**Lab 5-01: Design a Report in Power BI Desktop**

**Pre-requisites**

* Download and install Power BI from the Microsoft Store
* The lab links to a localhost SQL Server instance. Download a free Developer copy of the install media.

https://www.microsoft.com/sql-server/sql-server-downloads?SilentAuth=1&f=255&MSPPError=-2147217396&rtc=1

* Install SQL Server from Installation Wizard (Setup)

<https://learn.microsoft.com/sql/database-engine/install-windows/install-sql-server-from-the-installation-wizard-setup>

* Install the latest version of Microsoft Edge to access Power BI service online
* Extract the ‘AllFiles’ folder to F:/ and rename it to ‘F:\Allfiles'

<https://github.com/MicrosoftLearning/PL-300-Microsoft-Power-BI-Data-Analyst/raw/Main/AllfilesDownload.zip>

**Introduction**

BI empowers businesses to gain insights, make informed decisions, and communicate complex information effectively. This lab focuses on the core process of designing a report within Power BI Desktop.

**Problem**

Organizations often struggle with effectively communicating complex data to their stakeholders. Traditional methods of data presentation, such as static reports or spreadsheets, often fail to engage the audience and provide actionable insights. There is a need for a dynamic and interactive tool that can transform raw data into visually appealing and informative reports.

**Solution**

By mastering Power BI Desktop, individuals can create impactful reports that drive data-driven decision-making and improve organizational performance.

Open the 06-Starter-Sales Analysis.pbix file.

***Task 1: Design Page 1***

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| 1. In Power BI Desktop, to rename a page, at the bottom-left, right-click **Page 1**, then **Rename** the page as **Overview**.      1. To add an image, on the **Insert** ribbon tab, from inside the **Elements** group, select **Image**.   Picture 1   1. In the Open window, navigate to the Resources folder. Select the AdventureWorksLogo.jpg file, and then click on Open.      1. Drag the image to position it at the top-left corner, and also drag guide markers to resize it. 2. To add a slicer, first, de-select the image by clicking an empty area of the report page, then select the **Slicer** in the **Visualizations** pane.   Picture 49   1. In the **Data** pane, drag the **Date | Year** field (not **Year** level of the hierarchy) into the slicer **Field** in the Visualizations pane.      1. To change the slicer from a list to a dropdown, go to Visualizations > Format Visual > Visual > Slicer Settings > Style, and select Dropdown from the dropdown menu.   Slicer style   1. Resize and position the slicer so it sits beneath the image and is the same width as the image.      1. In **Year** slicer, open the dropdown list, select **FY2020**, and then collapse the dropdown list.   Picture 20   1. De-select the slicer by clicking an empty area of the report page. 2. Create a second slicer based on the **Region | Region** field (not the **Region** level of the hierarchy).      1. Leave the slicer as a list, and then resize and position the slicer beneath the **Year** slicer.      1. To de-select the slicer, click on an empty area of the report page. 2. To add a chart to the page, select Line and Stacked Column Chart visual type from the Visualizations pane.   Picture 51   1. Resize and position the visual so it sits to the right of the logo and so it fills the width of the report page.      1. Drag and drop the following fields into the visual:  * Date | Month * Sales | Sales      1. In the visual fields pane (located beneath the **Visualizations** pane), notice that the fields are assigned to the **X-axis** and **Column Y-axis** wells/areas.   Picture 27   1. From the **Data** pane, drag the **Sales | Profit Margin** field into **Line Y-axis** well/area.      1. Notice that visual only has 11 months.      1. In the visual fields pane, in the **X-axis** well/area, for the **Month** field, select the down-arrow, and then select **Show Items With No Data**.   Picture 52   1. Click on an empty area of the report page to de-select the chart. 2. To add a chart to the page, select Stacked Column Chart visual type from the Visualizations pane.   Picture 53   1. Resize and position the visual so that it is located below the column/line chart and fills half the width of the chart above.      1. Add the following fields to visual wells/areas:      1. De-select the chart by clicking an empty area of the report page. 2. To add a chart to the page, in the **Visualizations** pane, click on **Stacked Bar Chart** visual type.   Picture 54   1. Resize and position the visual so it fills the remaining report page space.      1. Add the following fields to the visual area:      1. To format visuals, open the **Format** pane.   Picture 3   1. Expand **Bars** and then the **Colors** group, and then set the **Default Color** property to a suitable color.      1. Set **Data Labels** property to **On**.      1. Save the Power BI Desktop file. |

***Task 2: Design Page 2***

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| 1. To create a new page, at the bottom-left, select the plus icon and change it to **Profit**.      1. Add a slicer based on the **Region | Region** field.      1. Use the **Format** pane to enable the “Select All” option (in **Slicer settings > Selection** group).      1. Resize and position the slicer on the left side of the report page, making it about half the page's height.      1. Add a matrix visual, and resize and position it so it fills the remaining space of the report page.      1. Add **Date | Fiscal** hierarchy to matrix **Rows** well/area.      1. Add the following five **Sales** table fields to the **Values** well/area:  * **Orders** (from the **Counts** folder) * **Sales** * **Cost** * **Profit** (from the **Pricing** folder) * **Profit Margin** (from the **Pricing** folder)      1. In the **Filters** pane (located at the left of the **Visualizations** pane), notice **Filter On This Page** well/area (you may need to scroll down).   Picture 57   1. From the **Data** pane, drag the **Product | Category** field into the **Filter On This Page** well/area.      1. Inside the filter card, at the top-right, select the arrow to collapse the card.      1. Add the following **Product** table fields to **Filter On This Page** well/area, collapsing each directly under the **Category** card:      1. Save the Power BI Desktop file. |

***Task 3: Design Page 3***

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| 1. Create a new page and change it to **My Performance**.      1. To simulate the performance of row-level security filters, drag the **Salesperson (Performance) | Salesperson** field to page-level filters in the filter pane.      1. Select **Michael Blythe**. The data on the My Performance report page will now be filtered to show information for Michael Blythe only.      1. Add a dropdown slicer based on the **Date | Year** field, and then resize and position it so it sits at the top-left corner of the page.      1. In the slicer, set the page to filter by **FY2019**.      1. Add a Multi-row Card visual, then resize and reposition it to the right of the slicer to fill the remaining width of the page.   Picture 56   1. Add the following four fields to the visual:  * Sales | Sales * Targets | Target * Targets | Variance * Targets | Variance Margin      1. Format visual:  * In the Callout Values group, set the Text Size property to 28pt. * In the General > Effects > Background group, change the Color to a light gray shade (e.g., “White, 20% Darker”) to provide contrast.      1. Add a Clustered Bar Chart visual, then resize and position it so that it is placed below the multi-row card visual, filling the remaining height of the page and half the width of the multi-row card visual.   Picture 59   1. Add the following fields to the visual wells/areas:  * Y-axis: Date | Month * X-axis: Sales | Sales and Targets | Target   Picture 80   1. To create a copy of the visual, press **Ctrl+C** and then press **Ctrl+V**. 2. Position the new visual to the right of the original visual.      1. To modify the visualization type, in the **Visualizations** pane, select **Clustered Column Chart**.   Picture 61 |

***Task 4: Publish and Explore the Report***

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| 1. On the **Home** ribbon tab, from inside the **Share** group, click on **Publish**.      1. To publish the report, select **Select**. This may take a few moments.      1. Open a Microsoft Edge browser, then sign in at https://app.powerbi.com. To explore the report, select the **Sales Analysis** report. 2. At the left, in the **Pages** pane, click on the **Overview** page.      1. Hover over the stacked column chart visual, and then select the Focus mode icon at the top-right.   Picture 96   1. Hover the cursor over different segments of the bar charts to reveal tooltips. 2. To return to the report page, at the top-left, select **Back to Report**.   Picture 86   1. Hover over one of the visuals again, then select the ellipsis (...) at the top-right, and take note of the menu options. Try each option except for Chat in Teams.   Picture 97   1. At the left, in the **Pages** pane, select **Profit** page.   Picture 84   1. Notice that the **Region** slicer has a different selection from the **Region** slicer on the **Overview** page. 2. In the **Filters** pane (located at the right), expand a filter card and apply some filters.      1. In matrix visual, use the plus (+) button to drill into the **Fiscal** hierarchy.      1. Select **My Performance** page.   Picture 89   1. At the top-right on the menu bar, click on **View**, and then select **Full Screen**.   Picture 98   1. Interact with the page by adjusting the slicer and using cross-filtering features. 2. At the bottom of the window, observe the commands for changing pages, navigating backward or forward between pages, or exiting full-screen mode. 3. Click the right icon to exit full-screen mode.   Picture 91 |

**Lab 5-02: Enhance a Report in Power BI Desktop**

**Pre-requisites**

* Download and install Power BI from the Microsoft Store
* The lab links to a localhost SQL Server instance. Download a free Developer copy of the install media.

https://www.microsoft.com/sql-server/sql-server-downloads?SilentAuth=1&f=255&MSPPError=-2147217396&rtc=1

* Install SQL Server from Installation Wizard (Setup)

<https://learn.microsoft.com/sql/database-engine/install-windows/install-sql-server-from-the-installation-wizard-setup>

* Install the latest version of Microsoft Edge to access Power BI service online
* Extract the ‘AllFiles’ folder to F:/ and rename it to ‘F:\Allfiles'

<https://github.com/MicrosoftLearning/PL-300-Microsoft-Power-BI-Data-Analyst/raw/Main/AllfilesDownload.zip>

**Introduction**

Power BI Desktop offers a robust platform for creating interactive and informative reports. While initially building a report is crucial, enhancing it to meet specific user needs and improve data insights is equally important. This lab focuses on refining an existing Power BI report to maximize its effectiveness and value.

**Problem**

Once a Power BI report is created, it often requires further development to address evolving business requirements, improve data visualization, enhance user experience, and optimize performance.

**Solution**

By applying advanced Power BI techniques, users can enhance their reports to overcome these challenges. Through the enhancements, users can create more engaging, informative, and user-friendly Power BI reports that drive better decision-making.

Open the 07-Starter-Sales Analysis.pbix file.

***Task 1: Sync Slicers***

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| 1. In Power BI Desktop, on the **Overview** page, set the **Year** slicer to **FY2018**.      1. Go to **My Performance** page, and then notice that the **Year** slicer is a different value. 2. Return to the **Overview** page, and then select **Year** slicer. 3. On the **View** ribbon tab, from inside the **Show Panes** group, click on **Sync Slicers**.   Picture 1   1. In the Sync Slicers pane, located to the left of the Visualizations pane, check the boxes for Overview and My Performance pages in the second column, which represents syncing.   Picture 93   1. On the **Overview** page, select **Region** slicer. 2. Sync the slicer with the **Overview** and **Profit** pages.   Picture 94   1. Test the sync slicers by clicking on different filter options and verifying that the synced slicers reflect the same selection. 2. To close the **Sync Slicer** page, select the **Sync Slicer** option located on the **View** ribbon tab. |

***Task 2: Configure a Drill through Page***

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| 1. Add a new report page named **Product Details**. 2. Right-click the **Product Details** page tab, and then click on **Hide Page**.      1. Below the Visualizations pane, in the Drill Through section, add the Product | Category field to the Add Drill Through Fields Here box.   Picture 96   1. To test the drill through page, in the drill through filter card, select **Bikes**.   Picture 99   1. At the top-left of the report page, notice the arrow button. 2. Add a Card visual to the page, then resize and position it to the right of the button so that it fills the remaining width of the page.   Picture 13   1. Drag the **Product | Category** field into the card visual. 2. Configure format options for the visual, and then turn the **Category Label** property to **Off**.   Picture 103   1. Set **Effects > Background** color property to *White, 20% darker*.   Picture 103   1. Add a Table visual to the page, then resize and position it below the card visual to fill the remaining space on the page.   Picture 14   1. Add the following fields to the visual:  * Product | Subcategory * Product | Color * Sales | Quantity * Sales | Sales * Sales | Profit Margin      1. Configure format options for the visual, and in the Values and Column Headers sections, set the Text Size property to **20pt.** |

***Task 3: Add Conditional Formatting***

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| 1. Select table visual. In the visualization pane, select down-arrow on **Profit Margin** value, and then click on **Conditional Formatting | Icons**.   Picture 107   1. In the **Icons – Profit Margin** window, in the **Icon Layout** dropdown list, select **Right of Data**.   Picture 108   1. To delete a middle rule, at the right of the yellow triangle, select **X**.   Picture 109   1. Configure the first rule (red diamond) as follows:  * In the second control, remove the value * In the third control, select the **Number** * In the fifth control, enter **0** * In the sixth control, select the **Number**      1. Configure the second rule (green circle) as follows, then select **OK**:  * In the second control, enter **0** * In the third control, select the **Number** * In the fifth control, remove the value * In the sixth control, select the **Number**      1. In the table visual, verify that the correct signs are displayed.      1. Configure background color conditional formatting for the **Color** field. 2. In the **Background Color – Color** window, in the **Format Style** dropdown list, select **Field Value**.      1. In **What field should we base this?** dropdown list, click on **Product | Formatting | Background Color Format**, then **OK**.   Picture 114   1. Repeat the previous steps to configure font color conditional formatting for the **Color** field using the **Product | Formatting | Font Color Format** field |

***Task 4: Add Bookmarks and Buttons***

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| 1. Go to **My Performance** page. On the **View** ribbon tab, from inside the **Show Panes** group, click on **Bookmarks**.   Picture 118   1. On the **View** ribbon tab, from inside the **Show Panes** group, click on **Selection**.      1. In the **Selection** pane, beside one of the **Sales and Target by Month** items, to hide visuals, click on the eye icon.   Picture 120   1. In the **Bookmarks** pane, select **Add**.   Picture 121   1. If the visible chart is a bar chart, rename the bookmark to "Bar Chart ON"; otherwise, rename it to "Column Chart ON."      1. To edit the bookmark, in the **Bookmarks** pane, hover the cursor over the bookmark, select the ellipsis, and then click on **Data**.   Picture 16   1. To update the bookmark, select the ellipsis again and then click on **Update**.      1. In the **Selection** pane, toggle the visibility of two **Sales and Target by Month** items.   Picture 122   1. Create a second bookmark, and name it (either **Column Chart ON** or **Bar Chart ON).**   Picture 123   1. Configure a second bookmark to ignore filters (**Data** option off), and update the bookmark.      1. In the **Selection** pane, to make both visuals visible, show hidden visuals.      1. Resize and reposition both visuals so that they cover the area beneath the multi-card visual and completely overlap each other.      1. In the **Bookmarks** pane, click on each of the bookmarks and observe that only one of the visuals is visible. 2. On the **Insert** ribbon, from inside the **Elements** group, select **Button**, and then click on **Blank**.   Picture 125   1. Position the button directly beneath the **Year** slicer.      1. Select the button, and then in the **Format button** pane, click on **Button**, expand the **Style** section, and turn the **Text** property to **On**.   Picture 126   1. Expand the **Text** section, and then in the **Text** box, enter **Bar Chart**.      1. Expand the **Fill** section, and then set a fill color using a complementary color.      1. Select the **Button** and turn the **Action** property to **On**.   Picture 127   1. Expand the **Action** section, and then set the **Type** dropdown list to **Bookmark**. In the **Bookmark** dropdown list, click on **Bar Chart ON**.      1. Create a copy of the button by using copy and paste, and then configure the new button as follows:  * Set Button Text property to Column Chart * In the Action section, set the Bookmark dropdown list to Column Chart ON |

***Task 5: Publish and Explore the Report***

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| 1. Select the **Overview** page. In the **Year** slicer, select **FY2020**. In the **Region** slicer, select **Select All**. 2. Save the Power BI Desktop file.      1. On the **Home** ribbon tab, from inside the **Share** group, click on **Publish**. 2. To publish the report, click on **Select**.  * If prompted to replace the semantic model, click on **Replace**.      1. In a Microsoft Edge browser window, go to Power BI service > **My Workspace**, then select **Sales Analysis** report. 2. To test drill through feature, navigate to the **Overview** page > **Quantity by Category** visual. Then right-click the **Clothing** bar and select **Drill Through | Product Details**.   Picture 130   1. Notice that the **Product Details** page is for **Clothing**.      1. To return to the source page, at the top-left corner of the page, select the arrow button. 2. Select **My Performance** page. Select each of the buttons, and then observe that a different visual is displayed. |

**Lab 5-03: Perform Data Analysis in Power BI**

**Pre-requisites**

* Download and install Power BI from the Microsoft Store
* The lab links to a localhost SQL Server instance. Download a free Developer copy of the install media.

https://www.microsoft.com/sql-server/sql-server-downloads?SilentAuth=1&f=255&MSPPError=-2147217396&rtc=1

* Install SQL Server from Installation Wizard (Setup)

<https://learn.microsoft.com/sql/database-engine/install-windows/install-sql-server-from-the-installation-wizard-setup>

* Install the latest version of Microsoft Edge to access Power BI service online
* Extract the ‘AllFiles’ folder to F:/ and rename it to ‘F:\Allfiles'

<https://github.com/MicrosoftLearning/PL-300-Microsoft-Power-BI-Data-Analyst/raw/Main/AllfilesDownload.zip>

**Introduction**

Power BI Desktop is a robust tool for data analysis and visualization. It lets users link to various data sources, transform data, and create insightful reports. This lab focuses on the core process of extracting meaningful information from data using Power BI Desktop's analytical capabilities.

**Problem**

Organizations frequently struggle to derive actionable insights from their data due to several challenges.

**Solution**

Power BI Desktop offers a comprehensive solution for data analysis. By leveraging Power BI’s features, users can efficiently explore data, identify key insights, and make data-driven decisions.

Open the 08-Starter-Sales Analysis.pbix file.

***Task 1: Create an Animated Scatter Chart***

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| 1. Create a new page with the name **Scatter Chart**.      1. Add a **Scatter Chart** visual to the report page, and then position and resize it so it fills the entire page.   Picture 18   1. Add the following fields to the visual wells/areas:  * X-axis: Sales | Sales * Y-axis: Sales | Profit Margin * Legend: Reseller | Business Type * Size: Sales | Quantity * Play Axis: Date | Quarter      1. In the **Filters** pane, add the **Product | Category** field to the **Filters On This Page** well/area. In the filter card, filter by **Bikes**.      1. To animate the chart, at the bottom left corner, select **Play**.   Picture 41   1. Watch the entire animation cycle from **FY2018 Q1** to **FY2020 Q4**. 2. When the animation stops, click on one of the bubbles to reveal its tracking.      1. Hover the cursor over any bubble to reveal a tooltip describing measure values for the reseller type at that point in time.      1. In the Filters pane, select Clothing only and observe the significantly different results that this produces.      1. Save the Power BI Desktop file. |

***Task 2: Create a Forecast***

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| 1. Add a new page, and then rename the page to **Forecast**.      1. Add a **Line Chart** visual to the report page, and then position and resize it so it fills the entire page.   Picture 19   1. Add the following fields to the visual wells/areas:  * X-axis: Date | Date * Y-axis: Sales | Sales      1. In the **Filters** pane, add the **Date | Year** field to the **Filters On This Page** well/area. In the filter card, filter by two years: **FY2019** and **FY2020**      1. Add also the **Product | Category** field to the **Filters On This Page** area, and filter by **Bikes**.      1. To add a forecast, beneath the **Visualizations** pane, click on the **Analytics** pane.   Picture 20   1. Expand the **Forecast** section. Turn the **Forecast** option to **On**. 2. Configure the following forecast properties, then click on **Apply**:   Picture 52   1. In line visual, notice that the forecast has extended one month beyond the history data. |