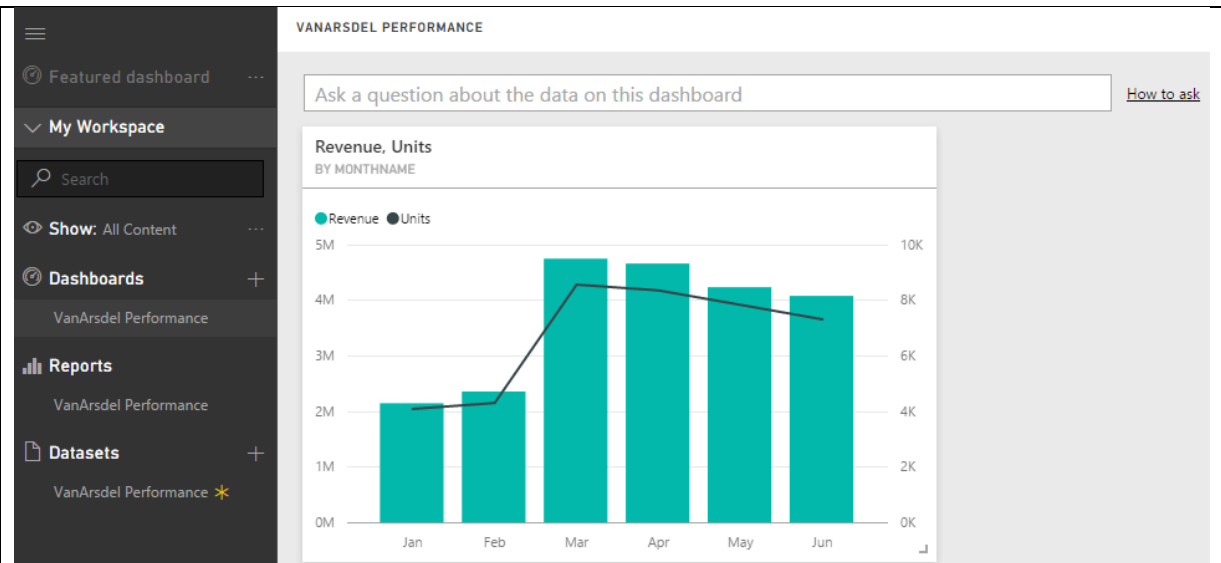|	
15. Click on **VanArsdel Performance** in Dashboards section Notice Revenue and Units by MonthName chart element is available in the dashboard 16. Click on one of the month columns in the dashboard Notice the dashboard is not interactive, instead it navigates back to the report	
17. Hover over the **Treemap** chart in 2015 Performance report page and pin it to the VanArsdel Performance dashboard	
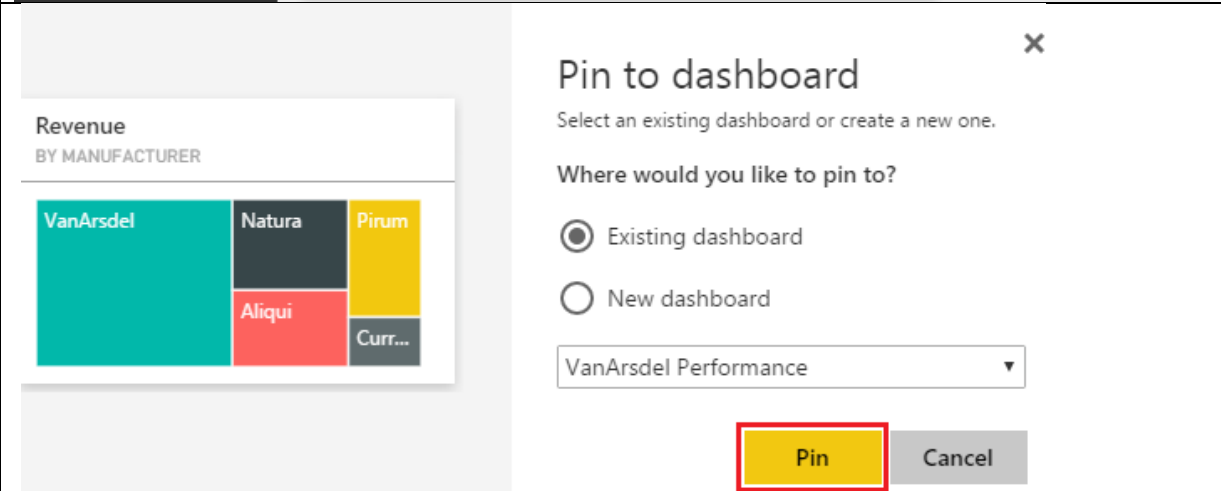
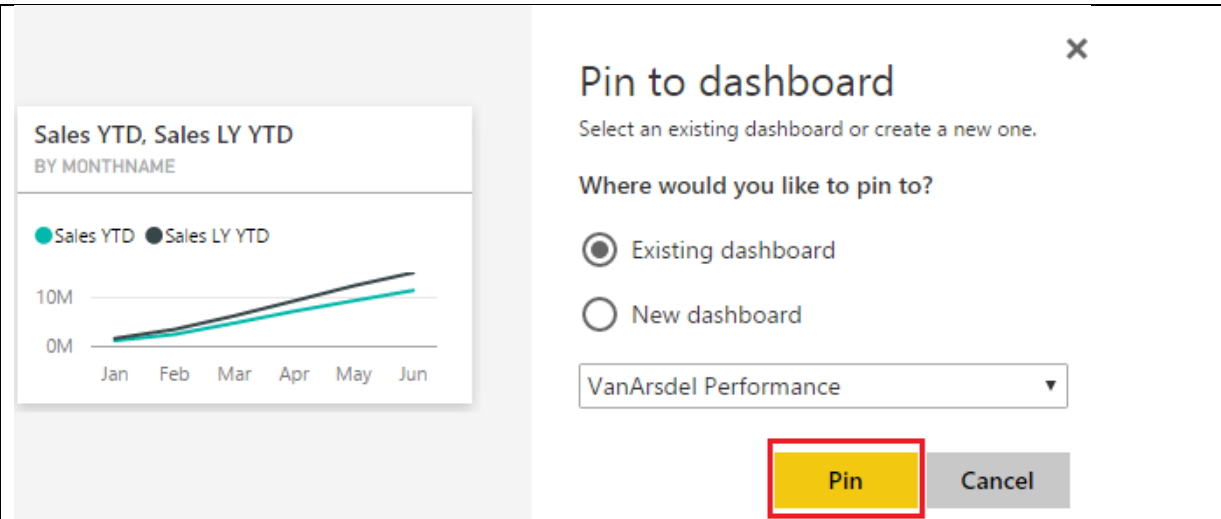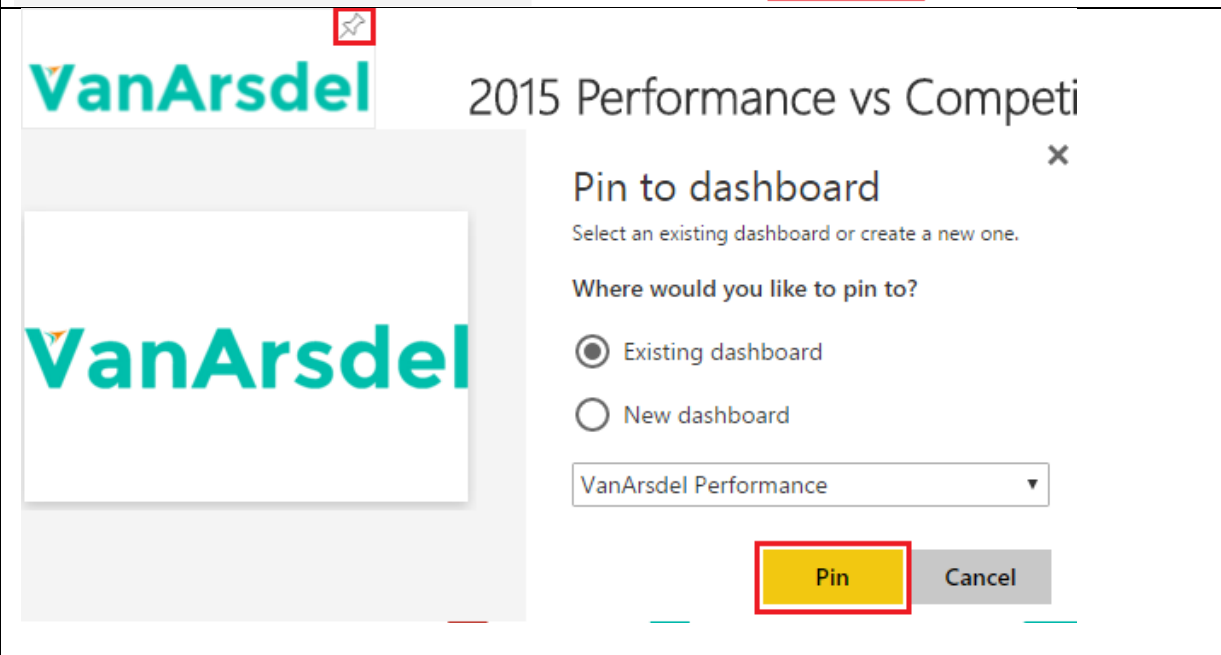|	
18. Hover over the **Donut** chart and pin it to the VanArsdel Performance dashboard	
19. Navigate to **vs Competitors** page of the report CMO wants to compare VanArsdel's performance with that of the competitors for the year 2015 Notice there is a slicer called IsVanArsdel, if this slicer has a value "Y", it indicates that manufacturer is VanArsdel and "N" indicates competitors Key indicators the CMO wants to see on the dashboard is VanArsdel's performance this year and comparison of sales this year vs last year 20. Hover over **Waterfall** chart and pin the chart to existing VanArsdel Performance dashboard	
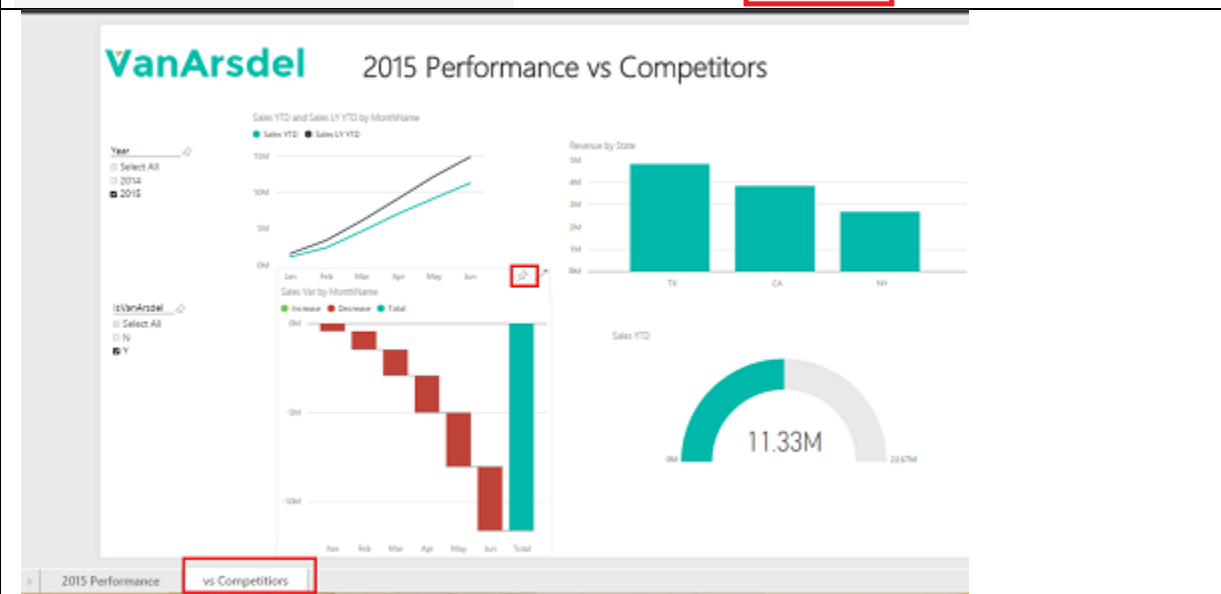
|	
21. Hover over **Line chart** and pin the chart to the existing VanArsdel Performance dashboard	
22. Hover over **VanArsdel logo** and notice you have the ability to pin the logo as well 23. Click on the push pin and pin the logo to the existing VanArsdel Performance dashboard	

24. Navigate back to VanArsdel Dashboard
    Notice the newly added chart elements are
    available in the dashboard
25. **Move the tiles** by hovering and dragging the
    tiles to the desired location
26. **Resize** the dashboard elements by dragging
    the element in or out from the bottom right
    corner (as shown in the figure for the Sales
    YTD, Sales LY YTD tile)
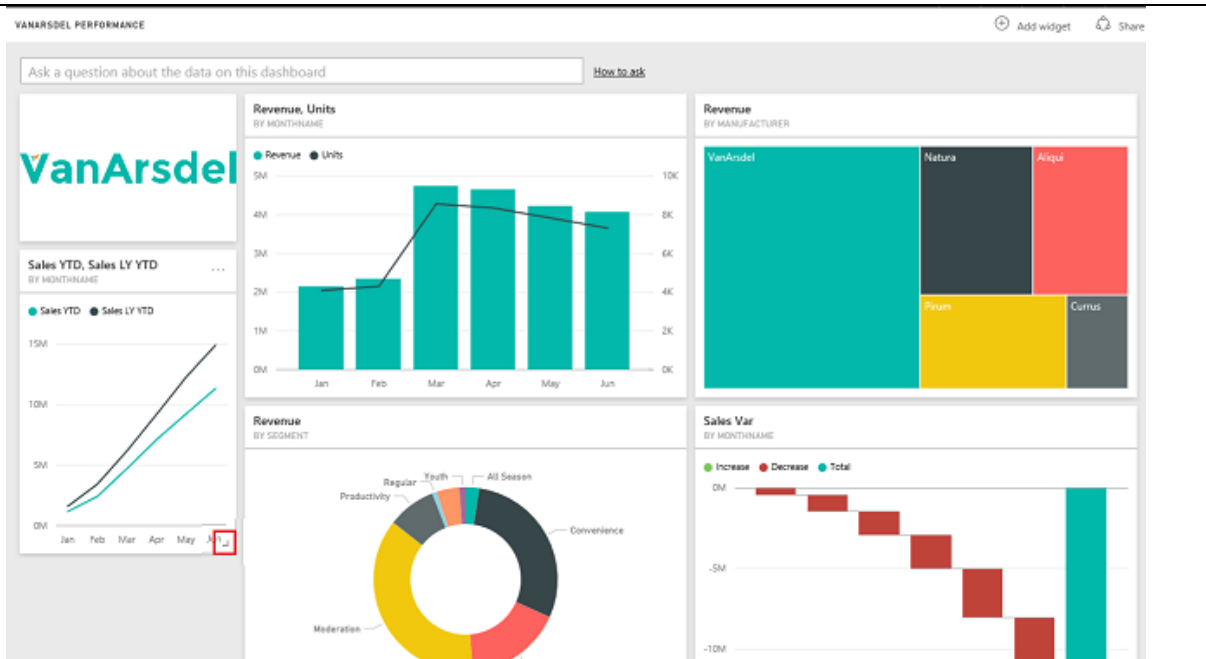
Power BI Service – Power Q & A

Notice on the top of the dashboard there is a text box which says "Ask a question about the data on this dashboard" 1. Enter **2015 VanArsdel Revenue** in the text box Notice Power BI Service is able to answer adhoc queries 2. Click on the **Pin** button on the top right corner, next to the text box 3. Pin it to existing VanArsdel Performance dashboard	
4. Navigate back to VanArsdel Performance dashboard and notice the newly created ad hoc card chart element is available on the dashboard Hover over Revenue tile and click on the **ellipse** on the top right corner. Notice there are options to **delete, edit, export** tile. There is also an option to **pin the tile to another dashboard**. Click on "X" to close the options 5. Click on the Revenue chart element Notice it navigates back to the Q&A page 6. Navigate back to the dashboard by clicking on VanArsdel Performance under Dashboard section in the left panel	
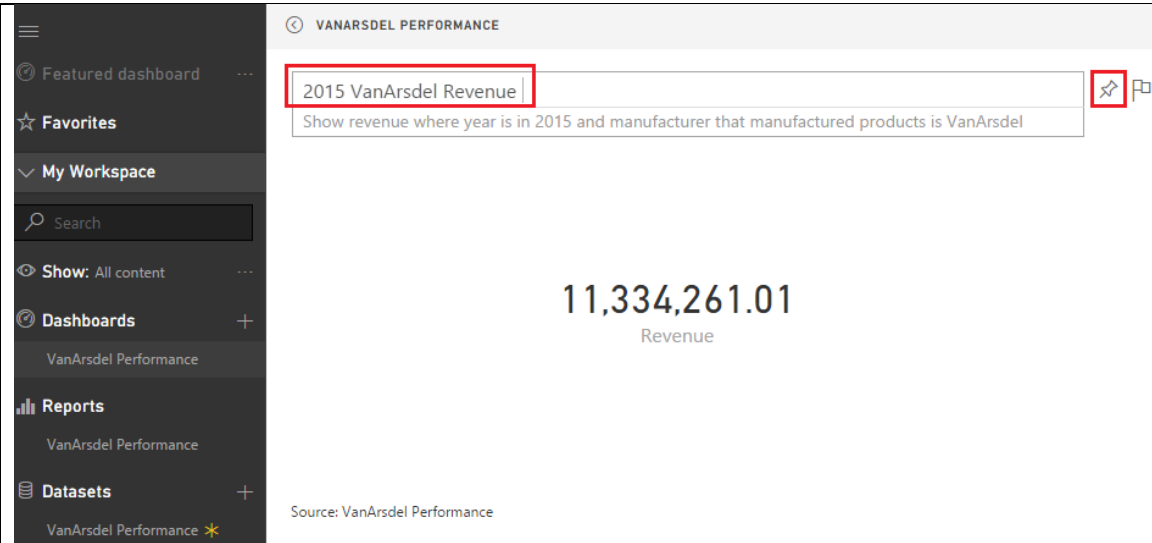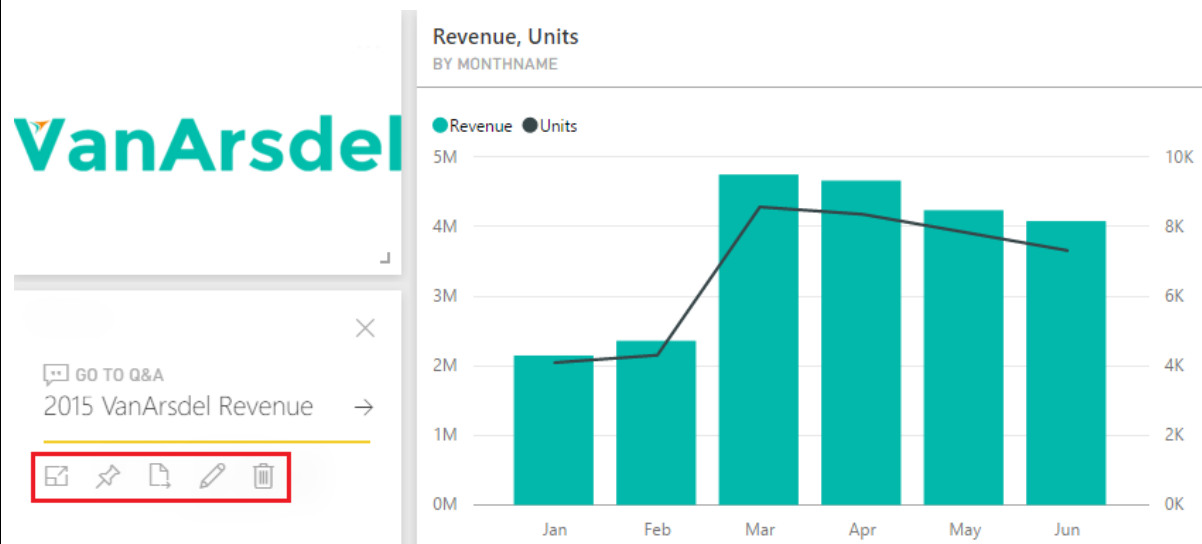
Power BI Service – Share Dashboard

1. Navigate back to VanArsdel Dashboard
2. Resize the tiles as desired. Notice the dashboard provides various sizing options The dashboard should look something like this

With this dashboard, CMO can compare VanArsdel's performance with the competitors, figure out VanArsdel's revenue and performance compared to last year in a glance

3. Notice on the top right of the screen there is **Share Dashboard** option. This can be used to share the dashboard
4. There is also an option to set Favorite dashboards
5. Click on the **ellipsis** on the top right of the screen next to Share option. This provides options to **duplicate, print, refresh dashboard** and **Set as Featured** dashboard. Set as Featured dashboard sets the dashboard as the default dashboard that user will land every time they login.
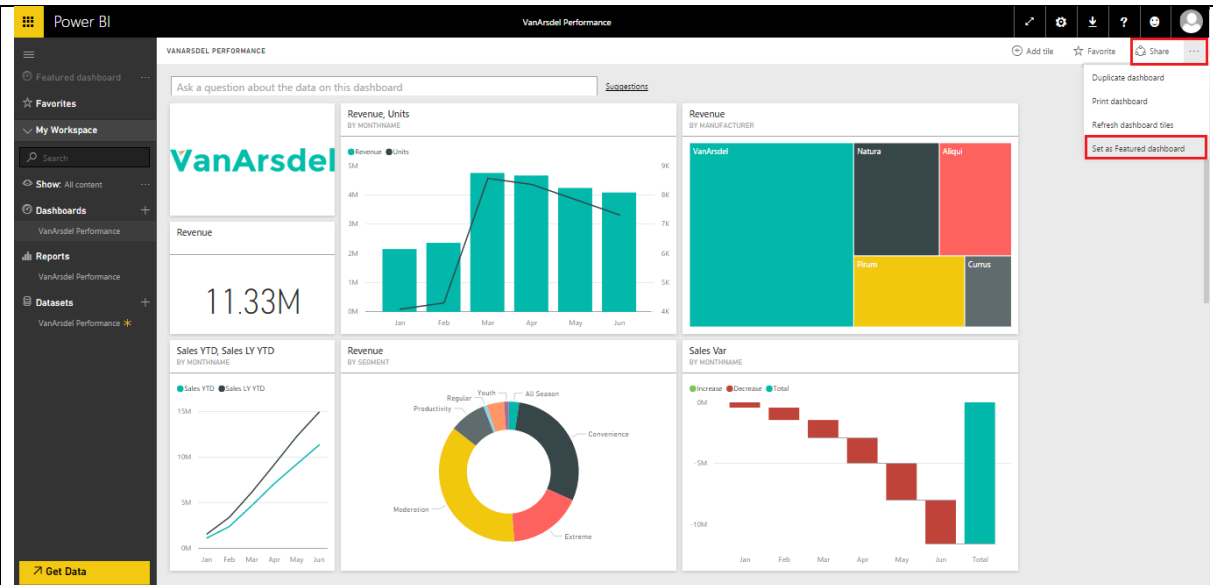
6. Click on **ellipsis** next to **Show: All Content**. Notice there are options to change the settings to show only content created by you or shared with you. This is useful when you are working with a large set of dashboards 7. Notice on the left panel, there is an option to view Favorites	
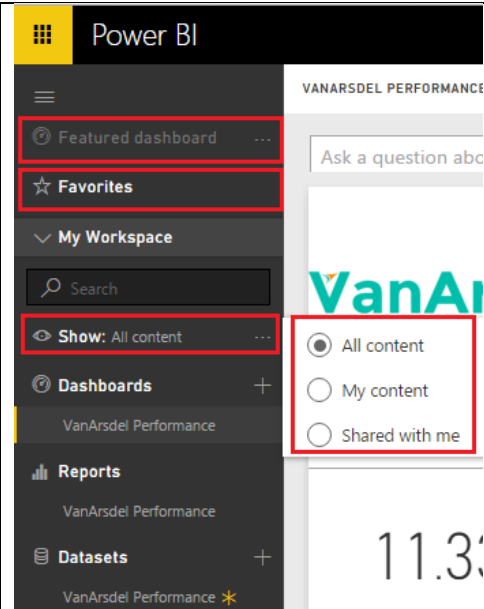
References

You should now have a basic understanding of Power BI. Below are a few helpful references.

Getting started: http://powerbi.com

Power BI Desktop: https://powerbi.microsoft.com/desktop

Power BI Mobile: https://powerbi.microsoft.com/en-us/mobile

Community site https://community.powerbi.com/

Power BI Getting started support page: https://support.powerbi.com/knowledgebase/articles/430814-get-started-with-power-bi

Support site https://support.powerbi.com/

Feature requests https://support.powerbi.com/forums/265200-power-bi

Power BI course https://www.edx.org/course/analyzing-visualizing-data-power-bi-microsoft-dat207x-0

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