

## **2.1. Exercise: Creating a shared workspace**

### **Introduction**

At this lesson stage, you should understand how to create and manage workspaces and their access permissions, contents, and settings.

In this exercise, you can apply this knowledge by setting up a shared workspace to facilitate the collaborative environment for an upcoming Adventure Works project.

By completing this exercise, you'll demonstrate your ability to:

- Create a shared workspace in Power BI Service.
- Upload and manage content within the workspace.
- Identify the storage capacity and monitor the space utilization in the workspace.
- Modify a report and publish the update on Power BI Service.

### **Scenario**

Adventure Works is optimizing its supply chain process. This project requires a collaborative workspace where the team can share and review data. Help the company create a shared workspace in Power BI Service, upload the initial Orders Report for 2023, and manage content in a way that promotes effective collaboration.

### **Instructions**

Before you begin the exercise, download the Orders report workbook. The workbook contains a single worksheet.

Step 1: Creating the shared workspace.

1. Sign into your Power BI Service account and navigate to the Workspaces tab.
2. Create a new workspace.
3. Name the workspace Supply Chain Optimization Project.

Tip: Normally, you would use Manage Access and add users or groups for this shared workspace. For this example, as you're using a trial version of the platform, we will consider this step done.

Step 2: Upload your report.

1. Navigate to your new workspace.
2. Choose the appropriate method of publishing the local report you have downloaded to the workspace.

3. Identify the three-part content that was published in the workspace.

Step 3: Identify the workspace's storage capacity.

1. Navigate to the Storage capacity analysis your Power BI Service workspace provides.
2. Note the maximum storage capacity of the workspace.
3. Note the percentage of storage consumed by the content uploaded.

Step 4: Modify and republish the report.

1. Open the Orders Report in Power BI Desktop.
2. Add an average line to the bar chart present in the report.
3. Save the modifications and republish the report to the Supply Chain Optimization Project workspace.
4. Verify that the published report has successfully updated the modifications.

Tip: Republishing requires your permission to overwrite the dataset. Since you haven't modified the dataset, you can freely overwrite it.

## Conclusion

Having completed the assigned tasks, you now possess the skills to create, manage, and optimize a shared workspace in Power BI Service. You've also demonstrated the ability to modify and update reports within the workspace. This ensures the collaborative environment remains updated with the latest Adventure Works supply chain optimization project analysis.

## Exemplar: Creating a shared workspace

### Overview

In the exercise *Creating a Shared Workspace*, you were asked to establish a shared workspace in Power BI Service and manage its content.

Your tasks in this exercise were to:

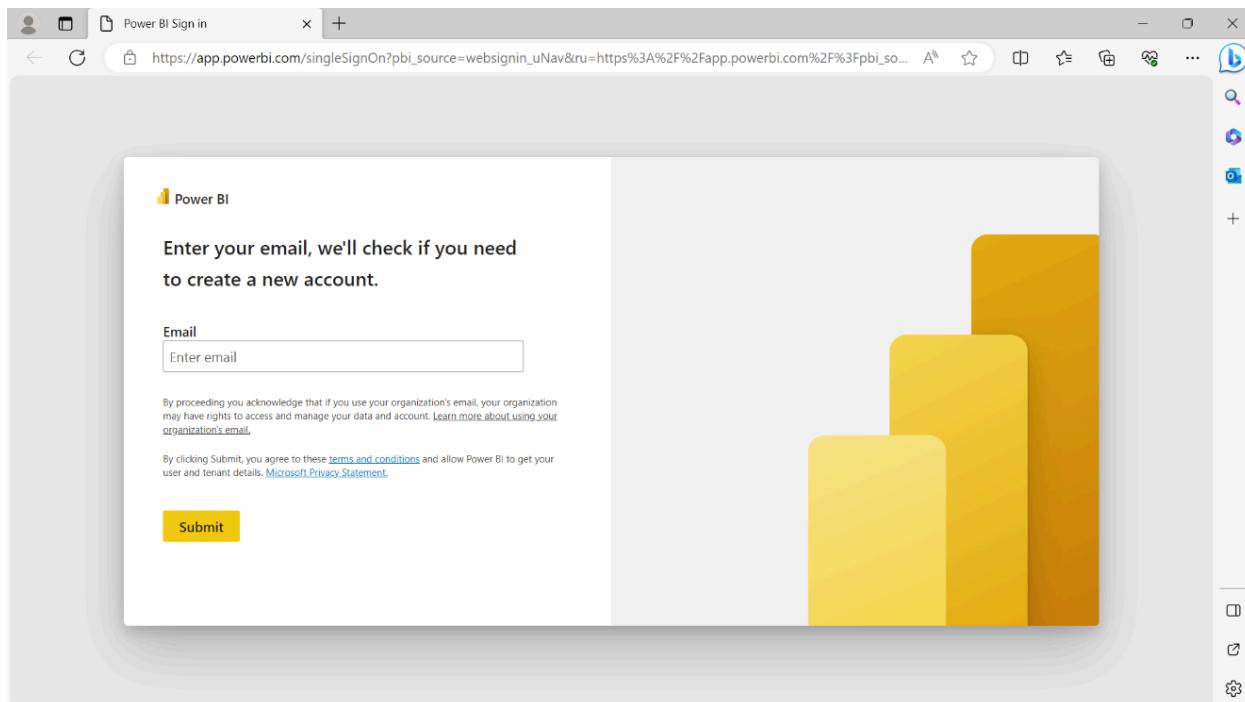
- Create a shared workspace in Power BI Service.
- Upload and manage content within the workspace.
- Identify the storage capacity and monitor the space utilization in the workspace.
- Modify a report and publish the updated version on Power BI Service.

This reading provides you with a step-by-step guide for completing these tasks. It also includes screenshots that you can compare against your work.

You can also review the *Creating a Workspace* video to recap the key concepts that this exercise tests.

### Step 1: Creating the shared workspace

1. Sign into your Power BI Service account using a trial version.



1. Create a new workspace.

Select Workspace from Power BI Service's left sidebar.

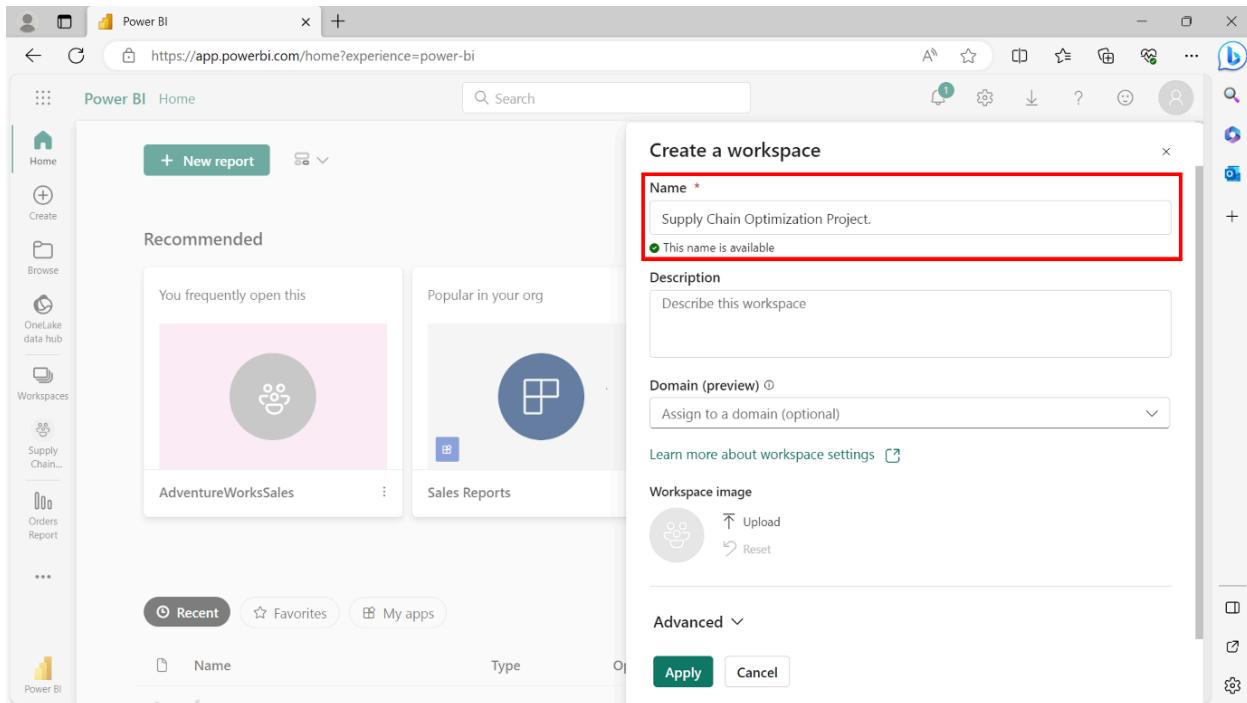
The screenshot shows the Power BI Home page. On the left sidebar, the 'Workspaces' icon is highlighted with a red box. The main area displays a 'Recommended' section with four cards: 'Usage Metrics Report', 'Orders Report', 'My workspace', and 'Product Sales Report'. A search bar at the top right says 'New items saved to: My workspace'.

Select New Workspace to create a new shared workspace.

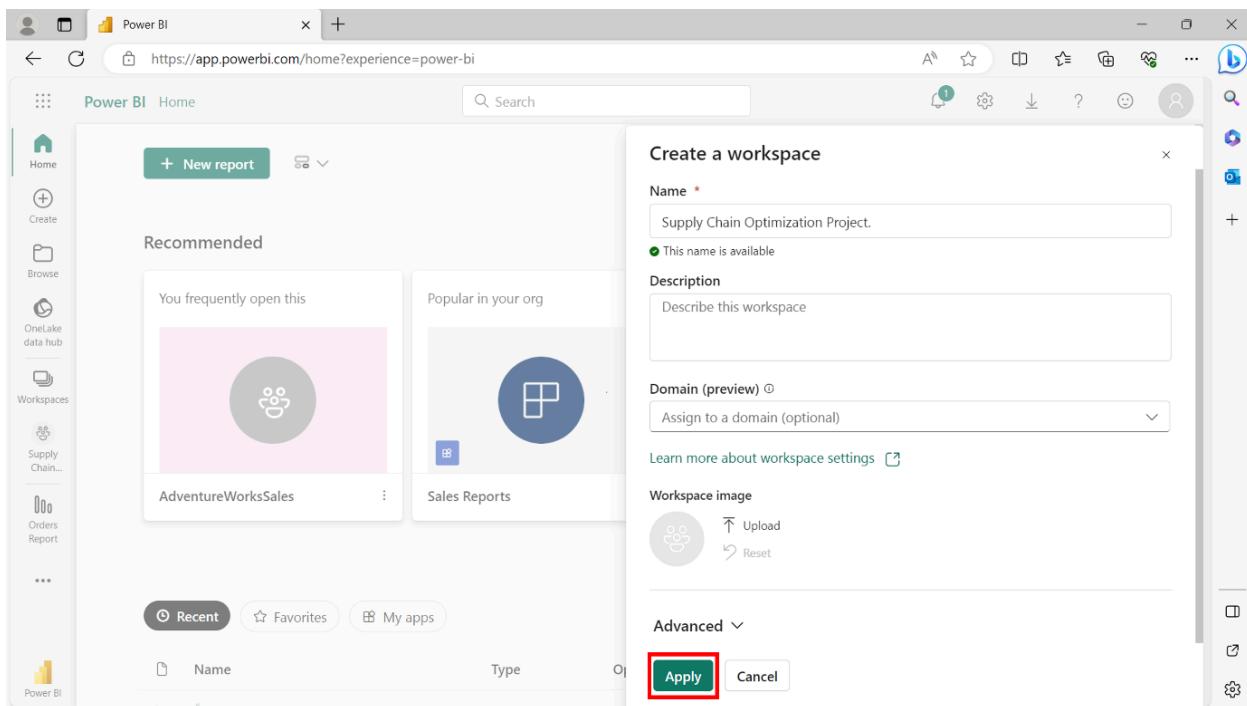
The screenshot shows the 'Power BI My workspace' page. The 'Workspaces' section on the left sidebar has a red box around it. In the center, there is a 'New workspace' button highlighted with a red box. The page includes a search bar and filter options.

## 1. Name the workspace **Supply Chain Optimization Project**.

Enter Supply Chain Optimization Project in the workspace Name field.



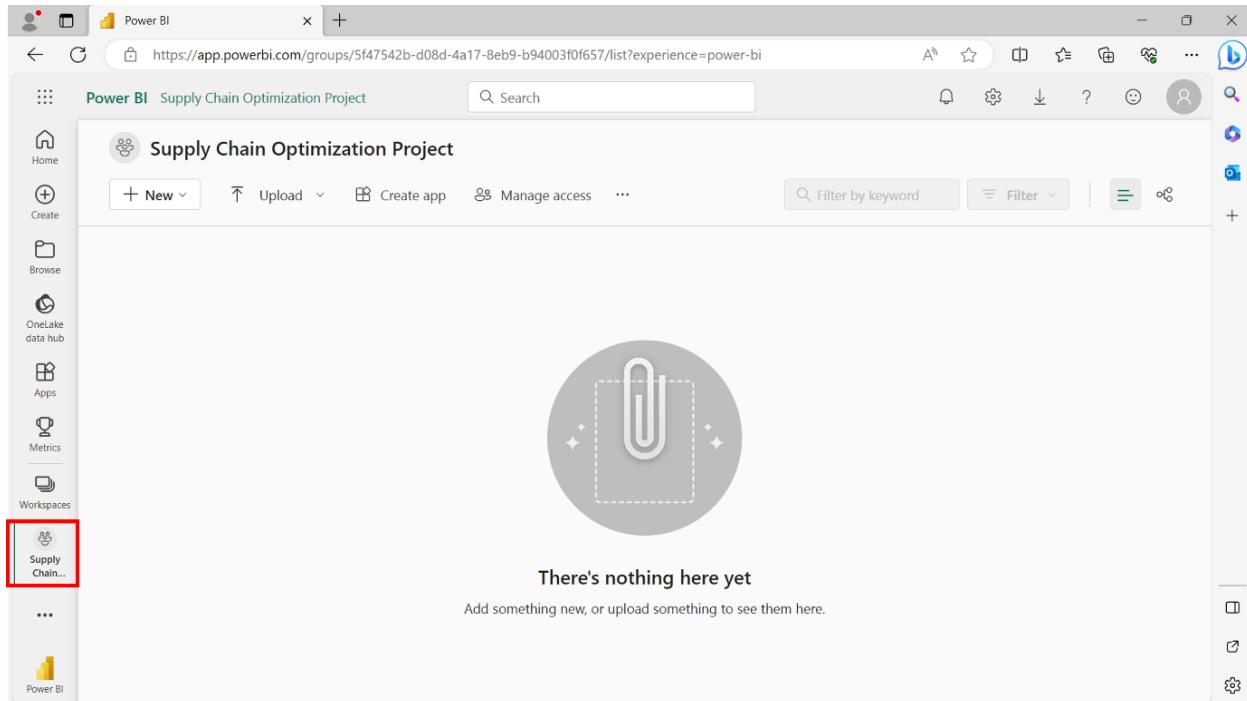
Select Apply to create the workspace.



## Step 2: Upload your report

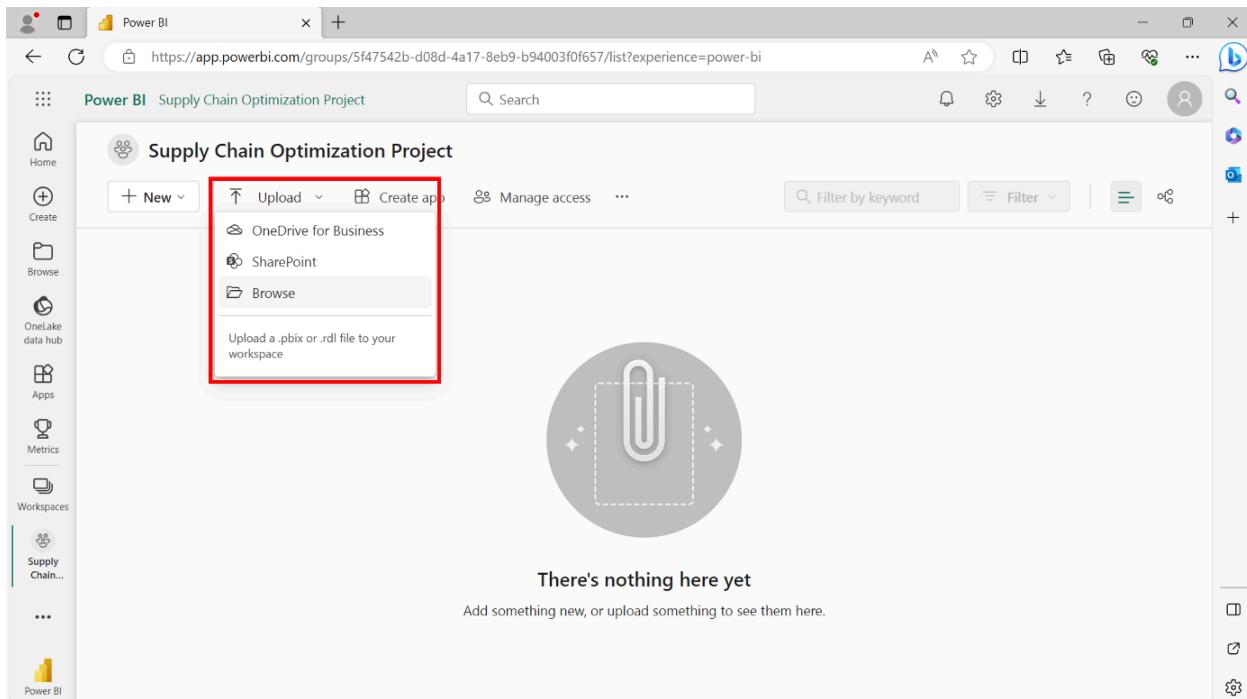
1. Navigate to your new workspace.

Navigate to Workspaces on the left sidebar. Select the Supply Chain Optimization Project workspace.

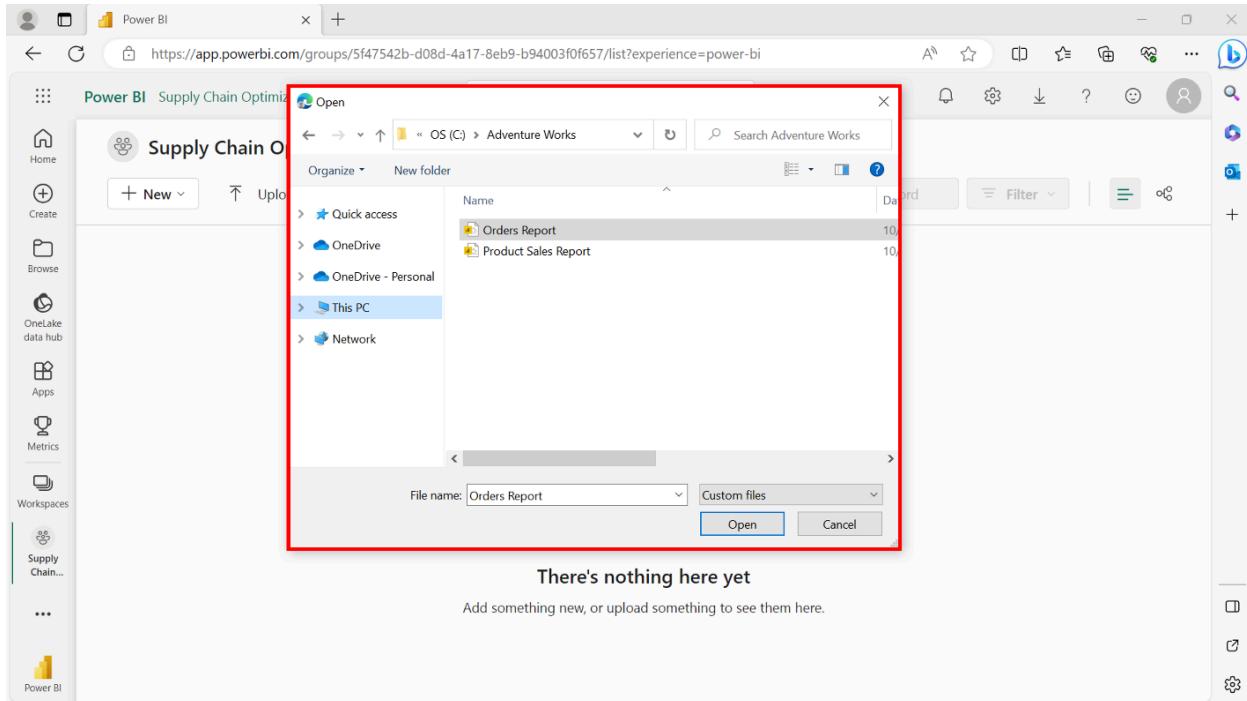


1. Choose the appropriate method of publishing the local report you have downloaded to the workspace.

Select Upload and then select the Browse option to locate your local Power BI report file.



Browse and select the Orders Report file from your local machine. Select Open to upload.



### 1. Identify the three-part content that was published in the workspace.

Once you upload the file, the report's contents appear in your workspace. These contents are the report, dashboard, and dataset.

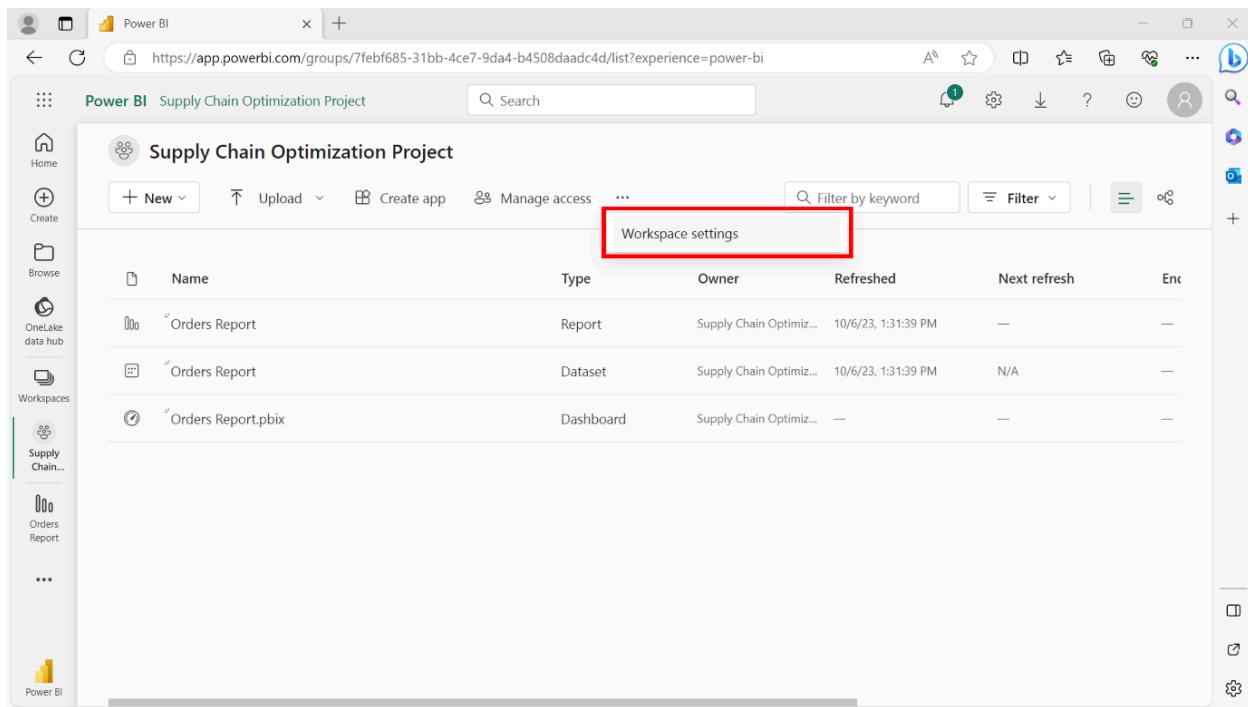
The screenshot shows the Power BI service workspace 'Supply Chain Optimization Project'. The left sidebar shows 'Workspaces' with 'Orders Report' selected. The main area displays a table of published items:

Name	Type	Owner	Refreshed	Next refresh	Enc
Orders Report	Report	Supply Chain Optimiz...	10/6/23, 1:31:39 PM	—	—
Orders Report	Dataset	Supply Chain Optimiz...	10/6/23, 1:31:39 PM	N/A	—
Orders Report.pbix	Dashboard	Supply Chain Optimiz...	—	—	—

### Step 3: Identify Storage Capacity

1. Navigate to the Storage capacity analysis your Power BI Service workspace provides.

From inside the workspace space, select the Workspace settings option in the available workspace tabs of the Power BI Service interface. Depending on your monitor size, you might have to select the ellipsis symbol to access the workspace settings, as shown in the screenshot below.



The screenshot shows the Power BI Service workspace interface for the 'Supply Chain Optimization Project'. On the left, there's a sidebar with icons for Home, Create, Browse, OneLake data hub, Workspaces, and Supply Chain... (which is selected). The main area displays three items: 'Orders Report' (Report), 'Orders Report' (Dataset), and 'Orders Report.pbix' (Dashboard). At the top right, there's a toolbar with various icons. Below the toolbar, a menu bar includes '+ New', 'Upload', 'Create app', 'Manage access', and an ellipsis (...). The ellipsis icon is highlighted with a red box. A dropdown menu labeled 'Workspace settings' is open. The URL in the browser is https://app.powerbi.com/groups/7febf685-31bb-4ce7-9da4-b4508daadc4d/list?experience=power-bi.

Under the Workspaces settings, select System Storage.

The screenshot shows the 'Workspace settings' page in Power BI. On the left, there's a sidebar with options like Home, Create, Browse, OneLake data hub, Workspaces, Supply Chain..., Orders Report, and Power BI. The main area has tabs for 'About', 'Premium', and 'Azure connections'. Under 'Azure connections', there's a table with columns 'Name', 'Size', 'Type', and 'Related objects'. A row for 'System storage' is selected and highlighted with a red box. The table shows:

Name	Size	Type	Related objects
System storage	1 MB	Dataset	Orders Report

At the top right, there's a progress bar showing '1 MB used of 10 GB (0.01%)' and '9 GB available'.

## 1. Note the maximum storage capacity of the workspace.

The System storage tab states that the maximum storage capacity of the workspace is 10GB.

This screenshot is identical to the one above, showing the 'Workspace settings' page in Power BI. The 'System storage' row is selected and highlighted with a red box. The '9 GB available' text at the top right is also highlighted with a red box. The rest of the interface and data are the same as the first screenshot.

## 1. Note the percentage of storage consumed by the content uploaded.

The Orders Report content consumes just 0.01% of the workspace's total storage capacity.

The screenshot shows the 'Power BI Supply Chain Optimization Project' workspace settings. In the top right, a storage summary indicates '1 MB used of 10 GB (0.01%)' with '9 GB available'. Below this, a table lists workspace objects:

Name	Type	Related objects
Orders Report	Dataset	Orders Report

#### Step 4: Modify and republish the report.

1. Open the Orders Report in Power BI Desktop.

The screenshot shows the 'Adventure Works Order Report 2023' in Power BI Desktop. It contains three visualizations:

- Number of Orders by Customer Location:** A bar chart showing the number of orders for various countries. The data is as follows:
 

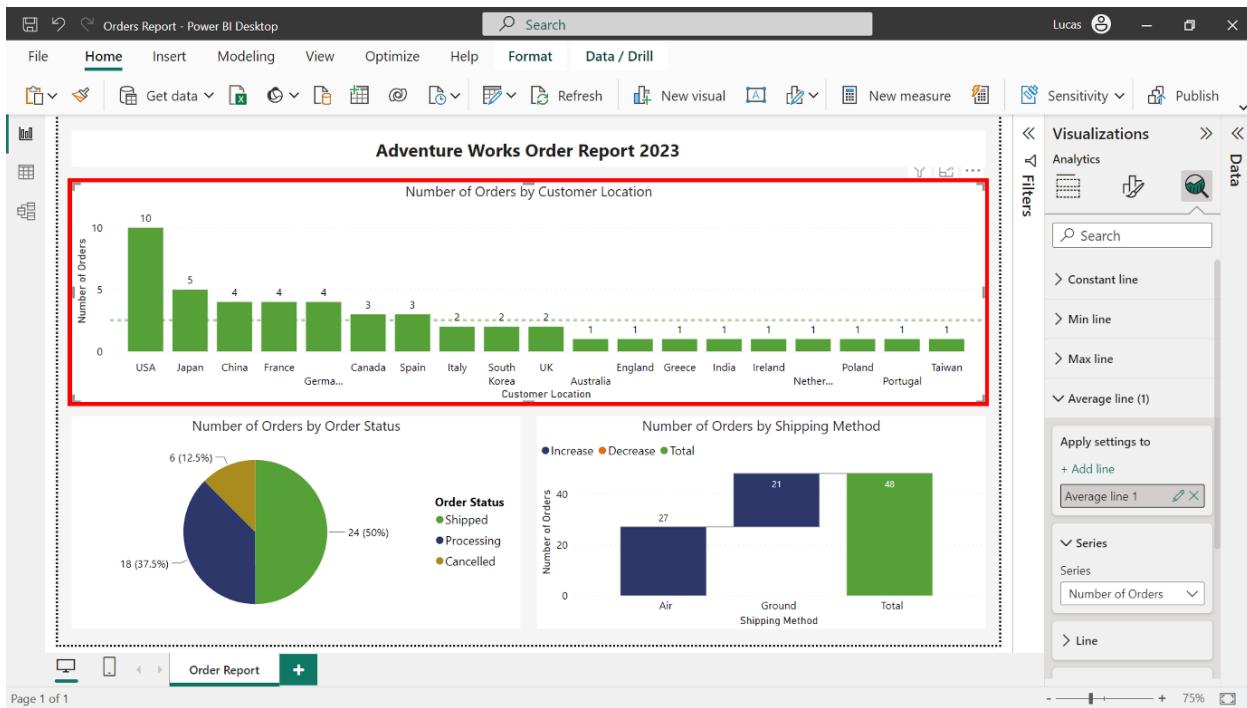
Customer Location	Number of Orders
USA	10
Japan	5
China	4
France	4
Germany	4
Canada	3
Spain	3
Italy	2
South Korea	2
UK	2
Australia	1
England	1
Greece	1
India	1
Ireland	1
Netherlands	1
Poland	1
Portugal	1
Taiwan	1
- Number of Orders by Order Status:** A pie chart showing the distribution of order statuses. The data is as follows:
 

Order Status	Percentage
Shipped	50%
Processing	37.5%
Cancelled	12.5%
- Number of Orders by Shipping Method:** A stacked bar chart showing the number of orders for different shipping methods. The data is as follows:
 

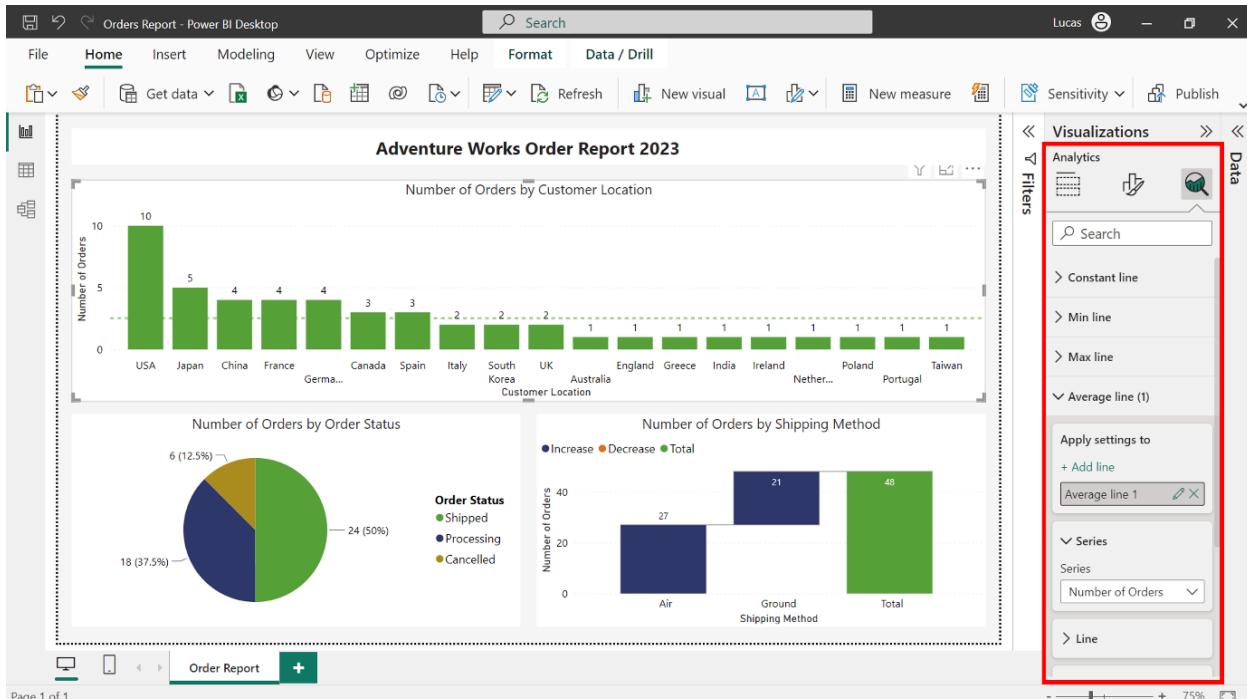
Shipping Method	Number of Orders
Air	27
Ground	21
Total	48

1. Add an average line to the bar chart present in the report.

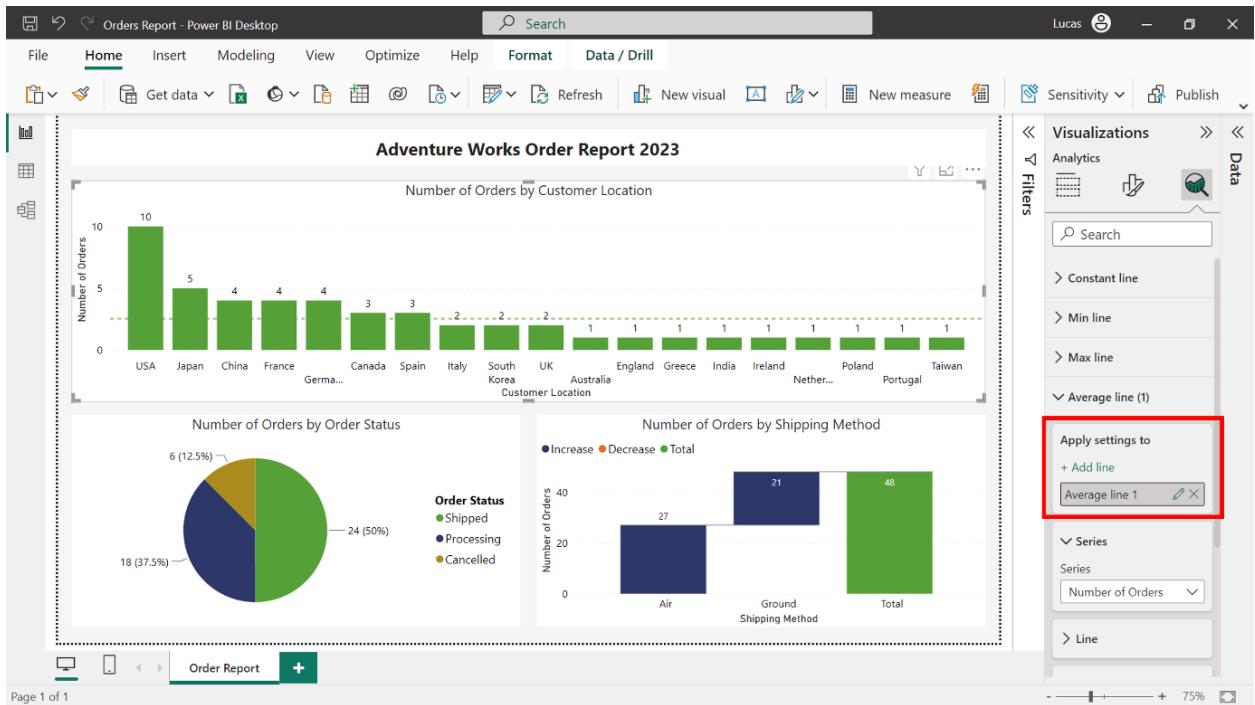
Locate the bar chart on the top of the canvas.



Select the Analytics pane on the Visualizations tab.

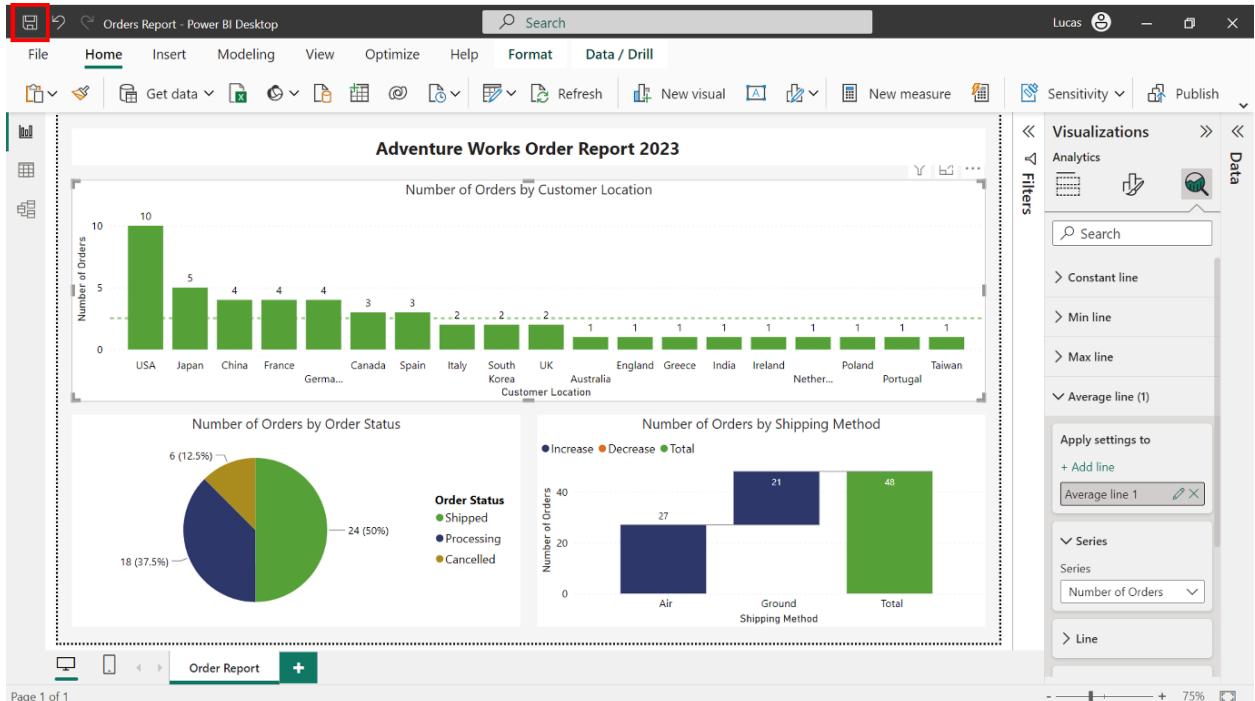


Select the Average line option, then select Add line to add the average line on the visualization.



1. Save the modifications and republish the report to the Supply Chain Optimization Project workspace.

Save and close the report, then return to Power BI Service.



Select Upload and then Browse to locate the newly saved report. Publish it again on the platform.

The screenshot shows the Power BI web interface with the 'Adventure Works Sales' workspace selected. At the top, there's a navigation bar with icons for Home, Workspaces, and the current workspace. Below it is a search bar and a toolbar with various icons. The main area displays a list of items in the workspace, including reports, datasets, and dashboards. A red box highlights the 'Upload' button and the 'Upload a .pbix or .rdl file to your workspace' option.

## 1. Verify that the published report has successfully updated the modifications.

Select the Orders Report to reopen it. Confirm that your visual update, the average line, has been successfully implemented on the platform.

The screenshot shows the 'Orders Report - Power BI' page. The left sidebar includes options like Home, Create, Browse, OneLake data hub, Workspaces, Supply Chain..., and Orders Report. The main area contains three visualizations: 1) A bar chart titled 'Number of Orders by Customer Location' showing the count of orders for various countries. 2) A pie chart titled 'Number of Orders by Order Status' showing the distribution of order statuses. 3) A bar chart titled 'Number of Orders by Shipping Method' showing the count of orders for different shipping methods. The interface includes a navigation bar at the top and a toolbar with various icons.

## Conclusion

With these steps, you have successfully set up a shared workspace, managed content, monitored storage utilization, and updated a report in Power BI Service, showcasing your adeptness in leveraging Power BI for collaborative projects.

## **2.2. Exercise: Configuring a dataset**

### **Introduction**

You should now understand the fundamentals of configuring datasets and gateways.

In this exercise, you can apply your knowledge of these concepts by following all necessary aspects of deploying and maintaining a dataset.

By completing this exercise, you'll demonstrate your ability to:

- Publish a dataset and configure its gateway.
- Authenticate a data source and schedule refresh times.
- Endorse the dataset and verify all settings with an on-demand refresh.

### **Scenario**

The Adventure Works Sales dataset logs sales records for various departments within the organization. Each department has been asked to produce their annual sales report using this dataset. To ensure these reports are accurate, you must publish and configure the dataset and check it's correctly connected and available.

### **Instructions**

Download the Adventure Works FactSales.xlsx file and follow the prompts below to complete the exercise.

Step 1: Load and publish the dataset.

1. Launch a new Power BI Desktop file and import the AdventureWorks FactSales.xlsx file. The file contains multiple tables related to the company's sales.
2. Load the Customer, Date, Product, and Sales tables.
3. Save the Power BI file as AW Sales Dataset.
4. Log in to Power BI Service and create a new shared workspace named AW Sales.
5. Upload your content to the new workspace.

Step 2: Configure the connection between the gateway and cloud service

1. Navigate to the dataset settings. If you have already installed a gateway on your machine, you can verify that it's active in the dataset from the settings, then move on to Step 3.

2. If this is your first time connecting a dataset from your machine, you must download and install the gateway.
3. Sign in with your Power BI Service credentials to finalize the gateway's configuration.
4. Select the new gateway to be used on the dataset. Verify that it is applied successfully.

#### Step 3: Authenticate the data source

1. Navigate to the credentials sector and update the authentication credentials.
2. Insert the authentication method and privacy level setting.
3. Sign in on the dataset.

Tip: Don't worry about which settings you choose. The dataset is used only for this exercise, so there is no difference in the selection.

#### Step 4: Configure a scheduled refresh

1. Enable the scheduled refresh.
2. Set a daily UTC refresh frequency.
3. Set a three-times-per-day refresh with eight-hour intervals.
4. Identify the maximum refresh frequency and keep only the three relevant scheduled times.
5. Apply and confirm your scheduled refresh time.

#### Step 5: Endorse the dataset and verify all configurations

1. Promote the dataset to share its accountability.
2. Make the dataset discoverable to others.
3. From the workspace view, verify that the dataset scheduled refresh is enabled and is now endorsed.
4. Perform an on-demand refresh to confirm that all settings are working.

Tip: In a real-case scenario, a thorough testing of the dataset's data quality should be made beforehand when endorsing a dataset.

#### Conclusion

In this exercise, you have successfully helped Adventure Works deploy and maintain a dataset. You've also helped to authenticate the data source and schedule refresh times,

ensuring the dataset remains updated. And you've demonstrated a solid understanding of maintaining data.

You improved data management processes significantly through these steps, showcasing the practical application of acquired skills.

## Exemplar: Configuring a dataset

### Overview

In the exercise Configuring a dataset, you were asked to publish a dataset and configure all its necessary settings.

Your tasks in this exercise were to:

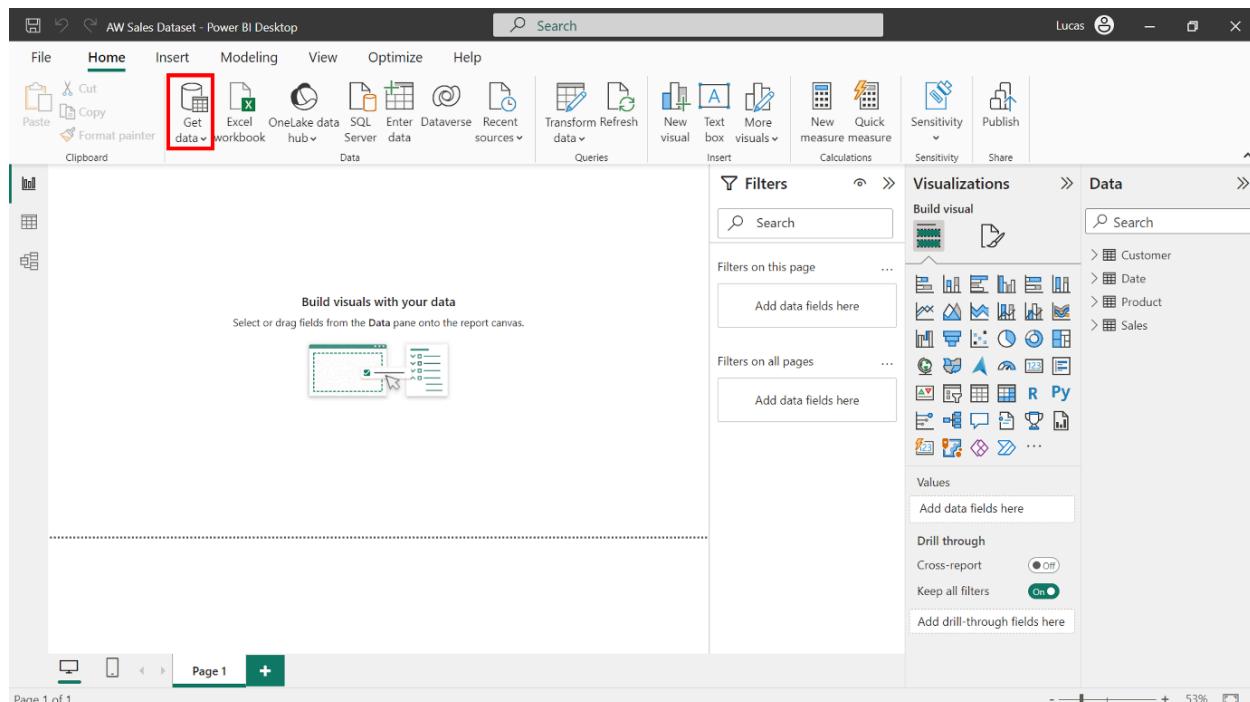
- Publish the dataset and configure its gateway.
- Authenticate its data source and schedule refresh times.
- Endorse the dataset and verify all settings with an on-demand refresh.

This reading provides you with a step-by-step guide for completing these tasks. It also includes screenshots that you can compare against your work.

You can also review the *Datasets in Power BI Service*, *Configure dataset refresh*, and *Endorsing datasets* videos for more guidance.

### Step 1: Load and publish the dataset.

1. Launch a new Power BI Desktop file and select Get data to Import the AdventureWorks FactSales.xlsx file into Power BI.



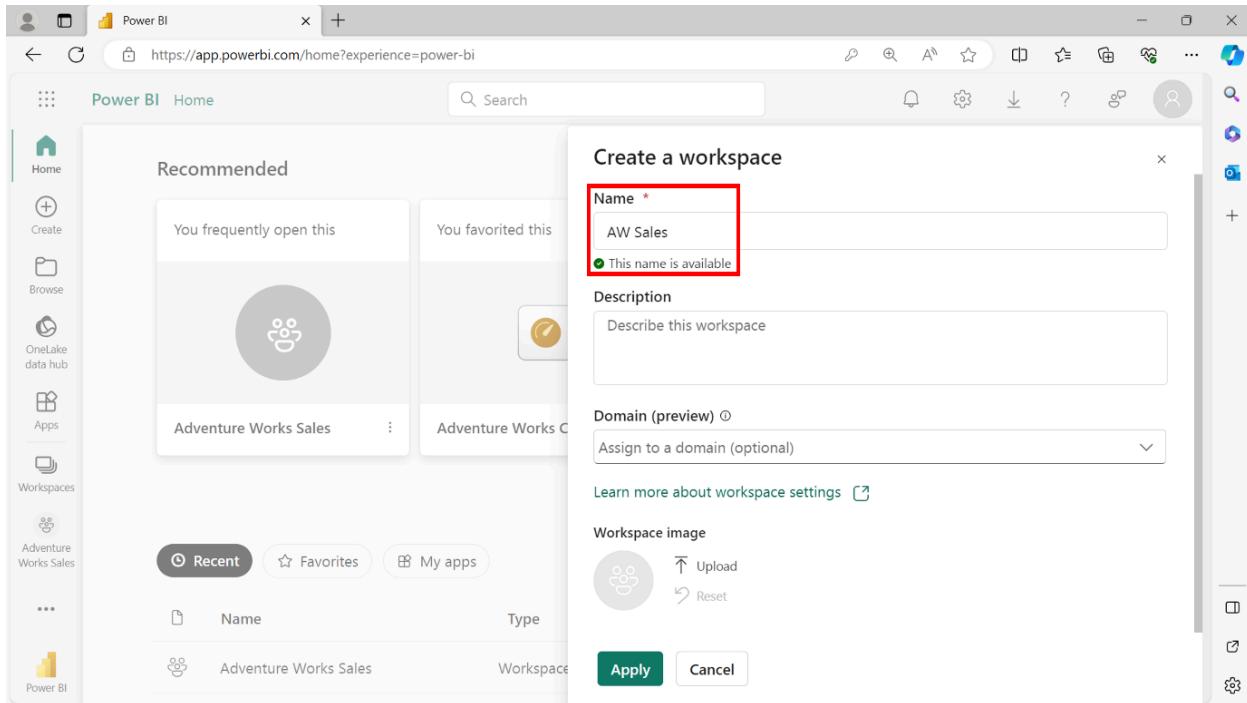
1. Select the data source's Customer, Date, Product, and Sales tables. Then select Load to load these tables to Power BI.

The screenshot shows the Power BI Desktop interface. In the top left, the ribbon has 'File', 'Home' (selected), and 'Insert'. The 'Clipboard' section shows a clipboard icon and a dotted line indicating a connection to the main workspace. The 'Navigator' pane on the left lists 'AdventureWorks FactSales.xlsx [14]' with several tables selected: Customer, Date, Product, Reseller, and Sales. The 'Sales' table is currently highlighted. The main area shows a preview of the 'Sales' table with columns: SalesOrderLineKey, ResellerKey, CustomerKey, ProductKey, and OrderDateKey. The data preview shows rows from 43659001 to 43661008. The bottom right of the preview area has 'Load', 'Transform Data', and 'Cancel' buttons, with 'Load' being the one highlighted by a red box.

1. Select the disk icon on the top left of the tool to save the Power BI file as AW Sales Dataset.

The screenshot shows the Power BI Desktop interface again, but this time the 'File' tab is highlighted with a red box. The ribbon also includes 'Home', 'Insert', 'Modeling', 'View', 'Optimize', and 'Help'. The 'Data' section of the ribbon contains icons for 'Get data', 'Clipboard', 'Enter data', 'Transform data', 'New visual', 'Text box', 'More visuals', 'Sensitivity', and 'Publish'. The 'Visualizations' pane on the right shows various chart and report icons under 'Build visual'. The 'Data' pane on the far right lists categories: Customer, Date, Product, and Sales. The bottom navigation bar shows 'Page 1' and a '+' icon.

1. In Power BI Service, select the Workspaces icon from the left navigation pane. Then select Create a new workspace. Create a new shared workspace named AW Sales.

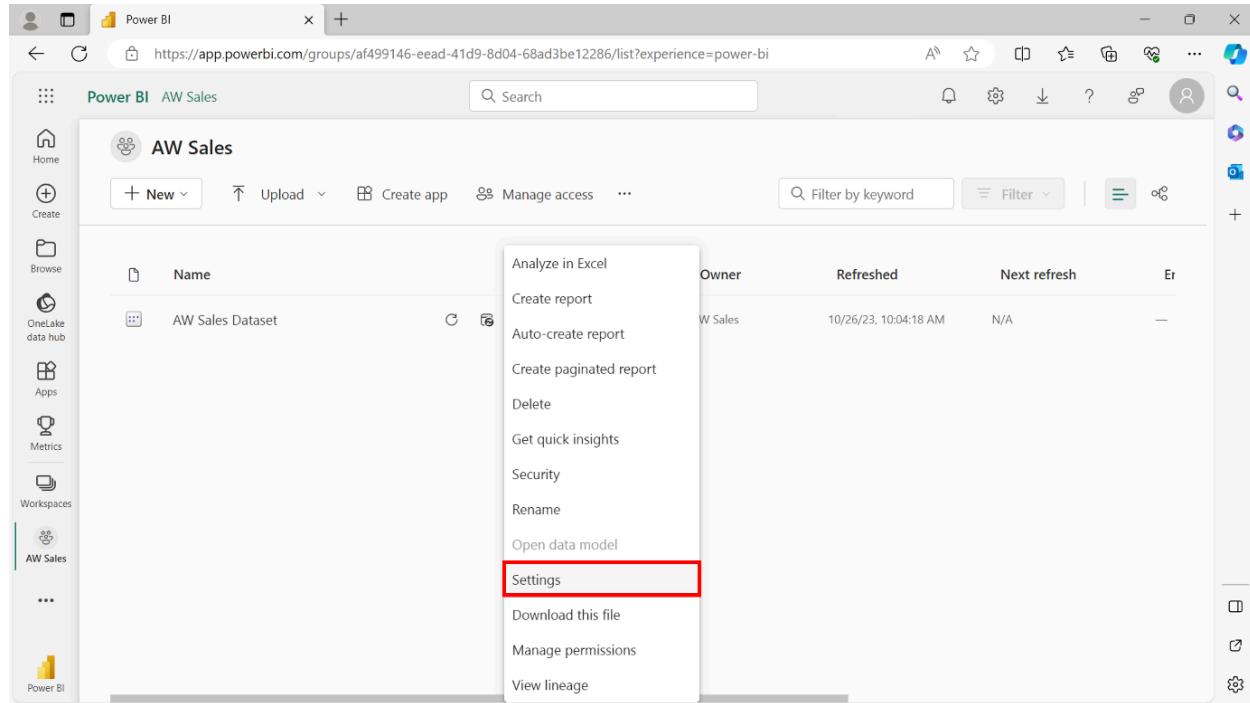


1. Select Upload to upload your content to the new workspace. Power BI service automatically creates a report and dashboard. You can remove these and retain the dataset.

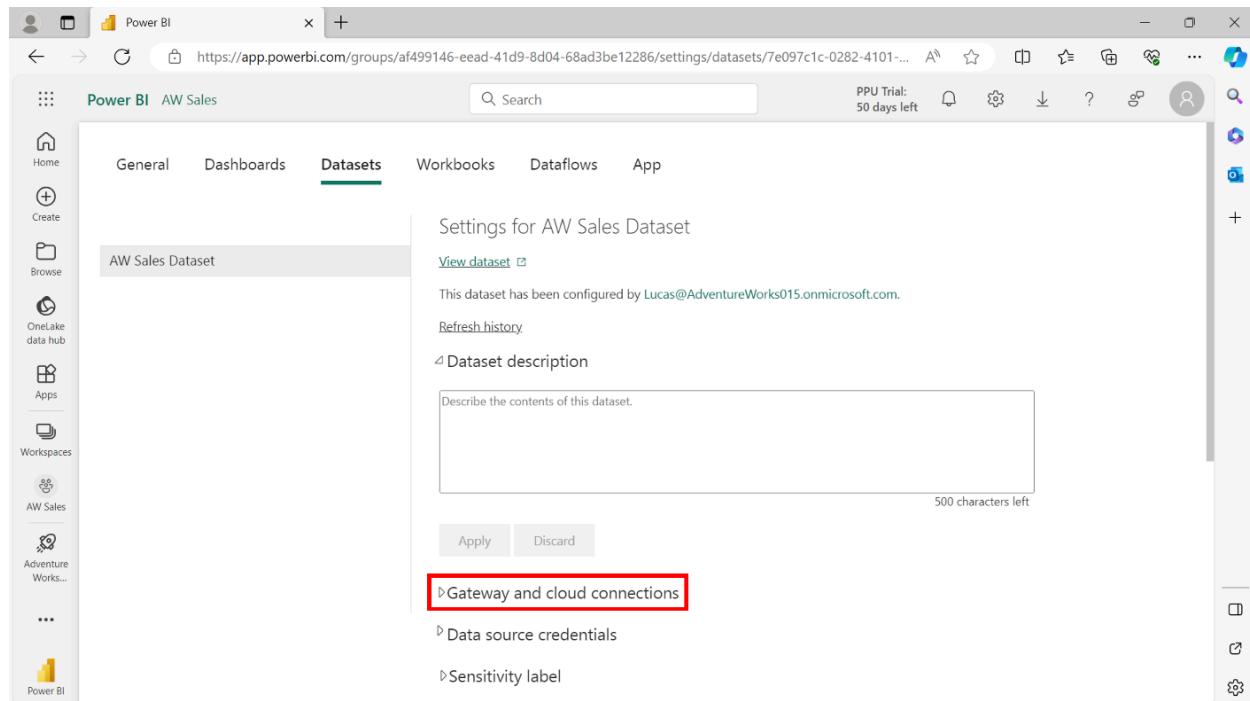
Name	Type	Owner	Refreshed	Next refresh
AW Sales Dataset	Report	AW Sales	10/24/23, 12:23:02 PM	—
AW Sales Dataset	Dataset	AW Sales	10/24/23, 12:23:02 PM	N/A
AW Sales Dataset.pbix	Dashboard	AW Sales	—	—

## Step 2: Configure the connection between the gateway and cloud service

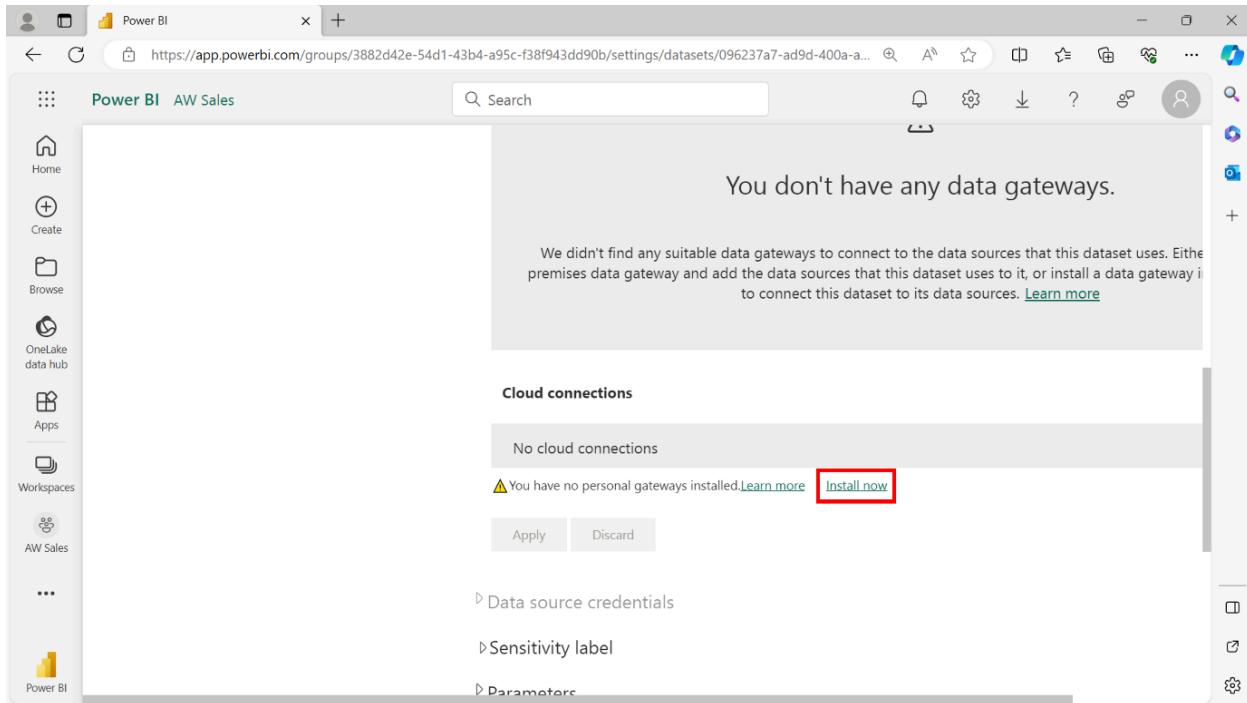
1. Navigate to the dataset settings by hovering over the dataset's name. Select the ellipsis symbol and then Settings.



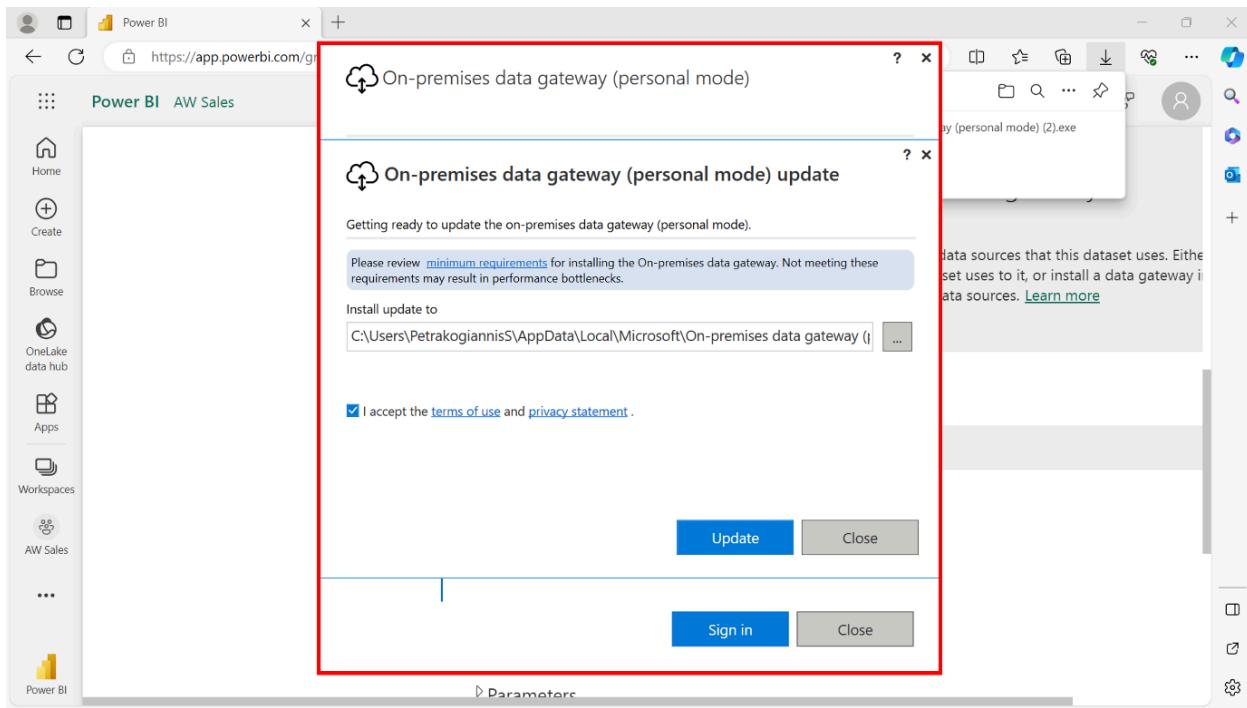
Scroll down through the settings to locate the Gateway and cloud connections.



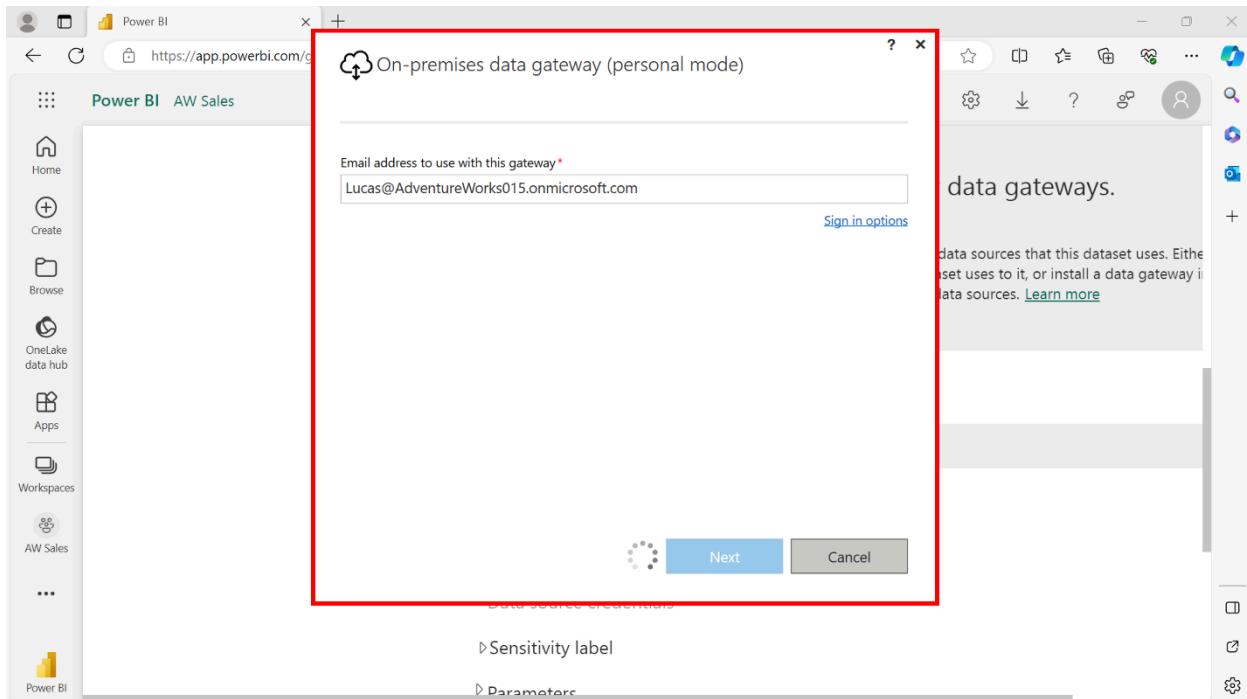
1. If this is the first time connecting a dataset from your machine, a gateway won't exist. Download and install a new one by selecting Install now.



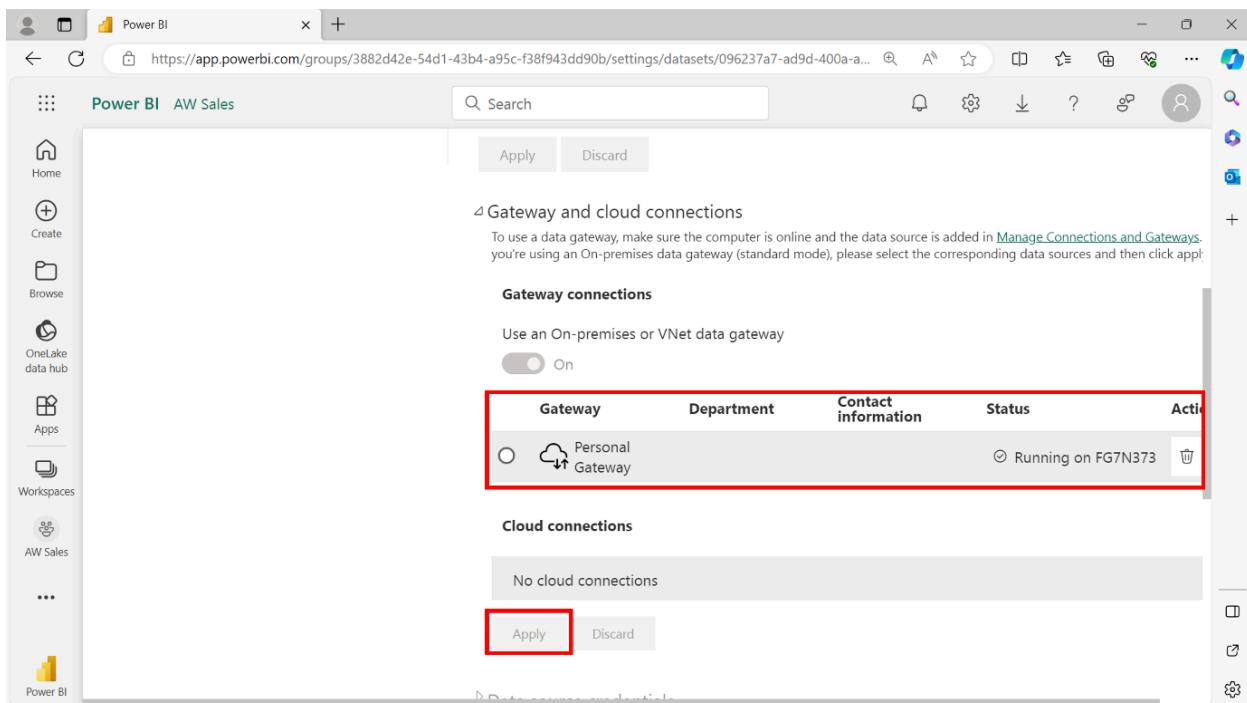
Select the downloaded gateway file and follow the installation steps.



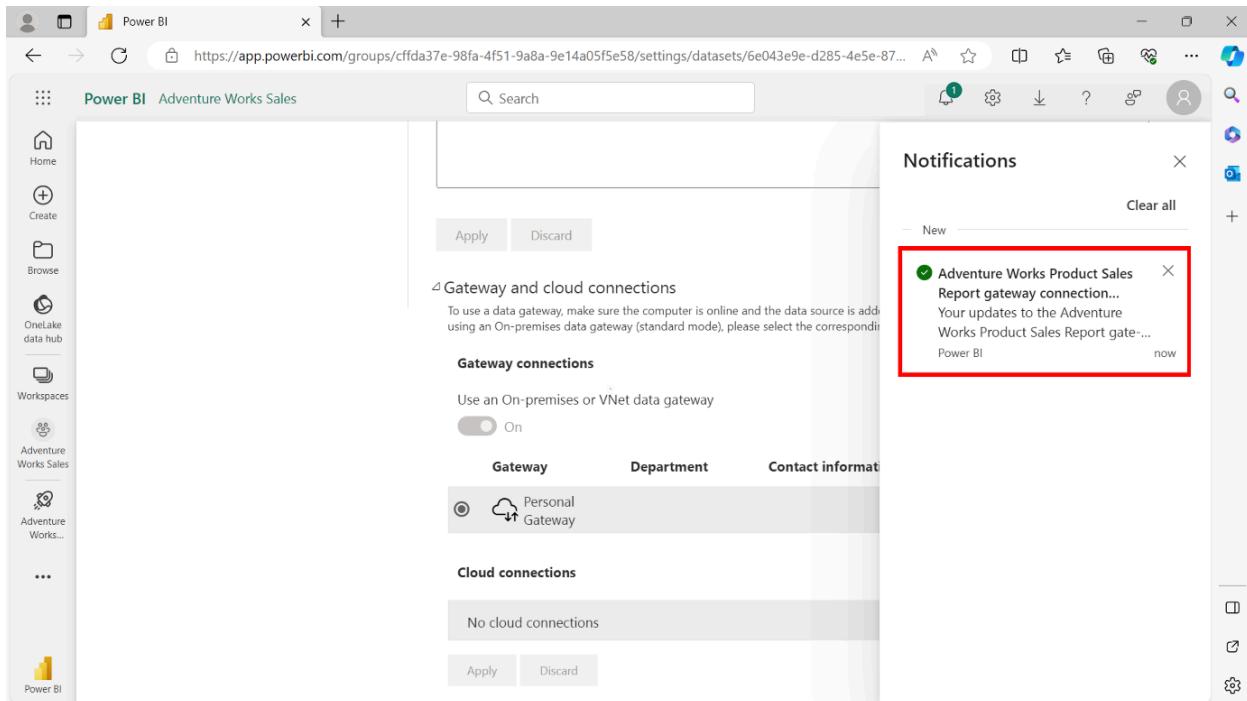
1. Sign in with your Power BI Service credentials to finalize the gateway's configuration.



1. Return to Power BI Service to verify that the new gateway has been applied successfully. Select the gateway, then select Apply.

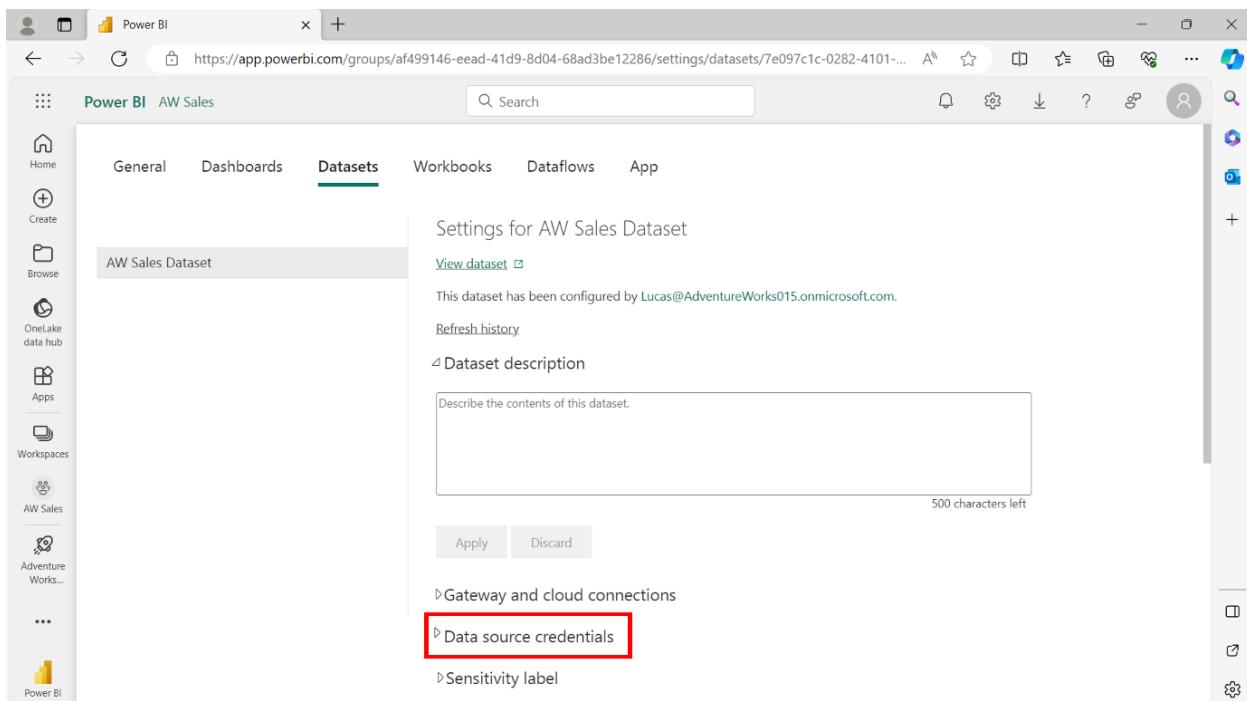


A notification states that the gateway is active.

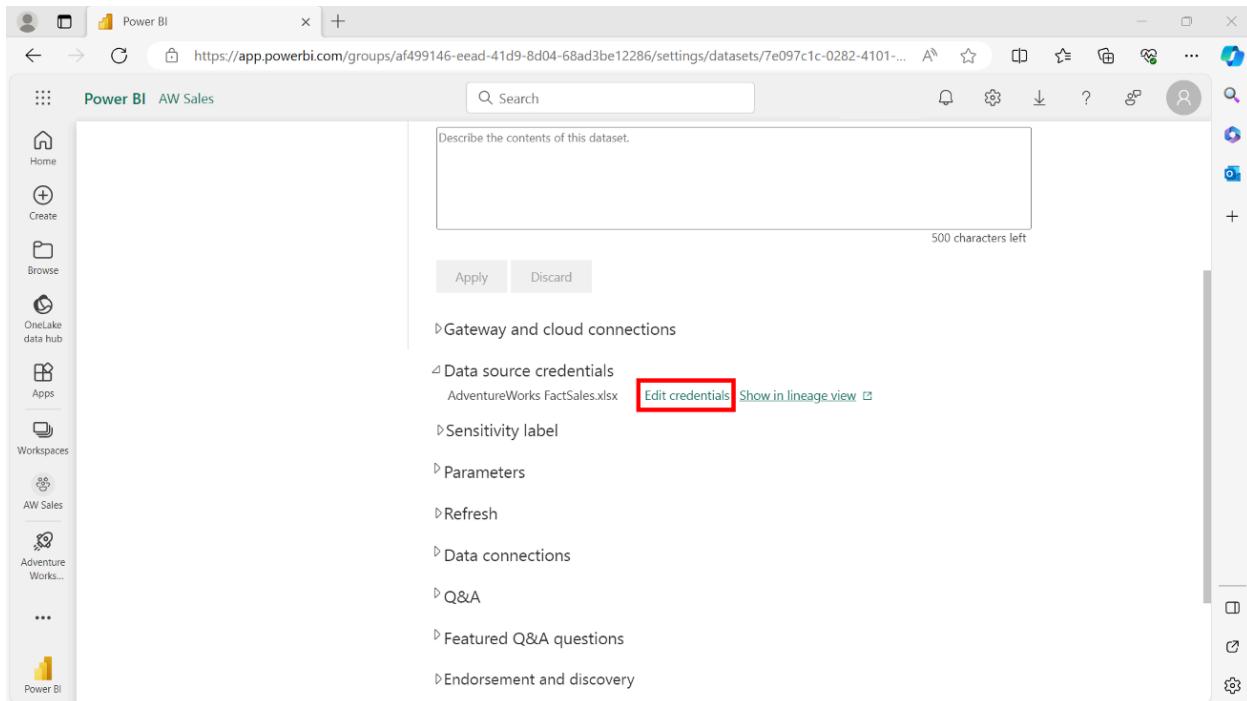


### Step 3: Authenticate data source credentials

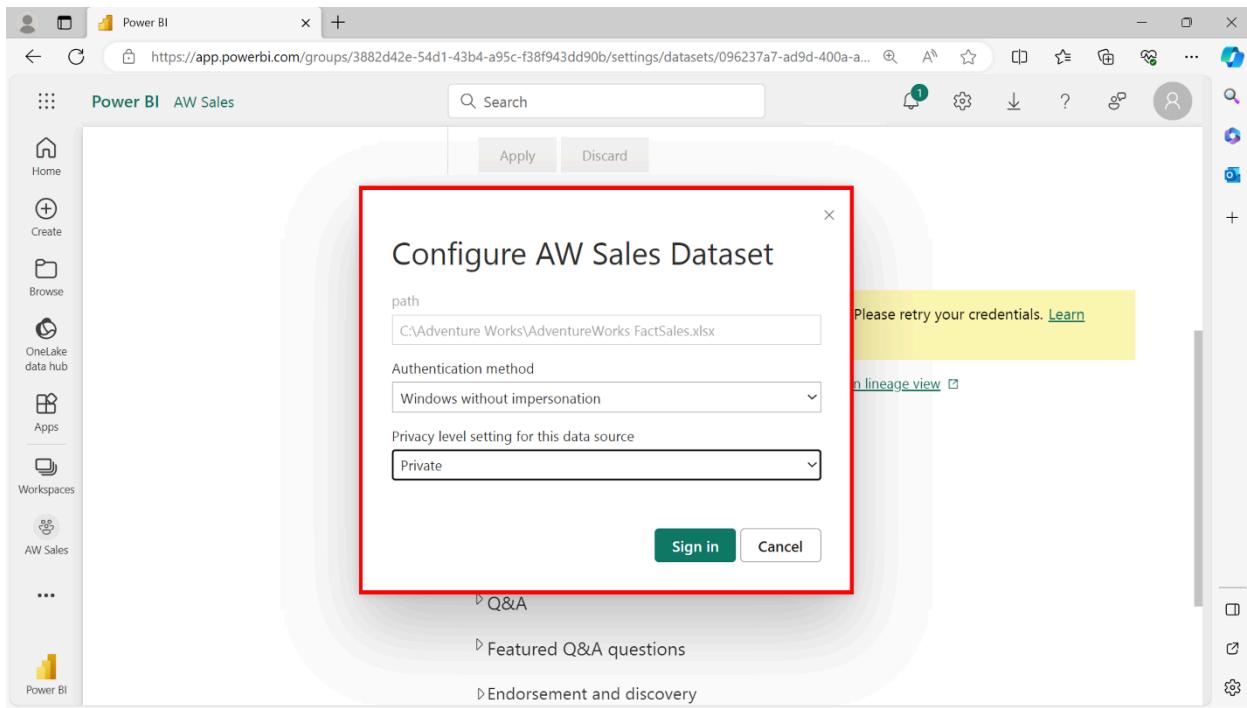
1. Scroll one section down to locate the Data source credentials section of dataset's settings.



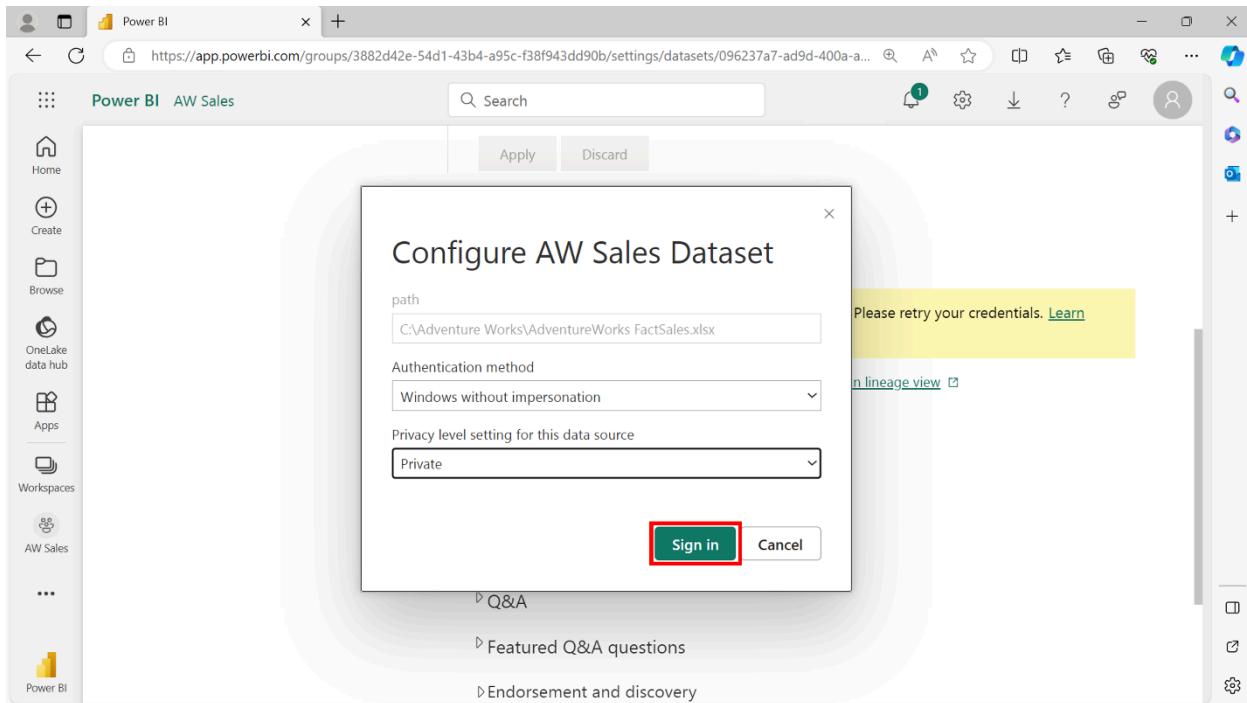
Expand the section to view its options. Select Edit credentials of the AdventureWorks FactSales.xlsx to update the required information.



## 1. Insert the Authentication method and Privacy level settings.



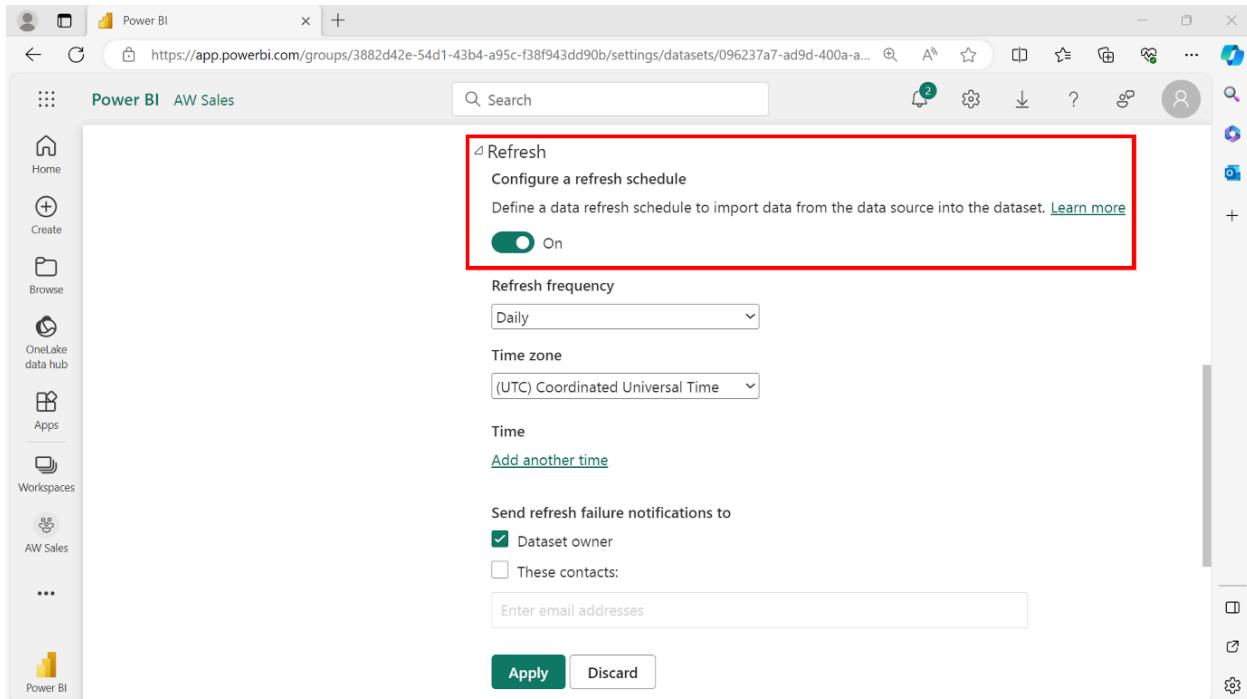
## 1. Select Sign in.



Tip: The dataset is used only for this exercise, so your chosen settings don't matter.

#### Step 4: Configure a scheduled refresh.

1. Toggle the refresh schedule to ON to enable the scheduled refresh.



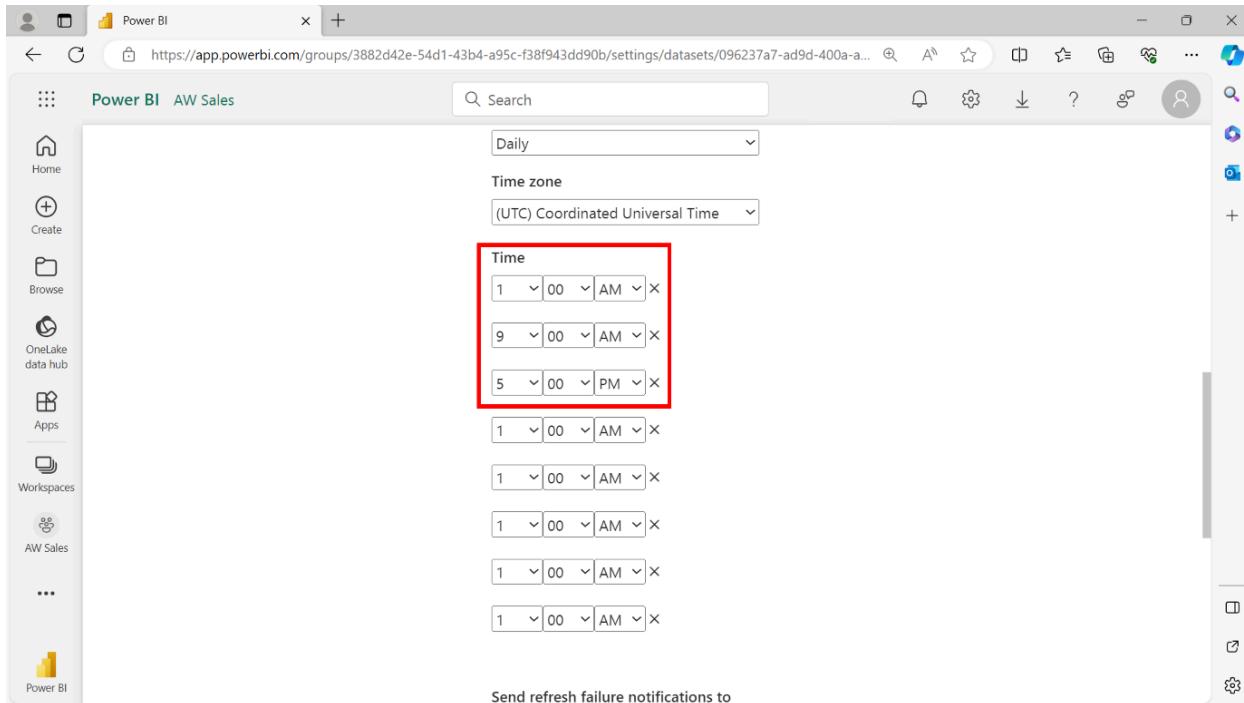
1. Select Daily and UTC from the Refresh frequency and Time zone options.

The screenshot shows the 'Refresh' section of the Power BI dataset settings. A red box highlights the 'Refresh frequency' dropdown set to 'Daily' and the 'Time zone' dropdown set to '(UTC) Coordinated Universal Time'. Below these are sections for sending refresh failure notifications to the 'Dataset owner' (checked) and other contacts (unchecked), with an 'Enter email addresses' input field.

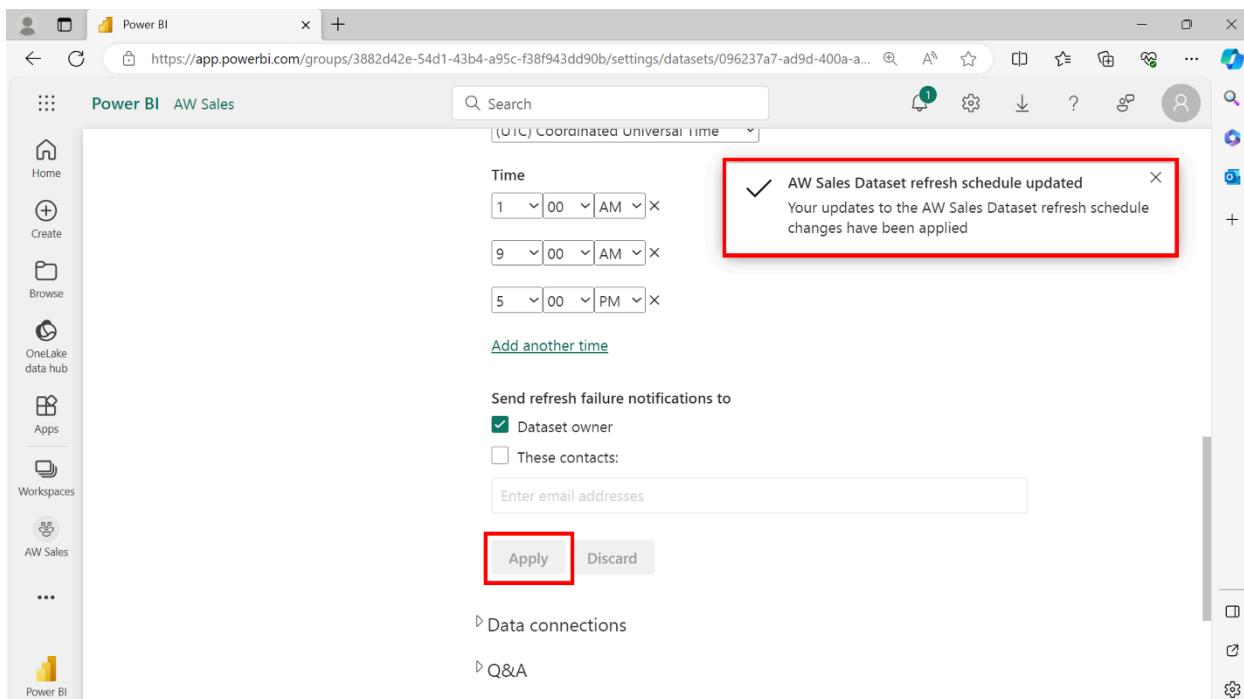
1. Set a three-times per-day refresh with an eight-hour interval in between using the following times: 01:00 AM, 09:00 AM, and 05:00 PM.

The screenshot shows the 'Refresh' section with a red box highlighting the 'Time' section. It displays three scheduled refresh times: 01:00 AM, 09:00 AM, and 05:00 PM. Below this is an 'Add another time' link and a section for sending refresh failure notifications to the 'Dataset owner' (checked).

1. The maximum number of times the data can be refreshed is eight times. Delete all scheduled refreshes except the three you've scheduled.

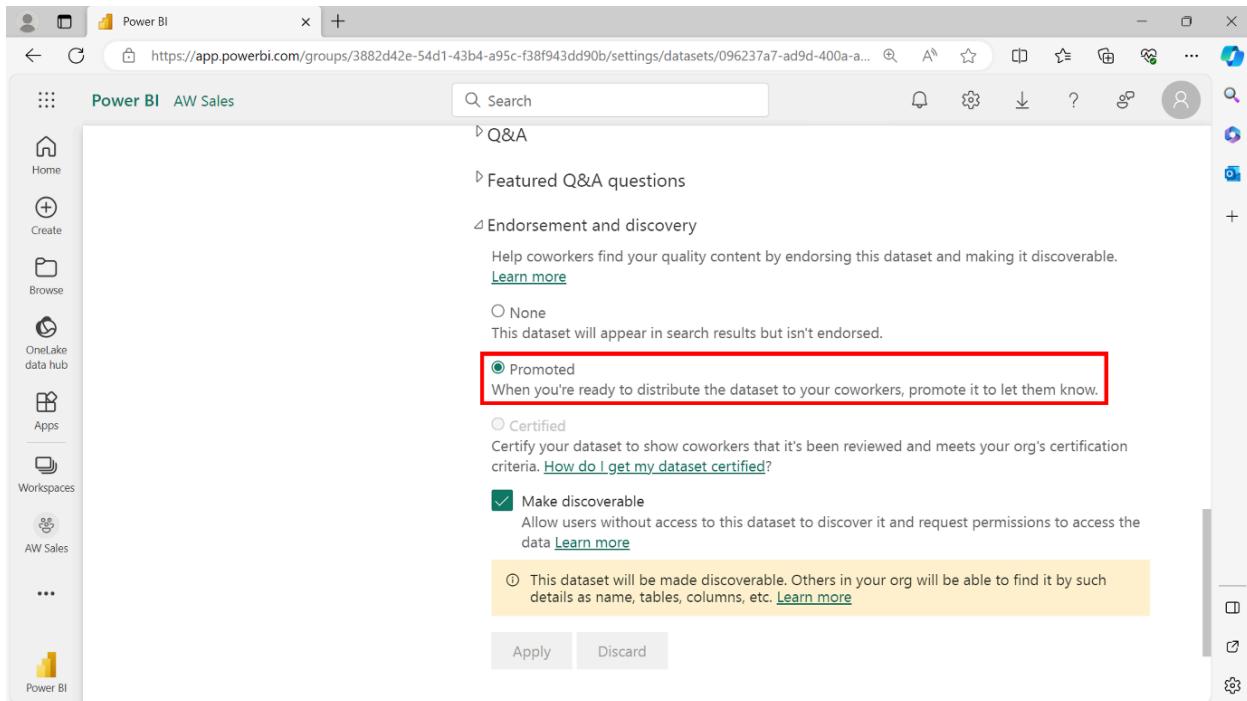


1. Select Apply, then wait for the confirmation notification of your scheduled refresh time. The scheduled refresh is now configured.

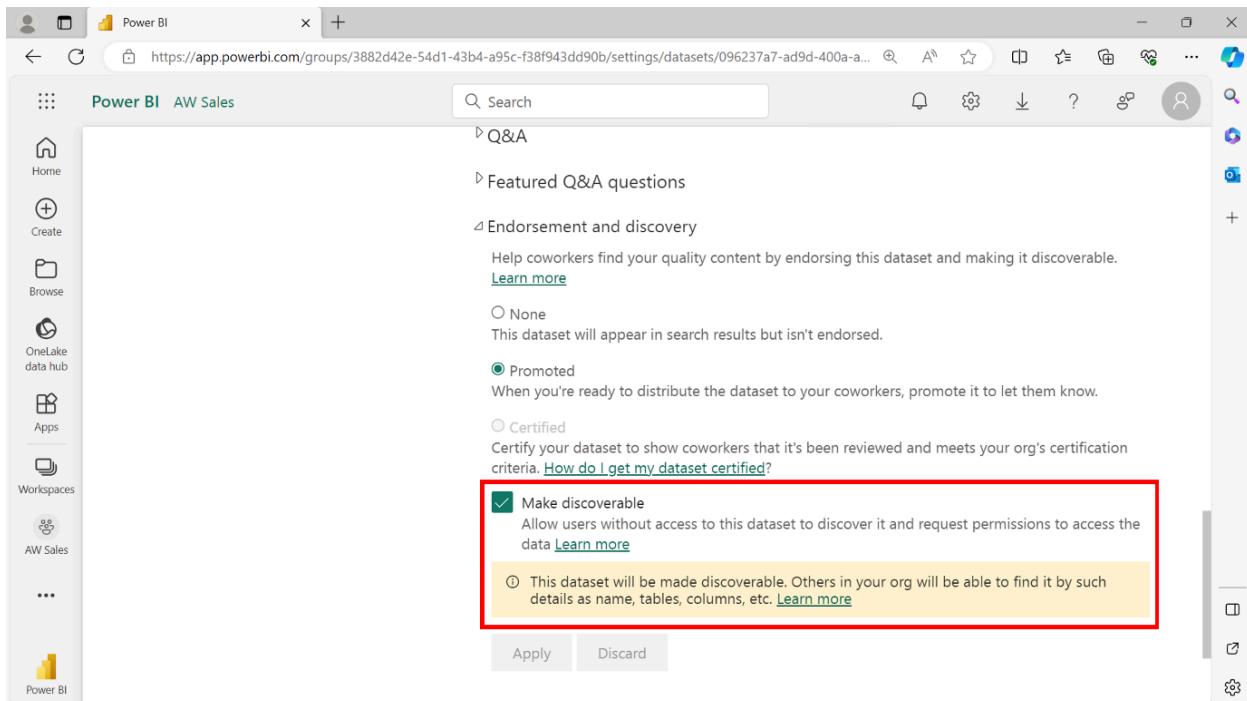


## Step 5: Endorse the dataset and verify all configurations.

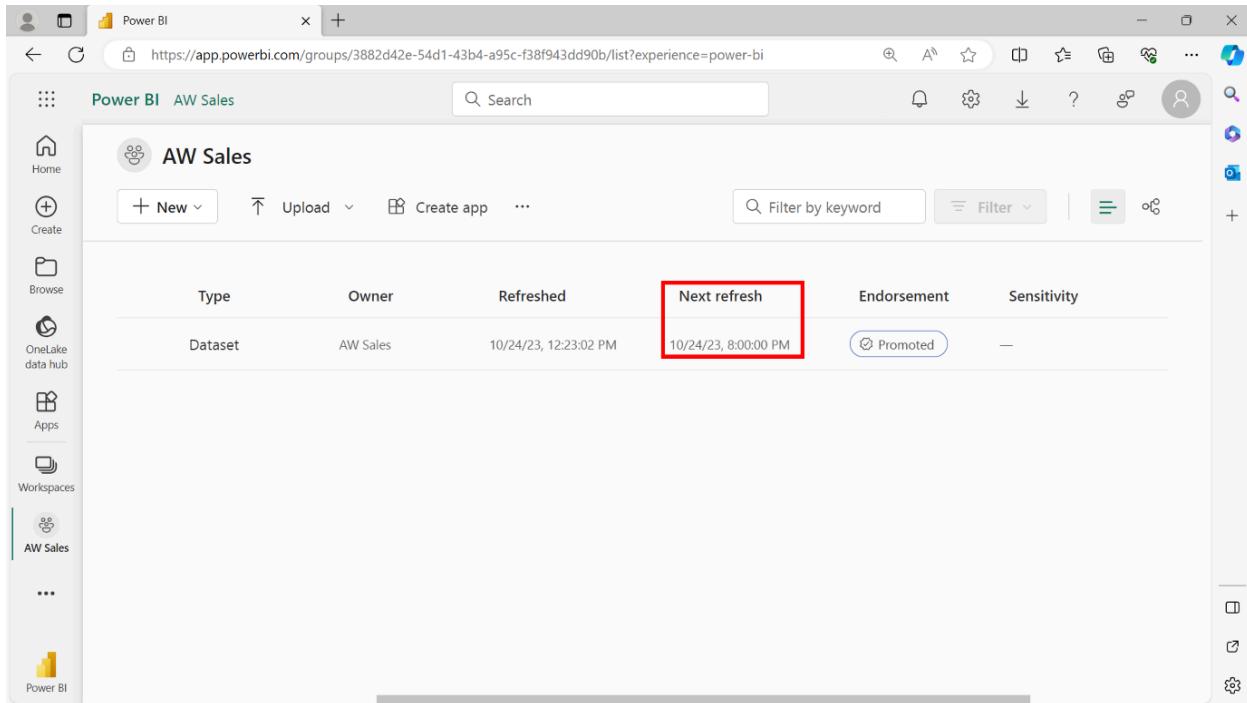
1. Navigate to the Endorsement and discovery options and select Promoted to promote and share the dataset.



## 1. Select Make discoverable to ensure others can discover the dataset.



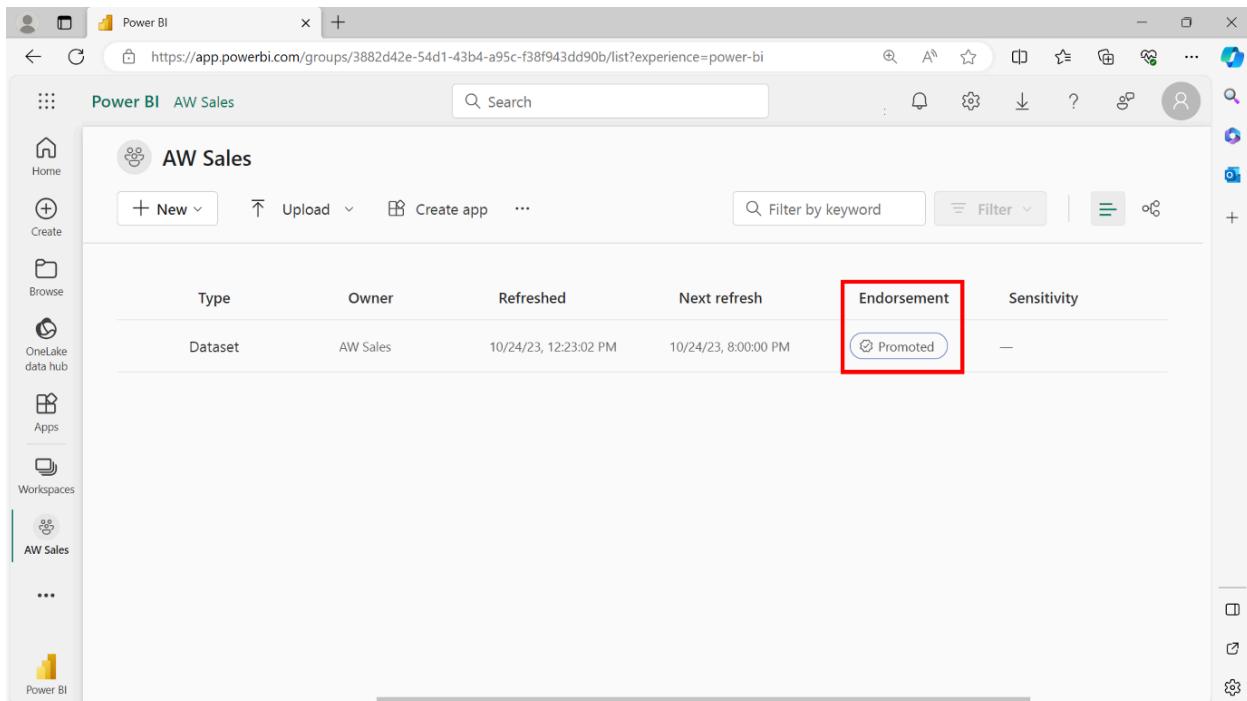
## 1. Return to the Workspace view. Navigate to the dataset and identify the Next refresh column and scheduled time to verify the dataset scheduled refresh is enabled by checking that a Next refresh time is planned.



The screenshot shows the Power BI dataset list page. On the left, there's a sidebar with icons for Home, Create, Browse, OneLake data hub, Apps, Workspaces, and Power BI. The main area has a title bar "Power BI AW Sales" and a search bar. Below that is a card for "AW Sales". The main content is a table with columns: Type, Owner, Refreshed, Next refresh, Endorsement, and Sensitivity. A single row is shown for a Dataset owned by AW Sales, refreshed on 10/24/23 at 12:23:02 PM, with the next refresh set for 10/24/23 at 8:00:00 PM. The "Next refresh" cell is highlighted with a red box.

Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
Dataset	AW Sales	10/24/23, 12:23:02 PM	10/24/23, 8:00:00 PM	(?) Promoted	—

Navigate to the Endorsement column and identify the Promoted label to verify that the dataset is promoted.



This screenshot is identical to the one above, showing the Power BI dataset list page. The table includes an additional column "Endorsement". The "Promoted" label in the "Endorsement" column for the dataset row is highlighted with a red box.

Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
Dataset	AW Sales	10/24/23, 12:23:02 PM	10/24/23, 8:00:00 PM	(?) Promoted	—

1. Select the Refresh now icon to perform an on-demand refresh.

The screenshot shows the Power BI dataset management interface. On the left, there's a sidebar with icons for Home, Create, Browse, OneLake data hub, Apps, Workspaces, and Power BI. The main area is titled "Power BI AW Sales" and contains a search bar and navigation buttons for "New", "Upload", "Create app", "Filter by keyword", and "Filter". A table lists datasets, with one row selected: "AW Sales Dataset" (Type: Dataset, Owner: AW Sales, Refreshed: 10/24/23, 12:23:02 PM, Next refresh: 10/24/23, 8:00). The "Refresh now" button next to the dataset name is highlighted with a red box.

## Conclusion

With these steps, you have successfully navigated the essential processes of deploying and maintaining a dataset and proved your capabilities with dataset management tasks such as gateway configuration, refresh scheduling, and dataset endorsement.

### **3.1. Exercise: Applying sensitivity labels**

#### **Introduction**

By this point in the lesson, you should be well-acquainted with handling and configuring data sets and emphasizing the importance of data sensitivity and security in Power BI. In this exercise, you'll configure sensitivity labels on existing reports.

You will demonstrate your understanding of and skills in:

- Adding existing reports to your Power BI workspace.
- And applying and configuring data sensitivity labels to secure sensitive information within these reports.

#### **Scenario**

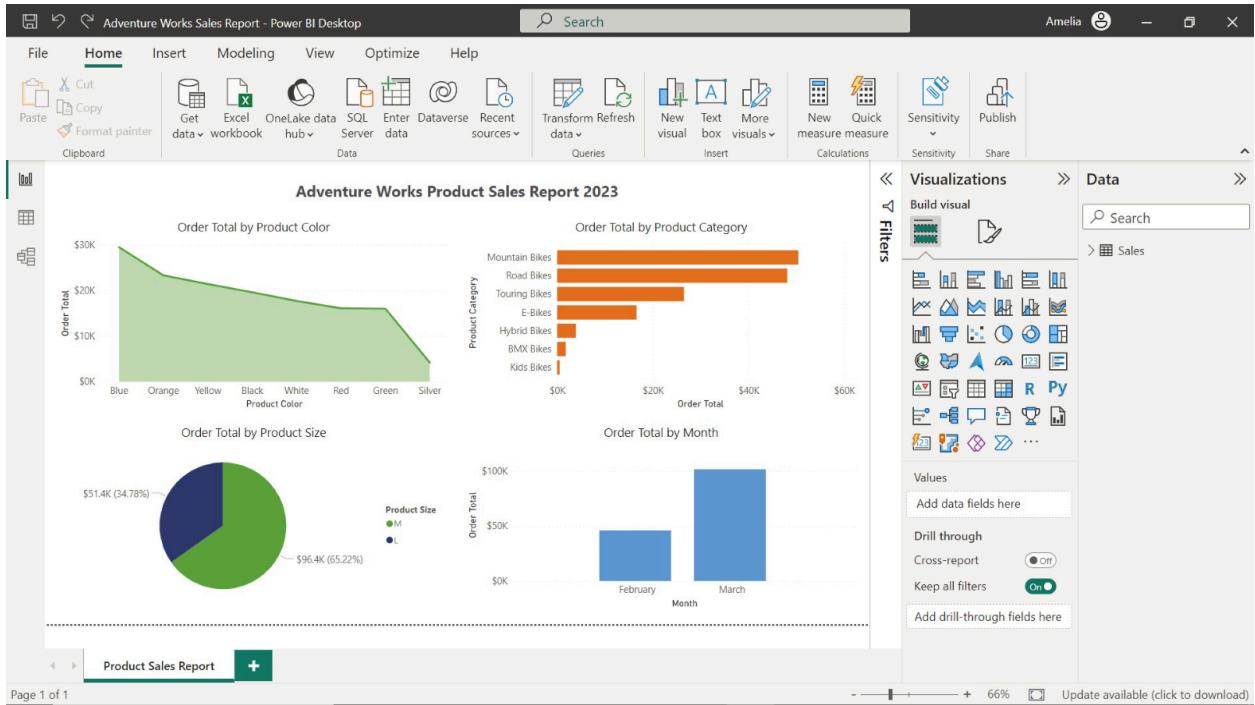
Adventure Works need you to upload an important, confidential report to your Power BI workspace and apply the correct sensitivity label to it.

#### **Instructions**

Download and open the Power BI file Adventure Works Sales Report. Follow the prompts below to complete the exercise. Please note that you will require an upgraded subscription with Azure configuration to complete the task.

##### **Step 1: Open Power BI and the report**

- Launch Power BI Desktop and open the Adventure Works Sales Report. The report should resemble the following screenshot:



## Step 2: Observe the data

1. Access Report view and locate the Order Total by Product Color and the Order Total by Product Category visuals.
2. Take note of their values.

## Step 3: Save, publish and view the report

1. Save your report.
2. Publish the saved report to the Adventure Works Power BI workspace.
3. Once published successfully, view the report on Power BI Service.

Tip: Ensure you save your report before publication, as Power BI will not allow publishing unsaved reports.

## Step 4: Configure data sensitivity labels

1. Locate the report and apply the Confidential sensitivity label.
2. Check the report to ensure it is correctly labeled.

Tip: If you haven't applied a label before, the label might state None or No.

## Conclusion

You have successfully added data sensitivity labels to your report with these steps. As you finish this task, consider the importance of data sensitivity labels at Adventure

Works. This exercise has improved your technical skills and emphasized the ethics of privacy and confidentiality.

## Exemplar: Applying sensitivity labels

### Overview

In the *Applying Sensitivity Labels* exercise, you were asked to secure the Adventure Works Sales report using Power BI sensitivity labels to protect its data.

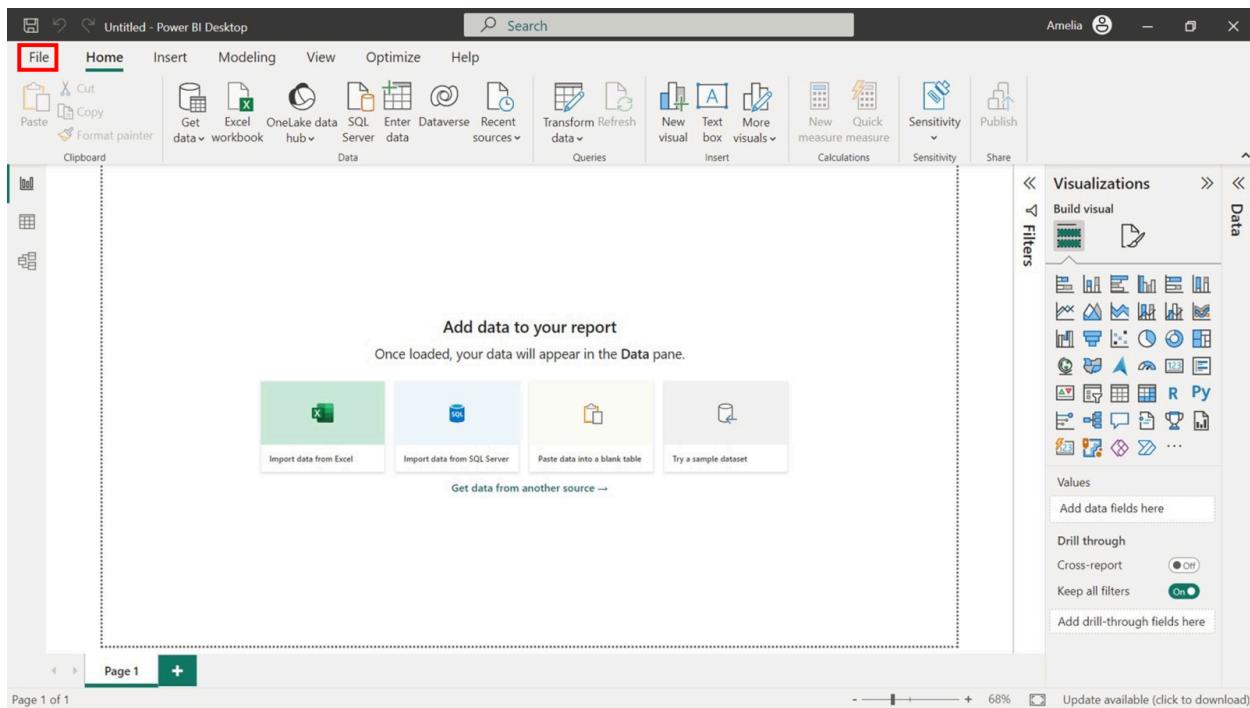
Your tasks in this exercise were to:

- Open the Adventure Works Sales report,
- Examine the data,
- Publish the report,
- And classify it with a data sensitivity label.

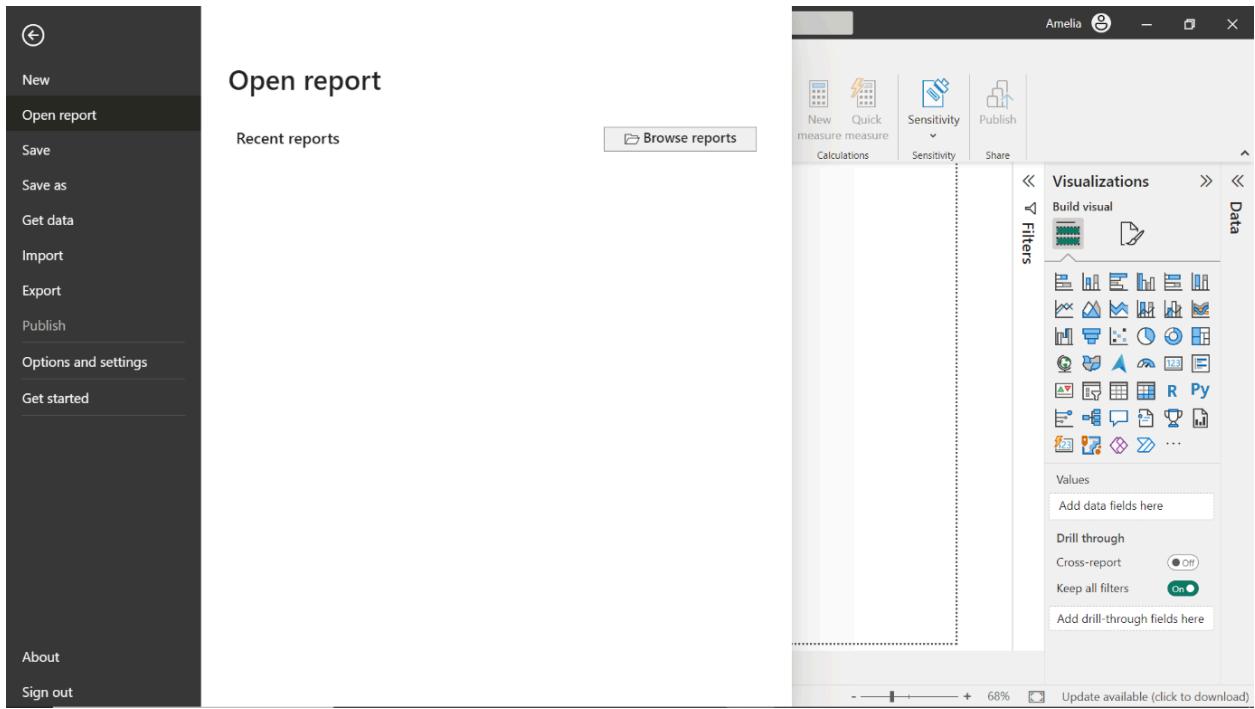
This reading provides you with a step-by-step guide for completing these tasks. It also includes screenshots that you can compare against your work.

### Step 1: Open Power BI and the report

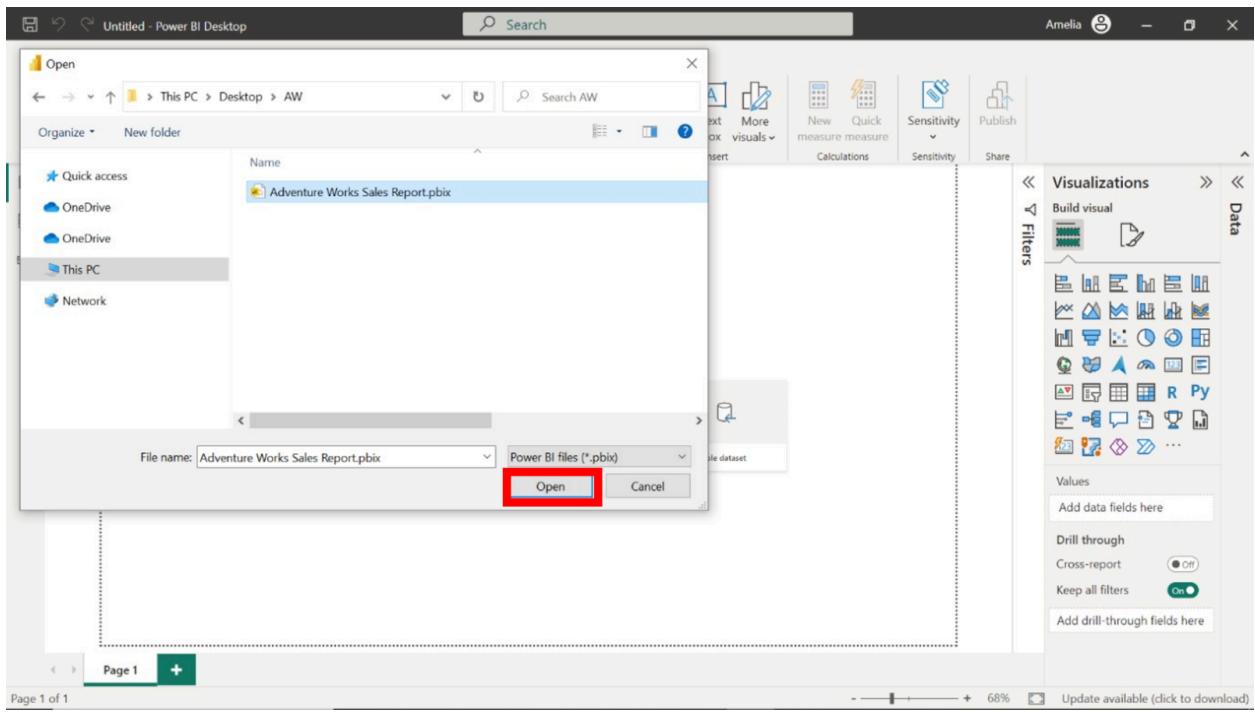
1. Launch Power BI Desktop and navigate to the File menu found in the upper left corner of the screen.



Navigate to Adventure Works Sales Report.

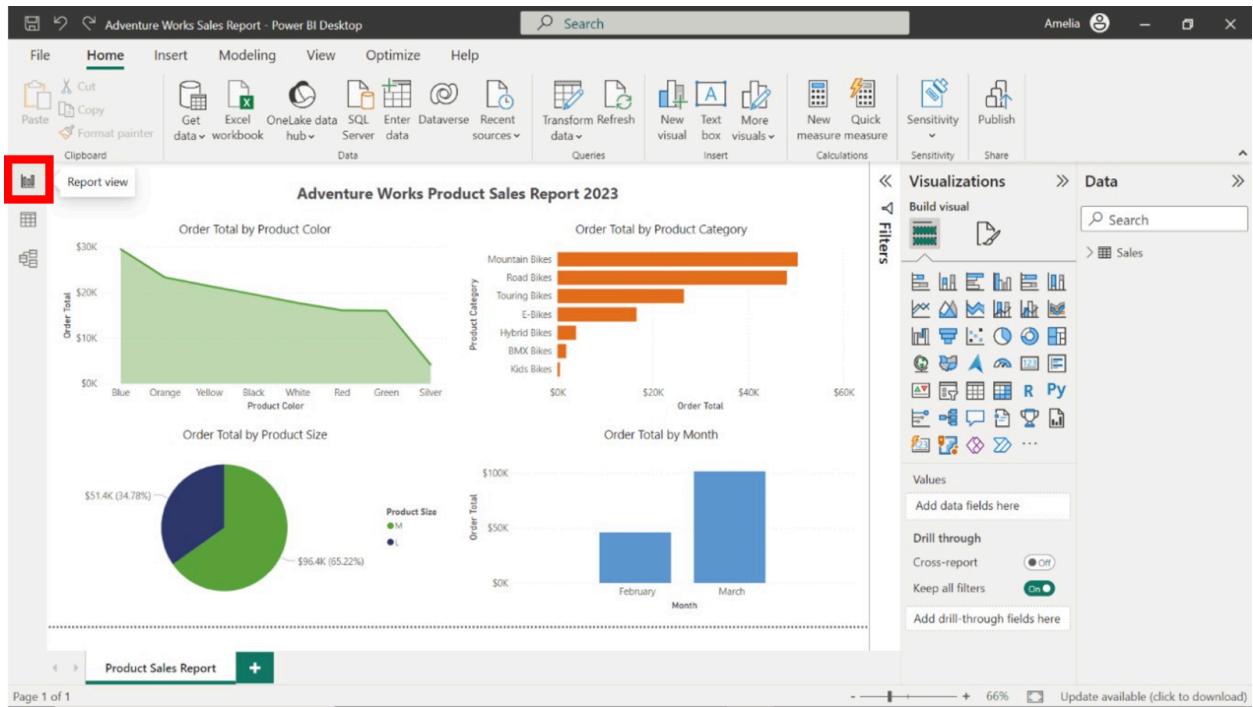


Select Open to open the report.

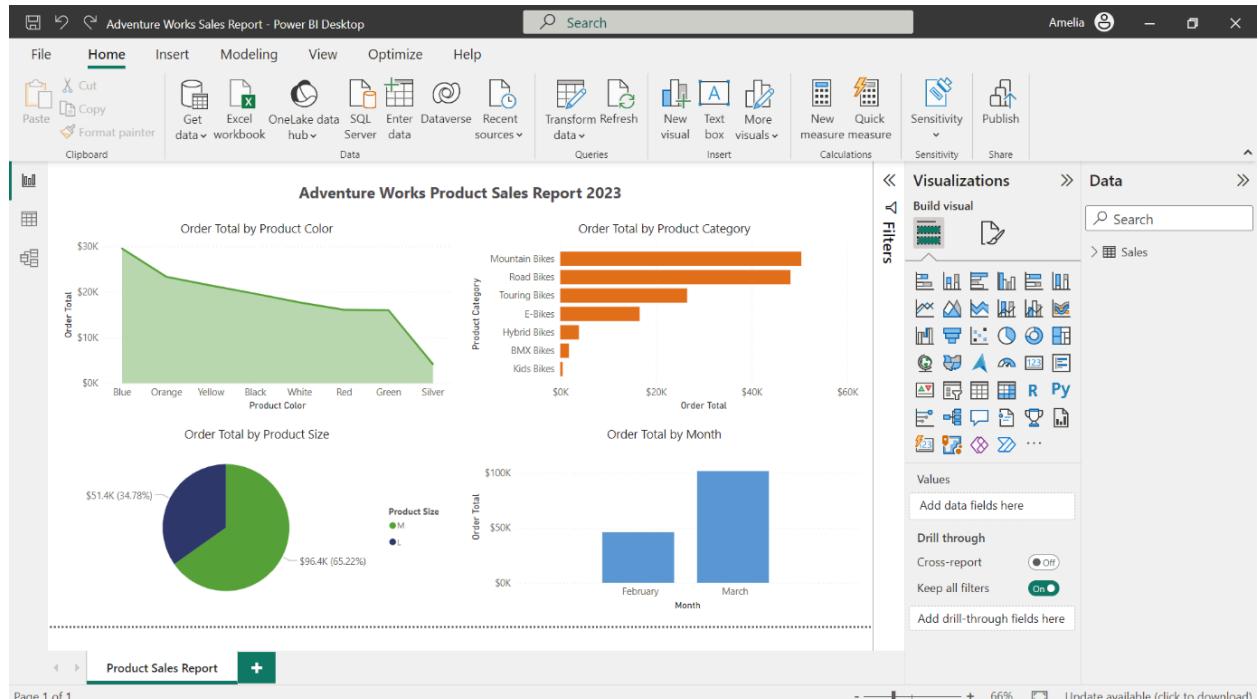


## Step 2: Observe the Data

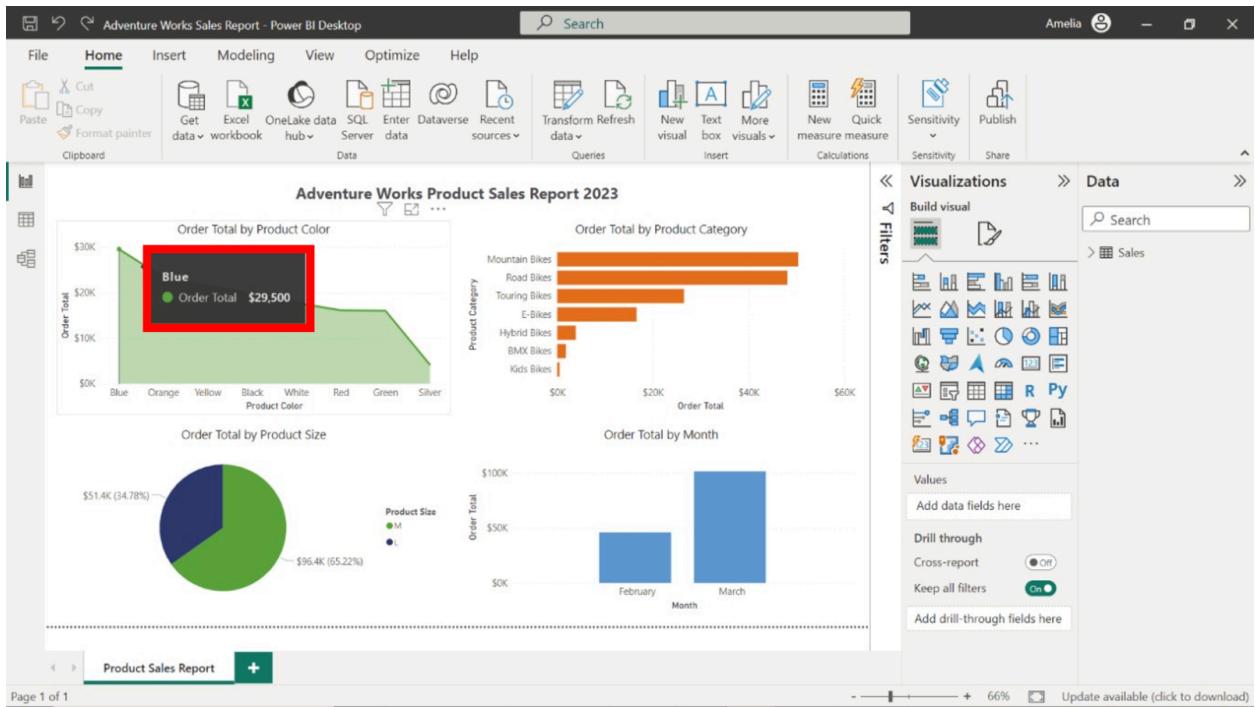
1. Select the Report view on the left side of your screen.



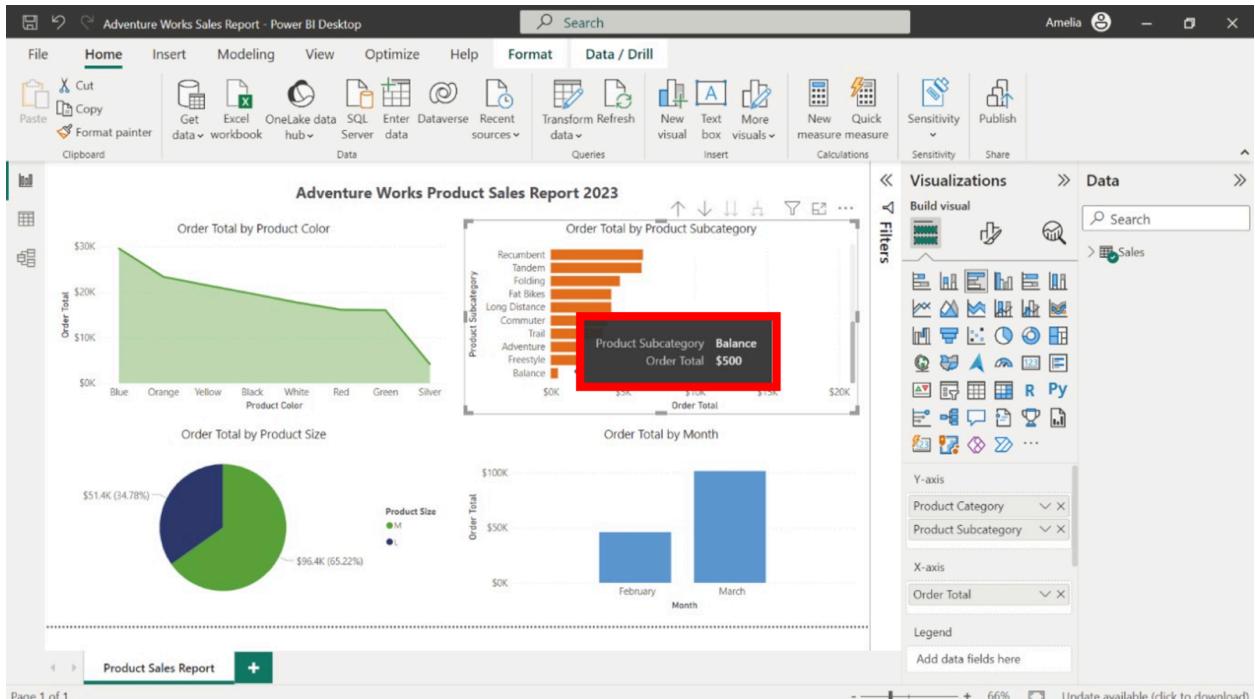
Identify the core visuals representing your data in the middle of your screen. Navigate through these visuals and observe the insights.



1. The Order Total by Product Color visual identifies which product color has the highest and lowest order totals, noting its value. The Blue product color registers the highest order total, amounting to \$29,500.

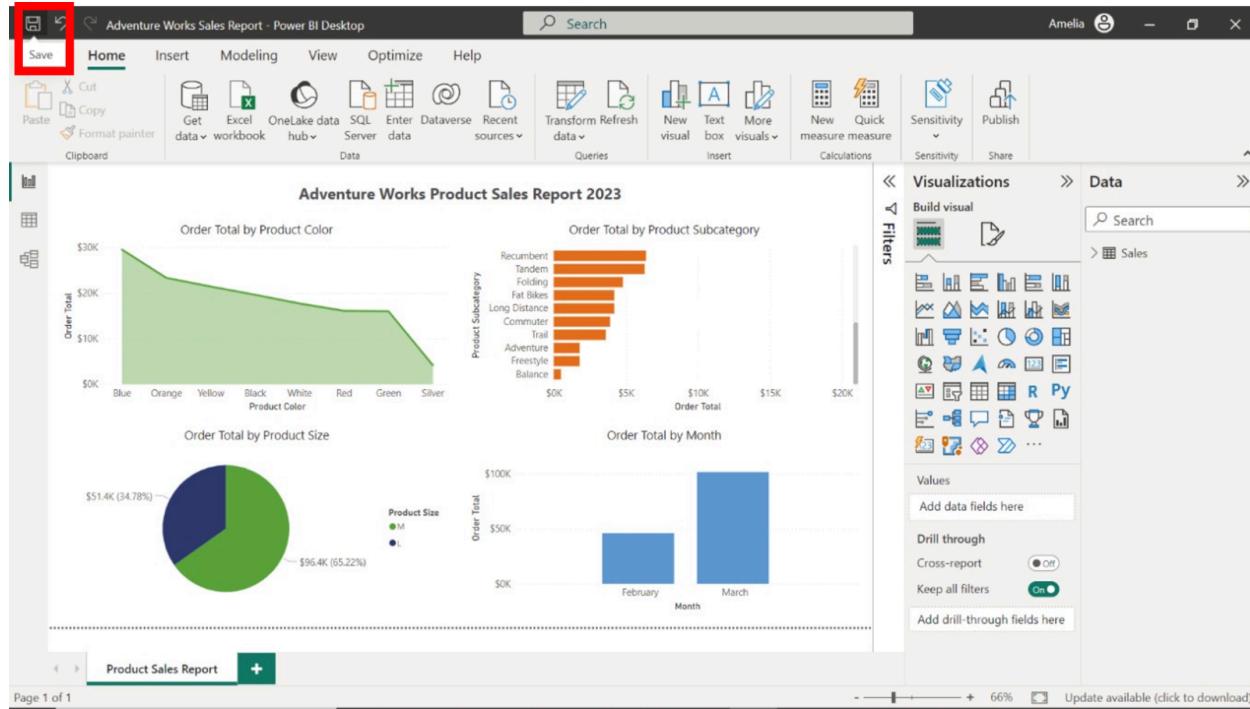


In the Order Total by Product Category visual, the Balance subcategory within Kids Bikes has the lowest order total at \$500.

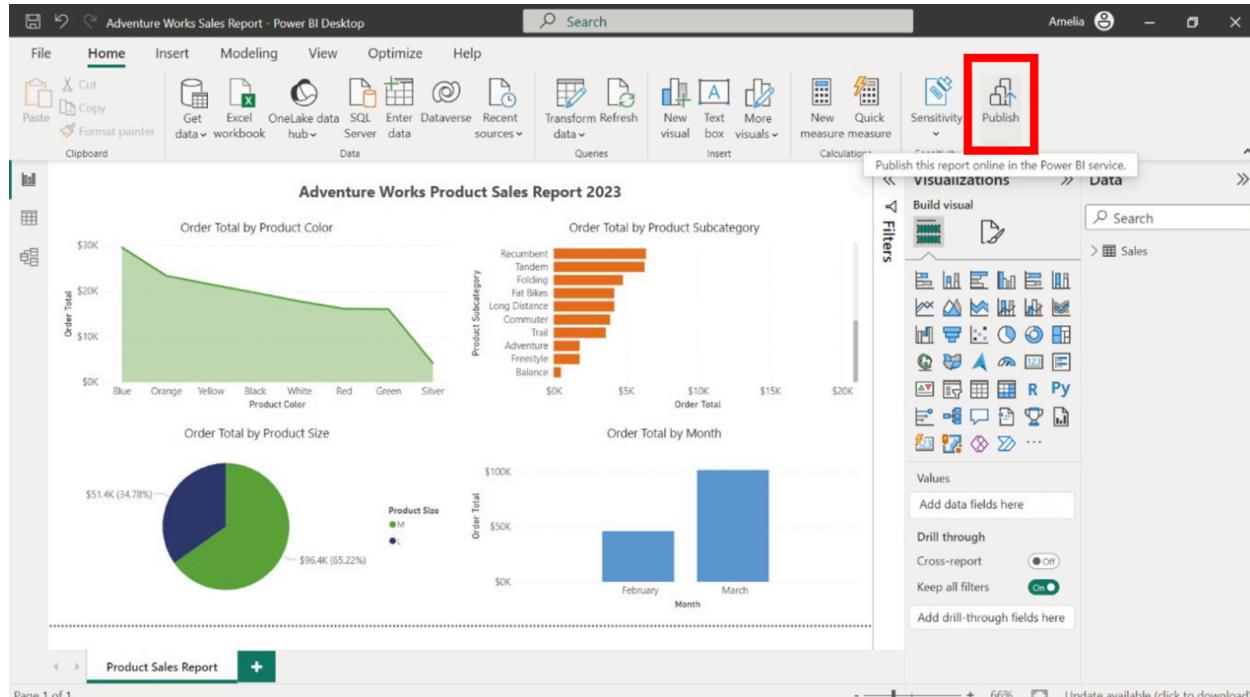


### Step 3: Save, publish, and view the report

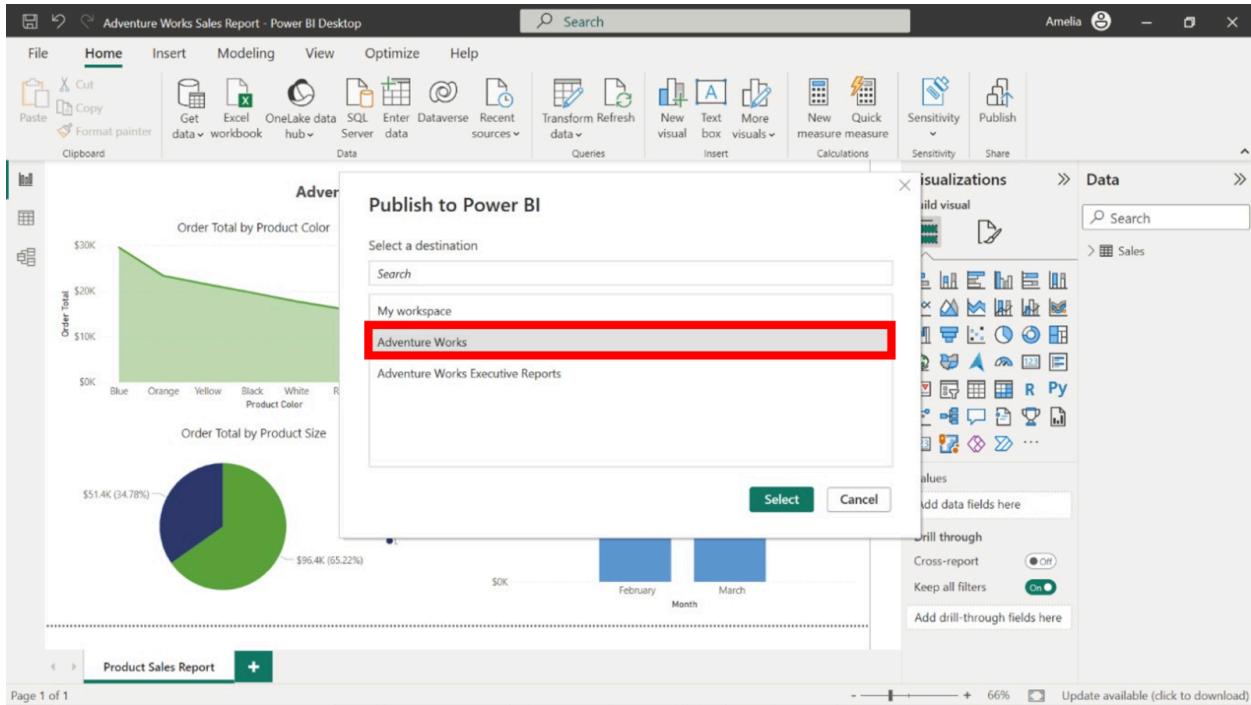
1. Save your report to Power BI before publishing. Power BI will not allow the publishing of unsaved reports. This is a built-in safeguard to ensure no work gets lost.



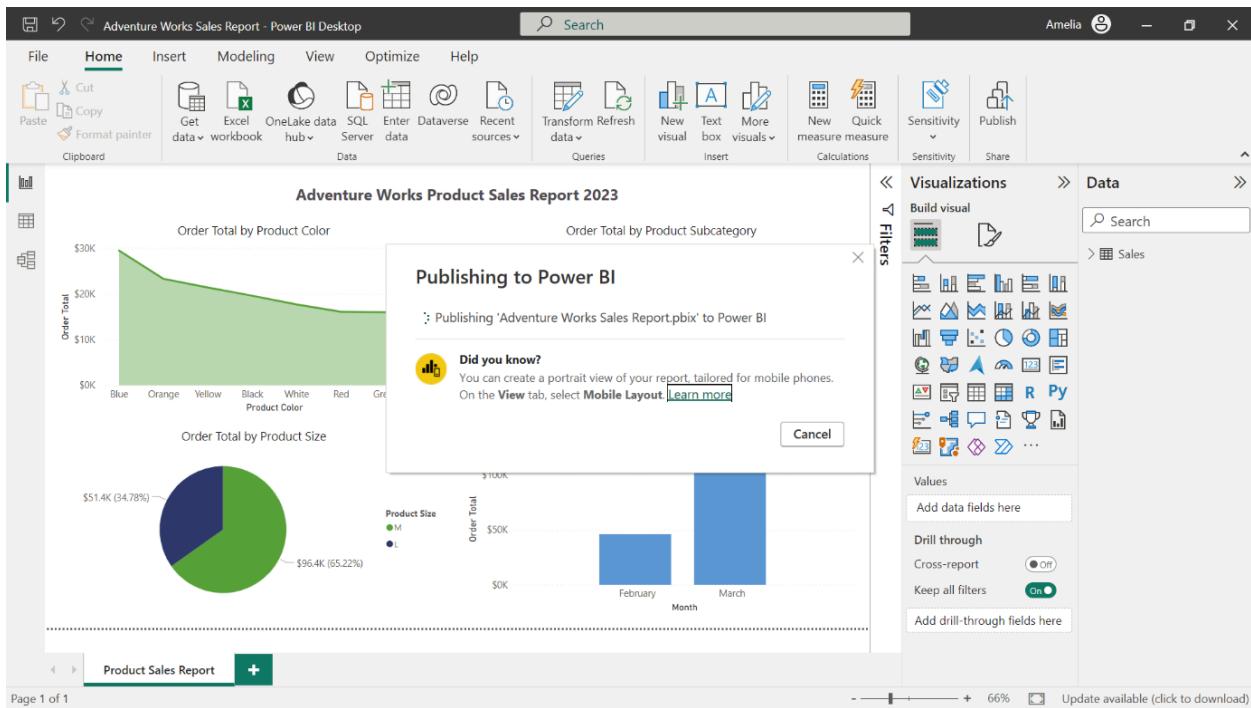
1. Once your report is saved, navigate to the Publish option in the Home tab of the ribbon interface.



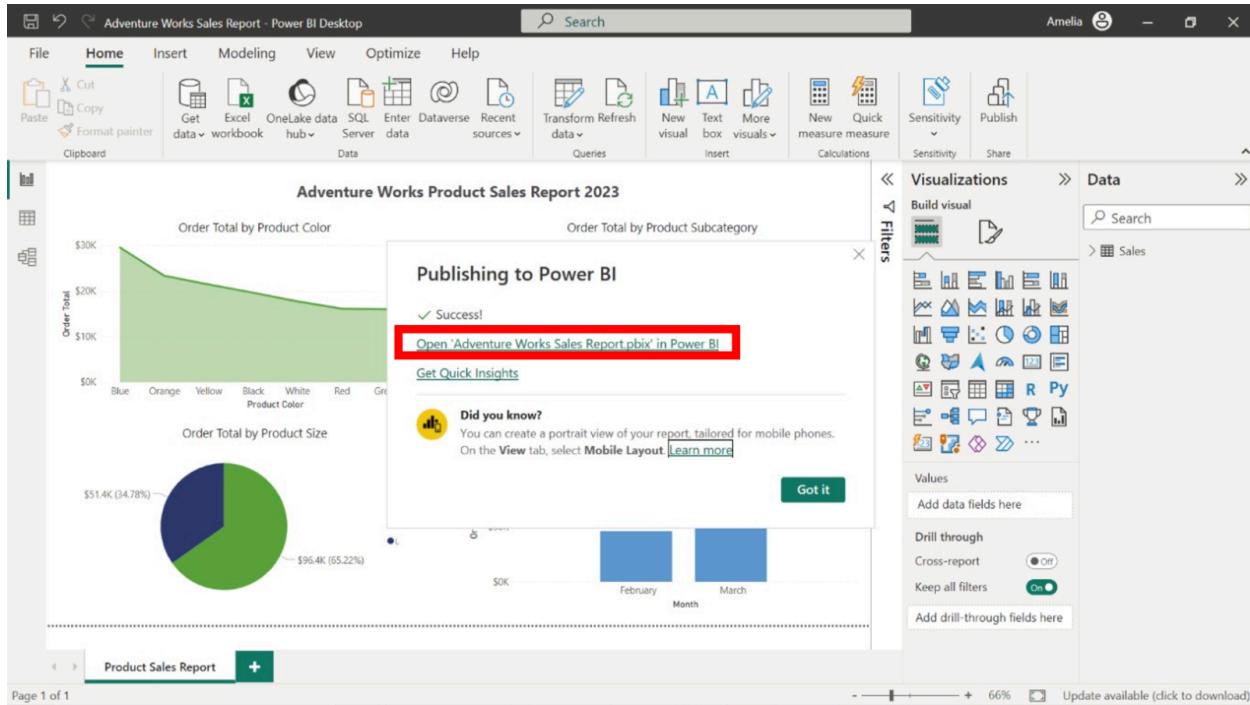
In the dialog, choose Adventure Works as the destination (this is the current Power BI workspace you're working in). Select the Select button.



After the destination is selected, Power BI publishes the report. Depending on the size of the report and your internet connection, this could take a few moments.



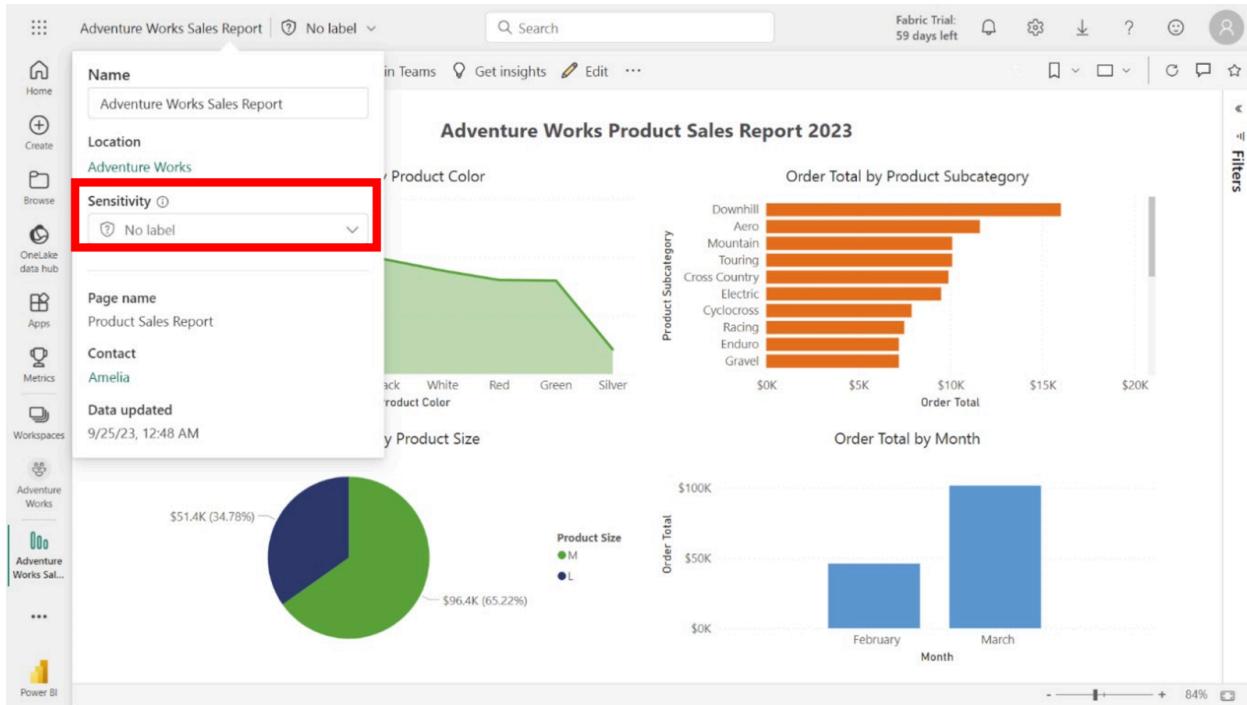
- After your report is published, a new dialog box confirms its successful publication. Select Open to review the published report in Power BI Service.



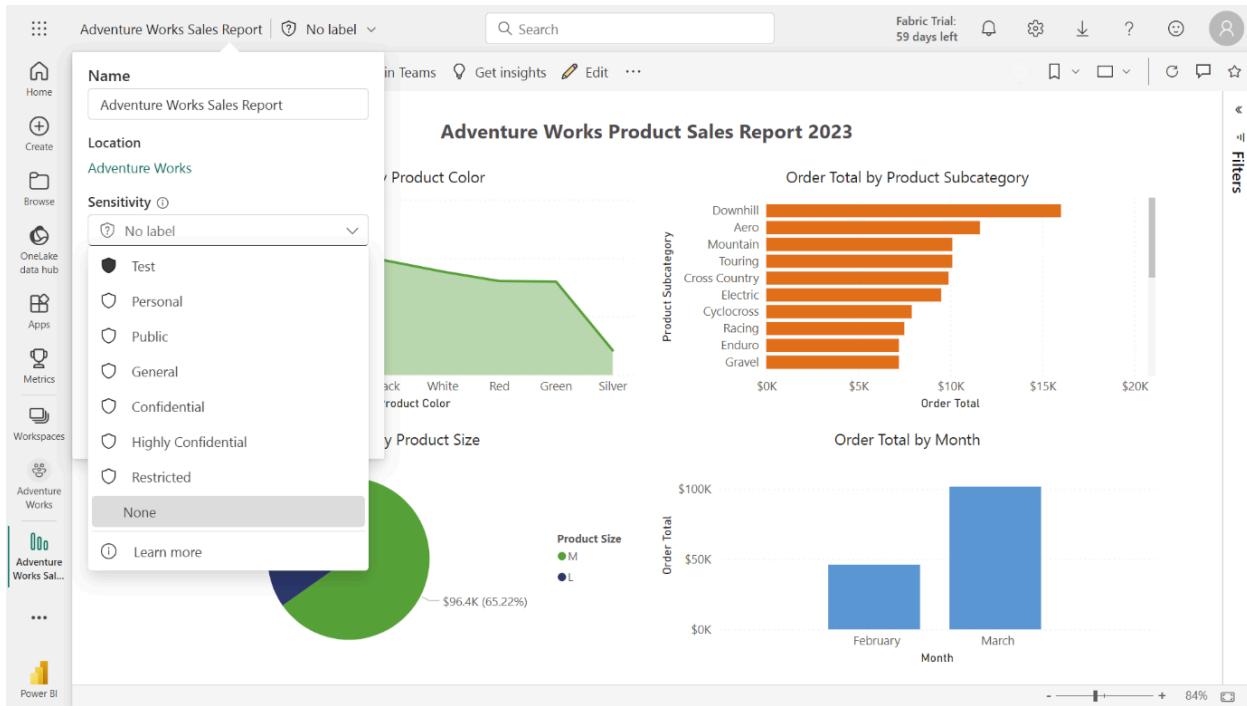
## Step 4: Configure data sensitivity labels

- Once the report is open, locate and select the Report title on the top-left corner of the screen.

In the dropdown menu, locate the Sensitivity Label drop-down. You haven't applied a label before, so this label might read None or No Label, signaling its dormant state.



Upon selecting the Sensitivity Label dropdown, a range of sensitivity labels are presented.



Locate and select the Confidential label. The Confidential ensures that the report remains within its shared domain.

The screenshot shows the Microsoft Power BI interface. On the left, there's a sidebar with various navigation options like Home, Create, Browse, etc. In the center, there's a report titled "Adventure Works Product Sales Report 2023". A dropdown menu for "Sensitivity" is open, showing several options: Confidential, Test, Personal, Public, General, Confidential (selected and highlighted with a red box), Highly Confidential, Restricted, and None. Below the sensitivity dropdown, there's a link "Learn more". To the right of the dropdown, there are three charts: a line chart for "Order Total by Product Color", a bar chart for "Order Total by Product Subcategory", and a bar chart for "Order Total by Month".

- Once the selection is completed, observe the label near the report's name at the top of the screen. It should read Confidential, which means that the report is successfully labeled.

This screenshot shows the same Microsoft Power BI interface as the previous one, but with a key difference: the "Confidential" label is now selected in the sensitivity dropdown. At the top of the screen, the report title "Adventure Works Product Sales Report 2023" is followed by a small lock icon and the word "Confidential", indicating that the report has been successfully labeled. The rest of the interface, including the charts and navigation sidebar, remains the same.

## **Conclusion**

As you wrap up securing data with sensitivity labels in Power BI, remember the importance of your work. The data you protect is vital for Adventure Works, reflecting its essence and goals. Your role is crucial in upholding trust and mission continuity.

## **3.2. Exercise: Configuring a data alert**

### **Introduction**

At this lesson stage, you should understand how to navigate your reports and create and manage alerts.

In this exercise, you can apply this knowledge by identifying key report metrics and configuring an alert to inform you of its status.

By completing this exercise, you'll demonstrate your ability to:

- Open and publish reports in Power BI
- Navigate and observe your report data
- And manage and configure KPIs and alerts.

### **Scenario**

Adventure Works has been experiencing fluctuations in its profit margins. The company needs you to review its most recent revenue data and help set up an alert that notifies its analysts if its margins drop below a threshold of 15%.

### **Instructions**

Download and open the Adventure Works Power BI report titled Adventure Works Revenue Report and follow the prompts below to complete the exercise.

#### [Adventure Works Revenue Report File](#)

Step 1: Open your Power BI report

- Launch Power BI Desktop and open the Adventure Works Revenue Report file.

Step 2: Observe the data

1. Open the report in Report View.
2. Observe the following visuals and note the highest and lowest values for each:
  - Total Revenue by Product Region
  - Total Revenue by Order Status
  - Total Revenue by Day

Step 3: Publish the report

1. Save your report.
2. Publish your report to Power BI Service.
3. Open the published report in Power BI Service.

#### Step 4: Pin the KPI to a dashboard

1. Pin the Profit Margin KPI visual to a new dashboard called Adventure Works Revenue Dashboard.
2. Open your new dashboard to ensure the visual is pinned.

Tip: Select the relevant visual's pin icon to create a new dashboard.

#### Step 5: Setup a Profit Margin alert

1. Navigate to the Manage Alerts menu.
2. Create a new alert for your Profit Margin KPI titled Profit Margin Threshold below 15%.
3. Configure the alert so that it notifies you if your Profit Margin KPI drops below a threshold of 15%.
4. Set the alert to a frequency of every hour.
5. Save and activate the alert rule.

Tip: You can access the settings for a tile, like a KPI, by hovering your cursor in the upper right corner, and using its ellipses.

### **Conclusion**

Having completed the assigned tasks, you now have the skills to navigate and observe the data in your reports. You've also demonstrated the ability to configure alerts to assist you with monitoring your data.

## Exemplar: Configuring a data alert

### Overview

In the exercise *Configuring a data alert*, you were asked to configure a data alert for Adventure Works that informs its data analysts if its profit margins drop below the critical threshold of 15%.

Your tasks in this exercise were to:

- Open and publish reports in Power BI
- Navigate and observe your report data
- And manage and configure KPIs and alerts.

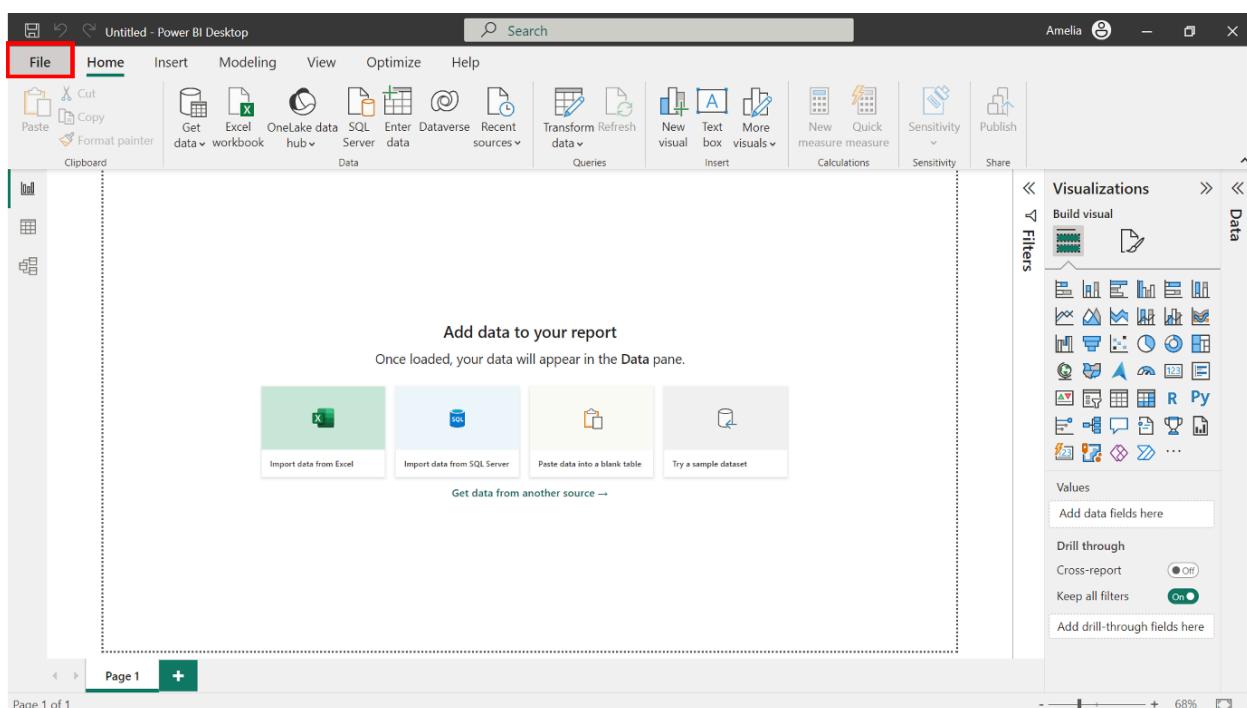
This reading provides you with a step-by-step guide for completing these tasks. It also includes screenshots that you can compare against your work.

You can also review the *Configuring data alerts* video to recap the key concepts that this exercise tests.

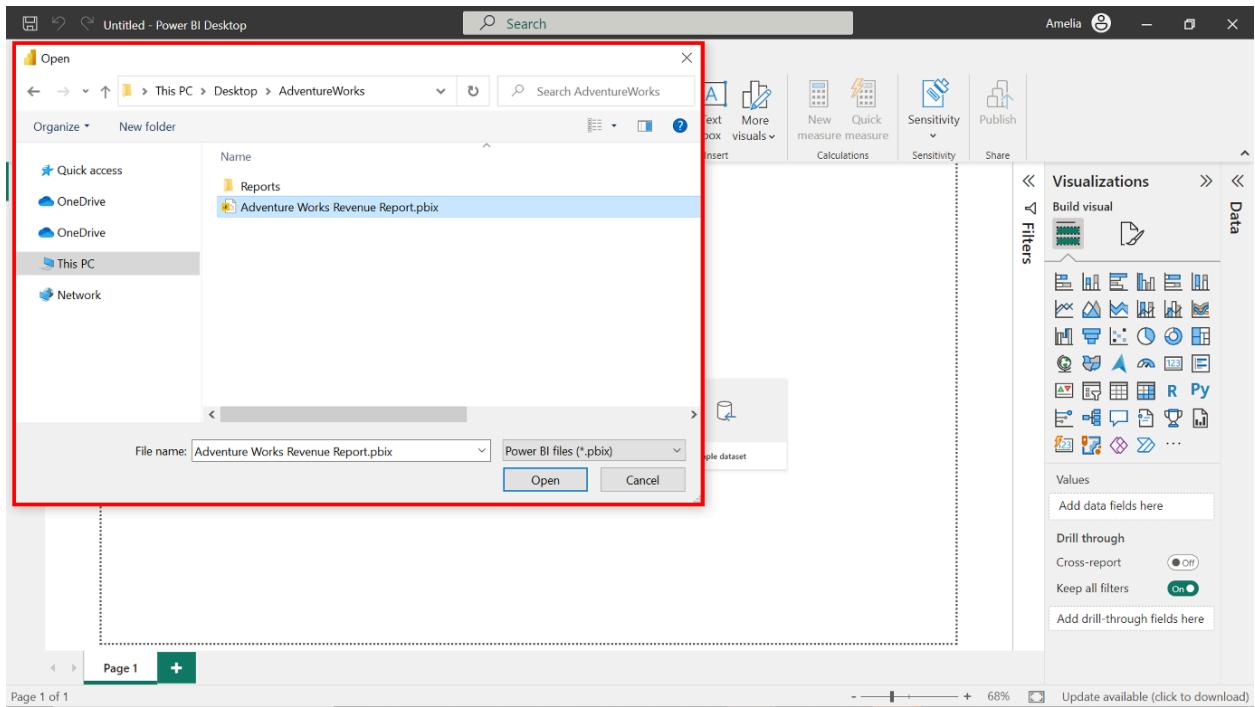
### Step 1: Open your Power BI report

1. Launch Power BI Desktop and open the Adventure Works Revenue Report file.

Launch Power BI Desktop and navigate to the menu.



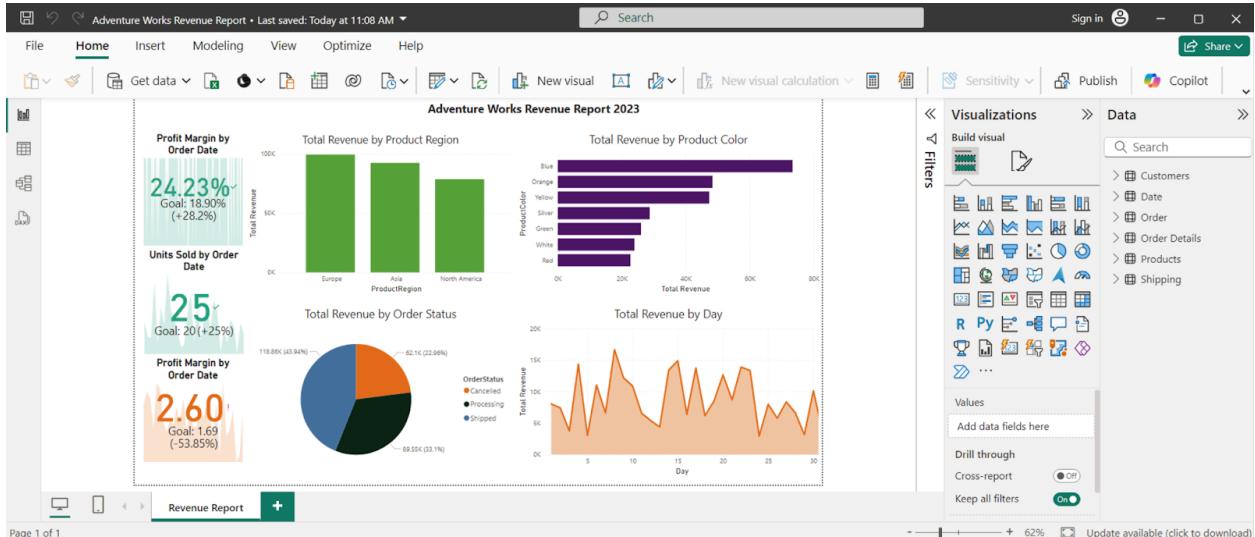
Locate the Adventure Works Revenue Report Power BI file in your system and select Open.



## Step 2: Observe the data

1. Open the report in Report View.

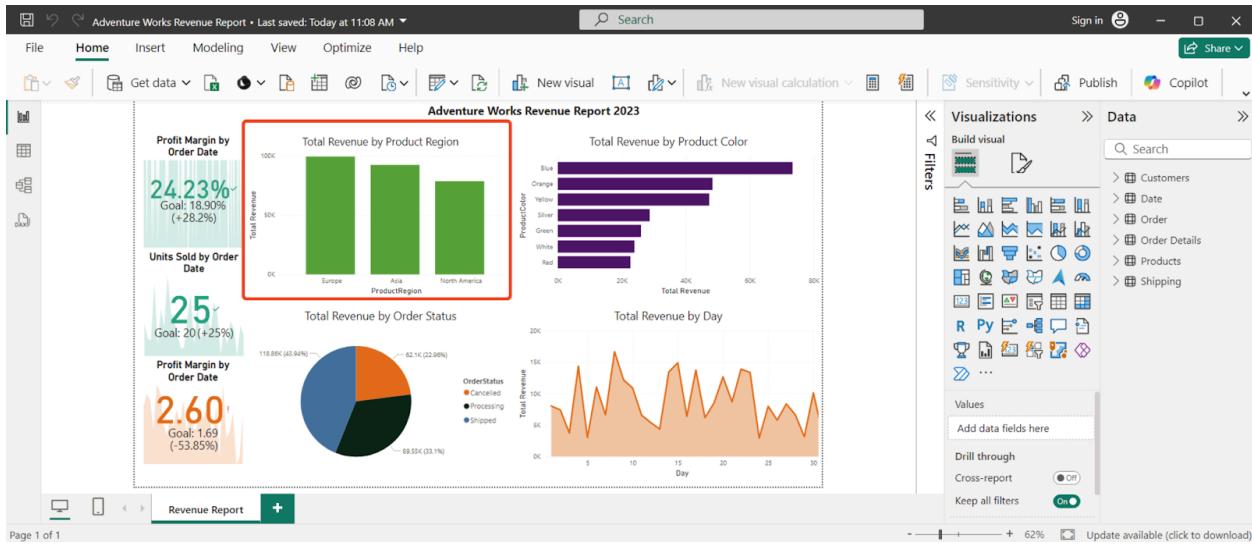
Select Report view to view the Adventure Works Revenue Report in Power BI.



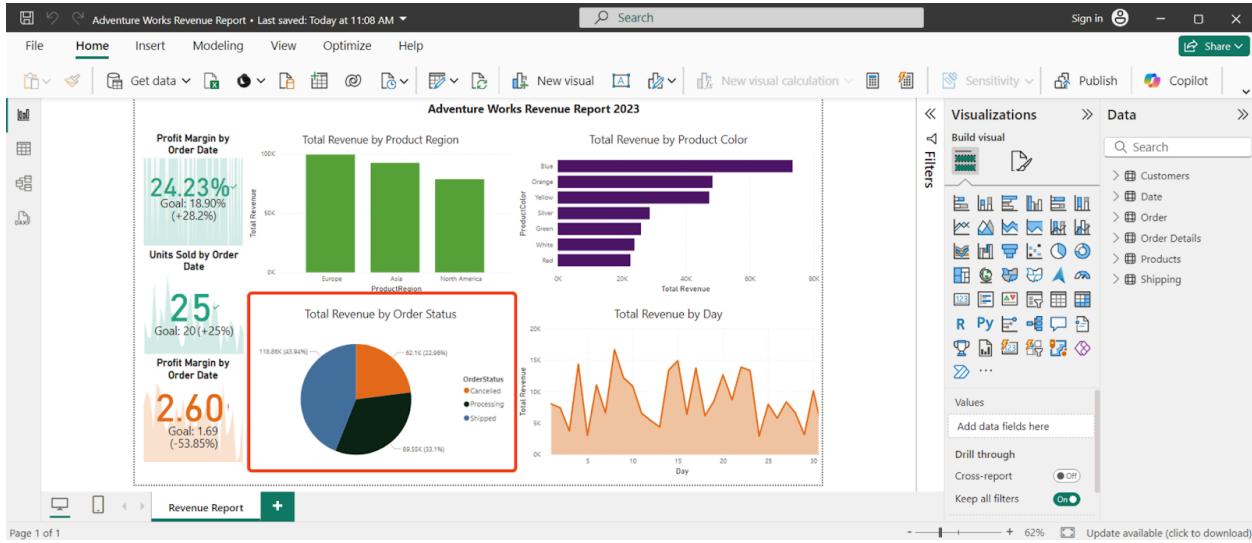
2. Observe the following visuals and note the highest and lowest values for each:

- Total Revenue by Product Region
- Total Revenue by Order Status
- Total Revenue by Day

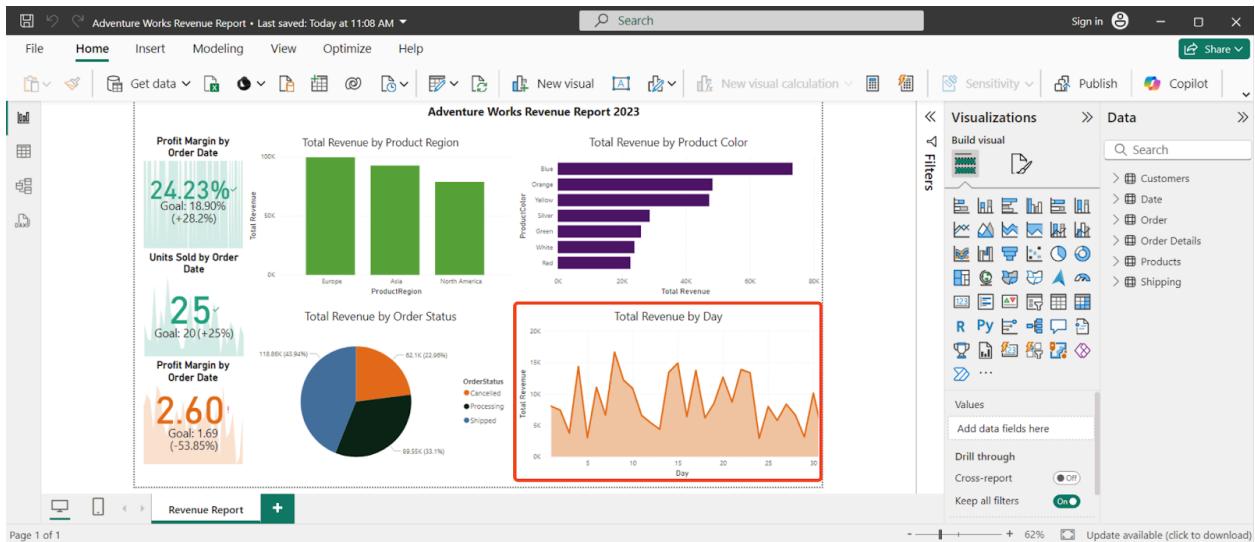
Navigate to the Total Revenue by Product Region visual and identify which Product Regions have the highest and lowest total revenue. The Europe product region registers the highest total revenue, amounting to \$99,500. The North America product region has the lowest total.



Navigate to the Total Revenue by Order Status visual. The order status Shipped has the highest revenue at \$118,600. The Cancelled order status has the lowest total revenue at \$62,100.



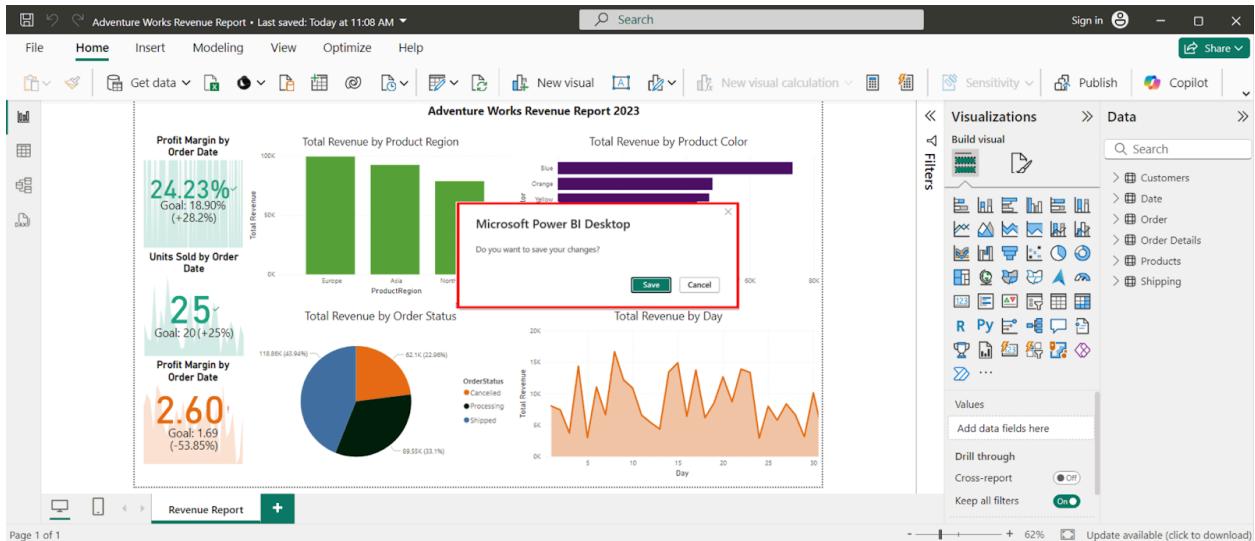
Navigate to the Total Revenue by Day visual. The eighth day of the month amounts to the highest total revenue at \$16,640. The twenty fourth day of the month has the lowest revenue at \$2,920.



## Step 3: Publish the report

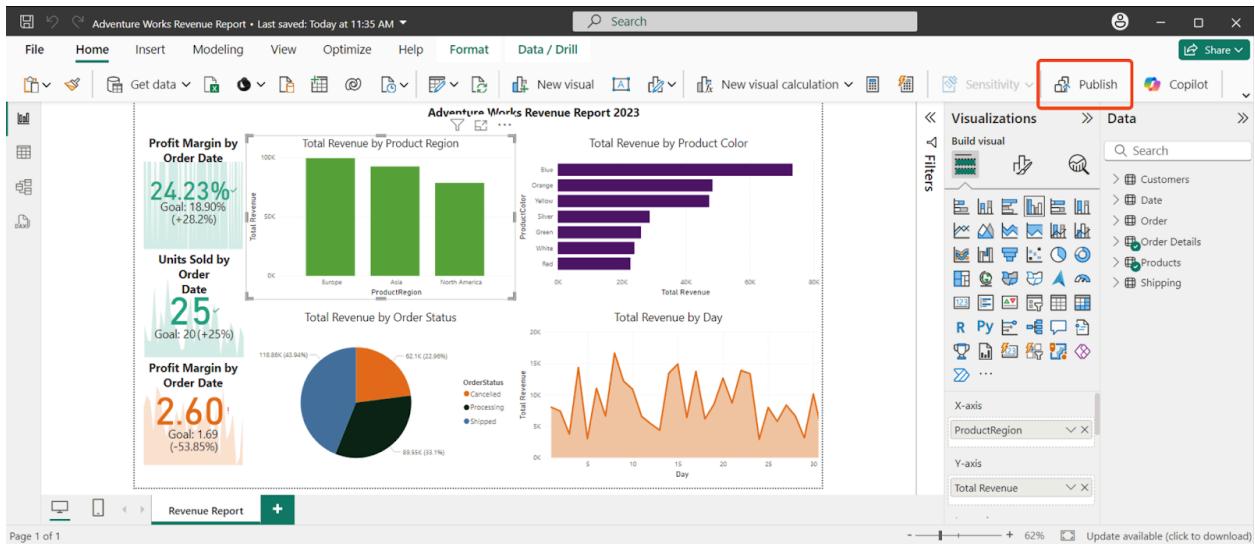
### 1. Save your report.

Navigate to the Save icon on the top left corner of your Power BI window. Power BI will not allow you to publish an unsaved report. This is a built-in safeguard to ensure no work gets lost.

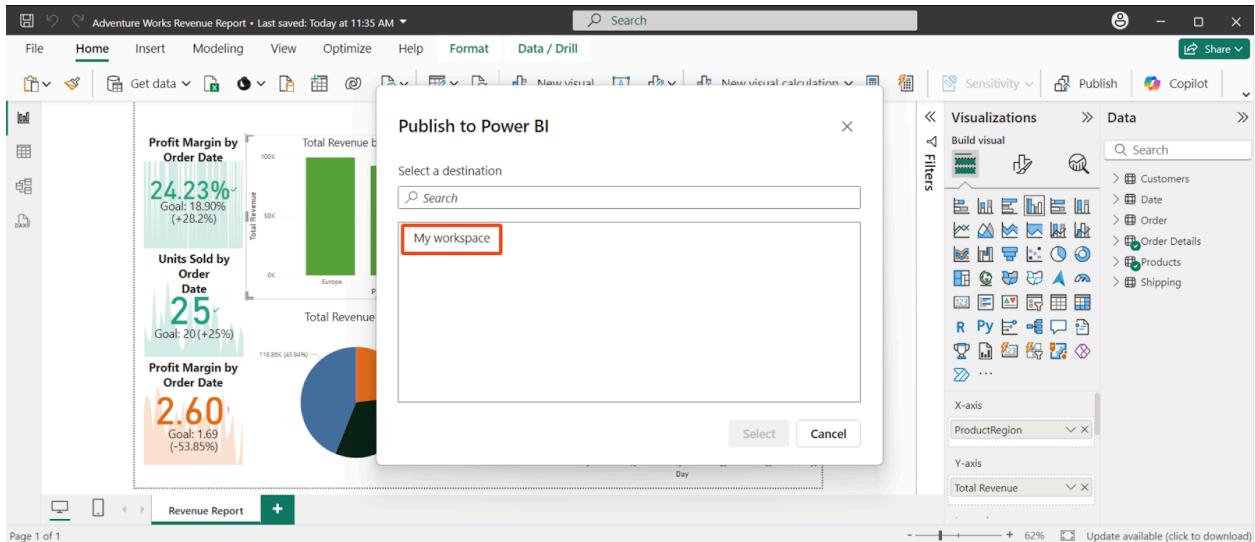


### 2. Publish your report to Power BI service.

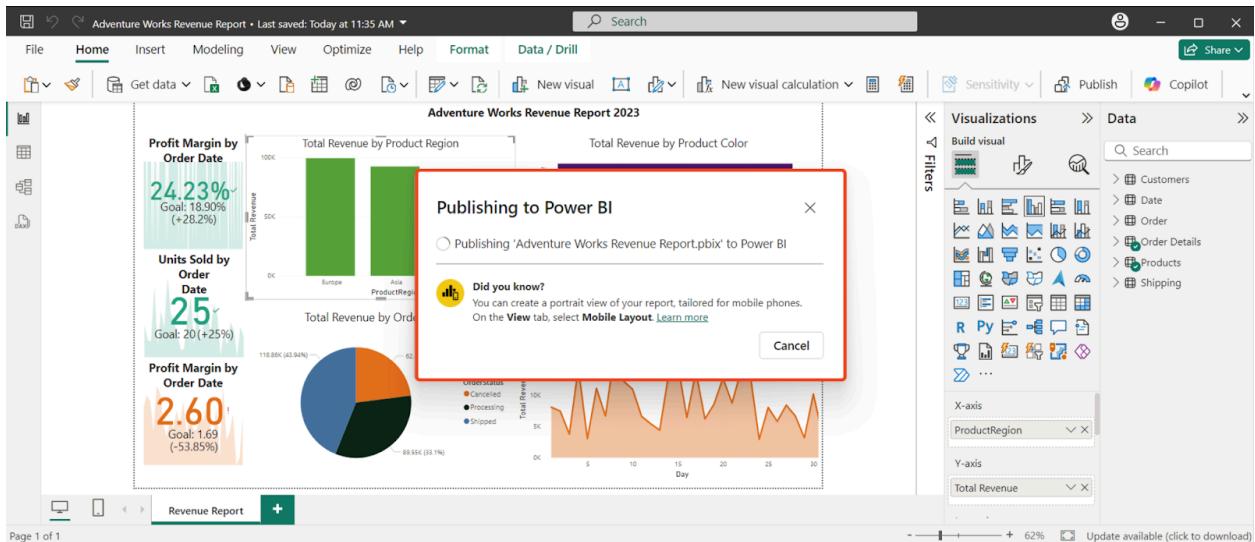
Navigate to the Publish option in the Home tab of the Power BI Desktop Ribbon interface.



In the Publish to Power BI dialog box, select My workspace.

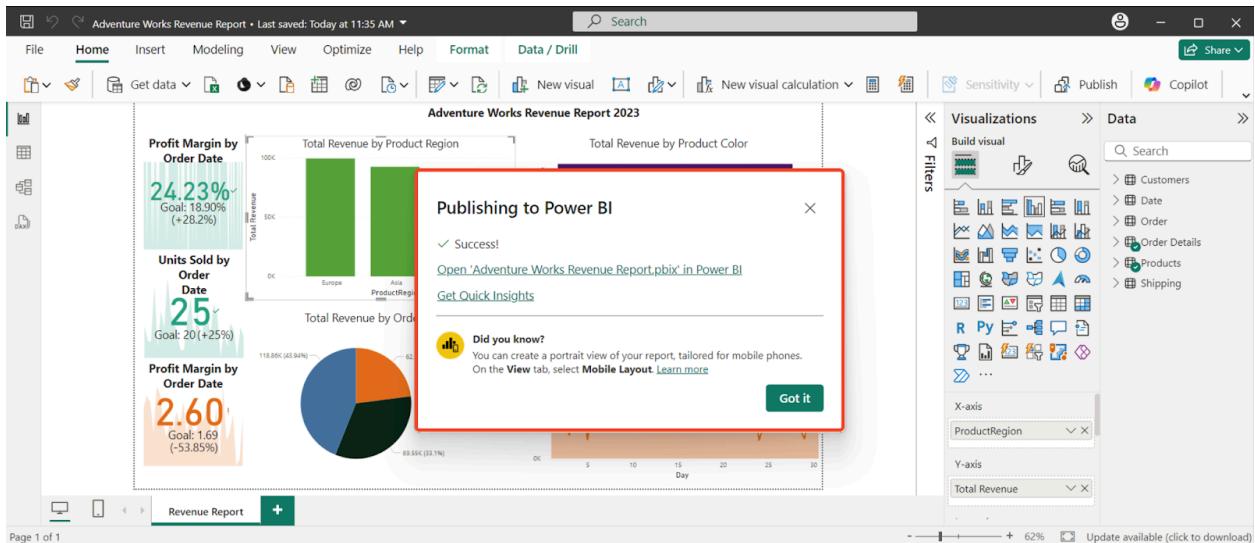


Once the destination is selected, Power BI publishes the report. Depending on the size of the report and your internet connection, this could take a few moments.



### 3. Open the published report in Power BI Service.

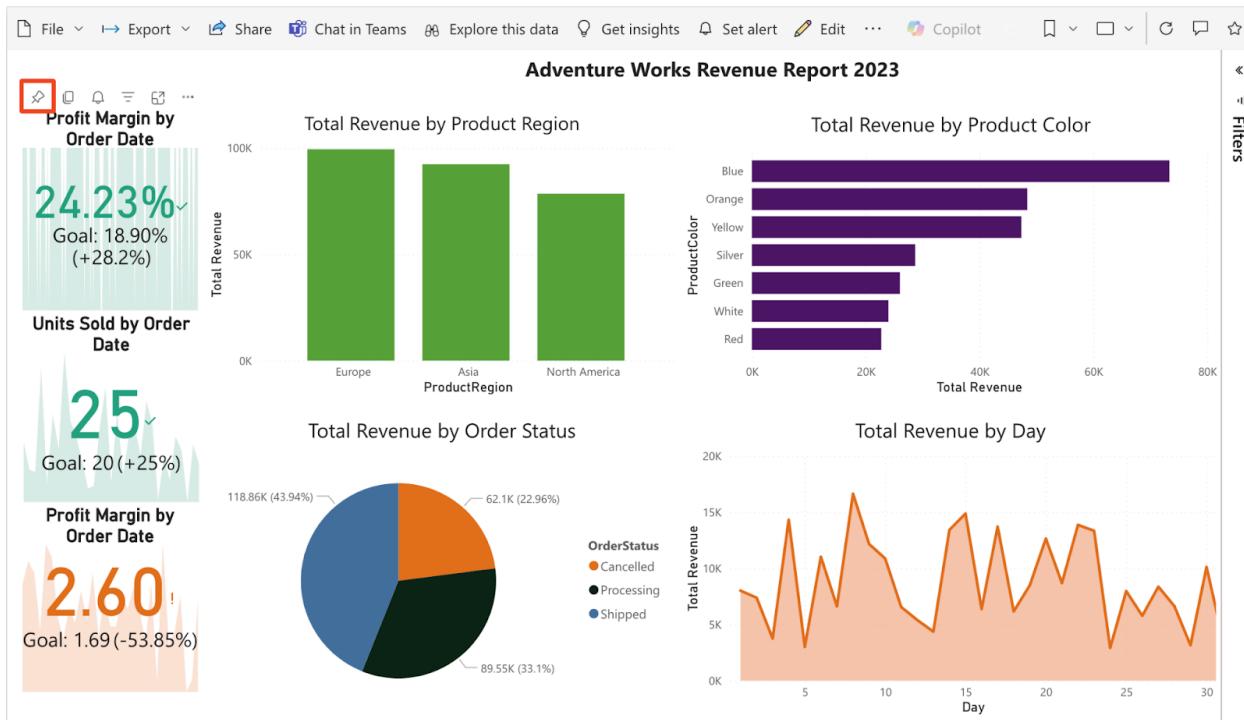
A new dialog box confirms the successful publication of your report. Select Open to review the published report in Power BI Service to ensure everything is in order.



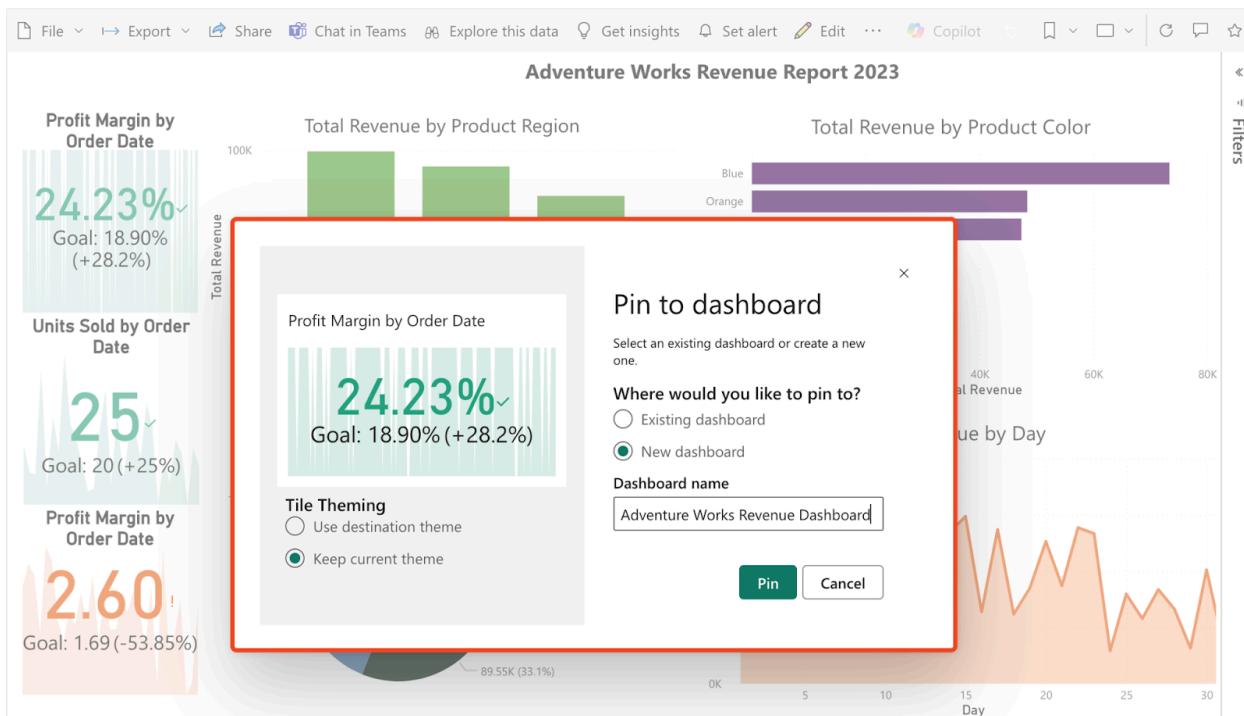
## Step 4: Pin the KPI to a dashboard

1. Pin the Profit Margin KPI visual to a new dashboard called Adventure Works Revenue Dashboard.

Hover over your report's Profit Margin KPI visual to reveal an action bar. Select the pin icon.

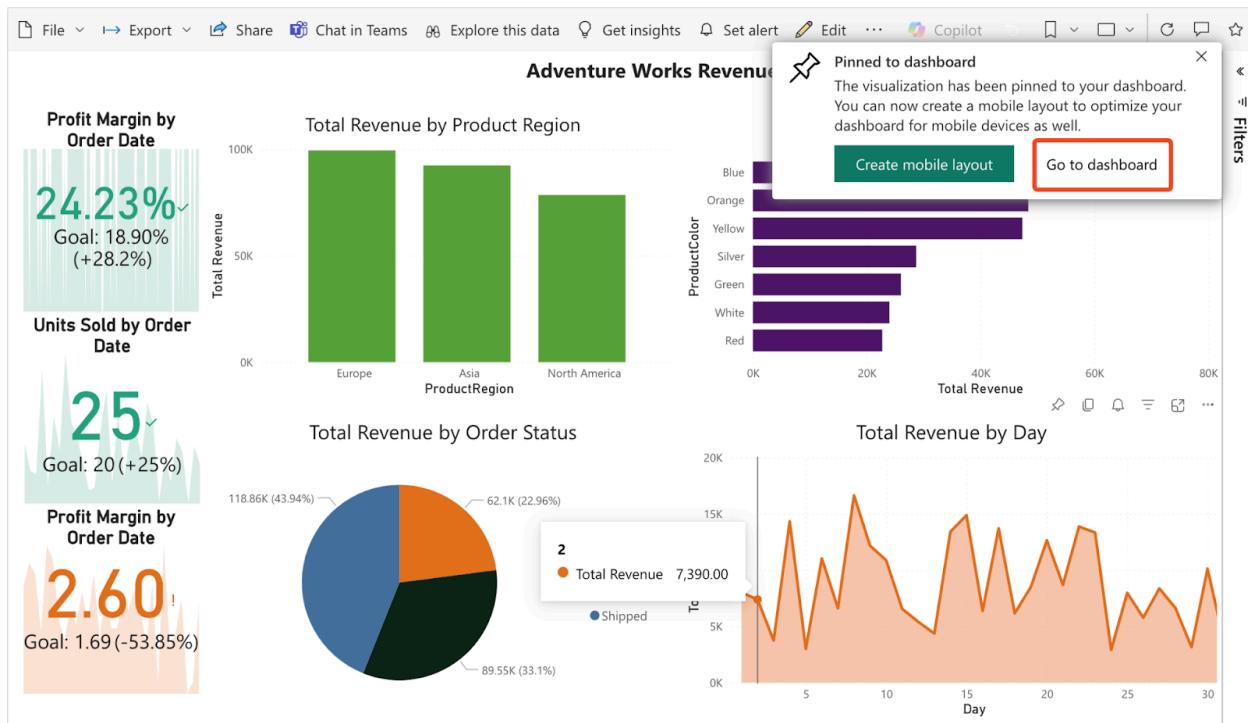


A dialog box prompts you to choose an existing dashboard or create a new one. Create a new dashboard titled Adventure Works Revenue Dashboard and select Pin. This bookmarks critical data points for easy access and monitoring.



2. Open your new dashboard to ensure the visual is pinned.

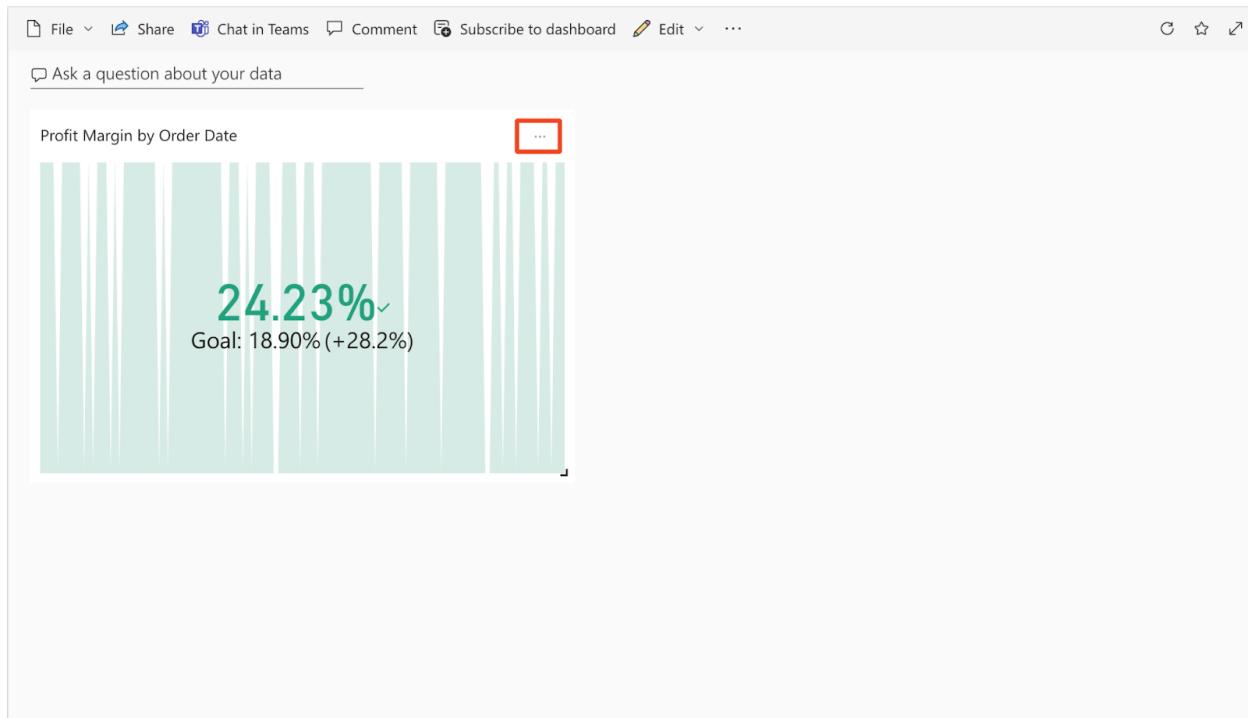
Once pinned, select Go to the dashboard to view the KPI in its tile form.



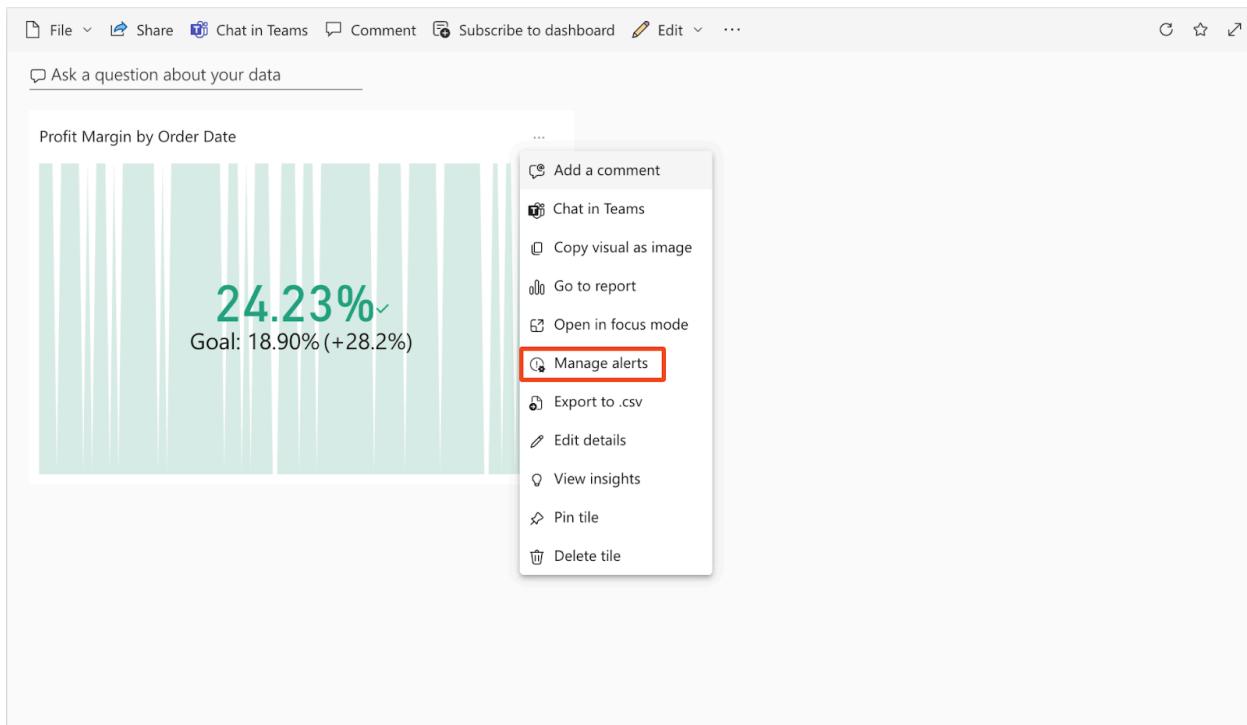
## Step 5: Set up a Profit Margin alert

1. Navigate to the Manage Alerts menu.

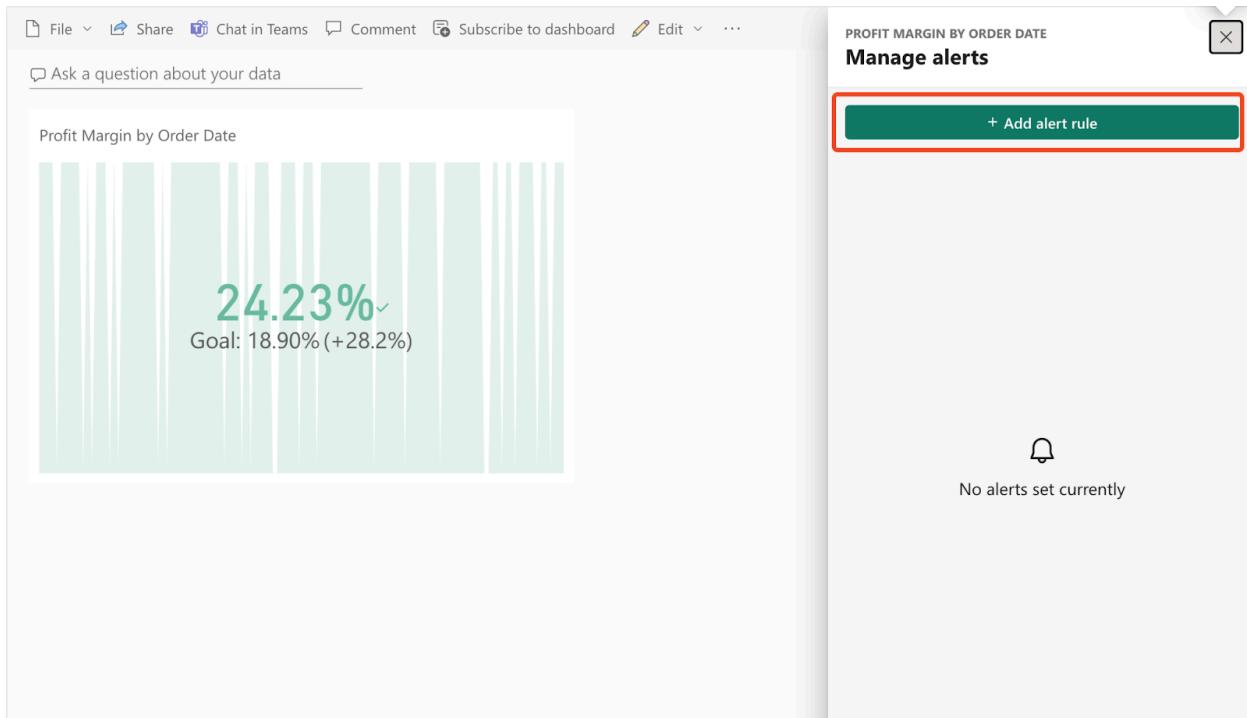
Locate the Profit Margin KPI tile and select the ellipsis to open the tile-specific options.



Select Manage alerts from the dropdown menu.



This action redirects you to the Alerts management screen. On this screen, locate and select + Add alert rule to set a criterion for triggering an alert.



2. Create a new alert for your Profit Margin KPI titled Profit Margin Threshold below 15%.

A set of fields and options for configuring your alert appear onscreen. Enter a meaningful name in the Alert Title field, like Profit Margin Threshold below 15%. When multiple alerts are active, a distinct name ensures that you can immediately recognize and respond to the alert.

The screenshot shows the Power BI service interface. On the left, the 'Adventure Works Revenue Dashboard' is displayed, featuring a bar chart titled 'Profit Margin by Order Date' with a value of 24.23% and a goal of 18.90% (+28.2%). To the right, a modal window titled 'PROFIT MARGIN BY ORDER DATE' and 'Manage alerts' is open. Inside the modal, there is a section for 'Add alert rule' with a toggle switch labeled 'On'. The 'Alert title' field contains 'Profit Margin Threshold Below 15%' and is highlighted with a red border. Below it, 'Set alerts rule for' is set to 'Profit Margin'. In the 'Condition' dropdown, 'Above' is selected, and the 'Threshold' field contains '0.189'. A note states 'Maximum notification frequency' with options for 'At most every 24 hours' (selected) and 'At most once an hour'. A checkbox 'Send me email, too' is checked. At the bottom, there are 'Save and close' and 'Cancel' buttons.

3. Configure the alert so that it notifies you if your Profit Margin KPI drops below a threshold of 15%.

In the Condition section, locate the dropdown menu and select Below. and in the adjacent Threshold field, type 0.15 to set the threshold at 15%. This triggers the alert if the Profit Margin drops below 15%. Without a precise condition, alerts might trigger too often (leading to alert fatigue) or not at all (causing you to miss critical insights).

The screenshot shows a Microsoft Power BI dashboard titled "Adventure Works Revenue Dashboard". On the left, there's a sidebar with various navigation options like Home, Create, Browse, OneLake, Apps, Metrics, Monitor, Learn, Workspaces, My workspace, Adventure Works ..., and Power BI. The main area displays a bar chart titled "Profit Margin by Order Date" with a large green value of "24.23%" and a goal of "Goal: 18.90% (+28.2%)". To the right, a modal window titled "PROFIT MARGIN BY ORDER DATE Manage alerts" is open. It contains a section for "Add alert rule" with a "Profit Margin Threshold Below 15%" alert already configured. The alert is active and set to trigger "On". The "Condition" dropdown is set to "Below" and the "Threshold" input field is set to "0.15". A red box highlights this row. Below the alert configuration, there are sections for "Maximum notification frequency" (with radio buttons for "At most every 24 hours" and "At most once an hour"), a note about alerts only sending if data changes, and links to "Activator" and "Power Automate". At the bottom of the modal are "Save and close" and "Cancel" buttons.

#### 4. Set the alert to a frequency of every hour.

Navigate to the Frequency section. For critical metrics like Profit Margin, which might require hourly checks, Every Hour is an appropriate setting to check (Selecting Every 24 hours would be ideal for alternative parameters that aren't time-sensitive).

The screenshot shows a Power BI dashboard titled "Adventure Works Revenue Dashboard". On the left, there's a sidebar with various navigation options like Home, Create, Browse, OneLake, Apps, Metrics, Monitor, Learn, Workspaces, My workspace, Adventure Works ..., and Power BI. The main area displays a chart titled "Profit Margin by Order Date" with a large green bar showing "24.23%" and a goal of "Goal: 18.90% (+28.2%)". A search bar at the top right says "Search".

A modal window titled "PROFIT MARGIN BY ORDER DATE" and "Manage alerts" is open on the right. It contains a section for "Add alert rule" with a button "+ Add alert rule". Below it is a list of existing rules: "Profit Margin Threshold Below 15%" which is active and set to "On". The "Condition" is set to "Below" and the "Threshold" is "0.15". A red box highlights the "Maximum notification frequency" section, which includes two options: "At most every 24 hours" (unchecked) and "At most once an hour" (checked). A note below says "Alerts are only sent if your data changes." and "By default, you'll receive notifications on the service in the notification center." There are also links to "Activator" and "Power Automate". At the bottom are "Save and close" and "Cancel" buttons.

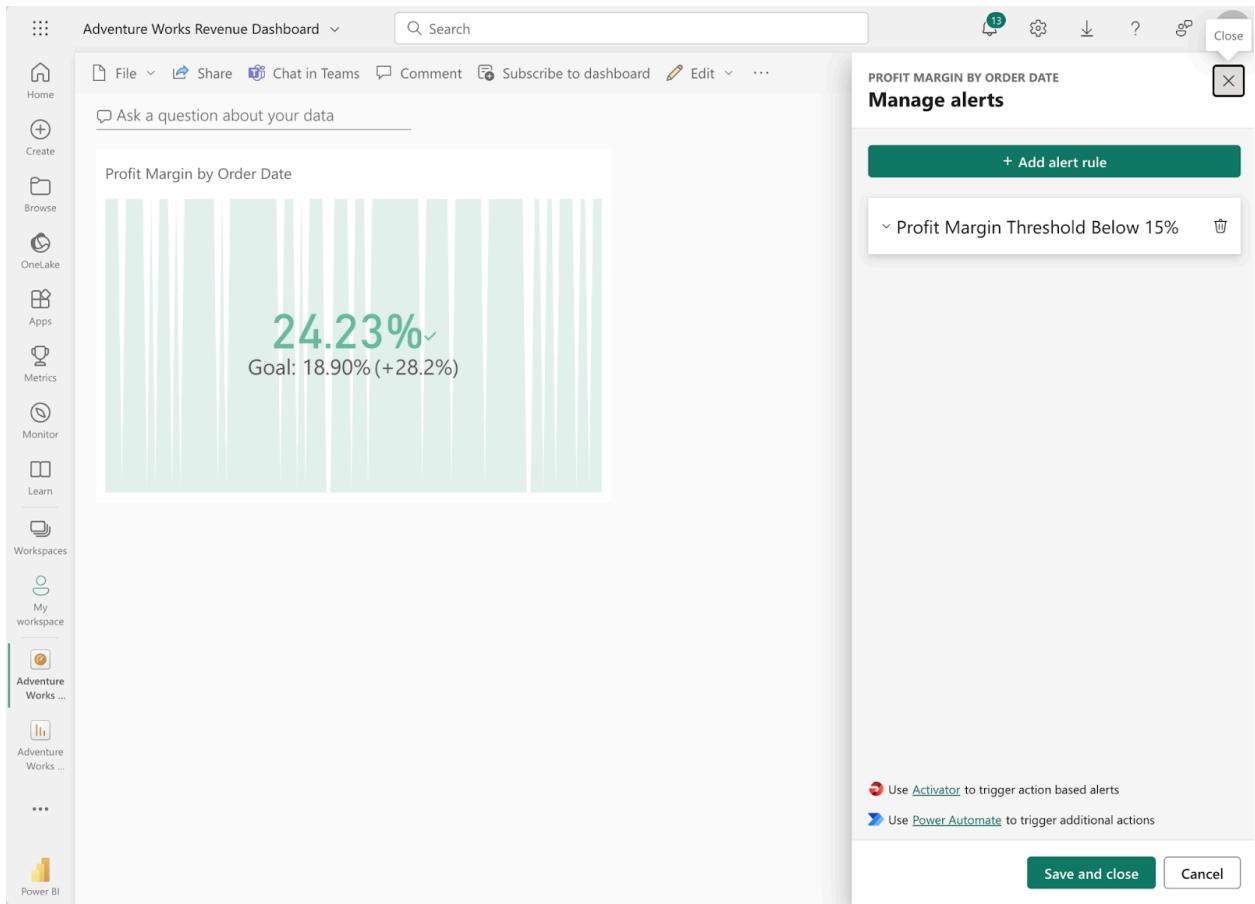
## 5. Save and activate the alert rule.

Once you've set your parameters, select Save and close. This not only saves your alert settings but also activates the alert rule. Power BI will continuously monitor the Profit Margin KPI and notify you based on the conditions set.

The screenshot shows the Microsoft Power BI interface. On the left, the navigation pane includes Home, Create, Browse, OneLake, Apps, Metrics, Monitor, Learn, Workspaces, My workspace, Adventure Works ..., Adventure Works ..., and Power BI. The main area displays a dashboard titled "Adventure Works Revenue Dashboard" with a search bar and various sharing options. A prominent chart titled "Profit Margin by Order Date" shows a value of 24.23% and a goal of 18.90% (+28.2%). To the right, a modal window titled "PROFIT MARGIN BY ORDER DATE Manage alerts" is open. It contains a section for "Add alert rule" with a button "+ Add alert rule". An existing alert rule is listed: "Profit Margin Threshold Below 15%" (Active, On). The alert title is "Profit Margin Threshold Below 15%". The condition is set to "Below" with a threshold of "0.15". There are options for "Maximum notification frequency" (At most once an hour selected) and "Send me email, too" (checkbox checked). Buttons at the bottom right of the modal are "Save and close" (highlighted with a red border) and "Cancel".

You can now view and manage this alert and all others from the Manage alerts panel.

Always remember to revisit your alerts occasionally. As Adventure Works' dynamics change, ensuring that your alerts remain up to date is crucial.



## Conclusion

With these steps, you have successfully navigated and observed the data in your reports. You've also demonstrated the ability to configure alerts to assist you with monitoring your data.

## **4.1. Exercise: Prepare Sales Excel data**

### **Introduction**

Throughout your journey have learned how to create and control a variety of different calculations in Microsoft Excel. In this exercise, you will put this knowledge into practice by creating calculations to work out typical business results such as net revenue.

By completing this exercise, you will demonstrate your ability to:

- Prepare the sales data worksheet to ensure accuracy before integration into Power BI.
- Understand the components of the sales data, such as individual sales per day and the corresponding gross amount.
- Implement formulas to determine the net amount by subtracting tax from the gross amount.

### **Case study**

Tailwind Traders requires a detailed report that outlines the company's latest sales data. The report must contain gross amounts and the difference between gross and net sales. Let's help Tailwind Traders create this report so it can shape its future sales strategies.

### **Instructions**

Download and open the Excel workbook Tailwind Traders Sales.xlsx.

Step 1: Download the file

- Launch Microsoft Excel and open the Excel workbook Tailwind Traders Sales.xlsx. The file contains a single Sales worksheet.

A	B	C	D	E	F	G	H	I
OrderID	Customer Name	Product Name	Product Description	Gross Product Price	Tax Per Product	Quantity Purchased	Product Category	SKU Numbr
1024	Jane Smith	UltraGrip Hammer	A sturdy hammer with an ergonomic handle.	60	8.4	2	Tools	TWH-024
1025	Darren White	Luminous Bulb 60W	Energy-saving 60W bulb with a bright white light.	35	2.45	3	Lighting	TWF-025
1026	Lucy Roberts	Oakwood Shelf	A durable oakwood shelf for home storage.	250	17.5	1	Furniture	TKW-026
1027	Mark Lewis	ProTile Cutter	High precision tile cutter for professionals.	15	1.05	5	Tools	TWF-027
1028	Olivia Graham	Garden Glove Set	Comfortable gloves for gardening tasks.	55	3.85	4	Gardening	TWT-028
1029	Jack Thompson	Steel Nails (1inch)	Rust-resistant steel nails for construction.	75	5.25	2	Hardware	TWH-029
1030	Mia Hughes	Luxury Paint (Blue)	Premium quality blue paint for interior walls.	50	14.7	1	Paint & Decor	TWS-030
1031	Aaron Walker	Kitchen Sink (Steel)	Stainless steel kitchen sink with a modern design.	90	6.3	3	Plumbing	TWF-031
1032	Lily Peterson	Power Drill Set	A complete drill set with multiple bits and accessories.	180	12.6	2	Tools	TWG-032
1033	Ben Foster	Floral Wallpaper	Beautiful floral design wallpaper for walls.	3	1.4	6	Paint & Decor	TWT-033
1034	Owen Gray	Brass Door Knob	Elegant brass doorknob for interior doors.	300	21	1	Hardware	TWS-034
1035	Amelia Carter	LED Garden Lights	Set of 6 LED lights for garden or patio areas.	50	3.5	4	Lighting	TWH-035
1036	Liam Clark	Compost Bin	Durable compost bin for organic waste.	60	4.2	5	Gardening	TKW-036
1037	Sophia Turner	Ceramic Vase (Red)	Red ceramic vase for home decor and centerpieces.	40	2.8	3	Home Decor	TWT-037
1038	Jacob Moore	Patio Chair Set	Set of 2 chairs for patio or balcony seating.	45	3.15	4	Furniture	TWO-038
1039	Ava Lee	Electric Lawnmower	Efficient electric lawnmower for maintaining lawns.	80	5.6	2	Gardening	TWB-039
1040	Ethan Wilson	Kitchen Faucet	Modern kitchen faucet with a chrome finish.	200	14	1	Plumbing	TWT-040
1041	Charlotte Adams	Designer Wall Clock	Stylish wall clock with quartz movement.	65	4.55	3	Home Decor	TWF-041
1042	Lucas Taylor	Granite Countertop	Durable granite countertop for kitchens.	110	7.7	2	Furniture	TBW-042
1043	Mia Roberts	Teakwood Desk	Spacious teakwood desk for office work.	95	6.65	1	Furniture	TWH-043
1044	Noah White	Marble Floor Tile	Elegant marble tiles for luxurious floors.	130	9.1	3	Flooring	TWT-044
1045	Harper Smith	Solar Outdoor Lantern	Solar-powered lantern for garden lighting.	40	2.8	4	Lighting	TWS-045

## Step 2: Calculate Gross Revenue

1. Insert a column after Quantity Purchased and label it Gross Revenue.
2. Use the formula =E2\*G2 to calculate the revenue from each product.

## Step 3: Calculate Total Tax

1. Create a Total Tax column next to Gross Revenue.
2. Input the formula =F2\*G2 to calculate the tax for each product.

## Step 4: Calculate Net Revenue

1. Insert a Net Revenue column next to Total Tax.
2. Use the formula =H2-I2 to determine the actual earnings post-tax for each product.
3. Double-click the shortcut on cell J2 or drag this formula down to cater to all products on your list. Repeat this action for the formulas in H2 and I2.
4. Observe the first 10 records and note the highest and lowest values for Net Revenue, Quantity Purchased, and Total Tax. In conjunction, observe neighboring columns like Sales Rep for trends.

## Conclusion

Having completed the assigned tasks, you now have the skills to prepare data in an Excel report. You've also demonstrated the ability to perform calculations in your worksheet.

## 4.2. Exercise: Configure data sources

### Introduction

In this exercise, you'll use Power BI to help Tailwind Traders navigate through its data, apply transformations, and prepare its data for future analysis.

By completing this exercise, you'll demonstrate your ability to:

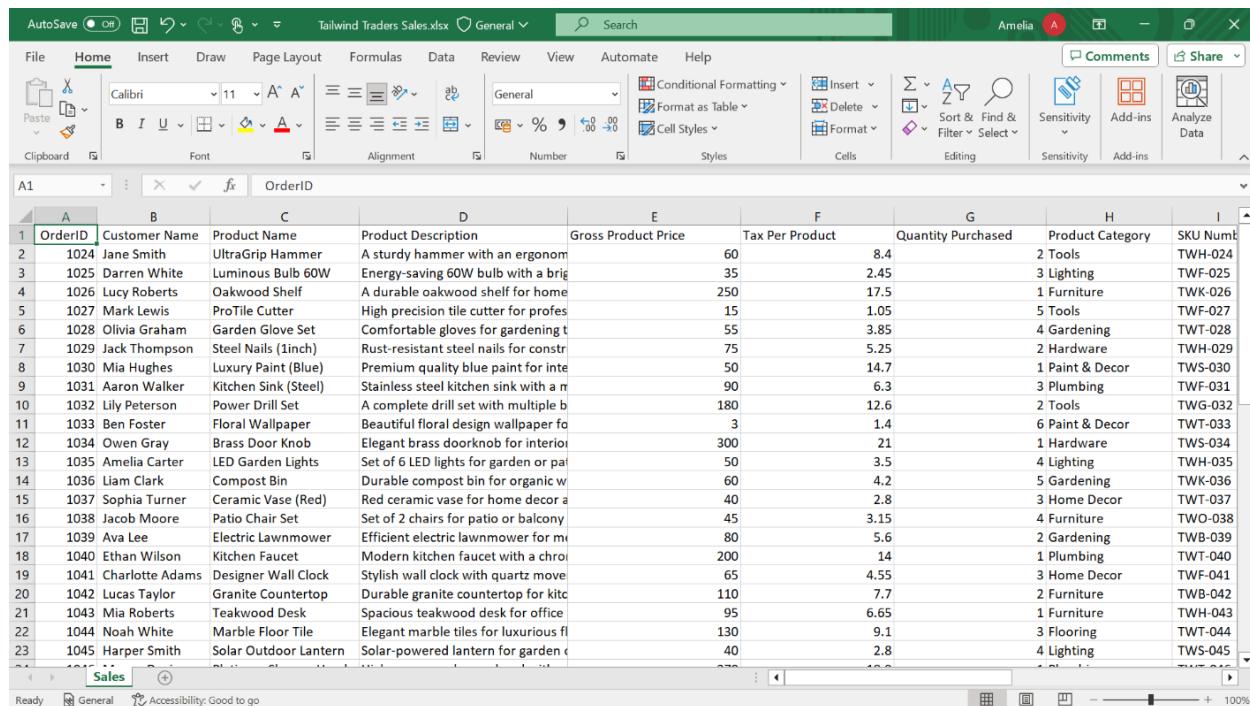
- Incorporate Excel data sources into Power BI and ensure accurate data types.
- Review statistics and details of the data sources to detect and rectify any discrepancies or errors.
- Identify and filter out refunded purchases to maintain the data's integrity.
- Implement a Python script to transform and refine the currency exchange data.

### Case study

Tailwind Traders needs to configure its data sources. The company has sought your help and needs you to add sales data, ensure the accuracy of its data types, and transform its historical currency exchange data.

### Instructions

Open the Excel workbook Tailwind Traders Sales.xlsx you created in the previous exercise. The workbook should contain a single Sales worksheet.



The screenshot shows the Microsoft Excel application with the 'Tailwind Traders Sales.xlsx' file open. The 'Sales' worksheet is active, displaying a table of product data. The columns are labeled: OrderID, Customer Name, Product Name, Product Description, Gross Product Price, Tax Per Product, Quantity Purchased, Product Category, and SKU Num#. The data includes various products like UltraGrip Hammer, Luminous Bulb 60W, Oakwood Shelf, etc., with their respective details and category assignments. The Excel ribbon and various toolbars are visible at the top, and the status bar at the bottom indicates 'Ready' and '100%'. The table has a total of 23 rows of data.

OrderID	Customer Name	Product Name	Product Description	Gross Product Price	Tax Per Product	Quantity Purchased	Product Category	SKU Num#
1024	Jane Smith	UltraGrip Hammer	A sturdy hammer with an ergonomic handle.	60	8.4	2	Tools	TWH-024
1025	Darren White	Luminous Bulb 60W	Energy-saving 60W bulb with a bright white light.	35	2.45	3	Lighting	TWF-025
1026	Lucy Roberts	Oakwood Shelf	A durable oakwood shelf for home storage.	250	17.5	1	Furniture	TWK-026
1027	Mark Lewis	ProTile Cutter	High precision tile cutter for professionals.	15	1.05	5	Tools	TWF-027
1028	Olivia Graham	Garden Glove Set	Comfortable gloves for gardening tasks.	55	3.85	4	Gardening	TWT-028
1029	Jack Thompson	Steel Nails (1inch)	Rust-resistant steel nails for construction.	75	5.25	2	Hardware	TWH-029
1030	Mia Hughes	Luxury Paint (Blue)	Premium quality blue paint for interior walls.	50	14.7	1	Paint & Decor	TWS-030
1031	Aaron Walker	Kitchen Sink (Steel)	Stainless steel kitchen sink with a modern design.	90	6.3	3	Plumbing	TWF-031
1032	Lily Peterson	Power Drill Set	A complete drill set with multiple bits and accessories.	180	12.6	2	Tools	TWG-032
1033	Ben Foster	Floral Wallpaper	Beautiful floral design wallpaper for walls.	3	1.4	6	Paint & Decor	TWT-033
1034	Owen Gray	Brass Door Knob	Elegant brass doorknob for interior doors.	300	21	1	Hardware	TWS-034
1035	Amelia Carter	LED Garden Lights	Set of 6 LED lights for garden or patio areas.	50	3.5	4	Lighting	TWH-035
1036	Liam Clark	Compost Bin	Durable compost bin for organic waste.	60	4.2	5	Gardening	TWK-036
1037	Sophia Turner	Ceramic Vase (Red)	Red ceramic vase for home decor and gifts.	40	2.8	3	Home Decor	TWT-037
1038	Jacob Moore	Patio Chair Set	Set of 2 chairs for patio or balcony seating.	45	3.15	4	Furniture	TWO-038
1039	Ava Lee	Electric Lawnmower	Efficient electric lawnmower for maintaining lawns.	80	5.6	2	Gardening	TWB-039
1040	Ethan Wilson	Kitchen Faucet	Modern kitchen faucet with a chrome finish.	200	14	1	Plumbing	TWT-040
1041	Charlotte Adams	Designer Wall Clock	Stylish wall clock with quartz movement.	65	4.55	3	Home Decor	TWF-041
1042	Lucas Taylor	Granite Countertop	Durable granite countertop for kitchens.	110	7.7	2	Furniture	TWB-042
1043	Mia Roberts	Teakwood Desk	Spacious teakwood desk for office work.	95	6.65	1	Furniture	TWH-043
1044	Noah White	Marble Floor Tile	Elegant marble tiles for luxurious floors.	130	9.1	3	Flooring	TWT-044
1045	Harper Smith	Solar Outdoor Lantern	Solar-powered lantern for garden lighting.	40	2.8	4	Lighting	TWS-045

## Step 1: Load the Sales data

1. Load the Tailwind Traders Sales file into Power BI and select Transform.
2. Within Power Query, find the OrderID column and set the data type to Whole Number.
3. To complete optimization, assign the following data types for the columns:
  - Gross Product Price = Fixed Decimal Number
  - Tax Per Product = Fixed Decimal Number
  - Quantity Purchased = Whole Number
  - Loyalty Points = Whole Number
  - Stock = Whole Number
  - Product Category = Text
  - Rating = Fixed Decimal Number
4. In the View tab, upon selecting the Column Quality, Column Distribution, and Column Profileboxes, ensure the Valid percentage is 100% for the OrderID column.
5. Select the Gross Product Price column and note down the histogram frequency of distinct and unique values.
6. Select the Quantity Purchased column and note down the MIN, MAX and AVERAGE values displayed on the additional statistical pane.

## Step 2: Load the Purchases data

1. Load the Purchases file into Power BI and select Transform.

To complete optimization, assign the following data types for the columns:

- PurchaseID = Whole Number
- OrderID = Whole Number
- Return Policy (Days) = Whole Number
- Purchase Date = Date
- Warranty (Months) = Whole Number
- Supplier = Text
- Last Visited = Date
  - ReturnStatus = Text

3. Select the Warranty (Months) column and note down the MIN, MAX and AVERAGE values displayed on the additional statistical pane.

4. Select the ReturnStatus column and observe the Column Quality pane to ensure the Valid percentage is 100%.

5. Filter the ReturnStatus column to ensure that only records with Not Returned are visible.

Step 3: Load the Countries data

1. Load the Countries file into Power BI and select Transform.

2. To complete optimization, assign the following data types for the columns:

- Country ID = Whole Number
- Exchange ID = Whole Number
- Country = Text

Step 4: Load the Historical currency exchange data

1. Select Get Data, choose Python script, and then paste the following code into the script window in Power BI:

```
import pandas as pd
from io import StringIO

data = """Exchange ID;ExchangeRate;Exchange Currency
1;1;USD
2;0,75;GBP
3;0,85;EUR
4;3,67;AED
5;1,3;AUD"""
df = pd.read_csv(StringIO(data), sep=';')

# Return the transformed dataframe
df
```

2. Integrate this data into your Power BI report.

3. Save the Power BI project as Tailwind Traders Report.pbix.

Note: The Python script prepares the currency exchange data for analysis. It transforms the raw string data into a structured format that can be easily integrated with other datasets within Power BI. The core script elements are as follows:

- The pandas data analysis library is used for manipulating and analyzing data.
- StringIO is a module that lets you read and write strings like files.
- pd.read\_csv() is a pandas function that reads a CSV file into a DataFrame.

## Conclusion

Having completed the assigned tasks, you now have the skills to prepare data in an Excel report. You've also demonstrated the ability to perform calculations in your worksheet.

## **4.3. Exercise: Design and develop the data model**

### **Introduction**

As you've worked with Power BI, you've seen first-hand how data can tell stories to inform insights. In this exercise, you'll put this knowledge into practice by working with sales data from around the globe to prepare a report.

By completing this exercise, you'll demonstrate your ability to:

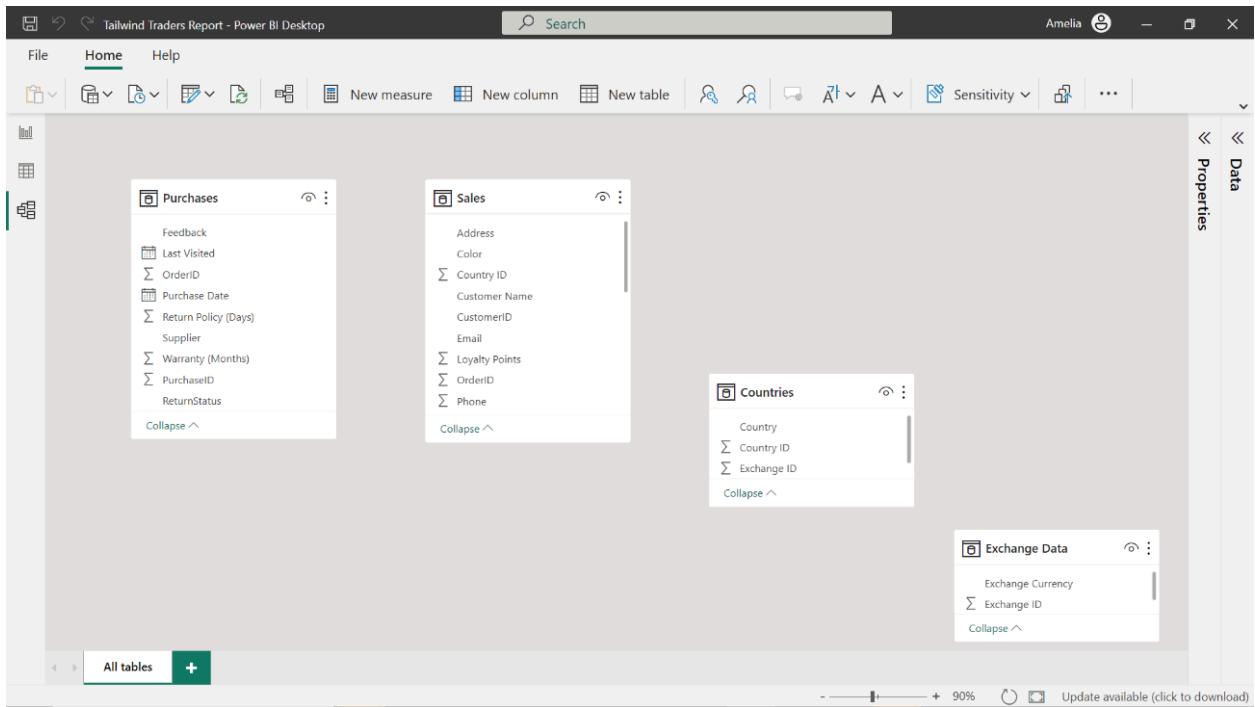
- Construct a snowflake schema tailored for the data model.
- Establish and specify the relationships between various tables in the data model.
- Define a dedicated calendar table for temporal data analysis and reporting.
- Synthesize DAX data into a consolidated US Dollar table encompassing sales and profit metrics.

### **Case study**

Tailwind Traders needs a report that shows the company's worldwide sales and profits. However, the sales and profit data must be displayed in US dollars. Let's help Tailwind Traders create this report so that it can generate insights into its global sales.

### **Instructions**

Open the Tailwind Traders Report.pbix Power BI file you have created in the previous exercise. Access Model View in Power BI to view the report's tables. Your Power BI environment should resemble the screenshot below. Follow the prompts to design and develop a data model from these tables.



### Step 1: Create a relationship between the Countries and Exchange Data tables

1. Create a relationship between the Countries and Exchange Data tables on the Exchange ID field.
2. Set the Cardinality to One to One (1:1)
3. Set the Cross filter direction to Both to be bi-directional.
4. Ensure the Make this relationship active checkbox is selected.
5. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a 1:1 symbol on either end of the connector.

### Step 2: Create a relationship between the Sales and Countries tables

1. Create a relationship on the Country ID field between the Sales and Countries tables.
2. Set the Cardinality to Many to One (1:1).
3. Set the Cross-filter direction to Both so that it's bi-directional.
4. Ensuring the Make this relationship active checkbox is selected.
5. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a \*:1 symbol on either end of the connector.

### Step 3: Create a relationship between the Purchases and Sales tables

1. Create a relationship on the OrderID field between the Purchases and Sales tables.

2. Set the Cardinality to One to One (1:1).
3. Set the Cross filter direction to Both to be bi-directional.
4. Ensure the Make this relationship active checkbox is selected.
5. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a 1:1 symbol on either end of the connector.

#### Step 4: Configure the Calendar table

- Select New Table and add the following DAX code to create a new Calendar table:

```
CalendarTable =
ADDCOLUMNS(
CALENDAR(DATE(2020, 1, 1), DATE(2023, 12, 31)),
"Year", YEAR([Date]),
"Month Number", MONTH([Date]),
"Month", FORMAT([Date], "MMMM"),
"Quarter", QUARTER([Date]),
"Weekday", WEEKDAY([Date]),
"Day", DAY([Date])
)
```

#### Step 5: Create a relationship between the Calendar and Purchases tables

1. Create a relationship on the Date field between the Calendar and on Purchase Date in the Purchases table.
2. Set the Cardinality to Many to One (1:1).
3. Ensure the Make this relationship active checkbox is selected.
4. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a \*:1 symbol on either end of the connector.

#### Step 6: Create a Sales in USD calculated table

1. Select New Table and add the following DAX code to create a new calculated table:

```
Sales in USD =
ADDCOLUMNS(
Sales,
```

```
"Country Name", RELATED(Countries[Country]),  
"Exchange Rate", RELATED('Exchange Data'[Exchange Rate]),  
"Exchange Currency", RELATED('Exchange Data'[Exchange Currency]),  
"Gross Revenue USD", [Gross Revenue] * RELATED('Exchange  
Data'[Exchange Rate]),  
"Net Revenue USD", [Net Revenue] * RELATED('Exchange Data'[Exchange  
Rate]),  
"Total Tax USD", [Total Tax] * RELATED('Exchange Data'[Exchange Rate])  
)
```

2. Note the Gross Revenue USD, Net Revenue USD, and Total Tax USD for the Order ID= 1035 on the Sales in USD table.

Step 7: Create a relationship between the Sales in USD and Sales tables

1. Create a relationship between the Sales in USD and Sales tables on the Order ID field.
2. Set the Cardinality to Many to One (1:1).
3. Ensuring the Make this relationship active checkbox is selected.
4. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a 1:1 symbol on either end of the connector.

## Conclusion

Having completed the assigned tasks, you have demonstrated the skills to design and develop a data model!

## 4.4. Exercise: Configure aggregations using DAX

### Introduction

In your experience with Power BI, you've learned to turn data into insights. In this exercise, you'll use DAX to calculate annual and quarterly profits and analyze data sets to create a clear financial story.

By completing this exercise, you'll demonstrate your ability to:

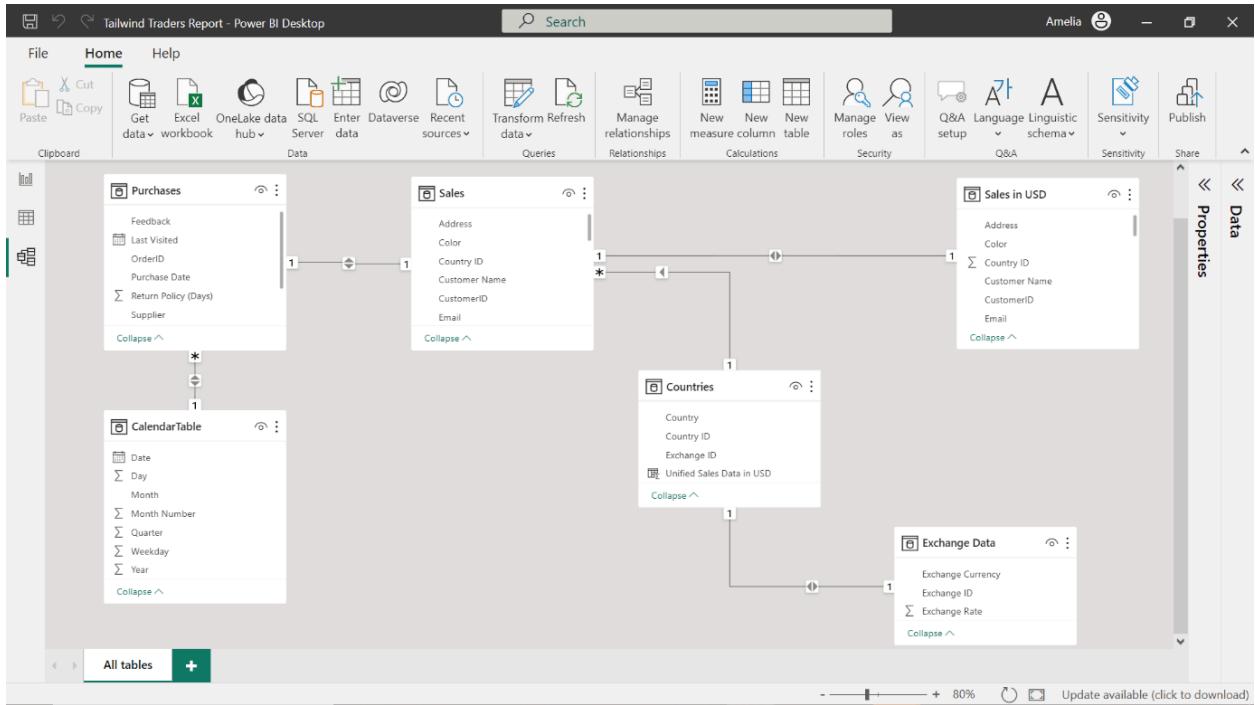
- Create time-based summaries for displaying quarterly, annual, and year-to-date profit data.
- Determine median sales volume to assess Tailwind Traders' performance stability.
- Utilize the Performance Analyzer tool to enhance report generation and ensure fast loading times.

### Scenario

Tailwind Traders needs to generate insights into its financial performance to inform its strategic decisions for the upcoming business year. The insights it requires include time-based summaries that display quarterly and annual profits and year-to-date breakdowns. The company also requires its median sales volume to assess its financial performance. Let's help Tailwind Traders create this report.

### Instructions

Locate and open the Tailwind Traders Report.pbix Power BI file you created in the previous exercise. If you followed the steps from the previous exercise correctly, then your data model should resemble the one displayed in the screenshot below. Follow the prompts to configure aggregations for this data model using DAX.



## Step 1: Calculate Yearly Profit margin

1. Create a new measure for the Sales in USD table.
2. In the formula bar, create a new measure using a DAX function that represents the yearly profit margin. This margin should be calculated by dividing total profit by net revenue within the Sales in USD table.
3. In the Fields pane, select the new measure and change its format to Percentage in the Properties pane.

Tip: Consider using DIVIDE and SUM functions to create this ratio of profit to revenue.

## Step 2: Calculate Quarterly Profit

1. Right-click on the Sales in USD table in the Fields pane and choose New Measure.
2. In the formula bar, create a new measure for quarterly profit using the Profit in USD column. You'll need a function that aggregates data until the end of the current quarter, referencing both the profit values and a calendar table.
3. Format the new measure as a Percentage.

Tip: Consider using the DATESQTD function with your profit values to aggregate data by quarter.

### Step 3: Calculate Year-to-Date Profit

1. Right-click on the Sales in USD table in the Fields pane and select New Measure.
2. In the formula bar, create a new measure for the year-to-date profit using the Profit in USD column. You'll need a function that aggregates profit data from the start of the year up to the current date.
3. Format the new measure as a Percentage.

Tip: Consider using TOTALYTD with your profit values and calendar table to calculate running totals from the start of each year.

### Step 4: Calculate Median Sales

1. Right-click on the Sales in USD table in the Fields pane and choose New Measure.
2. In the formula bar, create a new measure to represent the median sales based on the Gross Revenue USD column. Consider which statistical functions in DAX can help you find the middle value of your sales data.

Tip: Consider using the MEDIAN function to find the central value in your Gross Revenue USD data. The median separates the higher and lower half of a data sample.

### Step 5: Access the Performance Analyzer

1. Find and select the Performance Analyzer option within the View tab.
2. Create an empty Card visual and drag the Yearly Profit Margin field to the Fields well. Repeat this process for the Median Sales, Quarterly Profit, and YTD Profit.
3. Begin recording the performance of the card visuals using the Performance Analyzer's recording feature.
4. Refresh your reports to test their performance.
5. Select the plus (+) symbol next to each Card to open up the details.
6. Observe the list of all visual items in your report and their respective load times. Ensure the DAX query time of visual items is < 200ms and note any slow-loading visuals.
7. Select Stop and remove all Card visuals, resulting in a blank Canvas.
8. Save your report.

## Conclusion

You've helped influence Tailwind Traders' strategic decisions by calculating profits and assessing sales consistency. In the data world, accuracy and speed are key. You've also demonstrated the ability to configure calculations using DAX.

## 4.5. Exercise: Create a Sales report

### Introduction

In this exercise, you'll help Tailwind Traders develop a visually engaging and insightful sales report.

By completing this exercise, you'll demonstrate your ability to:

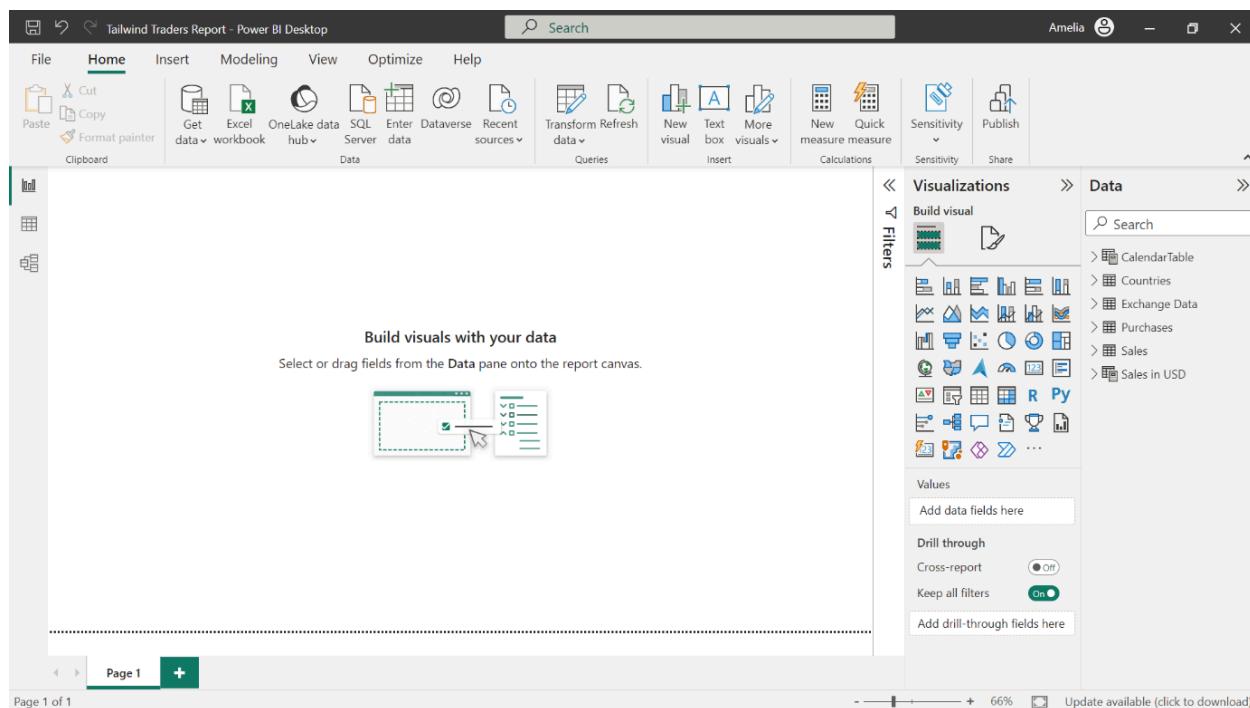
- Create different kinds of charts to display sales data.
- Display important sales metrics using cards and KPIs.

### Case study

Tailwind Traders requires a report that enables the company to make sales decisions based on solid, data-driven insights. The company has requested that you generate such a report using the data from its Sales in USD table.

### Instructions

Locate and open the Tailwind Traders Report.pbix Power BI file you have created in the previous exercise and follow the prompts below to complete the exercise.



#### Step 1: Create a Sales Overview report

1. Open the Tailwind Traders Report.pbix Power BI file.
2. Rename the report Sales Overview.

## Step 2: Create a bar chart for loyalty points by country

1. From the Visualizations pane, select the clustered bar chart.
2. Open the Data Fields pane.
3. Select the Sales in USD table to expand it and view its fields.
4. Add data from the Sales in USD table:
  - a. Drag Country to the Y-axis field
  - b. Drag Loyalty Points to the X-axis field
5. Resize and position the chart to the left side of the canvas.
6. Set the title to "Loyalty Points by Country".
7. Enable data labels.
8. Note the country with the highest loyalty points value.

Tip: You may need to sort the chart. To sort the bars in descending order to immediately highlight top performers, select the "More options" (...) menu on the chart and select "Sort axis" then "Country Name - Ascending"

## Step 3: Create a column chart for quantity sold by product

1. From the Visualizations pane, select the clustered column chart.
2. Add data from the Sales in USD table:
  - a. Drag Product to the X-axis field
  - b. Drag Quantity to the Y-axis field
3. Configure the chart. To start, resize and position the chart to the right of the Loyalty Points chart.
4. Set the title to "Quantity Sold by Product".
5. Enable data labels.

## Step 4: Create a pie chart for median sales distribution by country

1. From the Visualizations pane, select the pie chart.
2. Add data from the Sales in USD table:
  - a. Drag Country to the Legend field
  - b. Drag Median Sales to the Values field
3. Configure the chart. To start, resize and position the chart below the Loyalty Points chart.

4. Set the title to "Median Sales Distribution by Country".
5. Enable data labels.
6. Sort the data in ascending order.

Step 5: Create a line chart for median sales over time

1. From the Visualizations pane, select the line chart.
2. Add data from the Sales in USD table:
  - a. Drag Date to the X-axis field
  - b. Drag Median Sales to the Y-axis field
3. Configure the chart. To start, resize and position the chart below the Quantity Sold by Product column chart.
4. Set the title to "Median Sales Over Time".
5. Enable data labels.
6. Enable a Trend line.

Tip: You can set a Trend line in the Analytics tab of the Visualizations pane.

Step 6: Create cards to visualize your measures

1. From the Visualizations pane, select the card visualization.
2. Add data from the Sales in USD table:
  - a. Drag Stock to the Fields section
3. Create a second card and add:
  - a. Drag Quantity Purchased to the Fields section
4. Create a third card and add:
  - a. Drag Median Sales to the Fields section
5. Set the titles as Stock, Quantity Purchased, and Median Sales.
6. Position the Stock and Quantity Purchased cards above the Loyalty Points by Country bar chart.
7. Position the Median Sales card above the Quantity Sold by Product column chart.

Tip: Keep your card designs simple for clear and immediate data presentation.

Step 7: Add a slicer to the report

1. From the Visualizations pane, select the slicer visualization.
2. Add data from the Sales in USD table:

- a. Drag Country Name to the Fields section
3. Position the slicer above the Quantity Sold by Product column chart.
4. Save your report.

### **Conclusion**

Having completed the assigned tasks, you've demonstrated your ability to visualize key metrics in charts, cards and KPIs.

## 4.6. Exercise: Create a Profit report

### Introduction

In this exercise, you'll help Tailwind Traders develop a visually engaging and insightful profit report.

By completing this exercise, you'll demonstrate your ability to:

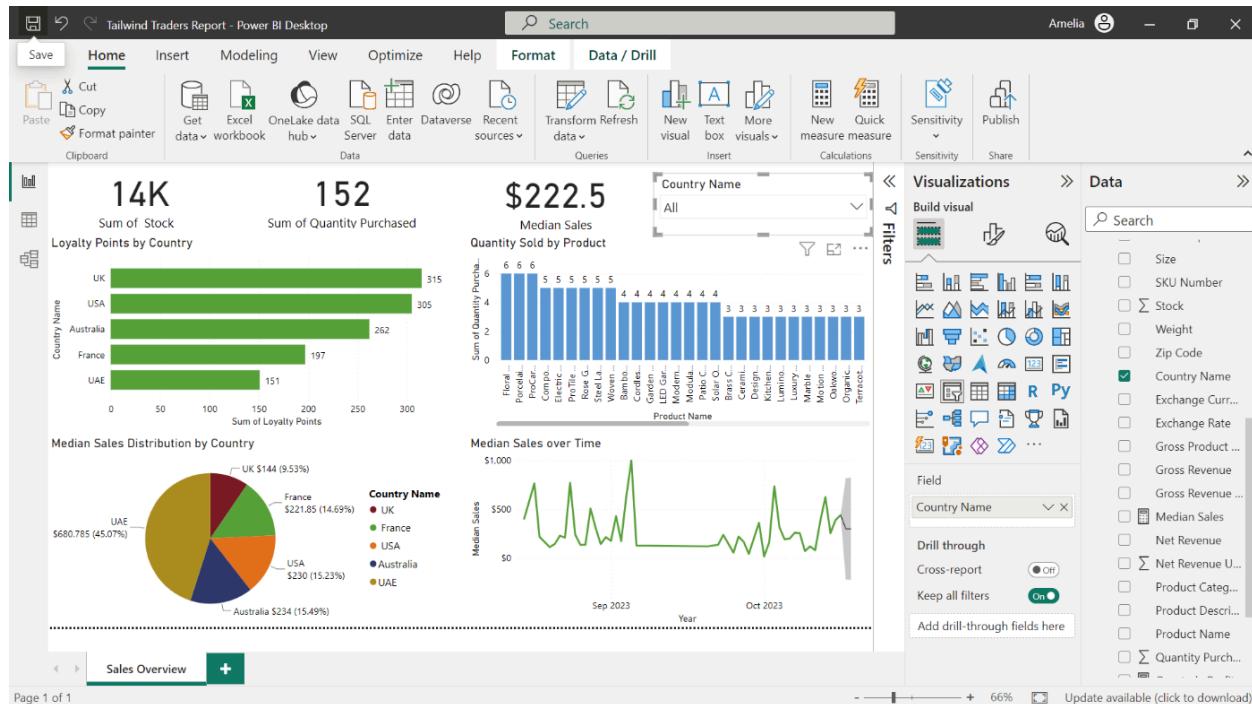
- Create different kinds of charts to display profit data.
- Display important profit metrics using cards and KPIs.

### Case study

In the previous exercise, you created a sales report that displayed key insights into Tailwind Traders' sales. The company has requested a second report providing insights into its profits.

### Instructions

Locate and open the Tailwind Traders Report.pbix Power BI file you have created in the previous exercise and follow the prompts below to complete the exercise.



### Step 1: Create a Profit Overview report

1. Open your Sales Overview report.
2. Create a new page in your existing Sales Overview report and name it Profit Overview.

## Step 2: Create a bar chart for Net Revenue by Product

1. From the Visualizations pane, select the clustered bar chart.
2. Open the Data Fields pane.
3. Select the Sales in USD table to expand it and view its fields.
4. Add data from the Sales in USD table:
  - a. Drag Product Name on the X-Axis
  - b. Drag Net Revenue USD on the Y-Axis.
5. Resize and position the chart to the left side of the canvas.
6. Set the title to "Net Revenue by Product".
7. Enable data labels.
8. Note the product with the highest Net Revenue value.
9. Sort the data in descending order.

Tip: You can customize your chart using the Format tab to change colors, add titles, and adjust scales.

## Step 3: Create a donut chart for Yearly Profit Margin by Country

1. From the Visualizations pane, select the donut chart.
2. Add data from the Sales in USD table:
  - a. Drag Country Name in the Legend area.
  - b. Drag Yearly Profit Margin in the Values area.
3. Configure the chart. To start, resize and position the chart to the right of the Net Revenue by Product chart.
4. Set the title to "Yearly Profit Margin by Country".
5. Enable detailed labels for Category, percent the Percent of total category.

## Step 4: Create an area chart for Yearly Profit Margin over Time

1. From the Visualizations pane, select the area chart.
2. Add data from the CalendarTable and Sales in USD table:
  - a. Drag Date to the X-axis field
  - b. Drag Yearly Profit Margin to the Y-axis
3. Configure the chart. To start, resize and position the chart below the Net Revenue by Product chart.

4. Set the title to "Yearly Profit Margin Over Time".
5. Enable data labels.

Step 5: Create cards to visualize your measures

1. Create cards that visualize the following measures:

- YTD Profit
- Net Revenue USD

2. Position the cards above the Net Revenue by Product bar chart.

Tip: Keep the card design simple and legible for quick data reference.

Step 6: Create a KPI for Gross Revenue USD

1. Create a KPI for Gross Revenue USD.
2. Configure the KPI as follows:
  - a. Display the Gross Revenue USD in the value area
  - b. Display the Date in the Trend Axis area.
3. Resize and position the KPI next to the Net Revenue USD card.

Step 7: Add a slicer to the report

1. From the Visualizations pane, select the slicer visualization.
  1. Add data from the CalendarTable table:
    - a. Drag Data to the Fields section
  2. Position the slicer next to the Gross Revenue KPI.
  3. Save your report.
  4. Publish your report to Power BI Service.

## Conclusion

Having completed the assigned tasks, you've demonstrated your ability to visualize key metrics in the form of charts, cards and KPIs.

## **4.7. Exercise: Create an executive dashboard**

### **Introduction**

During your Power BI journey, you explored the impact of analytics. In this exercise, you'll practice your analytics knowledge by curating data.

By completing this exercise, you'll demonstrate your ability to:

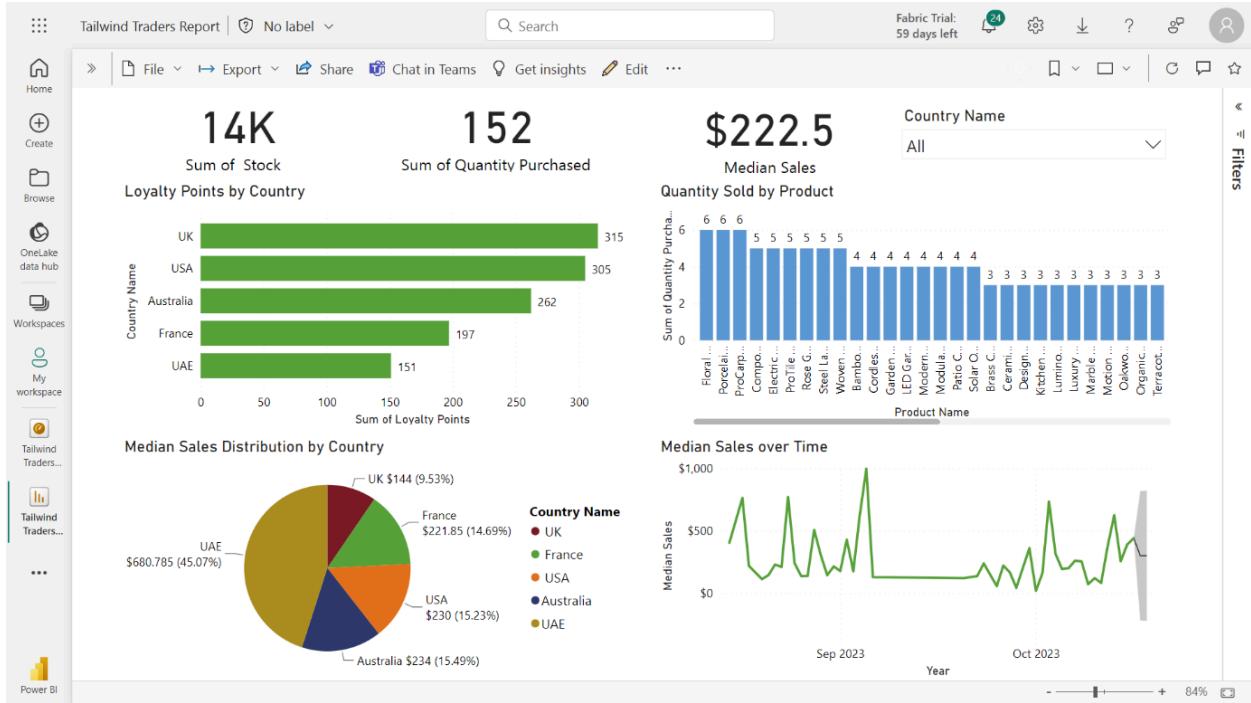
- Create an executive dashboard in Power BI to curate data efficiently.
- Display sales summaries focusing on product quantities and median sales trends.
- Highlight profit metrics, emphasizing net revenue and Yearly Profit Margin by country.
- Use card visualizations for quick insights.
- Ensure the dashboard is mobile-friendly, making important data accessible.

### **Case study**

Tailwind Traders requires your help creating an executive Power BI dashboard that the company can use to generate insights into its global performance. The dashboard needs to present global sales and profit data efficiently. It must also be accessible on mobile devices.

### **Instructions**

Locate and open the Tailwind Traders Report.pbix Power BI file you have created in the previous exercise and follow the prompts below to complete the exercise.



## Step 1: Create a new dashboard

1. Navigate to your workspace and create a new dashboard called Tailwind Traders Executive Dashboard.

## Step 2: Pin the Sales Overview core visualizations

1. Navigate to your Workspace and access the Sales Overview tab of the Tailwind Traders Report.
  2. Pin the following visuals to the Tailwind Traders Executive Dashboard:

- Loyalty Points by Country bar chart
  - Quantity Sold by Product column chart
  - Median Sales Distribution by Country pie chart
  - Media Sales Over Time line chart

### Step 3: Pin the Sales Overview card visualizations

1. Locate and pin the following Sales Overview card visualizations to the Tailwind Traders dashboard:

- Sum of Stock card
  - Sum of Quantity Purchased card
  - Median sales card

#### Step 4: Pin the Profit Overview core visualizations

1. Select the Profit Overview tab.
2. Locate and pin the following Profit Overview core visualization to the Tailwind Traders Executive Dashboard:
  - Net Revenue by Product bar chart
  - Yearly Profit Margin by Country donut chart
  - Year Profit Margin over Time area chart
3. Note the product with the highest value in the Net Revenue by Product bar chart.

#### Step 5: Pin the Profit Overview card and KPI visualizations

1. Locate and pin the following items to the Tailwind Traders Executive Dashboard:
  - YTD Profit card
  - Sum of Net Revenue USD card
  - Sum of Gross Revenue USD KPI

#### Step 6: Configure the Mobile View for the cards and the KPI visualizations

1. Locate and select the Tailwind Traders Executive Dashboard from the Dashboards list.
2. Select Mobile Layout from the Edit menu and pin your card visuals to the dashboard in the following order:
  - Sum of Net Revenue USD to the left and Sum of Quantity Purchased cards to the right.
  - Median Sales to the left and YTD Profit cards to the right.
  - Sum of Gross Revenue USD KPI across the full width of the layout

#### Step 7: Configure the Mobile View for the core visualizations

1. Configure the mobile view for the core visualizations by pinning the Sales Overview visualizations in the following order:
  - Loyalty Points by Country bar chart
  - Quantity Sold by Product column chart
  - Median Sales Distribution by Country pie chart
  - Median Sales over Time line chart
2. Pin the following Profit Overview visualizations in the following order:

- Net Revenue by Product bar chart
- Yearly Profit Margin by Country donut chart
- Yearly Profit Margin over Time area chart

## **Conclusion**

Having completed the assigned tasks, you have demonstrated that you possess the skills to curate visuals for an executive dashboard.

## 4.8. Exercise: Configure alerts and subscriptions

### Introduction

In your data analytics journey, you've learned how numbers tell stories. Now, you'll explore Power BI's subscriptions and alerts features.

By completing this exercise, you will demonstrate your ability to:

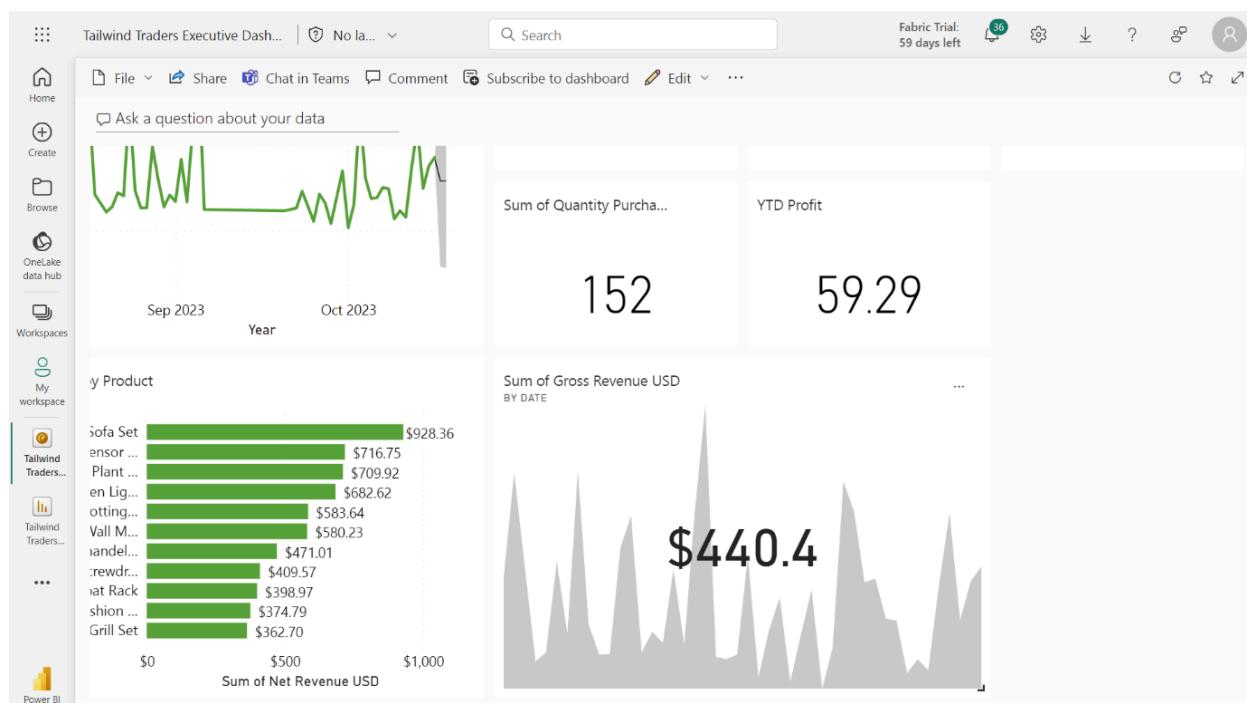
- Configure subscriptions to empower stakeholders with timely and actionable insights.
- Set up proactive alerts, enabling them to steer their strategies precisely and confidently.

### Case study

At Tailwind Traders, you receive an email from the executive team. They have tasked you with providing quick, actionable insights to improve the company's market position using Power BI's subscriptions and alerts features.

### Instructions

Locate and open the Tailwind Traders Executive Dashboard you created in the previous exercise and follow the prompts below to complete the exercise.



Step 1: Create a daily alert for Gross Revenue USD

1. Access the Manage Alerts menu for the Sum of Gross Revenue USD KPI tile.
2. Create a new alert titled Gross Revenue USD below \$400 with the following configurations:
  - In the Condition section, set the threshold at \$400.
  - Set a frequency of at most every 24 hours.
3. Save and close the alert.

#### Step 2: Create a subscription for the Sales Overview tab

1. Access the report's Sales Overview tab.
2. Access the Median Sales Distribution by Country pie chart and note down the country with the highest Median Sales value.
3. Create a subscription for the Sales Overview report with the following configurations:
  - Title the subscription Sales Weekly Summary.
  - Set the Start date to the current date and the End date to 12/31/2025.
  - For the frequency, select Weekly and select Monday.
  - Set the Scheduled time to 5:00 AM.
4. Access the Sales Overview report page in the Report page dropdown and ensure that the toggle switches for the following options are activated:
  - Permission to view the report in Power BI
  - Link to report in Power BI
  - Report page preview
5. Activate the subscription.

#### Step 3: Create a subscription for the Profit Overview tab

1. Access the report's Profit Overview tab.
2. Create a subscription to the report with the following configurations:
  - Name the subscription Profit Weekly Summary.
  - Set the Start date to the current date and the End date to 12/31/2025.
  - Set the frequency to Weekly and select Monday, Wednesday and Friday as the days of the week.
  - Set the Scheduled time to 6:00 AM.

3. Access the Profit Overview report page in the Report page dropdown and ensure that the toggle switches for the following options are activated:

- Permission to view the report in Power BI
- Link to report in Power BI
- Report page preview

4. Activate the subscription.

### **Conclusion**

You provided important insights urgently needed by the executive team. Your daily Gross Revenue alerts and weekly Sales and Profit updates keep them well-informed. This demonstrates how effectively used data can be a strategic tool, helping Tailwind Traders actively shape its market strategy.

## **4.9. Exemplar: Capstone project - Part 1**

### **Overview**

In the first three Capstone project exercises, you were asked to help Tailwind Traders prepare and configure its data for analysis and then utilize the refined data to design and develop a data model.

Your tasks in these three exercises were to:

- Prepare Sales Excel data.
- Configure data sources.
- And design and develop the data model.

This reading provides you with a step-by-step guide for completing these tasks. It also includes screenshots that you can compare against your work.

You can also review the learning materials provided in this course for more guidance.

#### **Exercise 1: Prepare the Sales Excel data**

##### **Step 1: Download the file**

- Launch Microsoft Excel and open the Sales worksheet from the Excel workbook Tailwind Traders Sales.xlsx.

Download the file named Tailwind Traders Sales.xlsx to your working directory. Once opened, verify that you're on the Sales worksheet, which will be the source of the data you'll be working with.

L15	A	B	C	D	E	F	G	H	I	J	K
1	OrderID	Customer Name	Product Name	Product Description	Gross Product Price	Tax Per Product	Quantity Purchased	Product Cat	SKU Num:	Weight	Color
2	1024	Jane Smith	UltraGrip Hammer	A sturdy hammer with an ergonomic	60	8.4	2	Tools	TWH-024	0,1	Red
3	1025	Darren White	Luminous Bulb 60W	Energy-saving 60W bulb with a brig	35	2.45	3	Lighting	TWF-025	0,2	Blue
4	1026	Lucy Roberts	Oakwood Shelf	A durable oakwood shelf for home i	250	17.5	1	Furniture	TWK-026	2,5	Green
5	1027	Mark Lewis	ProTile Cutter	High precision tile cutter for professi	15	1.05	5	Tools	TWF-027	8,0	Red
6	1028	Olivia Graham	Garden Glove Set	Comfortable gloves for gardening to	55	3.85	4	Gardening	TWT-028	1,2	Black
7	1029	Jack Thompson	Steel Nails (1inch)	Rust-resistant steel nails for constru	75	5.25	2	Hardware	TWH-029	1,5	White
8	1030	Mia Hughes	Luxury Paint (Blue)	Premium quality blue paint for interi	50	14.7	1	Paint & De	TWS-030	0,8	Red
9	1031	Aaron Walker	Kitchen Sink (Steel)	Stainless steel kitchen sink with a n	90	6.3	3	Plumbing	TWF-031	0,1	Blue
10	1032	Lily Peterson	Power Drill Set	A complete drill set with multiple bi	180	12.6	2	Tools	TWG-032	0,5	Green
11	1033	Ben Foster	Floral Wallpaper	Beautiful floral design wallpaper fo	3	1.4	6	Paint & De	TWT-033	0,2	Yellow
12	1034	Owen Gray	Brass Door Knob	Elegant brass doorknobs for interior	300	21	1	Hardware	TWS-034	0,05	Black
13	1035	Amelia Carter	LED Garden Lights	Set of 6 LED lights for garden or pat	50	3.5	4	Lighting	TWH-035	2,0	White
14	1036	Liam Clark	Compost Bin	Durable compost bin for organic wa	60	4.2	5	Gardening	TWK-036	4,0	Yellow
15	1037	Sophia Turner	Ceramic Vase (Red)	Red ceramic vase for home decor a	40	2.8	3	Home Dec	TWT-037	0,05	Red
16	1038	Jacob Moore	Patio Chair Set	Set of 2 chairs for patio or balcony s	45	3.15	4	Furniture	TWO-038	6,0	Blue
17	1039	Ava Lee	Electric Lawnmower	Efficient electric lawnmower for me	80	5.6	2	Gardening	TWB-039	0,3	Green
18	1040	Ethan Wilson	Kitchen Faucet	Modern kitchen faucet with a chron	200	14	1	Plumbing	TWT-040	0,2	Red
19	1041	Charlotte Adams	Designer Wall Clock	Stylish wall clock with quartz mover	65	4.55	3	Home Dec	TWF-041	1,0	Blue
20	1042	Lucas Taylor	Granite Countertop	Durable granite countertop for kitch	110	7.7	2	Furniture	TWB-042	0,3	Green
21	1043	Mia Roberts	Teakwood Desk	Spacious teakwood desk for office a	95	6.65	1	Furniture	TWH-043	1,5	Red
22	1044	Noah White	Marble Floor Tile	Elegant marble tiles for luxurious fl	130	9.1	3	Flooring	TWT-044	0,2	Black
23	1045	Harper Smith	Solar Outdoor Lantern	Solar-powered lantern for garden or	40	2.8	4	Lighting	TWS-045	1,0	White
24	1046	Mason Davis	Platinum Shower Head	High-pressure shower head with a s	270	18.9	1	Plumbing	TWT-046	0,5	Red
25	1047	Evelyn Wilson	ProCarpenter Toolkit	Comprehensive toolset for advance	18	1.26	6	Tools	TWH-047	1,2	Blue
26	1048	James Johnson	Rose Garden Fertilizer	Specially formulated fertilizer for ro	58	4.06	5	Gardening	TWF-048	0,1	Green
27	1049	Emma Martinez	Vintage Wall Mirror	Decorative wall mirror with a vintag	85	5.95	2	Home Dec	TWK-049	1,0	Yellow
28	1050	Benjamin Clark	Digital Thermostat	Energy-saving digital thermostat wi	220	15.4	1	Electronics	TWK-050	2,5	Black

## Step 2: Calculate Cost of Goods

- Insert a column after Gross Product Price and label it Cost per Unit.

Right-click on the column header immediately to the right of the Gross Product Price column to insert a new column. Label this new column as Cost per Unit.

- Use the formula =E2\*0.35 to calculate the cost of each product.

Select the first cell under the Cost per Unit column. Enter the formula =E2\*0.35 and press Enter to apply the formula to this first cell.

Then, using either the fill handle or the double-click shortcut, extend the formula to the entire column to calculate the cost for each product.

	A	B	C	D	E	F	G	H	I	J
1	OrderID	Customer Name	Product Name	Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Product Category	SKU Number
2	1024	Jane Smith	UltraGrip Hammer	A sturdy hammer with an ergonomic	60	21	8.4	2	Tools	TWH-024 0.1
3	1025	Darren White	Luminous Bulb 60W	Energy-saving 60W bulb with a brig	35	12.25	2.45	3	Lighting	TWF-025 0.2
4	1026	Lucy Roberts	Oakwood Shelf	A durable oakwood shelf for home i	250	87.5	17.5	1	Furniture	TWK-026 2.5
5	1027	Mark Lewis	ProTile Cutter	High precision tile cutter for professi	15	5.25	1.05	5	Tools	TWF-027 8.0
6	1028	Olivia Graham	Garden Glove Set	Comfortable gloves for gardening to	55	19.25	3.85	4	Gardening	TWT-028 1.2
7	1029	Jack Thompson	Steel Nails (1inch)	Rust-resistant steel nails for constru	75	26.25	5.25	2	Hardware	TWH-029 1.5
8	1030	Mia Hughes	Luxury Paint (Blue)	Premium quality blue paint for interi	50	17.5	14.7	1	Paint & De	TWS-030 0.8
9	1031	Aaron Walker	Kitchen Sink (Steel)	Stainless steel kitchen sink with a n	90	31.5	6.3	3	Plumbing	TWF-031 0.1
10	1032	Lily Peterson	Power Drill Set	A complete drill set with multiple bi	180	63	12.6	2	Tools	TWG-032 0.5
11	1033	Ben Foster	Floral Wallpaper	Beautiful floral design wallpaper fo	3	1.05	1.4	6	Paint & De	TWT-033 0.2
12	1034	Owen Gray	Brass Door Knob	Elegant brass doorknobs for interior	300	105	21	1	Hardware	TWS-034 0.05
13	1035	Amelia Carter	LED Garden Lights	Set of 6 LED lights for garden or pat	50	17.5	3.5	4	Lighting	TWH-035 2.0
14	1036	Liam Clark	Compost Bin	Durable compost bin for organic wa	60	21	4.2	5	Gardening	TWK-036 4.0
15	1037	Sophia Turner	Ceramic Vase (Red)	Red ceramic vase for home decor a	40	14	2.8	3	Home Dec	TWT-037 0.05
16	1038	Jacob Moore	Patio Chair Set	Set of 2 chairs for patio or balcony s	45	15.75	3.15	4	Furniture	TWO-038 6.0
17	1039	Ava Lee	Electric Lawnmower	Efficient electric lawnmower for me	80	28	5.6	2	Gardening	TWB-039 0.3
18	1040	Ethan Wilson	Kitchen Faucet	Modern kitchen faucet with a chron	200	70	14	1	Plumbing	TWT-040 0.2
19	1041	Charlotte Adams	Designer Wall Clock	Stylish wall clock with quartz mover	65	22.75	4.55	3	Home Dec	TWF-041 1.0
20	1042	Lucas Taylor	Granite Countertop	Durable granite countertop for kitch	110	38.5	7.7	2	Furniture	TWB-042 0.3
21	1043	Mia Roberts	Teakwood Desk	Spacious teakwood desk for office a	95	33.25	6.65	1	Furniture	TWH-043 1.5
22	1044	Noah White	Marble Floor Tile	Elegant marble tiles for luxurious fl	130	45.5	9.1	3	Flooring	TWT-044 0.2
23	1045	Harper Smith	Solar Outdoor Lantern	Solar-powered lantern for garden or	40	14	2.8	4	Lighting	TWS-045 1.0
24	1046	Mason Davis	Platinum Shower Head	High-pressure shower head with a s	270	94.5	18.9	1	Plumbing	TWT-046 0.5
25	1047	Evelyn Wilson	ProCarpenter Toolkit	Comprehensive toolset for advance	18	6.3	1.26	6	Tools	TWF-047 1.2
26	1048	James Johnson	Rose Garden Fertilizer	Specially formulated fertilizer for ro	58	20.3	4.06	5	Gardening	TWF-048 0.1
27	1049	Emma Martinez	Vintage Wall Mirror	Decorative wall mirror with a vintag	85	29.75	5.95	2	Home Dec	TWK-049 1.0
28	1050	Benjamin Clark	Digital Thermostat	Energy-saving digital thermostat wi	220	77	15.4	1	Electronics	TWK-050 2.5

### Step 3: Calculate Gross Revenue

1. Insert a column after Quantity Purchased and label it Gross Revenue.

Identify the Quantity Purchased column. Right-click on the column header immediately to the right of the Quantity Purchased column to insert a new column. Label this new column as Gross Revenue. This will serve as the placeholder for your calculations.

The screenshot shows a Microsoft Excel spreadsheet titled "Tailwind-Traders-Sa...". The ribbon menu is visible at the top, and the formula bar shows "Search". The main area displays a table with the following columns: D (Product Description), E (Gross Product Price), F (Cost per Unit), G (Tax Per Product), H (Quantity Purchased), I (Gross Revenue), J (Product Cat), K (SKU Num), L (Weight), M (Color), N (Size), and O (Rating). The "Sales" tab is selected. The "Gross Revenue" column (I) is highlighted with a red border. The formula bar at the bottom shows the formula =E2\*H2.

D	E	F	G	H	I	J	K	L	M	N	O	
1	Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Product Cat	SKU Num	Weight	Color	Size	Rating
2	A sturdy hammer with an ergonomic handle	60	21	8.4	2	120.00	Tools	TWH-024	0.1	Red	Small	4.5
3	Energy-saving 60W bulb with a brig	35	12.25	2.45	3	45.75	Lighting	TWF-025	0.2	Blue	Medium	4.8
4	A durable oakwood shelf for home a	250	87.5	17.5	1	225.00	Furniture	TKW-026	2.5	Green	Large	5.0
5	High precision tile cutter for profes	15	5.25	1.05	5	26.25	Tools	TWF-027	8.0	Red	XL	4.4
6	Comfortable gloves for gardening t	55	19.25	3.85	4	76.00	Gardening	TWT-028	1.2	Black	Small	4.9
7	Rust-resistant steel nails for constr	75	26.25	5.25	2	15.00	Hardware	TWH-029	1.5	White	Medium	4.2
8	Premium quality blue paint for inter	50	17.5	14.7	1	17.50	Paint & De	TWS-030	0.8	Red	Large	4.7
9	Stainless steel kitchen sink with a n	90	31.5	6.3	3	94.50	Plumbing	TWF-031	0.1	Blue	Small	4.6
10	A complete drill set with multiple bi	180	63	12.6	2	75.60	Tools	TWG-032	0.5	Green	XL	4.0
11	Beautiful floral design wallpaper fo	3	1.05	1.4	6	1.40	Paint & De	TWT-033	0.2	Yellow	Small	4.8
12	Elegant brass doorknob for interior	300	105	21	1	21.00	Hardware	TWS-034	0.05	Black	Medium	4.7
13	Set of 6 LED lights for garden or pat	50	17.5	3.5	4	67.50	Lighting	TWH-035	2.0	White	Large	4.9
14	Durable compost bin for organic wa	60	21	4.2	5	105.00	Gardening	TWK-036	4.0	Yellow	XL	5.0
15	Red ceramic vase for home decor a	40	14	2.8	3	33.60	Home Dec	TWT-037	0.05	Red	Medium	4.8
16	Set of 2 chairs for patio or balcony s	45	15.75	3.15	4	58.75	Furniture	TWO-038	6.0	Blue	XL	4.6
17	Efficient electric lawnmower for me	80	28	5.6	2	134.40	Gardening	TWB-039	0.3	Green	Small	4.5
18	Modern kitchen faucet with a chrom	200	70	14	1	980.00	Plumbing	TWT-040	0.2	Red	Small	4.7
19	Stylish wall clock with quartz mover	65	22.75	4.55	3	103.75	Home Dec	TWF-041	1.0	Blue	Medium	4.8
20	Durable granite countertop for kitch	110	38.5	7.7	2	205.50	Furniture	TWB-042	0.3	Green	Large	4.9
21	Spacious teakwood desk for office a	95	33.25	6.65	1	64.875	Furniture	TWH-043	1.5	Red	XL	4.4
22	Elegant marble tiles for luxurious fl	130	45.5	9.1	3	136.50	Flooring	TWT-044	0.2	Black	Small	4.6
23	Solar-powered lantern for garden or	40	14	2.8	4	39.20	Lighting	TWS-045	1.0	White	Medium	4.7
24	High-pressure shower head with a s	270	94.5	18.9	1	177.15	Plumbing	TWT-046	0.5	Red	Large	4.8
25	Comprehensive toolset for advance	18	6.3	1.26	6	23.40	Tools	TWH-047	1.2	Blue	Small	4.5
26	Specially formulated fertilizer for ro	58	20.3	4.06	5	103.74	Gardening	TWF-048	0.1	Green	XL	4.7
27	Decorative wall mirror with a vintag	85	29.75	5.95	2	51.875	Home Dec	TWK-049	1.0	Yellow	Small	4.6
28	Energy-saving digital thermostat wi	220	77	15.4	1	114.78	Electronics	TWK-050	2.5	Black	Medium	4.8

2. Use the formula =E2\*H2 to calculate the revenue from each product.

Select the first cell under the Gross Revenue column. Enter the formula =E2\*H2 and press Enter to apply the formula to this first cell.

The screenshot shows the same Microsoft Excel spreadsheet as the previous one, but the formula =E2\*H2 has been entered into the first cell of the Gross Revenue column (I2). The formula bar at the bottom shows the formula =E2\*H2. The rest of the table remains the same, with the Gross Revenue column now containing calculated values.

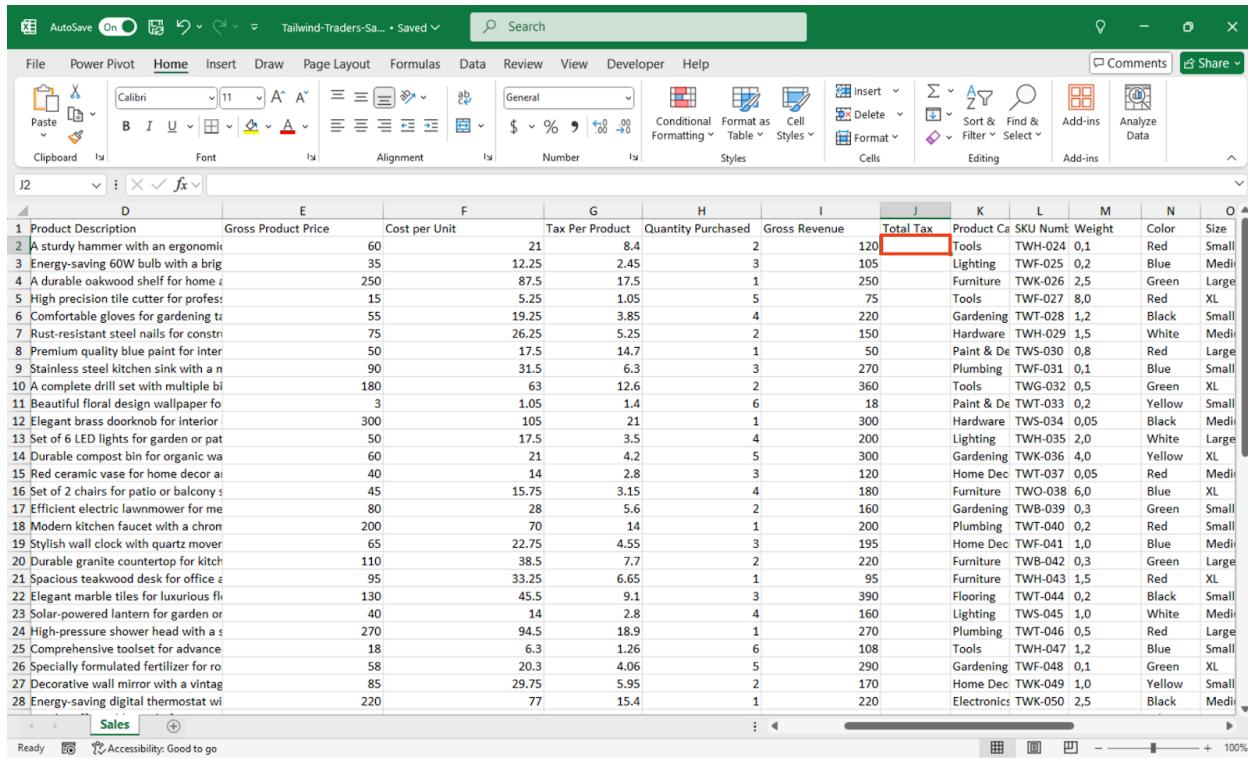
D	E	F	G	H	I	J	K	L	M	N	O	
1	Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Product Cat	SKU Num	Weight	Color	Size	Rating
2	A sturdy hammer with an ergonomic handle	60	21	8.4	2	=E2*H2	Tools	TWH-024	0.1	Red	Small	4.5
3	Energy-saving 60W bulb with a brig	35	12.25	2.45	3	82.50	Lighting	TWF-025	0.2	Blue	Medium	4.8
4	A durable oakwood shelf for home a	250	87.5	17.5	1	156.25	Furniture	TKW-026	2.5	Green	Large	5.0
5	High precision tile cutter for profes	15	5.25	1.05	5	26.25	Tools	TWF-027	8.0	Red	XL	4.4
6	Comfortable gloves for gardening t	55	19.25	3.85	4	76.00	Gardening	TWT-028	1.2	Black	Small	4.9
7	Rust-resistant steel nails for constr	75	26.25	5.25	2	135.00	Hardware	TWH-029	1.5	White	Medium	4.2
8	Premium quality blue paint for inter	50	17.5	14.7	1	17.50	Paint & De	TWS-030	0.8	Red	Large	4.7
9	Stainless steel kitchen sink with a n	90	31.5	6.3	3	94.50	Plumbing	TWF-031	0.1	Blue	Small	4.6
10	A complete drill set with multiple bi	180	63	12.6	2	75.60	Tools	TWG-032	0.5	Green	XL	4.0
11	Beautiful floral design wallpaper fo	3	1.05	1.4	6	6.30	Paint & De	TWT-033	0.2	Yellow	Small	4.8
12	Elegant brass doorknob for interior	300	105	21	1	21.00	Hardware	TWS-034	0.05	Black	Medium	4.7
13	Set of 6 LED lights for garden or pat	50	17.5	3.5	4	67.50	Lighting	TWH-035	2.0	White	Large	4.9
14	Durable compost bin for organic wa	60	21	4.2	5	105.00	Gardening	TWK-036	4.0	Yellow	XL	5.0
15	Red ceramic vase for home decor a	40	14	2.8	3	112.00	Home Dec	TWT-037	0.05	Red	Medium	4.8
16	Set of 2 chairs for patio or balcony s	45	15.75	3.15	4	47.25	Furniture	TWO-038	6.0	Blue	XL	4.6
17	Efficient electric lawnmower for me	80	28	5.6	2	145.60	Gardening	TWB-039	0.3	Green	Small	4.5
18	Modern kitchen faucet with a chrom	200	70	14	1	980.00	Plumbing	TWT-040	0.2	Red	Small	4.7
19	Stylish wall clock with quartz mover	65	22.75	4.55	3	103.75	Home Dec	TWF-041	1.0	Blue	Medium	4.8
20	Durable granite countertop for kitch	110	38.5	7.7	2	417.50	Furniture	TWB-042	0.3	Green	Large	4.9
21	Spacious teakwood desk for office a	95	33.25	6.65	1	226.875	Furniture	TWH-043	1.5	Red	XL	4.4
22	Elegant marble tiles for luxurious fl	130	45.5	9.1	3	406.50	Flooring	TWT-044	0.2	Black	Small	4.6
23	Solar-powered lantern for garden or	40	14	2.8	4	39.20	Lighting	TWS-045	1.0	White	Medium	4.7
24	High-pressure shower head with a s	270	94.5	18.9	1	177.15	Plumbing	TWT-046	0.5	Red	Large	4.8
25	Comprehensive toolset for advance	18	6.3	1.26	6	37.80	Tools	TWH-047	1.2	Blue	Small	4.5
26	Specially formulated fertilizer for ro	58	20.3	4.06	5	231.74	Gardening	TWF-048	0.1	Green	XL	4.7
27	Decorative wall mirror with a vintag	85	29.75	5.95	2	163.75	Home Dec	TWK-049	1.0	Yellow	Small	4.6
28	Energy-saving digital thermostat wi	220	77	15.4	1	114.78	Electronics	TWK-050	2.5	Black	Medium	4.8

Then, using either the fill handle or the double-click shortcut, extend the formula to the entire column to calculate the revenue for each product.

#### Step 4: Calculate Total Tax:

1. Create a Total Tax column next to Gross Revenue.

Insert a new column to the right of Gross Revenue and label it Total Tax.



The screenshot shows a Microsoft Excel spreadsheet titled "Tailwind-Traders-Sa... • Saved". The ribbon is visible at the top with tabs like File, Power Pivot, Home, Insert, Draw, Page Layout, Formulas, Data, Review, View, Developer, Help, and Add-ins. The Home tab is selected. The toolbar below has buttons for Paste, Font, Alignment, Number, Styles, Cells, and Editing. The main area contains a table of product data. Column J is labeled "Total Tax" and is highlighted with a red border. The table includes columns for Product Description, Gross Product Price, Cost per Unit, Tax Per Product, Quantity Purchased, Gross Revenue, and Total Tax. The last column, O, lists categories like Tools, Lighting, Furniture, etc. The rows contain various product details such as "A sturdy hammer with an ergonomic handle" and "A durable oakwood shelf for home decor". The bottom of the screen shows the status bar with "Sales" and "Ready".

	D	E	F	G	H	I	J	K	L	M	N	O
1	Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Total Tax	Product Ca	SKU Num:	Weight	Color	Size
2	A sturdy hammer with an ergonomic handle	60	21	8.4	2	120		Tools	TWH-024	0.1	Red	Small
3	Energy-saving 60W bulb with a brig	35	12.25	2.45	3	105		Lighting	TWF-025	0.2	Blue	Medi
4	A durable oakwood shelf for home dec	250	87.5	17.5	1	250		Furniture	TWK-026	2.5	Green	Large
5	High precision tile cutter for professi	15	5.25	1.05	5	75		Tools	TWF-027	8.0	Red	XL
6	Comfortable gloves for gardening tasks	55	19.25	3.85	4	220		Gardening	TWT-028	1.2	Black	Small
7	Rust-resistant steel nails for construc	75	26.25	5.25	2	150		Hardware	TWH-029	1.5	White	Medi
8	Premium quality blue paint for interior	50	17.5	14.7	1	50		Paint & De	TWS-030	0.8	Red	Large
9	Stainless steel kitchen sink with a modern	90	31.5	6.3	3	270		Plumbing	TWF-031	0.1	Blue	Small
10	A complete drill set with multiple bits	180	63	12.6	2	360		Tools	TWG-032	0.5	Green	XL
11	Beautiful floral design wallpaper for walls	3	1.05	1.4	6	18		Paint & De	TWT-033	0.2	Yellow	Small
12	Elegant brass doorknob for interior doors	300	105	21	1	300		Hardware	TWS-034	0.05	Black	Medi
13	Set of 6 LED lights for garden or patio	50	17.5	3.5	4	200		Lighting	TWH-035	2.0	White	Large
14	Durable compost bin for organic waste	60	21	4.2	5	300		Gardening	TWK-036	4.0	Yellow	XL
15	Red ceramic vase for home decor accents	40	14	2.8	3	120		Home Dec	TWT-037	0.05	Red	Medi
16	Set of 2 chairs for patio or balcony seating	45	15.75	3.15	4	180		Furniture	TWO-038	6.0	Blue	XL
17	Efficient electric lawnmower for medium-sized lawns	80	28	5.6	2	160		Gardening	TWB-039	0.3	Green	Small
18	Modern kitchen faucet with a chrome finish	200	70	14	1	200		Plumbing	TWT-040	0.2	Red	Small
19	Stylish wall clock with quartz movement	65	22.75	4.55	3	195		Home Dec	TWF-041	1.0	Blue	Medi
20	Durable granite countertop for kitchen	110	38.5	7.7	2	220		Furniture	TWB-042	0.3	Green	Large
21	Spacious teakwood desk for office work	95	33.25	6.65	1	95		Furniture	TWH-043	1.5	Red	XL
22	Elegant marble tiles for luxurious floors	130	45.5	9.1	3	390		Flooring	TWT-044	0.2	Black	Small
23	Solar-powered lantern for garden lighting	40	14	2.8	4	160		Lighting	TWS-045	1.0	White	Medi
24	High-pressure shower head with a sleek design	270	94.5	18.9	1	270		Plumbing	TWT-046	0.5	Red	Large
25	Comprehensive toolset for advanced mechanics	18	6.3	1.26	6	108		Tools	TWH-047	1.2	Blue	Small
26	Specially formulated fertilizer for healthy plants	58	20.3	4.06	5	290		Gardening	TWF-048	0.1	Green	XL
27	Decorative wall mirror with a vintage frame	85	29.75	5.95	2	170		Home Dec	TWK-049	1.0	Yellow	Small
28	Energy-saving digital thermostat with remote control	220	77	15.4	1	220		Electronics	TWK-050	2.5	Black	Medi

2. Input the formula =G2\*H2 to calculate the tax for each product.

Select the first cell under Total Tax. Input the formula =G2\*H2 and press Enter to confirm the formula.

Screenshot of Microsoft Excel showing a product sales dataset. The formula `=G2*H2` is entered in cell J2, and the fill handle is being used to copy it down the column.

D	E	F	G	H	I	J	K	L	M	N	
Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Total Tax	Product Ca	SKU Num:	Weight	Color	Size
A sturdy hammer with an ergonomic	60	21	8.4	3	105	120	Tools	TWH-024	0.1	Red	Small
Energy-saving 60W bulb with a brig	35	12.25	2.45	5	250	7.5	Lighting	TWF-025	0.2	Blue	Medi
A durable oakwood shelf for home	250	87.5	17.5	1	250	17.5	Furniture	TWK-026	2.5	Green	Large
High precision tile cutter for profess	15	5.25	1.05	5	75	5.25	Tools	TWF-027	8.0	Red	XL
Comfortable gloves for gardening t	55	19.25	3.85	4	220	15.4	Gardening	TWT-028	1.2	Black	Small
Rust-resistant steel nails for constr	75	26.25	5.25	2	150	10.5	Hardware	TWH-029	1.5	White	Medi
Premium quality blue paint for inter	50	17.5	14.7	1	50	14.7	Paint & De	TWS-030	0.8	Red	Large
Stainless steel kitchen sink with a n	90	31.5	6.3	3	270	18.9	Plumbing	TWF-031	0.1	Blue	Small
A complete drill set with multiple bi	180	63	12.6	2	360	25.2	Tools	TWG-032	0.5	Green	XL
Beautiful floral design wallpaper fo	3	1.05	1.4	6	18	8.4	Paint & De	TWT-033	0.2	Yellow	Small
Elegant brass doorknob for interior	300	105	21	1	300	21	Hardware	TWS-034	0.05	Black	Medi
Set of 6 LED lights for garden or pat	50	17.5	3.5	4	200	14	Lighting	TWH-035	2.0	White	Large
Durable compost bin for organic wa	60	21	4.2	5	300	13.65	Gardening	TWK-036	4.0	Yellow	XL
Red ceramic vase for home decor a	40	14	2.8	3	120	6.65	Home Dec	TWT-037	0.05	Red	Medi
Set of 2 chairs for patio or balcony s	45	15.75	3.15	4	180	12.6	Furniture	TWO-038	6.0	Blue	XL
Efficient electric lawnmower for me	80	28	5.6	2	160	11.2	Gardening	TWB-039	0.3	Green	Small
Modern kitchen faucet with a chrom	200	70	14	1	200	14	Plumbing	TWT-040	0.2	Red	Small
Stylish wall clock with quartz mover	65	22.75	4.55	3	195	15.4	Home Dec	TWF-041	1.0	Blue	Medi
Durable granite countertop for kitche	110	38.5	7.7	2	220	10.5	Furniture	TWB-042	0.3	Green	Large
Spacious teakwood desk for office a	95	33.25	6.65	1	95	6.65	Furniture	TWH-043	1.5	Red	XL
Elegant marble tiles for luxurious fl	130	45.5	9.1	3	390	27.3	Flooring	TWT-044	0.2	Black	Small
Solar-powered lantern for garden or	40	14	2.8	4	160	11.2	Lighting	TWS-045	1.0	White	Medi
High-pressure shower head with a sta	270	94.5	18.9	1	270	18.9	Plumbing	TWT-046	0.5	Red	Large
Comprehensive toolset for advance	18	6.3	1.26	6	108	7.56	Tools	TWH-047	1.2	Blue	Small
Specially formulated fertilizer for ro	58	20.3	4.06	5	290	20.3	Gardening	TWF-048	0.1	Green	XL
Decorative wall mirror with a vintag	85	29.75	5.95	2	170	11.9	Home Dec	TWK-049	1.0	Yellow	Small
Energy-saving digital thermostat wi	220	77	15.4	1	220	15.4	Electronics	TWK-050	2.5	Black	Medi

Drag down or double-click the fill handle to copy the formula down the column, calculating the tax for each item.

Screenshot of Microsoft Excel showing the same product sales dataset after the formula has been copied down the column. The column J now contains the calculated total tax for each item.

D	E	F	G	H	I	J	K	L	M	N	
Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Total Tax	Product Ca	SKU Num:	Weight	Color	Size
A sturdy hammer with an ergonomic	60	21	8.4	2	120	16.8	Tools	TWH-024	0.1	Red	Small
Energy-saving 60W bulb with a brig	35	12.25	2.45	3	105	7.35	Lighting	TWF-025	0.2	Blue	Medi
A durable oakwood shelf for home	250	87.5	17.5	1	250	17.5	Furniture	TWK-026	2.5	Green	Large
High precision tile cutter for profess	15	5.25	1.05	5	75	5.25	Tools	TWF-027	8.0	Red	XL
Comfortable gloves for gardening t	55	19.25	3.85	4	220	15.4	Gardening	TWT-028	1.2	Black	Small
Rust-resistant steel nails for constr	75	26.25	5.25	2	150	10.5	Hardware	TWH-029	1.5	White	Medi
Premium quality blue paint for inter	50	17.5	14.7	1	50	14.7	Paint & De	TWS-030	0.8	Red	Large
Stainless steel kitchen sink with a n	90	31.5	6.3	3	270	18.9	Plumbing	TWF-031	0.1	Blue	Small
A complete drill set with multiple bi	180	63	12.6	2	360	25.2	Tools	TWG-032	0.5	Green	XL
Beautiful floral design wallpaper fo	3	1.05	1.4	6	18	8.4	Paint & De	TWT-033	0.2	Yellow	Small
Elegant brass doorknob for interior	300	105	21	1	300	21	Hardware	TWS-034	0.05	Black	Medi
Set of 6 LED lights for garden or pat	50	17.5	3.5	4	200	14	Lighting	TWH-035	2.0	White	Large
Durable compost bin for organic wa	60	21	4.2	5	300	21	Gardening	TWK-036	4.0	Yellow	XL
Red ceramic vase for home decor a	40	14	2.8	3	120	8.4	Home Dec	TWT-037	0.05	Red	Medi
Set of 2 chairs for patio or balcony s	45	15.75	3.15	4	180	12.6	Furniture	TWO-038	6.0	Blue	XL
Efficient electric lawnmower for me	80	28	5.6	2	160	11.2	Gardening	TWB-039	0.3	Green	Small
Modern kitchen faucet with a chrom	200	70	14	1	200	14	Plumbing	TWT-040	0.2	Red	Small
Stylish wall clock with quartz mover	65	22.75	4.55	3	195	15.4	Home Dec	TWF-041	1.0	Blue	Medi
Durable granite countertop for kitche	110	38.5	7.7	2	220	10.5	Furniture	TWB-042	0.3	Green	Large
Spacious teakwood desk for office a	95	33.25	6.65	1	95	6.65	Furniture	TWH-043	1.5	Red	XL
Elegant marble tiles for luxurious fl	130	45.5	9.1	3	390	27.3	Flooring	TWT-044	0.2	Black	Small
Solar-powered lantern for garden or	40	14	2.8	4	160	11.2	Lighting	TWS-045	1.0	White	Medi
High-pressure shower head with a sta	270	94.5	18.9	1	270	18.9	Plumbing	TWT-046	0.5	Red	Large
Comprehensive toolset for advance	18	6.3	1.26	6	108	7.56	Tools	TWH-047	1.2	Blue	Small
Specially formulated fertilizer for ro	58	20.3	4.06	5	290	20.3	Gardening	TWF-048	0.1	Green	XL
Decorative wall mirror with a vintag	85	29.75	5.95	2	170	11.9	Home Dec	TWK-049	1.0	Yellow	Small
Energy-saving digital thermostat wi	220	77	15.4	1	220	15.4	Electronics	TWK-050	2.5	Black	Medi

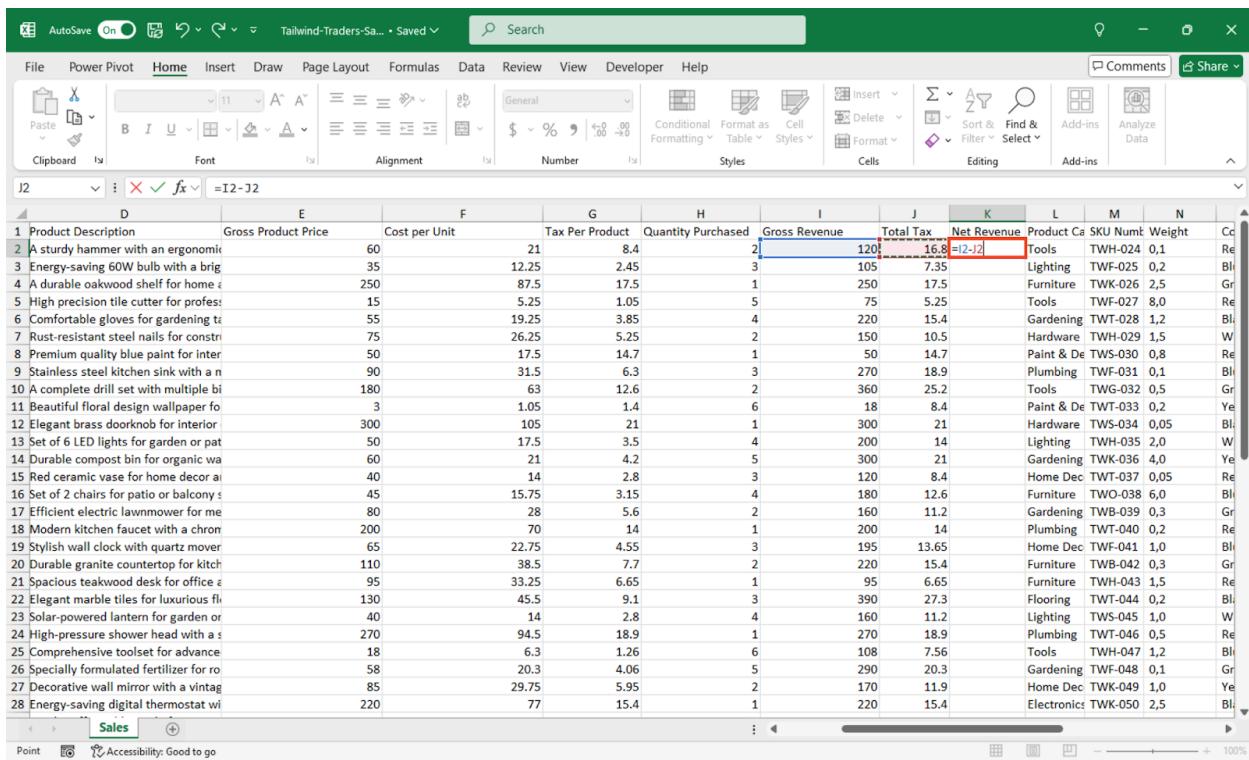
## Step 5: Calculate Net Revenue

## 1. Insert a Net Revenue column next to Total Tax.

Insert a new column to the right of Total Tax and label it Net Revenue. Net Revenue is a critical metric for Tailwind Traders as it represents the revenue after tax deductions but before accounting for product costs.

## 2. Use the formula =I2-J2 to determine the actual earnings post-tax for each product.

In the first cell under Net Revenue, input the formula =I2-J2 and press Enter to compute the net revenue for the first product.



D	E	F	G	H	I	J	K	L	M	N
Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Total Tax	Net Revenue	Product Cat	SKU Num:	Weight
1 A sturdy hammer with an ergonomic handle	60	21	8.4	2	120	16.8	=I2-J2	Tools	TWH-024	0.1
2 Energy-saving 60W bulb with a brig	35	12.25	2.45	3	105	7.35		Lighting	TWF-025	0.2
3 A durable oakwood shelf for home de	250	87.5	17.5	1	250	17.5		Furniture	TWK-026	2.5
4 High precision tile cutter for profess	15	5.25	1.05	5	75	5.25		Tools	TWF-027	8.0
5 Comfortable gloves for gardening tasks	55	19.25	3.85	4	220	15.4		Gardening	TWT-028	1.2
6 Rust-resistant steel nails for constru	75	26.25	5.25	2	150	10.5		Hardware	TWH-029	1.5
7 Premium quality blue paint for interior	50	17.5	14.7	1	50	14.7		Paint & De	TWS-030	0.8
8 Stainless steel kitchen sink with a n	90	31.5	6.3	3	270	18.9		Plumbing	TWF-031	0.1
9 Set of 6 LED lights for garden or pat	50	17.5	3.5	4	200	14		Lighting	TWH-035	2.0
10 Durable compost bin for organic waste	60	21	4.2	5	300	21		Gardening	TWK-036	4.0
11 Red ceramic vase for home decor a	40	14	2.8	3	120	8.4		Home Dec	TWT-037	0.05
12 Set of 2 chairs for patio or balcony	45	15.75	3.15	4	180	12.6		Furniture	TWO-038	6.0
13 Efficient electric lawnmower for me	80	28	5.6	2	160	11.2		Gardening	TWB-039	0.3
14 Modern kitchen faucet with a chrome finish	200	70	14	1	200	14		Plumbing	TWT-040	0.2
15 Stylish wall clock with quartz movement	65	22.75	4.55	3	195	13.65		Home Dec	TWF-041	1.0
16 Durable granite countertop for kitchen	110	38.5	7.7	2	220	15.4		Furniture	TWB-042	0.3
17 Spacious teakwood desk for office or study	95	33.25	6.65	1	95	6.65		Furniture	TWH-043	1.5
18 Elegant marble tiles for luxurious floors	130	45.5	9.1	3	390	27.3		Flooring	TWT-044	0.2
19 Solar-powered lantern for garden or patio	40	14	2.8	4	160	11.2		Lighting	TWS-045	1.0
20 High-pressure shower head with a sleek design	270	94.5	18.9	1	270	18.9		Plumbing	TWT-046	0.5
21 Comprehensive toolset for advanced repair work	18	6.3	1.26	6	108	7.56		Tools	TWH-047	1.2
22 Specially formulated fertilizer for healthy plants	58	20.3	4.06	5	290	20.3		Gardening	TWF-048	0.1
23 Decorative wall mirror with a vintage style	85	29.75	5.95	2	170	11.9		Home Dec	TWK-049	1.0
24 Energy-saving digital thermostat with remote control	220	77	15.4	1	220	15.4		Electronics	TWH-050	2.5

## 3. Then, double-click shortcut on cell K2 or drag this formula down to cater to all products on your list.

Drag down or double-click the fill handle to copy the formula down the column, calculating the net revenue for each product.

The screenshot shows a Microsoft Excel spreadsheet titled "Tailwind-Traders-Sales.xlsx". The ribbon menu is visible at the top, and the "Home" tab is selected. The main content is a data table with columns labeled D through N. Column K is explicitly labeled "Net Revenue". A red box highlights the header cell "Net Revenue" and the first few data cells in column K. The data includes various products like hammers, lighting, and tools, with columns for description, price, cost, tax, quantity, revenue, tax, total tax, and net revenue.

	D	E	F	G	H	I	J	K	L	M	N
1	Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Total Tax	Net Revenue	Product Ca	SKU Num:	Weight
2	A sturdy hammer with an ergonomic handle	60	21	8.4	2	120	16.8	103.2	Tools	TWH-024	0.1
3	Energy-saving 60W bulb with a brig	35	12.25	2.45	3	105	7.35	97.65	Lighting	TWF-025	0.2
4	A durable oakwood shelf for home de	250	87.5	17.5	1	250	17.5	232.5	Furniture	TWK-026	2.5
5	High precision tile cutter for profess	15	5.25	1.05	5	75	5.25	69.75	Tools	TWF-027	8.0
6	Comfortable gloves for gardening tasks	55	19.25	3.85	4	220	15.4	204.6	Gardening	TWT-028	1.2
7	Rust-resistant steel nails for constru	75	26.25	5.25	2	150	10.5	139.5	Hardware	TWH-029	1.5
8	Premium quality blue paint for interior	50	17.5	14.7	1	50	14.7	35.3	Paint & De	TWS-030	0.8
9	Stainless steel kitchen sink with a n	90	31.5	6.3	3	270	18.9	251.1	Plumbing	TWF-031	0.1
10	A complete drill set with multiple bi	180	63	12.6	2	360	25.2	334.8	Tools	TWG-032	0.5
11	Beautiful floral design wallpaper fo	3	1.05	1.4	6	18	8.4	9.6	Paint & De	TWT-033	0.2
12	Elegant brass doorknob for interior d	300	105	21	1	300	21	279	Hardware	TWS-034	0.05
13	Set of 6 LED lights for garden or pat	50	17.5	3.5	4	200	14	186	Lighting	TWH-035	2.0
14	Durable compost bin for organic wa	60	21	4.2	5	300	21	279	Gardening	TWK-036	4.0
15	Red ceramic vase for home decor a	40	14	2.8	3	120	8.4	111.6	Home Dec	TWT-037	0.05
16	Set of 2 chairs for patio or balcony s	45	15.75	3.15	4	180	12.6	167.4	Furniture	TWO-038	6.0
17	Efficient electric lawnmower for me	80	28	5.6	2	160	11.2	148.8	Gardening	TWB-039	0.3
18	Modern kitchen faucet with a chrome	200	70	14	1	200	14	186	Plumbing	TWT-040	0.2
19	Stylish wall clock with quartz mover	65	22.75	4.55	3	195	13.65	181.35	Home Dec	TWF-041	1.0
20	Durable granite countertop for kitch	110	38.5	7.7	2	220	15.4	204.6	Furniture	TWB-042	0.3
21	Spacious teakwood desk for office a	95	33.25	6.65	1	95	6.65	88.35	Furniture	TWH-043	1.5
22	Elegant marble tiles for luxurious fl	130	45.5	9.1	3	390	27.3	362.7	Flooring	TWT-044	0.2
23	Solar-powered lantern for garden or	40	14	2.8	4	160	11.2	148.8	Lighting	TWS-045	1.0
24	High-pressure shower head with a s	270	94.5	18.9	1	270	18.9	251.1	Plumbing	TWT-046	0.5
25	Comprehensive toolset for advance	18	6.3	1.26	6	108	7.56	100.44	Tools	TWH-047	1.2
26	Specially formulated fertilizer for ro	58	20.3	4.06	5	290	20.3	269.7	Gardening	TWF-048	0.1
27	Decorative wall mirror with a vintag	85	29.75	5.95	2	170	11.9	158.1	Home Dec	TWK-049	1.0
28	Energy-saving digital thermostat wi	220	77	15.4	1	220	15.4	204.6	Electronics	TWK-050	2.5

## Step 6: Calculate Profit

1. Insert a Profit column next to Net Revenue.

Insert a new column to the right of Net Revenue and label it Profit.

2. Use the formula  $=K2-(F2*H2)$  to calculate the profit for each product. This formula takes the net revenue and subtracts total product cost, which is the cost per unit multiplied by quantity purchased.

In the first cell under Profit, input the formula  $=K2-(F2*H2)$  and press Enter to compute the profit for the first product.

Screenshot of Microsoft Excel showing a product sales dataset. The formula  $=K2 - (F2 * H2)$  is entered in cell L2 and is highlighted with a red border. The formula is then copied and pasted into cell L3.

D	E	F	G	H	I	J	K	L	M	N	
Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Total Tax	Net Revenue	Profit	Product Category	SKU Number	Volume
1 A sturdy hammer with an ergonomic handle	60	21	8.4	2	120	16.8	103.2	=K2 - (F2 * H2)	Tools	TWH-024	0
2 Energy-saving 60W bulb with a brig	35	12.25	2.45	3	105	7.35	97.65		Lighting	TWF-025	0
3 A durable oakwood shelf for home a	250	87.5	17.5	1	250	17.5	232.5		Furniture	TWK-026	2
4 High precision tile cutter for profess	15	5.25	1.05	5	75	5.25	69.75		Tools	TWF-027	8
5 Comfortable gloves for gardening t	55	19.25	3.85	4	220	15.4	204.6		Gardening	TWT-028	1
6 Rust-resistant steel nails for constr	75	26.25	5.25	2	150	10.5	139.5		Hardware	TWH-029	1
8 Premium quality blue paint for inter	50	17.5	14.7	1	50	14.7	35.3		Paint & De	TWS-030	0
9 Stainless steel kitchen sink with a n	90	31.5	6.3	3	270	18.9	251.1		Plumbing	TWF-031	0
10 A complete drill set with multiple bi	180	63	12.6	2	360	25.2	334.8		Tools	TWG-032	0
11 Beautiful floral design wallpaper fo	3	1.05	1.4	6	18	8.4	9.6		Paint & De	TWT-033	0
12 Elegant brass doorknob for interior	300	105	21	1	300	21	279		Hardware	TWS-034	2
13 Set of 6 LED lights for garden or pat	50	17.5	3.5	4	200	14	186		Lighting	TWH-035	2
14 Durable compost bin for organic wa	60	21	4.2	5	300	21	279		Gardening	TWK-036	4
15 Red ceramic vase for home decor a	40	14	2.8	3	120	8.4	111.6		Home Dec	TWT-037	0
16 Set of 2 chairs for patio or balcony s	45	15.75	3.15	4	180	12.6	167.4		Furniture	TWO-038	6
17 Efficient electric lawnmower for me	80	28	5.6	2	160	11.2	148.8		Gardening	TWB-039	0
18 Modern kitchen faucet with a chrom	200	70	14	1	200	14	186		Plumbing	TWT-040	0
19 Stylish wall clock with quartz mover	65	22.75	4.55	3	195	13.65	181.35		Home Dec	TWF-041	1
20 Durable granite countertop for kitch	110	38.5	7.7	2	220	15.4	204.6		Furniture	TWB-042	0
21 Spacious teakwood desk for office a	95	33.25	6.65	1	95	6.65	88.35		Tools	TWH-043	1
22 Elegant marble tiles for luxurious fl	130	45.5	9.1	3	390	27.3	362.7		Flooring	TWT-044	0
23 Solar-powered lantern for garden or	40	14	2.8	4	160	11.2	148.8		Lighting	TWS-045	1
24 High-pressure shower head with a s	270	94.5	18.9	1	270	18.9	251.1		Plumbing	TWT-046	0
25 Comprehensive toolset for advance	18	6.3	1.26	6	108	7.56	100.44		Tools	TWH-047	1
26 Specially formulated fertilizer for ro	58	20.3	4.06	5	290	20.3	269.7		Gardening	TWF-048	0
27 Decorative wall mirror with a vintag	85	29.75	5.95	2	170	11.9	158.1		Home Dec	TWK-049	1
28 Energy-saving digital thermostat wi	220	77	15.4	1	220	15.4	204.6		Electronics	TWK-050	2

Then, double-click shortcut or drag this formula down to calculate profit for all products.

Screenshot of Microsoft Excel showing the same product sales dataset. The formula  $=K2 - (F2 * H2)$  is now applied to cell L2, and the result (61.2) is displayed in cell L2. The formula is also present in cell L3, and the entire column L (from L2 to L3) is highlighted with a red border.

D	E	F	G	H	I	J	K	L	M	N	
Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Total Tax	Net Revenue	Profit	Product Category	SKU Number	Volume
1 A sturdy hammer with an ergonomic handle	60	21	8.4	2	120	16.8	103.2	61.2	Tools	TWH-024	0
2 Energy-saving 60W bulb with a bright	35	12.25	2.45	3	105	7.35	97.65	60.9	Lighting	TWF-025	0
3 A durable oakwood shelf for home a	250	87.5	17.5	1	250	17.5	232.5	145	Furniture	TWK-026	2
4 High precision tile cutter for profess	15	5.25	1.05	5	75	5.25	69.75	43.5	Tools	TWF-027	8
5 Comfortable gloves for gardening t	55	19.25	3.85	4	220	15.4	204.6	127.6	Gardening	TWT-028	1
6 Rust-resistant steel nails for constr	75	26.25	5.25	2	150	10.5	139.5	87	Hardware	TWH-029	1
8 Premium quality blue paint for inter	50	17.5	14.7	1	50	14.7	35.3	17.8	Paint & De	TWS-030	0
9 Stainless steel kitchen sink with a n	90	31.5	6.3	3	270	18.9	251.1	156.6	Plumbing	TWF-031	0
10 A complete drill set with multiple bi	180	63	12.6	2	360	25.2	334.8	208.8	Tools	TWG-032	0
11 Beautiful floral design wallpaper fo	3	1.05	1.4	6	18	8.4	9.6	3.3	Paint & De	TWT-033	0
12 Elegant brass doorknob for interior	300	105	21	1	300	21	279	174	Hardware	TWS-034	0
13 Set of 6 LED lights for garden or pat	50	17.5	3.5	4	200	14	186	116	Lighting	TWH-035	2
14 Durable compost bin for organic wa	60	21	4.2	5	300	21	279	174	Gardening	TWK-036	4
15 Red ceramic vase for home decor a	40	14	2.8	3	120	8.4	111.6	69.6	Home Dec	TWT-037	0
16 Set of 2 chairs for patio or balcony s	45	15.75	3.15	4	180	12.6	167.4	104.4	Furniture	TWO-038	6
17 Efficient electric lawnmower for me	80	28	5.6	2	160	11.2	148.8	92.8	Gardening	TWB-039	0
18 Modern kitchen faucet with a chrome	200	70	14	1	200	14	186	116	Plumbing	TWT-040	0
19 Stylish wall clock with quartz mover	65	22.75	4.55	3	195	13.65	181.35	113.1	Home Dec	TWF-041	1
20 Durable granite countertop for kitch	110	38.5	7.7	2	220	15.4	204.6	127.6	Furniture	TWB-042	0
21 Spacious teakwood desk for office a	95	33.25	6.65	1	95	6.65	88.35	55.1	Tools	TWH-043	1
22 Elegant marble tiles for luxurious fl	130	45.5	9.1	3	390	27.3	362.7	226.2	Flooring	TWT-044	0
23 Solar-powered lantern for garden or	40	14	2.8	4	160	11.2	148.8	92.8	Lighting	TWS-045	1
24 High-pressure shower head with a s	270	94.5	18.9	1	270	18.9	251.1	156.6	Plumbing	TWT-046	0
25 Comprehensive toolset for advanced	18	6.3	1.26	6	108	7.56	100.44	62.64	Tools	TWH-047	1
26 Specially formulated fertilizer for ro	58	20.3	4.06	5	290	20.3	269.7	168.2	Gardening	TWF-048	0
27 Decorative wall mirror with a vintage	85	29.75	5.95	2	170	11.9	158.1	98.6	Home Dec	TWK-049	1
28 Energy-saving digital thermostat wi	220	77	15.4	1	220	15.4	204.6	127.6	Electronics	TWK-050	2

3. Next, observe the first ten records and note the highest and lowest values for Net Revenue, Quantity Purchased, and Total Tax. In conjunction, observe neighboring columns like Sales Rep for trends.

The product Power Drill Set priced at 334.8USD, is the highest among the first ten listed orders. Floral Wallpaper, priced at 3 USD and with a quantity of 6, generated the lowest net revenue of 9.6 USD.

C	D	E	F	G	H	I	J	K	L
Product Name	Product Description	Gross Product Price	Cost per Unit	Tax Per Product	Quantity Purchased	Gross Revenue	Total Tax	Net Revenue	Profit
1 UltraGrip Hammer	A sturdy hammer with an ergonomic	60	21	8.4	2	120	16.8	103.2	61
2 Luminous Bulb 60W	Energy-saving 60W bulb with a brig	35	12.25	2.45	3	105	7.35	97.65	60
3 Oakwood Shelf	A durable oakwood shelf for home	250	87.5	17.5	1	250	17.5	232.5	14
4 ProTile Cutter	High precision tile cutter for profess	15	5.25	1.05	5	75	5.25	69.75	43
5 Garden Glove Set	Comfortable gloves for gardening t	55	19.25	3.85	4	220	15.4	204.6	127
6 Steel Nails (1inch)	Rust-resistant steel nails for constr	75	26.25	5.25	2	150	10.5	139.5	86
7 Luxury Paint (Blue)	Premium quality blue paint for inter	50	17.5	14.7	1	50	14.7	35.3	17
8 Kitchen Sink (Steel)	Stainless steel kitchen sink with a n	90	31.5	6.3	3	270	18.9	251.1	156
9 Power Drill Set	A complete drill set with multiple bi	180	63	12.6	2	360	25.2	334.8	208
10 Floral Wallpaper	Beautiful floral design wallpaper fo	3	1.05	1.4	6	18	8.4	9.6	3
11 Brass Door Knob	Elegant brass doorknob for interior	300	105	21	1	300	21	279	18
12 LED Garden Lights	Set of 6 LED lights for garden or pat	50	17.5	3.5	4	200	14	186	11
13 Compost Bin	Durable compost bin for organic wa	60	21	4.2	5	300	21	279	11
14 Ceramic Vase (Red)	Red ceramic vase for home decor a	40	14	2.8	3	120	8.4	111.6	69
15 Patio Chair Set	Set of 2 chairs for patio balconys	45	15.75	3.15	4	180	12.6	167.4	104
16 Electric Lawnmower	Efficient electric lawnmower for me	80	28	5.6	2	160	11.2	148.8	92
17 Kitchen Faucet	Modern kitchen faucet with a chron	200	70	14	1	200	14	186	11
18 Designer Wall Clock	Stylish wall clock with quartz mover	65	22.75	4.55	3	195	13.65	181.35	113
19 Granite Countertop	Durable granite countertop for kitch	110	38.5	7.7	2	220	15.4	204.6	127
20 Teakwood Desk	Spacious teakwood desk for office a	95	33.25	6.65	1	95	6.65	88.35	55
21 Marble Floor Tiles	Elegant marble tiles for luxurious fl	130	45.5	9.1	3	390	27.3	362.7	226
22 Solar Outdoor Lantern	Solar-powered lantern for garden or	40	14	2.8	4	160	11.2	148.8	92
23 Platinum Shower Head	High-pressure shower head with a s	270	94.5	18.9	1	270	18.9	251.1	156
24 ProCarpenter Toolkit	Comprehensive toolkit for advance	18	6.3	1.26	6	108	7.56	100.44	62.6
25 Rose Garden Fertilizer	Specially formulated fertilizer for ro	58	20.3	4.06	5	290	20.3	269.7	168
26 Vintage Wall Mirror	Decorative wall mirror with a vintag	85	29.75	5.95	2	170	11.9	158.1	98
27 Digital Thermostat	Energy-saving digital thermostat wi	220	77	15.4	1	220	15.4	204.6	127

Alice, the sales rep, managed sales transactions for the UltraGrip Hammer, Oakwood Shelf, Garden Glove Set, and Kitchen Sink (Steel), making 4 transactions, the most among the listed orders.

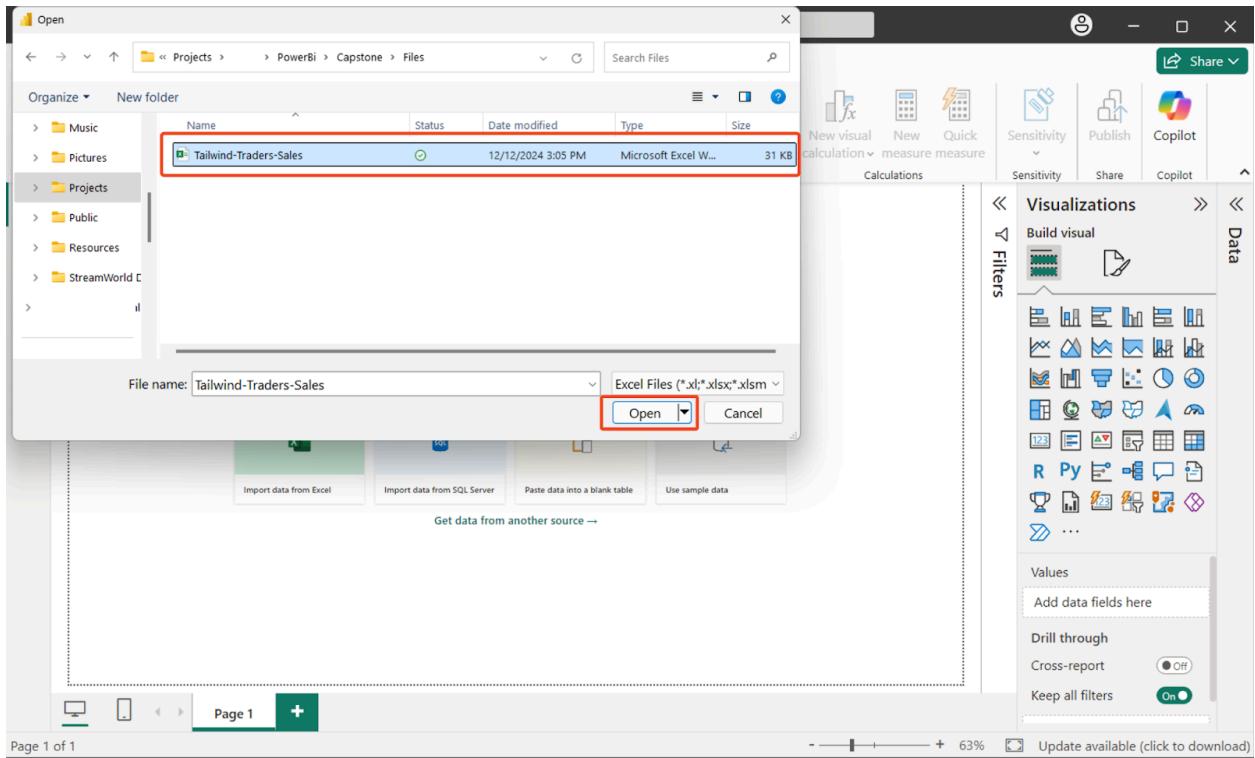
4. Be sure to save your updated Excel spreadsheet. You will be using it for the following exercise.

## Exercise 2: Configure data sources

### Step 1: Load the Sales data

- Load the Tailwind Traders Sales file into Power BI and select Transform.

Begin by loading the Tailwind Traders Sales data file into Power BI.



## Load the data into Power BI

OrderID	Customer Name	Product Name	Product Description
1024	Jane Smith	UltraGrip Hammer	A sturdy hammer with an ergonomic handle.
1025	Darren White	Luminous Bulb 60W	Energy-saving 60W bulb with a long lifespan.
1026	Lucy Roberts	Oakwood Shelf	A durable oakwood shelf for displaying books or decorative items.
1027	Mark Lewis	ProTile Cutter	High precision tile cutter for straight and curved cuts.
1028	Olivia Graham	Garden Glove Set	Comfortable gloves for gardening tasks.
1029	Jack Thompson	Steel Nails (1inch)	Rust-resistant steel nails for general construction.
1030	Mia Hughes	Luxury Paint (Blue)	Premium quality blue paint for interior walls.
1031	Aaron Walker	Kitchen Sink (Steel)	Stainless steel kitchen sink with a modern design.
1032	Lily Peterson	Power Drill Set	A complete drill set with multiple accessories.
1033	Ben Foster	Floral Wallpaper	Beautiful floral design wallpaper for home decor.
1034	Owen Gray	Brass Door Knob	Elegant brass doorknob for interior doors.
1035	Amelia Carter	LED Garden Lights	Set of 6 LED lights for garden paths and walkways.
1036	Liam Clark	Compost Bin	Durable compost bin for organic waste.
1037	Sophia Turner	Ceramic Vase (Red)	Red ceramic vase for home centerpieces.
1038	Jacob Moore	Patio Chair Set	Set of 2 chairs for patio or balcony seating.
1039	Ava Lee	Electric Lawnmower	Efficient electric lawnmower for small lawns.
1040	Ethan Wilson	Kitchen Faucet	Modern kitchen faucet with a gooseneck spout.
1041	Charlotte Adams	Designer Wall Clock	Stylish wall clock with quartz movement.

2. Once the data is loaded, select Transform data to open the Power Query editor.

3. Within Power Query, find the OrderID column and set the data type to Whole Number.

In Power Query, locate the OrderID column and set its data type to Whole Number. This ensures that transactions are treated as unique numeric values, not as text or any other format, which could lead to incorrect sorting or calculations.

The screenshot shows the Microsoft Power Query Editor interface. The main area displays a table with columns: OrderID, Customer Name, Product Name, and Product Description. The 'Properties' pane on the right shows the 'Data Type' for 'OrderID' is set to 'Whole Number'. The 'Applied Steps' pane lists the step 'Changed Type'.

OrderID	Customer Name	Product Name	Product Description
1	Jane Smith	UltraGrip Hammer	A sturdy hammer with an ergonomic grip for carpenters.
2	Darren White	Luminous Bulb 60W	Energy-saving 60W bulb with a bright luminous output.
3	Lucy Roberts	Oakwood Shelf	A durable oakwood shelf for home and office use.
4	Mark Lewis	ProTile Cutter	High precision tile cutter for professional use.
5	Olivia Graham	Garden Glove Set	Comfortable gloves for gardening tasks.
6	Jack Thompson	Steel Nails (1inch)	Rust-resistant steel nails for construction.
7	Mia Hughes	Luxury Paint (Blue)	Premium quality blue paint for interior walls.
8	Aaron Walker	Kitchen Sink (Steel)	Stainless steel kitchen sink with a modern design.
9	Lily Peterson	Power Drill Set	A complete drill set with multiple bits for various tasks.
10	Ben Foster	Floral Wallpaper	Beautiful floral design wallpaper for home decor.
11	Owen Gray	Brass Door Knob	Elegant brass doorknob for interior doors.
12	Amelia Carter	LED Garden Lights	Set of 6 LED lights for garden or pathway illumination.
13	Liam Clark	Compost Bin	Durable compost bin for organic waste.
14	Sophia Turner	Ceramic Vase (Red)	Red ceramic vase for home decor and floral arrangements.
15	Jacob Moore	Patio Chair Set	Set of 2 chairs for patio or balcony seating.
16	Ava Lee	Electric Lawnmower	Efficient electric lawnmower for medium-sized lawns.
17	Ethan Wilson	Kitchen Faucet	Modern kitchen faucet with a chrome finish.
18	Charlotte Adams	Designer Wall Clock	Stylish wall clock with quartz movement.
19	Lucas Taylor	Granite Countertop	Durable granite countertop for kitchens and bathrooms.
20	Mia Roberts	Teakwood Desk	Spacious teakwood desk for office and study areas.
21	Noah White	Marble Floor Tile	Elegant marble tiles for luxurious flooring solutions.
22	Harper Smith	Solar Outdoor Lantern	Solar-powered lantern for garden or patio lighting.
23	Mason Davis	Platinum Shower Head	High-pressure shower head with a sleek platinum finish.
24	Evelyn Wilson	ProCarpenter Toolkit	Comprehensive toolset for advanced carpentry tasks.
25	James Johnson	Rose Garden Fertilizer	Specially formulated fertilizer for rose plants.
26			

4. To complete optimization, assign the following data types for the columns:

- Gross Product Price = Fixed Decimal Number
- Cost per Unit = Fixed Decimal Number
- Tax Per Product = Fixed Decimal Number
- Quantity Purchased = Whole Number
- Gross Revenue = Fixed Decimal Number
- Total Tax = Fixed Decimal Number
- Net Revenue = Fixed Decimal Number
- Profit = Fixed Decimal Number
- Loyalty Points = Whole Number
- Stock = Whole Number

- Product Category = Text
- Rating = Fixed Decimal Number

Select the title of each column to view the list of available data types. Select the required data type to assign it to its respective column.

The screenshot shows the Power BI Editor interface with the 'Transform' tab selected. A query named 'Sales' is open. A context menu is displayed over the 'Gross Product Price' column, with 'Fixed decimal number' highlighted. The 'APPLIED STEPS' pane on the right shows the 'Changed Type' step applied to the 'Source'.

Column	Header	Value
1	Gross Product Price	1.2 Decimal Number
2		\$ Fixed decimal number
3		1.2 Cost per Unit
4		1.2 Tax Per Product
5		1.23 Quantity Purch
6		
7		
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5. Navigate to the View tab and select the Column Quality, Column Distribution, and Column Profile boxes.

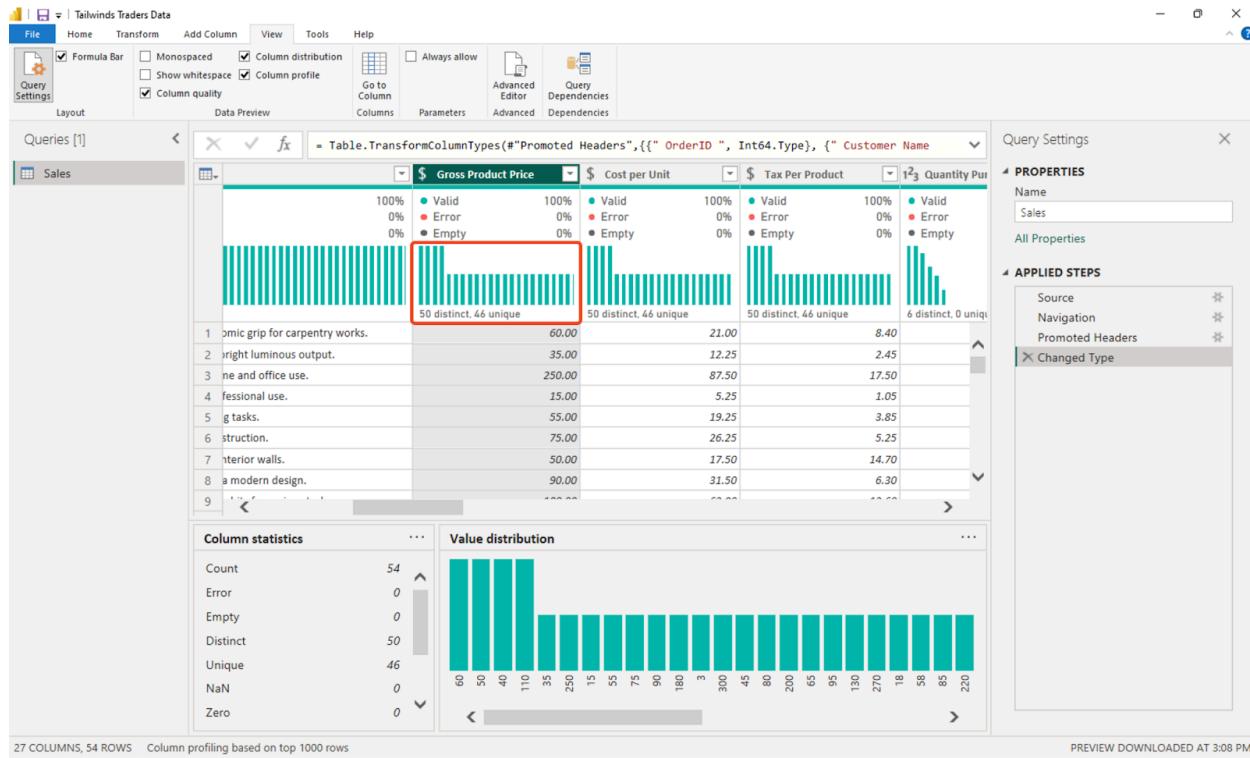
Examining column quality, distribution, and profiles helps assess the data's health. It also allows for the early detection of issues, saving time and preventing errors in later stages of the analysis.

6. Select the OrderID column, check that the Valid percentage is 100% in the Column Quality pane.

Validate that the OrderID column achieves a 100% Valid rate, reflecting its data integrity. This confirms that there are no nulls, duplicates, or erroneous entries in this crucial column, which is vital for tracking individual sales accurately.

7. Select the Gross Product Price column and note down the histogram frequency of distinct and unique values in the Column Distribution pane.

Tailwind Traders offers products at 50 distinct price points for the Gross Product Price column.



8. Select the Quantity Purchased column and note down the MIN, MAX and AVERAGE values displayed in the Column Profile pane.

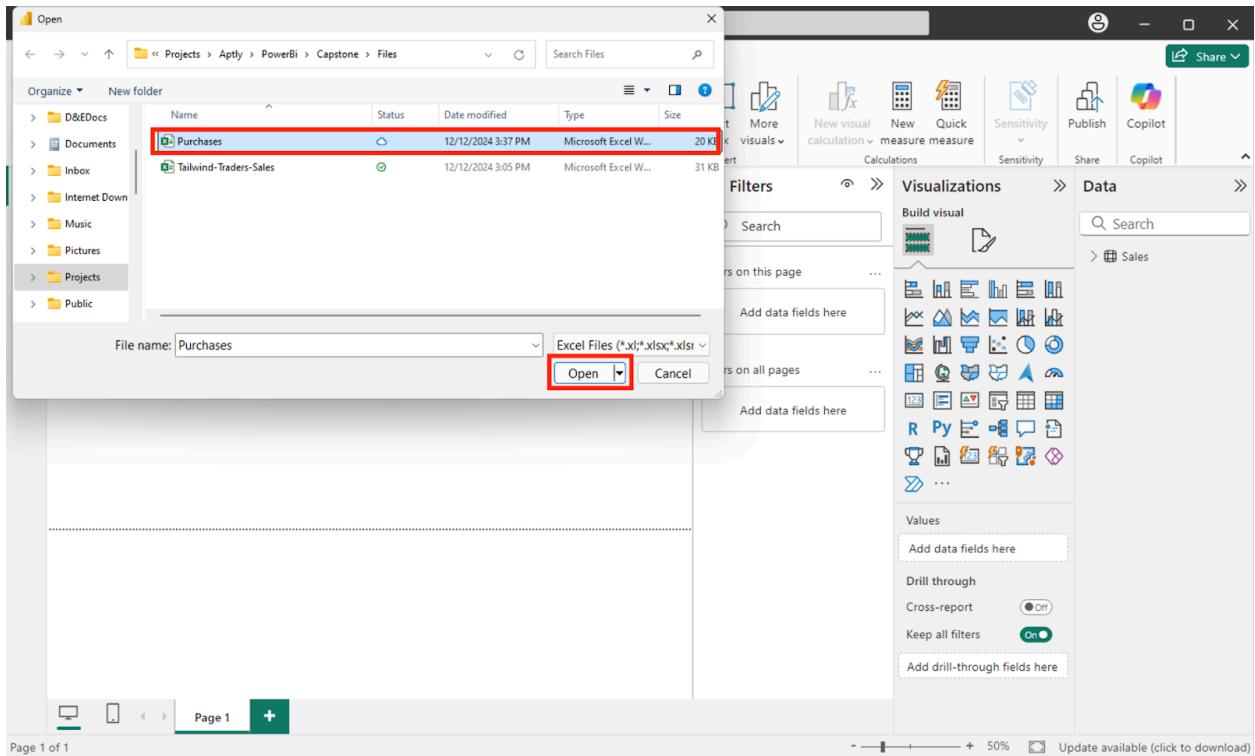
In the Quantity Purchased column, the minimum value is 1, the maximum value is 6, and the average value is 2.8148. These statistics are fundamental to understanding sales volumes.

9. Select Close and Apply to move on to the next step.

Step 2: Load the Purchases data

1. Download the Purchases File.

2. Select Get Data, choose Excel and Connect, and then select the Purchases file.



3. Select the Purchases table, and then select Load to load the file into Power BI.

The screenshot shows the Microsoft Power Query Editor within the Power BI desktop application. On the left, the 'Navigator' pane displays a folder named 'Purchases.xlsx [1]' containing a single item 'Purchases', which is selected and highlighted with a red box. The main area shows a table titled 'Purchases' with columns: PurchaseID, Supplier, Last Visited, ReturnStatus, and Warranty. The table contains 23 rows of data. At the bottom right of the editor, there are three buttons: 'Load', 'Transform Data', and 'Cancel'. The 'Load' button is highlighted with a red box. The top of the screen shows the title 'Tailwinds Traders Data - Last saved: Today at 3:19 PM' and the Power BI ribbon with 'Home' selected.

4. Once the data is loaded, select Transform data to open the Power Query editor.

5. Within Power Query, to complete optimization, assign the following data types for the columns:

- PurchaseID = Whole Number
- OrderID = Whole Number
- Return Policy (Days) = Whole Number
- Purchase Date = Date
- Warranty (Months) = Whole Number
- Supplier = Text
- Last Visited = Date
- ReturnStatus = Text

Carefully assign the appropriate data types for each column by selecting the column header and the correct data type from the list.

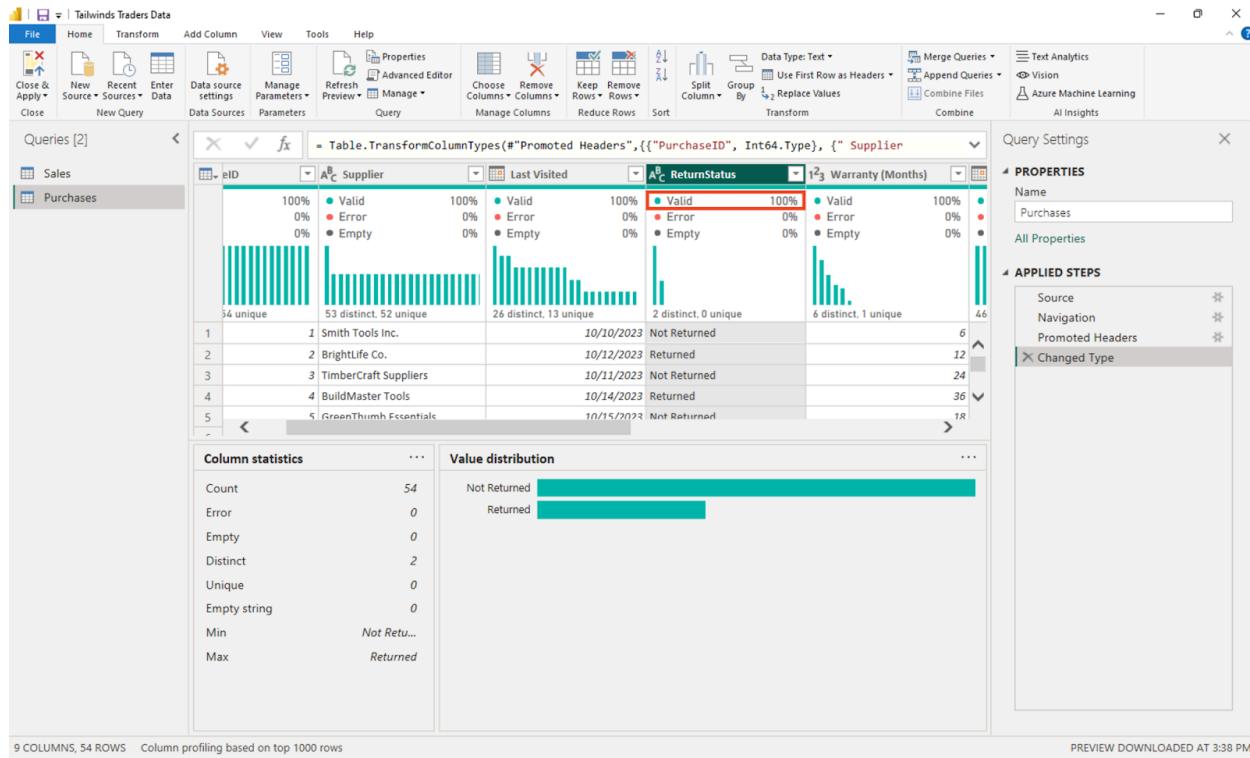
The screenshot shows the Microsoft Power Query Editor interface. The 'Purchases' query is selected. In the 'Properties' pane, the 'Name' is set to 'Purchases'. The 'Applied Steps' pane shows the last step was 'Changed Type'. The preview pane displays 54 rows of purchase data, including columns for PurchaseID, Supplier, Last Visited, ReturnStatus, and Warranty (Months). The 'Supplier' column's data type is currently set to 'Text' but is being changed to 'Whole Number', as indicated by the red box around the 'Whole Number' option in the dropdown menu. The preview pane shows various supplier names like Smith Tools Inc., BrightLife Co., TimberCraft Suppliers, etc., along with their respective dates and return statuses.

6. Select the Warranty (Months) column and note down the MIN, MAX and AVERAGE values displayed on the additional statistical pane.

Tailwind Traders offers a minimum warranty duration of 6 months, a maximum of 48 months, and an average of 18.88 months.

7. Select the ReturnStatus column and observe the Column Quality pane to ensure the Valid percentage is 100%.

Observe the ReturnStatus column and confirm a 100% Valid rate via the Column Quality pane, indicating clean data. This is vital for financial reporting and understanding customer satisfaction.



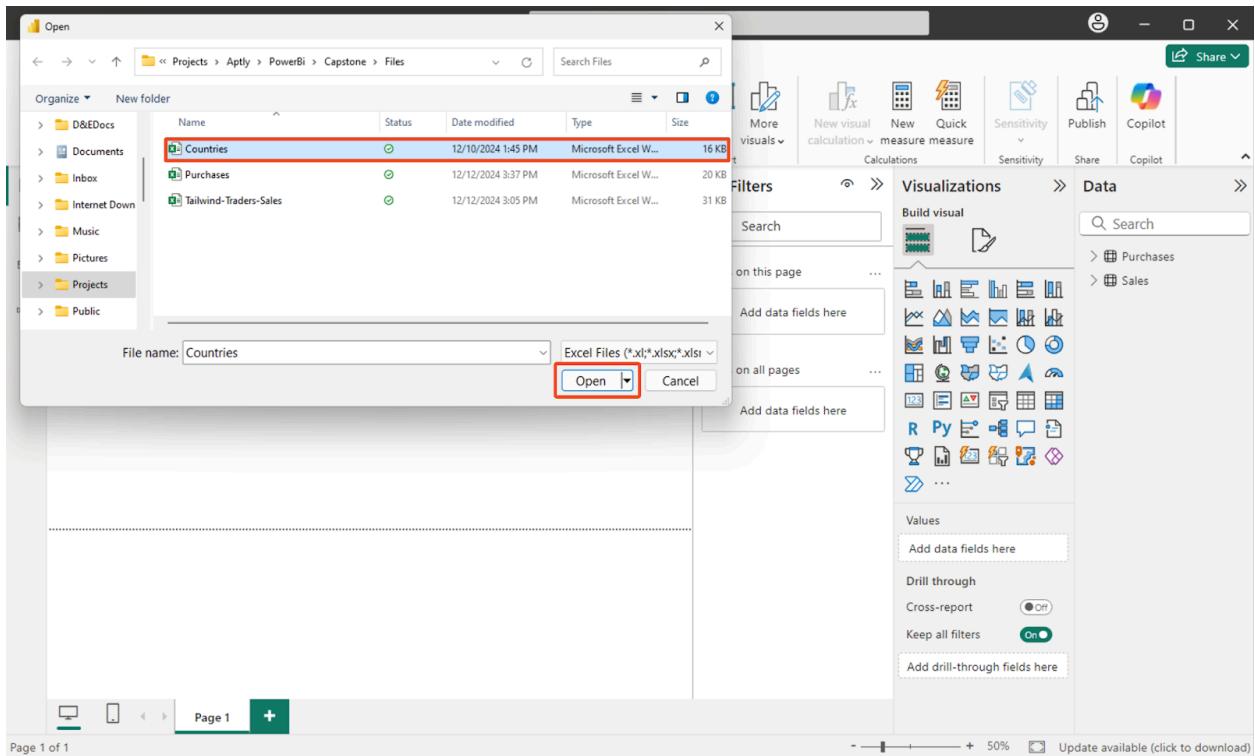
Select the ReturnStatus column header to access the filter options. Select Not Returned from the list of filter options to ensure visibility of only those records.

9. Select Close and Apply to move on to the next step.

Step 3: Load the Countries data

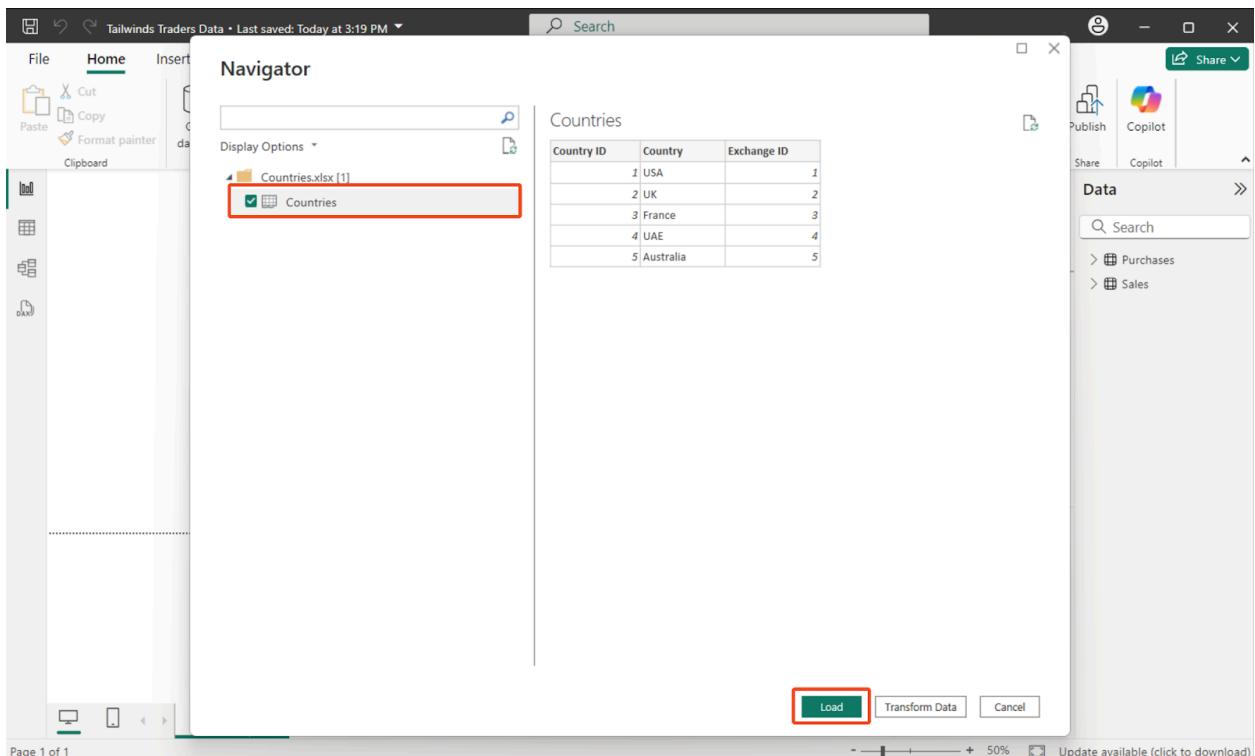
1. Download the Countries File.

2. Select Get Data, choose Excel and Connect, and then select the Countries file.



### 3. Select the Countries table, and then select Load to load the file into Power BI.

Load the Countries data file into Power BI. Choose Transform Data to access the data manipulation tools in Power Query.



4. Once the data is loaded, select Transform data to open the Power Query editor.

5. To complete optimization, assign the following data types for the columns:

- Country ID = Whole Number
- Exchange ID = Whole Number
- Country = Text

To assign data types, select each column header to open the list of options. Then, select the correct data type from the list.

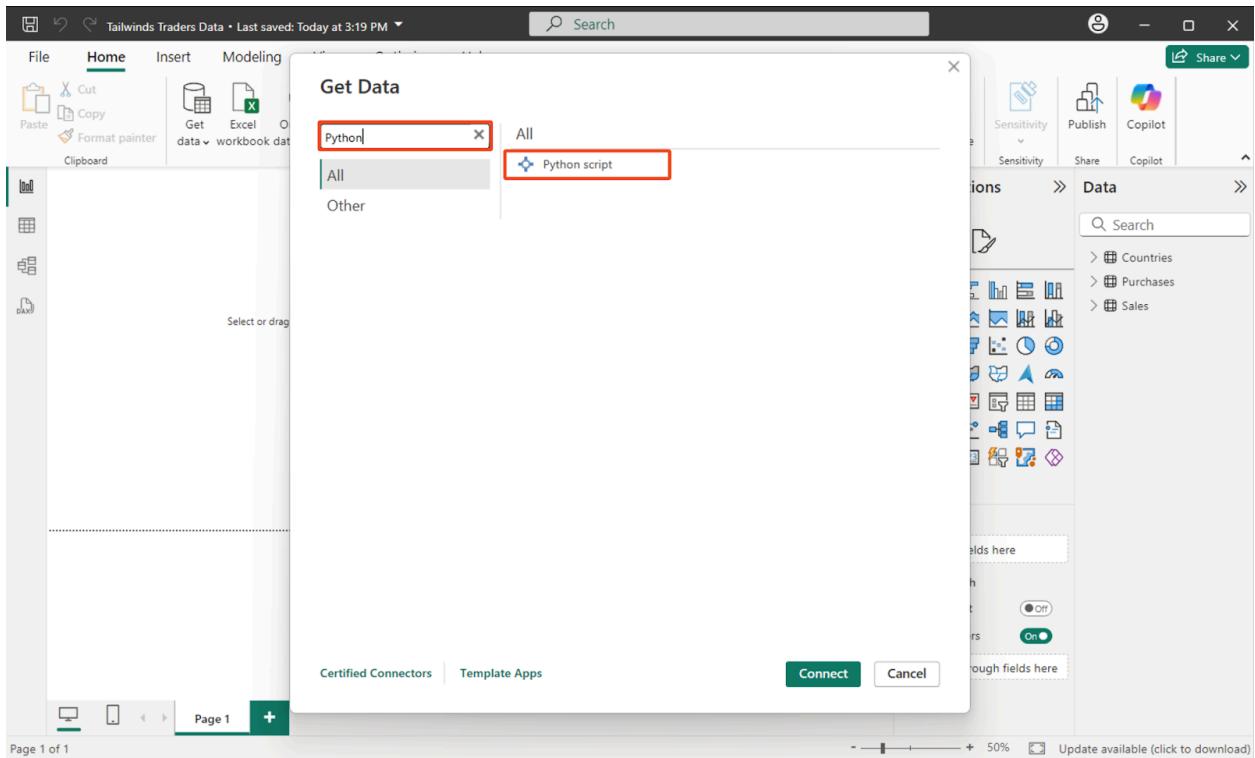
The screenshot shows the Microsoft Power Query Editor interface. The 'Country' query is selected in the left pane. In the main area, the 'Country ID' column is highlighted with a red box, indicating it is being edited. The 'Data Type' dropdown menu is open, showing options like 'Decimal Number', 'Fixed decimal number', and 'Whole Number'. The 'Whole Number' option is selected. The preview pane shows the data for the 'Country ID' column, which contains five distinct values: USA, UK, France, UAE, and Australia, all of which are marked as 'Valid' (green). The 'Country' and 'Exchange ID' columns are also visible in the preview pane. The right pane displays 'Query Settings' with the name 'Countries' and an applied step named 'Changed Type'.

6. Select Close and Apply to move on to the next step.

Step 4: Load the Historical Currency Exchange data

1. Select Get Data

2. Search for Python script, and select Connect.

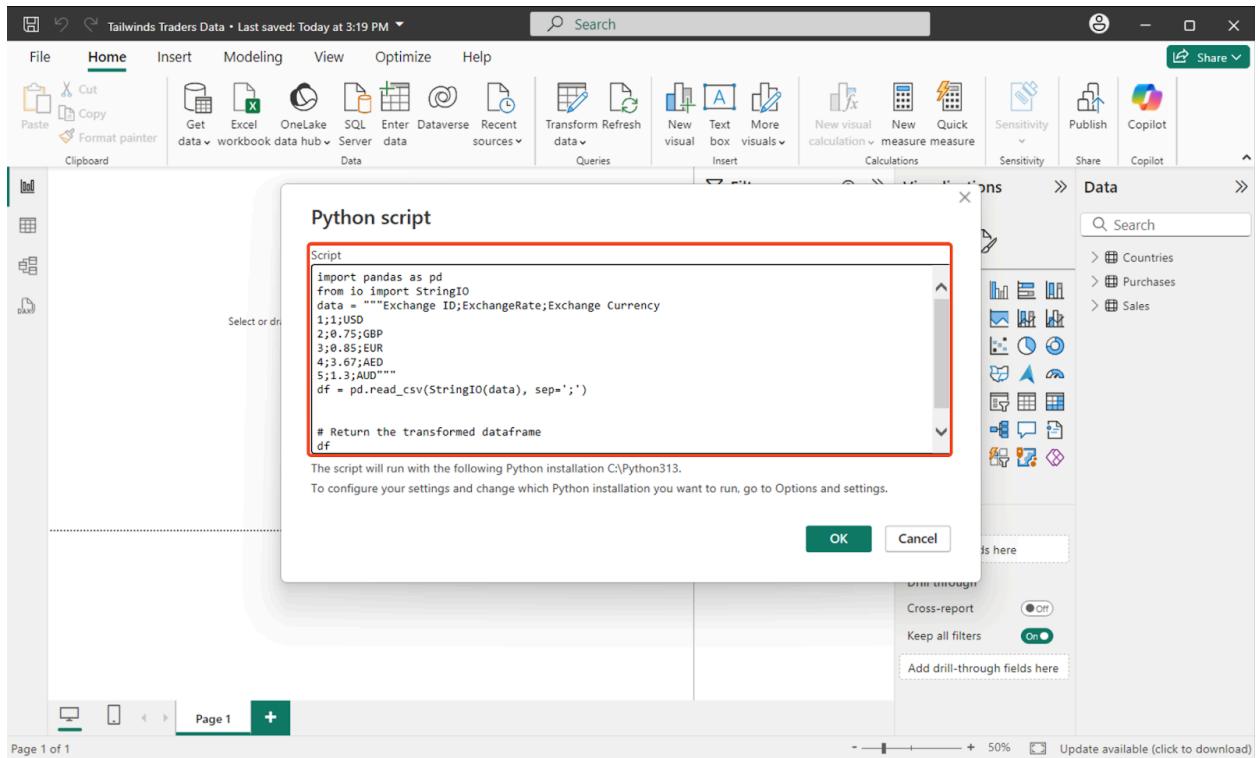


3. In the script window, paste the following code:

```
import pandas as pd
from io import StringIO
data = """Exchange ID;ExchangeRate;Exchange Currency
1;1;USD
2;0.75;GBP
3;0.85;EUR
4;3.67;AED
5;1.3;AUD"""
df = pd.read_csv(StringIO(data), sep=';')

# Return the transformed dataframe
df
```

```
# Return the transformed dataframe
df
```



### 3. Select df and then select Load to add the data to your report

The screenshot shows the Power BI desktop interface with the Navigator pane open. The 'df' dataset is selected and highlighted with a red box. The data preview pane shows the following table:

Exchange ID	ExchangeRate	Exchange Currency
1	1	USD
2	0.75	GBP
3	0.85	EUR
4	3.67	AED
5	1.3	AUD

At the bottom right of the screen, there is a 'Load' button highlighted with a red box.

### 4. Save the Power BI project as Tailwind Traders Report.pbix.

Save your Power BI project with the name Tailwind Traders Report.pbix. This captures your progress and solidifies the analytical workflow, allowing for reporting and further analysis continuity.

## Troubleshooting: Install and Configure Python in Power BI

### Part 1: Installing Python

#### Step 1: Download Python

1. Go to <https://www.python.org/downloads/>
2. Download the latest Python version (3.x) for your OS
3. Check "Add Python to PATH" during installation
4. Complete the installation using default settings
5. Restart your computer

Troubleshooting tip: If you forget to check "Add Python to PATH", you'll need to uninstall and reinstall Python

#### Step 2: Verify Python Installation

1. Select the Windows Start button, and type Command Prompt. Select Command Prompt from the results to open.
2. You'll see something like "C:\Users\YourUsername>". Next to this text, type python --version
3. If you see a version number (like "Python 3.13.1"), Python is installed correctly

Troubleshooting tip: If you see "python is not recognized", try these fixes in order:

4. Restart your computer - this often solves the PATH issue
5. If still not working, uninstall Python from Add or remove programs, and repeat Step 1, making sure to check "Add Python to PATH"

#### Step 3: Install Required Python Packages

1. In Command Prompt, next to C:\Users\YourUsername> type the following commands. After each command, press enter and wait for the Python Package to install before moving on to the next command.
  - Install pandas: python -m pip install pandas
  - Install numpy: python -m pip install numpy
  - Install matplotlib: python -m pip install matplotlib

- Install scikit-learn: `python -m pip install scikit-learn`

Troubleshooting tip: If you see "pip is not recognized", try these fixes:

1. First in Command Prompt try: `python -m pip install --upgrade pip`. Then try the commands again.
2. If that doesn't work, verify Python installation again by typing `python --version`

## Part 2: Configuring Power BI

### Step 1: Enable Python Scripting

1. Open the Command Prompt and type `where python`. Right-click on the path to copy it. It might look something like

`C:\Users\YourUsername\AppData\Local\Programs\Python\Python3x`, but your path might be different - that's OK! Copy whatever path appears on your screen.

2. Open Power BI Desktop
3. Go to File, then select Options and settings
4. Select options, then navigate to Python scripting
5. Set your Python home directory, by pasting the path you copied earlier into the "Python home directory" box

Troubleshooting tip:

6. If no path appears in the Command Prompt, revisit Part 1 Step 2 to fix PATH issues

### Step 2: Verify Configuration

1. Open your Power BI report
2. Select 'Get Data'
3. Search for 'Python script'
4. If you can see and select 'Python script', the configuration is successful

Troubleshooting tip: If 'Python script' is not appearing:

5. Close Power BI completely
6. Restart your computer
7. Reopen Power BI
8. If still not appearing, verify Python directory in Power BI options

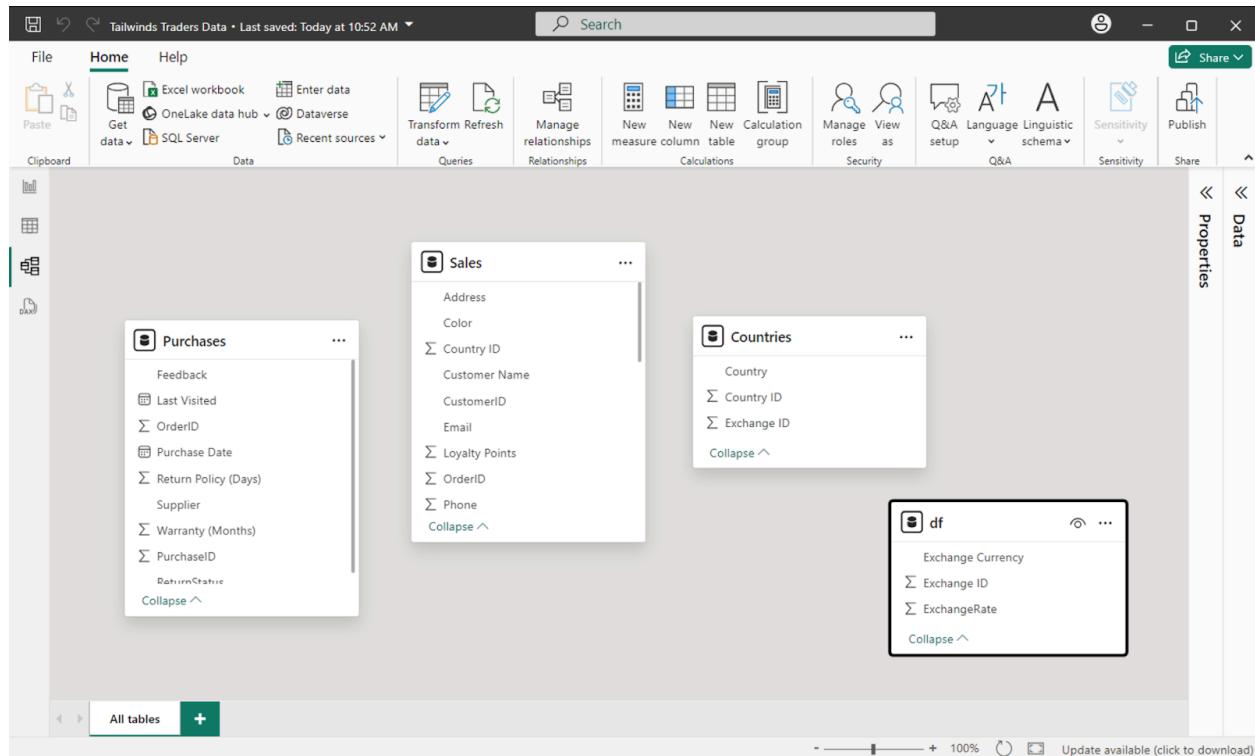
## Part 3: Using Python Script as Data Source

### Step 1: Basic Data Import

1. Select 'Get Data'
2. Select 'Python script'
3. Enter your Python code in the editor

### Exercise 3: Design and develop the data model

Your Power BI environment should resemble the screenshot below. Follow the steps to design and develop a data model from these tables.



#### Step 1: Create a relationship between the Countries and Exchange Datatables

1. Select the table titled df, and open the properties panel

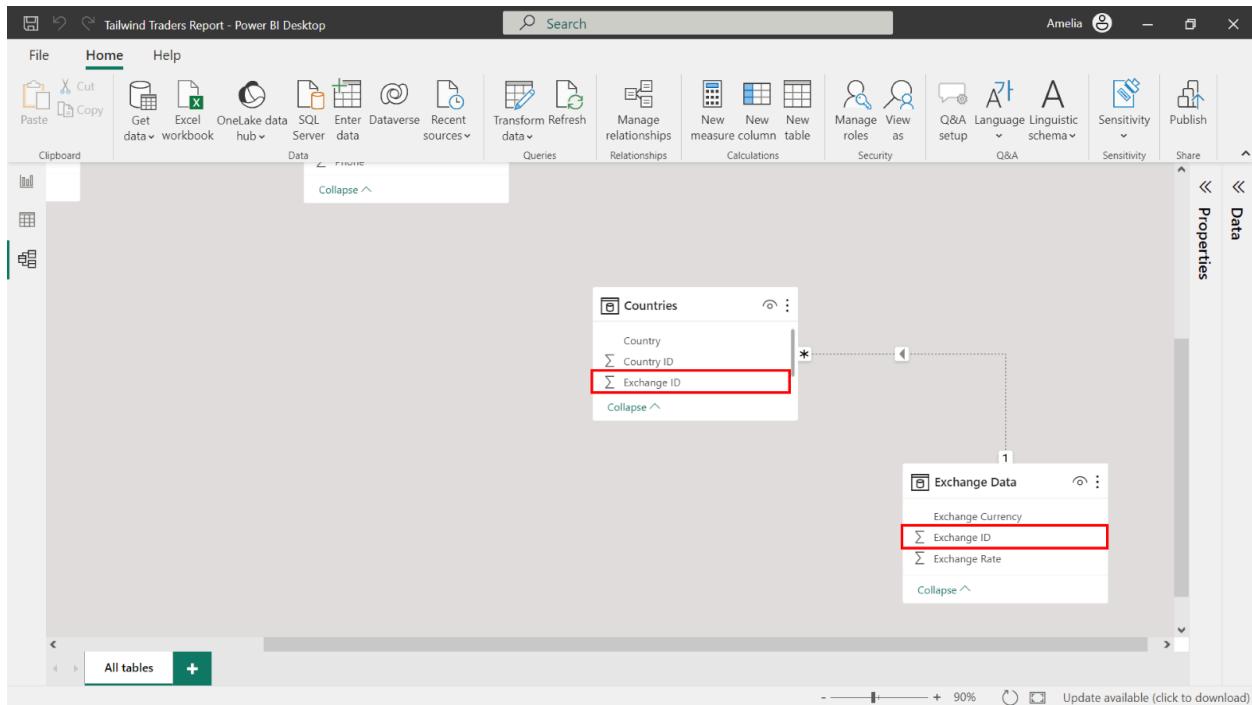
The screenshot shows the Power BI Data view interface. On the left, there's a sidebar with icons for Paste, Get data from, SQL Server, and Recent sources. The main area displays three tables: 'Sales' (Address, Color, Country ID, Customer Name, CustomerID, Email, Loyalty Points, OrderID, Phone), 'Countries' (Country, Country ID, Exchange ID, ExchangeRate), and 'Exchange Data' (Exchange Currency, Exchange ID, ExchangeRate). A red box highlights the 'Exchange Data' table. On the right, there's a 'Properties' pane with tabs for General, Data, and Sensitivity. The 'General' tab is selected, showing fields for Name (set to 'Exchange Data'), Description (empty), Synonyms (exchange data, data), Row label (empty), Key column (empty), and Is hidden (unchecked).

## 2. In the name field, rename the table Exchange Data

This screenshot is similar to the previous one, but the 'Name' field in the Properties pane has been changed to 'Exchange Data'. The table is now highlighted with a red box.

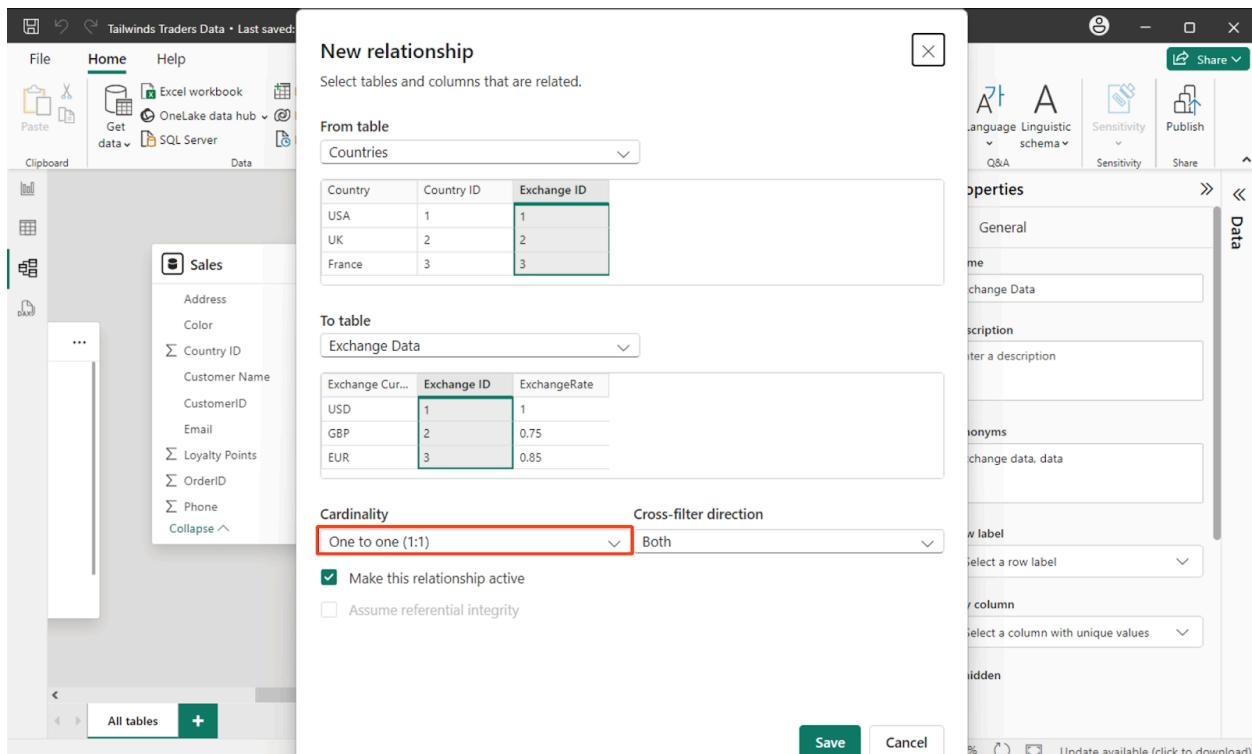
## 3. Create a relationship between the Countries and Exchange Data tables on the Exchange ID field.

Drag Exchange ID from Countries table to Exchange ID in Exchange Data table.



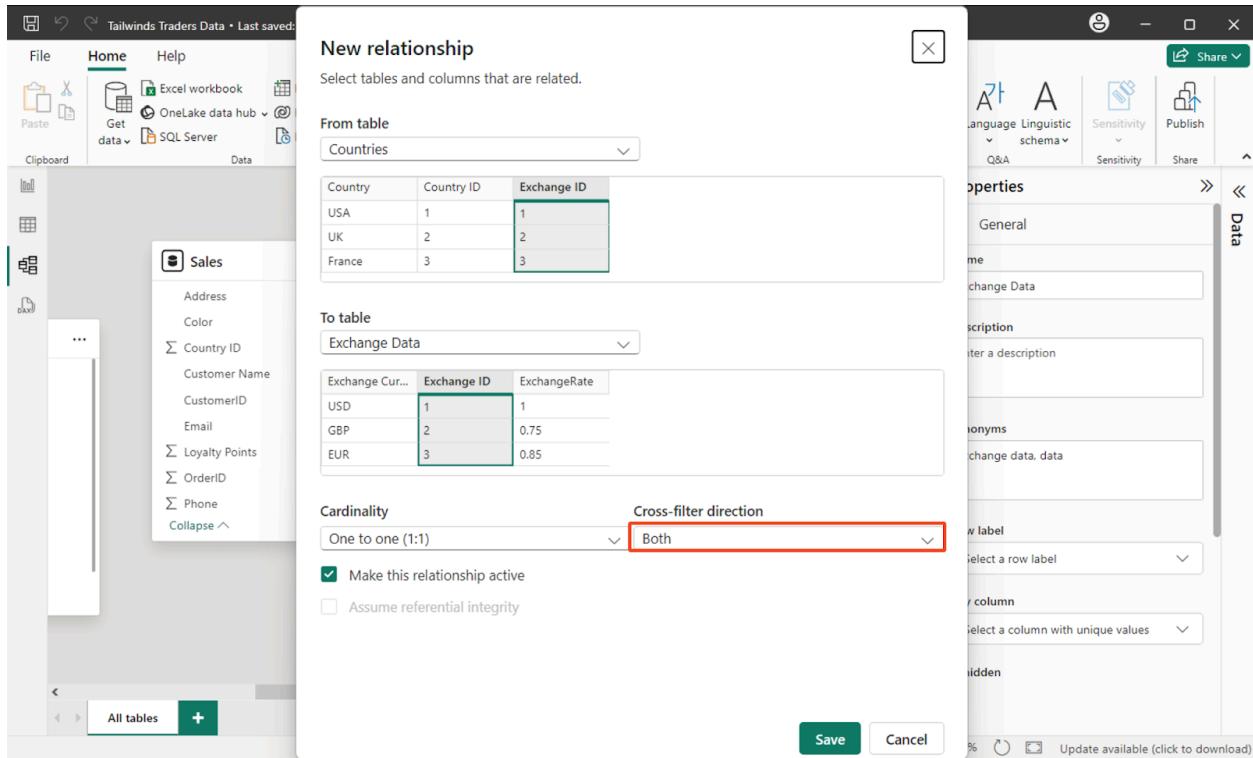
#### 4. Set the Cardinality to One to One (1:1).

In the New relationship dialog, navigate to the Cardinality options and set the cardinality of this relationship to One to One (1:1).



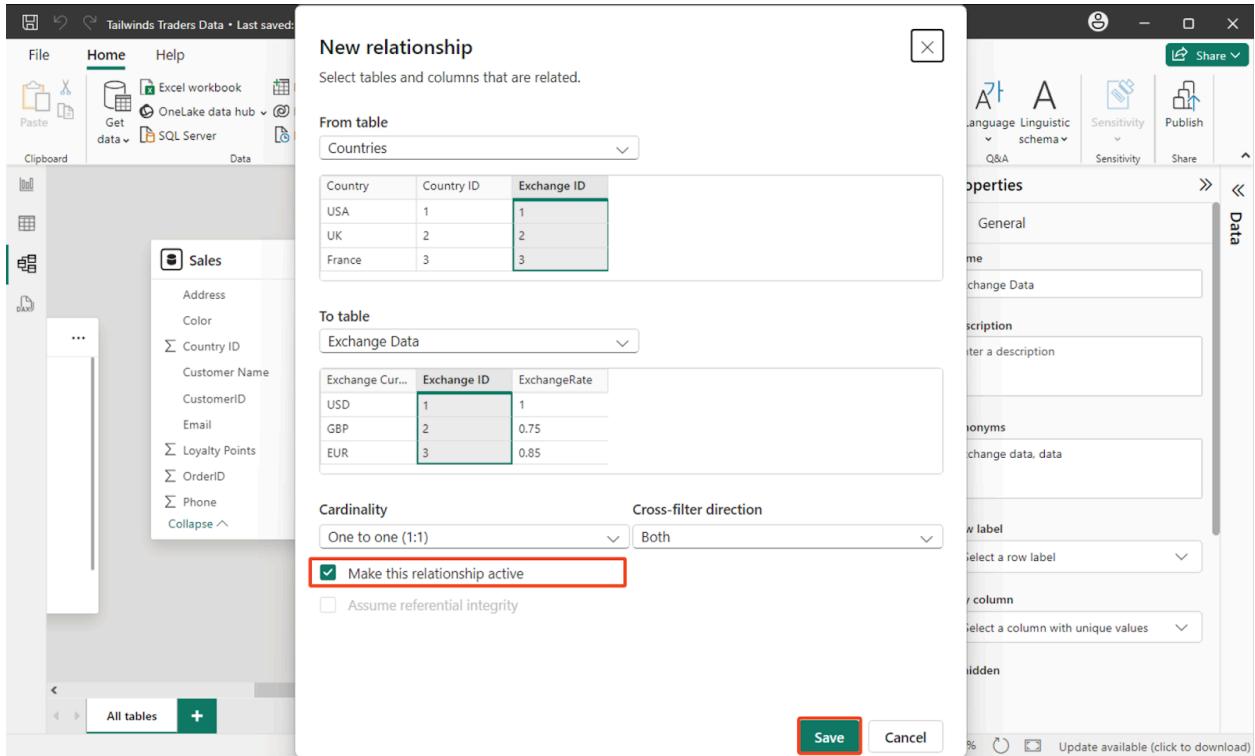
5. Set the Cross filter direction to Both to be bi-directional.

Navigate to the Cross filter direction options and select Both to enable a bi-directional flow.



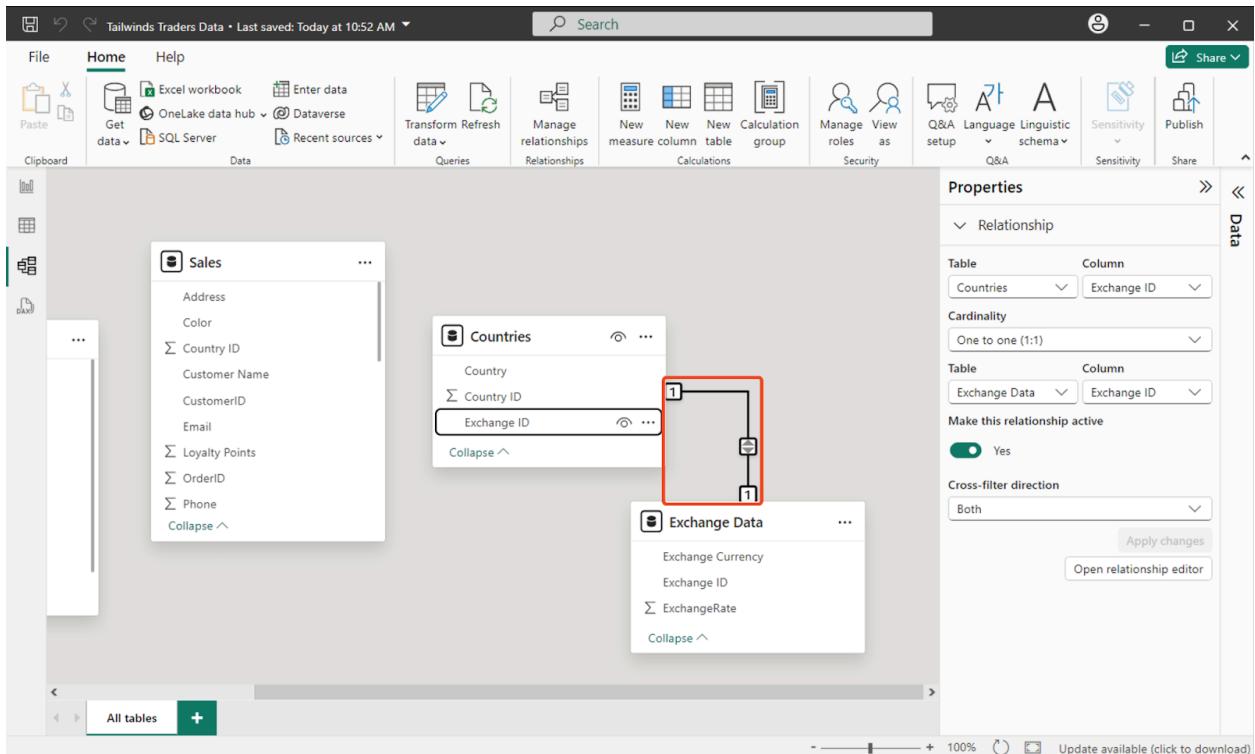
6. Ensure the Make this relationship active checkbox is selected.

Navigate to the Make this relationship active checkbox and confirm it's checked. Select Save to apply your settings.



7. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a 1:1 symbol on either end of the connector.

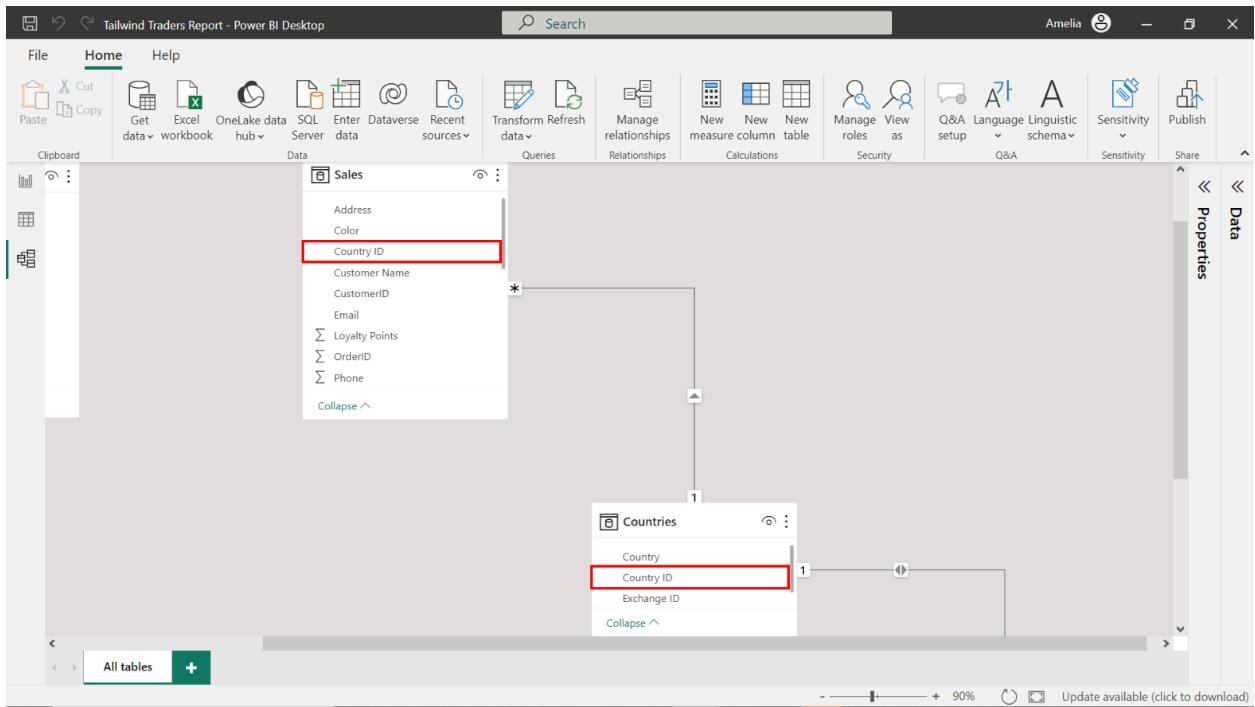
After selecting Save, go back to Model View and check your work. Look at the line connecting the tables - you should see arrows pointing both ways (this shows it's bi-directional) and a 1 symbol at each end (this shows it's a one-to-one relationship).



## Step 2: Create a relationship between Sales and Countries

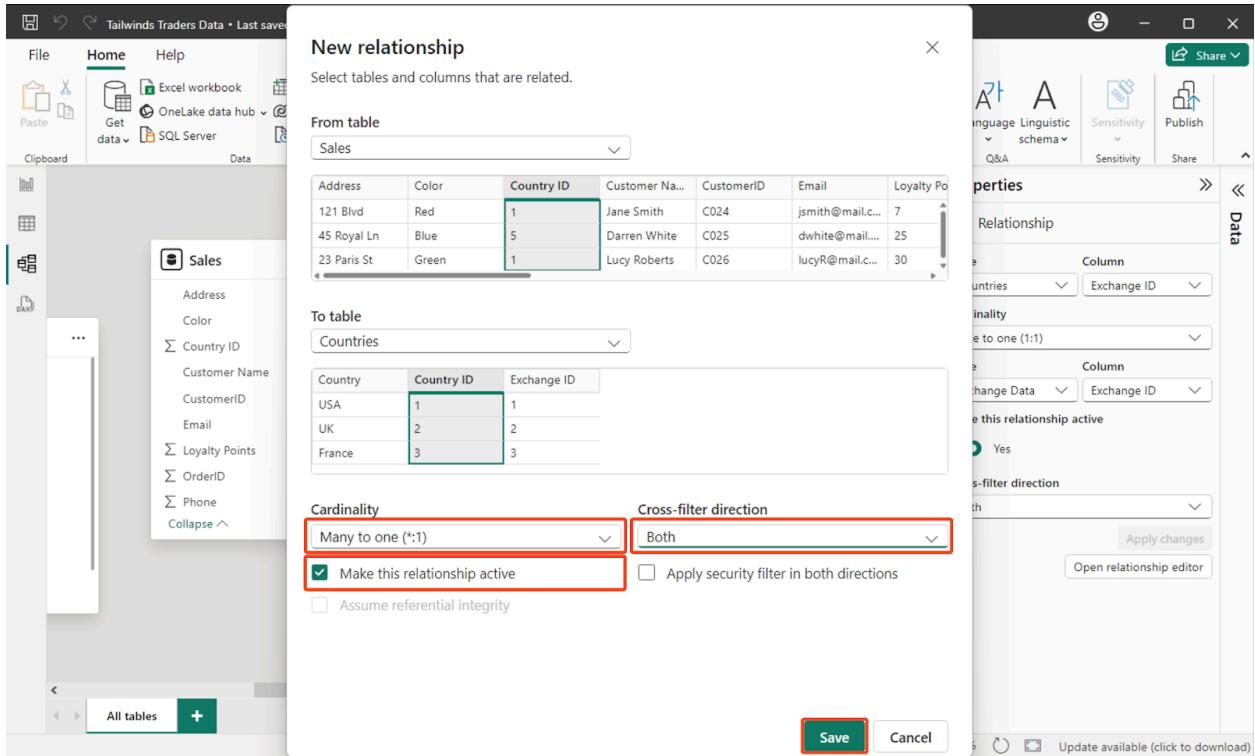
1. Create a relationship on the Country ID field between the Sales and Countries tables.

Like the previous task, establish a connection on the Country ID field between the Sales and Countries tables to allow for geographical analysis of sales data.



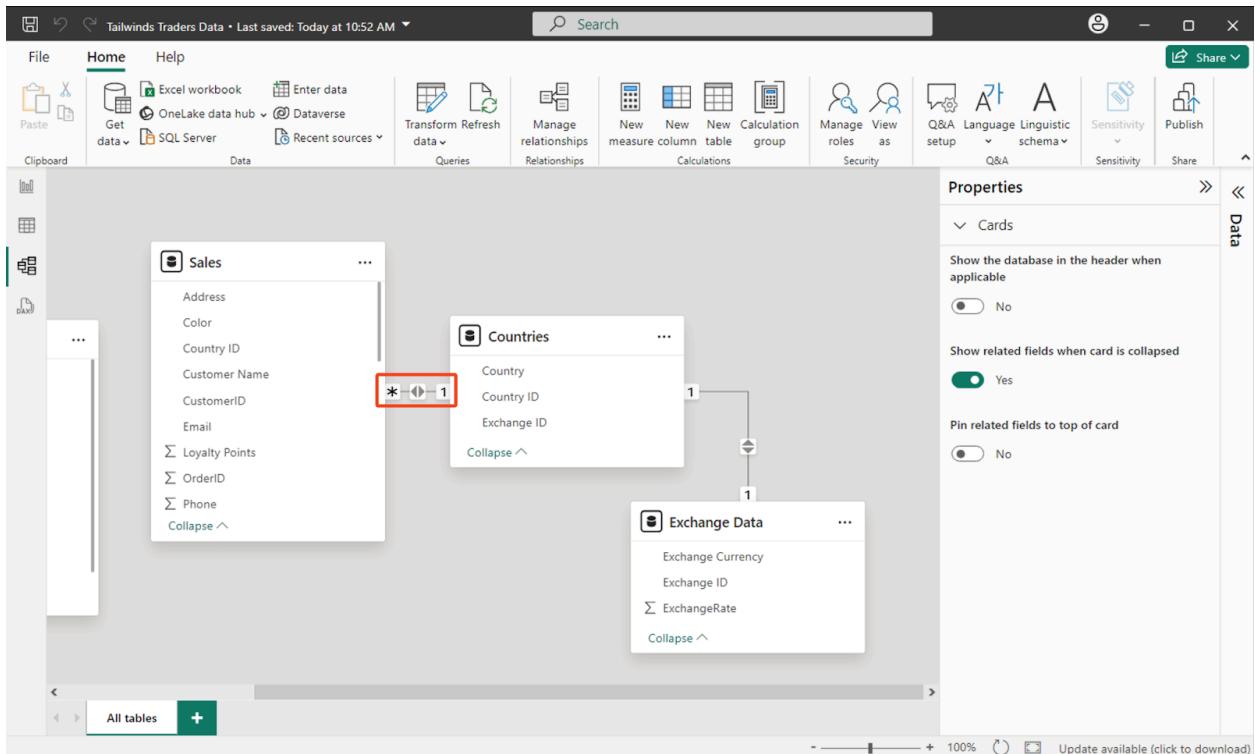
2. Set the Cardinality to Many to One (1:1).
3. Set the Cross-filter direction to Both so that it's bi-directional.
4. Ensure the Make this relationship active checkbox is selected.

In the New relationship dialog, configure the above relationship settings as you did for the tables in the previous task. Your settings should resemble the following screenshot.



5. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a \*:1 symbol on either end of the connector.

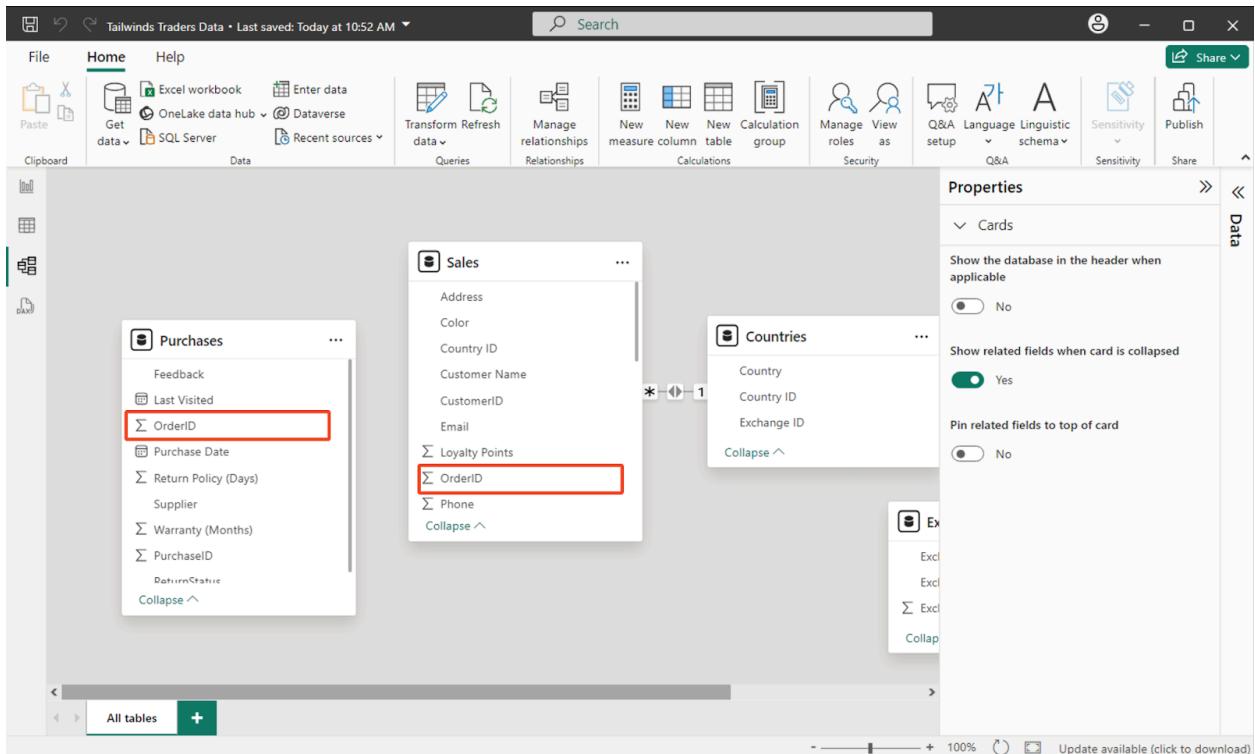
After selecting Save, go back to Model View and check your work. Look at the line connecting the tables - you should see arrows pointing both ways (this shows it's bi-directional) and a \* symbol on the Sales table, and a 1 symbol on the Countries table. This shows that for each country in your Countries table, you can have multiple sales records in your Sales table, but each sale only belongs to one country.



### Step 3: Create a relationship between the Purchases and Sales tables

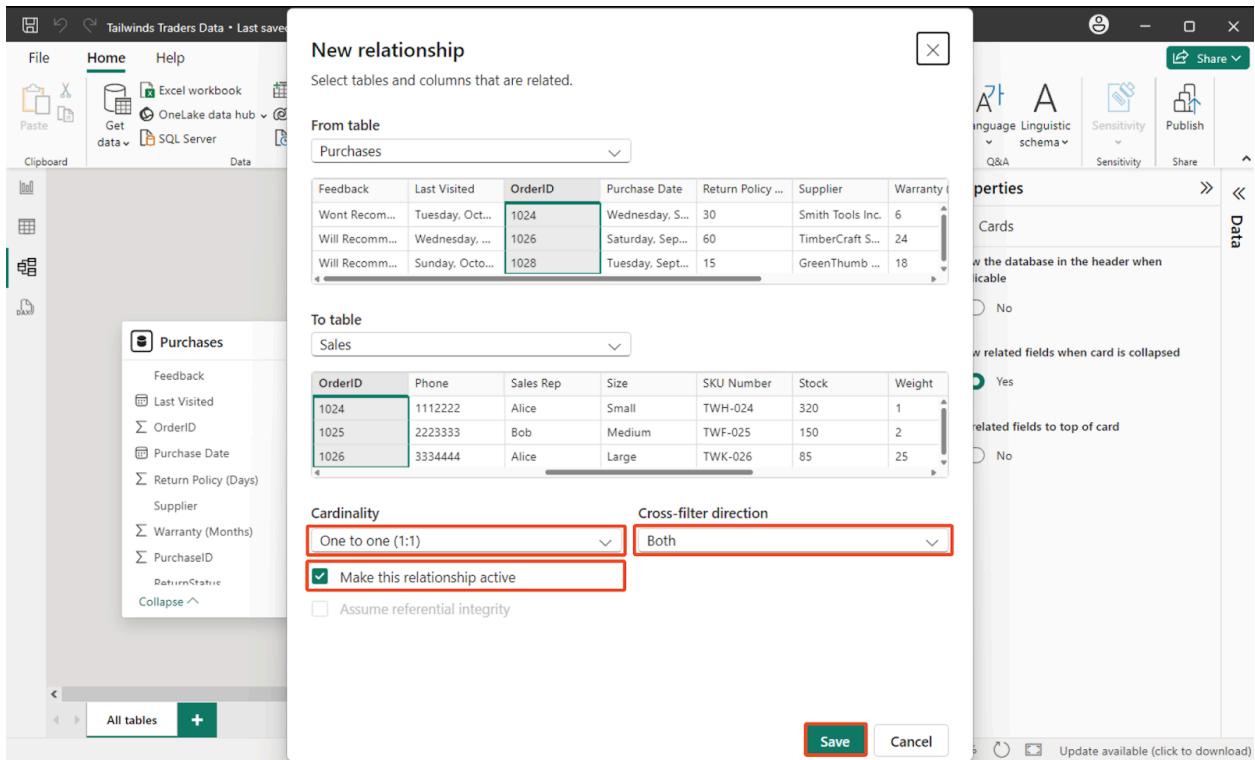
1. Create a relationship on the OrderID field between the Purchases and Sales tables.

Create a relationship using the OrderID field as a bridge between the Purchases and Sales tables, linking procurement with sales.

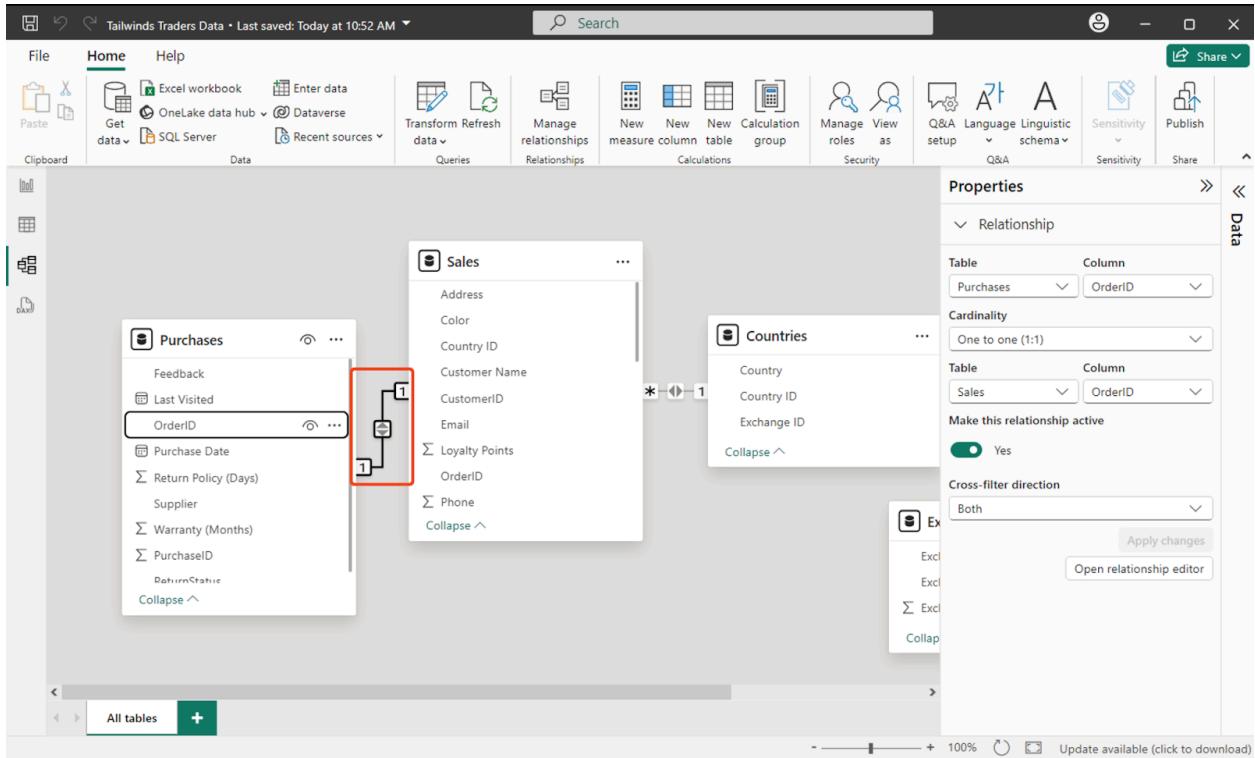


2. Set the Cardinality to One to One (1:1).
3. Set the Cross filter direction to Both to be bi-directional.
4. Ensure the Make this relationship active checkbox is selected.

In the New relationship dialog, configure the above relationship settings as you did for the tables in the previous task. Your settings should resemble the following screenshot.

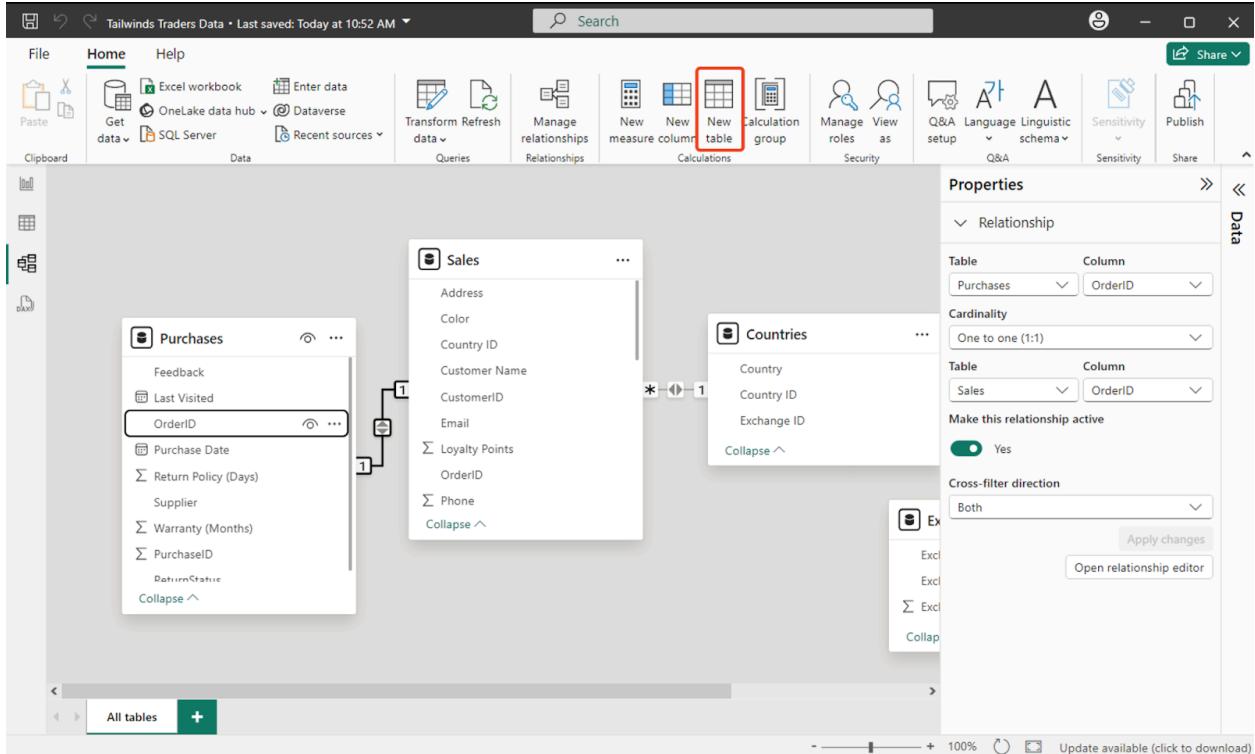


After selecting Save, go back to Model View and check your work. Look at the line connecting the tables - you should see arrows pointing both ways (this shows it's bi-directional) and a 1 symbol at each end. This shows that each purchase record has one matching sales record, and each sales record has one matching purchase record.



## Step 4: Create the Calendar table

### 1. To create a new table, select New Table.



### 2. In the calculation field, add the following DAX code to create a new Calendar table:

```

CalendarTable =
ADDCOLUMNS(
CALENDAR(DATE(2020, 1, 1), DATE(2023, 12, 31)),
"Year", YEAR([Date]),
"Month Number", MONTH([Date]),
"Month", FORMAT([Date], "MMMM"),
"Quarter", QUARTER([Date]),
"Weekday", WEEKDAY([Date]),
"Day", DAY([Date])
)

```

The screenshot shows the Microsoft Power BI Data Editor interface. A red box highlights the DAX code for creating the CalendarTable:

```

1 CalendarTable =
2 ADDCOLUMNS(
3 CALENDAR(DATE(2020, 1, 1), DATE(2023, 12, 31)),
4 "Year", YEAR([Date]),
5 "Month Number", MONTH([Date]),
6 "Month", FORMAT([Date], "MMMM"),
7 "Quarter", QUARTER([Date]),
8 "Weekday", WEEKDAY([Date]),
9 "Day", DAY([Date])
10 )
11

```

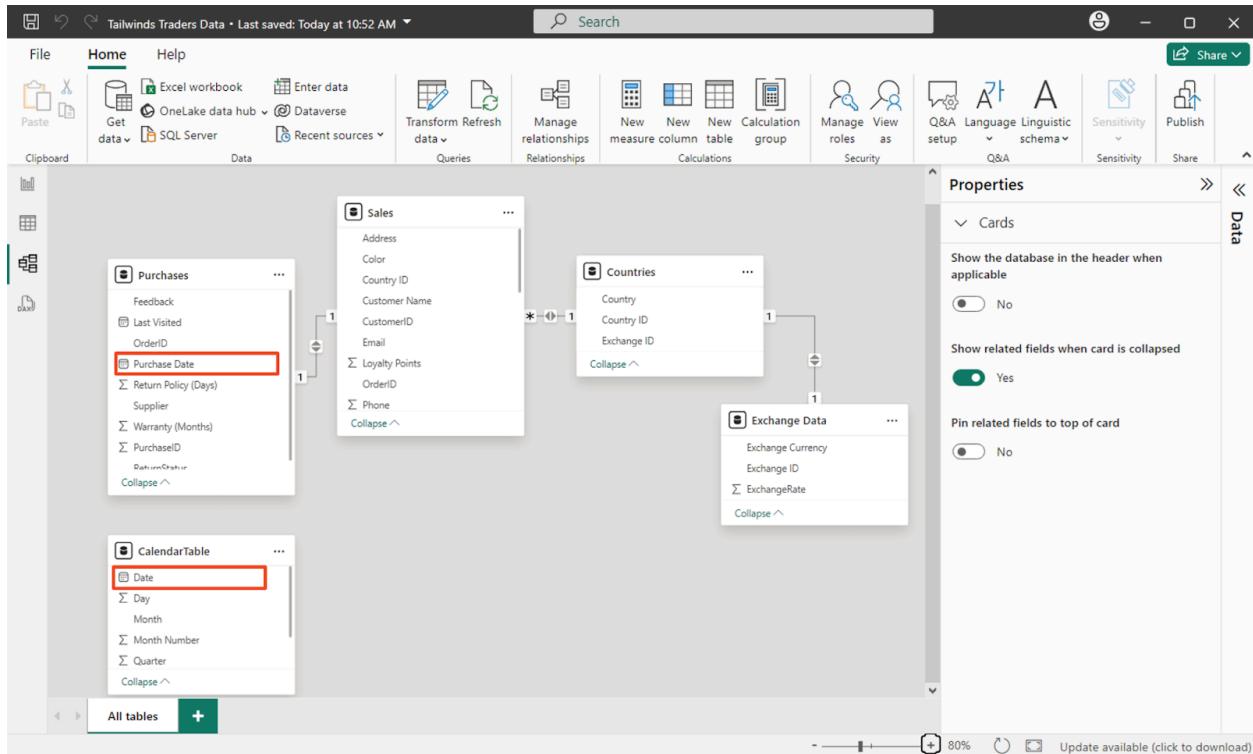
The Data pane displays the table structure with relationships to other tables such as Customer and Purchase. The Properties pane on the right shows general settings for the table, including Name (Table), Description (Enter a description), Synonyms (table), Row label (Select a row label), Key column (Select a column with unique values), and Is hidden.

The Calendar table gives you useful time fields like Year, Month, Quarter, and Day. You can use these fields to analyze your data by different time periods.

#### Step 5: Create a relationship between the Calendar and Purchases tables

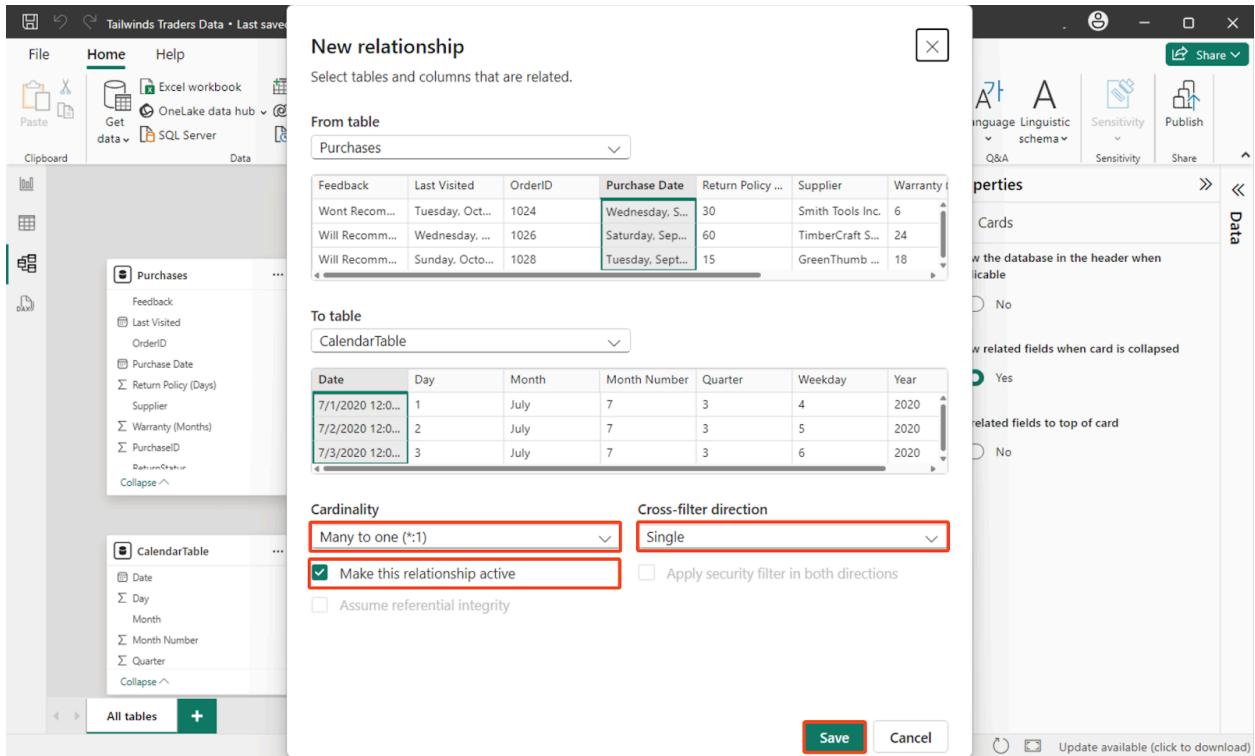
1. Move the new Calendar Table closer to Purchases. Then, create a relationship on the Date field between the Calendar and the Purchase Date in the Purchases table.

Create a relationship on the Date field that aligns the Calendar table and Purchase Date with Purchases.



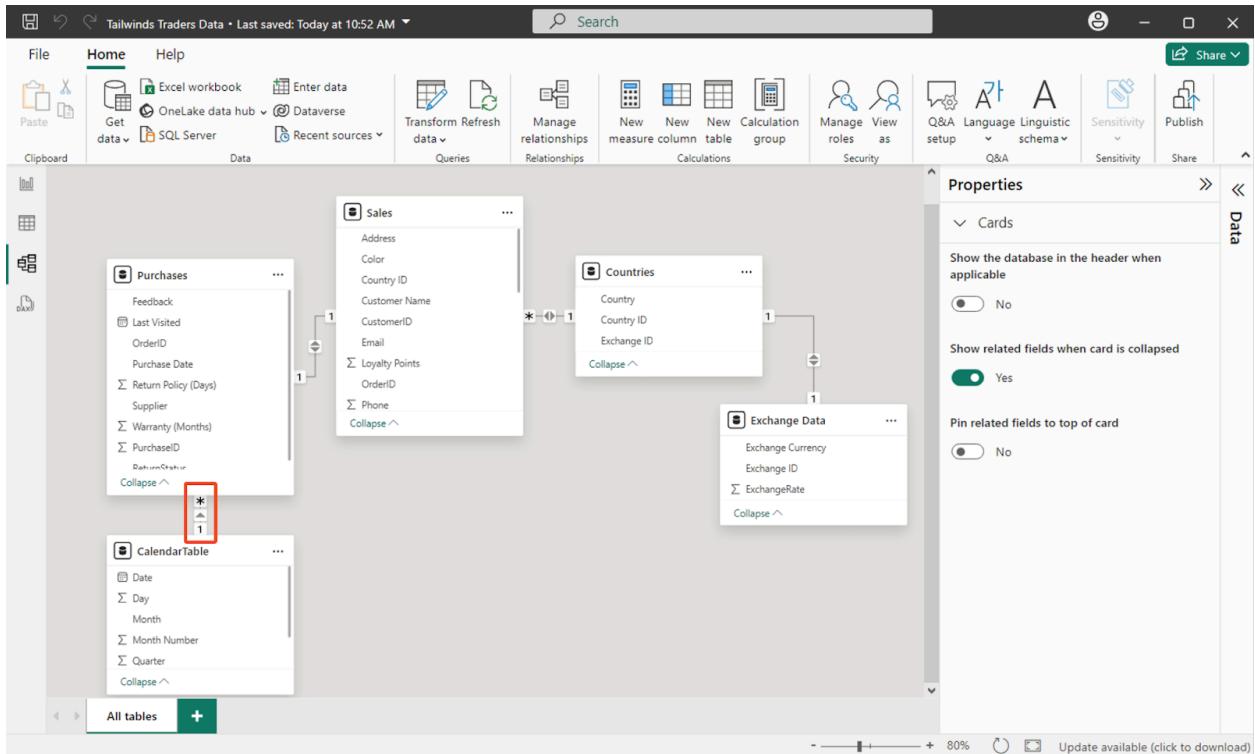
2. Set the Cardinality to Many to One (\*:1).
3. Set the Cross filter direction to Single.
4. Ensure the Make this relationship active checkbox is selected.

In the New relationship dialog, configure the above relationship settings as you did for the tables in the previous task. Your settings should resemble the following screenshot.



5. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a \*:1 symbol on either end of the connector.

After selecting OK, go back to Model View and check your work. Look at the line connecting the tables - you should see arrows pointing both ways (this shows it's bi-directional) and a 1:\* symbol at each end. This means that each date in your Calendar table can have multiple purchases, but each purchase can only have one date.



## Step 6: Create Sales in USD Calculated Table

1. To create a new table, select New Table. In the calculation field, add the following DAX code to create a new Sales in USD table. The Sales in USD table lets you easily analyze all sales amounts in US dollars, without having to convert currencies in each calculation. This saves time and ensures consistent currency conversion across your analysis.

```
Sales in USD =
ADDCOLUMNS (
    Sales,
    "Country Name", RELATED(Countries[Country]),
    "Exchange Rate", RELATED('Exchange Data'[ExchangeRate]),
    "Exchange Currency", RELATED('Exchange Data'[Exchange Currency]),
    "Cost per Unit USD", [Cost per Unit] * RELATED('Exchange
Data'[ExchangeRate]),
    "Gross Revenue USD", [Gross Revenue] * RELATED('Exchange
Data'[ExchangeRate]),
    "Net Revenue USD", [Net Revenue] * RELATED('Exchange
Data'[ExchangeRate]),
    "Total Tax USD", [Total Tax] * RELATED('Exchange
Data'[ExchangeRate]),
    "Profit USD", [Profit] * RELATED('Exchange Data'[ExchangeRate]))
```

```

1 Sales in USD =
2 ADDCOLUMNS(
3   Sales,
4   "Country Name", RELATED(Countries[Country]),
5   "Exchange Rate", RELATED('Exchange Data'[Exchange Rate]),
6   "Exchange Currency", RELATED('Exchange Data'[Exchange Currency]),
7   "Gross Revenue USD", [Gross Revenue] * RELATED('Exchange Data'[Exchange Rate]),
8   "Net Revenue USD", [Net Revenue] * RELATED('Exchange Data'[Exchange Rate]),
9   "Total Tax USD", [Total Tax] * RELATED('Exchange Data'[Exchange Rate])
10 )

```

Troubleshooting tip: If you get the error "The column 'Exchange Data[Exchange Rate]' either doesn't exist or doesn't have a relationship to any table available in the current context":

2. Delete the whole parameter
3. Type 'Exchange' and select 'Exchange Data'[Exchange Rate] from the dropdown list  
Sometimes Power BI's auto-complete can cause formatting issues with apostrophes and brackets. Typing them manually usually fixes this error.
4. Note the Gross Revenue USD, Net Revenue USD, and Total Tax USD for the Order ID= 1035 on the Sales in USD table.

The Net Revenue for Order ID 1035 placed by Amelia Carter is precisely 682.62 USD.

The Gross Revenue USD measures 734 USD, and the Total Tax USD is 51.38 USD.

Sales in USD =  
 ADDCOLUMNS(  
 Sales,  
 "Country Name", RELATED(Countries[Country]),  
 "Exchange Rate", RELATED("Exchange Data"[ExchangeRate]),  
 "Exchange Currency", RELATED("Exchange Data"[ExchangeCurrency]),  
 "Cost per Unit USD", [Cost per Unit] \* RELATED("Exchange Data"[ExchangeRate]),  
 "Gross Revenue USD", [Gross Revenue] \* RELATED("Exchange Data"[ExchangeRate]),  
 "Net Revenue USD", [Net Revenue] \* RELATED("Exchange Data"[ExchangeRate]),  
 "Total Tax USD", [Total Tax] \* RELATED("Exchange Data"[ExchangeRate]),  
 "Profit USD", [Profit] \* RELATED("Exchange Data"[ExchangeRate])  
 )

Country Name	Exchange Rate	Exchange Currency	Cost per Unit USD	Gross Revenue USD	Net Revenue USD	Total Tax USD	Profit USD
USA	1	USD	\$21	\$120	\$103.2	\$16.8	\$61.4
Australia	1.3	AUD	\$15.925	\$136.5	\$126.945	\$9.555	\$79.1
USA	1	USD	\$87.5	\$250	\$232.5	\$17.5	\$14.5
UK	0.75	GBP	\$3.9375	\$56.25	\$52.3125	\$3.9375	\$32.625
USA	1	USD	\$19.25	\$220	\$204.6	\$15.4	\$127.2
UK	0.75	GBP	\$19.6875	\$112.5	\$104.625	\$7.875	\$65.2
France	0.85	EUR	\$14.875	\$42.5	\$30.005	\$12.495	\$15.1
UK	0.75	GBP	\$23.625	\$202.5	\$188.325	\$14.175	\$117.4
USA	1	USD	\$63	\$360	\$334.8	\$25.2	\$208
USA	1	USD	\$1.05	\$18	\$9.6	\$8.4	\$3.2
UK	0.75	GBP	\$78.75	\$225	\$209.25	\$15.75	\$130.5
UAE	3.67	AED	\$64.225	\$734	\$682.62	\$51.38	\$425.7
USA	1	USD	\$21	\$300	\$279	\$21	\$17
Australia	1.3	AUD	\$18.2	\$156	\$145.08	\$10.92	\$90.4
Australia	1.3	AUD	\$20.175	\$224	\$217.62	\$16.28	\$125.7

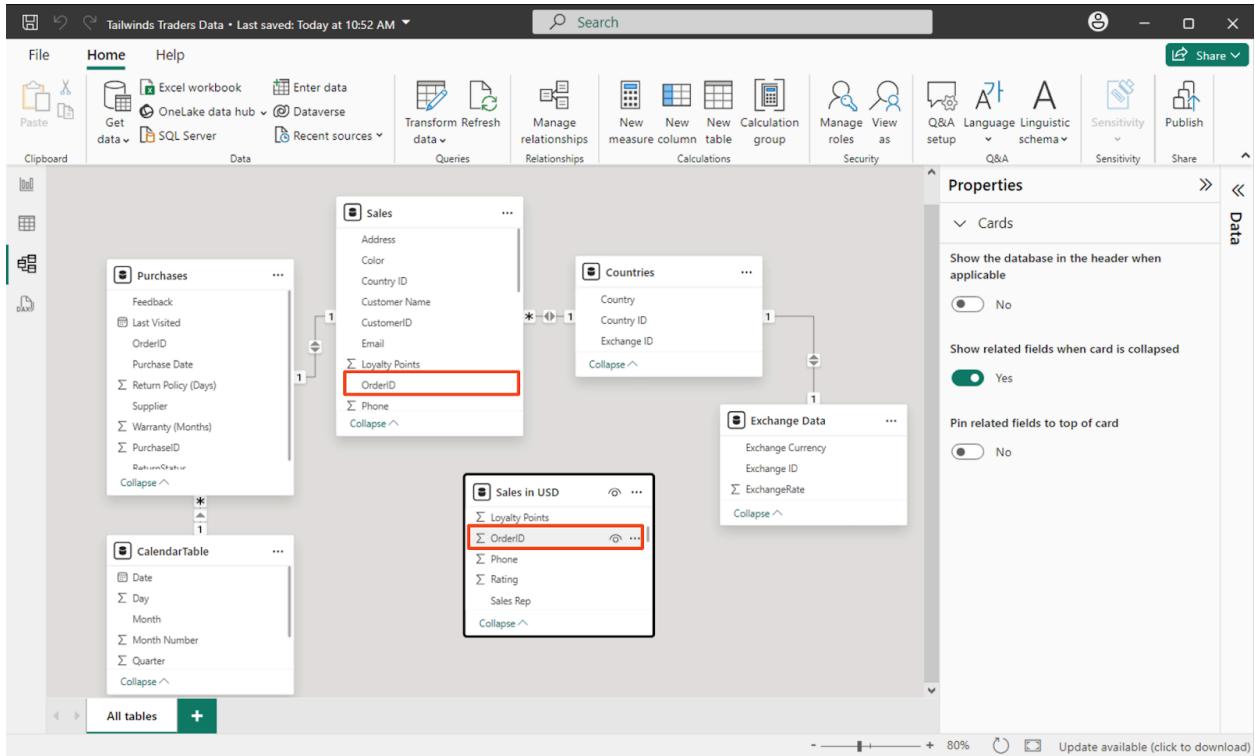
Table: Sales in USD (54 rows) Column: Loyalty Points (23 distinct values)

Update available (click to download)

## Step 7: Create a relationship between the Sales in USD and Sales tables

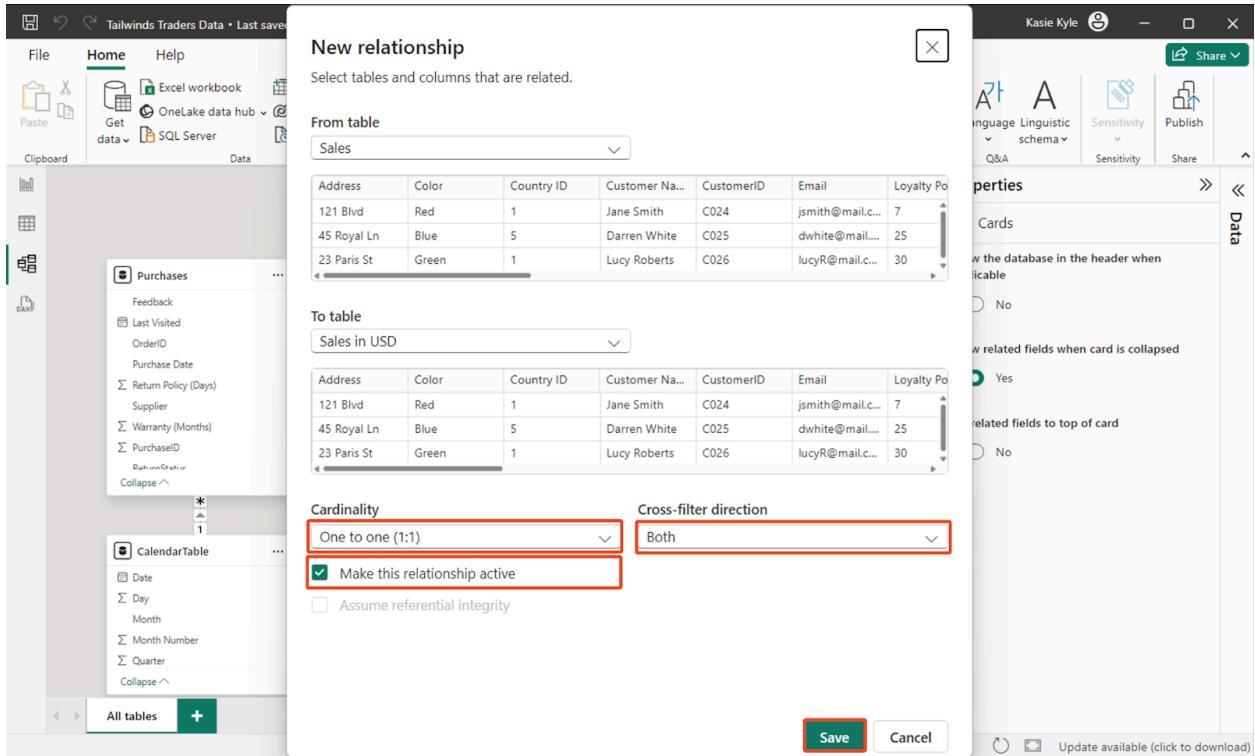
1. Navigate back to the model view.
2. Move the Sales in USD table closer to the Sales table
3. Create a relationship between the Sales in USD and Sales tables on the Order ID field.

Link the Sales in USD table with the Sales table by creating a relationship based on the Order ID field, enabling Tailwind Traders to contrast the original sales data with its USD equivalent.



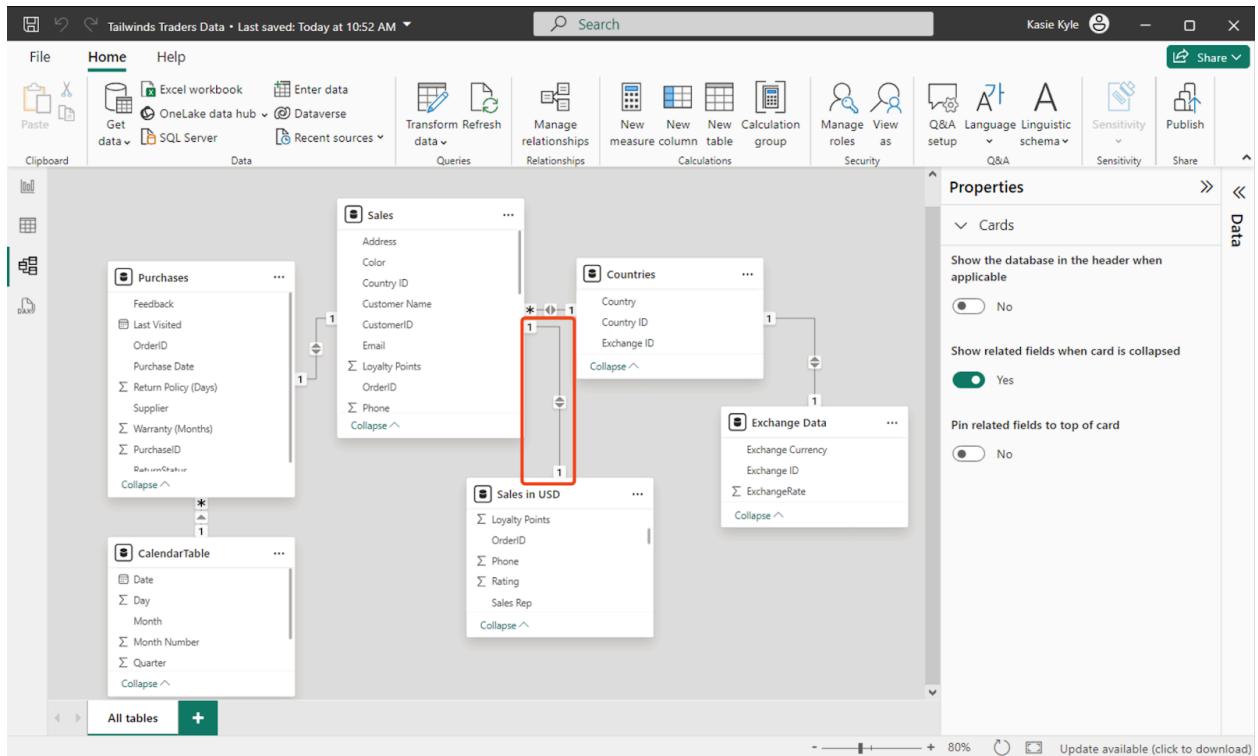
4. Set the Cardinality to One to One (1:1) as this is a calculated table based on Sales.
5. Set the Cross filter direction to Both to be bi-directional
6. Ensure the Make this relationship active checkbox is selected.

In the New relationship dialog, configure the above relationship settings as you did for the tables in the previous task. Your settings should resemble the following screenshot.



7. Inspect the relationship arrow in the Model View to ensure the arrows point in both directions and display a 1:1 symbol on either end of the connector.

After selecting Save, go back to Model View and check your work. Look at the line connecting the tables - you should see arrows pointing both ways (this shows it's bi-directional) and a 1:1 symbol at each end. This means each sales record has one matching USD sales record, and each USD sales record has one matching sales record.



Save your file

## Conclusion

With these steps, you have successfully prepared and configured sales data for Tailwind Traders and used this data to design and develop a data model.

## 4.10. Exemplar: Capstone project - Part 2

### Overview

In the second set of Capstone project exercises, you had to assist Tailwind Traders with configuring its aggregations and generating insights in the form of reports from its data.

The two exercises you undertook in this second phase were:

- Configure aggregations using DAX.
- And create sales and profit reports.

This reading provides you with a step-by-step guide for completing these tasks. It also includes screenshots that you can compare against your work.

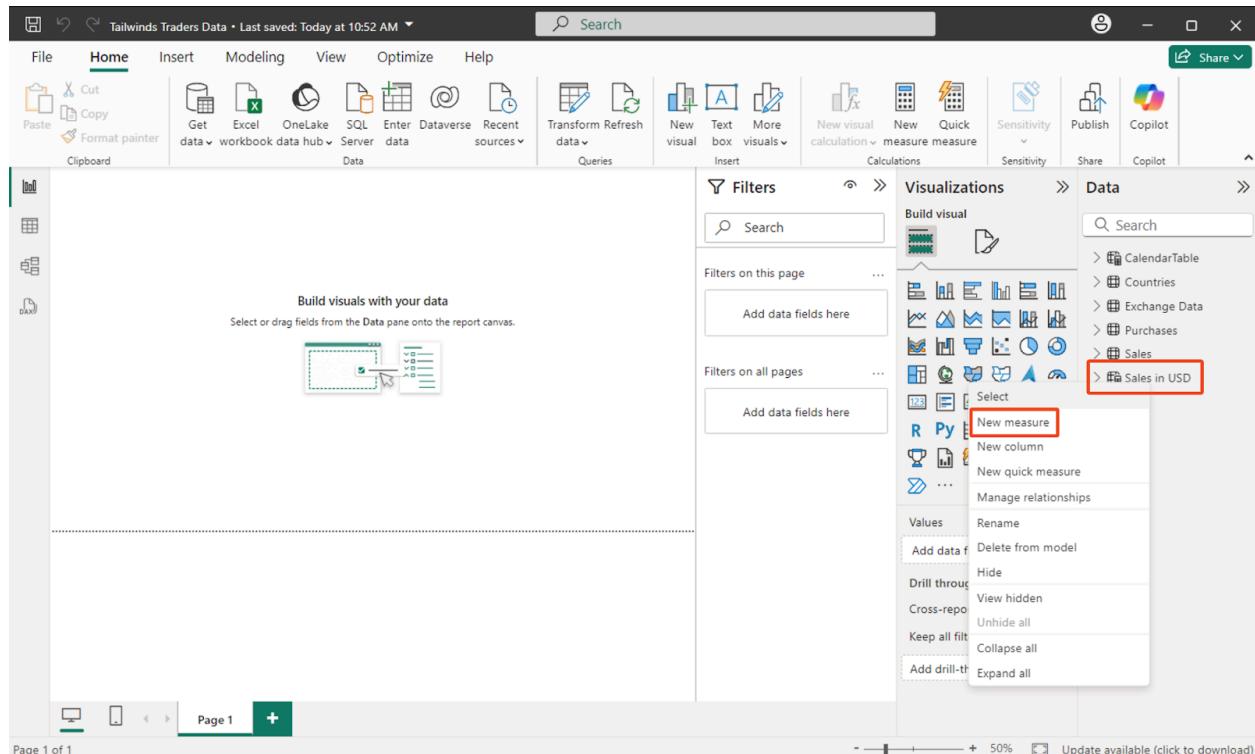
You can also review the learning materials provided in this course for more guidance.

#### Exercise 1: Configure aggregations using DAX

##### Step 1: Calculate Yearly Profit margin

1. Create a new measure for the Sales in USD table.

Right-click on the Sales in USD table in the Fields pane and select New Measure.



2. In the formula bar, create a new measure using a DAX function that represents the yearly profit margin. This margin should be calculated by dividing total profit by gross revenue within the Sales in USD table.

In the calculation field, input the provided DAX formula into the formula bar and press enter.

```
Yearly Profit Margin =  
DIVIDE(  
    SUM('Sales in USD'[Profit USD]),  
    SUM('Sales in USD'[Net Revenue USD])  
)
```

This calculation divides the total Profit by the Net Revenue, showing what percentage of revenue is kept as profit after all costs and taxes. This measure provides an overarching view of Tailwind Traders' profit efficiency throughout the year and is a key indicator of the company's financial health.

The screenshot shows the Power BI desktop application interface. The ribbon at the top has 'Table tools' selected under 'Measure tools'. The 'Measure' tab in the ribbon is active. The formula bar contains the DAX code for the measure:

```
1 Yearly Profit Margin =  
2 DIVIDE(  
3     SUM('Sales in USD'[Profit USD]),  
4     SUM('Sales in USD'[Net Revenue USD])  
5 )  
6
```

The 'Structure' pane on the left shows the measure definition. The 'Properties' pane on the right shows the measure is categorized as 'Uncategorized'. The 'Calculations' section of the Properties pane is highlighted with a red box. The 'Visualizations' pane on the right lists various chart types, and the 'Data' pane shows the 'Sales in USD' table with its columns listed.

3. In the Fields pane, select the new measure and change its format to Percentage in the Properties pane.

## Step 2: Calculate Quarterly Profit

1. Right-click on the Sales in USD table in the Fields pane and choose New Measure.
2. In the formula bar, create a new measure for quarterly profit margin. This measure will apply the yearly profit margin calculation to quarterly time periods. Input the provided DAX formula into the formula bar, then press enter:

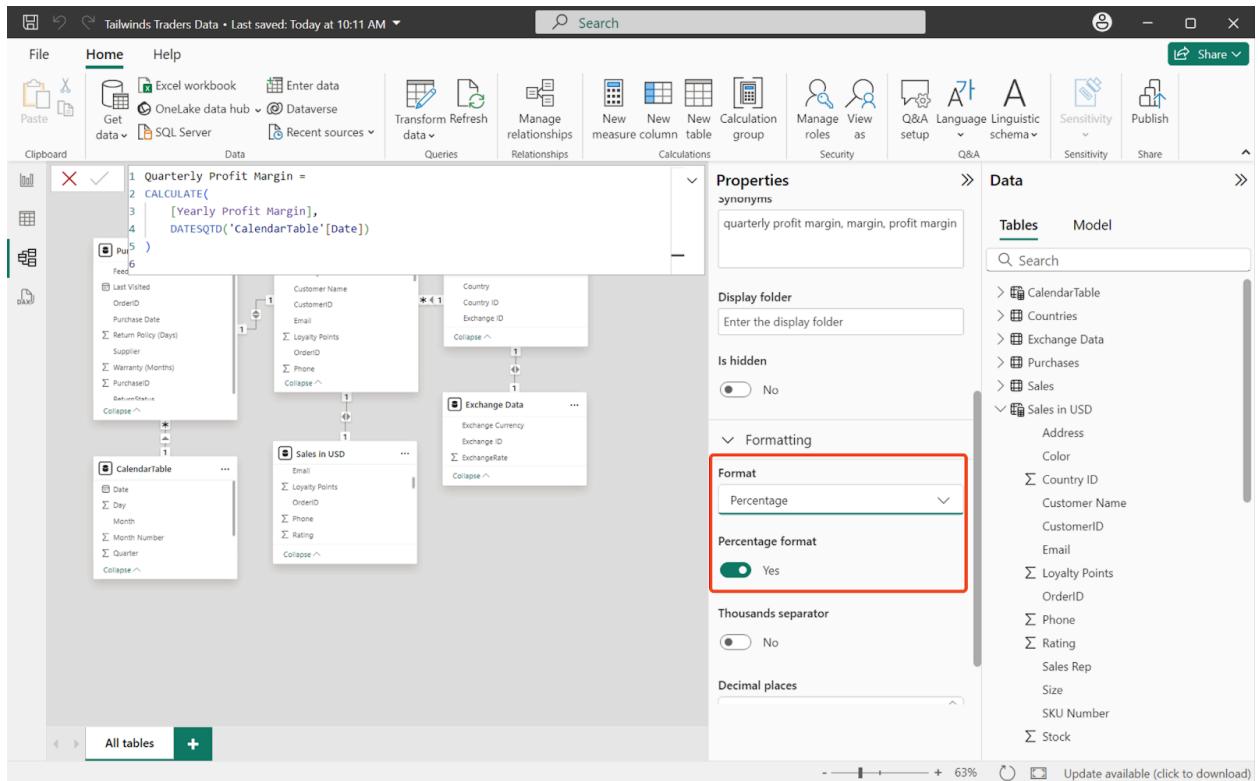
```

Quarterly Profit Margin =
CALCULATE(
    [Yearly Profit Margin],
    DATESQTD('CalendarTable'[Date])
)

```

This calculation provides a quarter-by-quarter view of profit margins by using time intelligence functions. The resulting measure helps identify seasonal trends and supports short-term strategic planning by showing how efficiently the company converts revenue into profit during different quarters of the year.

3. Format the new measure as a Percentage.



### Step 3: Calculate Year-to-Date Profit

1. Right-click on the Sales in USD table in the Fields pane and select New Measure.
2. Create a new measure for the year-to-date profit. You'll need a function aggregating data from the start of the year to the current date. Input the provided DAX formula into the formula bar:

**YTD Profit Margin =**

**TOTALYTD([Yearly Profit Margin],'CalendarTable'[Date])**

This measure tracks profit margins as they build up from the first day of the fiscal year to any point in time, giving a running picture of how efficiently Tailwind Traders is converting revenue into profit. By comparing these running profit margins against previous years or targets, the company can assess if their financial efficiency is improving or declining as the year progresses.

The screenshot shows the Power BI Desktop interface. In the top ribbon, the 'Measure tools' tab is selected. Under the 'Structure' section, a new measure named 'YTD Profit Margin' is being defined with the DAX formula: `1 YTD Profit Margin =  
2 | TOTALYTD([Yearly Profit Margin], 'CalendarTable'[Date])  
3`. A red box highlights this formula. The 'Formatting' and 'Properties' tabs are also visible. On the right side, the 'Visualizations' pane shows various chart types, and the 'Data' pane lists various measures like 'Country Name', 'Exchange Rate', and 'Profit'. The bottom navigation bar shows 'Page 1'.

### 3. Format the new measure as a Percentage.

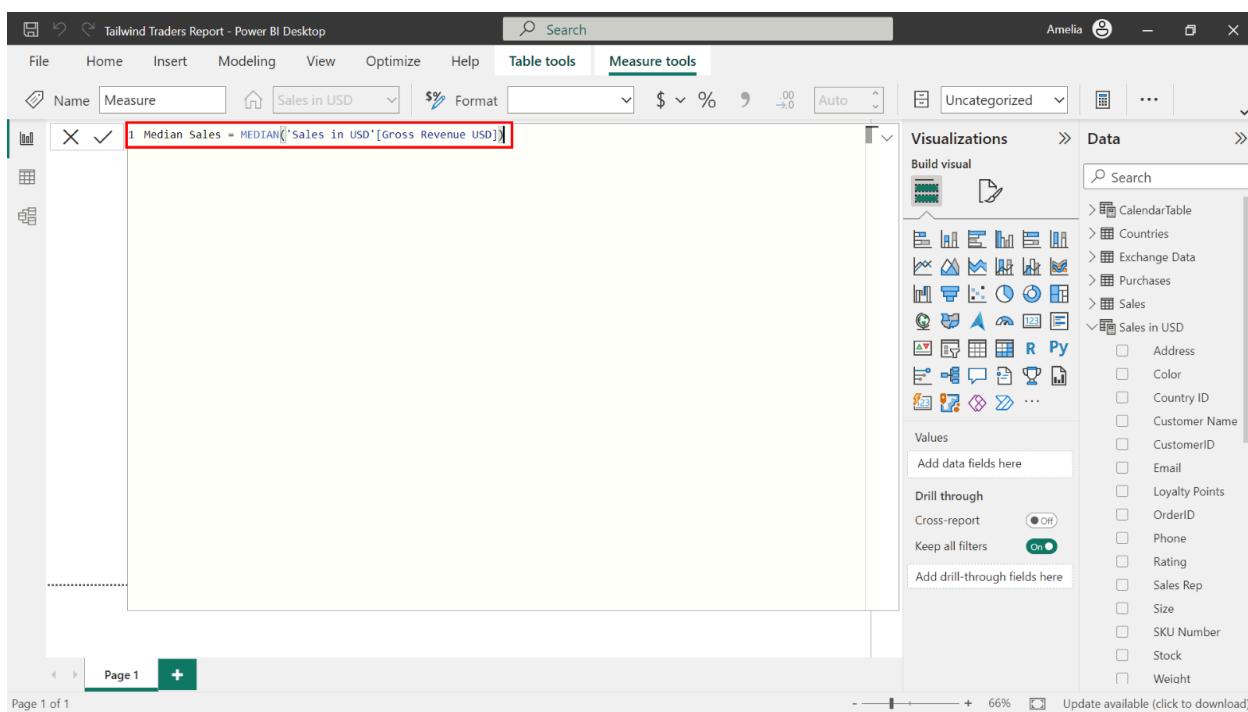
The screenshot shows the Power BI Desktop interface with the 'Properties' pane open for the 'YTD Profit Margin' measure. In the 'Formatting' section, the 'Format' dropdown is set to 'Percentage' and the 'Percentage format' toggle is turned 'Yes'. A red box highlights this configuration. The 'Tables' and 'Model' panes on the right show the data model structure, including tables like 'Sales', 'Purchases', 'Countries', and 'Exchange Data'. The bottom navigation bar shows 'All tables'.

### Step 4: Calculate Median Sales

1. Right-click on the Sales in USD table in the Fields pane and choose New Measure.
2. In the formula bar, create a new measure to represent the median sales. Consider the statistical functions in DAX that can help you find the middle value of gross revenue. Input the provided DAX formula into the formula bar, then press enter.

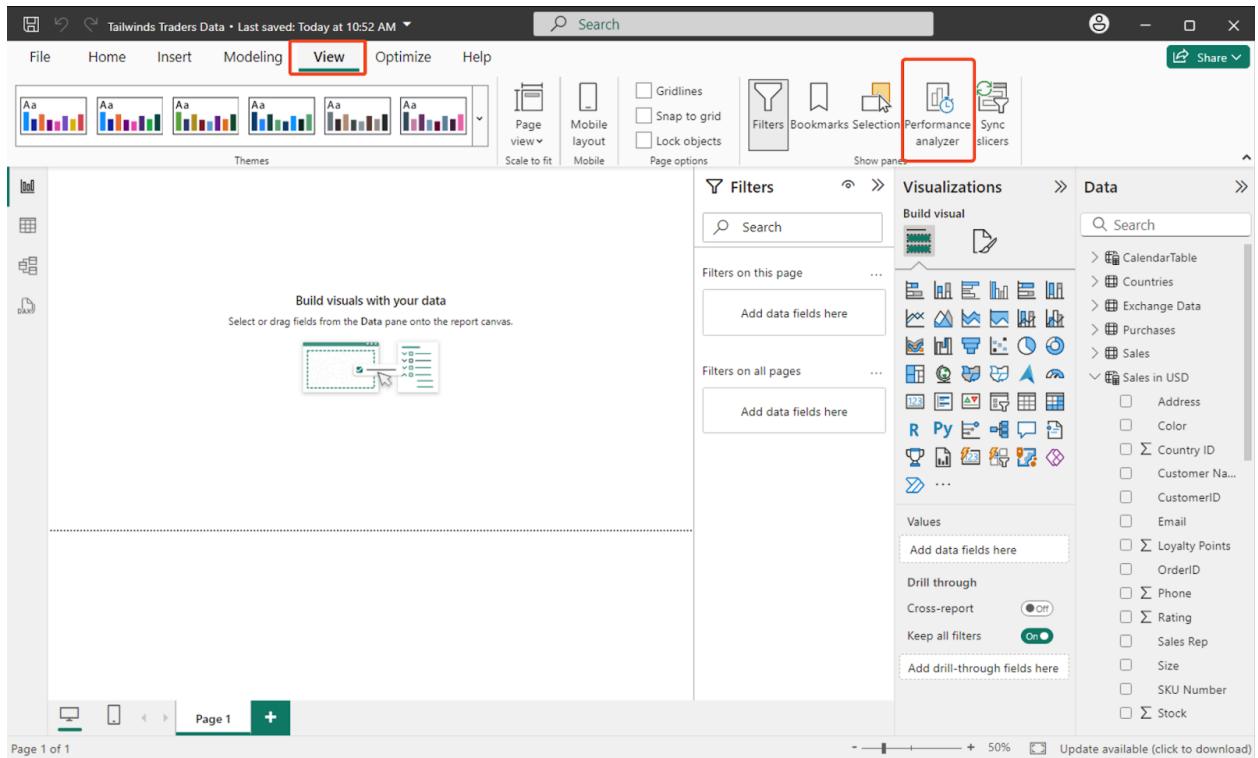
**Median Sales = MEDIAN('Sales in USD'[Gross Revenue USD])**

The median sales value gives us the "middle ground" of all sales - meaning half of all sales are above this number and half are below. By calculating this from the Gross Revenue, we get a clear picture of typical sales performance that isn't skewed by unusually high or low sales days. This is particularly useful for Tailwind Traders to understand their standard sales level without being distracted by occasional outliers.

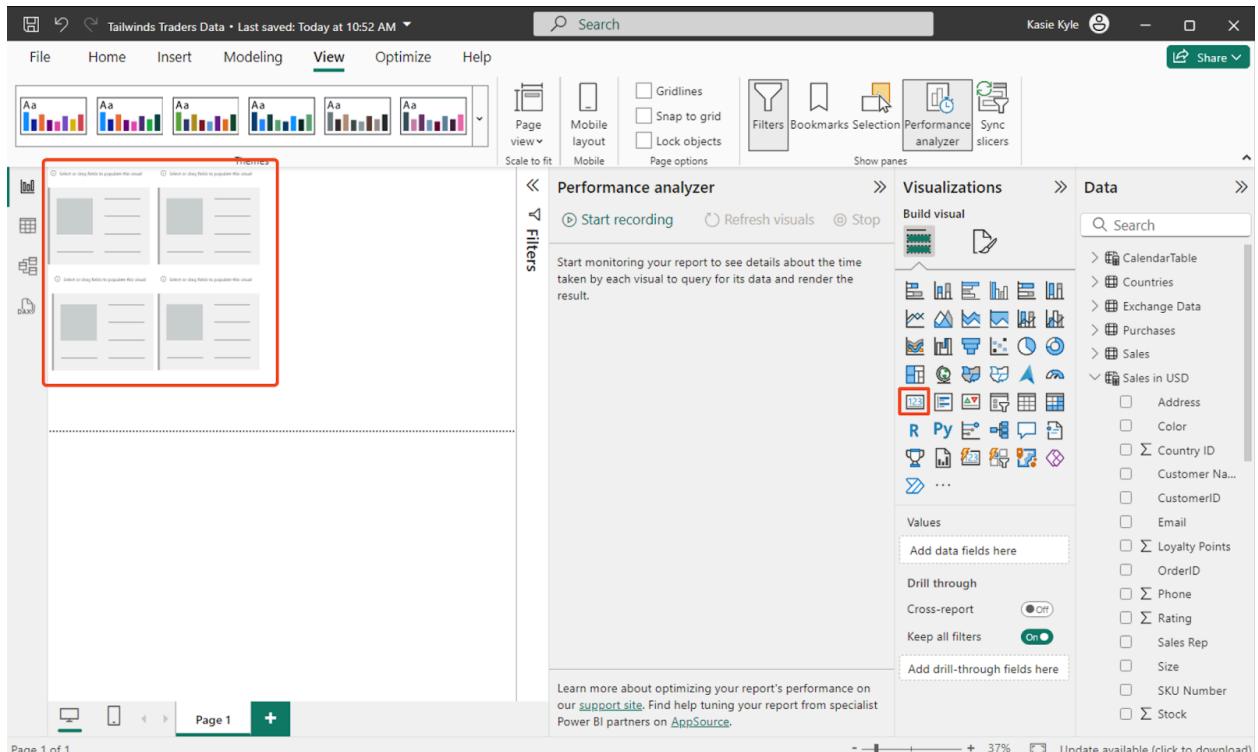


## Step 5: Access the Performance Analyzer

1. Navigate to the View Tab
2. Select Performance Analyzer



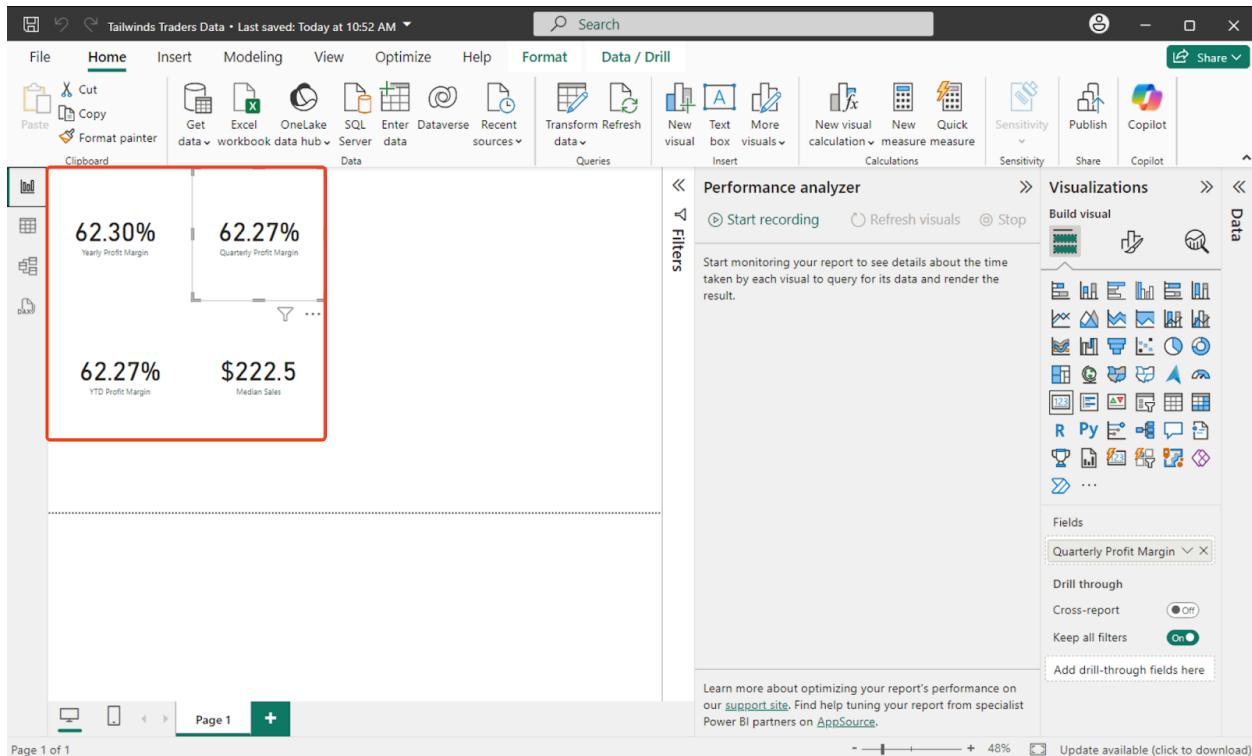
3. From the Visualizations pane, select the Card icon to create an empty Card visual on your canvas. Then create three more Card visuals, so you have four in total. You'll use these to display your key metrics.



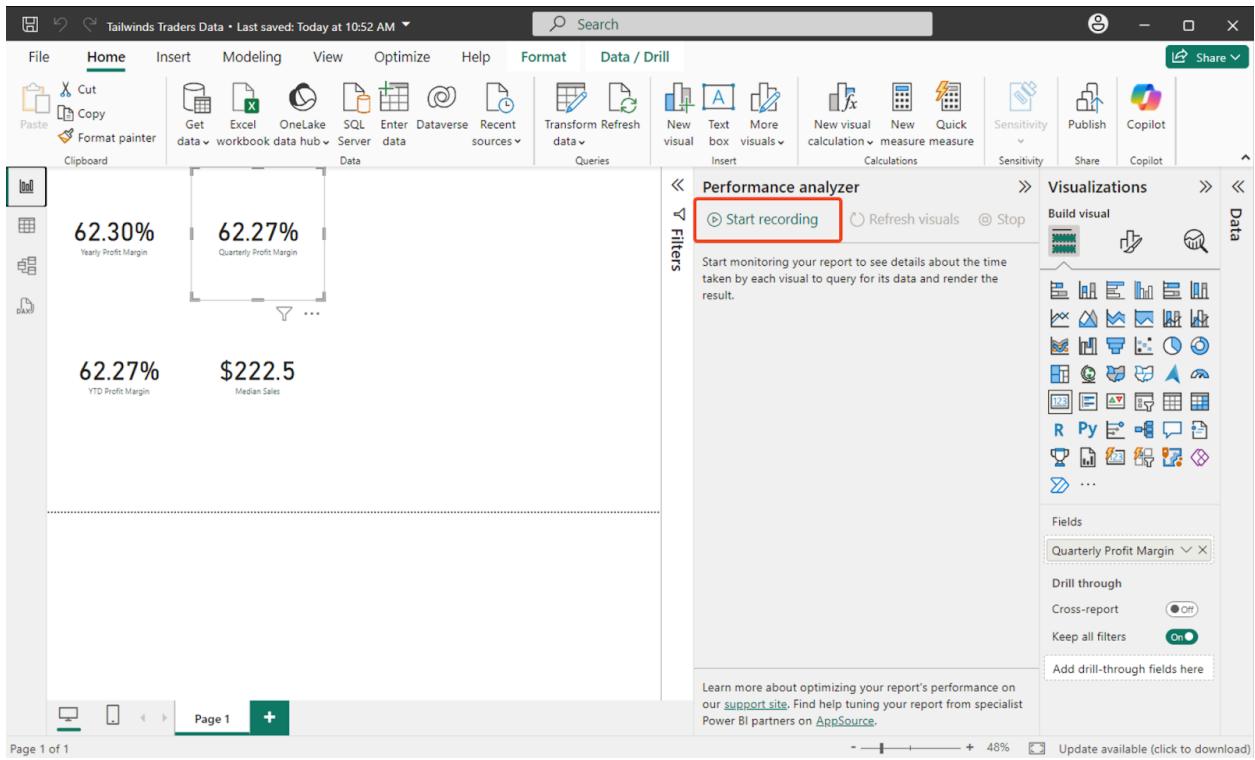
#### 4. For each Card visual:

- Find the Sales in USD table in the Fields pane
- Drag one of these measures to the Fields well in the Visualizations pane:
  - Yearly Profit Margin
  - Quarterly Profit Margin
  - YTD Profit Margin
  - Median Sales

Your report should look similar to the following screenshot. Note that since the sample data only contains one quarter of data, your Yearly, Quarterly, and YTD Profit Margins will show (nearly) the same values. In a real-world scenario with multiple quarters of data, these metrics would show different values as you progress through the year.



#### 5. Begin recording the performance of the card visuals using the Performance Analyzer's recording feature.



6. Refresh your reports to test their performance. You can refresh a report using two methods:

- Select the Refresh button in the Home tab of the ribbon interface
- Interact directly with the report.

6. Select the plus (+) symbol next to each Card to open up the details. As you interact with the report while the Performance Analyzer is recording, it tracks and documents the time taken to load each visual item. Select the plus (+) symbol next to each Card to open up the details.

The screenshot shows a Power BI report titled "Tailwinds Traders Data" last saved at 10:52 AM. The report contains three cards displaying "Yearly Profit Margin" (62.30%), "Quarterly Profit Margin" (62.27%), and "YTD Profit Margin" (62.27%). On the right side, the "Performance analyzer" pane is open, showing a list of visual items and their DAX query times. A red border highlights the list of visual items:

Name	Duration (ms)	
Recording started (12/12/2024 ...)	-	
Changed the model	-	
Card	1842	
DAX query	112	
Visual display	24	
Other	1707	
Copy query	1911	
Run in DAX Query View	248	
Card	35	
DAX query	1628	
Visual display	Other	1913
Copy query	Run in DAX Query View	1903
Card	1913	
Card	1903	

Below the table, a note reads: "Learn more about optimizing your report's performance on our [support site](#). Find help tuning your report from specialist Power BI partners on [AppSource](#)".

7. Observe the list of all visual items in your report and their respective load times. Ensure the DAX query time of visual items is < 200ms and note any slow-loading visuals.

Tip: To easily match measures with their corresponding performance data, click each Card title ("Card") in the Performance Analyzer. As you select each one, a border will appear around its matching Card visual on your canvas.

The screenshot shows a Power BI report titled "Tailwinds Traders Data". The report contains three card visualizations: "Yearly Profit Margin" (62.30%), "Quarterly Profit Margin" (62.27%), and "Median Sales" (\$222.5). On the right side, the "Performance analyzer" tool is open, displaying a table of operations and their durations. The "DAX query" row for each card visualization is highlighted with a red box.

Name	Duration (ms)
Card	1842
DAX query	112
Visual display	24
Other	1707
Copy query	
Run in DAX Query View	
Card	1911
DAX query	248
Visual display	35
Other	1628
Copy query	
Run in DAX Query View	
Card	1913
DAX query	76
Visual display	62
Other	1775
Copy query	

## 8. Select Stop and remove all Card visuals, resulting in a blank Canvas.

Select Stop and remove all Card visuals upon completion, resulting in a blank Canvas.

The screenshot shows a Power BI report titled "Tailwinds Traders Data". The report contains three card visualizations: "Yearly Profit Margin" (62.30%), "Quarterly Profit Margin" (62.27%), and "Median Sales" (\$222.5). On the right side, the "Performance analyzer" tool is open, displaying a table of operations and their durations. The "DAX query" row for each card visualization is highlighted with a red box. The "Stop" button in the Performance analyzer sidebar is also highlighted with a red box.

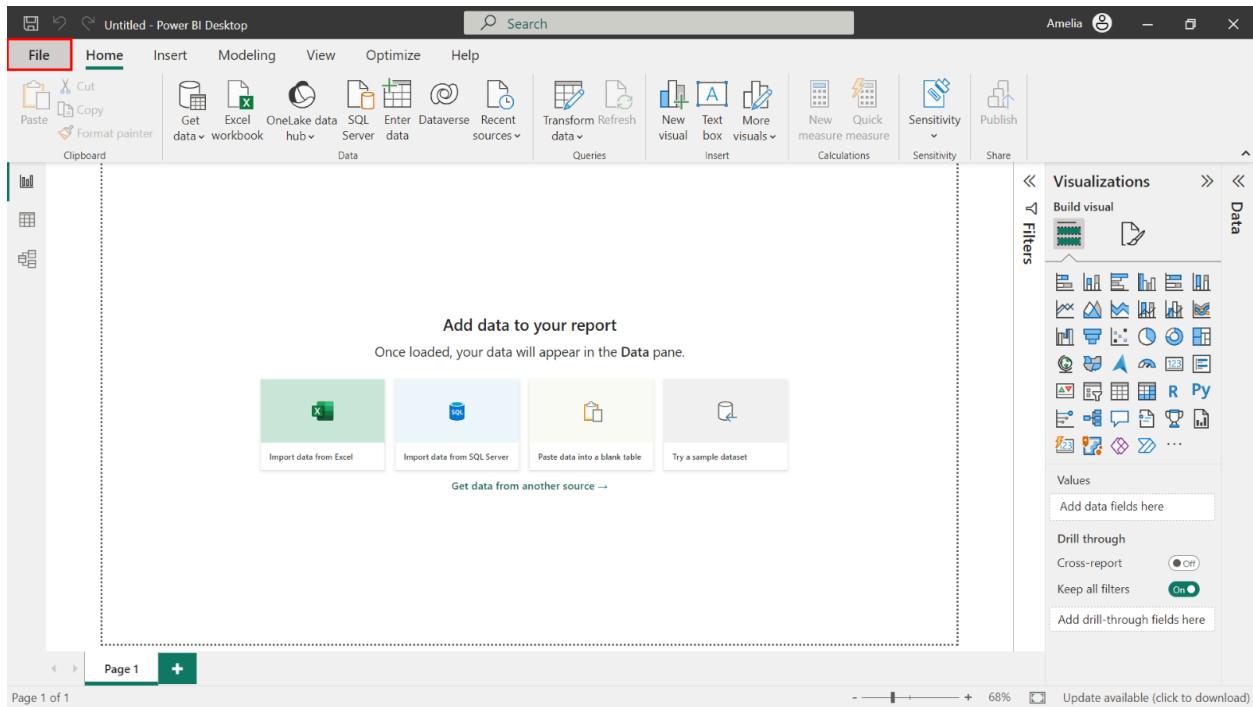
Name	Duration (ms)
Card	1842
DAX query	112
Visual display	24
Other	1707
Copy query	
Run in DAX Query View	
Card	1911
DAX query	248
Visual display	35
Other	1628
Copy query	
Run in DAX Query View	
Card	1913
DAX query	76
Visual display	62
Other	1775
Copy query	

## Exercise 2: Create a Sales report

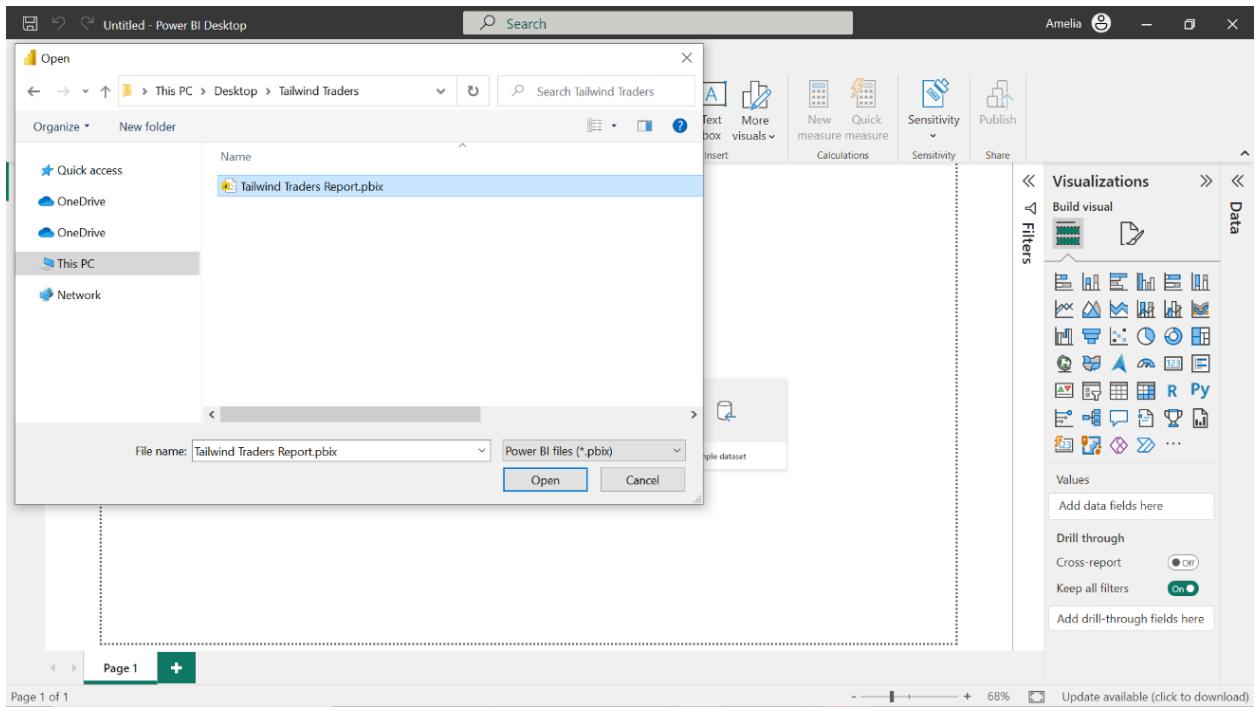
## Step 1: Create a Sales Overview report

Open the Tailwind Traders Report.pbix Power BI file.

1. OpenPower BI Desktop
2. Select the File menu in the top left corner.



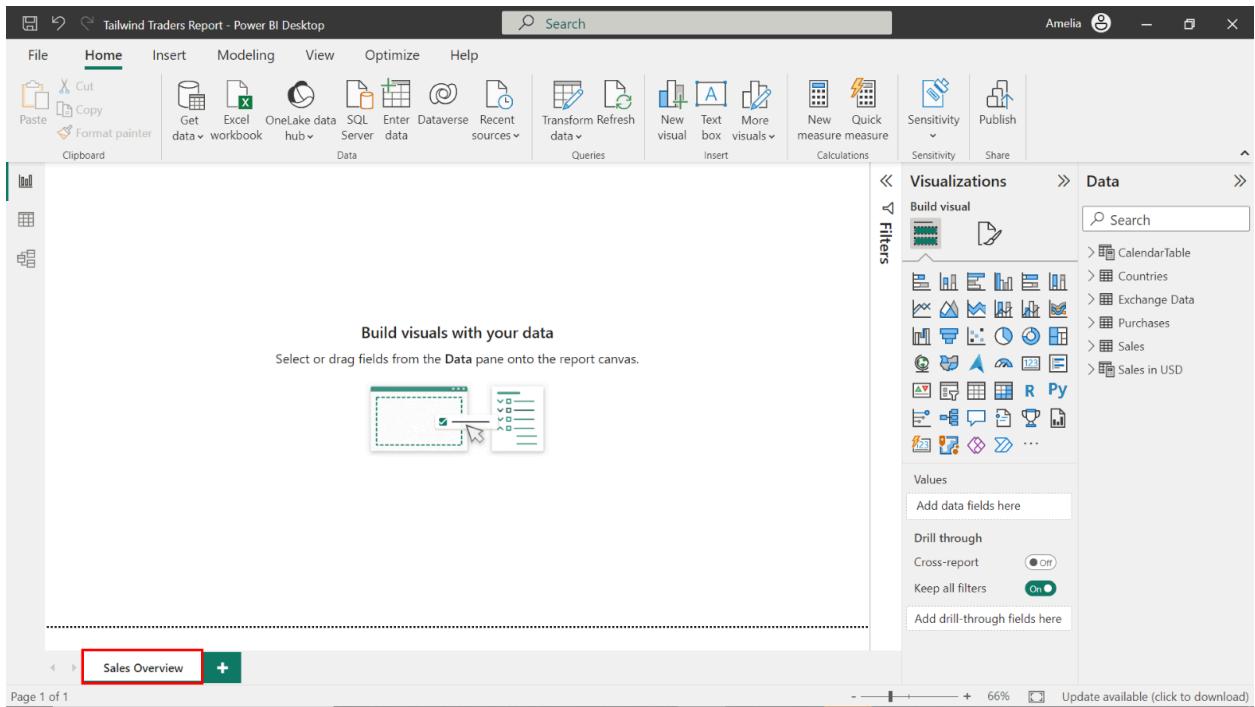
3. Navigate to the location where your Tailwind Traders Report.pbix file is saved.



4. Select the Tailwind Traders Report.pbix file and then select Open.
5. Open the Report view.
6. In the report, right click the page name, and select Rename Page.

The screenshot shows the Power BI Desktop application window titled "Tailwind Traders Report - Power BI Desktop". The "Home" tab is selected in the ribbon. On the left, there's a navigation pane with icons for Home, Insert, Modeling, View, Optimize, and Help. The main area displays a report canvas with a single page labeled "Page 1". A context menu is open over the "Page 1" tab, with the "Rename Page" option highlighted by a red box. To the right of the canvas, there's a "Visualizations" pane showing various chart and table icons, and a "Data" pane listing data sources like "Sales in USD", "Sales", "Purchases", "Exchange Data", "Countries", and "Calendartable". The status bar at the bottom indicates "Page 1 of 1" and "66%".

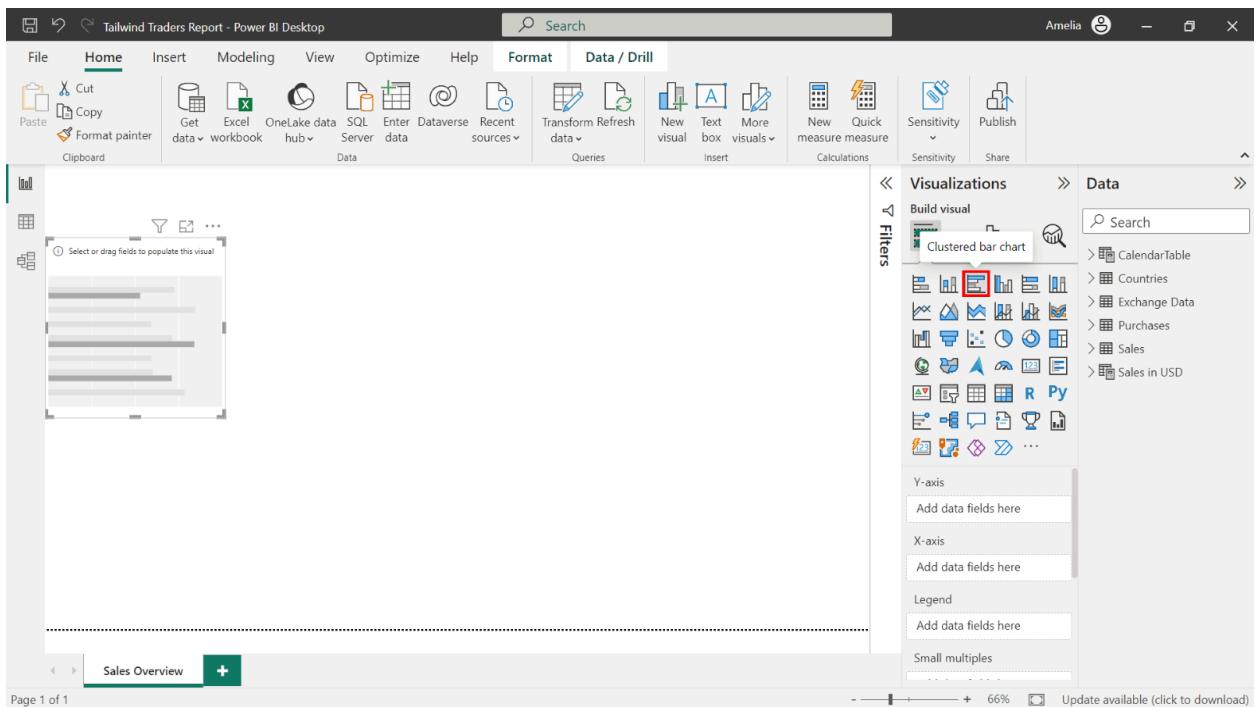
7. Rename the page to Sales Overview.



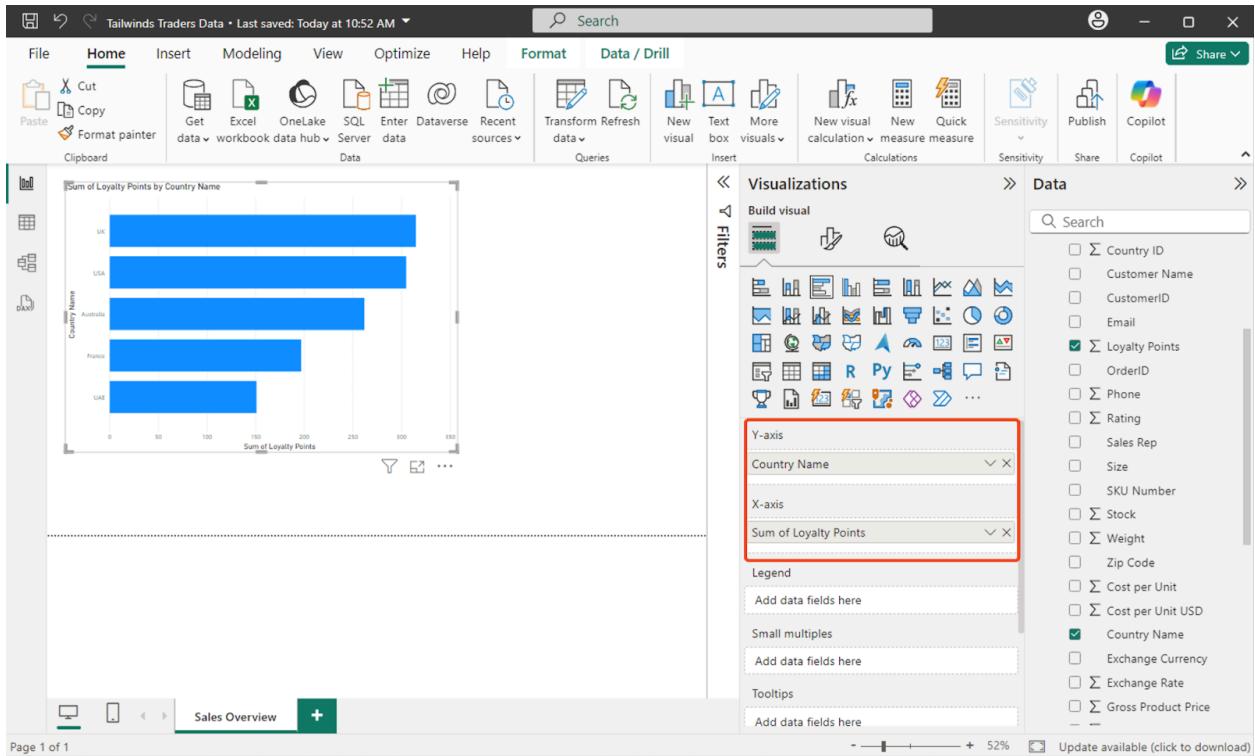
## Step 2: Create a bar chart for loyalty points by country

Create a clustered bar chart that visualizes loyalty points by country using data from the Sales in USD table.

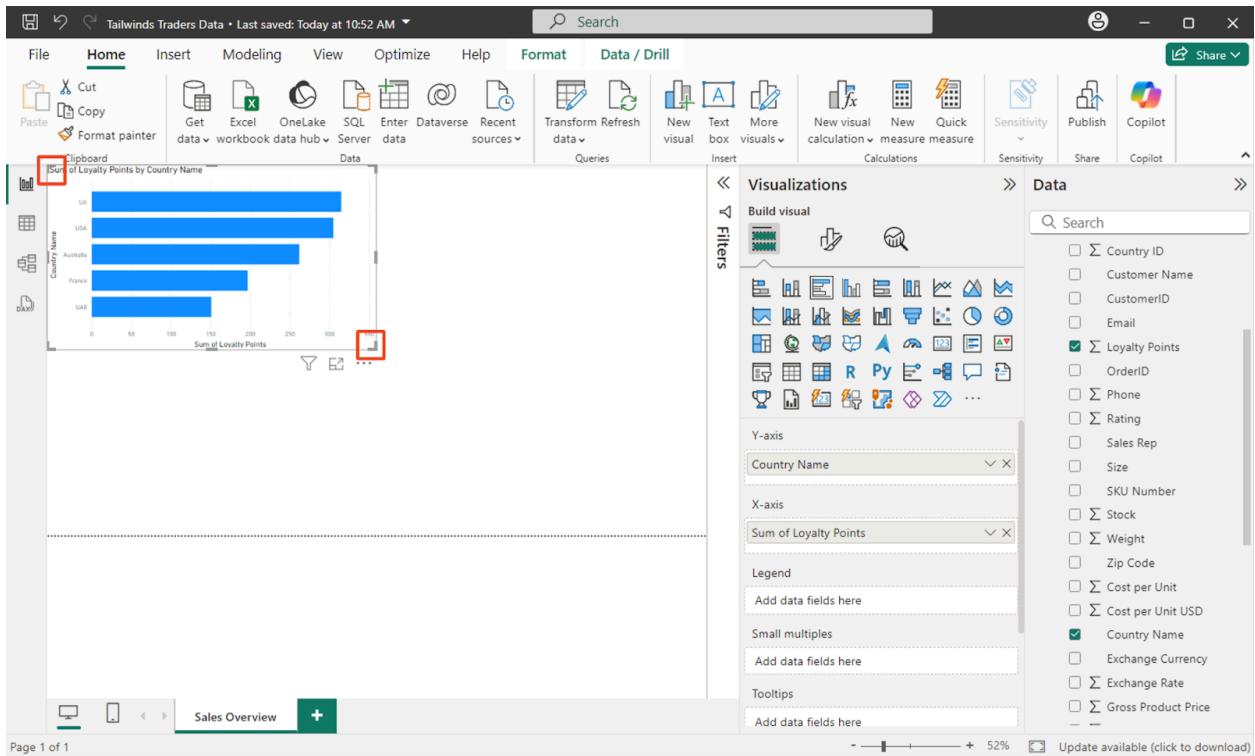
### 1. From the Visualizations pane, select the clustered bar chart



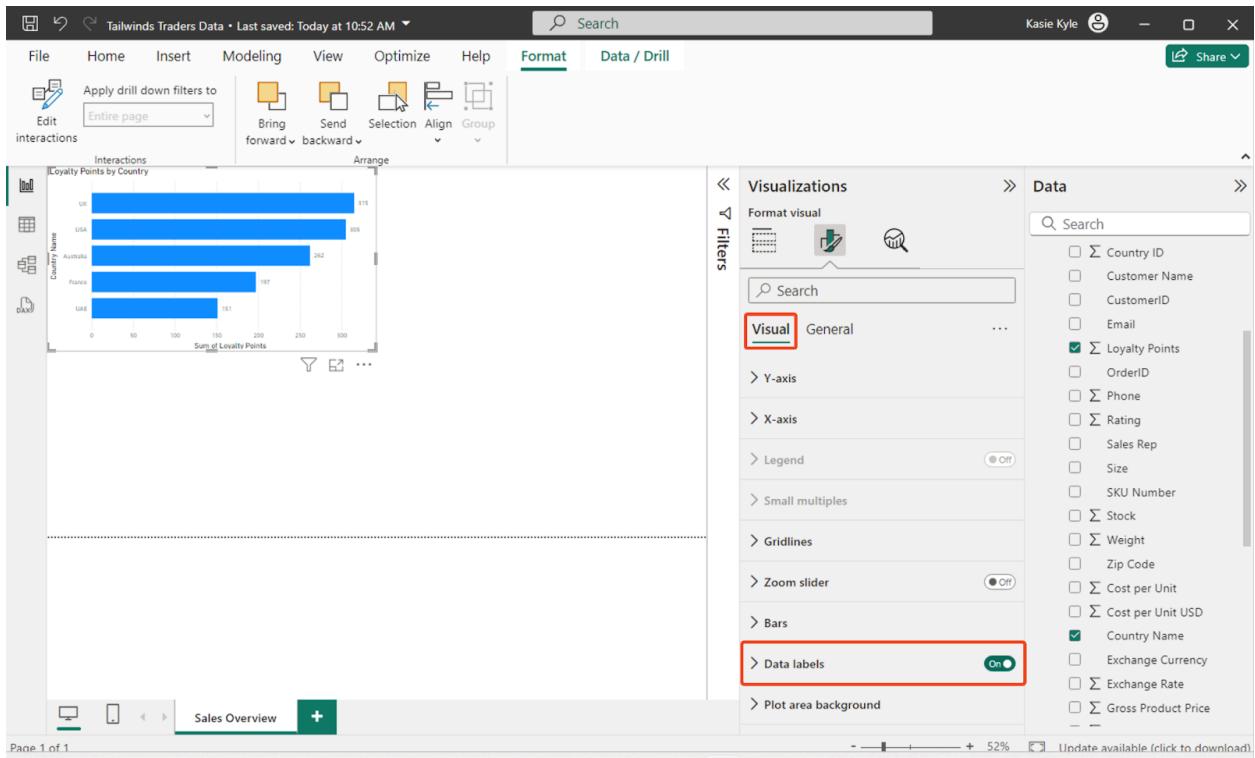
2. Open the Data Fields pane.
3. Select the Sales in USD table to expand it and view its fields.
4. Add data from the Sales in USD table:
  - Drag Country Name to the Y-axis field
  - Drag Loyalty Points to the X-axis field



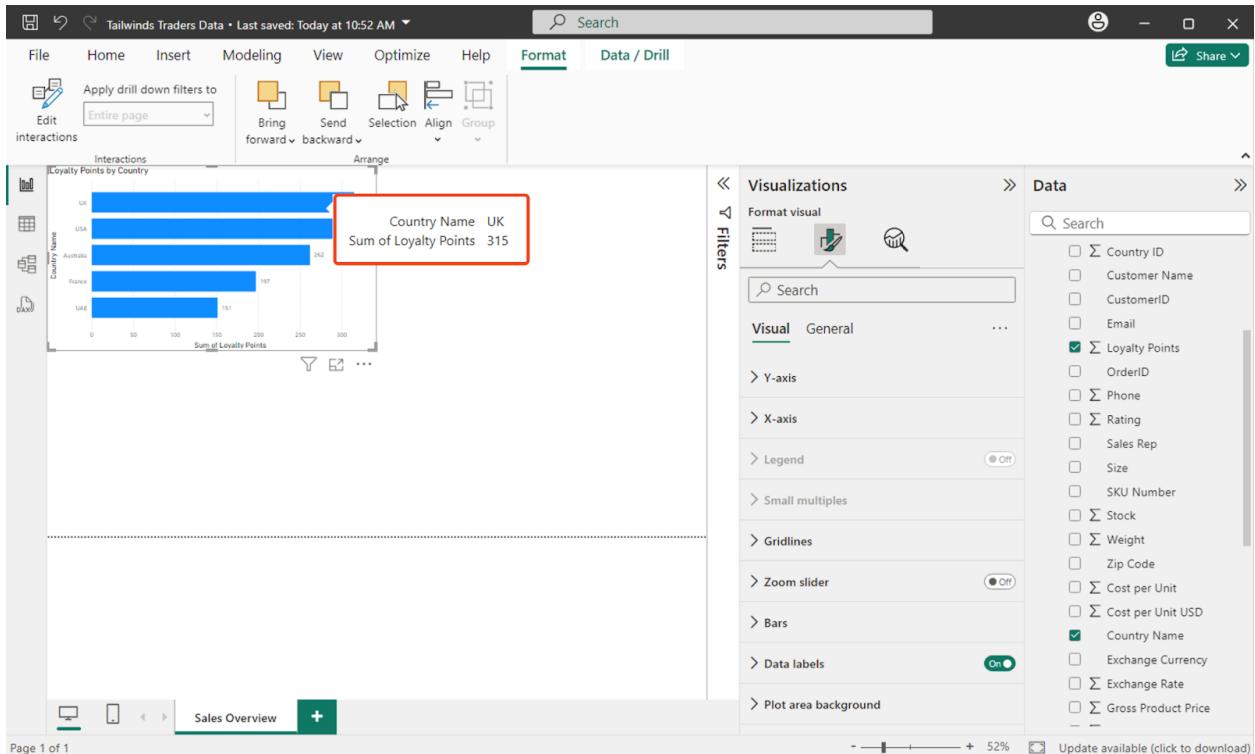
5. Configure the chart. To start, resize and position the chart to the left side of the canvas, by selecting the edges of the chart on your canvas.



6. Set the title. In the Visualizations pane, select the Format tab (paint roller icon). Select General, then expand the Title card. Change the text to "Loyalty Points by Country".
7. Enable data labels. In the Format tab, select Visual. Then in the Data labels card, set the Show toggle to On.



8. Note the country with the highest loyalty points value. The UK leads the chart with 315 loyalty points.



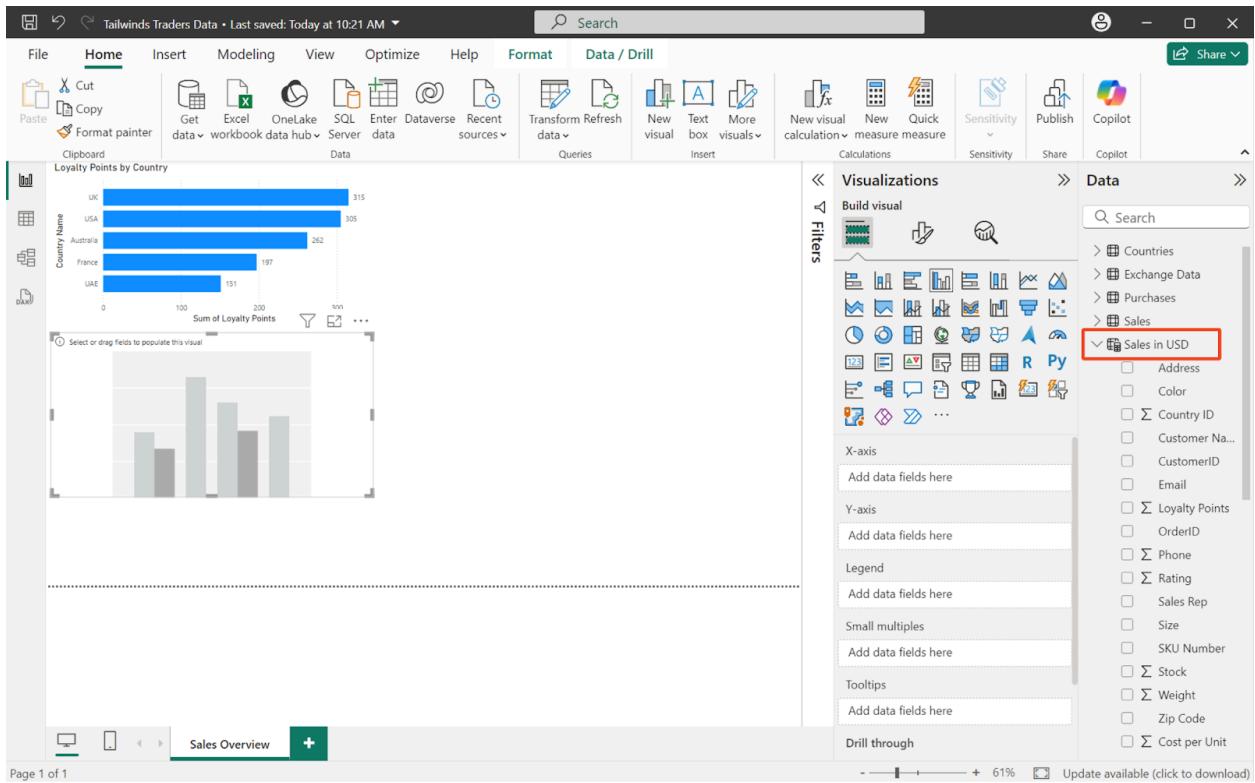
Step 3: Create a column chart for Quantity Sold by Product

1. From the Visualizations pane, select the clustered column chart

The screenshot shows the Microsoft Power BI desktop interface. On the left, there is a visual titled "Loyalty Points by Country" which is a clustered column chart. The chart has "Country Name" on the Y-axis and "Sum of Loyalty Points" on the X-axis. The data points are: UK (315), USA (305), Australia (262), France (197), and UAE (151). In the center, the ribbon menu is visible with options like File, Home, Insert, Modeling, View, Optimize, Help, Data, Queries, Insert, Calculations, Sensitivity, Share, Copilot, and Copilot. On the right, the "Visualizations" pane is open, showing various chart types. A red box highlights the "Clustered column chart" icon in the list. Below the chart types, there are sections for "Filters", "Values", "Drill through", and "Cross-report". The "Data" pane on the far right lists various data fields such as CustomerID, Email, Loyalty Points, OrderID, Phone, Rating, Sales Rep, Size, SKU Number, Stock, Weight, Zip Code, Cost per Unit, Exchange Rate, Gross Product, Gross Revenue, Median Sales, and Net Revenue.

2. Open the Data Fields pane.

3. Select the Sales in USD table to expand it and view its fields.



#### 4. Add data from the Sales in USD table:

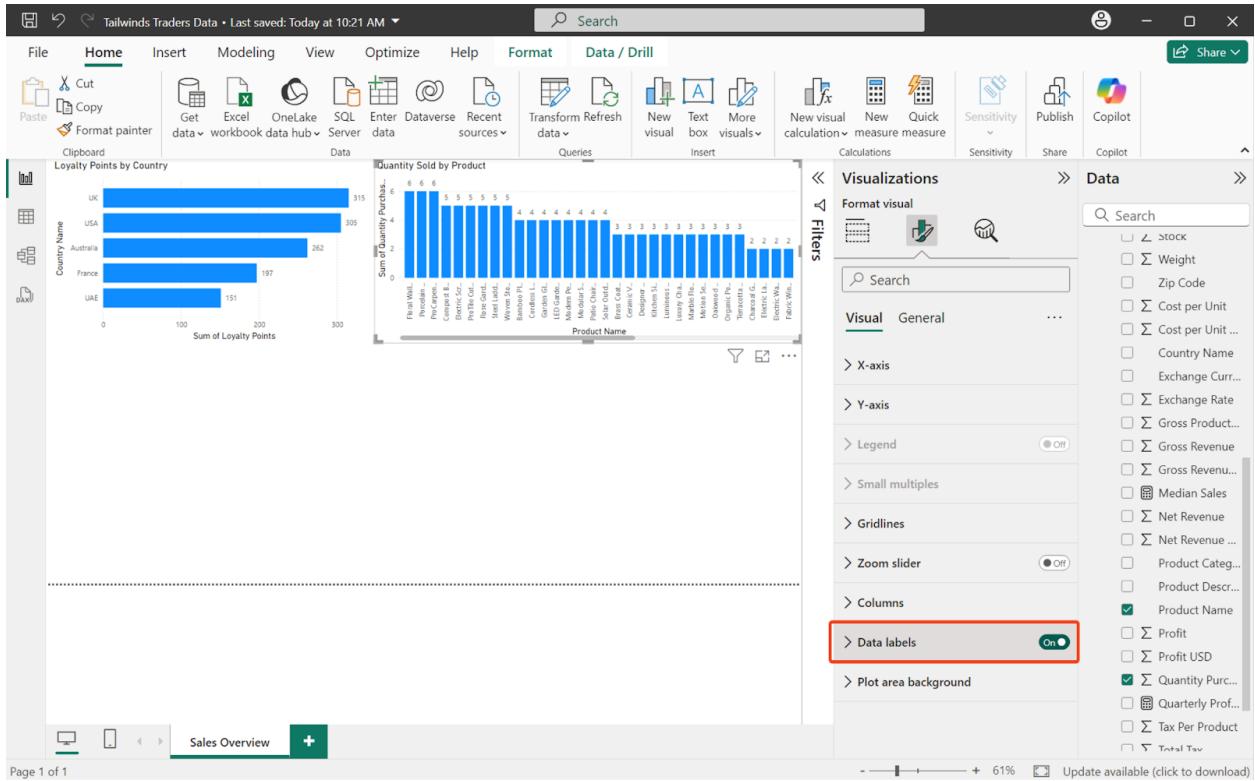
- Drag Product to the X-axis field
- Drag Quantity to the Y-axis field

#### 5. Configure the chart. To start, resize and position the chart to the right of the Loyalty Points chart.

##### 6. Set the title. In the Visualizations pane, select the Format tab (paint roller icon).

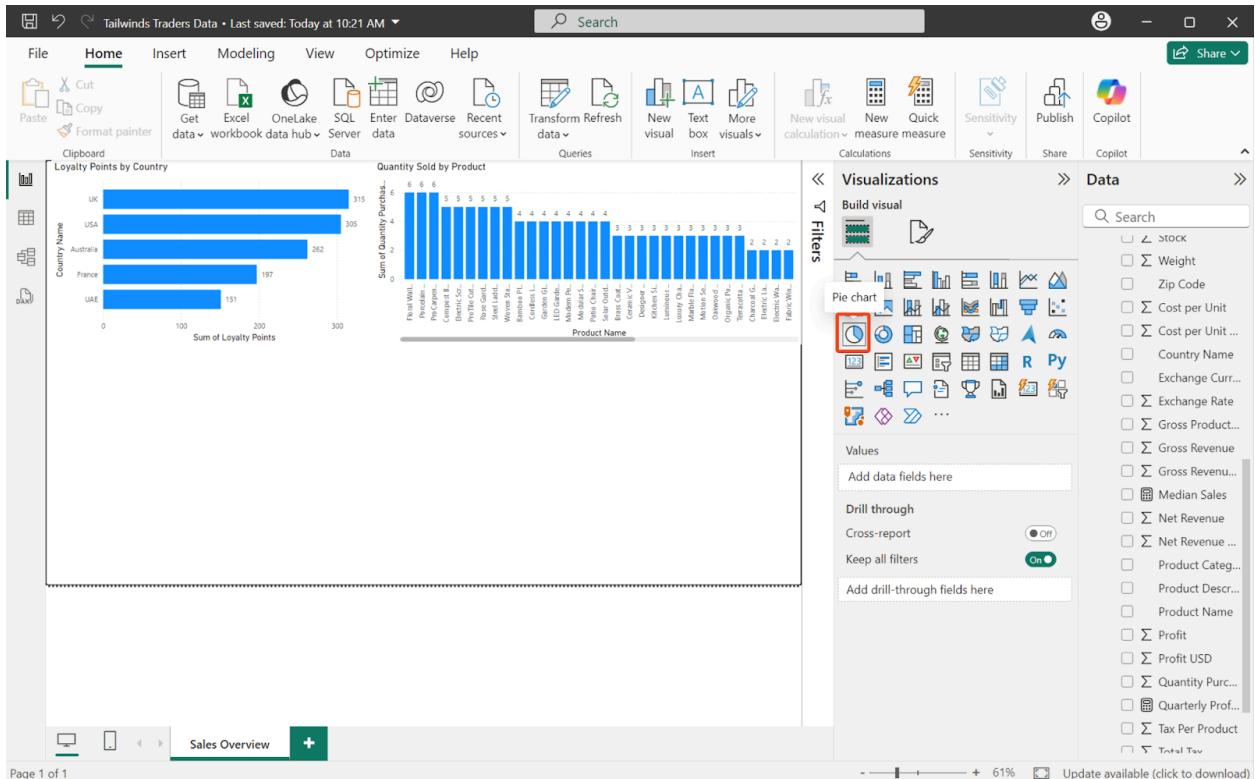
Select General, then expand the Title card. Change the text to "Quantity Sold by Product."

7. Enable data labels. In the Format tab, select Visual, then expand the Data labels card. Set the Show toggle to On.



## Step 4: Create a pie chart for median sales distribution by country

1. From the Visualizations pane, select the pie chart



2. Open the Data Fields pane.

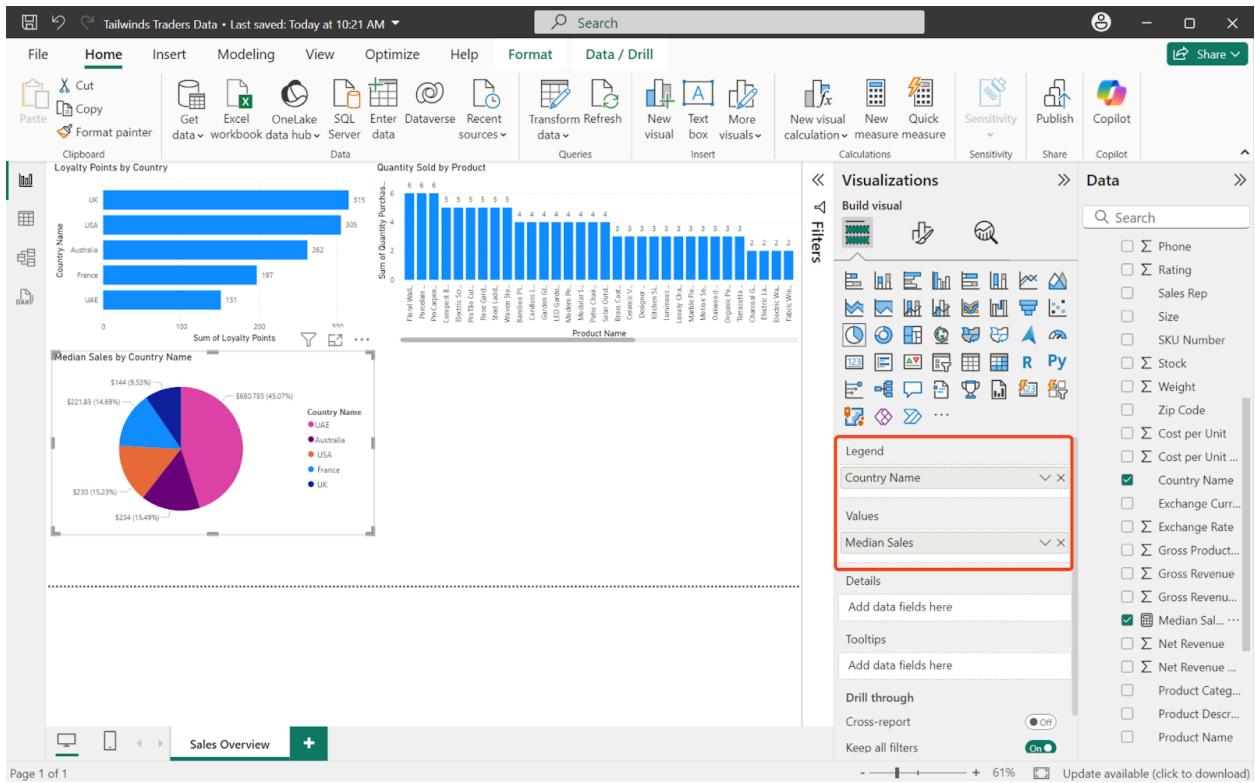
3. Select the Sales in USD table to expand it and view its fields.

The screenshot shows the Microsoft Power BI interface. At the top, the ribbon includes Home, Modeling, View, Optimize, Help, Format, and Data / Drill. The Data tab is selected. Below the ribbon, there are several icons for data management: Paste, Cut, Copy, Format painter, Get data (with options for Excel, OneLake, and SQL Server), Enter data, Recent sources, Transform data (with options for Refresh, Queries, New visual, Text box, More visuals, Insert, New visual calculation, New measure, Quick measure, Sensitivity, Publish, Share, Copilot, and Calculations). On the left, there are two visualizations: a bar chart titled "Loyalty Points by Country" showing points for UK, USA, Australia, France, and UAE, and a bar chart titled "Quantity Sold by Product" showing quantities for various products like Felt NOLI, Pendleton, Pic Capes, Cappie & Co., etc. The right side features the "Visualizations" pane with a grid of visualization icons and the "Data" pane which is expanded to show the "Sales in USD" table. The "Sales in USD" table contains the following fields:

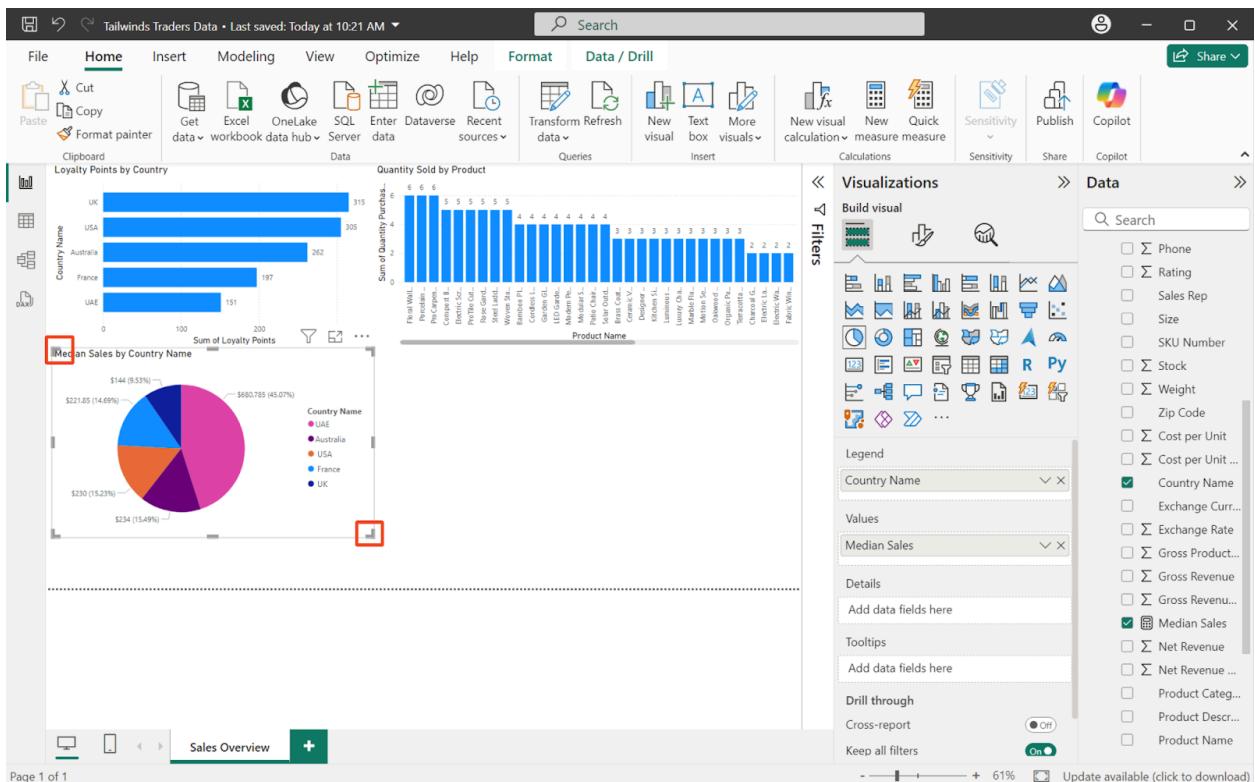
Field	Type
Address	Text
Color	Text
Country ID	Text
Customer Name	Text
Customer ID	Text
Email	Text
Loyalty Points	Text
Order ID	Text
Phone	Text
Rating	Text
Sales Rep	Text
Size	Text
SKU Number	Text
Stock	Text
Weight	Text
Zip Code	Text

3. Add data from the Sales in USD table:

- Drag Country to the Legend field
- Drag Median Sales to the Values field



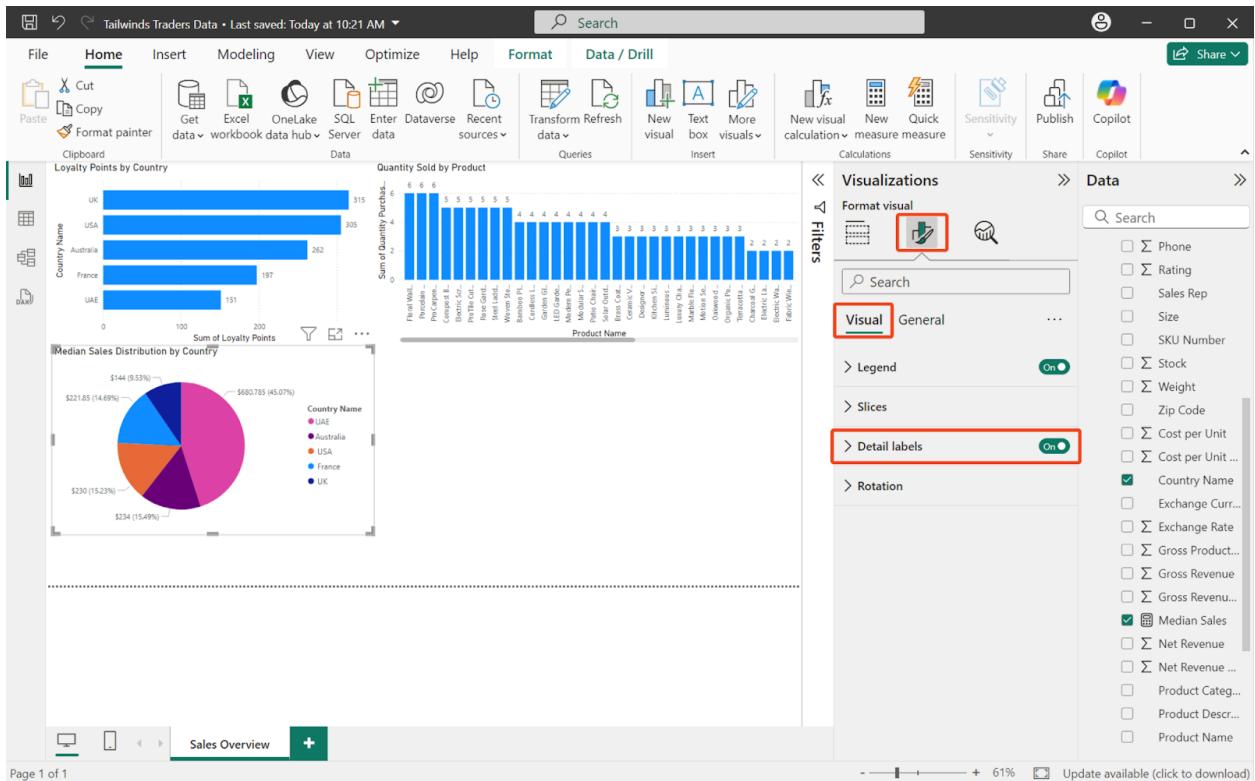
4. Configure the chart. To start, resize and position the chart below the Loyalty Points chart.



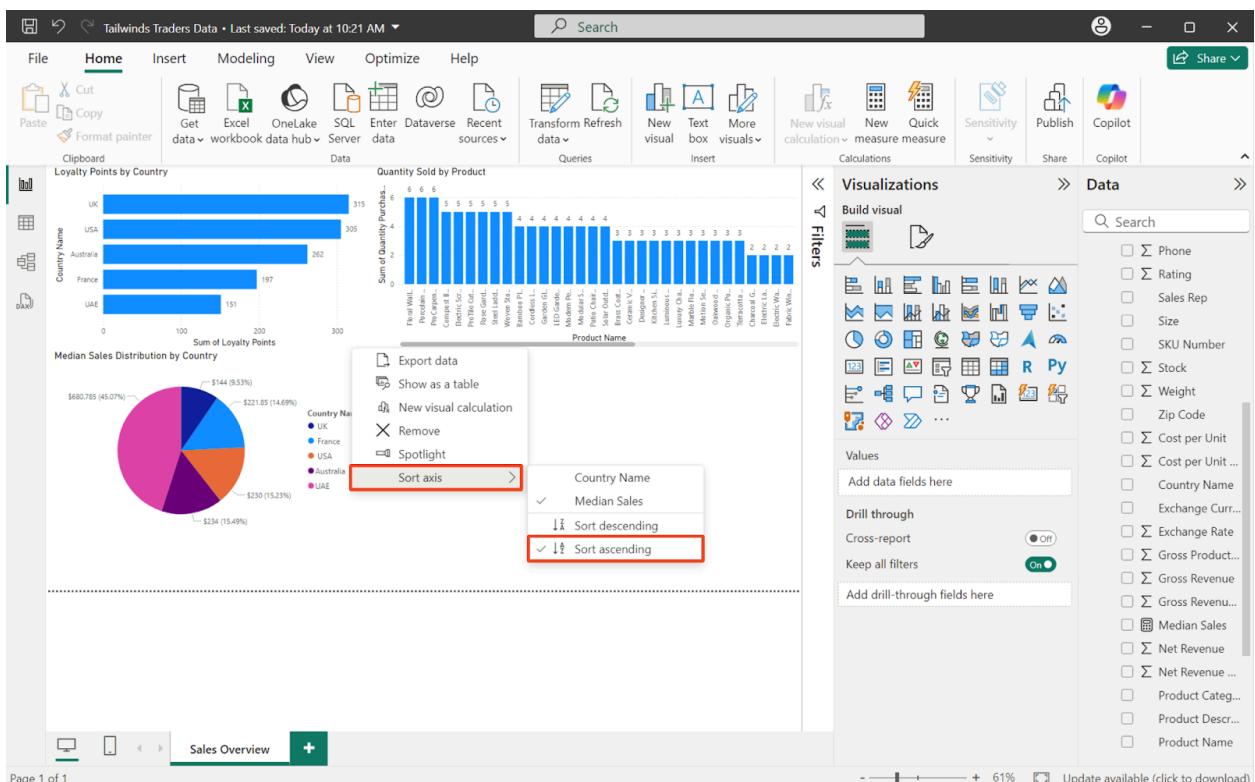
5. Set the title. In the Visualizations pane, select the Format tab (paint roller icon). Select General, then expand the Title card. Change the text to "Median Sales Distribution by Country."

The screenshot shows the Microsoft Power BI desktop interface. On the left, there are two visualizations: a bar chart titled "Loyalty Points by Country" and a pie chart titled "Median Sales Distribution by Country". The bar chart shows Loyalty Points for UK, USA, Australia, France, and UAE. The pie chart shows the distribution of Median Sales by Country. On the right, the "Visualizations" pane is open, showing a list of visualizations and filters. The "Format" tab is selected in the ribbon. In the "Title" section of the "General" card, the text "Median Sales Distribution by Cou" is highlighted with a red box, indicating it is being edited.

6. Set detailed labels. In the Format tab, select Visual. In Detail labels set the toggle to On.



7. Sort the data in ascending order, by selecting the ellipses located at the top right corner of the visualization. Select the Sort Axis dropdown, then select Sort ascending.



## Step 5: Create a line chart for median sales over time

1. From the Visualizations pane, select the line chart.
2. Open the Data Fields pane.
3. Select the Sales in USD table to expand it and view its fields. Also select the CalendarTable to expand it and view its fields.

The screenshot shows the Power BI desktop interface with three visualizations on the left:

- A horizontal bar chart titled "Loyalty Points by Country" showing points for UK, USA, Australia, France, and UAE.
- A vertical bar chart titled "Quantity Sold by Product" showing the sum of quantity purchases for various products.
- A pie chart titled "Median Sales Distribution by Country" showing the distribution of median sales across five countries.

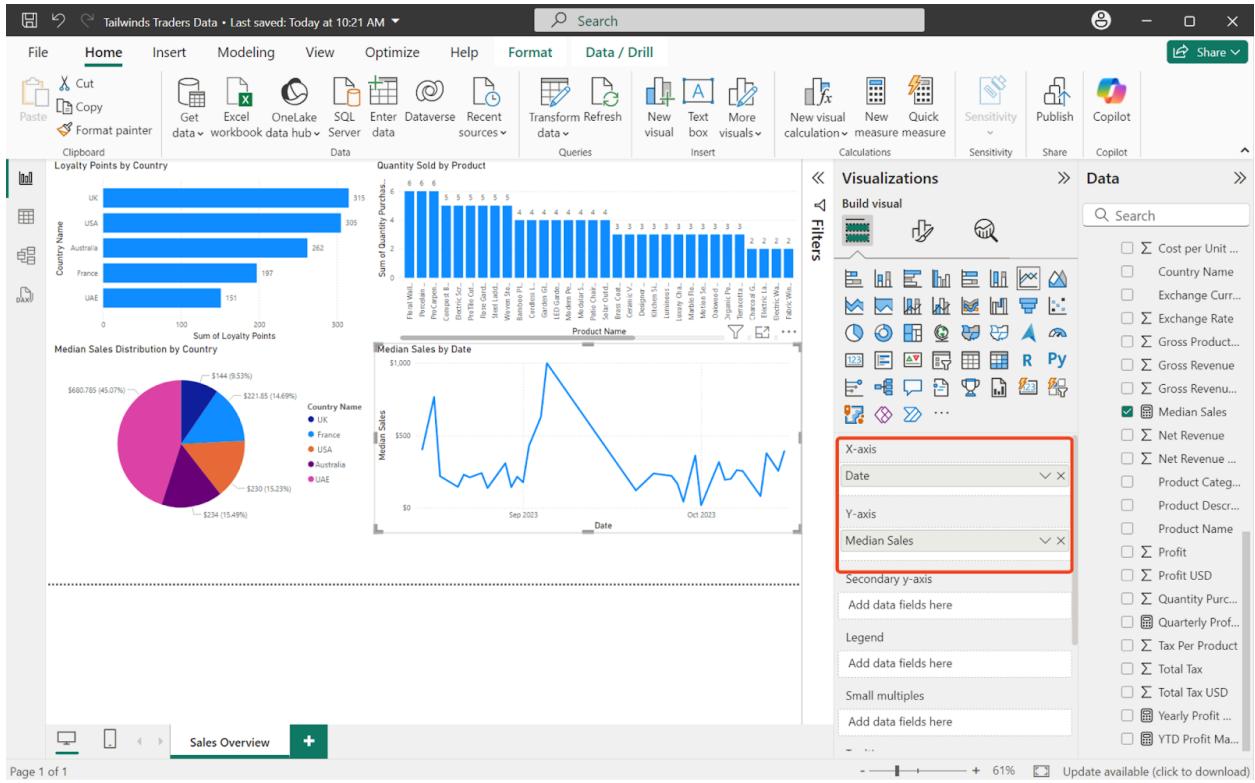
The "Data Fields" pane on the right is expanded, showing the following items:

- Visualizations: Build visual, Filters, and various chart icons.
- Data: A search bar with results for "CalendarTable" and "Sales in USD".
- Filters: X-axis, Y-axis, Secondary y-axis, Legend, Small multiples, and Tooltips sections.

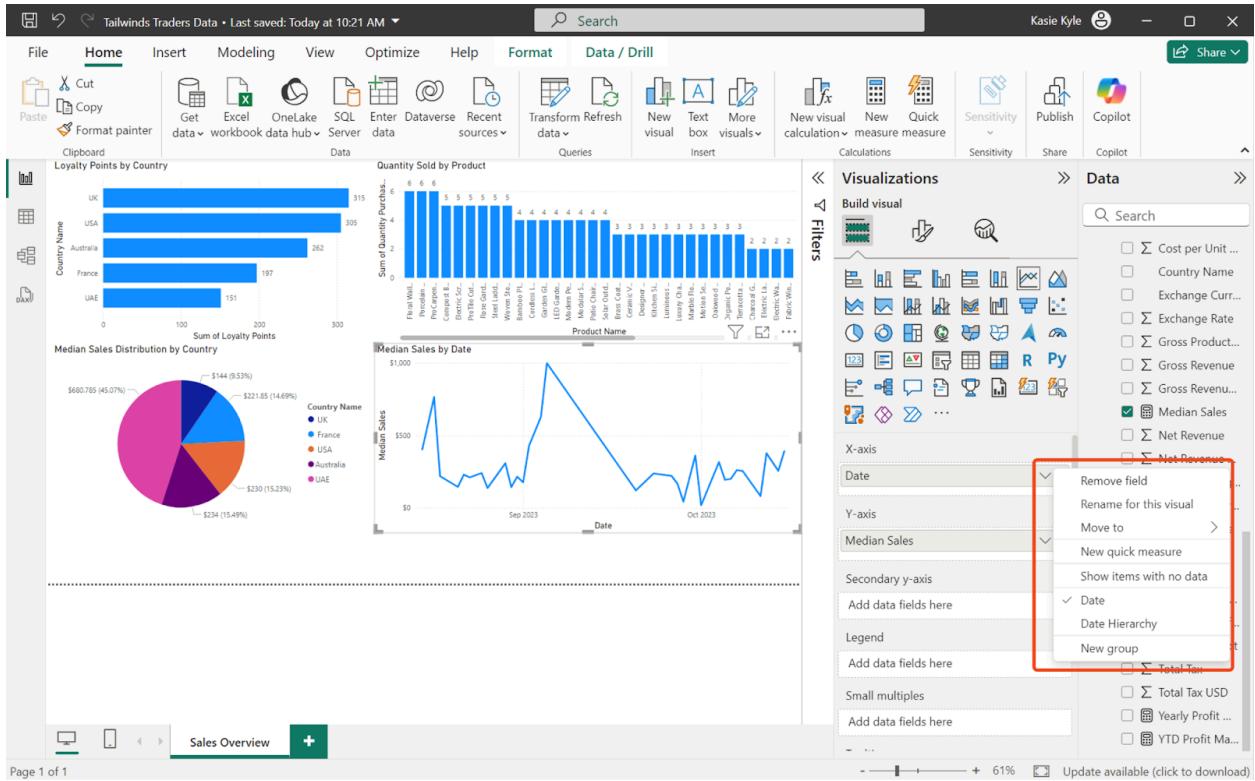
Red boxes highlight the "CalendarTable" and "Sales in USD" entries in the Data pane.

4. Add data from the Sales in USD and CalendarTable tables:

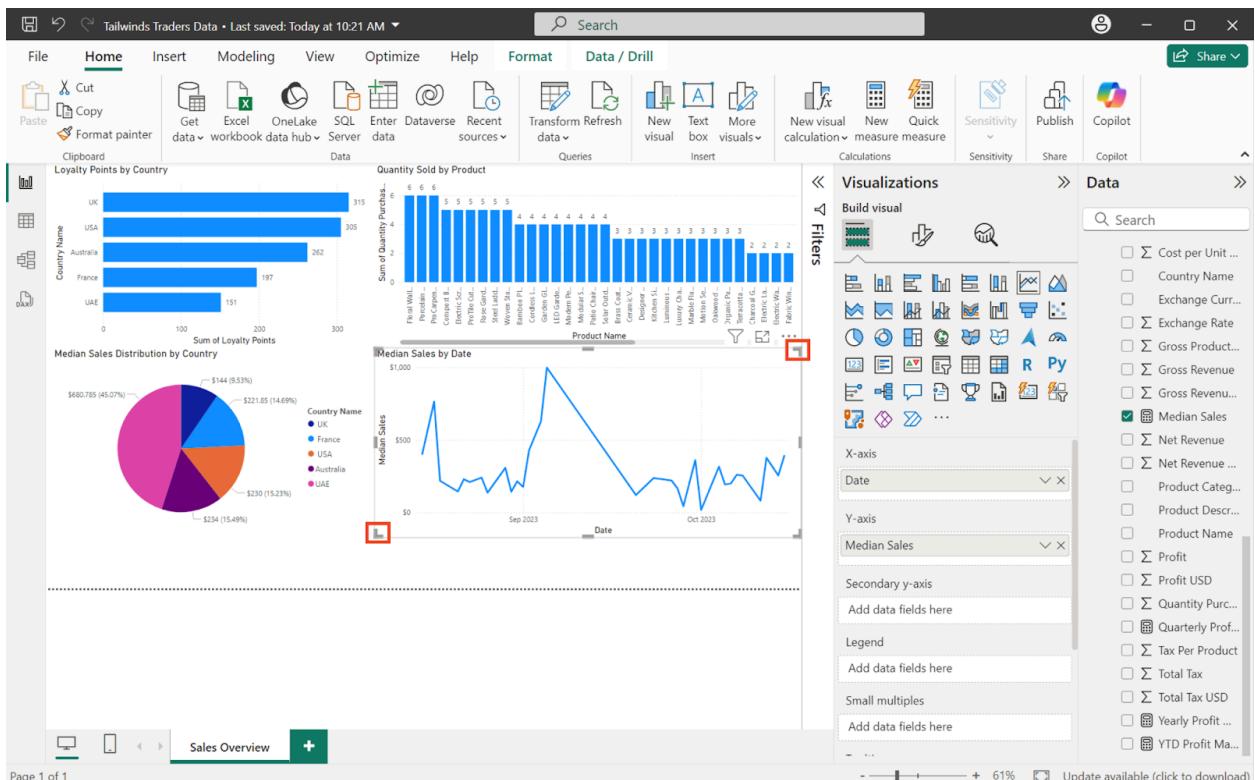
- From CalendarTable, drag Date to the X-axis field
- From Sales in USD, drag Median Sales to the Y-axis field



Tip: If your chart doesn't look correct, check your X-axis field. Make sure it is set to Date instead of Date Hierarchy. To fix this, click the down arrow next to the Date field on the X-axis, and select Date if Date Hierarchy is selected.



5. Configure the chart. To start, resize and position the chart below the Quantity Sold by Product column chart.



6. Set the title. In the Visualizations pane, select the Format tab (paint roller icon).

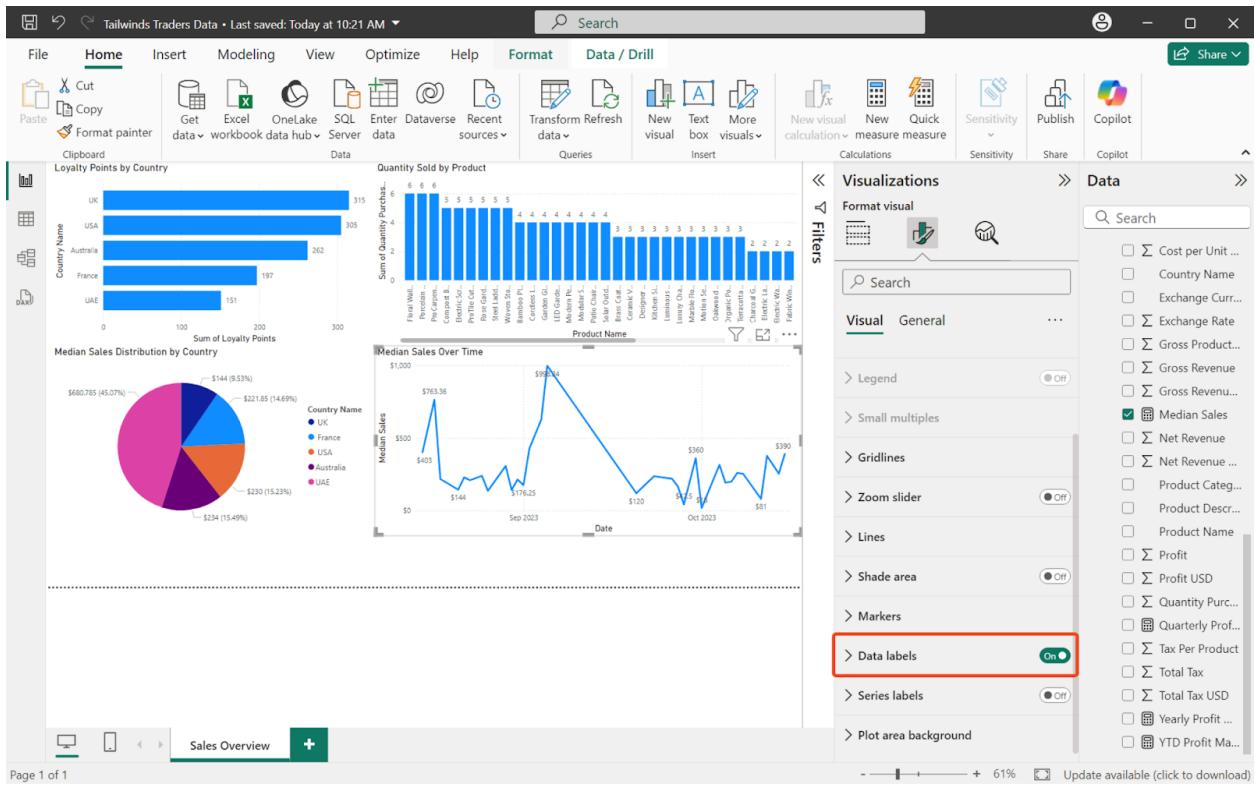
Select General, then expand the Title card. Change the text to "Median Sales Over Time."

The screenshot shows the Microsoft Power BI interface with three visualizations on the left:

- Loyalty Points by Country:** A horizontal bar chart showing the sum of loyalty points for five countries: UK (315), USA (305), Australia (282), France (197), and UAE (131).
- Median Sales Distribution by Country:** A pie chart showing the distribution of median sales by country. The segments are: UK (45.07%), France (14.69%), USA (15.49%), Australia (15.23%), and UAE (9.53%).
- Median Sales Over Time:** A line chart showing median sales over time from September 2023 to October 2023. The Y-axis represents Median Sales in dollars, ranging from \$0 to \$1,000. The X-axis represents Date.

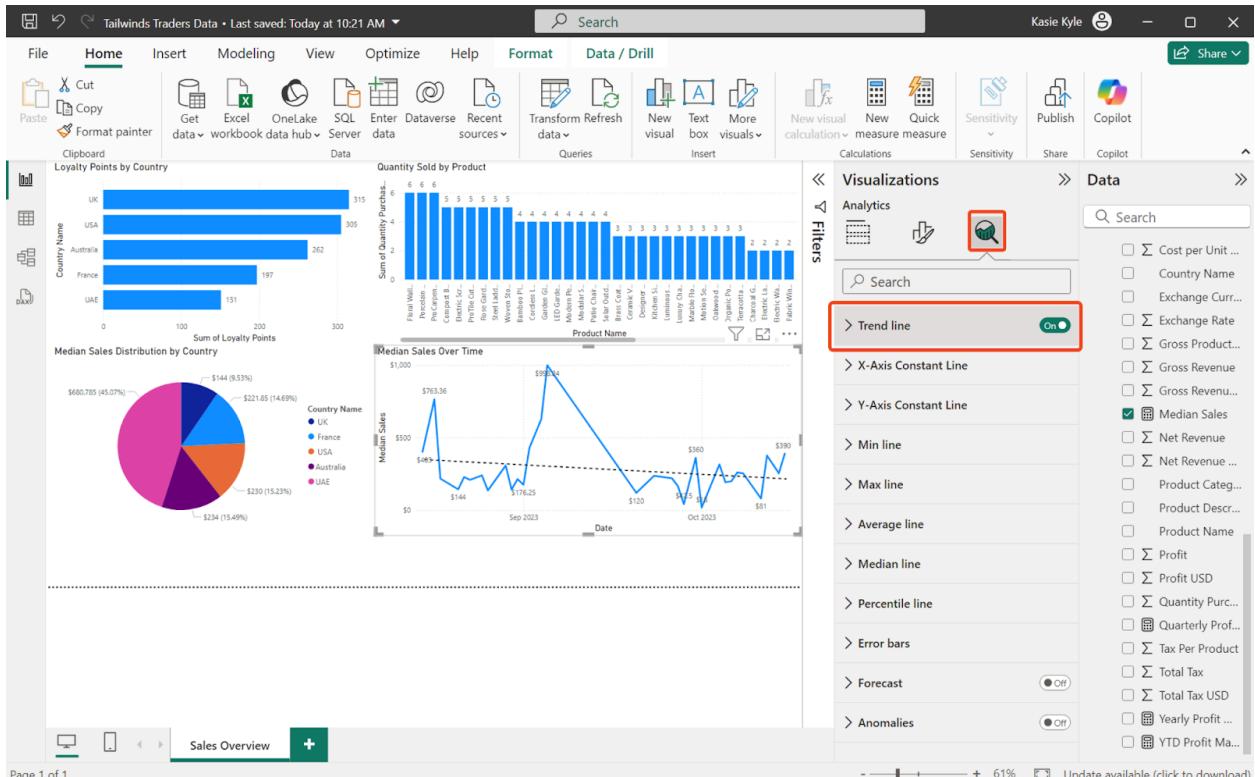
On the right, the **Format** tab is selected in the ribbon. In the **Visualizations** pane, the **General** tab is selected. In the **Title** card, the **Text** input field is highlighted with a red border and contains the text "Median Sales Over Time".

7. Enable data labels. In the Format tab, select Visual. Then in the Data labels card, set the Show toggle to On.



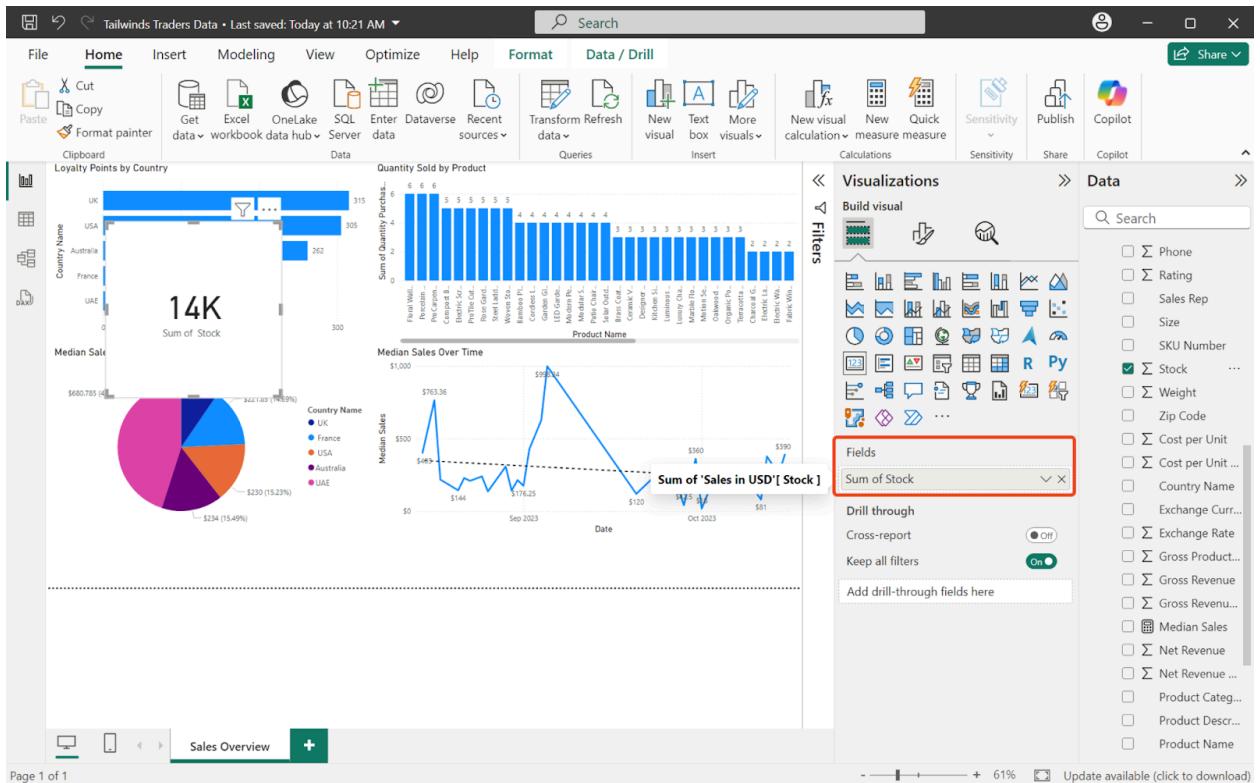
8. Enable a Trend line. In the Format tab, select Analytics (the magnifying glass icon).

Then in the Trend line card, set the toggle to On.

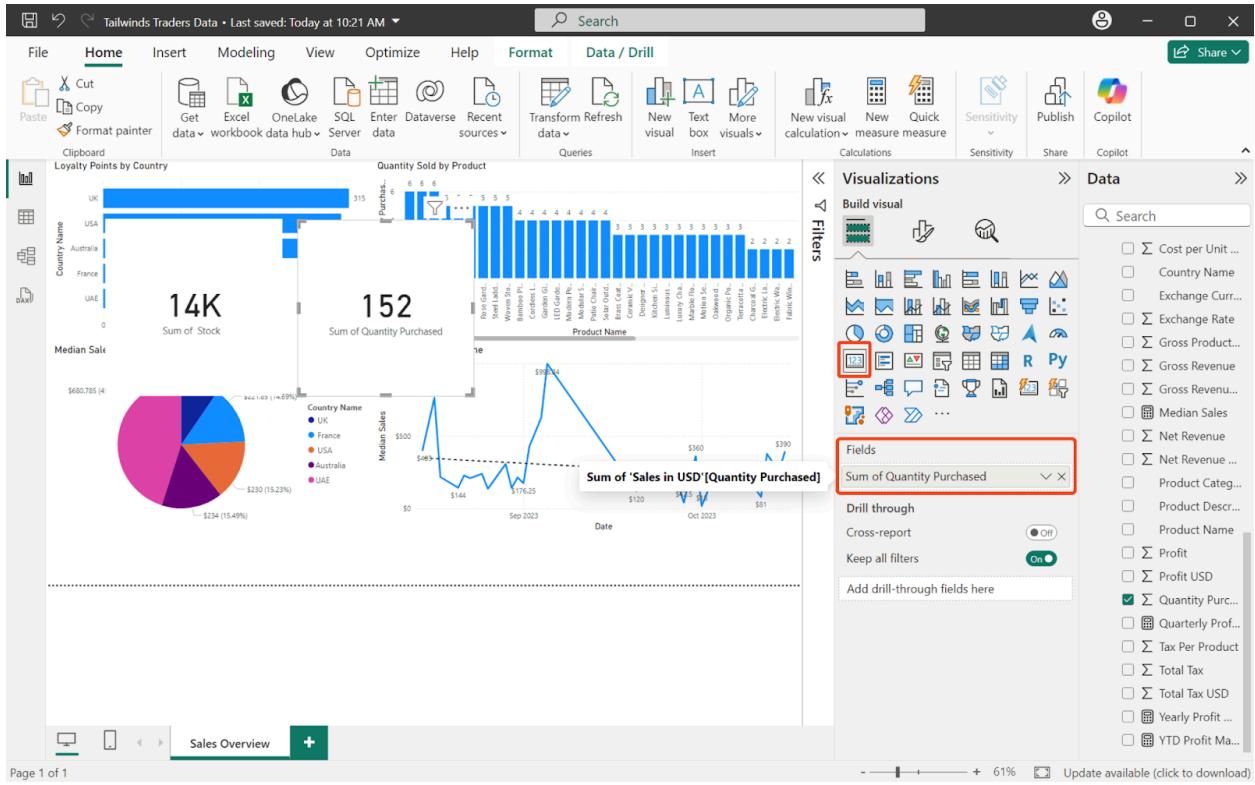


## Step 6: Create cards to visualize your measures

1. From the Visualizations pane, select the card visualization.
2. Add data from the Sales in USD table:
  - Drag Stock to the Fields section

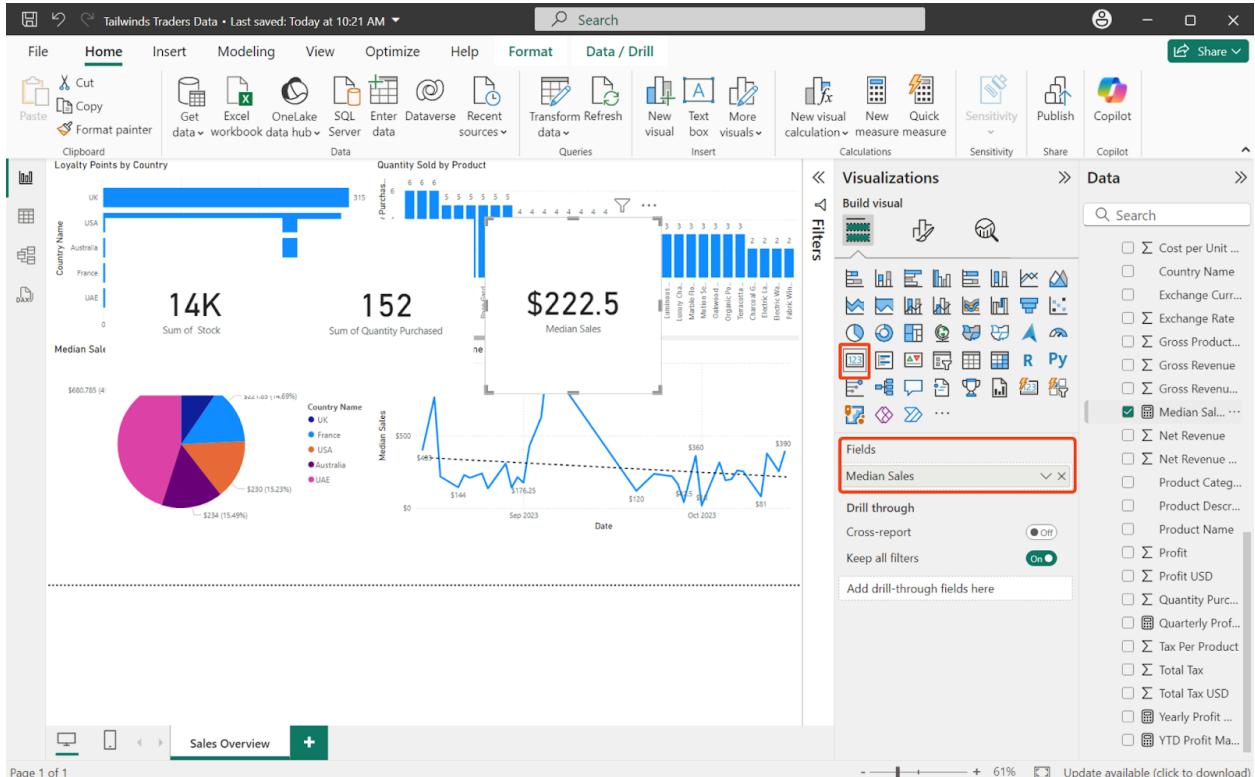


3. Create a second card and add:
  - Drag Quantity Purchased to the Fields section



#### 4. Create a third card and add:

- Drag Median Sales to the Fields section



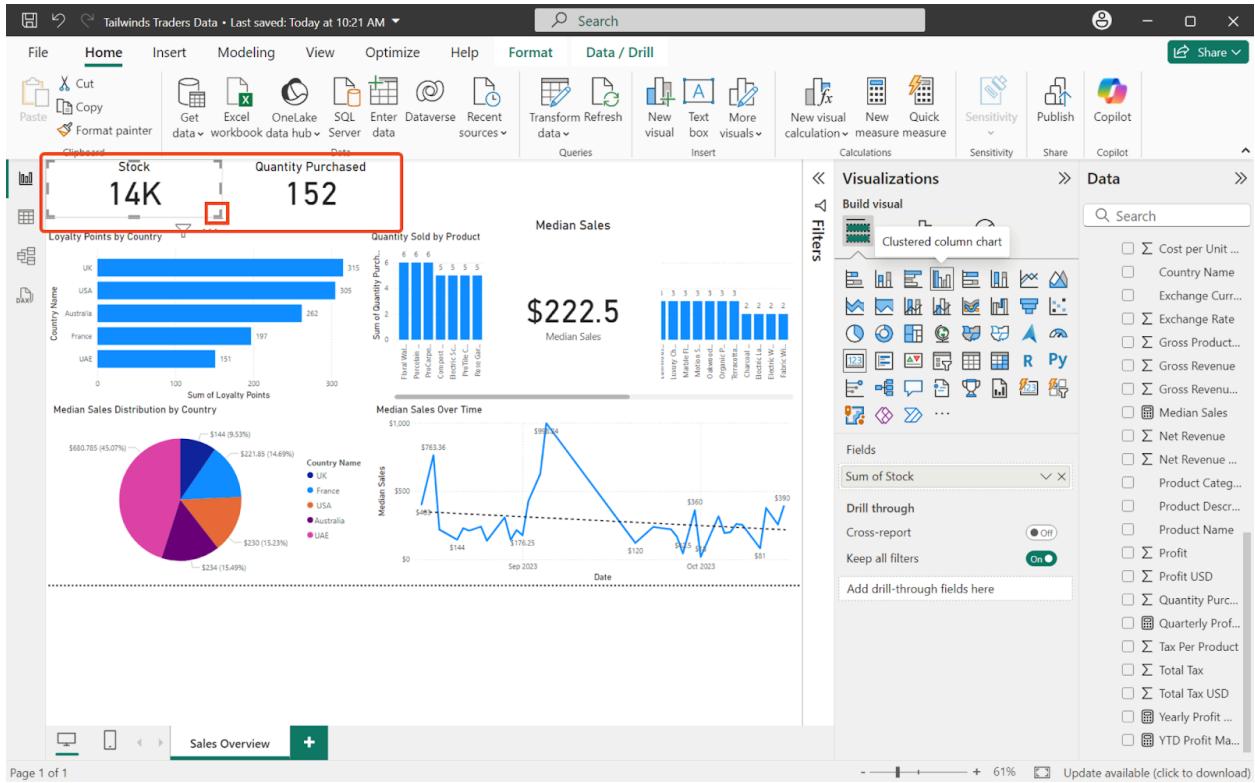
## 5. Set the titles as Stock, Quantity Purchased, and Median Sales.

The screenshot shows a Microsoft Power BI desktop interface with a dashboard containing several visualizations:

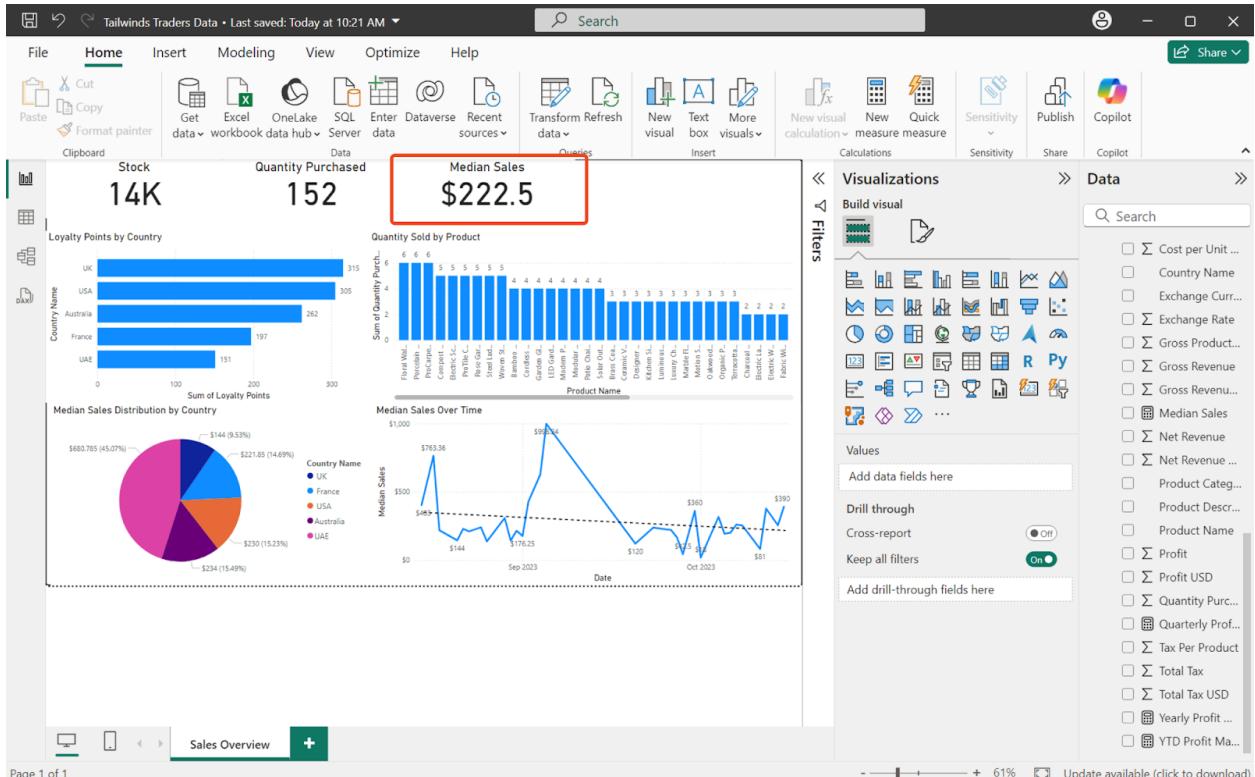
- A bar chart titled "Loyalty Points by Country" showing "Sum of Stock" (14K) for UK, "Sum of Quantity Purchased" (152) for USA, and "Median Sales" (\$222.5) for Median Sales.
- A pie chart showing the distribution of Loyalty Points by Country: UK (46%), USA (23%), Australia (15%), and UAE (15%).
- A line chart titled "Median Sales" showing sales over time from September 2023 to October 2023.

The "Format" ribbon is open on the top, and the "Visualizations" pane is visible on the right. A red box highlights the "Title" section in the "Properties" pane, which is currently set to "Median Sales".

## 6. Position the Stock and Quantity Purchased cards above the Loyalty Points by Country bar chart.



## 7. Position the Median Sales card above the Quantity Sold by Product column chart.



Step 7: Add a slicer to the report

1. From the Visualizations pane, select the slicer visualization.

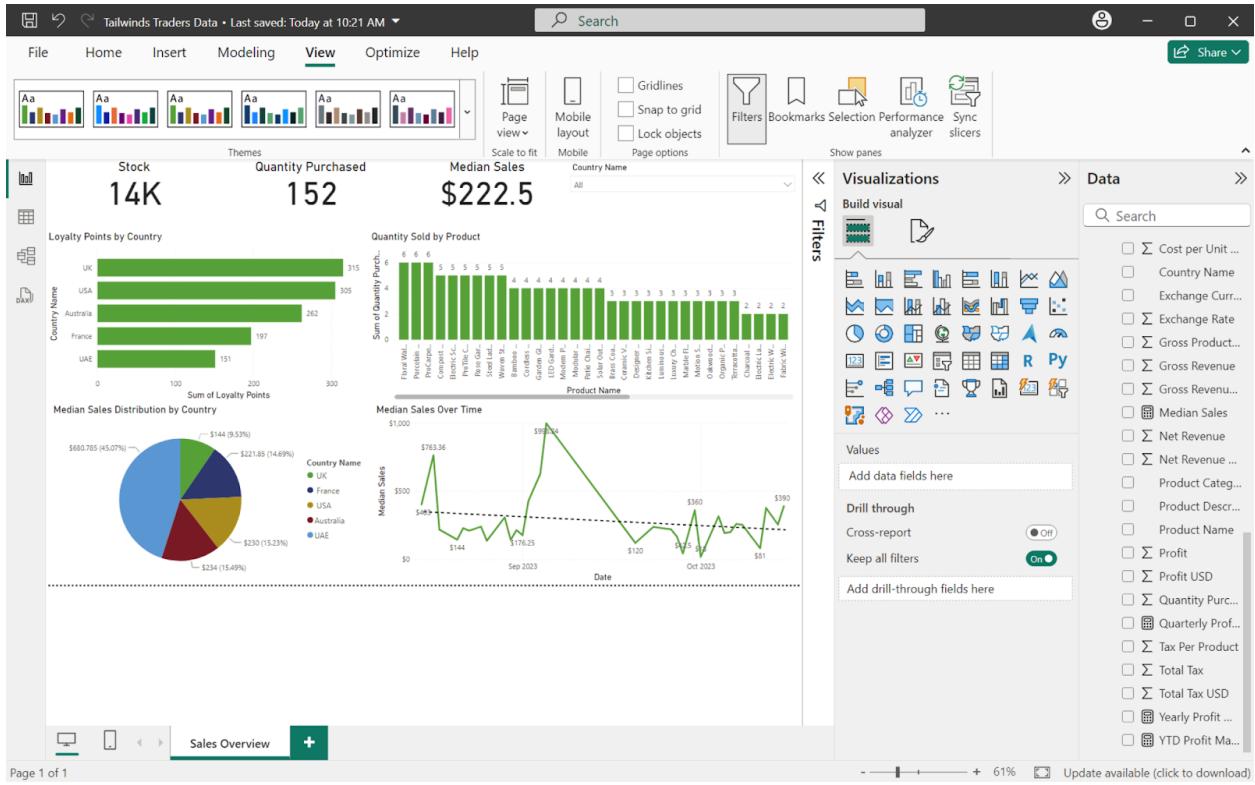
The screenshot shows a Microsoft Power BI dashboard titled "Tailwind Traders Data". The dashboard includes several visualizations: a Stock summary card with values 14K, 152, and \$222.5; a bar chart titled "Loyalty Points by Country" showing points for UK, USA, Australia, France, and UAE; a pie chart titled "Median Sales Distribution by Country" showing percentages for UK, France, USA, Australia, and UAE; a bar chart titled "Quantity Sold by Product" showing sales volume for various products; and a line chart titled "Median Sales Over Time" showing median sales from July to October 2023. To the right of the dashboard is the "Visualizations" pane, which lists various visualization types like Slicer, Card, and Gauge. The "Slicer" icon is highlighted with a red box. Below the list is a "Values" section with fields for "Add data fields here", "Drill through", "Cross-report", "Keep all filters", and "Add drill-through fields here".

2. Add data from the Sales in USD table:

- Drag Country Name to the Fields section

3. Format the Slicer as a Dropdown. Select the Format visual tab, then select the Visual tab. Expand Slicer settings, then expand Options. From the Style dropdown, select Dropdown.

4. Position the slicer above the Quantity Sold by Product column chart.
5. Format your report using the Accessible City Park theme. Select the View tab, then select the dropdown in themes. Select Accessible City Park theme.



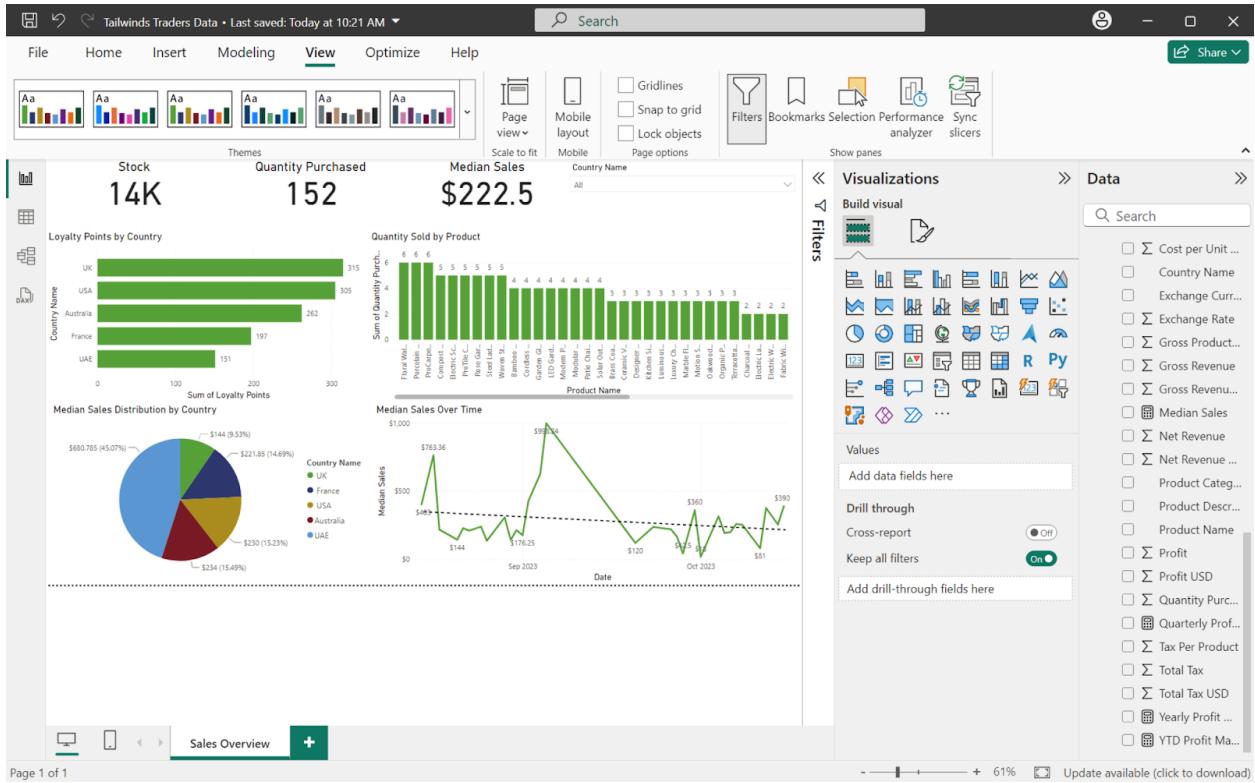
## 6. Save your report.

### Exercise 3: Create a Profit report

#### Step 1: Create Profit Overview report

1. Open your Sales Overview report.

Open the Sales Overview report within Power BI.



2. Create a new page in your existing Sales Overview report and name it Profit Overview. To add a new page, select the New Page option.

3. Right-click the new page, select the Rename option, and title the report Profit Overview.

The screenshot shows the Microsoft Power BI desktop application interface. The top navigation bar includes File, Home, Insert, Modeling, View (selected), Optimize, and Help. The ribbon also has themes, page view, mobile layout, filters, bookmarks, selection, performance analyzer, sync, and slicers. The main canvas displays a bar chart titled "Build visuals with your data". Below the canvas, there are tabs for Sales Overview and Profit Overview, with Profit Overview currently selected. The Visualizations pane on the right lists various chart types, and the Data pane lists numerous data fields such as Cost per Unit, Country Name, Exchange Curr., Exchange Rate, Gross Product, Gross Revenue, Median Sales, Net Revenue, Product Category, Product Description, Product Name, Profit, Profit USD, Quantity Purch., Quarterly Prof., Tax Per Product, Total Tax, Total Tax USD, Yearly Profit, and YTD Profit.

## Step 2: Create a bar chart for Net Revenue by Product

1. From the Visualizations pane, select the clustered bar chart

This screenshot shows the Microsoft Power BI desktop application interface, similar to the previous one but with a different tab selected. The top navigation bar includes File, Home, Insert, Modeling, View, Optimize, Help, Format, and Data / Drill. The ribbon also has themes, page view, mobile layout, filters, bookmarks, selection, performance analyzer, sync, and slicers. The main canvas displays a bar chart titled "Select or drag fields to populate this visual". Below the canvas, there are tabs for Sales Overview and Profit Overview, with Profit Overview currently selected. The Visualizations pane on the right lists various chart types, and the Data pane lists numerous data fields such as Cost per Unit, Country Name, Exchange Curr., Exchange Rate, Gross Product, Gross Revenue, Median Sales, Net Revenue, Product Category, Product Description, Product Name, Profit, Profit USD, Quantity Purch., Quarterly Prof., Tax Per Product, Total Tax, Total Tax USD, Yearly Profit, and YTD Profit. A red box highlights the "Clustered bar chart" icon in the Visualizations pane.

2. Open the Data Fields pane.
3. Select the Sales in USD table to expand it and view its fields.
4. Add data from the Sales in USD table:
  - Drag Product Name to the Y-axis field
  - Drag Net Revenue USD to the X-axis field

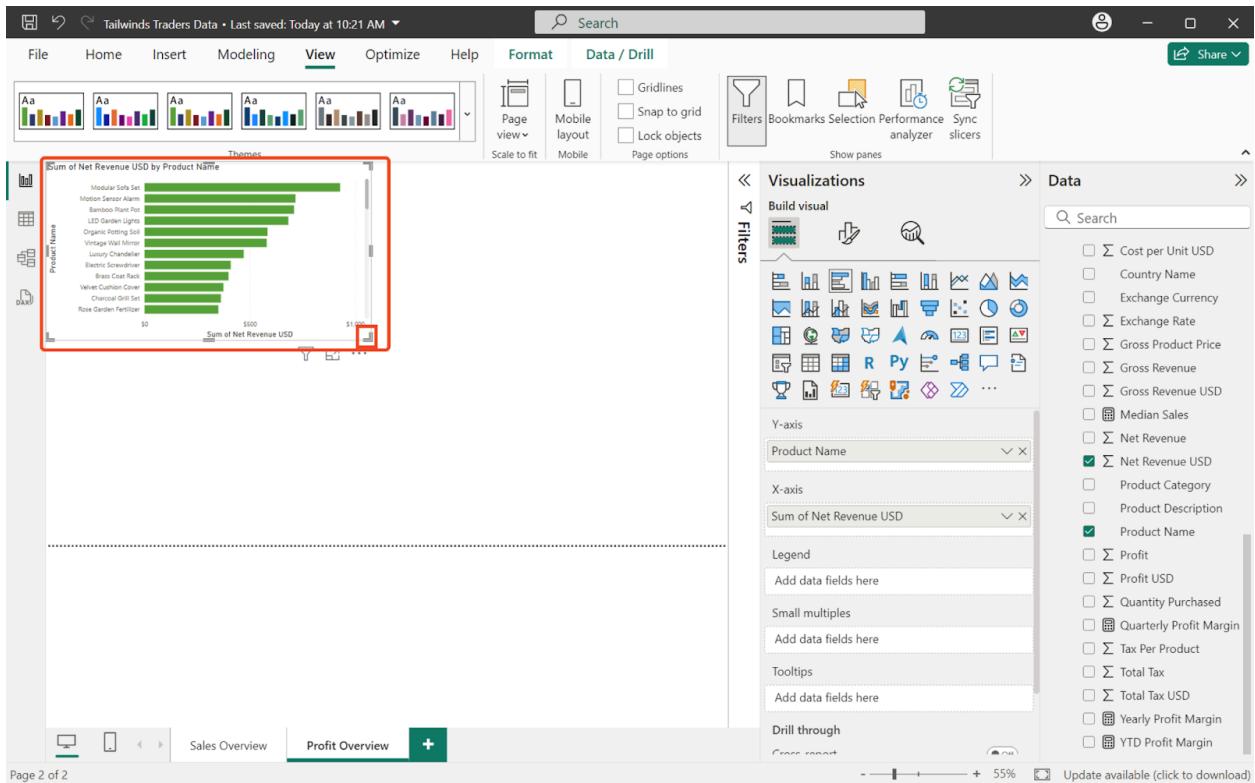
The screenshot shows the Microsoft Power BI interface. The top navigation bar includes File, Home, Insert, Modeling, View (selected), Optimize, Help, Format, and Data / Drill. The View tab has sub-options for Page view, Mobile layout, and Page options. The Data / Drill tab has sub-options for Gridlines, Snap to grid, Lock objects, and Show panes. The ribbon also includes Themes, Scale to fit, and Filters, Bookmarks, Selection, Performance, Sync analyzer, and Slicers.

The main workspace displays a horizontal bar chart titled "Sum of Net Revenue USD by Product Name". The Y-axis is labeled "Product Name" and lists categories like Modular, Eco, Banana, LED Gar., Organic, Vintage, Luxury C., and Electric S. The X-axis is labeled "Sum of Net Revenue USD" and shows values ranging from \$0 to \$1,000.

The right side of the screen features the "Visualizations" and "Data" panes. The "Visualizations" pane contains icons for various chart types. The "Data" pane lists numerous data fields, many of which have checkboxes next to them. A red box highlights the "Y-axis" and "X-axis" sections in the "Data" pane, which correspond to the fields selected in the chart.

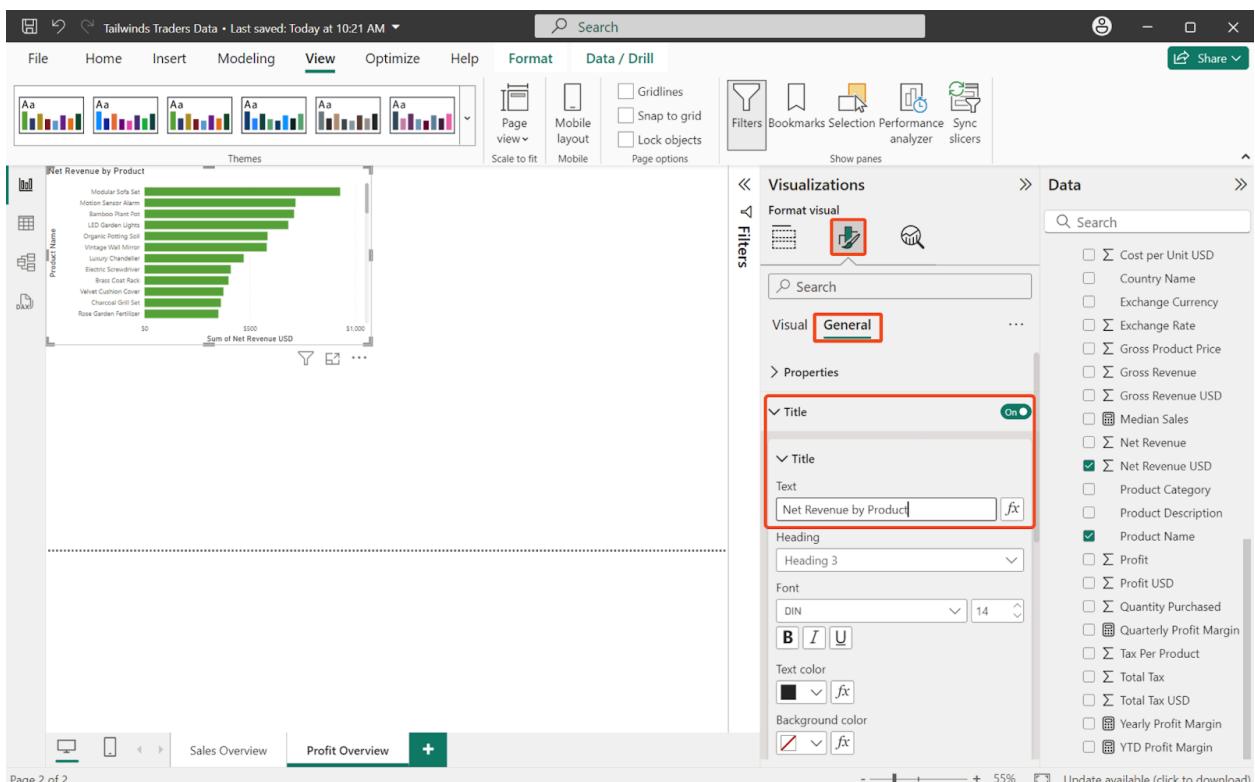
At the bottom, there are tabs for Sales Overview, Profit Overview (selected), and a plus sign icon. The status bar at the bottom indicates "Page 2 of 2", "55%", and "Update available (click to download)".

5. Configure the chart. To start, resize and position the chart to the left side of the canvas, by selecting the edges of the chart on your canvas.

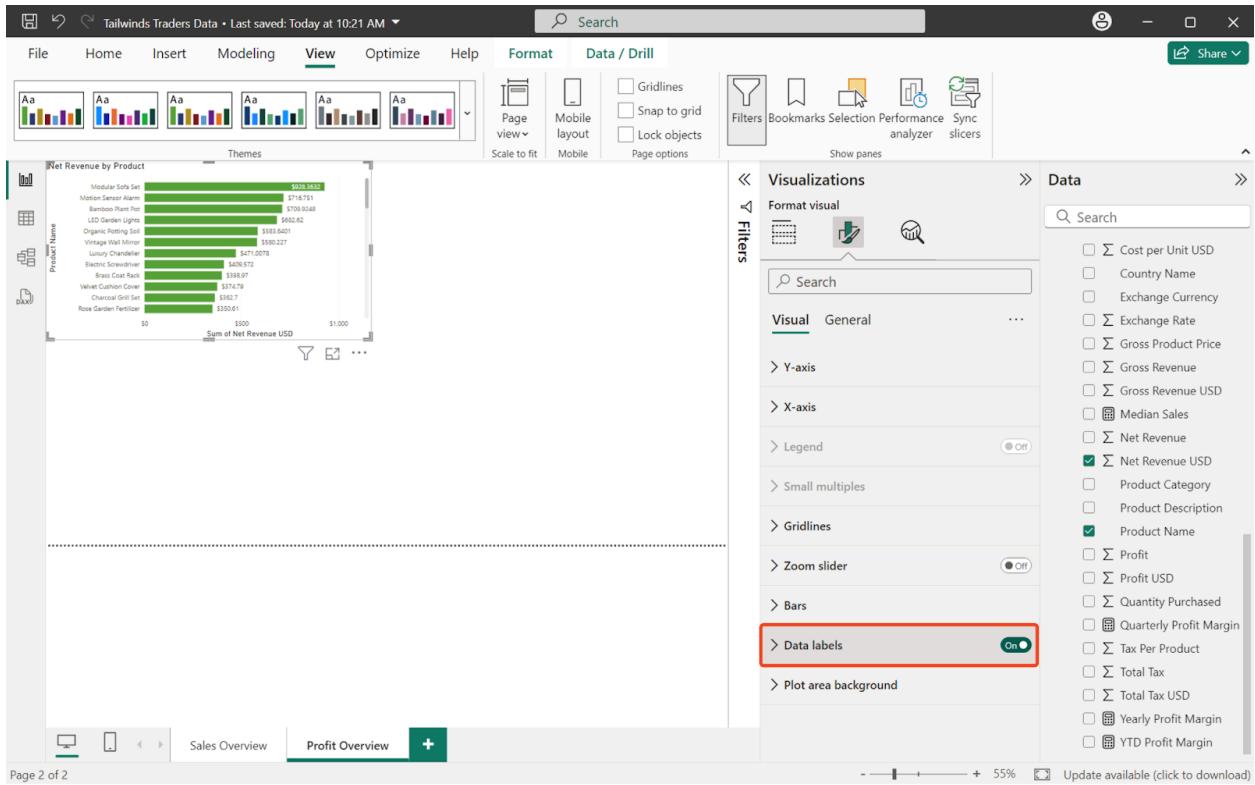


6. Set the title. In the Visualizations pane, select the Format tab (paint roller icon).

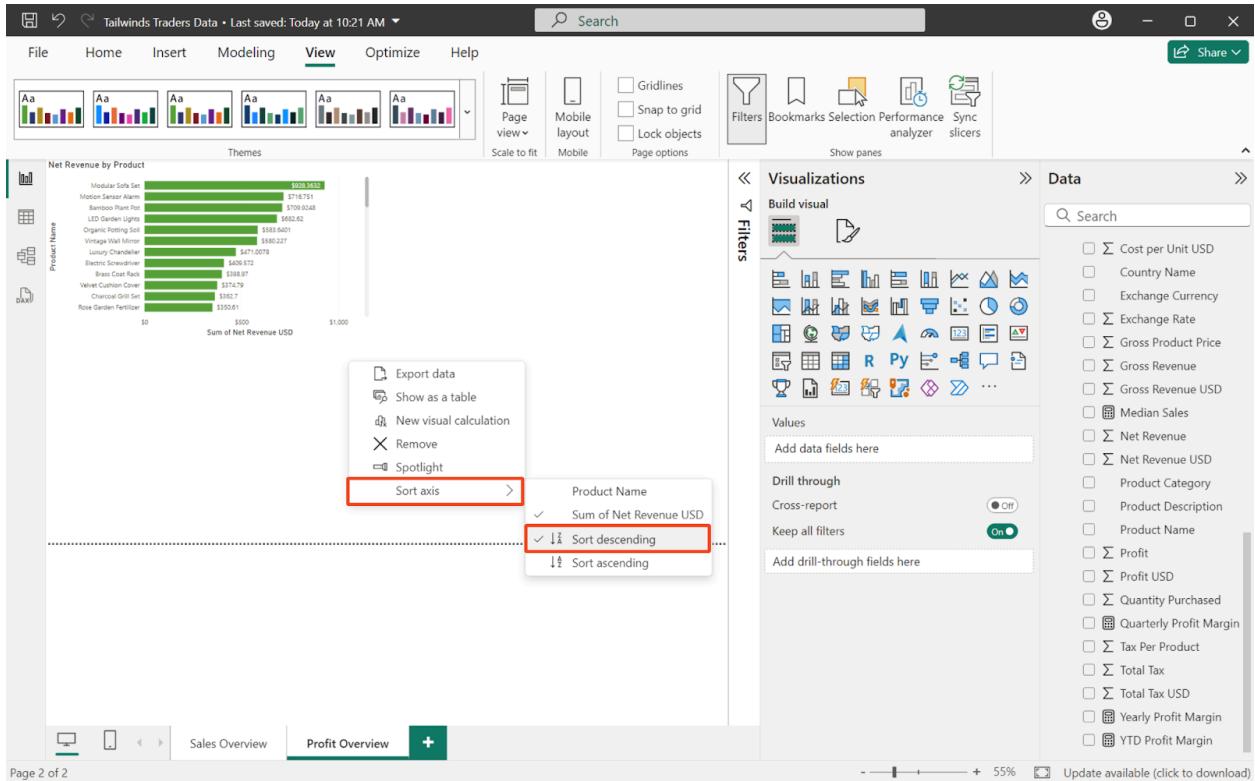
Select General, then expand the Title card. Change the text to "Net Revenue by Product".



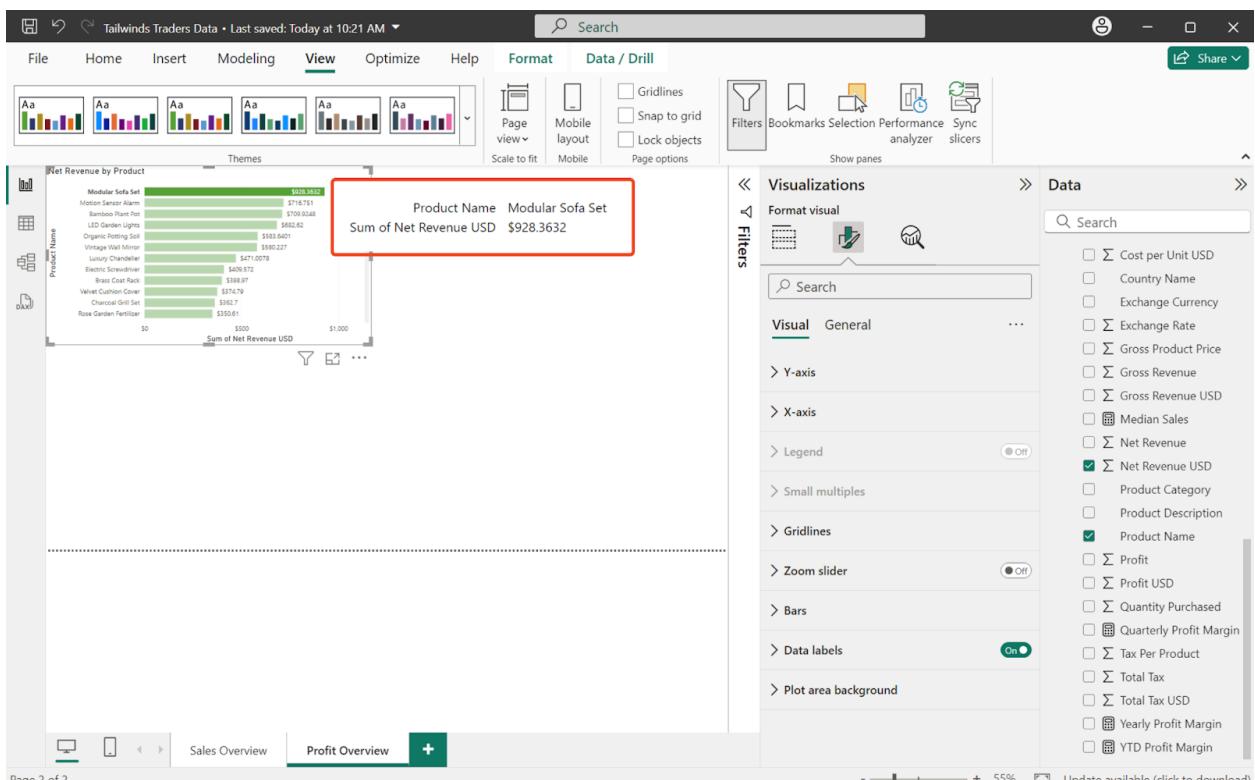
7. Enable data labels. In the Format tab, select Visual. Then in the Data labels card, set the Show toggle to On.



8. Sort the data in descending order, by selecting the ellipses located at the top right corner of the visualization. Select the Sort Axis dropdown, then select Sort descending



9. Note the product with the highest Net Revenue value. In this case, the Modular Sofa Set at 928.36 USD.

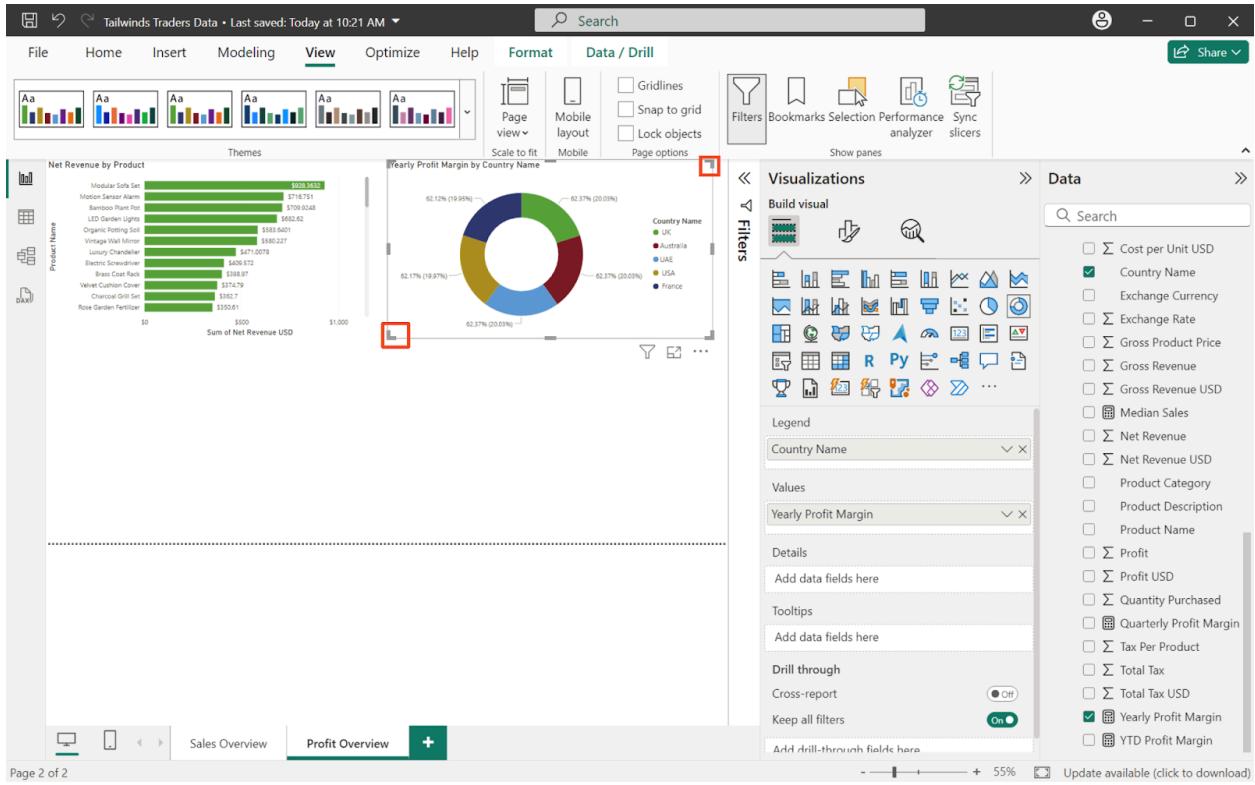


### Step 3: Create a donut chart for Yearly Profit Margin by Country

1. From the Visualizations pane, select the donut chart
2. Open the Data Fields pane.
3. Select the Sales in USD table to expand it and view its fields.
4. Add data from the Sales in USD table:
  - Drag Country Name to the Legend area
  - Drag Yearly Profit Margin to the Values area

The screenshot shows the Power BI desktop interface. On the left, there's a 'Net Revenue by Product' bar chart and a 'Yearly Profit Margin by Country Name' donut chart. The donut chart has segments labeled with percentages: 62.12% (19.85%), 62.17% (19.97%), 62.37% (20.01%), and 62.37% (20.03%). A legend on the right identifies the countries: UK (green), Australia (red), UAE (blue), USA (yellow), and France (purple). The top ribbon shows tabs like File, Home, Insert, Modeling, View, Optimize, Help, Format, and Data / Drill. The 'View' tab is selected. The 'Visualizations' pane on the right lists various chart types, and the 'Data' pane lists data fields. A red box highlights the 'Values' section in the Data Fields pane, which contains 'Yearly Profit Margin'. The status bar at the bottom indicates 'Page 2 of 2' and '55%'.

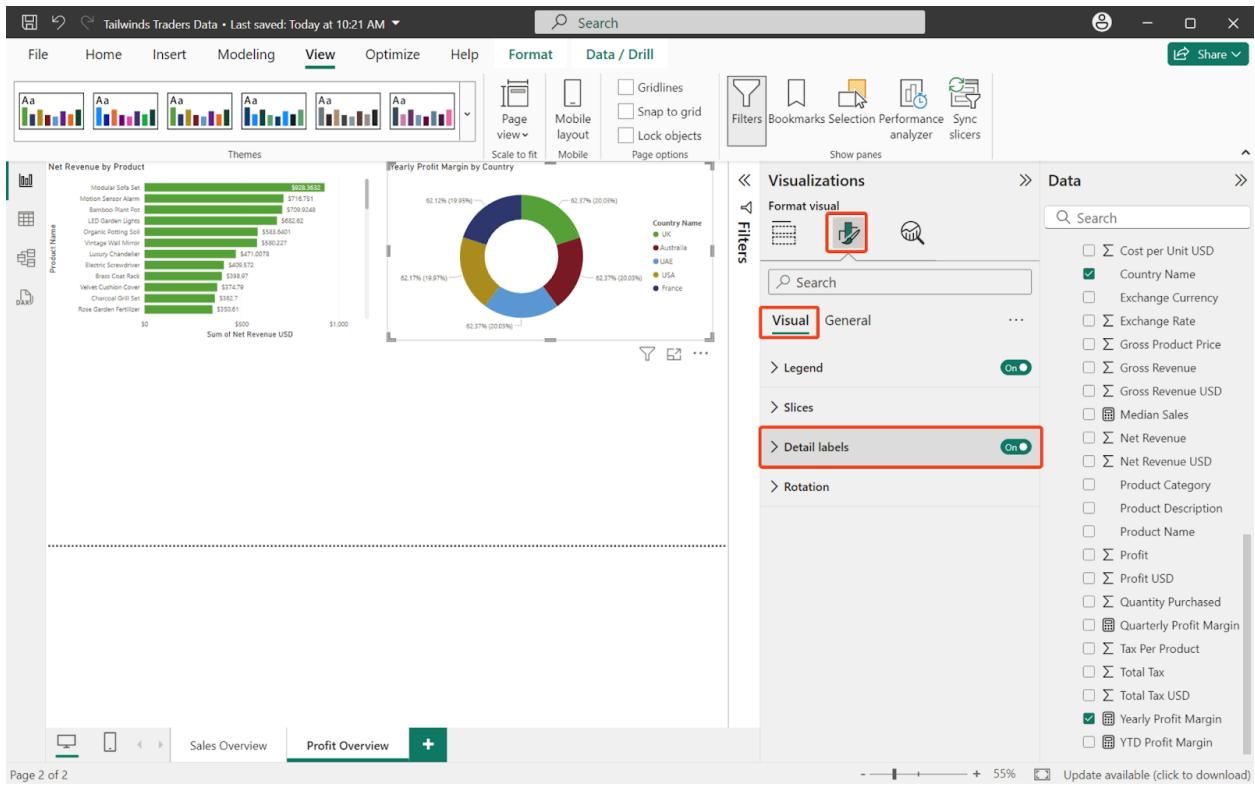
5. Configure the chart. To start, resize and position the chart to next to the Net Revenue by Product chart, by selecting the edges of the chart on your canvas.



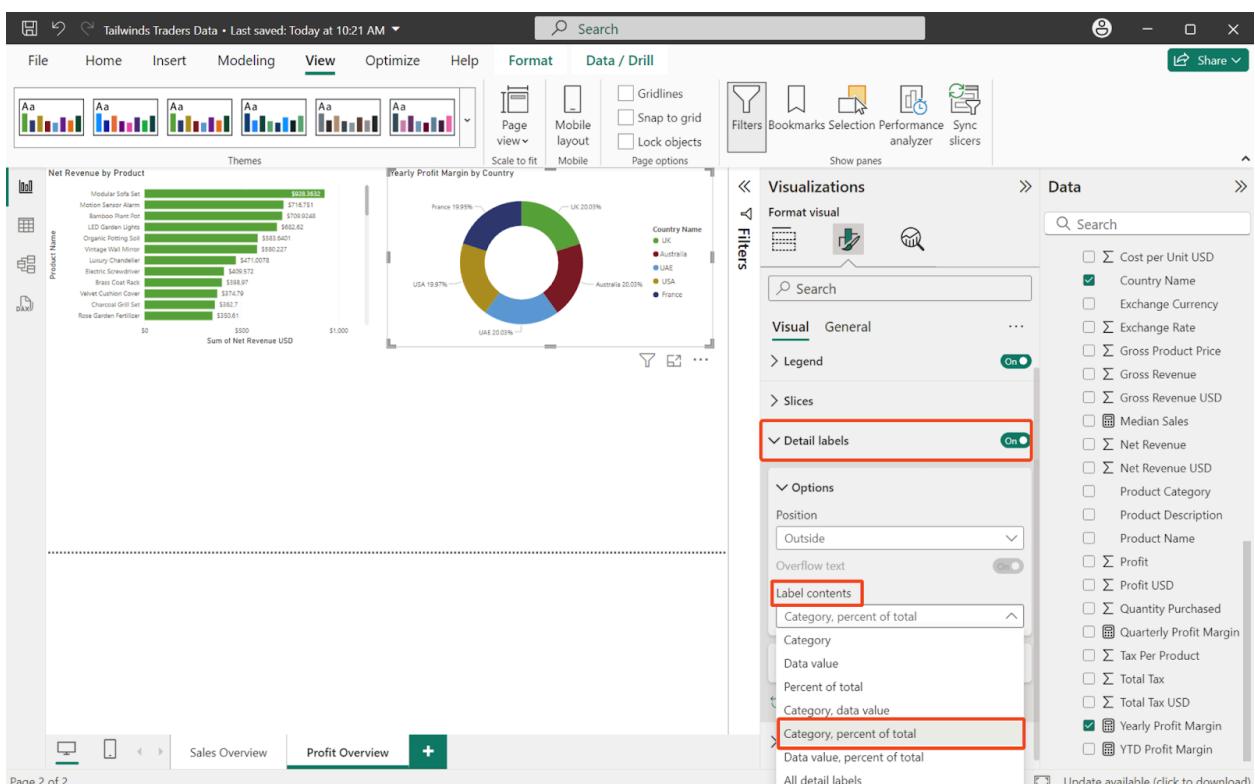
6. Set the title. In the Visualizations pane, select the Format tab (paint roller icon).

Select General, then expand the Title card. Change the text to "Yearly Profit Margin by Country".

7. Enable detail labels. In the Format tab, select Visual. Then in the Detail labels card, set the toggle to On.

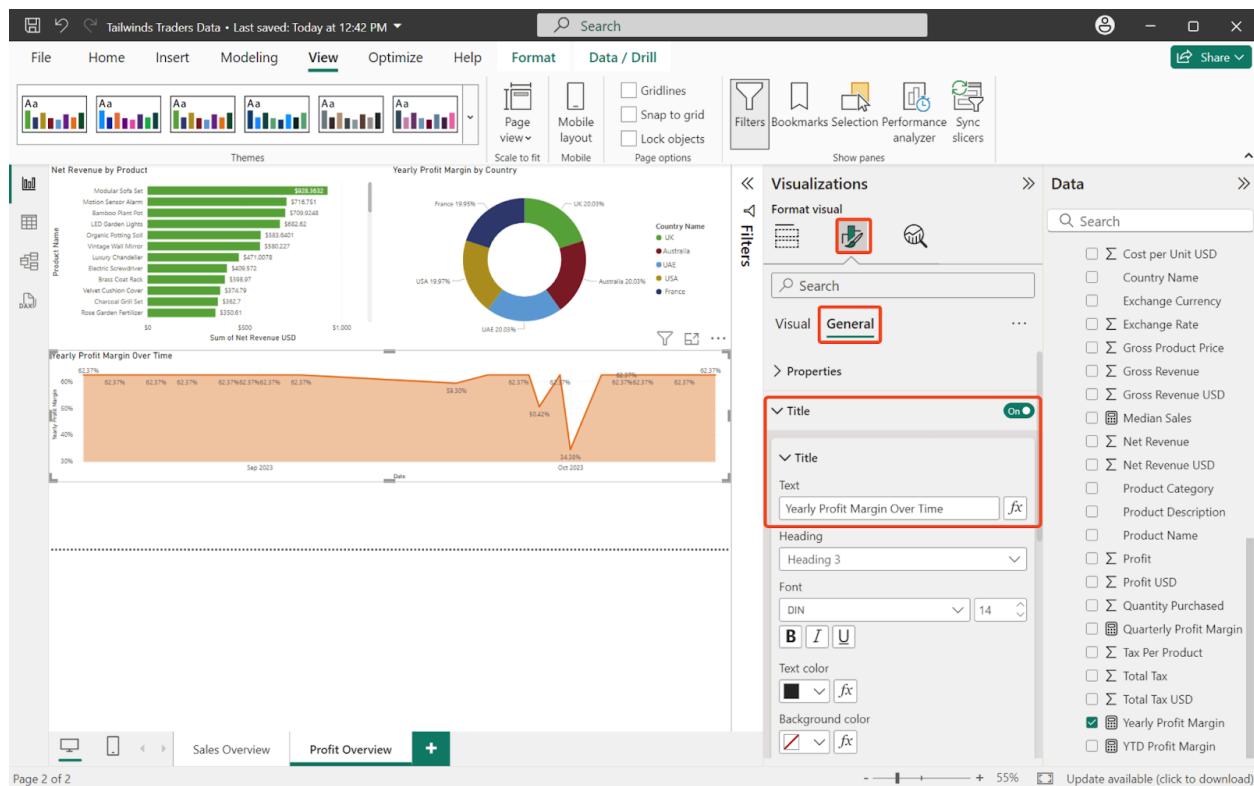


8. Expand the Detail labels card, then expand Options. In the Label contents dropdown select Category, percent of total.



## Step 4: Create an area chart for Yearly Profit Margin over Time

1. From the Visualizations pane, select the area chart.
2. Open the Data Fields pane.
3. Select the Sales in USD table to expand it and view its fields.
4. Add data from the CalendarTable and Sales in USD table:
  - From the CalendarTable table, drag Date to the X-axis field
  - From the Sales in USD table, drag Yearly Profit Margin to the Y-axis field
5. Configure the chart. To start, resize and position the chart to below the Net Revenue by Product chart, by selecting the edges of the chart on your canvas.
6. Set the title. In the Visualizations pane, select the Format tab (paint roller icon). Select General, then expand the Title card. Change the text to "Yearly Profit Margin Over Time".



7. Enable Data label labels. In the Format tab, select Visual. Then in the Data labels card, set the toggle to On.

The screenshot shows a Microsoft Power BI dashboard titled "Tailwinds Traders Data". The dashboard contains three main visualizations: a horizontal bar chart titled "Net Revenue by Product" showing revenue for various products like Modular Sofa Set, Motion Sensor Alarm, Bamboo Plant Pot, etc.; a pie chart titled "Yearly Profit Margin by Country" showing the distribution of profit margin by country (UK, Australia, UAE, USA, France); and a line chart titled "Yearly Profit Margin Over Time" showing the trend of profit margin from September 2023 to October 2023. The Visualizations pane on the right lists various format options, and the Data pane lists measures. The "Data labels" option in the Data pane is highlighted with a red box.

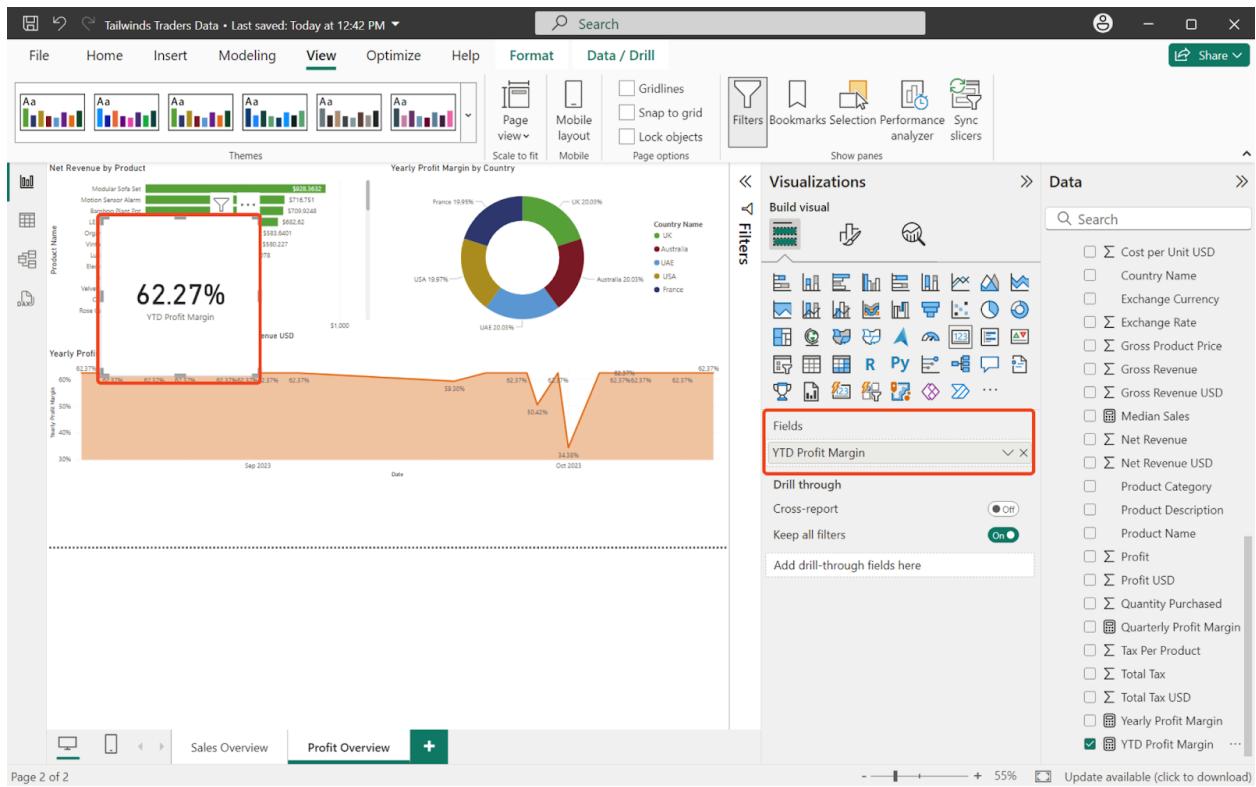
## Step 5: Create cards to visualize your measures

1. From the Visualizations pane, select the card visualization.

The screenshot shows the same Microsoft Power BI dashboard as the previous one, but with the Visualizations pane expanded. The "Build visual" section is visible, showing various visualization icons. The "Card" icon is highlighted with a red box. The Data pane is also visible on the right side of the screen.

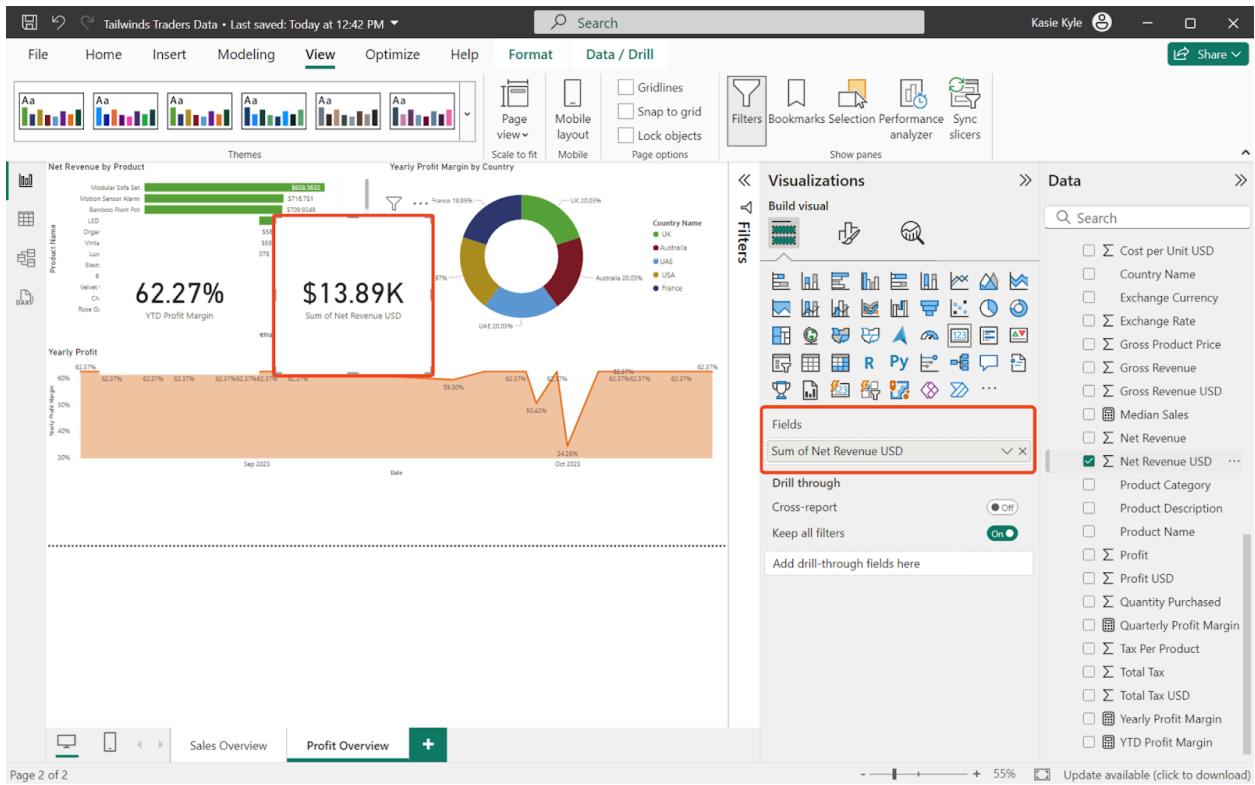
## 2. Add data from the Sales in USD table:

- Drag YTD Profit Margin to the Fields section

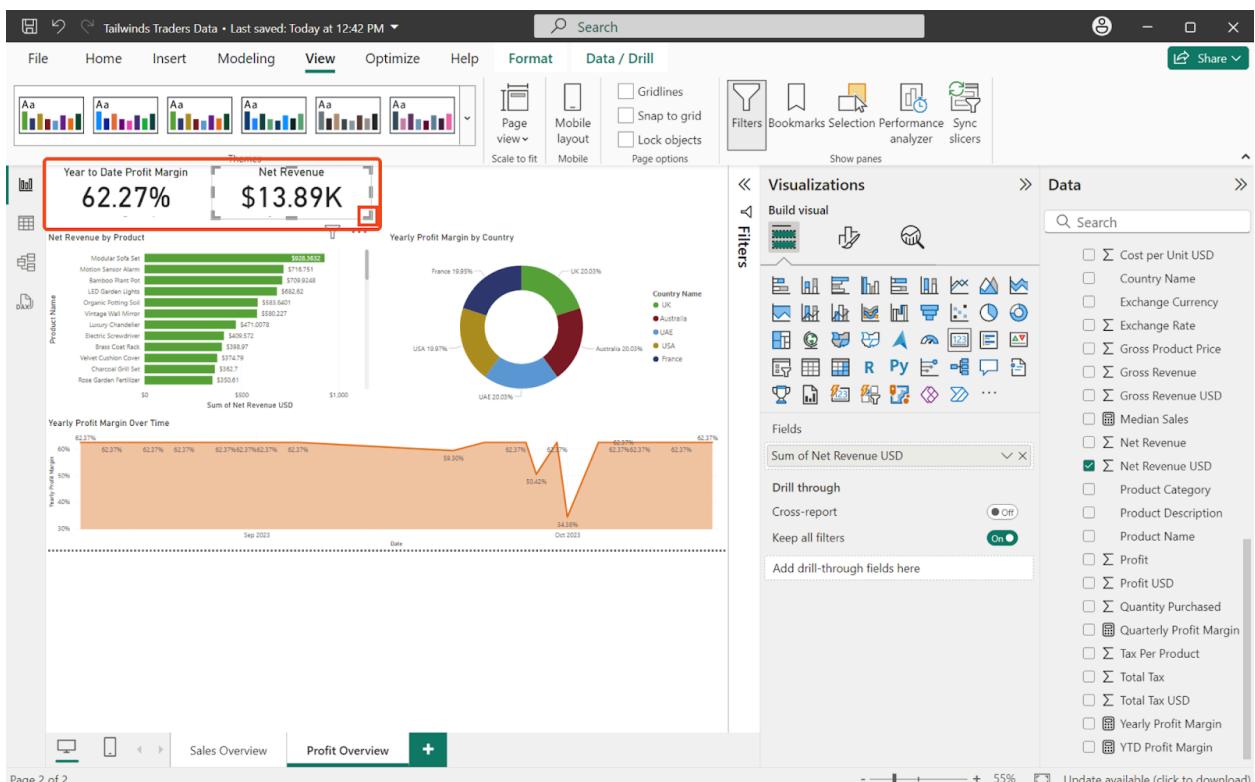


## 3. Create a second card and add:

- Drag Net Revenue USD to the Fields section



4. Set the titles as Year to Date Profit Margin and Net Revenue.
5. Position the cards above the Net Revenue by Product bar chart.



## Step 6: Create a KPI for Gross Revenue USD

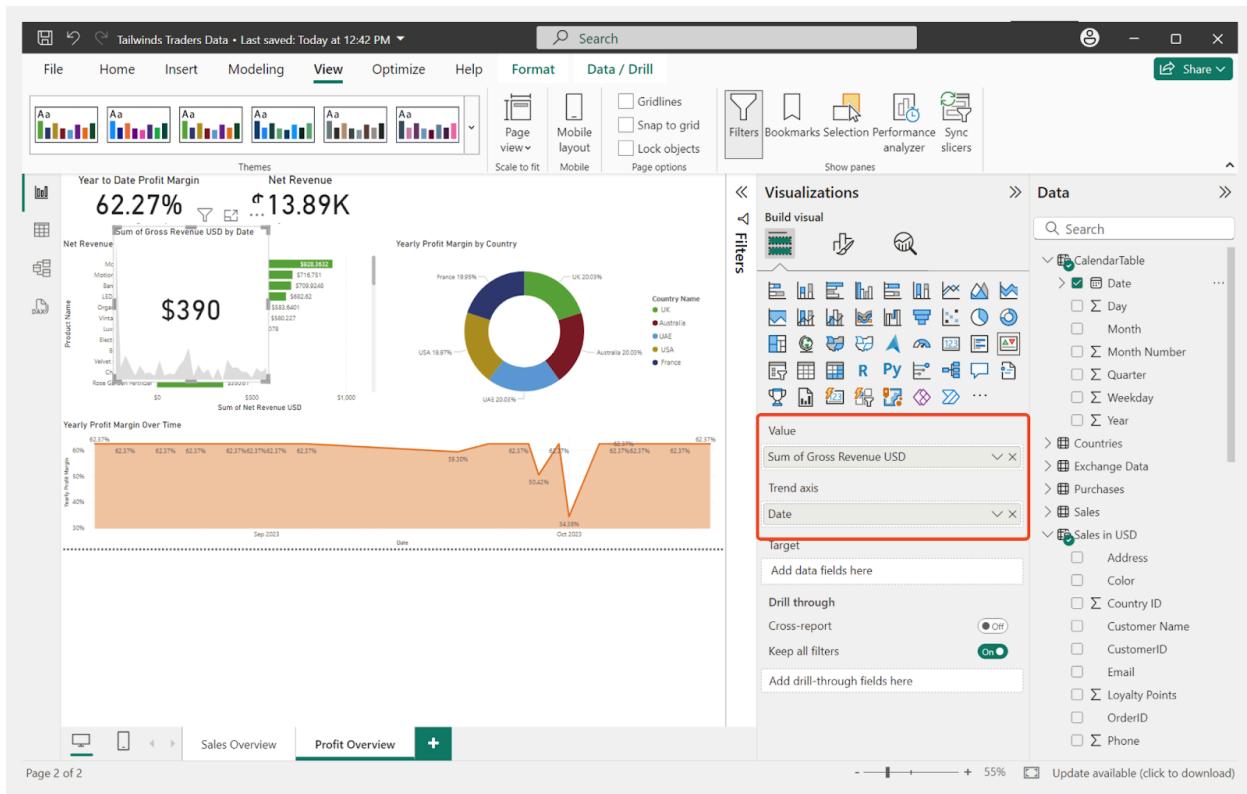
1. From the Visualizations pane, select KPI chart.

The screenshot shows the Power BI desktop interface with a dashboard containing three main visualizations:

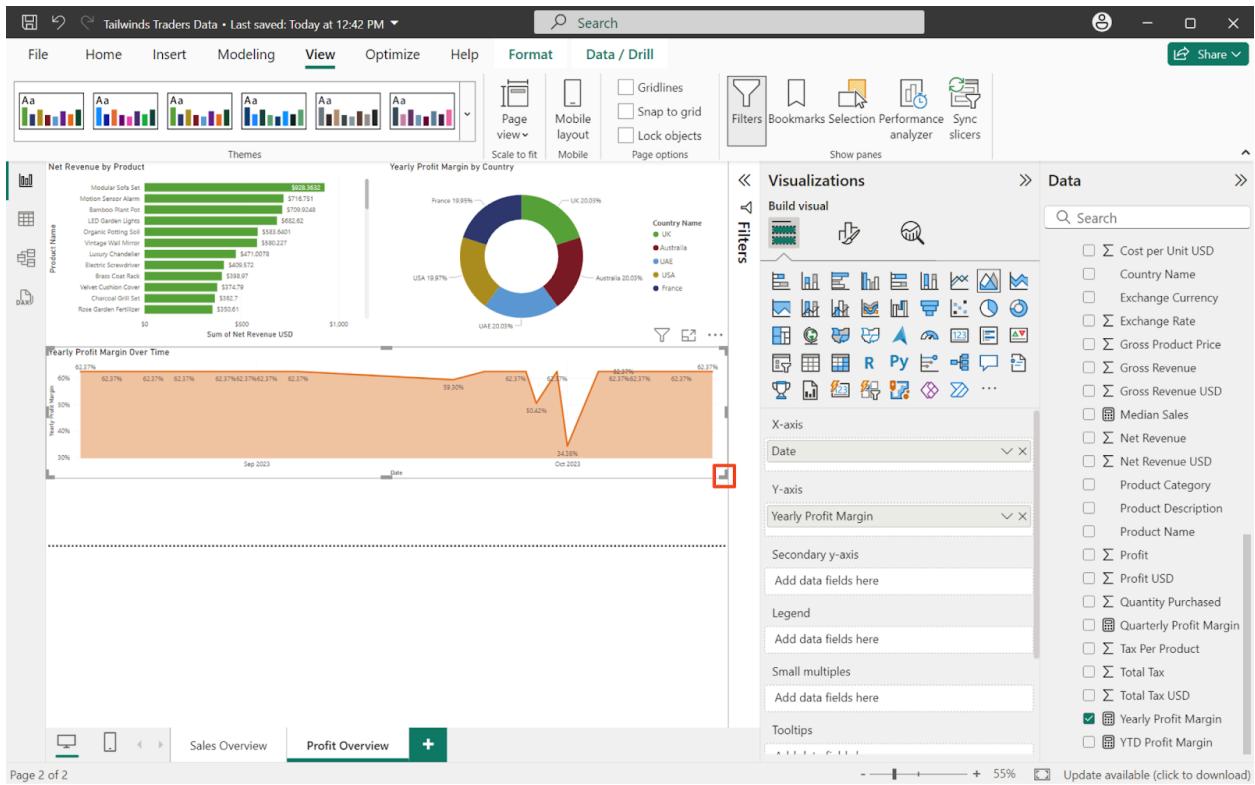
- A bar chart titled "Net Revenue" showing "Year to Date Profit Margin" at 62.27% and "Net Revenue" at \$13.89K.
- A donut chart titled "Yearly Profit Margin by Country" showing the distribution of profit margin across four countries: UK (20.05%), France (19.85%), USA (19.87%), and Australia (20.05%).
- A line chart titled "Yearly Profit Margin Over Time" showing the trend of profit margin from September 2023 to October 2023. The chart shows a dip from 62.37% to 59.30%, followed by a sharp rise to 62.37%.

The "Visualizations" pane on the right is open, showing a list of visualization types. The "KPI" icon is highlighted with a red box. The "Data" pane on the far right lists various data fields, including "Cost per Unit USD", "Country Name", "Exchange Currency", and "Gross Revenue".

2. Open the Data Fields pane.
3. Select the Sales in USD table to expand it and view its fields.
4. Add data from the Sales in USD table:
  - Drag Gross Revenue USD to the value area
  - Drag Date to the Trend Axis area.

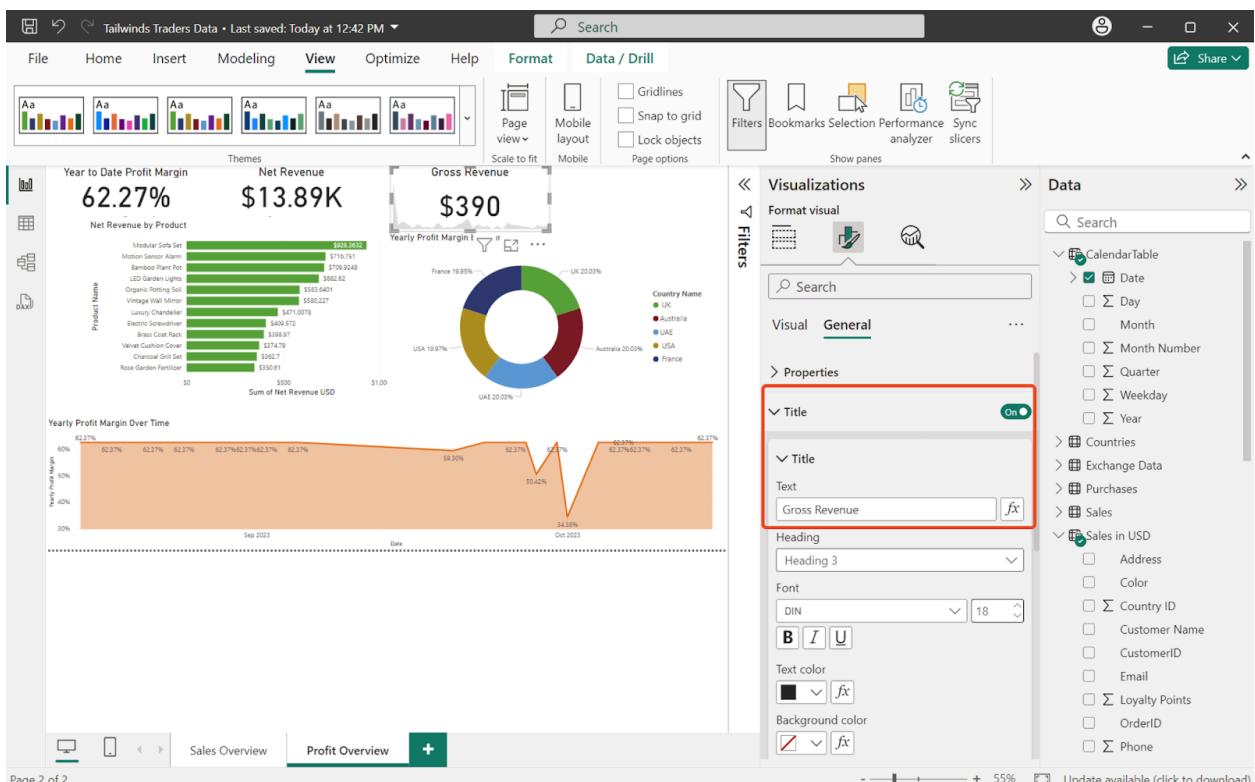


5. Configure the chart. To start, resize and position the chart above the Yearly Profit Margin by Country chart, by selecting the edges of the chart on your canvas.



6. Set the title. In the Visualizations pane, select the Format tab (paint roller icon).

Select General, then expand the Title card. Change the text to "Gross Revenue".



## Step 7: Add a slicer to the report

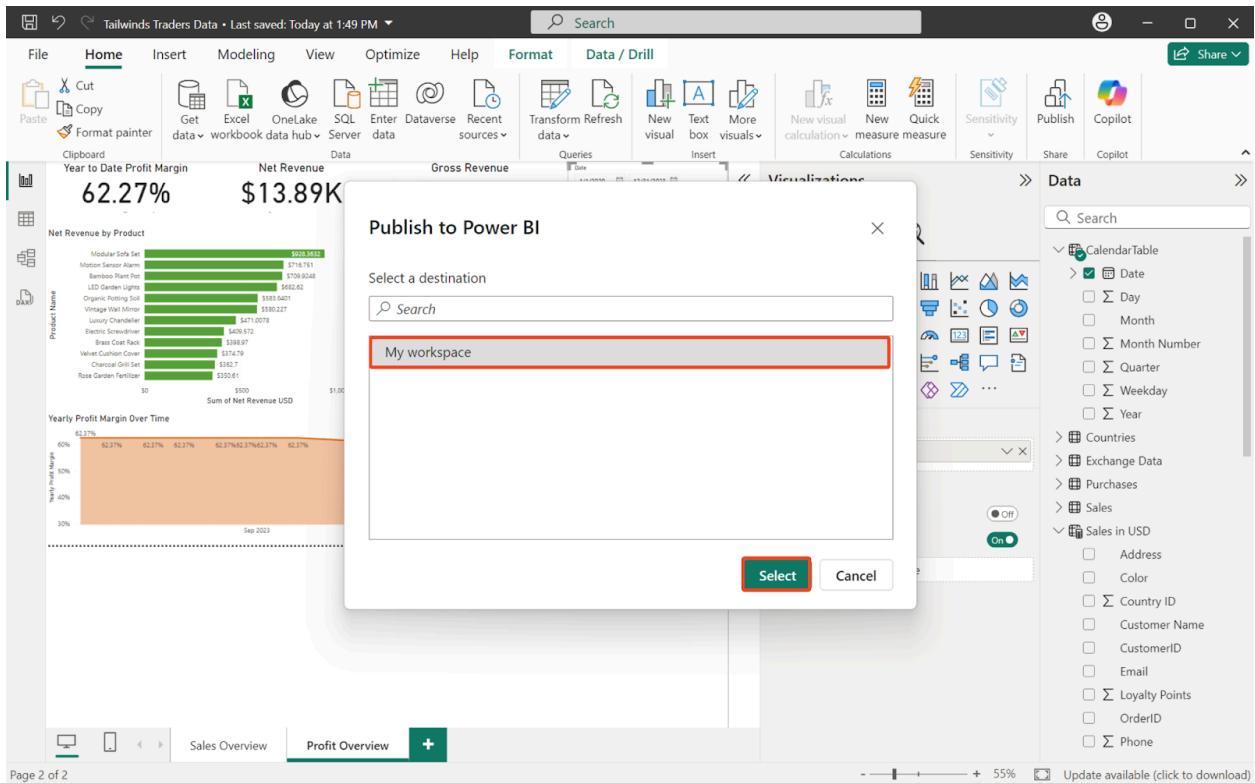
1. From the Visualizations pane, select the slicer visualization.

The screenshot shows a Power BI report titled "Tailwinds Traders Data" with the following details:

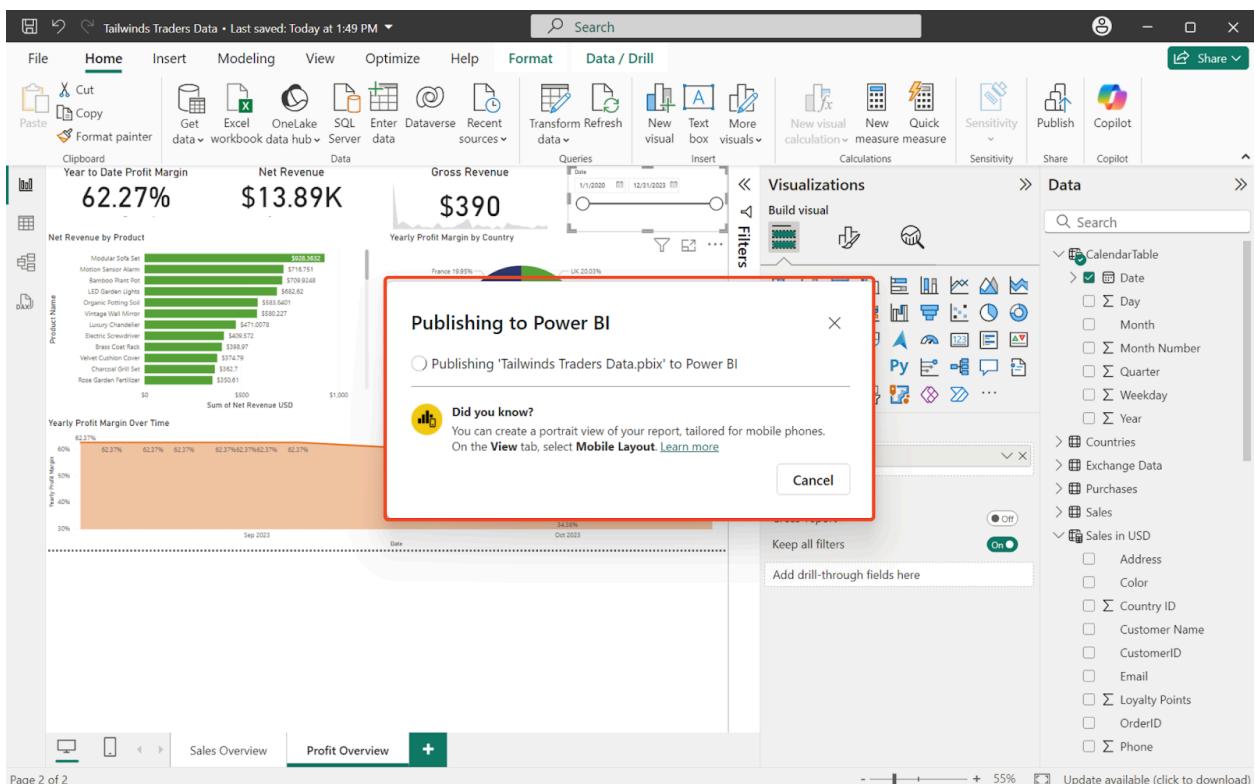
- Visualizations:** The report contains several visualizations:
  - A KPI card showing "Year to Date Profit Margin" at 62.27% and "Net Revenue" at \$13.89K.
  - A bar chart titled "Net Revenue by Product" showing revenue for various products like Modular Sofa Set, Motion Sensor Alarm, Bamboo Plant Pot, etc.
  - A donut chart titled "Yearly Profit Margin by Country" showing the distribution of profit margin by country (UK, Australia, UAE, USA, France).
  - A line chart titled "Yearly Profit Margin Over Time" showing the trend of profit margin from Sep 2023 to Oct 2023.
- Visualizations pane:** On the right, the "Visualizations" pane is open, showing a list of available visualizations. A red box highlights the "Slicer" icon, which is the selected item.
- Data pane:** The "Data" pane on the far right lists various data fields categorized under "Sales in USD".

2. Add data from the CalendarTable table:

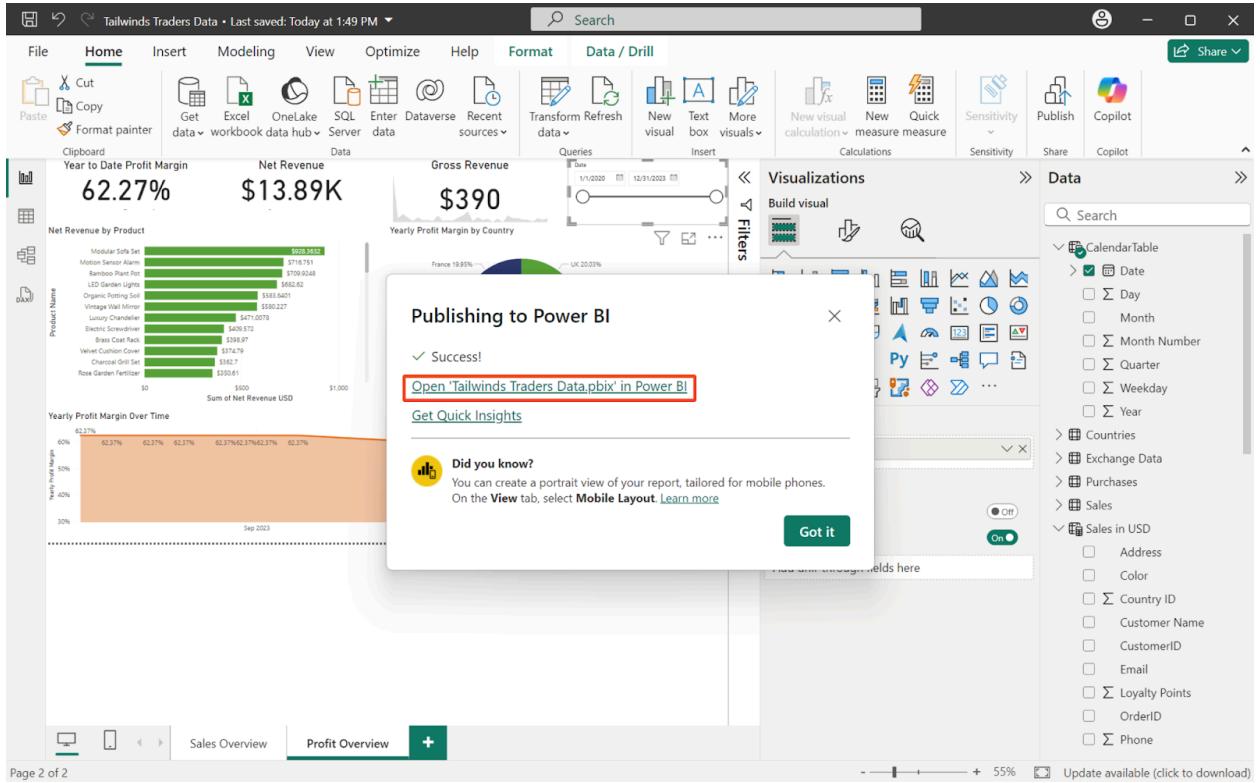
- Drag Date to the Fields section
3. Position the slicer next to the Gross Revenue KPI.
  4. Save and publish your report. Select File, then Save to save the report.
  5. In the Home tab, select Publish.
  6. In the dialog box, select My Workspace and then Select.

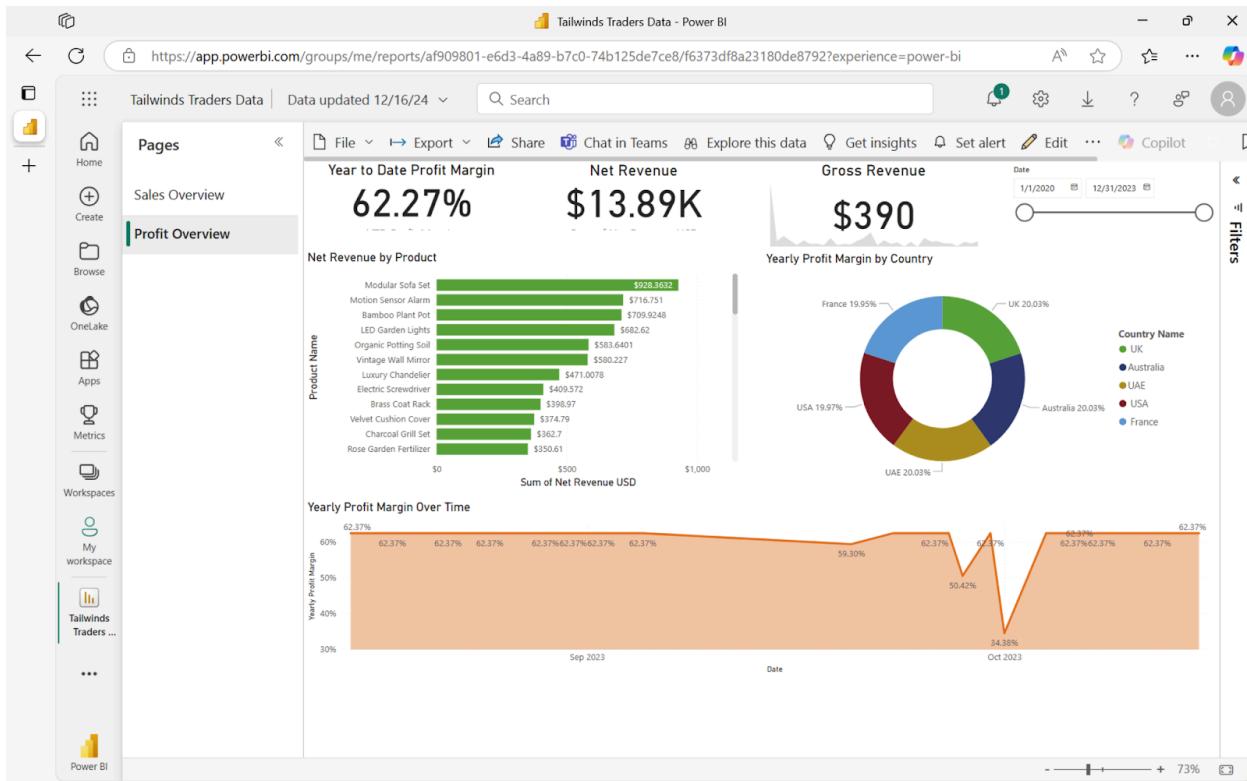


7. Power BI will publish your report. Depending on the size of the report and your internet connection, this process could take a few moments.



8. Once the report is published a new dialog box will appear, with an option to Open the report in Power BI Service, as well as Got it, and Get Quick Insights. Select Open to launch your web browser and review your report in Power BI Service.





## Conclusion

With these steps, you have successfully configured aggregations using DAX, and generated insights from the data you used to create sales and profit reports.

## 4.11. Exemplar: Capstone project - Part 3

### Overview

In the third and final set of Capstone project exercises, you helped Tailwind Traders create a dashboard in which you could upload the reports you generated and configure the dashboard, so it notified the company in the form of alerts and subscriptions.

In this final set, you undertook the fifth and sixth exercises in the Capstone project:

- Create an executive dashboard.
- And configuring alerts and subscriptions.

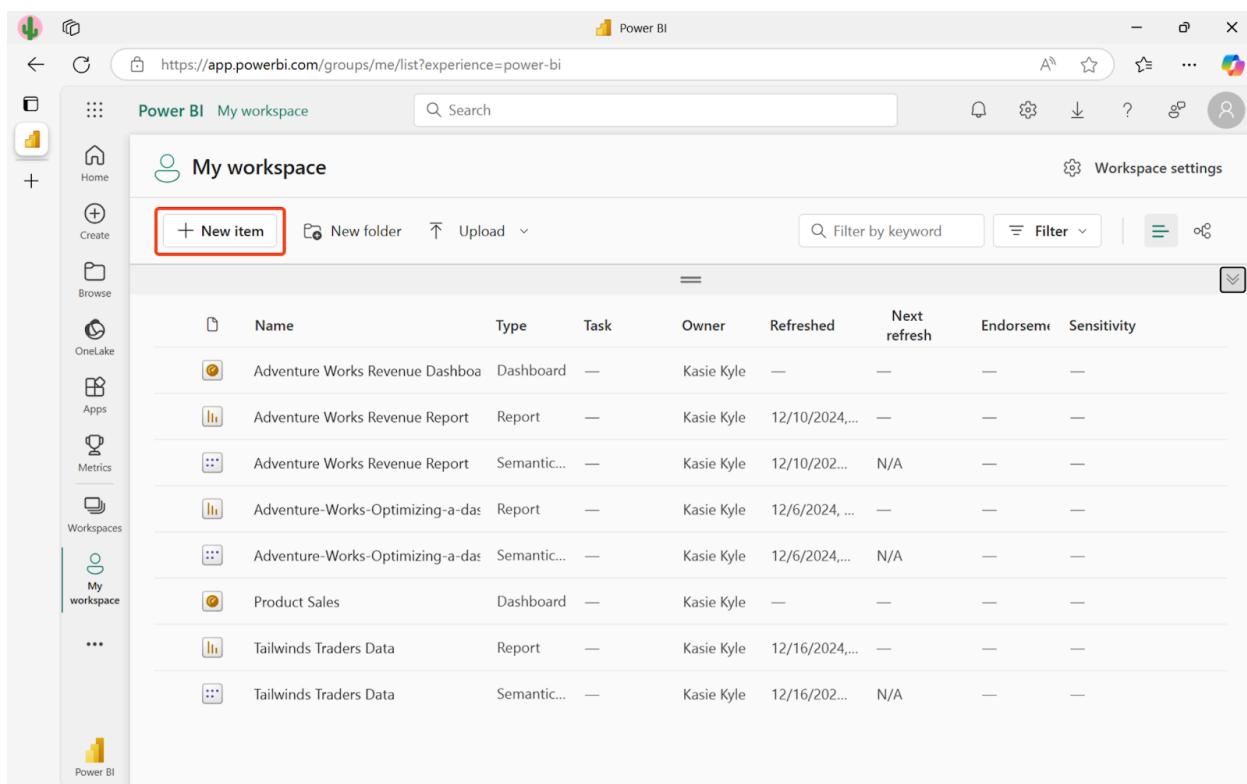
This reading provides you with a step-by-step guide for completing these tasks. It also includes screenshots that you can compare against your work.

You can also review the learning materials provided in this course for more guidance.

#### Exercise 6: Creating an executive dashboard

##### Step 1: Create a new dashboard

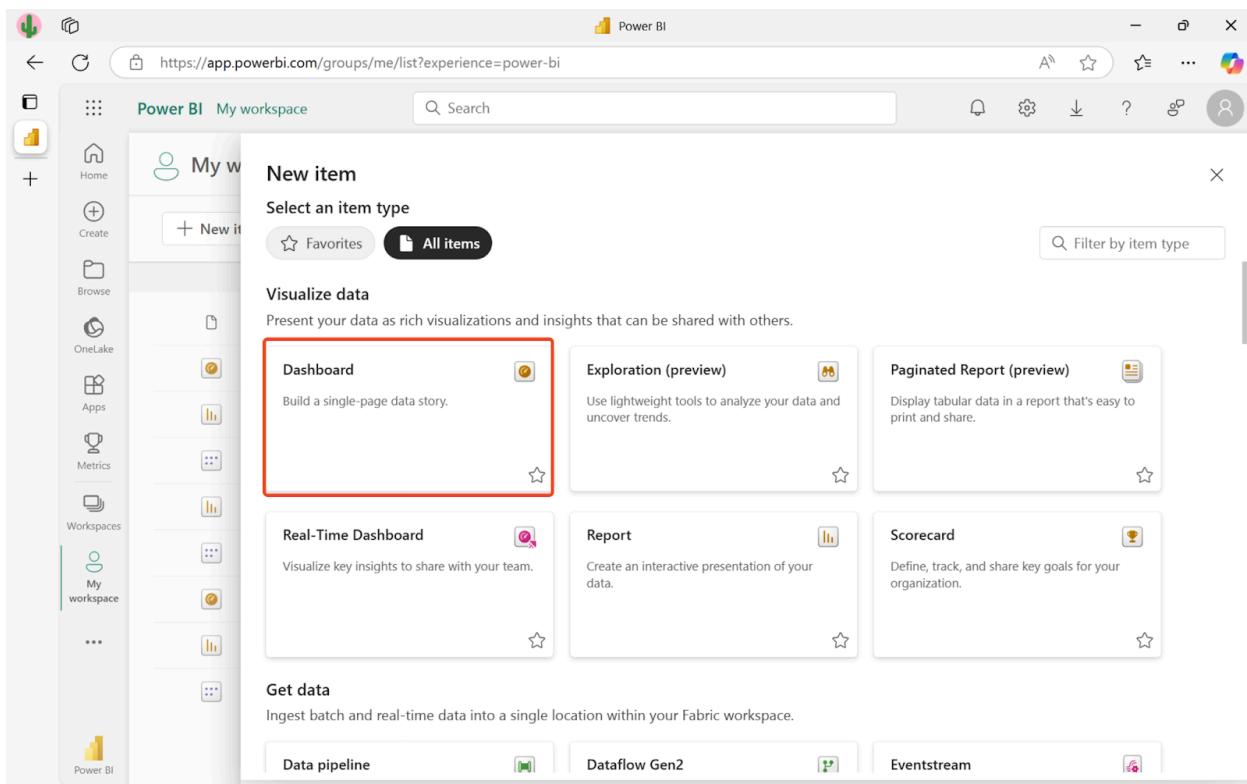
1. Open and Login to Power BI Service.
2. Navigate to My Workspace in your workspace.
3. In the Navigation view, click the + New button at the top-left corner of the screen.



The screenshot shows the 'My workspace' page in the Power BI Service. On the left, there's a navigation sidebar with icons for Home, Create, Browse, OneLake, Apps, Metrics, Workspaces, and My workspace. The 'My workspace' icon is selected. The main area has a title bar 'Power BI My workspace' and a search bar. Below that is a toolbar with 'New folder', 'Upload', 'Filter by keyword', 'Filter', and other settings. A prominent red box highlights the '+ New item' button in the toolbar. The main content area is a table listing various items:

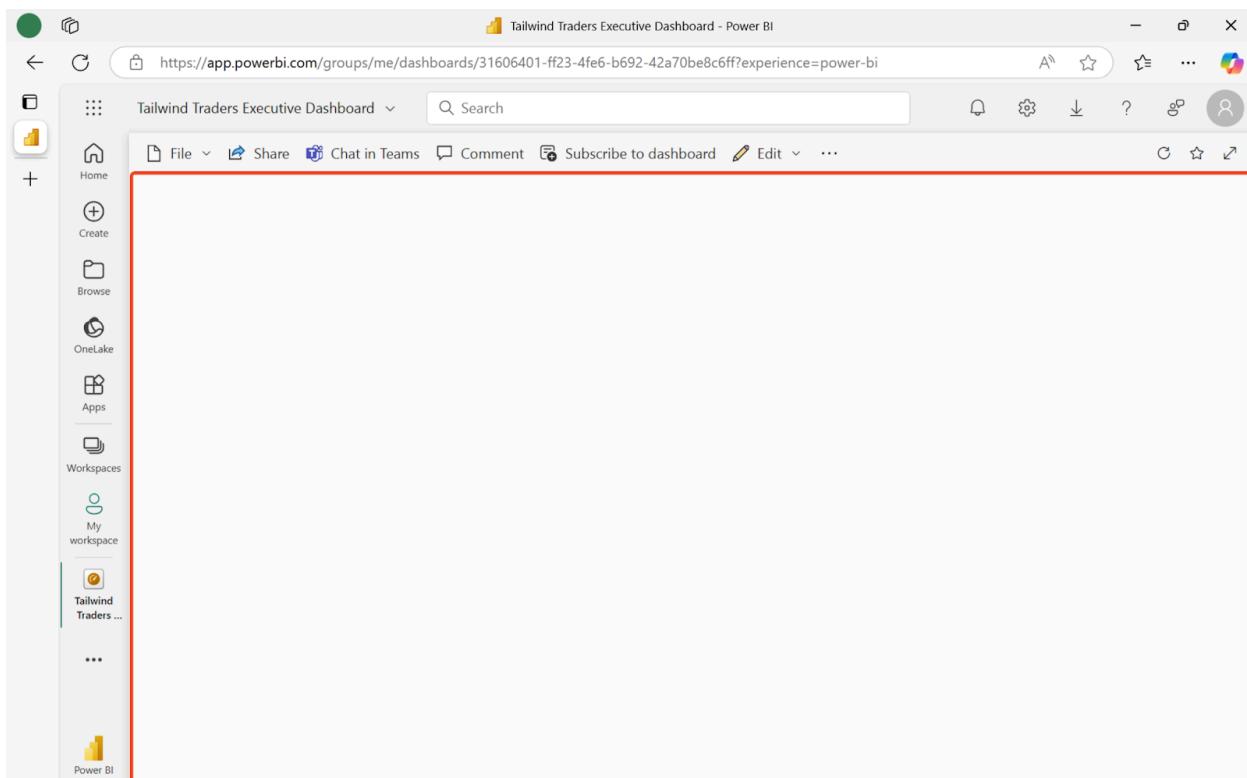
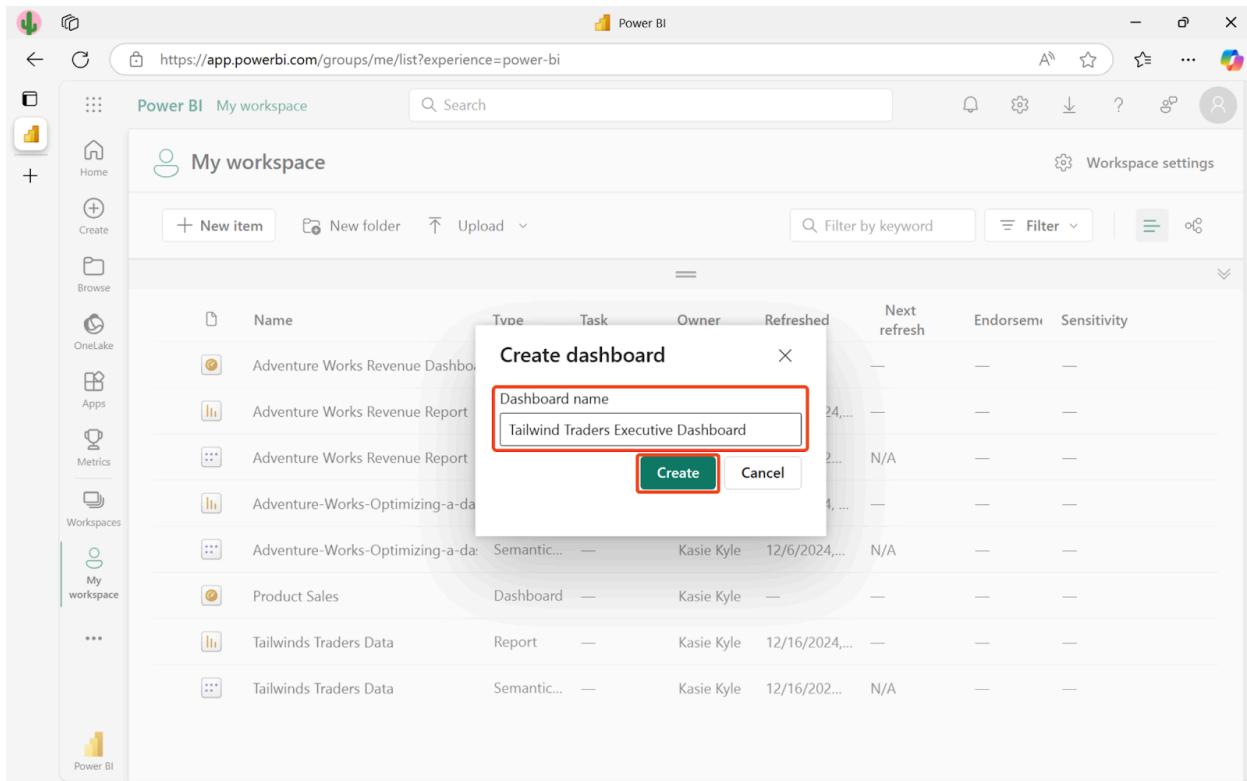
	Name	Type	Task	Owner	Refreshed	Next refresh	Endorsements	Sensitivity
1	Adventure Works Revenue Dashboard	Dashboard	—	Kasie Kyle	—	—	—	—
2	Adventure Works Revenue Report	Report	—	Kasie Kyle	12/10/2024, ...	—	—	—
3	Adventure Works Revenue Report	Semantic...	—	Kasie Kyle	12/10/202...	N/A	—	—
4	Adventure-Works-Optimizing-a-das...	Report	—	Kasie Kyle	12/6/2024, ...	—	—	—
5	Adventure-Works-Optimizing-a-das...	Semantic...	—	Kasie Kyle	12/6/2024, ...	N/A	—	—
6	Product Sales	Dashboard	—	Kasie Kyle	—	—	—	—
7	Tailwinds Traders Data	Report	—	Kasie Kyle	12/16/2024, ...	—	—	—
8	Tailwinds Traders Data	Semantic...	—	Kasie Kyle	12/16/202...	N/A	—	—

4. From the list of options, select Dashboard.



5. In the Create a dashboard pop-up window, enter Tailwind Traders Executive Dashboard in the Name field.

6. Click Create to generate a new dashboard shell.



## Step 2: Pin Sales Overview core visualizations

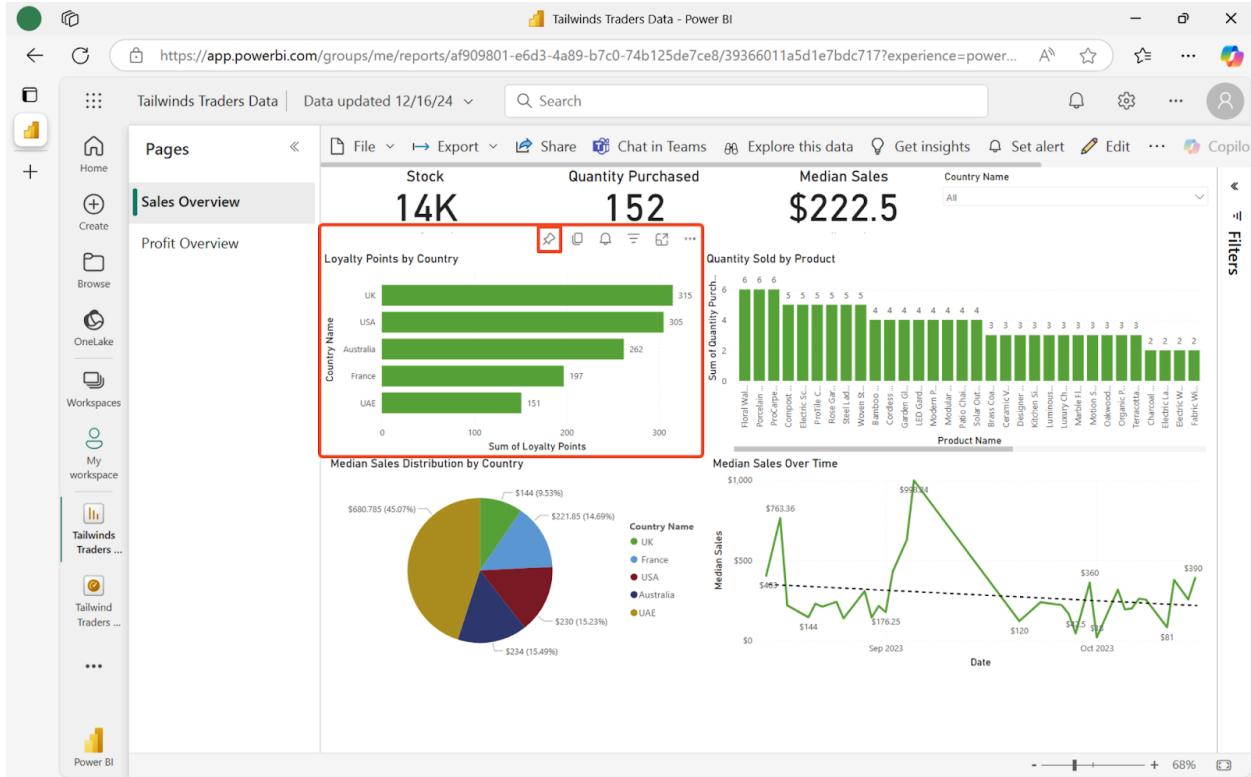
1. Navigate to My Workspace and open the Tailwind Traders Report.

The screenshot shows the Power BI 'My workspace' interface. On the left, there's a sidebar with icons for Home, Create, Browse, OneLake, Apps, Workspaces, and a 'My workspace' section which is currently selected and highlighted with a red box. The main area displays a table with columns: Name, Type, Task, Owner, Refreshed, Next refresh, Endorsement, and Sensitivity. Several items are listed, including 'Adventure Works Revenue Dashboard', 'Adventure Works Revenue Report', 'Adventure Works Revenue Report', 'Adventure-Works-Optimizing-a-dash', 'Adventure-Works-Optimizing-a-dash', 'Product Sales', 'Tailwind Traders Executive Dashboard', and 'Tailwinds Traders Data'. The 'Tailwinds Traders Data' row is also highlighted with a red box.

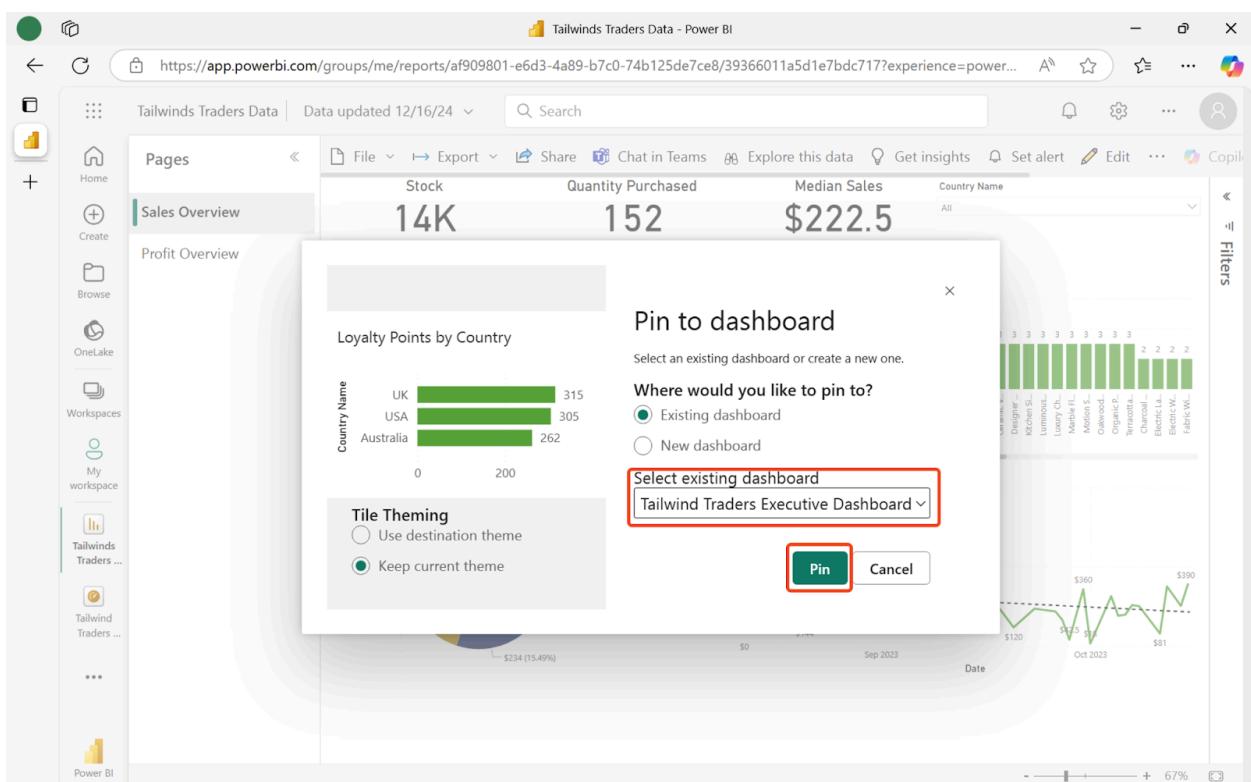
## 2. In the report, go to the Sales Overview tab.

The screenshot shows the 'Tailwinds Traders Data' report in Power BI. The left sidebar shows the 'Sales Overview' tab is selected and highlighted with a red box. The main content area features several visualizations: a large Stock and Quantity Purchased summary, a bar chart for Loyalty Points by Country (UK: 315, USA: 305, Australia: 262, France: 197, UAE: 151), a bar chart for Quantity Sold by Product, a pie chart for Median Sales Distribution by Country (UK: 45.07%, France: 14.69%, USA: 15.23%, Australia: 15.49%), and a line chart for Median Sales Over Time from September 2023 to October 2023.

## 3. Locate the Loyalty Points by Country bar chart and select the pin icon.



a. When the Pin to dashboard dialog box appears, choose Tailwind Traders Executive Dashboard and click Pin to confirm.



4. Repeat this process for the following charts:

a. Quantity Sold by Product column chart

The screenshot shows a Power BI report titled "Tailwinds Traders Data - Power BI". The main dashboard features three large summary tiles: "Stock 14K", "Quantity Purchased 152", and "Median Sales \$222.5". Below these is a bar chart titled "Quantity Sold by Product" with the Y-axis labeled "Sum of Quan...". The chart shows sales for various products like Floral, Porcel, Proca, Comp..., Electric, ProTil, Rose, and Steel, with values ranging from 2 to 6. A modal dialog box titled "Pin to dashboard" is open, asking "Where would you like to pin to?". It offers two options: "Existing dashboard" (selected) and "New dashboard". A dropdown menu "Select existing dashboard" contains "Tailwind Traders Executive Dashboard", which is highlighted with a red box. At the bottom of the modal are "Pin" and "Cancel" buttons.

b. Median Sales Distribution by Country pie chart

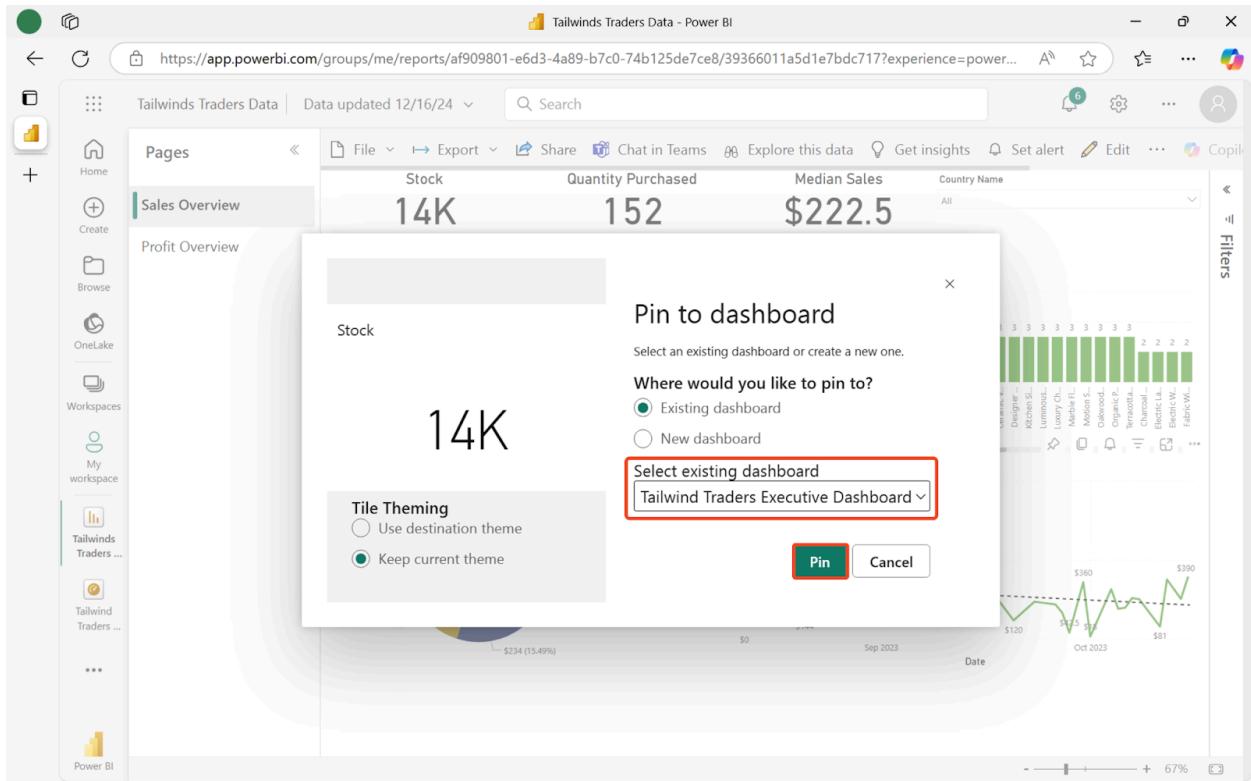
The screenshot shows a Power BI report titled "Tailwinds Traders Data - Power BI". The main card displays key metrics: Stock (14K), Quantity Purchased (152), Median Sales (\$222.5), and Country Name (All). On the left, there's a navigation pane with options like Home, Create, Browse, OneLake, Workspaces, and My workspace. A specific card titled "Sales Overview" is selected. A modal window titled "Pin to dashboard" is overlaid, asking "Where would you like to pin to?". It offers two options: "Existing dashboard" (selected) and "New dashboard". A dropdown menu "Select existing dashboard" shows "Tailwind Traders Executive Dashboard" (highlighted with a red box). At the bottom of the modal are "Pin" and "Cancel" buttons.

c. Median Sales Over Time line chart

This screenshot shows the same Power BI report interface as the previous one. The "Median Sales Over Time" card is now selected. A modal window titled "Pin to dashboard" is displayed, with the "Select existing dashboard" dropdown again showing "Tailwind Traders Executive Dashboard" (highlighted with a red box). The "Pin" button is visible at the bottom of the modal.

Step 3: Pin the Sales Overview card visualizations

1. Locate the Sum of Stock card and select the pin icon.
- a. When the Pin to dashboard dialog box appears, choose Tailwind Traders Executive Dashboard and click Pin to confirm.

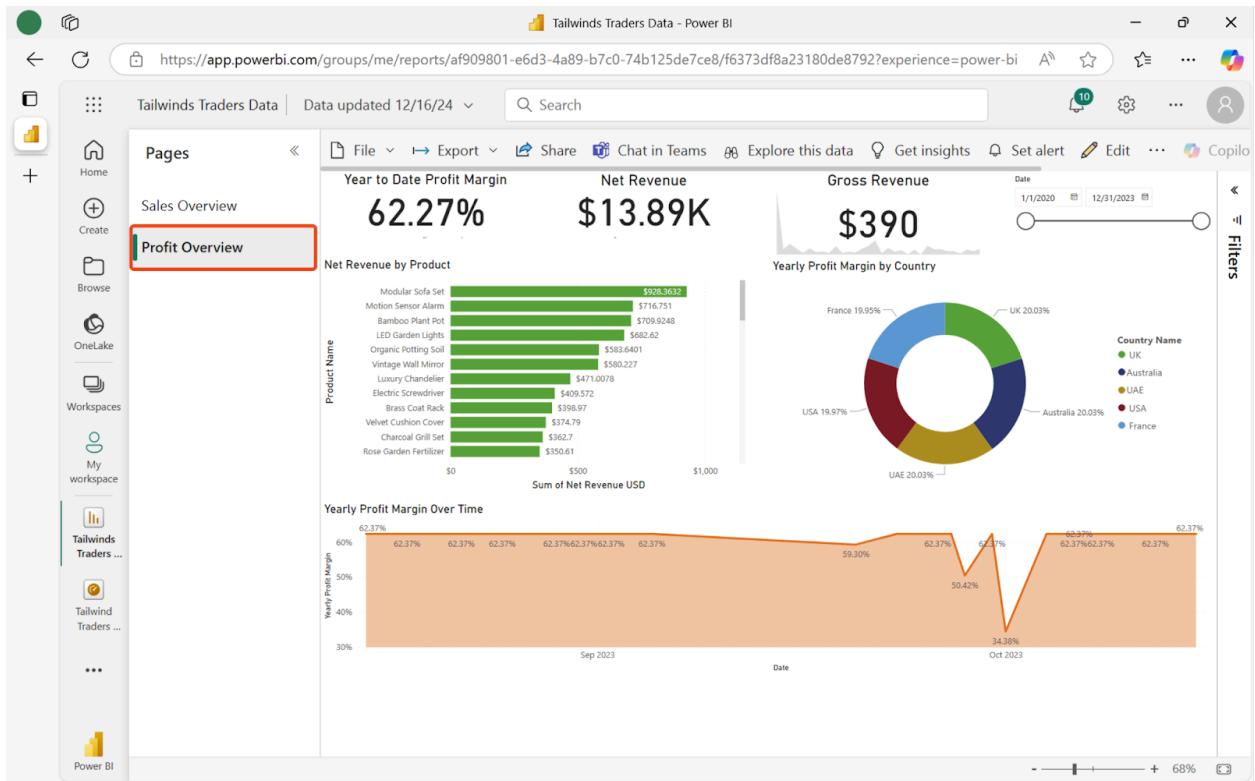


2. Repeat this process for the following cards:

- a. Sum of Quantity Purchased
- b. Median sales card

#### Step 4: Pin the Profit Overview core visualizations

1. Select the Profit Overview tab.

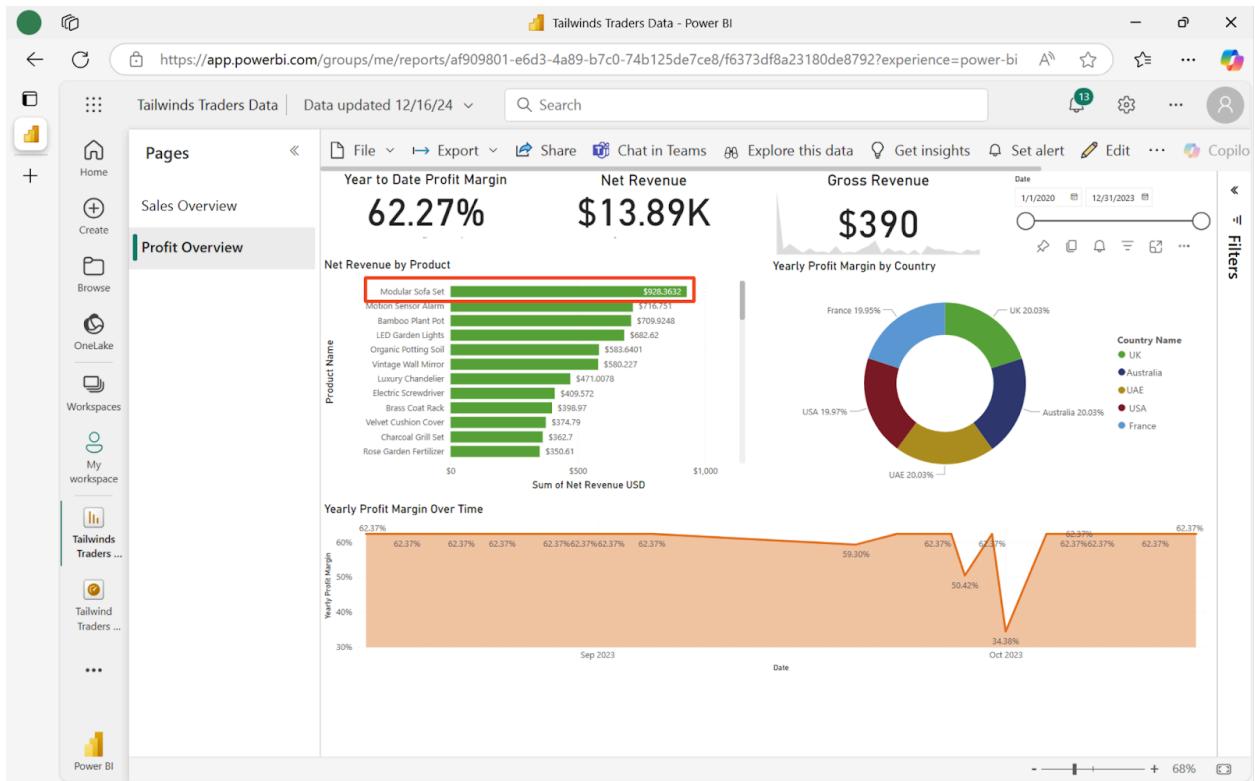


2. Locate the Net Revenue by Product bar chart and select the pin icon.
  - a. When the Pin to dashboard dialog box appears, choose Tailwind Traders Executive Dashboard and click Pin to confirm.

The screenshot shows a Power BI report titled "Tailwinds Traders Data - Power BI". The main dashboard features three large summary tiles: "Year to Date Profit Margin" at 62.27%, "Net Revenue" at \$13.89K, and "Gross Revenue" at \$390. Below these are several smaller charts and cards. A modal window titled "Pin to dashboard" is open, prompting the user to select a destination dashboard. The "Select existing dashboard" dropdown menu is open, showing "Tailwind Traders Executive Dashboard" as an option. The "Pin" button is highlighted with a red box.

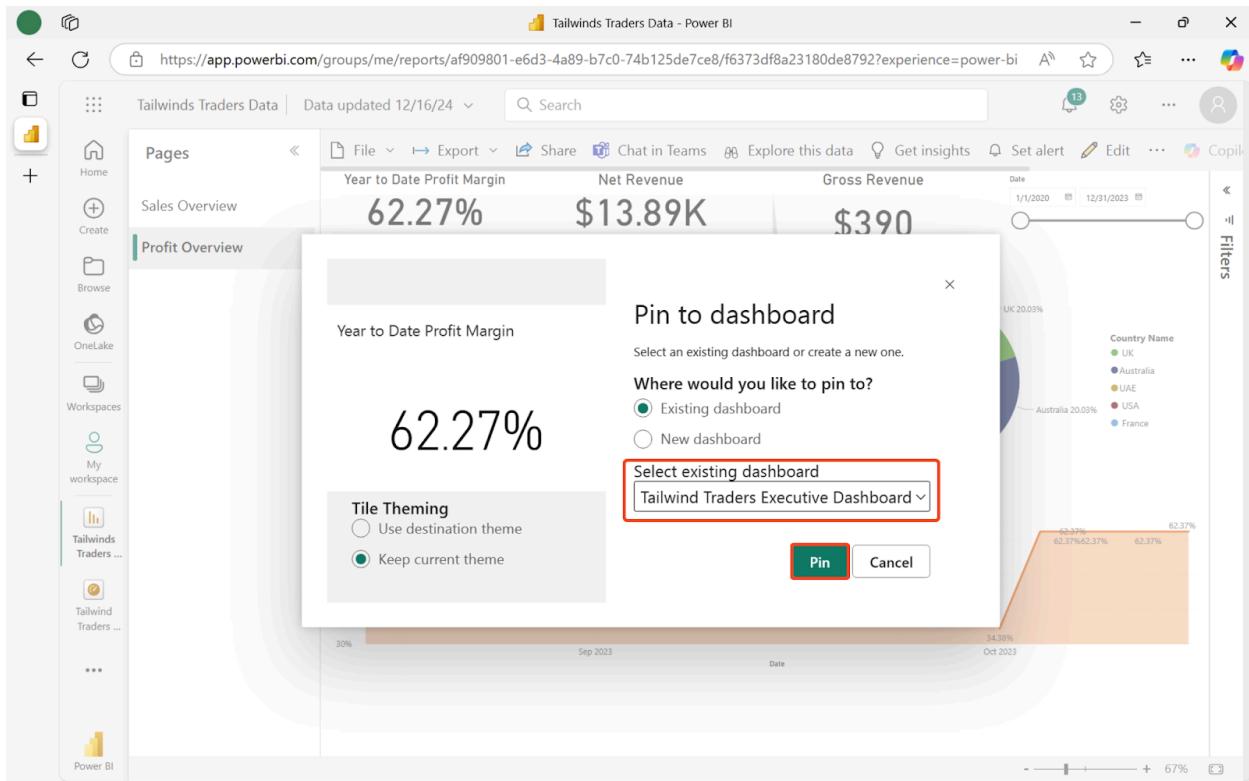
3. Repeat this process for the following charts:
  - a. Yearly Profit Margin by Country donut chart
  - b. Year Profit Margin over Time area chart
4. Note the product with the highest value in the Net Revenue by Product bar chart.

The Modular Sofa Set has the highest Sum of Net Revenue USD, which is precisely 928.36.



## Step 5: Pin Profit Overview Card and KPI Visualizations

1. Locate the YTD Profit card and select the pin icon.
- a. When the Pin to dashboard dialog box appears, choose Tailwind Traders Executive Dashboard and click Pin to confirm.



2. Repeat this process for the following cards:

- Sum of Net Revenue USD card
- Sum of Gross Revenue USD KPI

Step 6: Configure the Mobile View for the cards and KPI visuals

1. Navigate to Workspaces and select My Workspace.
2. From the list of dashboards, choose the Tailwind Traders Executive Dashboard.

The screenshot shows the Power BI desktop application interface. On the left is a vertical navigation bar with icons for Home, Create, Browse, OneLake, Apps, Workspaces, My workspace (which is selected and highlighted in blue), Tailwinds Traders Data, and a three-dot menu. The main area is titled 'My workspace' and contains a table with the following data:

	Name	Type	Task	Owner	Refreshed	Next refresh	Endorsements	Sensitivity
1	Adventure Works Revenue Dashboard	Dashboard	—	—	—	—	—	—
2	Adventure Works Revenue Report	Report	—	—	12/10/2024, ...	—	—	—
3	Adventure Works Revenue Report	Semantic...	—	—	12/10/202...	N/A	—	—
4	Adventure-Works-Optimizing-a-das...	Report	—	—	12/6/2024, ...	—	—	—
5	Adventure-Works-Optimizing-a-das...	Semantic...	—	—	12/6/2024, ...	N/A	—	—
6	Product Sales	Dashboard	—	—	—	—	—	—
7	Tailwind Traders Executive Dashboard	Dashboard	—	—	—	—	—	—
8	Tailwinds Traders Data	Report	—	—	12/16/2024, ...	—	—	—
9	Tailwinds Traders Data	Semantic...	—	—	12/16/202...	N/A	—	—

3. From the main navigation bar, select Edit, then choose Mobile layout to switch the view from desktop to mobile. The screen will adjust to a vertical layout, simulating a mobile device.

The screenshot shows the Tailwind Traders Executive Dashboard in a web browser. The dashboard features several visualizations: a bar chart titled 'Loyalty Points by Country' showing points for UK, USA, Australia, France, and UAE; a pie chart titled 'Median Sales Distribution by Country' showing percentages for UK, USA, and Australia; a line chart titled 'Median Sales Over Time' showing sales trends; and a bar chart titled 'Quantity Purchased by Product'. On the right side, there is a context menu with options like 'Edit', 'Add a tile', 'Dashboard theme', and 'Mobile layout'. The 'Mobile layout' option is highlighted with a red box.

4. If all of the visuals appear on the mobile device, select Unpin icon tile to unpin all tiles.

The screenshot shows the 'Edit mobile layout' interface. It displays a preview of the dashboard with its various visualizations. To the right, there is a dark panel titled 'Unpinned tiles' with a sub-instruction 'Unpin tiles to hide them from the mobile layout'. A red box highlights the 'X' icon in the top right corner of this panel, which is used to unpin tiles.

5. Pin and arrange the visuals on the mobile canvas in the following order:

a. Pin Sum of Net Revenue USD.

The screenshot shows the Power BI mobile dashboard editor interface. On the left, there's a sidebar with navigation options like Home, Create, Browse, OneLake, Workspaces, and My workspace. The main area is titled "Edit mobile layout". It displays a mobile phone icon representing the dashboard. Inside the phone icon, there's a card labeled "Net Revenue" with the value "\$13.89K", which is highlighted with a red border. To the right of the phone icon is a grid of "Unpinned tiles". The tiles include:

- A pie chart showing regional distribution with France (1-1), USA (1), and Australia (1).
- A line chart showing median sales over time from Sep 2023 to Oct 2023.
- A card for "Stock" showing the value 14K.
- A card for "Quantity Purchased" showing the value 152.
- A card for "Median Sales" showing the value \$222.5.
- A card for "Net Revenue by Product" comparing Modular (\$128,3632), Motion (\$716,751), and Bamboo (\$709,9248).
- A donut chart for "Yearly Profit Margin by Country" with segments for UK (20%), Australia (19.9%), UAE (2%), and USA (2%).
- A card for "Yearly Profit Margin Over..." showing a comparison between Sep 2023 and Oct 2023.
- A card for "Year to Date Profit Margin" showing 62.27%.
- A card for "Gross Revenue" showing the value \$390.

b. Pin Sum of Quantity Purchased card.

The screenshot shows the 'Edit mobile layout' screen for the 'Tailwind Traders Executive Dashboard'. On the left, there's a sidebar with navigation options like Home, Create, Browse, OneLake, Workspaces, My workspace, Tailwind Traders Data, and Power BI. The main area has a title 'Edit mobile layout' and shows a preview of the mobile dashboard. Inside the preview, there are two cards: 'Net Revenue' (\$13.89K) and 'Quantity Purchased' (152), which is highlighted with a red border. To the right is the 'Unpinned tiles' section, displaying various dashboards and charts.

c. Drag Sum of Quantity Purchased card to the right of Net Revenue card.

This screenshot shows the same 'Edit mobile layout' screen as the previous one, but the 'Quantity Purchased' card has been moved to the right of the 'Net Revenue' card, both enclosed in a single red-bordered container. The rest of the interface and pinned tiles remain the same.

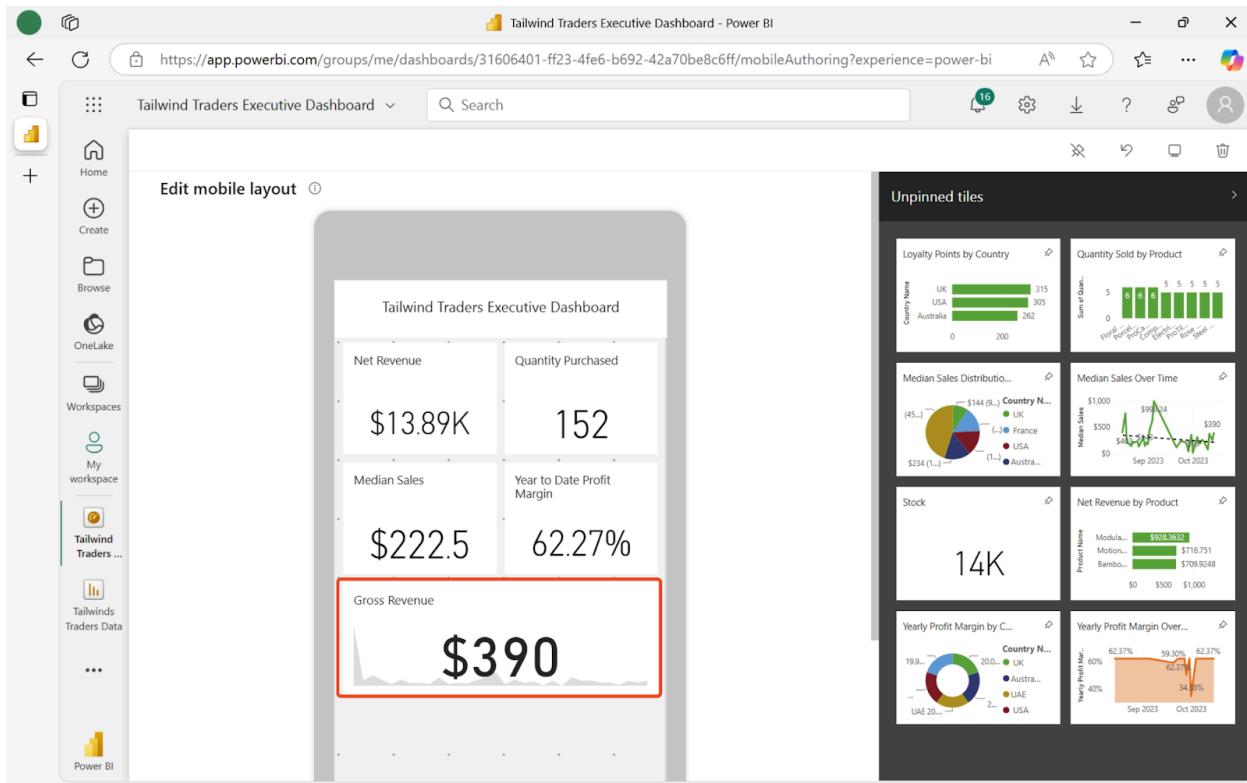
d. Pin Median Sales card.

The screenshot shows the Tailwind Traders Executive Dashboard in a mobile browser view. On the left is a sidebar with navigation options like Home, Create, Browse, OneLake, Workspaces, My workspace, Tailwind Traders ..., Tailwinds Traders Data, and Power BI. The main area displays a dashboard card with 'Net Revenue' (\$13.89K) and 'Quantity Purchased' (152). Below this is a card for 'Median Sales' which is highlighted with a red box and shows the value \$222.5. To the right is a grid of nine pinned tiles: 'Country N...', 'Median Sales Over Time', 'Stock' (14K), 'Net Revenue by Product', 'Yearly Profit Margin by C...', 'Yearly Profit Margin Over...', 'Year to Date Profit Margin' (62.27%), and 'Gross Revenue' (\$390).

e. Pin YTD Profit card and drag to the right of Median Sales card.

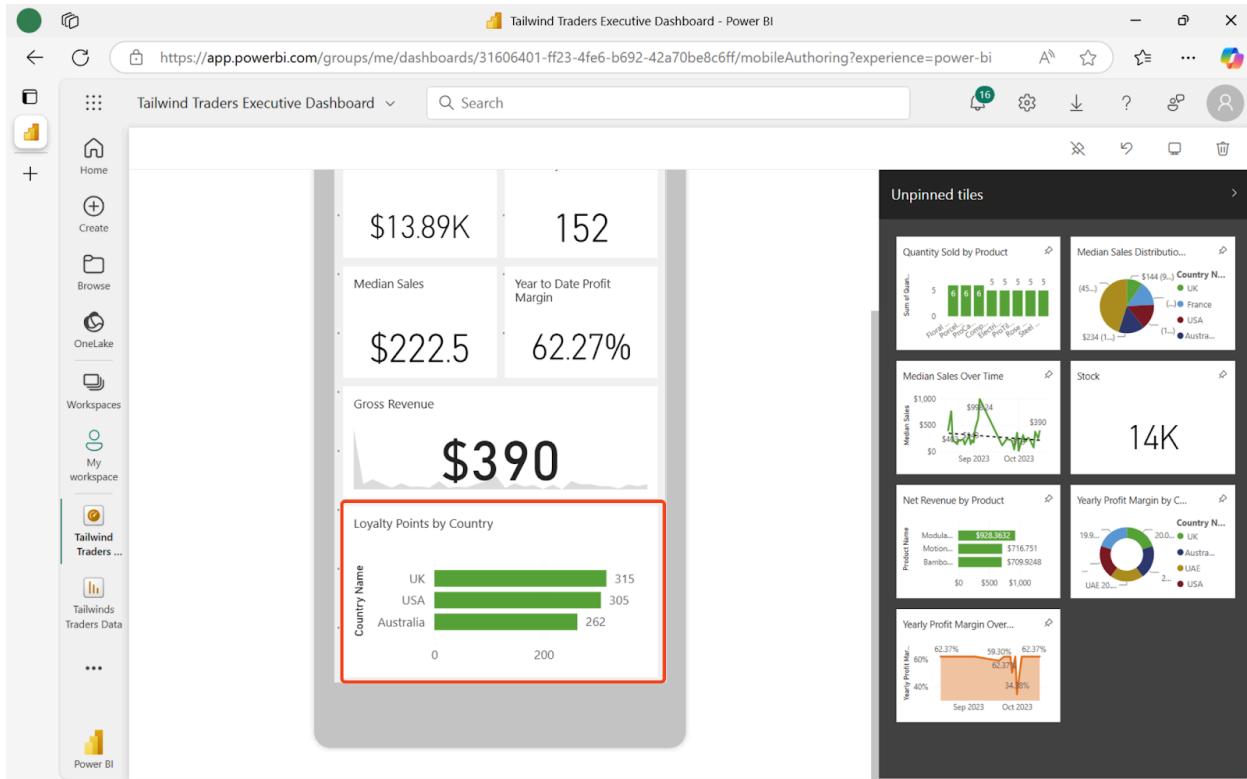
This screenshot shows the same mobile view as above, but with a different arrangement. The 'Median Sales' card has been moved to the right of the 'Year to Date Profit Margin' card, which is now highlighted with a red box and shows the value 62.27%. The rest of the dashboard and pinned tiles remain the same.

f. Pin Sum of Gross Revenue USD KPI across the full width of the layout.

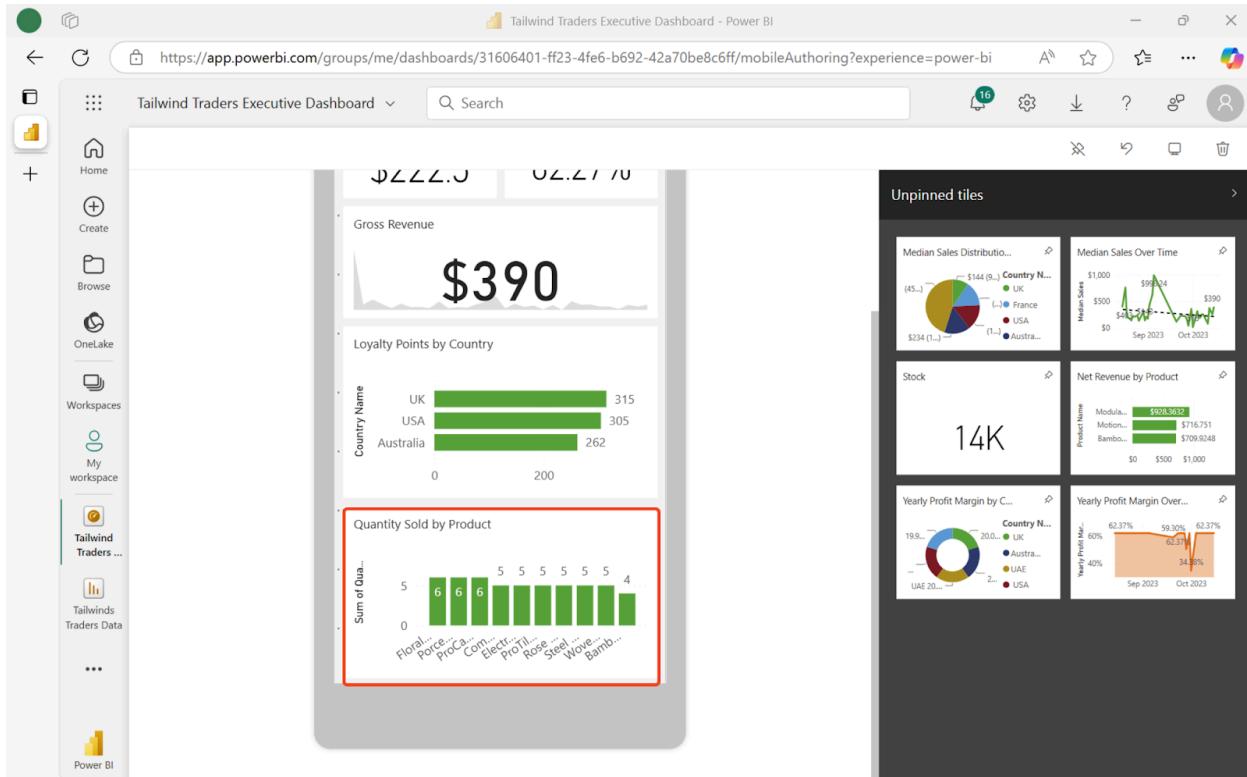


## Step 8: Configure the Mobile View for the core visualizations

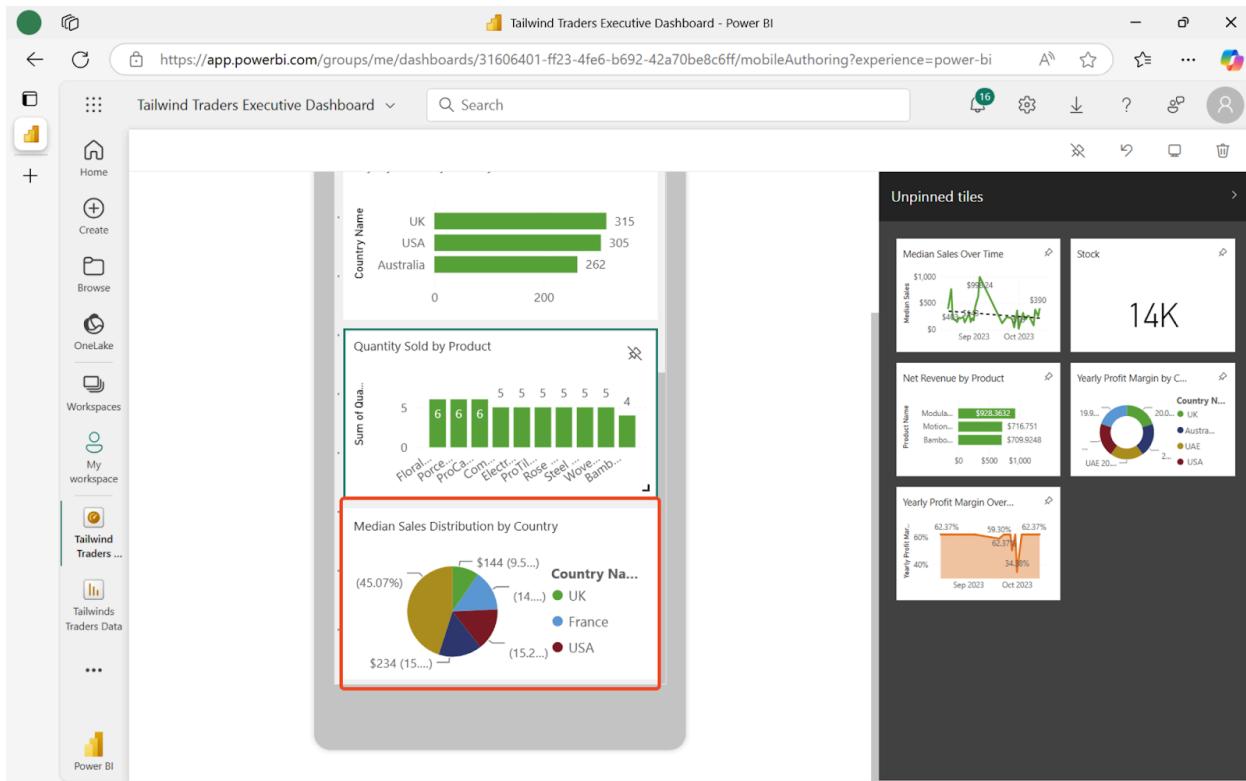
1. Now that you've pinned the cards, configure the mobile view for the core visualizations. Pin and arrange the visuals on the mobile canvas in the following order:
  - a. Pin Loyalty Points by Country bar chart.



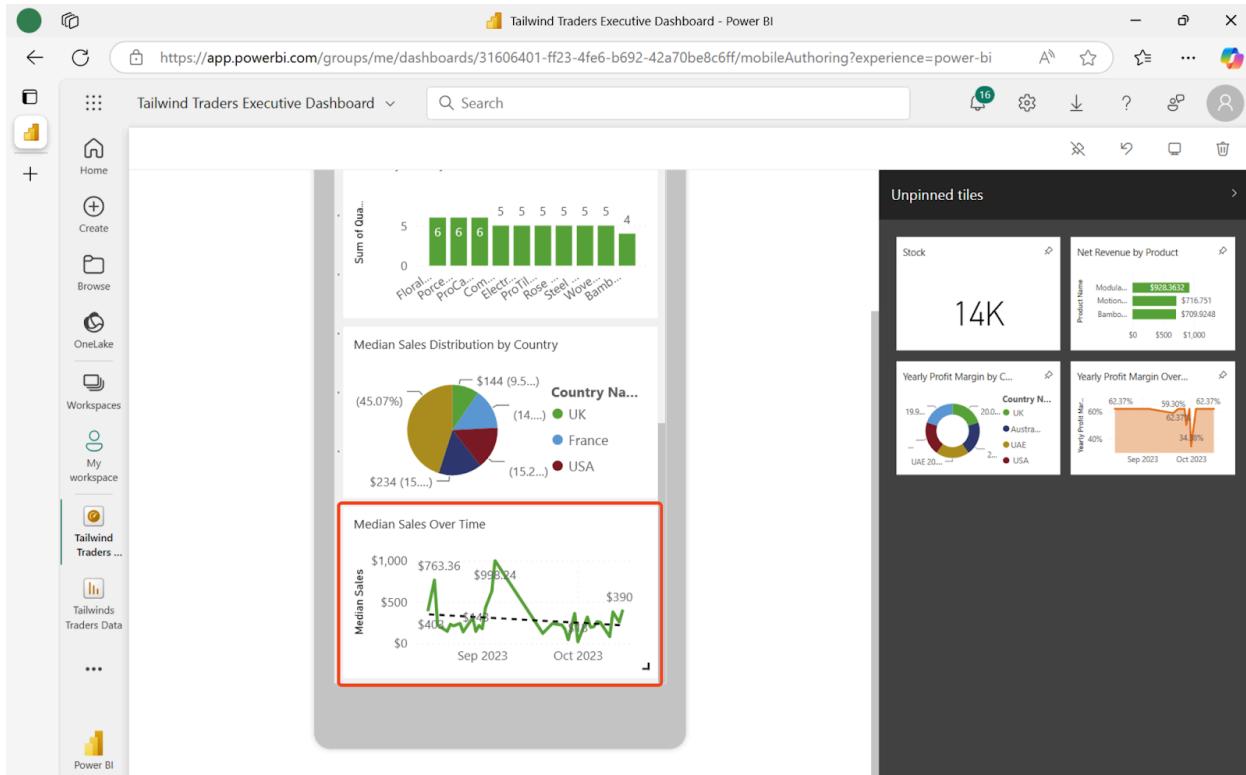
b. Quantity Sold by Product column chart.



c. Median Sales Distribution by Country pie chart.

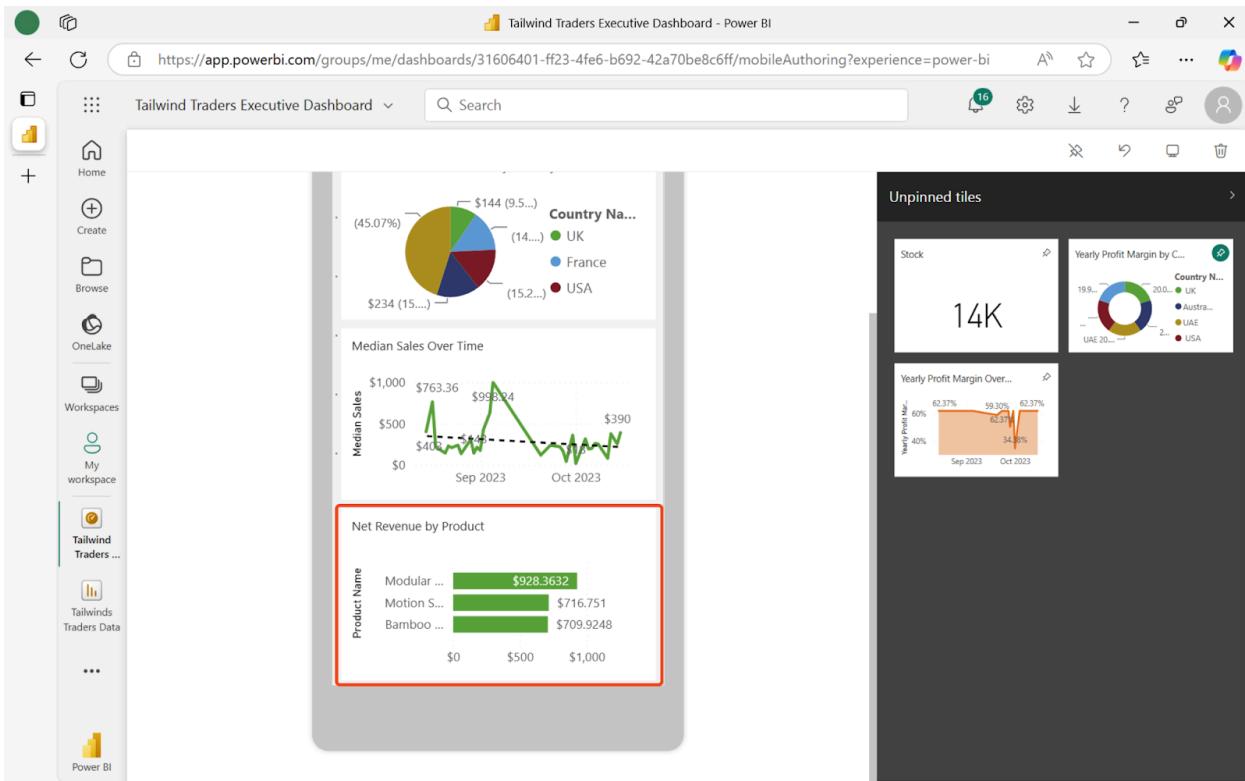


d. Median Sales over Time line chart.

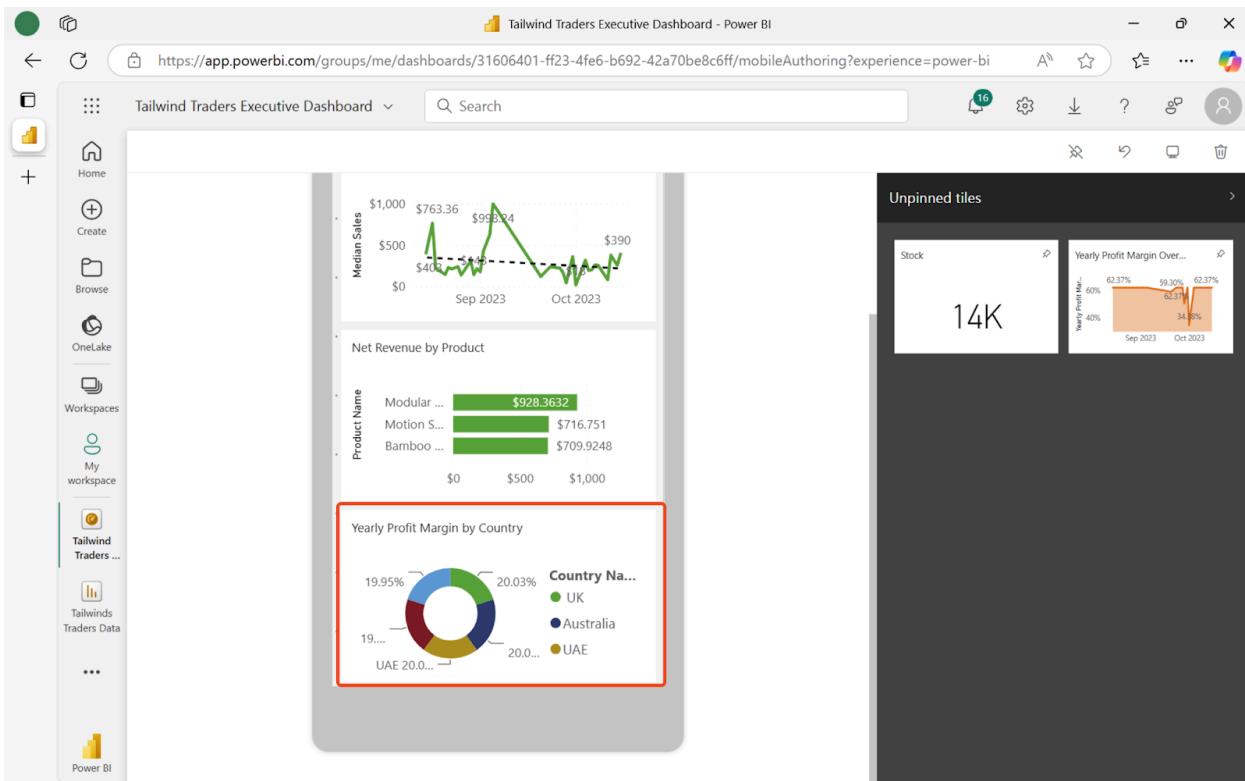


2. Now, pin the following Profit Overview visualizations in the following order:

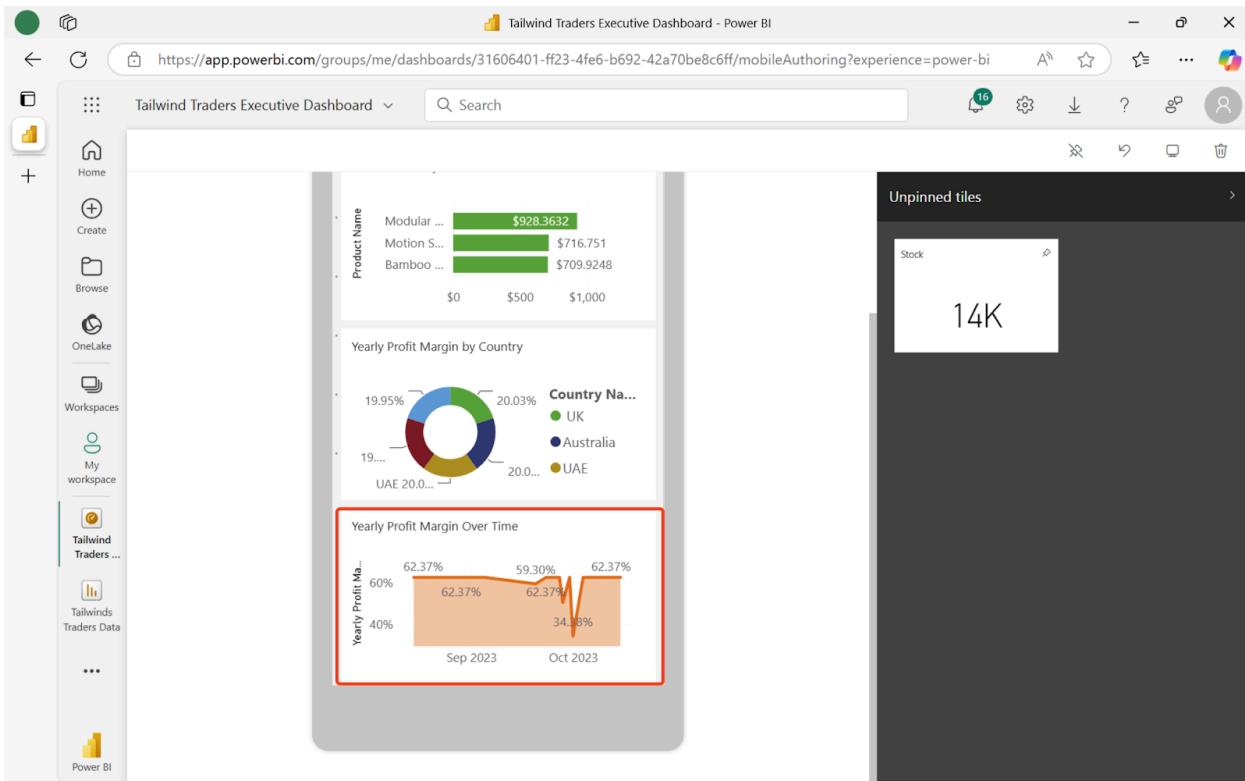
### a. Net Revenue by Product bar chart



### b. Yearly Profit Margin by Country donut chart



### c. Yearly Profit Margin over Time area chart



#### Exercise 7: Configuring alerts and subscriptions

##### Step 1: Create a daily alert for Gross Revenue USD

1. Select the Desktop icon to return to the Tailwind Traders Executive Dashboard.

The screenshot shows the 'Edit mobile layout' interface for the 'Tailwind Traders Executive Dashboard'. On the left, a sidebar lists workspace options like Home, Create, Browse, OneLake, Workspaces, My workspace, Tailwind Traders ..., Tailwinds Traders Data, and Power BI. The main area displays a mobile phone mockup showing four KPI tiles: Net Revenue (\$13.89K), Quantity Purchased (152), Median Sales (\$222.5), and Year to Date Profit Margin (62.27%). Below these is a bar chart for Gross Revenue with a total value of \$390. To the right is a dark panel titled 'Unpinned tiles' containing a single tile labeled 'Stock' with the value '14K'. A red box highlights the ellipsis icon in the top right corner of the mobile layout preview.

2. Locate the Sum of Gross Revenue USD KPI tile and select the ellipses icon.

The screenshot shows the 'Tailwind Traders Executive Dashboard' in Power BI desktop. The left sidebar includes options like File, Share, Chat in Teams, Comment, Subscribe to dashboard, Edit, and More options. The main area features several visualizations: a horizontal bar chart for 'Sum of Net Revenue USD' showing values for Luxury Chandelier, Electric Screwdriver, Brass Coat Rack, Velvet Cushion Cover, and Charcoal Grill Set; a donut chart showing regional distribution with UAE at 20.03%, USA at 19.97%, and France at 20.03%; a line chart for 'Yearly Profit Margin Over Time' showing fluctuations from 34.38% to 62.37%; and a large KPI tile for 'Gross Revenue' with the value '\$390'. A red box highlights the 'More options' button in the top right corner of the KPI tile.

3. From the options that appear, select Manage alerts.

The screenshot shows the Tailwind Traders Executive Dashboard in a web browser. The dashboard includes a bar chart for product net revenue, a donut chart for regional distribution, a line chart for profit margin over time, and a large value tile. A context menu is open on the right, with the 'Manage alerts' option highlighted.

4. In the Manage alerts screen, select + New alert rule to create a new alert.

The screenshot shows the 'Manage alerts' screen in the Tailwind Traders Executive Dashboard. It features a green button labeled '+ Add alert rule' highlighted by a red box. Below the button, there is a note stating 'No alerts set currently' and two activation options: 'Activator' and 'Power Automate'. At the bottom are 'Save and close' and 'Cancel' buttons.

5. In Alert title, enter Gross Revenue USD below \$400.

The screenshot shows a Power BI dashboard titled "Tailwind Traders Executive Dashboard". On the left, there's a sidebar with various workspace and data source options. The main area displays two charts: a horizontal bar chart for "Sum of Net Revenue USD" by product and a line chart for "Yearly Profit Margin Over Time". A modal window titled "Manage alerts" is overlaid on the dashboard. Inside the modal, an alert rule for "Gross Revenue USD Below \$400" is being configured. The "Condition" dropdown is set to "Below", and the "Threshold" input field is set to 0. Other settings like notification frequency and automation are also visible.

6. In the Condition dropdown menu, select **Below**.

This screenshot is identical to the one above, showing the Power BI dashboard and the "Manage alerts" modal. The key difference is that the "Condition" dropdown in the modal has been changed from "Above" to "Below", as instructed in the previous step.

7. In the Threshold section, enter **400** to set the threshold.

The screenshot shows a Power BI dashboard titled "Tailwind Traders Executive Dashboard". On the left, there's a sidebar with various navigation options like Home, Create, Browse, OneLake, Workspaces, My workspace, Tailwinds Traders Data, and Tailwind Traders ... . The main area displays two charts: a horizontal bar chart titled "Sum of Net Revenue USD" showing revenue for products like Luxury Chandelier, Electric Screwdriver, Brass Coat Rack, Velvet Cushion Cover, and Charcoal Grill Set; and a line chart titled "Yearly Profit Margin Over Time" showing profit margin percentages over time from Sep 2023 to Oct 2023. A modal window titled "Manage alerts" is overlaid on the dashboard. It contains a section for creating a new alert rule ("+ Add alert rule") and one existing rule for "Gross Revenue USD Below \$400". This rule is marked as "Active" (on) and set to trigger "At most every 24 hours". The "Threshold" is set to 400. The "Maximum notification frequency" section is highlighted with a red box, showing the option "At most every 24 hours" selected.

## 8. Set Maximum notification frequency to At most every 24 hours.

This screenshot is identical to the one above, showing the same Power BI dashboard and the "Manage alerts" modal. The "Maximum notification frequency" section is highlighted with a red box, specifically around the radio button for "At most every 24 hours".

9. Once you've set all required parameters, select Save and close to save your alert settings and activate the alert rule.

The screenshot shows the Tailwind Traders Executive Dashboard in a web browser. On the left, there's a sidebar with navigation options like Home, Create, Browse, OneLake, Workspaces, My workspace, Tailwinds Traders Data, and Tailwind Traders ... . The main dashboard area displays two charts: a horizontal bar chart titled "Sum of Net Revenue USD" showing revenue for various products, and a line chart titled "Yearly Profit Margin Over Time" showing profit margin percentages over time. A modal window titled "Manage alerts" is open on the right, specifically for a rule named "GROSS REVENUE". The rule details are as follows:

- Active:** On
- Alert title:** Gross Revenue USD Below \$400
- Set alerts rule for:** Sum of Gross Revenue USD
- Condition:** Below
- Threshold:** 400
- Maximum notification frequency:** At most every 24 hours
- Activator:** Use Activator to trigger action based alerts
- Power Automate:** Use Power Automate to trigger additional actions

At the bottom of the modal are "Save and close" and "Cancel" buttons.

## Step 2: Create a subscription for Sales Overview

1. Navigate to My Workspace, locate the Tailwind Traders Report in the list of reports, and open it.

Screenshot of the Power BI workspace interface showing the list of items. A report titled "Tailwinds Traders Data" is selected and highlighted with a red border.

Name	Type	Task	Owner	Refreshed
Adventure Works Revenue Dashboard	Dashboard	—	—	—
Adventure Works Revenue Report	Report	—	—	12/10/2024, 1:41:00 PM
Adventure Works Revenue Report	Semantic mo...	—	—	12/10/2024, 1:41:00 PM
Adventure-Works-Optimizing-a-dashboard	Report	—	—	12/6/2024, 12:08:54 PM
Adventure-Works-Optimizing-a-dashboard	Semantic mo...	—	—	12/6/2024, 12:08:54 PM
Product Sales	Dashboard	—	—	—
Tailwind Traders Executive Dashboard	Dashboard	—	—	—
<b>Tailwinds Traders Data</b>	Report	—	—	12/16/2024, 3:53:46 PM
Tailwinds Traders Data	Semantic mo...	—	—	12/16/2024, 3:53:46 PM

## 2. Access the report's Sales Overview tab.

Screenshot of the "Tailwinds Traders Data" report page. The "Sales Overview" tab is selected and highlighted with a red border.

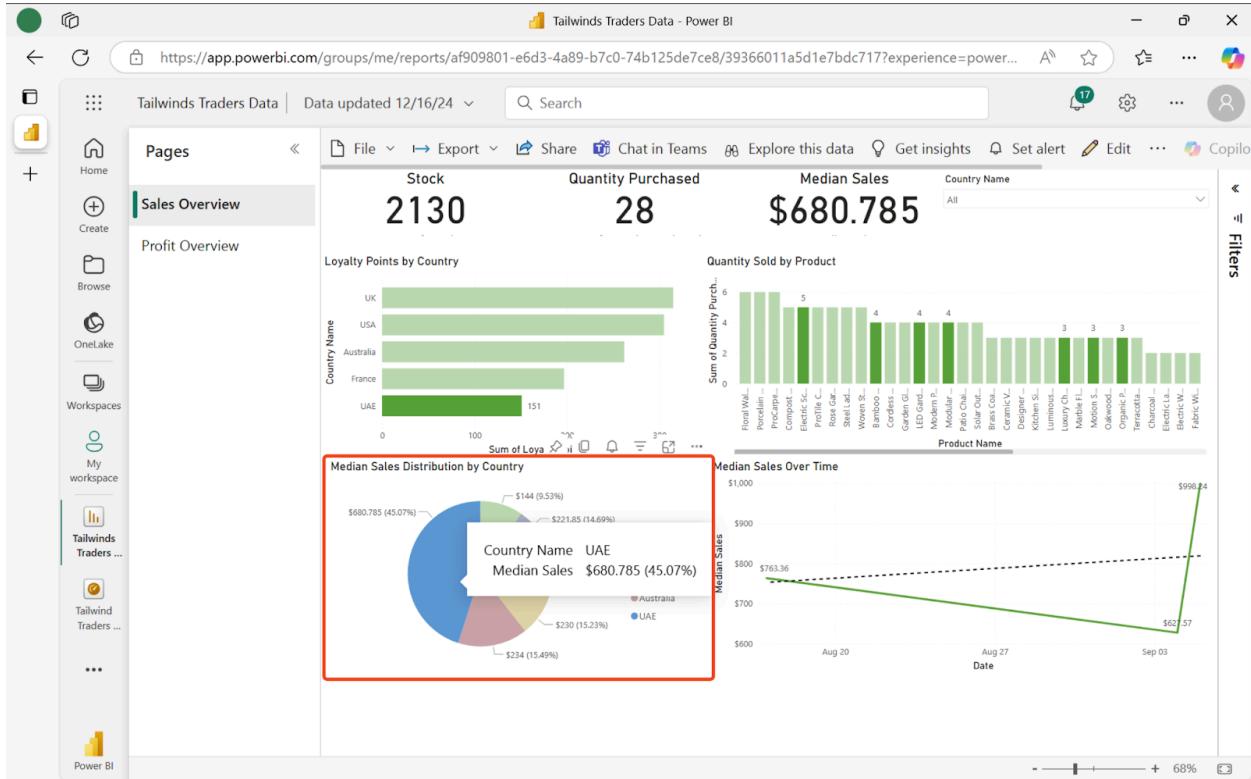
The report displays the following key metrics:

- Stock: 14K
- Quantity Purchased: 152
- Median Sales: \$222.5

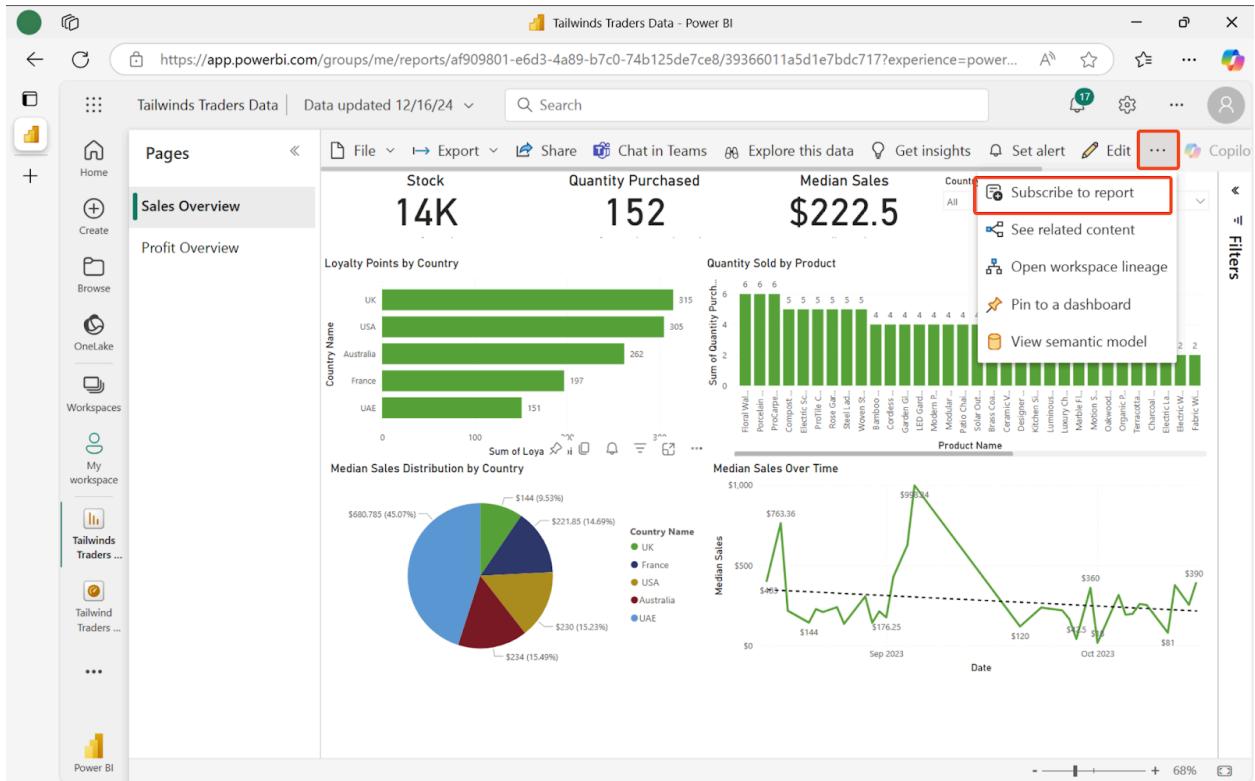
Visualizations include:

- Loyalty Points by Country:** Bar chart showing Loyalty Points for UK, USA, Australia, and France.
- Quantity Sold by Product:** Bar chart showing the sum of quantity purchased for various products.
- Median Sales Distribution by Country:** Pie chart showing the distribution of median sales by country.
- Median Sales Over Time:** Line chart showing median sales over time from September 2023 to October 2023.

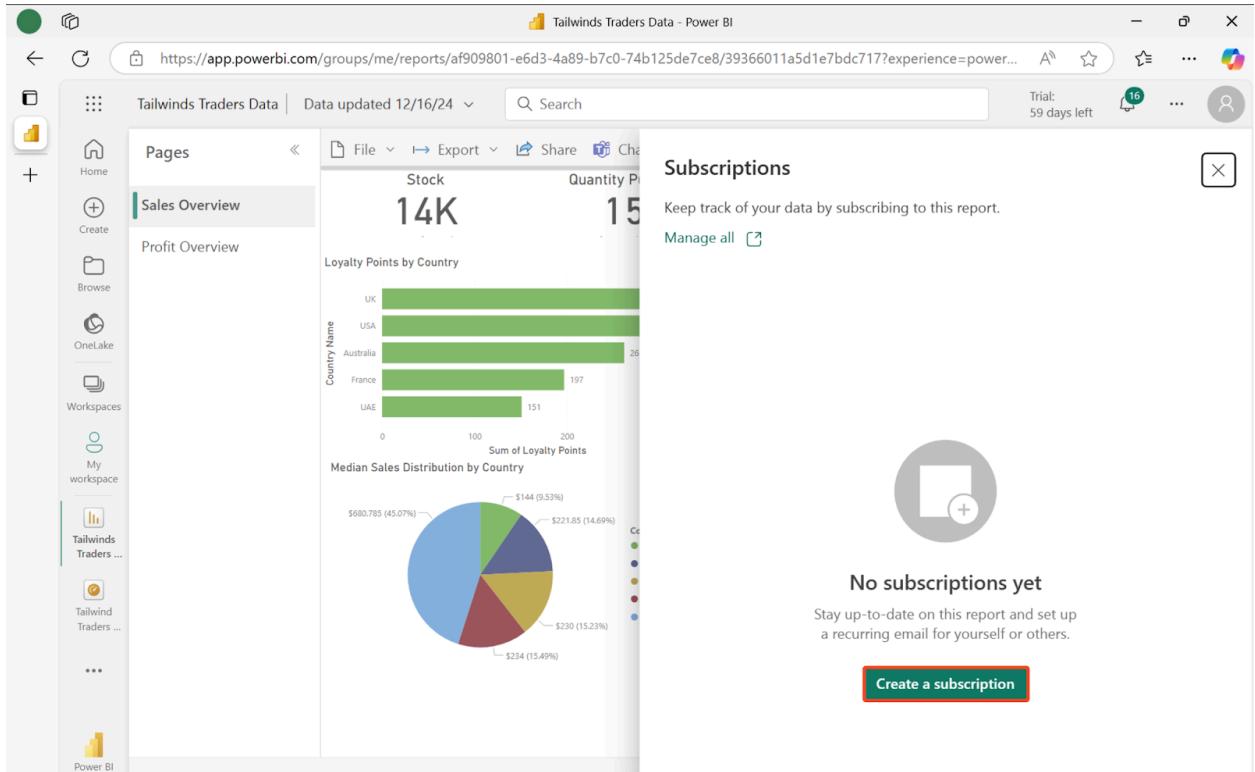
3. Select the Median Sales Distribution by Country pie chart from the canvas. Identify the country with the highest median sales value: UAE is the country with the highest Median Sales, measuring 680.785 USD.



4. Select the ellipses next to the Edit button and choose Subscribe.



## 5. In the Subscription pane, select Create a subscription.



## 6. In the Subscription pane, name the subscription Sales Weekly Summary.

The screenshot shows a Power BI report titled "Sales Overview". On the left, there's a navigation pane with options like Home, Create, Browse, OneLake, Workspaces, and My workspace. The main area displays two charts: "Loyalty Points by Country" (a horizontal bar chart) and "Median Sales Distribution by Country" (a pie chart). To the right, a "Subscriptions" panel is open, showing a new subscription being created for "Sales Weekly Summary". The "Subscription name" field contains "Sales Weekly Summary" and is highlighted with a red border. Other fields include "Recipients" (a placeholder icon), "Attach full report" (set to "None"), and "Scheduled date and time" (with "Start date" set to "12/28/2024" and "End date" set to "Select a date").

7. Set the Start date to today's date and the End date to 12/31/2025.

The screenshot shows the same Power BI report and subscription setup as the previous one. The "Subscriptions" panel now has the "Start date" set to "12/28/2024" and the "End date" set to "12/31/2025". A callout box points to the "Calendar button - choose date" for the end date field. The "Save" and "New subscription" buttons are visible at the bottom of the panel.

8. Scroll down, and in the Repeat dropdown select Weekly as the frequency and choose Monday as the day.

The screenshot shows a Power BI report titled "Sales Overview" within the "Tailwinds Traders Data" workspace. The report displays two main visualizations: a bar chart of Loyalty Points by Country and a pie chart of Median Sales Distribution by Country. To the right of the report, the "Subscriptions" pane is open, allowing users to manage subscriptions for the report. The "Repeat" dropdown is highlighted with a red box, showing "Weekly" as the selected frequency. The "On" field shows "M" selected, indicating the subscription will be triggered every Monday. The "Scheduled time" is set to 11:30 AM. The "Time zone" is set to (UTC-08:00) Pacific Time (US and Canada). A note at the bottom states that emails will be sent weekly at 11:30 AM starting Saturday, December 28, 2024.

9. Set the Scheduled time to 5:00 AM.

The screenshot shows the Power BI report page for 'Tailwinds Traders Data'. The left sidebar has a 'Pages' dropdown where 'Sales Overview' is selected. The main area displays two charts: 'Loyalty Points by Country' (bar chart) and 'Median Sales Distribution by Country' (pie chart). On the right, there's a 'Subscriptions' section with fields for 'Start date' (12/28/2024), 'End date' (12/31/2025), 'Repeat' (Weekly), 'On' (Monday), 'Scheduled time' (5:00 AM), and 'Time zone' (UTC-08:00 Pacific Time (US and Canada)). A red box highlights the 'Scheduled time' field.

10. Expand More options, and in the Report page dropdown ensure the Sales Overview report page is selected.

The screenshot shows the same Power BI report page as before, but with the 'More options' dropdown expanded. The 'Report page' dropdown is highlighted with a red box and set to 'Sales Overview'. Other options in the dropdown include 'Email subject' (Subject) and 'Message' (Include an optional message...). A red box also highlights the 'More options' dropdown itself.

11. Activate the toggles for the following options: Permission to view the report in Power BI, Link to the report in Power BI, and Report page preview.

The screenshot shows the Power BI interface with the 'Sales Overview' report selected. On the left, the navigation pane includes 'Home', 'Create', 'Browse', 'OneLake', 'Workspaces', and 'My workspace'. The main area displays two charts: 'Loyalty Points by Country' (a horizontal bar chart) and 'Median Sales Distribution by Country' (a pie chart). The 'Subscriptions' panel on the right allows users to manage email subjects and messages, and to set permissions for the report. Three specific permissions are highlighted with a red box: 'Permission to view the report in Power BI', 'Link to report in Power BI', and 'Report page preview'. The 'Save' button at the bottom of the panel is also highlighted.

12. Select Save to confirm and activate the subscription.

The screenshot shows a Power BI report titled "Sales Overview". The left sidebar lists "Pages" including "Sales Overview" (selected) and "Profit Overview". The main area displays two charts: "Loyalty Points by Country" (bar chart) and "Median Sales Distribution by Country" (pie chart). To the right, the "Subscriptions" pane is open, allowing users to manage subscriptions. A red box highlights the "Save" button at the bottom of the pane.

### Step 3: Create a subscription for Profit Overview

#### 1. Access the report's Profit Overview tab.

The screenshot shows a Power BI report titled "Profit Overview". The left sidebar lists "Pages" including "Sales Overview" and "Profit Overview" (selected). The main area displays "Net Revenue by Product" (bar chart) and "Yearly Profit Margin Over Time" (area chart). A context menu is open on the right side, with the "Subscribe to report" option highlighted. Other options include "See related content", "Open workspace lineage", "Pin to a dashboard", and "View semantic model".

2. Select the ellipses next to the Edit button and choose Subscribe.

The screenshot shows a Power BI report titled "Tailwinds Traders Data - Power BI". The report includes a main dashboard with a large "Year to Date Profit Margin" of 62.27%, a "Net Revenue" of \$13.89K, and a "Gross Revenue" of \$390. Below these are two charts: "Net Revenue by Product" (a bar chart) and "Yearly Profit Margin Over Time" (a line chart). On the right side of the dashboard, there is a "Copilot" section with various options. A red box highlights the "Edit" button and the dropdown menu that appears when it is selected, specifically the "Subscribe to report" option.

3. In the Subscription pane, select Create a subscription.

The screenshot shows the same Power BI report as above, but now the "Subscriptions" pane is open on the right side. The pane title is "Subscriptions" and it contains the text "Keep track of your data by subscribing to this report." and a "Manage all" link. Below this is a large circular icon with a plus sign. The text "No subscriptions yet" is displayed, followed by the instruction "Stay up-to-date on this report and set up a recurring email for yourself or others." At the bottom of the pane is a green button labeled "Create a subscription", which is also highlighted with a red box.

4. In the Subscription pane, name the subscription Profit Weekly Summary.

The screenshot shows the Power BI interface with the 'Profit Overview' report selected. On the right, the 'Subscriptions' pane is open, allowing users to manage subscriptions for the report. The 'Subscription name' field is highlighted with a red border and contains the text 'Profit Weekly Summary'. Below it, the 'Start date' and 'End date' fields are both set to '12/28/2024'. The 'Save' and 'New subscription' buttons are visible at the bottom of the pane.

5. Set the Start date to today's date and the End date to 12/31/2025.

The screenshot shows the Power BI interface with the 'Profit Overview' report selected. The 'Subscriptions' pane is open, and the 'Start date' and 'End date' fields are highlighted with a red border. Both fields are set to the date '12/28/2024'. The 'Save' and 'New subscription' buttons are visible at the bottom of the pane.

6. Scroll down, and in the Repeat dropdown select Weekly as the frequency and choose Monday, Wednesday, and Friday as the days.

The screenshot shows the Power BI interface with the report titled "Tailwinds Traders Data". The left sidebar lists various workspace options. The main content area displays a dashboard with a large summary card for "Year to Date Profit Margin" (62.27%) and "Net Revenue" (\$13). Below this are two charts: "Net Revenue by Product" (a horizontal bar chart showing revenue for items like Modular Sofa Set, Motion Sensor Alarm, Bamboo Plant Pot, etc.) and "Yearly Profit Margin Over Time" (a stacked area chart showing profit margin percentages over time). To the right of the dashboard is a "Subscriptions" panel. This panel allows users to set up recurring reports. The "Repeat" field is set to "Weekly", and the "On" field has checkboxes for Monday (M), Wednesday (W), and Friday (F). The "Scheduled time" is set to 6:00 AM, and the "Time zone" is set to (UTC-08:00) Pacific Time (US and Canada). A note at the bottom of the panel indicates that emails will be sent weekly starting on Saturday, December 28, 2024. At the bottom of the panel are "Save" and "New subscription" buttons.

7. Set the Scheduled time to 6:00 AM.

The screenshot shows the Power BI interface with the report titled "Tailwinds Traders Data". The left sidebar lists various pages: Home, Create, Browse, OneLake, Workspaces, My workspace, Tailwinds Traders ..., and Tailwind Traders ... . The "Profit Overview" page is currently selected. The main content area displays a large KPI "Year to Date Profit Margin" with a value of 62.27% and a dollar amount of \$13. Below it is a bar chart titled "Net Revenue by Product" showing revenue for items like Modular Sofa Set, Motion Sensor Alarm, Bamboo Plant Pot, etc. To the right, a "Subscriptions" panel is open, allowing users to manage subscriptions for this report. It includes fields for "Start date" (12/28/2024), "End date" (12/31/2025), "Repeat" (Weekly), "On" (S, M, T, W, T, F, S), "Scheduled time" (6:00 AM), and "Time zone" (UTC-08:00) Pacific Time (US and Canada). A note indicates emails will be sent weekly at 06:00 AM starting Saturday, December 28, 2024.

8. Expand More options, and in the Report page dropdown ensure the Profit Overview report page is selected.

This screenshot shows the same Power BI report and subscription settings as the previous one, but with a focus on the "More options" section. The "More options" button is highlighted with a red box. Below it, the "Report page" dropdown is also highlighted with a red box and set to "Profit Overview". Other options shown include "Email subject" (Subject), "Message" (Include an optional message...), and "Permission to view the report in Power BI" (which is turned on). The "Link to report in Power BI" and "Report page preview" options are also present.

9. Activate the toggles for the following options: Permission to view the report in Power BI, Link to the report in Power BI, and Report page preview.

The screenshot shows the Power BI interface with the URL <https://app.powerbi.com/groups/me/reports/af909801-e6d3-4a89-b7c0-74b125de7ce8/f6373df8a23180de8792?experience=power-bi>. The left sidebar shows the workspace 'Tailwinds Traders Data' with various pages like 'Sales Overview' and 'Profit Overview'. The main area displays a dashboard with a large 'Year to Date Profit Margin' of 62.27% and '\$13'. Below it is a bar chart titled 'Net Revenue by Product' showing revenue for items like Modular Sofa Set, Motion Sensor Alarm, Bamboo Plant Pot, etc. Another chart titled 'Yearly Profit Margin Over Time' shows a constant 62.37% margin from Sep 2023. On the right, the 'Subscriptions' panel is open, showing fields for 'Email subject' and 'Message', and three toggle switches under 'More options': 'Permission to view the report in Power BI' (activated), 'Link to report in Power BI' (activated), and 'Report page preview' (activated). A red box highlights these three toggle switches.

10. Select Save to confirm and activate the subscription.

The screenshot shows a Power BI report titled "Tailwinds Traders Data - Power BI". The main dashboard displays a large "Year to Date Profit Margin" of 62.27% and \$13 million. Below this are two charts: "Net Revenue by Product" (a horizontal bar chart) and "Yearly Profit Margin Over Time" (a stacked area chart). On the right side, a "Subscriptions" panel is open, allowing users to track their data by subscribing to the report. The "Save" button in this panel is highlighted with a red box.

Subscriptions

Keep track of your data by subscribing to this report.

Manage all [Edit](#)

More options

Email subject

Subject

Message

Include an optional message...

Report page [Edit](#)

Profit Overview

Permission to view the report in Power BI

Link to report in Power BI

Report page preview

**Save** [New subscription](#)

## Conclusion

You have successfully created an executive dashboard and configured alerts and subscriptions with these steps.