

Dashboard in a Day – Lab 3 Data Visualization

by Power BI Team, Microsoft



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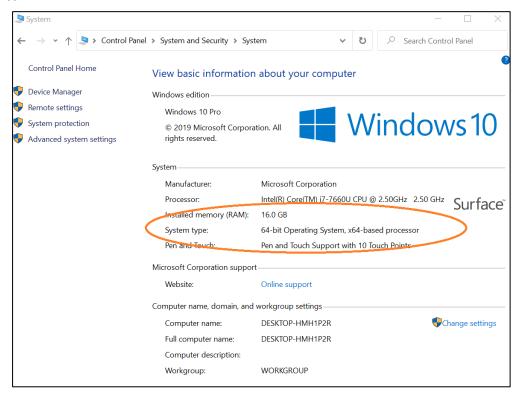
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Lab Prerequisites

The following prerequisites and setup must be done to successfully complete the lab:

- You must be connected to the internet.
- You must have Microsoft Office installed.
- You must be signed up for Power BI: Go to http://aka.ms/pbidiadtraining and sign up for Power BI with a business email address. If you cannot sign up for Power BI, let the instructor know. If you have an existing account, please use the same URL as above to log in.
- You must have, at minimum, a computer with 2-cores and 4GB RAM running Windows 8, Windows Server 2008 R2, or later.
- If you choose to use Internet Explorer, it will require version 10 or greater. You can also use Microsoft Edge or Google Chrome.
- You must verify whether you have a 32-bit or a 64-bit operating system so you know which version to install. To check your operating system type:
 - Open Control Panel, click System and Security, and then click System.
 - You will be able to identify if your operating system is 32-bit or 64-bit based on the
 System type field as shown in the screenshot below.



- You must download the Power BI Content: Create a folder named DIAD on the C drive of your local computer. Copy all contents from the folder called Dashboard in a Day Assets to the DIAD folder you just created (C:\DIAD).
- You must download and install Power BI Desktop using any one of the options listed below:
 - If you have Windows 10, use Microsoft App Store to download and install the Power BI Desktop app.

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- Download and install the Microsoft Power BI Desktop from http://www.microsoft.com/en-us/download/details.aspx?id=45331.
- If you already have the Power BI Desktop installed, ensure you have the latest version of Power BI downloaded.
- You must download and install the Power BI Mobile App on your mobile device.
 - If you are using an Apple product, download and install the Microsoft Power BI Mobile app from the Apple store or visit this link: https://apps.apple.com/us/app/microsoft-power-bi/id929738808
 - If you are using an Android product, download and install the Microsoft Power BI
 Mobile app from the Google Play store or visit this link:
 https://play.google.com/store/apps/details?id=com.microsoft.powerbim

Document Structure

This document is lab three out of five total labs.

Please continue to use your file after completing Lab 2. If you are joining the DIAD at this point or were unable to complete previous labs, please start this lab with the provided **Lab 2 solution.pbix** file found in the Reports folder.

At the end of this lab, you will have completed a full report that is ready to be published to the Power BI Service. In the report, you will have learned how to do conditional formatting, add a logo to the manufacturer filter, import a custom visual, and apply a custom theme to the report. By the end of this lab, you will have also learned how to add bookmarks to tell a story about the report.

The flow of this document includes screenshots to provide a visual aid for the users and a text description of the steps the user needs to follow. In the screenshots, sections are highlighted with red or orange boxes to indicate the action or area on which a user needs to focus.

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

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Power BI Desktop

Power BI Desktop – Data Visualization

Now that we've completed data exploration and visualization in labs one and two, you have good insights to share with your team. In this section, you create a professional report for the benefit of you and your entire team.

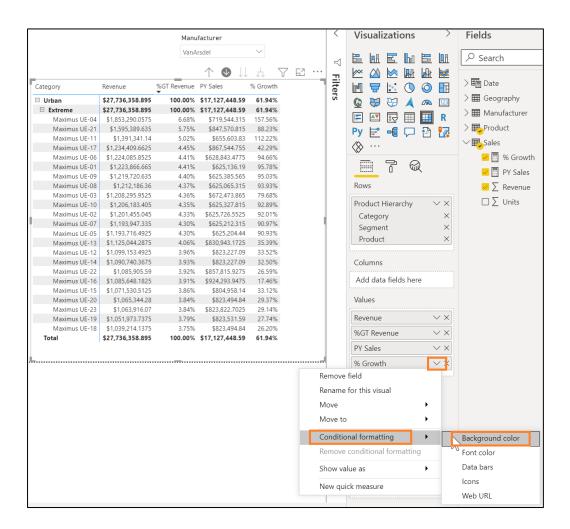
At the end of this section, you will build a report like the one shown in the screenshot below.



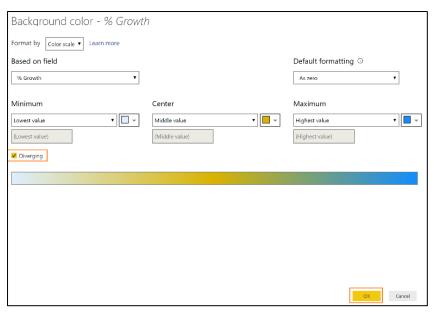
Now let's get started, we will pick up where we left off at the end of Lab 2

- 1. With the **Matrix** visual selected, navigate to the **Values** section and click the arrow next to **% Growth**.
- Click Conditional Formatting and then click Background color. The Background color dialog box opens. This dialog provides options to format the report background color using either rules or diverging colors.

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- 3. Click the **Diverging** checkbox.
- 4. Click OK.

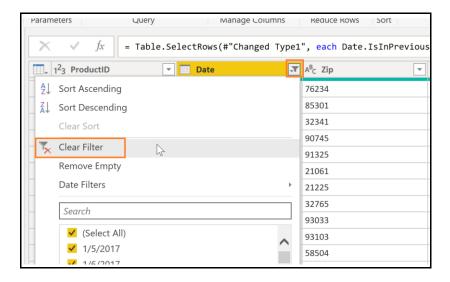


Note: Conditional formatting can also be based on another column using the **Color based on** the drop-down menu.

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Initially, we added a filter to load three years of data. Let's load the complete data now.

- 5. From the **ribbon**, click **Home** and then click **Transform Data**. The **Power Query Editor** window opens.
- 6. Click the filter button on the Date column.
- 7. Click Clear filter to remove the 3-year filter.

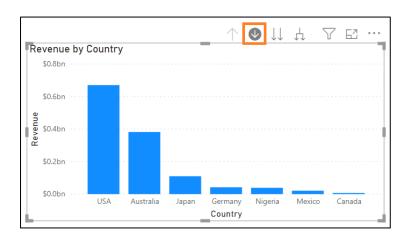


8. Click **Home** and then click **Close & Apply** to load the data.

This time all the data will be loaded. It might take a couple of minutes as we are loading approximately seven million rows.

Make sure the report is filtered by VanArsdel using the **Manufacturer** slicer. Remove all other filters.

9. Enable drill down mode on the Revenue by Country visual



- 10. Click Australia to drill down to State.
- 11. Disable drill mode on the Revenue by Country and State visual

At this point, your report page should look like the screenshot below.

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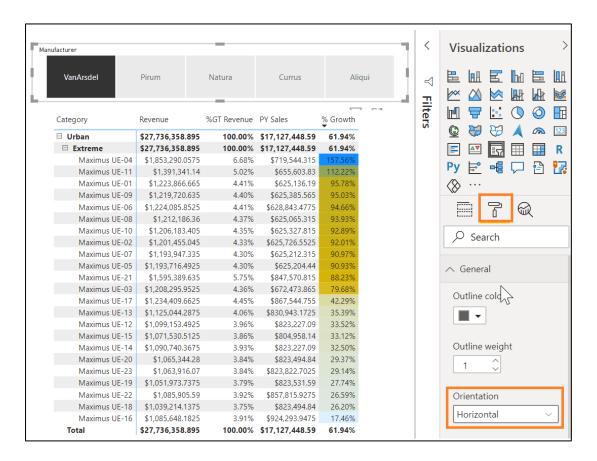
Once data is loaded, notice Revenue by Year visual. You will see columns for years 2013 through 2020.

- 12. Hover over **Manufacturer slicer** visual.
- 13. On the top right corner, click the arrow.
- 14. Click List.



- 15. In the **Visualizations** panel, click the **paint roller** icon. This opens the formatting options available for a visual.
- 16. To expand the **General** section, click **Horizontal** in the **Orientation** drop-down menu.
- 17. Notice the **Slicer** visual is updated. You can resize the visual, so all the manufacturers are listed horizontally.

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Note: There are other options to change the outline color, weight, and more.

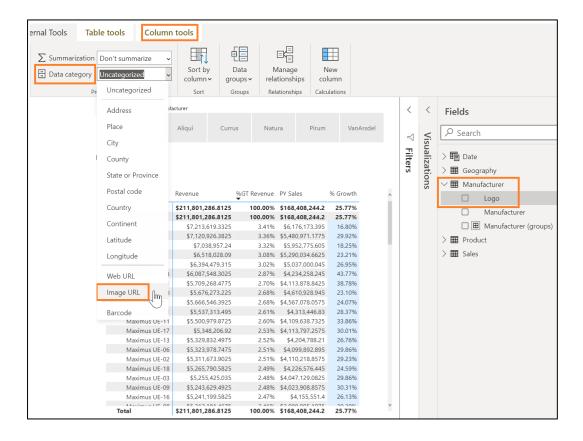
- 18. Click VanArsdel.
- 19. Now, collapse the General section.

Note: Notice there is an option to enable the **Select All** option in the visual. There is also an option to make the slicer multi-select. Feel free to explore other formatting options.

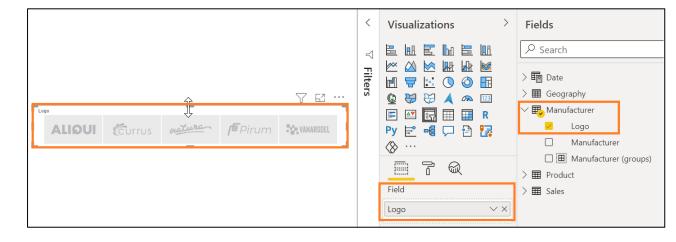
Now it would be nice to add logos of the manufacturer to the slicer. Let's do it.

- 20. From the **Fields** section, click the **Logo** field in the **Manufacturer** table.
- 21. From the ribbon, click **Column** tools, click **Data Category** and then click **Image URL**. Setting the data category to **Image URL** helps Power BI understand that it is a URL so it can access the data.

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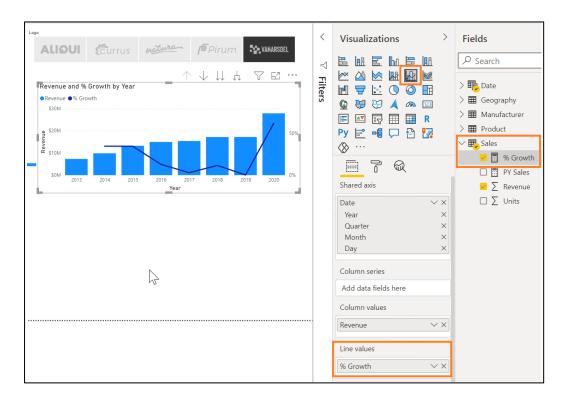


- 22. From the canvas, click the Manufacturer slicer.
- 23. From the **Fields** section, drag and drop the **Logo** from the **Manufacturer** table to the **Field** box replacing the **Manufacturer** column.
- 24. Resize the slicer visual as needed.



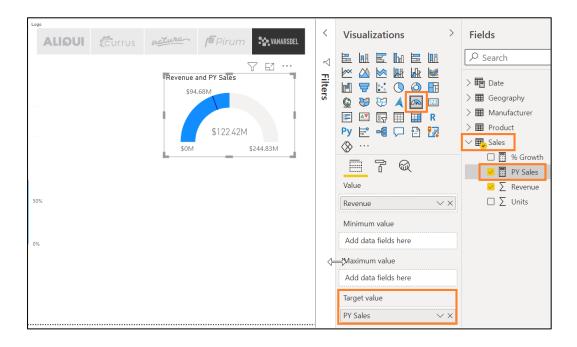
- 25. Click the VanArsdel logo to filter all the other visuals.
- 26. Click the Revenue by Year visual.
- 27. From Visualizations panel, click the Line and clustered column chart to change the visual type.
- 28. From the **Fields** section, drag and drop the **% Growth** field from the **Sales** table to the **Line** values.

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This provides a representation of the revenue and growth over time.

- 29. Now let's click the **Revenue Card** visual so we can change it to a **Gauge** visual.
- 30. From the Visualizations panel, click the Gauge visual.
- 31. From the Fields section, drag and drop the PY Sales field to the Target value.



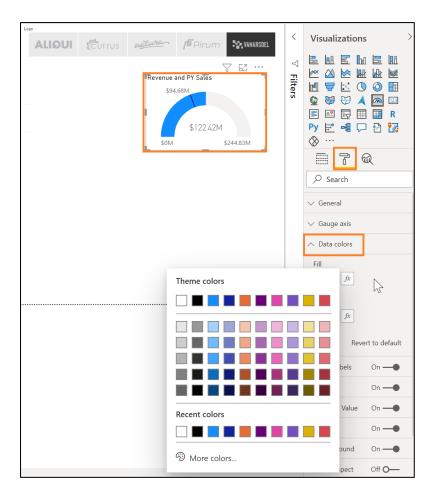
32. Resize the visual as needed. Now we can compare Revenue with the target.

Now let's take time to select the colors of the visuals.

33. Click the Gauge visual.

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- 34. From the **Visualizations** panel, click the **paint roller** icon.
- 35. Expand the **Data Colors** section.
- 36. Click the arrow next to Fill color.
- 37. Notice you can pick a color from the default color palette or pick More colors.



Let's check out some of the themes available.

38. From the ribbon, click **View**, click **Themes**, and then click **Temperature**.

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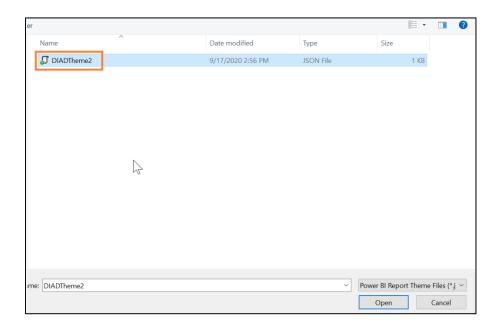


Notice that the colors on all the visuals are updated. Feel free to try the other out-of-the-box themes.

In our scenario, the Marketing department has provided standard color themes to be used across reports. We can use the **Report Theme** feature in Power BI by uploading a theme. The **Report Theme** requires a JSON file where the data colors, background, foreground, and a table of accent colors are defined. The JSON file can be used across all the reports.

- 39. From the ribbon, click **View**, click **Themes**, and then click **Browse for themes**.
- 40. A file browser dialog box opens. Navigate to the **Data** folder then the **Theme** folder (/Data/Theme).
- 41. Click the **DIADTheme2** file and then click **Open**.

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42. Once the theme is imported, a success dialog box opens. Click Close.



Notice colors on all the visuals are updated. Your report should look like the screenshot at this point. This theme looks good. Now, most of the visuals are blue, so let's add some contrast.

Note: Here you can save and add your custom themes.

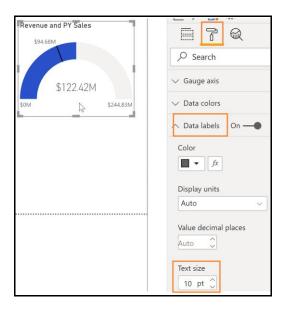
- 43. Click the Gauge visual.
- 44. From the Visualizations panel, click the paint roller icon.
- 45. Expand the **Data colors** section.
- 46. Click the drop-down menu next to **Target**. Notice the color palette is different now.

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- 47. Click the **black** color. Notice how it changes in the visual.
- 48. Collapse the **Data colors** section.



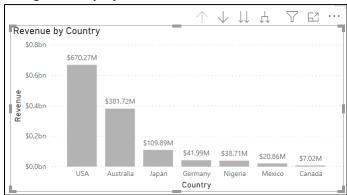
- 49. Expand the Data Labels section.
- 50. Change the **Text size** to **10**.
- 51. Expand the **Target** section.
- 52. Change the **Text size** to **10**.



- 53. Click the Matrix visual.
- 54. Drill up to the **Segment** level.
- 55. Click the Revenue by Country and State visual.
- 56. Drill up to the **Country** level.

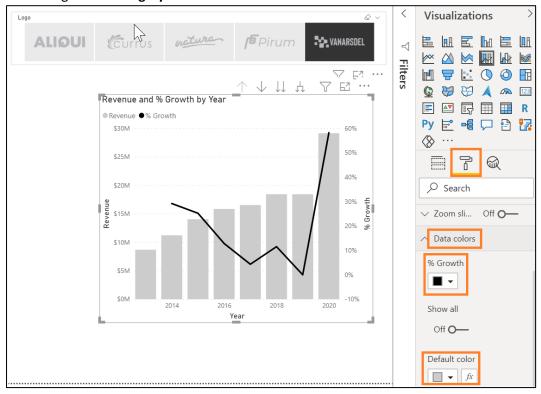
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- 57. From the **Visualizations** panel, click the **paint roller** icon.
- 58. Expand the **Data colors** section.
- 59. Select a light shade of gray as the **Default color**.
- 60. Enable and expand the Data labels.
- 61. Change the **Display** units to **Millions**.



Notice that there a lot of formatting options. For example, a visual title can be changed and formatted, or you can add a border and background to the visual. Feel free to explore the options.

- 62. Let's move to another visual, click the Revenue and % Growth by Year visual.
- 63. From the **Visualizations** panel, click the **paint roller** icon.
- 64. Expand the **Data colors** section.
- 65. Select the black color for % Growth.
- 66. Select a light shade of gray as the Default color.



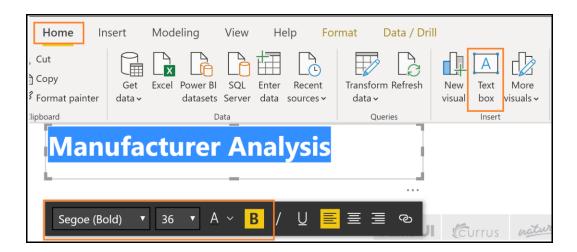
Now let's add a report title.

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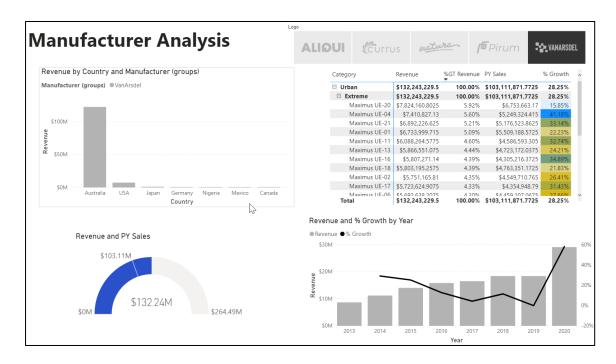
67. From the ribbon, click Home and then click Text box. Notice a text box visual is added.

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- 68. Resize the visual as needed.
- 69. Enter Manufacturer Analysis in the text box.
- 70. Highlight Manufacturer Analysis to format the text.
- 71. Select Segoe (Bold) as the font.
- 72. Select 36 as the font size.
- 73. Resize the text box as needed.

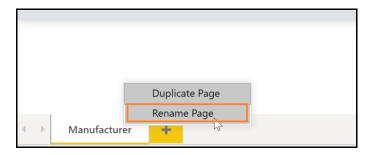


- 74. From the ribbon, click View.
- 75. Click the checkbox next to **Show Gridlines** and **Snap to Grid**. This will help with aligning the visuals.



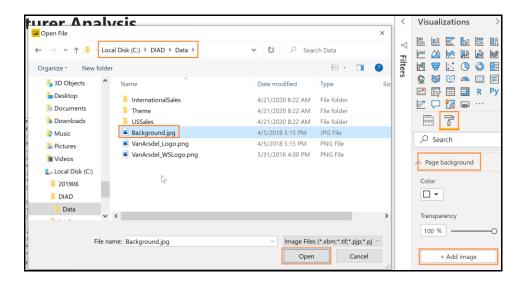
- 76. Uncheck the **Show Gridlines** and **Snap to Grid** options to disable these features.
- 77. Right-click the page name in the lower-left corner and then click Rename Page.
- 78. Rename the page to Manufacturer.

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We can also use a background image to format the reports. Let's try it.

- 79. Click the white space in the canvas.
- 80. From the **Visualizations** panel, click the **paint roller** icon.
- 81. Expand the Page Background section.
- 82. Click the Add Image button.
- 83. A File browser dialog box opens. Browse to the **DIAD** folder then the **Data** folder (/DIAD/Data).
- 84. Click the **Background** file.
- 85. Click Open.



- 86. From Image Fit drop-down, click Fit.
- 87. Slide Transparency slider to 0%.



Notice we have a template which has a place for header and slots for images.

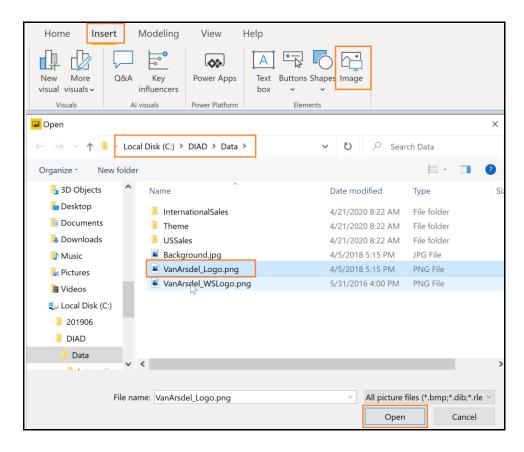
88. Resize and arrange the visuals as shown in the screenshot

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Now let's add a logo.

- 89. From the ribbon, click Insert and then click Image
- 90. The File browser dialog opens. Browse to the DIAD folder then the Data folder (/DIAD/Data).
- 91. Change the file type to All files(*).
- 92. Click the VanArsdel_Logo file.
- 93. Click Open.



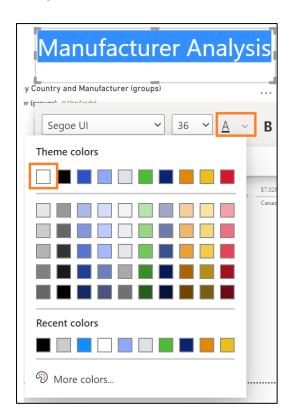
- 94. Resize the visual as needed.
- 95. **Drag** the visual to the top left corner of the page.

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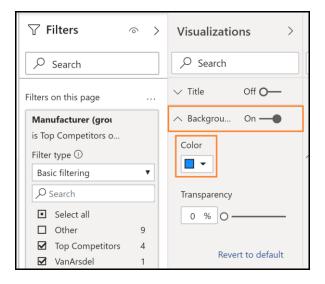
Note: The logo is transparent. You need to place it on the blue background to see it.

Now let's change the font color of the report title.

- 96. Highlight Manufacturer Analysis.
- 97. Click the arrow next to the **A** for the font color. Select the **white** color.
- 98. Change the size of the font to 24



99. Click on **Background** in the **Visualizations** pane and select the blue color shown below.



Out of the box, Power BI has a large selection of visuals. However, there may be a use-case when you need a custom visual. To meet this requirement, the visualization engine is open-sourced. The Power

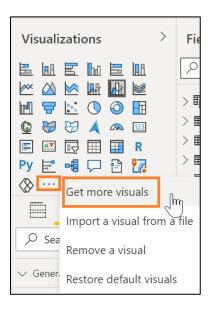
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BI community contributes visuals in the marketplace. You can add and use these visuals in your reports.

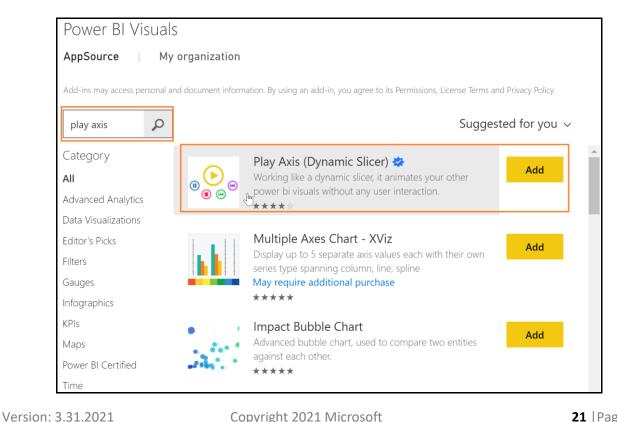
There is also an option to create your own visual and import it into Power BI Desktop.

Now let's add a custom visual.

- 100. From **Visualizations** section, click the ellipse in the last row of visuals.
- 101. Click Get more visuals.



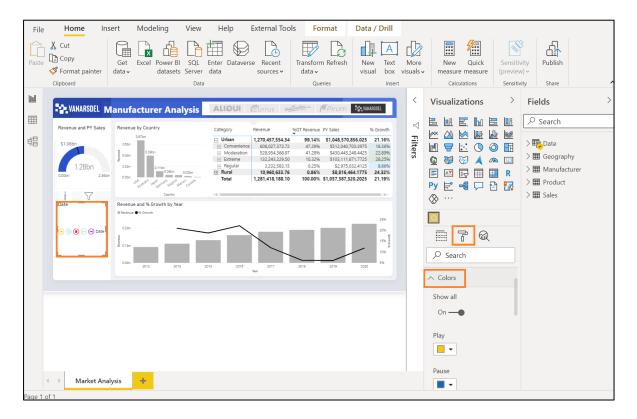
- 102. Type **play axis** in the **search box** and click the **Search** icon.
- 103. Click the Add next to the Play Axis (Dynamic Slicer).



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Note: Notice the checkmark in the blue star. This image is used to identify certified custom visuals. Custom visuals that meet Power BI teams coding requirements are certified. Certified custom visuals support features like export to PowerPoint and the ability to display in subscription emails which are not supported by non-certified custom visuals.

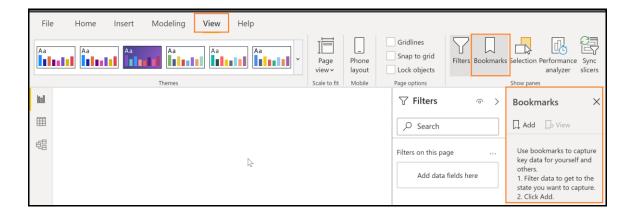
- 104. The **import custom visual** dialog opens. Click **OK**.
- 105. Notice a new visual is added to the list of available visuals.
- 106. Click on the white space in the canvas.
- 107. From the **Visualizations** section, click the newly imported **Play Axis** visual.
- 108. From the **Fields** section, click the checkbox next to the **Date** field in the **Date** table.
- 109. From the **Visualizations** panel, click the **paint roller** icon.
- 110. Expand the **Colors** section.
- 111. Enable the **Show all** option.
- 112. **Resize** and **position** the visual as shown in the screenshot below.



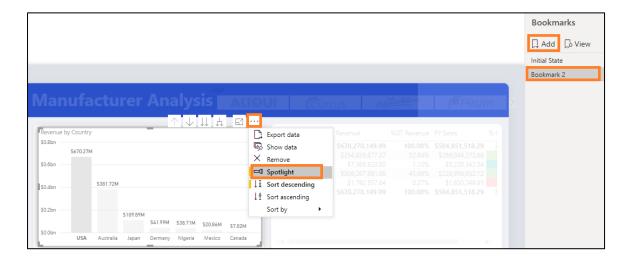
Now that we have a report ready, let's use Bookmarks to tell the story we discovered. Bookmarks capture the currently configured view of a report page, including filtering and the state of visuals which helps to make it easier to present the story.

- 113. From the ribbon, click **View**.
- 114. Click the **Bookmarks** button to enable Bookmarks. The **Bookmarks** pane opens.

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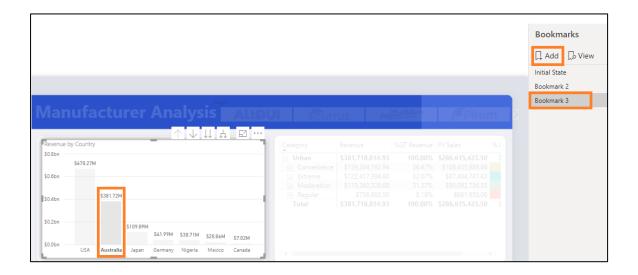


- 115. Click on **Add** in the **Bookmarks** pane. This will add the current state of the visual to the bookmark.
- 116. Click the **ellipse** next to the newly created **Bookmark 1**.
- 117. Click **Rename** and change the name to **Initial State**.
- 118. In the **Revenue by Country** visual, click the **USA** column.
- 119. Hover over the **Revenue by Country** visual and click the **ellipse** on the top right corner.
- 120. Click **Spotlight**.
- 121. In the **Bookmarks** pane, click **Add**. This will add a new bookmark with the current state of the report.

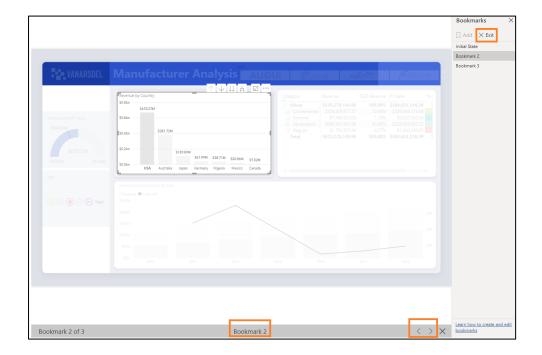


- 122. Click on the canvas.
- 123. Click **Australia** in the **Revenue by Country** visual.
- 124. In the **Bookmarks** pane, click **Add**. This will add a new bookmark with the current state of the report.

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- 125. From the **Bookmarks** pane, click **View**. You are now in Bookmarks slide show mode. You will be in the first bookmark, which we called **Initial State**. Notice on the bottom of the report pane there is an option to navigate between bookmarks.
- 126. You can use the arrows to navigate between bookmarks and tell your story.
- 127. From the **Bookmarks** pane, click **Exit** to exit the Bookmarks slide show mode.



If time permits, feel free to explore other options available with Bookmarks, such as **Selected Visuals**, as you continue to build your story.

- 128. From the ribbon, click **View**.
- 129. Uncheck the **Bookmarks Pane**.
- 130. Collapse the **Visualizations** and **Filters** pane by clicking on the arrows

Your report should look as shown in the figure below. Now let's finish up by saving the file.



131. Click **File** and then click **Save**.

You have built your first report!

You have successfully completed the hands-on lab by creating a report to share to your team. The next lab covers creating a dashboard from this report to share with your team. You have seen an overview of the functionality in Power BI Desktop. There are many more features for you to explore with your data!

References

Dashboard in a Day introduces you to some of the key functions available in Power BI. In the ribbon of the Power BI Desktop, the Help section has links to some great resources.



Here are a few more resources that will help you with your next steps with Power BI.

- Getting started: http://powerbi.com
- Power BI Desktop: https://powerbi.microsoft.com/desktop
- Power BI Mobile: https://powerbi.microsoft.com/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://ideas.powerbi.com/forums/265200-power-bi-ideas

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- New ideas for using Power BI https://aka.ms/PBI Comm Ideas
- Power BI Courses http://aka.ms/pbi-create-reports

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