



Data Analytics Workshop

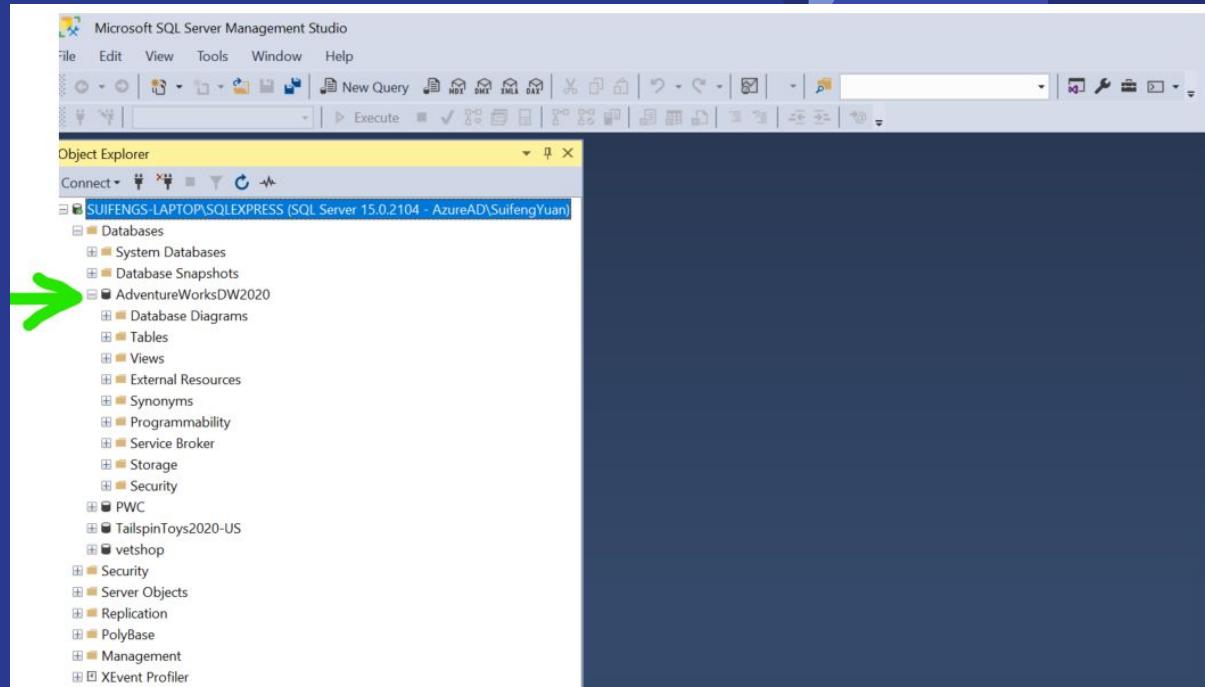
Ingesting data from
SQL Server & CSV files

Presented by
Suifeng Yuan

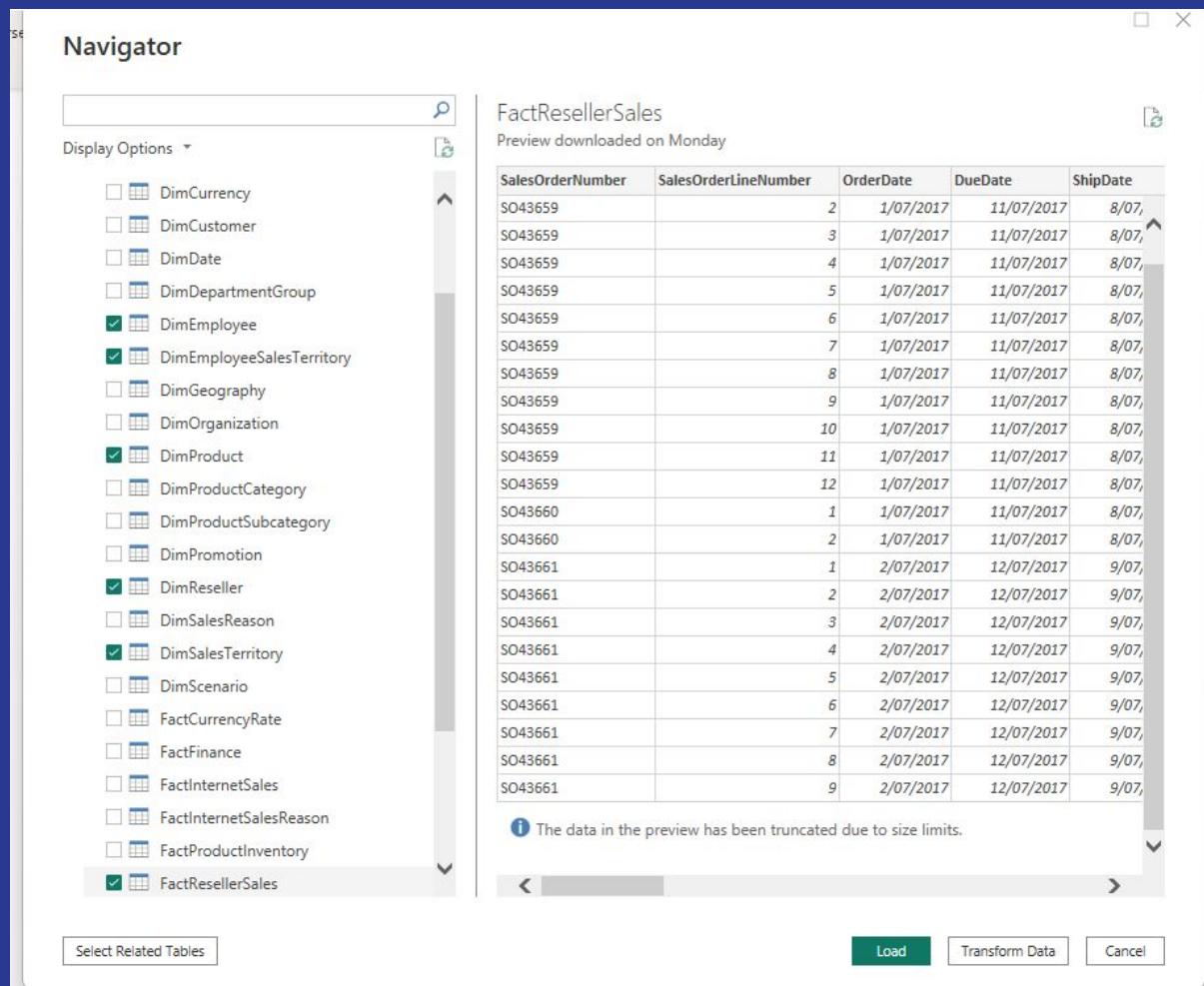
- 1. Get the SQL data to Power BI Desktop**
2. Load the required csv files to Power BI Desktop
3. The raw data in Power BI Desktop
3. Investigate data quality in Power Query Editor
4. Transform data using Power Query Editor
5. Model data and create DAX calculations
6. Enforce model role security in Power BI Desktop for data policy
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1. Get the SQL data to Power BI Desktop

Using Microsoft SQL Management Studio get the database information for this project, this one was called "AdventureWorksDW2020".

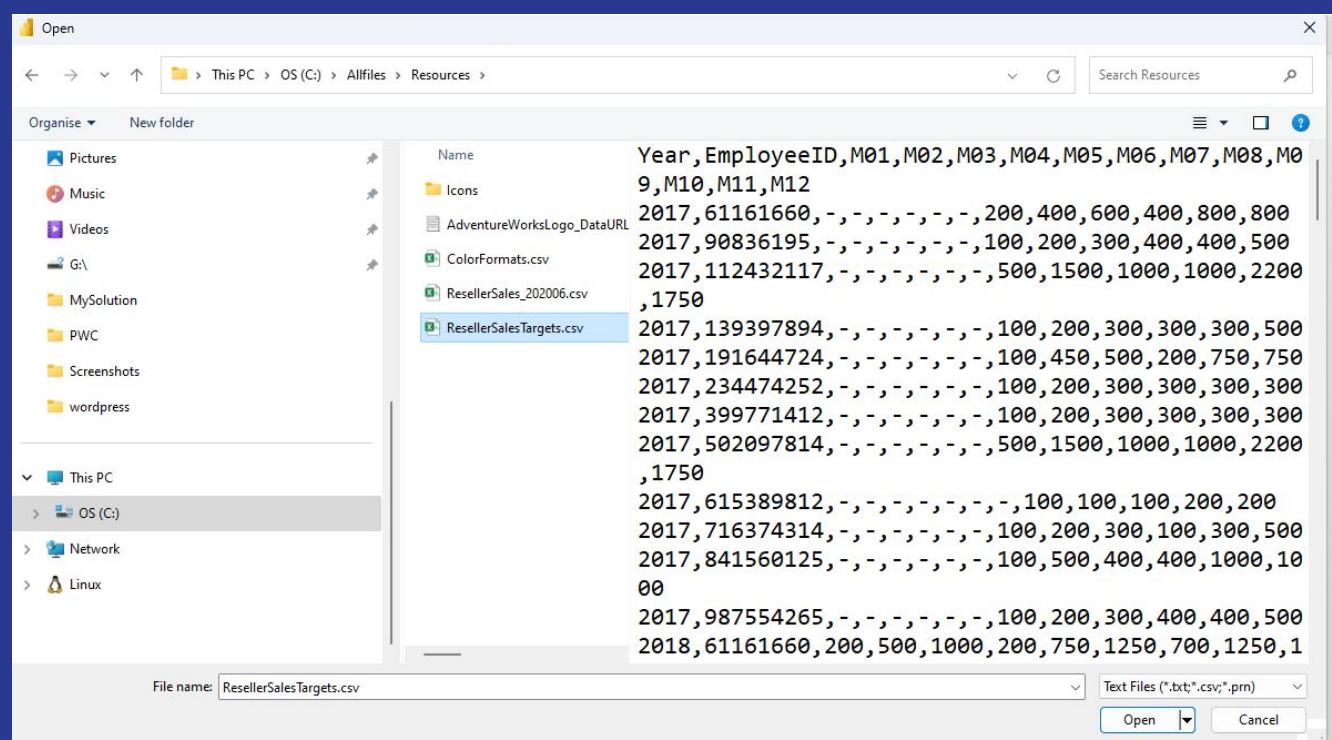
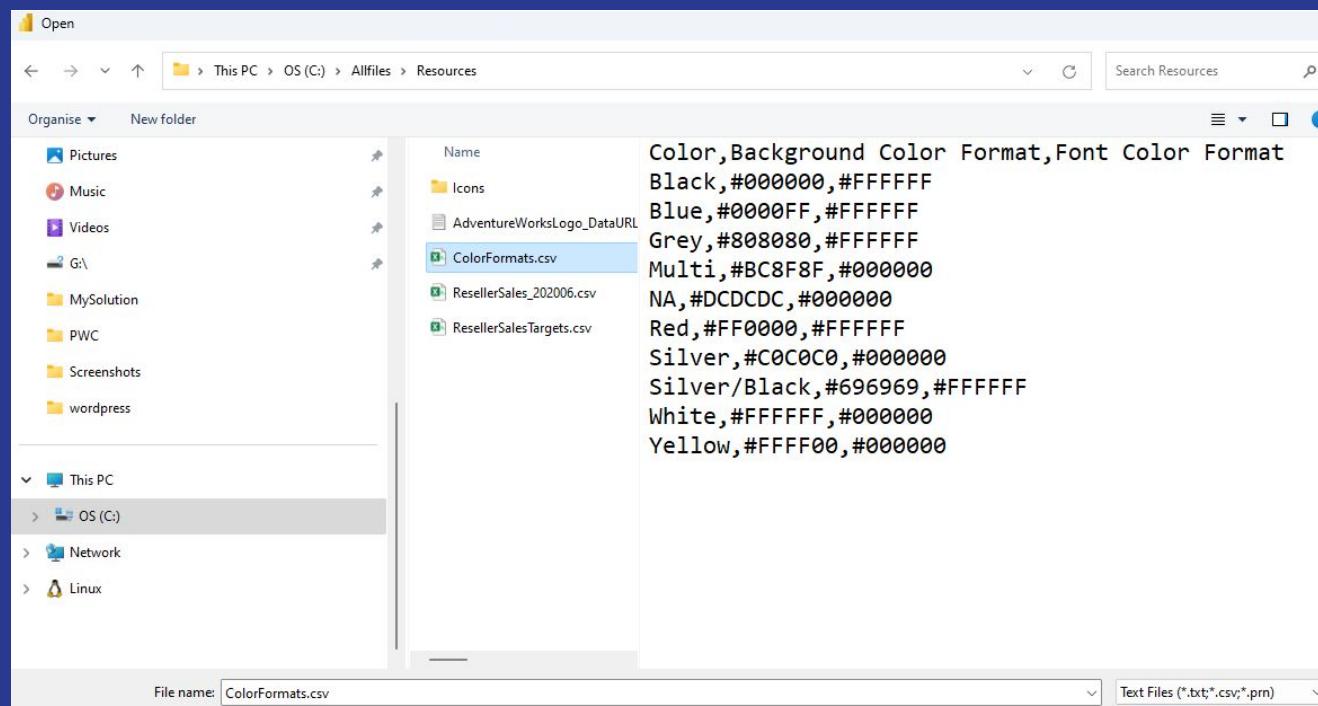


In Power BI Desktop connect to the SQL database and select the required tables:



2. Load the required csv files to Power BI Desktop

Bring in csv files that have standard colour mappings and sales targets that have come from a different source outside of the SQL database.



3. The raw data in Power BI Desktop

The screenshot shows the Power BI Desktop interface with the 'Data' tab selected. The left pane displays a list of tables: DimEmployee, DimProduct, FactResellerSales, DimReseller, ColorFormats, ResellerSalesTerritory, and DimSalesTerritory. The 'ColorFormats' table is currently selected, and its properties are shown in the 'Properties' pane on the right. The 'General' section of the properties pane shows the table name as 'ColorFormats' and its columns as 'Column1', 'Column2', and 'Column3'. The 'Advanced' section lists various column names such as EmployeeKey, FirstName, LastName, Title, ArabicDescription, ChineseDescription, Class, Color, DaysToManufacture, DealerPrice, EndDate, EnglishDescription, EnglishProductName, FinishedGoodsFlag, FrenchDescription, FrenchProductName, GermanDescription, HebrewDescription, JapaneseDescription, ListPrice, ModelName, ProductAlternateKey, ProductKey, ProductLine, ProductSubcategoryKey, ReorderPoint, SafetyStockLevel, Size, SizeRange, SizeUnitMeasureCode, SpanishProductName, StandardCost, StartDate, Status, Style, ThaiDescription, TurkishDescription, and UnitPrice. The 'Formatting' section indicates the data type is 'Text' and the format is also 'Text'. The 'Display folder' field is empty.

3. Investigate data quality in Power Query Editor

Check the raw data for anomalies - for example make sure all IDs are unique, look for common mistakes for example "Warehouse" and "Ware house".
Consult with business to verify what has been found in the data quality investigation.

The screenshot displays two separate data preview windows within the Power Query Editor:

Top Window (DimEmployee):

- Query Settings:** Includes options for Formula Bar (checked), Monospaced (unchecked), Column distribution (unchecked), Show whitespace (checked), Column profile (unchecked), Go to Column (button), Always allow (unchecked), Advanced Editor (button), Query Dependencies (button), and Dependencies (button).
- Properties Panel:** Shows the query name is "DimEmployee" with "All Properties" and "Applied Steps" sections.
- Data Preview:** Shows the DimEmployee table with columns: NationalIDAlternateKey, ParentEmployeeNationalIDAlternateKey, FirstName, LastName, MiddleName, Position, NameStyle, and Title. Each column includes a data quality summary bar and a detailed table below it. For example, the FirstName column has 100% Valid, 0% Error, and 0% Empty values. The LastName column has 99% Valid, 0% Error, and < 1% Empty values.

Bottom Window (DimReseller):

- Query Settings:** Includes options for Formula Bar (checked), Monospaced (unchecked), Column distribution (unchecked), Show whitespace (checked), Column profile (unchecked), Go to Column (button), Always allow (unchecked), Advanced Editor (button), Query Dependencies (button), and Dependencies (button).
- Properties Panel:** Shows the query name is "DimReseller" with "All Properties" and "Applied Steps" sections.
- Data Preview:** Shows the DimReseller table with columns: ResellerKey, GeographyKey, ResellerAlternateKey, Phone, BusinessType, ResellerName, NumberEmployees, OrderFrequency, OrderMonth, and FirstOrderYear. Each column includes a data quality summary bar and a detailed table below it. For example, the ResellerKey column has 701 distinct, 701 unique values. The BusinessType column has 4 distinct, 0 unique values.

4. Transform data using Power Query Editor

Actions applied to clean, merge and prepare the tables for the model.

Choose the required columns for each table.

Merge Columns

The screenshot shows the Power Query Editor interface with the 'DimEmployee' query selected. A 'Choose Columns' dialog is open over the table preview. The dialog lists columns: EmployeeKey, EmployeeNationalIDAlternateKey, FirstName, LastName, Title, and EmailAddress. Checkmarks are placed next to EmployeeKey, FirstName, LastName, Title, and EmailAddress. The main table preview shows 296 distinct values for EmployeeKey, 290 distinct values for EmployeeNationalIDAlternateKey, and 224 distinct values for FirstName. The table data includes rows for Guy, Kevin, Roberto, Rob, Thierry, David, etc., with their respective last names, titles, and email addresses.

EmployeeKey	EmployeeNationalIDAlternateKey	FirstName	LastName	Title	EmailAddress
1	14417807	Guy	Gilbert	Production Technician - WC60	guy-gilbert@adventureworks.com
2	253022876	Kevin	Brown	Marketing Assistant	kevin-brown@adventureworks.com
3	509647174	Roberto	Tamburello	Engineering Manager	roberto-tamburello@adventureworks.com
4	112457891	Rob	Walters	Senior Tool Designer	rob-walters@adventureworks.com
5	112457891	Rob	Walters	Senior Tool Designer	rob-walters@adventureworks.com
6	480168528	Thierry	D'Hers	Tool Designer	thierry-dhers@adventureworks.com
7	24756624	David	Bradley	Marketing Manager	david-bradley@adventureworks.com
8	24756624	David	Bradley	Marketing Manager	david-bradley@adventureworks.com
9	309738752	Jolynn	Dobney	Production Supervisor - WC60	jolynn-dobney@adventureworks.com
10	690627818	Ruth	Ellerbrock	Production Technician - WC10	ruth-ellerbrock@adventureworks.com
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

Choose how to merge the selected columns.

Separator: Space

New column name (optional): Salesperson

OK Cancel

4. Transform data using Power Query Editor (continued)

Actions applied to clean, merge and prepare the tables for the model.

4. Transform data using Power Query Editor (continued)

Actions applied to clean, merge and prepare the tables for the model.

Change data type

	EmployeeKey	SalesTerritoryKey	OrderQuantity	UnitPrice
1	1	285	5	202
2	1	285	5	202
3	1	285	5	202
4	1	285	5	203
5	1	285	5	203
6	1	285	5	203
7	1	285	5	203
8	1	285	5	203
9	1	285	5	2
10	1	285	5	2
11	1	285	5	87
12	1	285	5	41
13	1	285	5	7
14	1	285	5	7
15	1	288	6	2
16	1	288	6	4
17	1	288	6	4
18	1	288	6	2
19	1	288	6	2

The screenshot shows the Power Query Editor interface with a table of data from the AdventureWorksDW2020 database. A context menu is open over the 'OrderQuantity' column header, showing various data type options: Decimal Number, Fixed decimal number, Whole Number (selected), Percentage, Date/Time, Date, Time, Date/Time/Timezone, Duration, Text, True/False, Binary, and Using Locale... The 'Whole Number' option is highlighted with a gray background.

4. Transform data using Power Query Editor (continued)

Actions applied to clean, merge and prepare the tables for the model.

Merge columns from two tables

The screenshot shows the Power Query Editor interface with a 'Merge' dialog open. The dialog title is 'Merge' and it says 'Select a table and matching columns to create a merged table.' Below this, there is a preview of the 'DimProduct' table. The 'Join Kind' dropdown is set to 'Left Outer (all from first, matching from second)'. There is also a checkbox for 'Use fuzzy matching to perform the merge' which is unchecked. A note at the bottom says 'The selection matches 352 of 352 rows from the first table.' At the bottom right of the dialog are 'OK' and 'Cancel' buttons. The main Power Query ribbon bar is visible at the top, showing various transformation tools like 'Merge Queries', 'Append Queries', and 'Combine Files'.

Merge

Select a table and matching columns to create a merged table.

DimProduct

Name	StandardCost	FinishedGoodsFlag	Color	SafetyStockLevel	ReorderPoint	ListPrice	Size	SizeR
	null	FALSE	Black	500	375	null	null	NA
	null	FALSE	Black	500	375	null	null	NA
	null	FALSE	Black	500	375	null	null	NA
	null	FALSE	Silver	1000	750	null	null	NA

ColorFormats

Column1	Column2	Column3
Color	Background Color Format	Font Color Format
Black	#000000	#FFFFFF
Blue	#0000FF	#FFFFFF
Grey	#808080	#FFFFFF
Multi	#BC8F8F	#000000

Join Kind

Left Outer (all from first, matching from second)

Use fuzzy matching to perform the merge

Fuzzy matching options

The selection matches 352 of 352 rows from the first table.

OK Cancel

Rename table and columns

The screenshot shows the Power Query Editor interface with a 'Rename' context menu open over a column named 'NumberEmployees'. The menu includes options like 'Copy', 'Paste', 'Delete', 'Rename', 'Enable load', and 'Include in report refresh'. To the right of the menu, there is a preview of a table with columns 'NumberEmployees' and 'OrderFrequency'. The data in the preview table is as follows:

NumberEmployees	OrderFrequency
2	S
10	A
40	Q
5	S

5. Model data and create DAX calculations

Create hierarchy

A= Date

Fiscal
...

Year
Quarter
Month
Month
MonthKey
Quarter

Σ Profit Margin = DIVIDE([Profit], SUM('Sales'[Sales]))

OrderNumber	OrderDate	ProductKey	ResellerKey	EmployeeKey	SalesTerritoryKey	Quantity	Unit Price	Sales	Cost
043897	Friday, 25 August 2017	235	312	282	4	2	\$28.84	\$58	\$63
043897	Friday, 25 August 2017	351	312	282	4	2	\$2,024.99	\$4,050	\$3,796
043897	Friday, 25 August 2017	348	312	282	4	2	\$2,024.99	\$4,050	\$3,796
043897	Friday, 25 August 2017	232	312	282	4	2	\$28.84	\$58	\$63
044544	Saturday, 18 November 2017	292	312	282	4	2	\$818.70	\$1,637	\$1,414
044544	Saturday, 18 November 2017	220	312	282	4	2	\$20.19	\$40	\$24
044544	Saturday, 18 November 2017	351	312	282	4	2	\$2,024.99	\$4,050	\$3,796
044544	Saturday, 18 November 2017	349	312	282	4	2	\$2,024.99	\$4,050	\$3,796
044544	Saturday, 18 November 2017	344	312	282	4	2	\$2,039.99	\$4,080	\$3,824
045321	Sunday, 18 February 2018	346	312	282	4	2	\$2,039.99	\$4,080	\$3,824
045321	Sunday, 18 February 2018	347	312	282	4	2	\$2,039.99	\$4,080	\$3,824
046082	Wednesday, 23 May 2018	220	312	282	4	2	\$20.19	\$40	\$24
046082	Wednesday, 23 May 2018	346	312	282	4	2	\$2,039.99	\$4,080	\$3,824
046082	Wednesday, 23 May 2018	345	312	282	4	2	\$2,039.99	\$4,080	\$3,824
046082	Wednesday, 23 May 2018	232	312	282	4	2	\$28.84	\$58	\$63
046082	Wednesday, 23 May 2018	344	312	282	4	2	\$2,039.99	\$4,080	\$3,824
046082	Wednesday, 23 May 2018	348	312	282	4	2	\$2,024.99	\$4,050	\$3,796
046082	Wednesday, 23 May 2018	212	312	282	4	2	\$20.19	\$40	\$24
047028	Friday, 24 August 2018	410	312	282	4	2	\$36.45	\$73	\$54
047028	Friday, 24 August 2018	464	312	282	4	2	\$14.13	\$28	\$19
047028	Friday, 24 August 2018	412	312	282	4	2	\$180.13	\$360	\$267
047028	Friday, 24 August 2018	420	312	282	4	2	\$141.62	\$283	\$210
047028	Friday, 24 August 2018	468	312	282	4	2	\$22.79	\$46	\$31
047028	Friday, 24 August 2018	360	312	282	4	2	\$1,229.46	\$2,459	\$2,212
047028	Friday, 24 August 2018	409	312	282	4	2	\$209.26	\$419	\$372

Data

Search

Targets

- EmployeeID
- Target
- TargetAmount
- TargetMonth
- Variance
- Variance Margin

Data

Create hierarchy

Add to hierarchy

New measure

New column

Rename

Hide in report view

Unhide all

Collapse all

Expand all

New group

Color

Use the Quick measure make calculations.

Profit Margin = DIVIDE([Profit], SUM('Sales'[Sales]))

OrderNumber	OrderDate	ProductKey	ResellerKey	EmployeeKey	SalesTerritoryKey	Quantity	Unit Price	Sales	Cost
043897	Friday, 25 August 2017	235	312	282	4	2	\$28.84	\$58	\$63
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047028	Friday, 24 August 2018	409	312	282	4	2	\$209.26	\$419	\$372

Quick measure

Calculated measure

Select a calculation to create a measure or describe the measure you need and we'll generate suggestions in DAX, which you can customize later.

Calculations Suggestions

Division

Calculate the ratio of a value to another one. [Learn more](#)

Numerator ○ Profit

Denominator ○ Sum of Sales

Calculated column

Name [Profit Margin]

Search

City

Country-Region

Geography

Reseller

ResellerKey

Resellers

State-Province

Sales

Cost

Counts

EmployeeKey

OrderDate

Pricing

Avg Price

Max Price

Median Price

Min Price

ProductKey

Profit

Profit Margin

Quantity

Ratios

5. Model data and create DAX calculations (continued)

Set up relationships in the data model

The diagram illustrates the data model relationships:

- Salesperson** (Performance) is connected to **SalespersonRegion** via a relationship named "SalespersonRegion".
- SalespersonRegion** is connected to **Region** via a relationship named "Region".
- Salesperson** (Performance) is connected to **Sales** via a relationship named "Sales".
- Sales** is connected to **Targets** via a relationship named "Targets".
- Sales** is connected to **Data** via a relationship named "Data".
- Targets** is connected to **Data** via a relationship named "Data".
- Sales** is connected to **Product** via a relationship named "Product".
- Reseller** is connected to **Sales** via a relationship named "Sales".

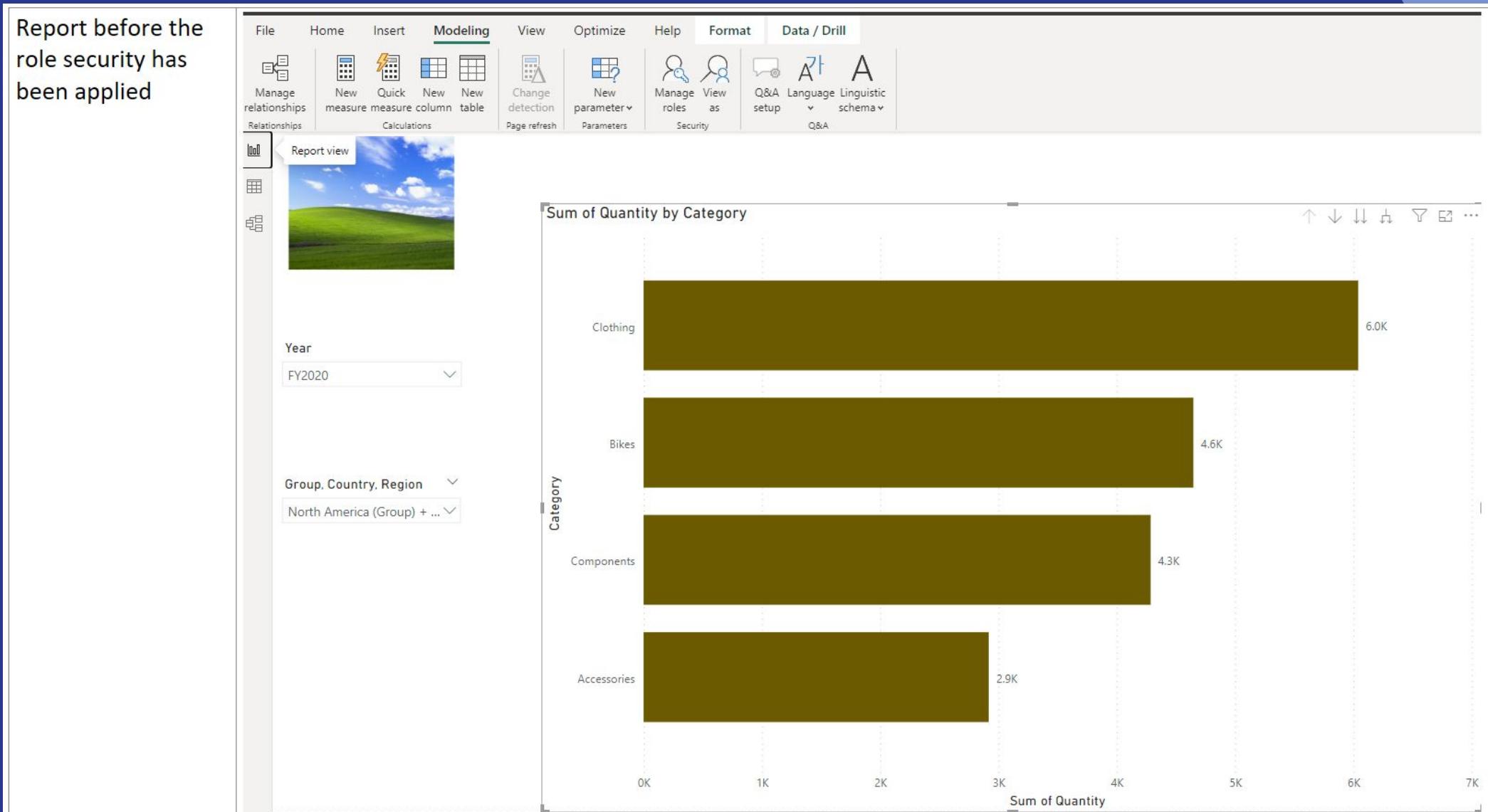
Hide or unhide the columns in the report

The report view displays the following columns:

- Targets** table:
 - EmployeeID
 - Target
 - TargetAmount
 - TargetMonth
 - Variance
 - Variance Margin
- Data** table:
 - Date
 - Month
 - MonthKey
 - Quarter
 - Year

6. Enforce model role security in Power BI Desktop for data policy

This is related to step 9.



6. Enforce model role security in Power BI Desktop for data policy

(continued)

Set up the role security.

FY2020 Q4

Sum of Sales, Profit Margin and Sum of Quantity by Business Type and Quarter

Business Type: Specialty Bike Shop, Value Added Reseller, Warehouse

Profit Margin

Sum of Sales

Manage roles

Roles: product, sales title

Data: Product

Table filter DAX expression: [Category] = "Bikes"

Filter the data that this role can see by entering a DAX filter expression that returns a True/False value. For example: [Entity ID] = "Value"

Save Cancel

Now role security has been applied to report.

Now viewing as: product

Sum of Quantity by Category

Year: FY2020

Group, Country, Region: North America (Group) + ...

Category: Bikes

Sum of Quantity: 4.6K

Filters on this visual:

- Category is (All)
- Product is (All)
- Subcategory is (All)
- Sum of Quantity is (All)

Add data fields here

Filters on this page:

Add data fields here

Filters on all pages:

Add data fields here

7. Publish the model to Power BI Service

Check out the Get Quick Insights to find relevant visuals.

The screenshot shows the Power BI Desktop interface with a data grid on the left containing columns for ResellerKey, Business Type, Reseller, City, State-Province, and Country-Region. A modal window titled "Publishing to Power BI" is open in the center, displaying a success message: "Success! Open 'AdventureWorks.pbix' in Power BI". Below this, a "Did you know?" section suggests creating a portrait view for mobile phones. On the right, the Power BI service navigation pane is visible, showing the structure of the published report, including sections like Targets, Data, Product, Region, Reseller, Business Type, Geography, ResellerKey, Resellers, State-Province, Sales, Counts, EmployeeKey, OrderDate, Pricing, and ProductKey.

The visuals from Quick Insights

The screenshot displays a dashboard titled "Quick Insights for AdventureWork-Suifeng" in the Power BI service. The dashboard features nine distinct visualizations arranged in a grid:

- Count of City BY COUNTRY-REGION:** A bar chart showing the count of cities by country-region. The United States has the highest count, followed by Canada, Germany, Australia, United Kingdom, and France.
- Quantity BY GROUP:** A donut chart showing the distribution of quantity by group. North America accounts for the majority of quantity, followed by Europe and Pacific.
- Max Price and Sales BY STANDARD COST:** A scatter plot showing the relationship between standard cost and sales. Most points cluster around \$487, \$1,482, \$1,898, etc.
- Max Price BY STANDARD COST:** A line chart showing the trend of maximum price versus standard cost. The trend is generally upward.
- Sales BY SUBCATEGORY:** A bar chart showing sales by subcategory. Road Bikes and Mountain Bikes have the highest sales.
- Variance Margin BY DATE:** A line chart showing variance margin over time. It shows significant fluctuations, with outliers for Stephen Jiang.
- Count of Country BY TITLE:** A bar chart showing the count of countries by title. Sales Representative has the highest count.
- Count of Region BY GROUP:** A donut chart showing the distribution of regions by group. North America accounts for the majority of regions.
- Count of City and Average of Cost BY STANDARD COST:** A scatter plot showing the count of cities and average cost versus standard cost. Most points cluster around \$36, \$487, \$1,898, etc.

8. Ways to design a report in Power BI Service

There are two ways to create reports:

1. Create report in Power BI Desktop or Service
2. Auto create report using Semantic model published by Power BI Desktop

The screenshot shows the Power BI Service interface. At the top, it says "Power BI AdventureWorks -Suifeng". Below that is a navigation bar with "Home", "Create", "Browse", and "Analysts". The main area displays a semantic model named "AdventureWorks" with the type "Semantic model" and owner "AdventureWorks -...". There are buttons for "New", "Upload", "Create deployment pipeline", "Create app", and "Manage access". A search bar at the top right says "Search".

The Auto-create action can be accessed from Teams

The screenshot shows the Microsoft Teams interface with the Power BI app open. A modal window titled "Build your first report" is displayed, containing steps: "Add and prepare your data", "Generate a premade report", and "Customize to suit your needs". Below the modal, a callout box says "Add data to start building a report" with three options: "Post or manually enter data", "Pick a published semantic model", and "Analyze your Teams data". A green arrow points to the "Pick a published semantic model" button. The Teams sidebar on the left includes sections like Home, Chat, Team, Calendar, OneDrive, Skills Catalog, and Apps.

While it is creating, can Pre-select data from the selected Semantic model.

The screenshot shows the report generation process. At the top, there's a yellow bar icon. Below it, a progress bar says "Generating your report...". A hint at the bottom says "Hint: To see the best results, try pre-selecting the data you're most interested in." A "Pre-select data" button is located at the bottom.

9. Auto-create report in Power BI Service

Use the auto-create to quickly start a report. This can help as a starting place for customisations.

AdventureWorks-Suifeng

File Export Save Share Chat in Teams Explore this data Get insights Subscribe to report Set alert Edit Show data table ...

Fabric Trial: 59 days left

Search

Quick summary Sales Analysis-09.0

\$2,146.96 Max Price | \$214.24 Median Price | 1.29% Profit Margin | \$446.39 Avg Price

Max Price by Subcategory

Subcategory	Max Price
Road Bikes	\$2,146.96
Mountain Bikes	\$2,039.99
Touring Bikes	\$1,430.44
Road Frames	\$858.90
Mountain Frames	\$818.70
Touring Frames	\$602.35
Cranksets	\$242.99
Wheels	\$214.24
Forks	\$137.69
Headsets	\$74.84
Bottom Brackets	\$72.89
Derailleurs	\$72.88
Handlebars	\$72.16
Bike Racks	\$72.00
Brakes	\$63.90
Bib-Shorts	\$53.99
Pedals	\$48.59
Tights	\$44.99

At \$2,146.96, Road Bikes had the highest Max Price and was 156,612.41% higher than Tires and Tubes, which had the lowest Max Price at \$1.37.

Across all 33 Subcategory, Max Price ranged from \$1.37 to \$2,146.96.

Median Price by Subcategory

Subcategory	Median Price
Mountain Bikes	\$1,229.46
Touring Bikes	\$728.91
Touring Frames	\$602.35
Road Bikes	\$600.26
Cranksets	\$242.99
Mountain Frames	\$218.45
Road Frames	\$202.33
Wheels	\$141.62
Forks	\$137.69

Profit Margin by Subcategory

Subcategory	Profit Margin
Tires and...	37.43%
Socks	37.12%
Hydrat...	36.79%
Cleaners	36.53%
Bottles a...	36.36%
Bike Racks	36.26%
Vests	35.61%
Helmets	33.78%
Shorts	33.66%

Avg Price by Subcategory

Subcategory	Avg Price
Mountai...	\$1.1K
Touring B...	\$0.8K
Road Bikes	\$0.8K
Mountai...	\$0.4K
Touring F...	\$0.4K
Road Fra...	\$0.3K
Cranksets	\$0.2K
Wheels	\$0.1K
Forks	\$0.1K

Filters

Your data

Search

Salesperson (Perfor...
Sales
Count of rows
Σ Cost
Counts
EmployeeKey
Pricing
Avg Price
Max Price
Median Price
Min Price
ProductKey
Profit
Profit Margin
Quantity
Ratios
Sales
Sales YoY Gro...
Sales YTD
Product
Count of rows
Category
Color
Formatting
Product
Products
Standard Cost
Subcategory
Reseller
Region
Targets
Salesperson
Data

127%

10. Customise the auto-created report

The auto-report can be adjusted to meet requirements.

Customised the Auto-created report

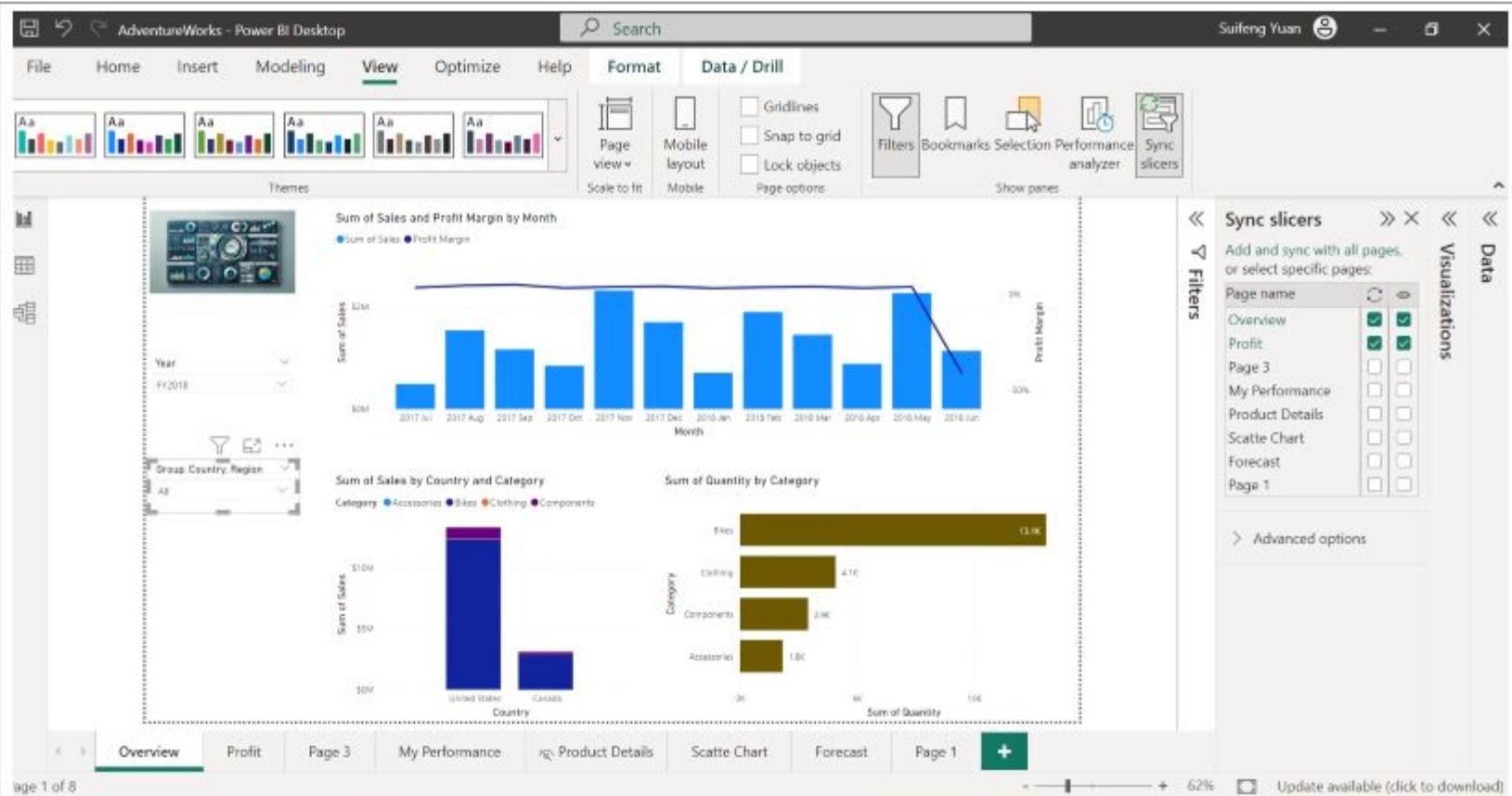
This screenshot shows a Power BI report titled "Sales Analysis-09.0". The report contains three visualizations: a horizontal bar chart showing sales by subcategory, a pie chart showing profit by subcategory, and a donut chart showing sales by group and country. A floating window titled "Choose a narrative type" is overlaid on the interface, providing options to use Copilot or select a custom narrative type.

Ask questions using natural language.

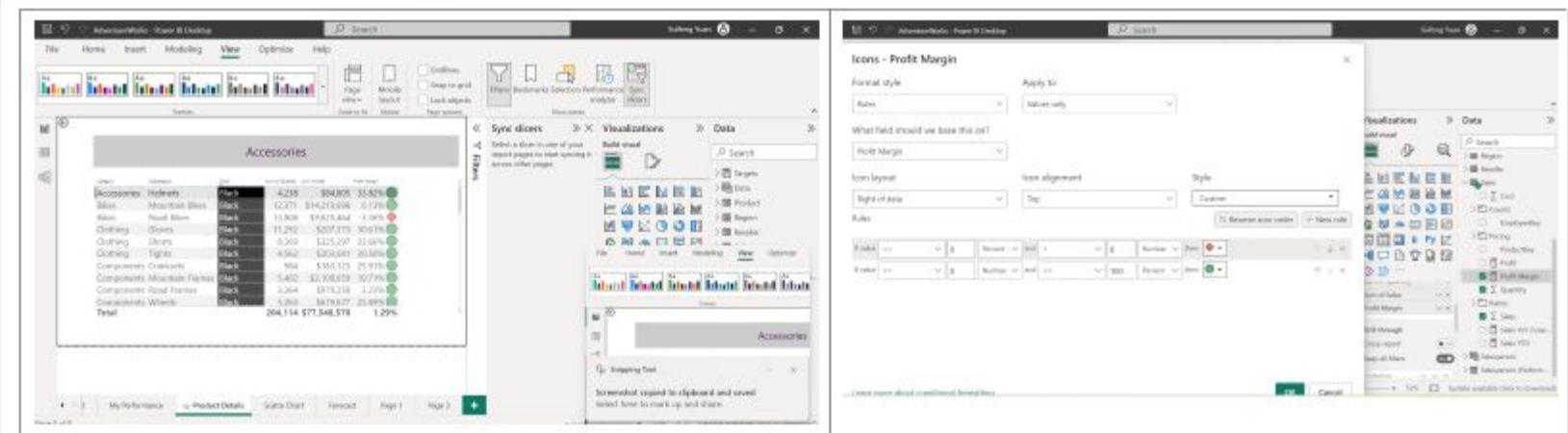
This screenshot shows the same Power BI report as above, but with the "Ask a question" feature highlighted. A green arrow points from the "Ask a question" button in the top navigation bar to a floating window titled "Ask a question about your data". This window displays several suggested queries to help users analyze their data further.

10. Enhancement of report

Sync slicers for required report pages



Configure a drill through page with conditional formatting

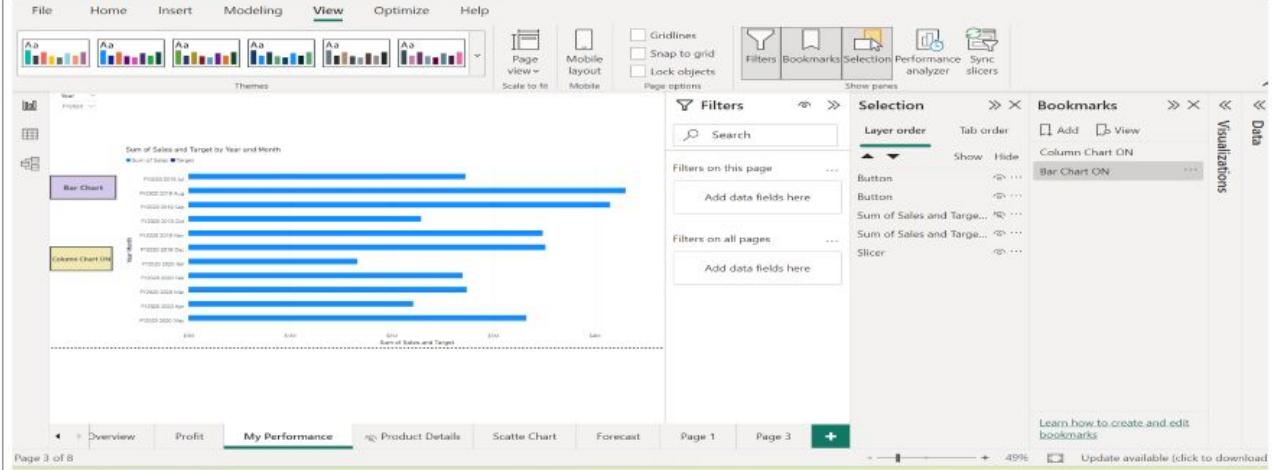


10. Enhancement of report

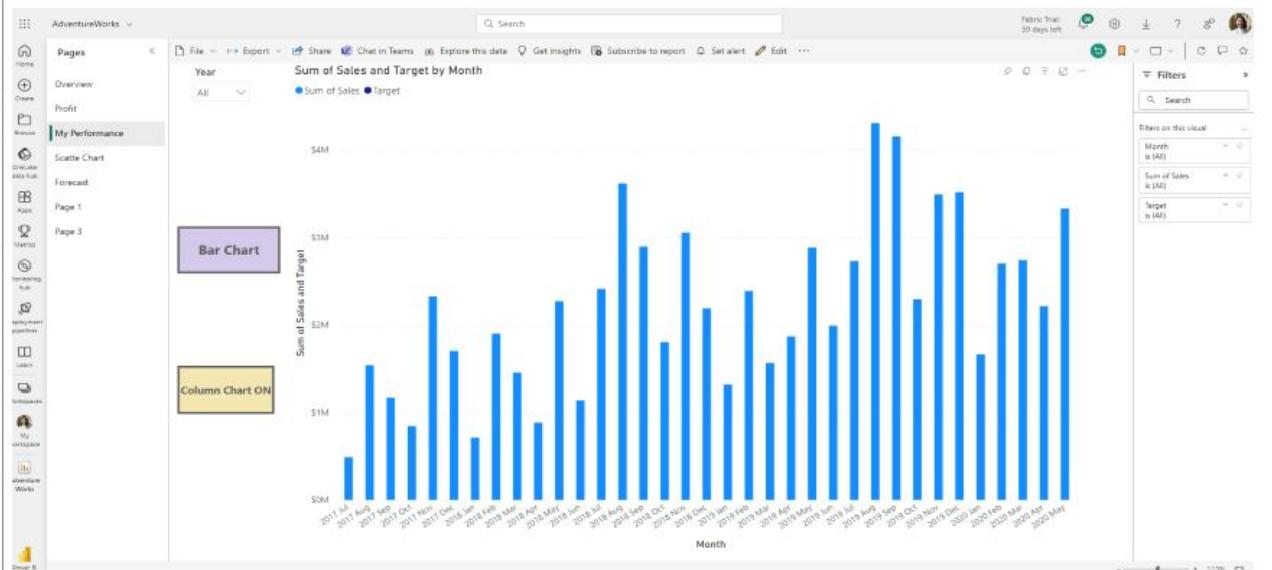
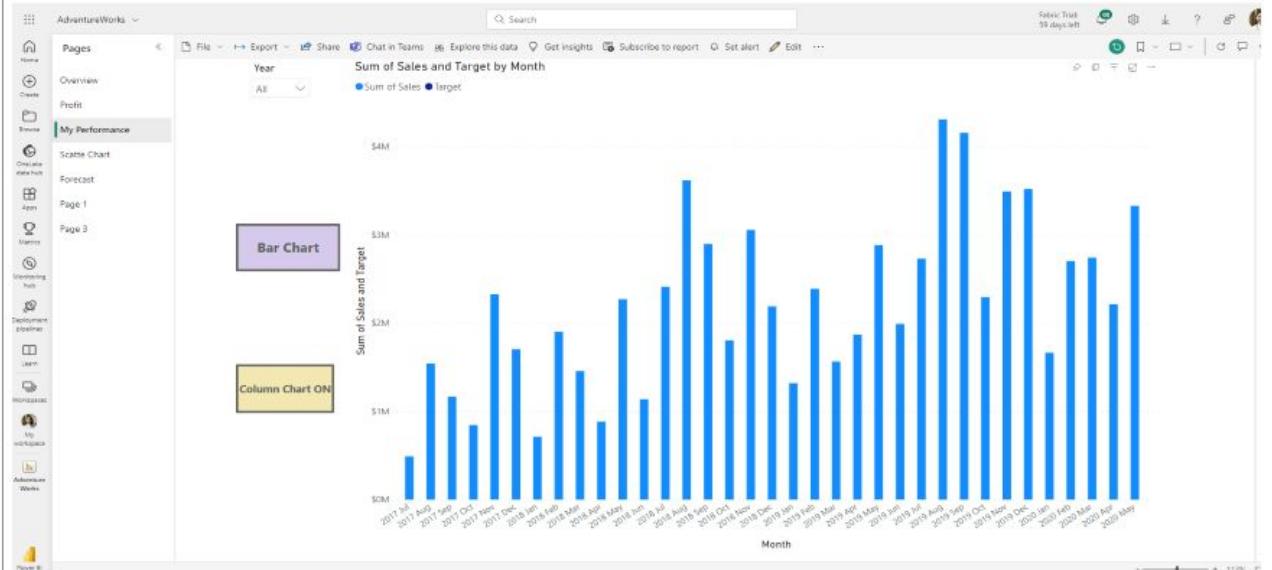
(continued)

Using Bookmarks and buttons to select the visual type to display

Configure in Power BI Desktop



Check in Power BI Service by clicking each button.



11. Enforce role-level security for report

Applying the role-level security into the reports gives control over who can access what. This is important when it comes to restricting views on the same report to ensure that data security is maintained. This may be applicable for customers to only see their data and not others.

In the Semantic model security, add people into the role:

The image contains two side-by-side screenshots of the Microsoft Power BI interface.

Left Screenshot: Row-Level Security

This screenshot shows the 'Row-Level Security' page for a role named 'sales title (0)'. On the left is a navigation bar with icons for Home, Create, Browse, OneLake data hub, Apps, and Metrics. The main area displays a section titled 'Members (0)' with a sub-section 'People or groups who belong to this role'. It lists a single user, 'Suifeng Yuan', with an 'X' icon to remove them. Below this is a text input field 'Enter email addresses' and a green 'Add' button.

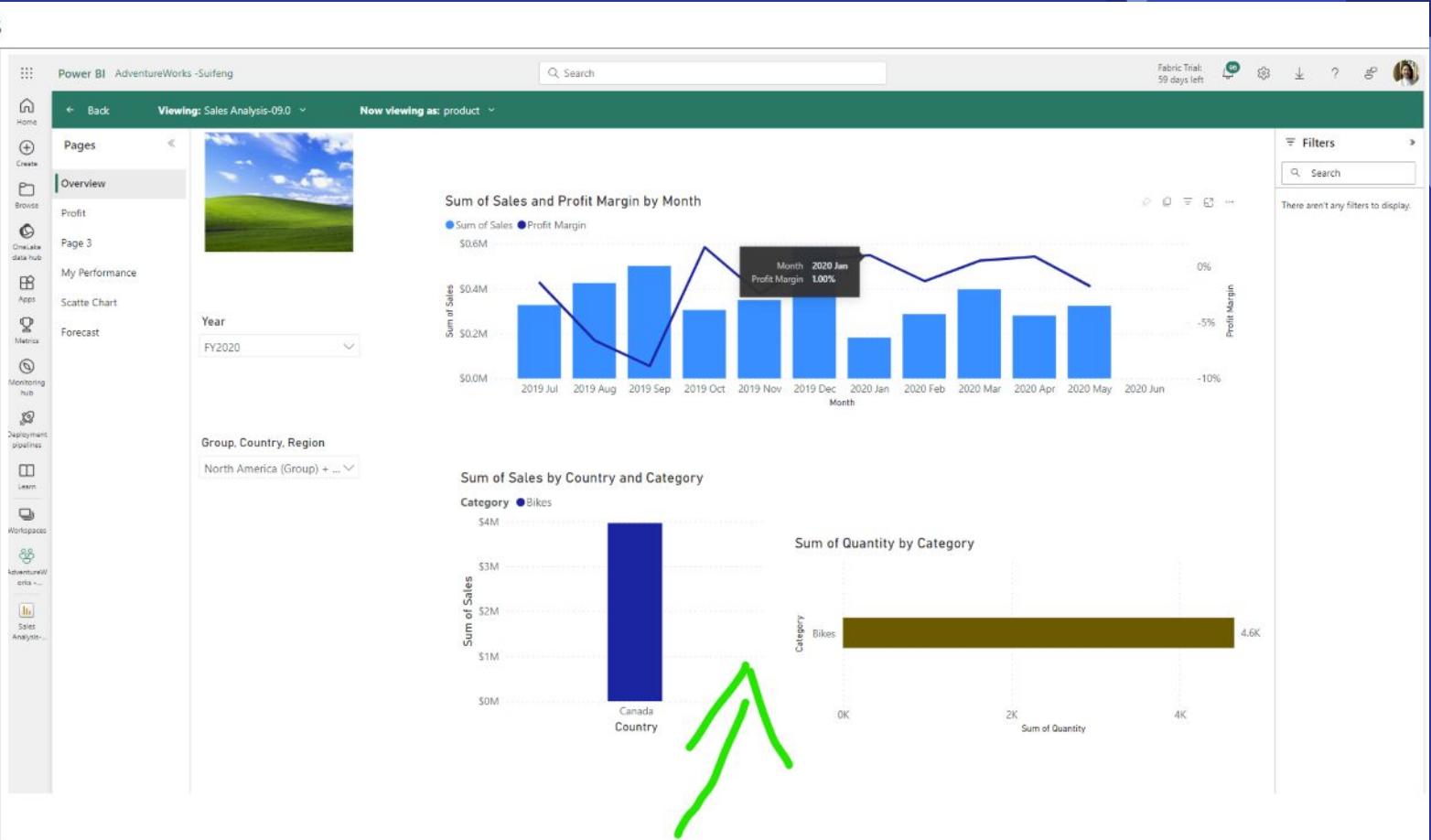
Right Screenshot: Report View

This screenshot shows a report titled 'Sales Analysis-09.0' for the year 'FY2020'. The report includes sections like Overview, Profit, Page 3, My Performance, and Scatter Chart. A modal dialog box is open under the heading 'View as...'. It has two tabs: 'Select role' (which is selected, showing 'sales title (1)' with a checked checkbox) and 'Select person'. At the bottom right of the dialog is a green 'Apply' button.

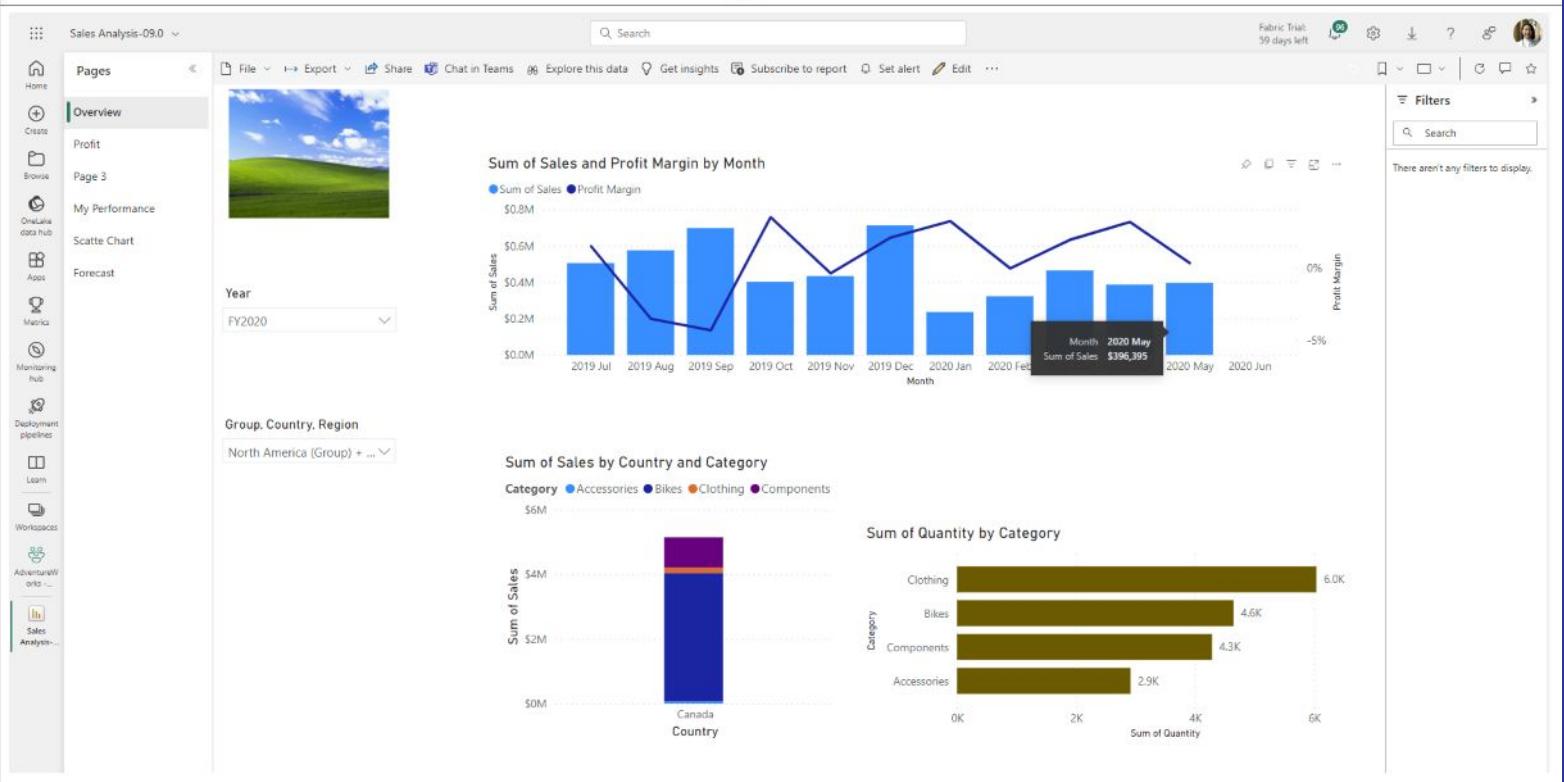
11. Enforce role-level security for report (continued)

Views from reports

Suifeng is mapped to Bikes role, which restricts data access to view only Bikes sales.

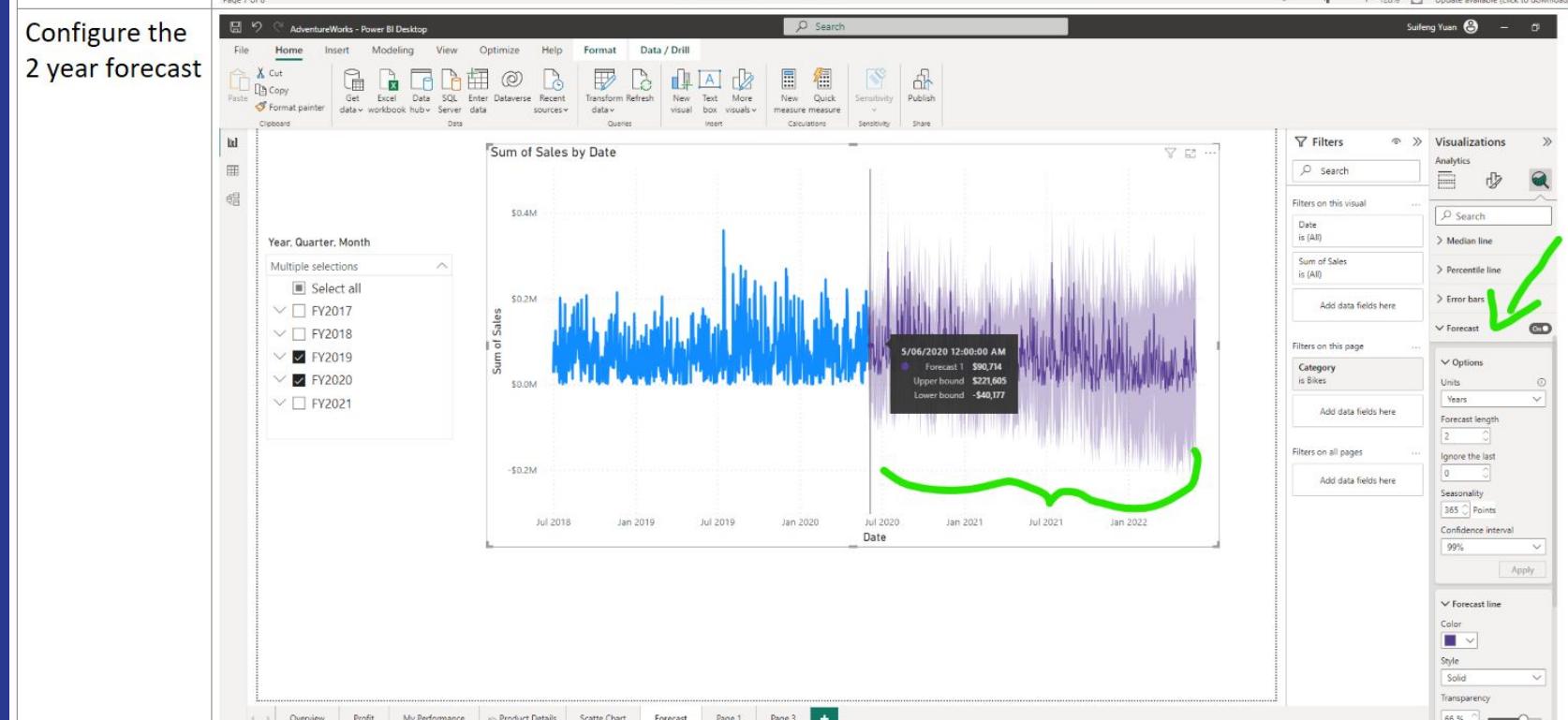
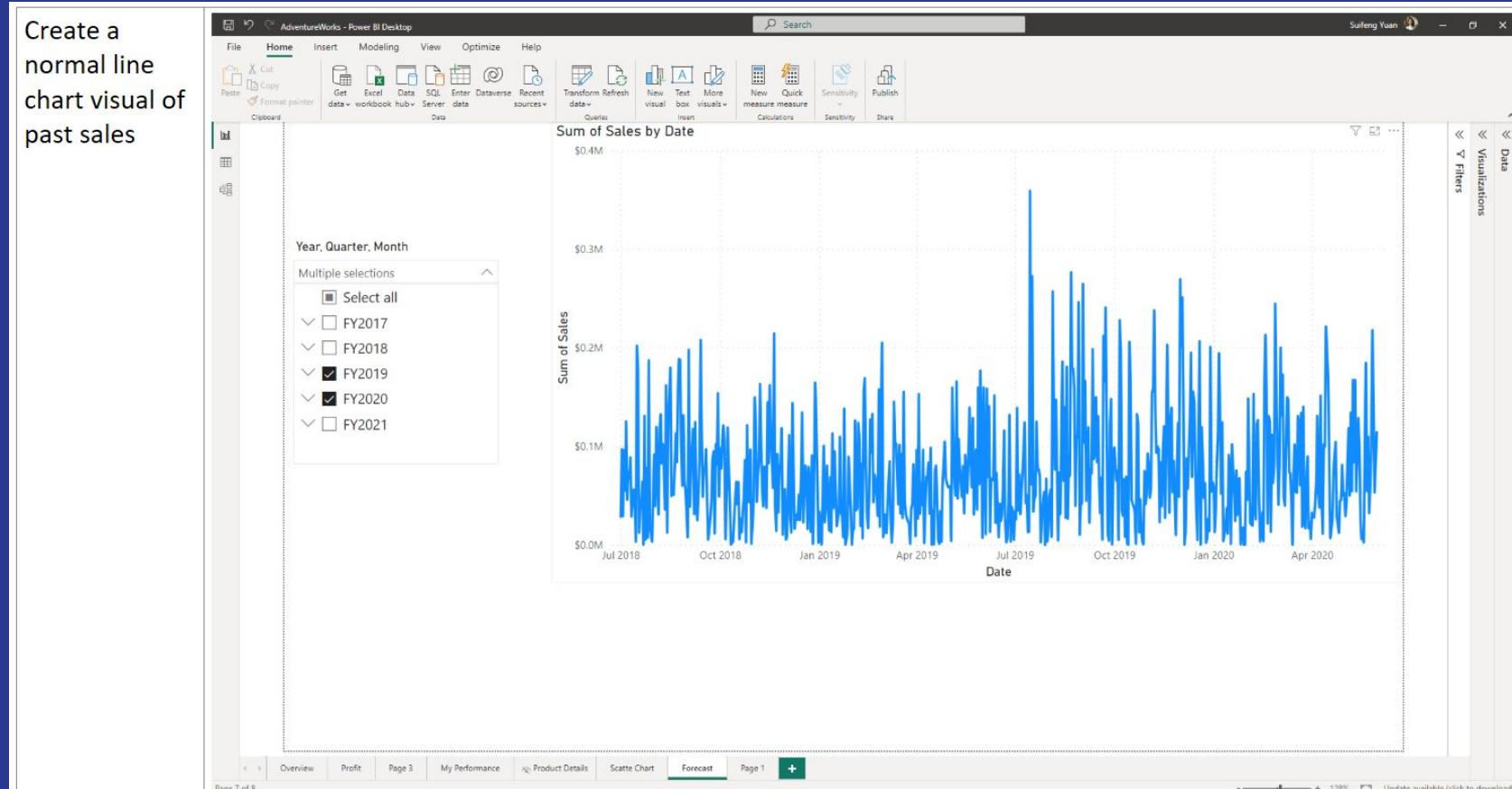


Without role - level security



12. AI analytics - predictive sales

Analyse current visuals and predict future trends for the next 2 years based on the last 2 years of sales recorded (2019 and 2020). Filtered on Bikes, it gives in the insight for potential Bike sale demands.



13. Perform Data Analysis using animated scatter chart

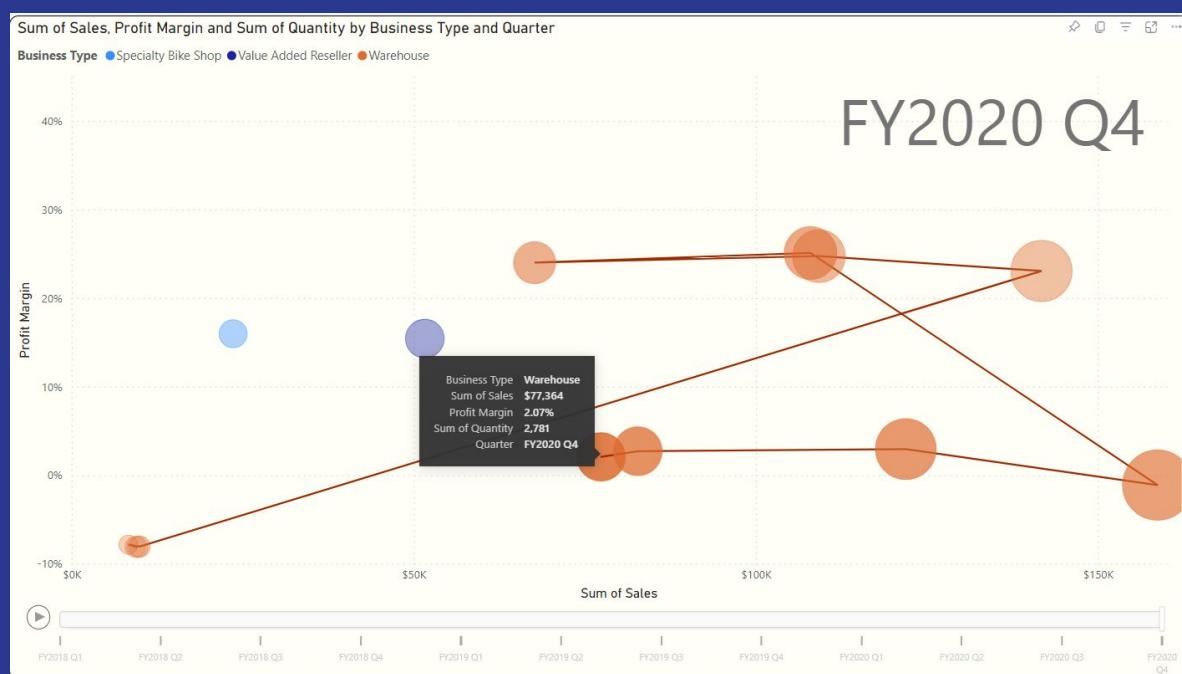
The scatter chart allows understanding the measure values simultaneously: in this case, order quantity, sales revenue, and profit margin.

Each bubble represents a reseller business type. Changes in the bubble size reflect increased or decreased order quantities. While horizontal movements represent increases/decreases in sales revenue, and vertical movements represent increases/decreases in profitability.

When the animation stops, select one of the bubbles to reveal its tracking over time.

Hover the cursor over any bubble to reveal a tooltip describing the measure values for the reseller type at that point in time.

Click on a bubble to see where it had move from through the sales history.



13. Build Power BI dashboard

Pinned visuals to a new dashboard.

Screenshot of the Power BI service interface showing a pinned dashboard titled "AdventureWork-Suifeng-Dashboard".

The dashboard contains the following pinned visualizations:

- Sum of Sales and Profit Margin by Month**: A stacked bar chart showing monthly sales and profit margin from July 2019 to June 2020. The Y-axis represents Sum of Sales and Profit Margin. The X-axis represents the Month. The chart includes a narrative section describing the highest sales month (Aug 2019) and the divergence between sales and profit margin.
- Sum of Sales by Country and Category**: A bar chart showing total sales by country. The Y-axis represents Sum of Sales. The X-axis lists countries: United States, Canada, United Kingdom, France, Australia, and Germany. The chart includes a narrative section about the highest sales country.
- Narrative**: A text box providing analysis of sales trends and product categories.
- Sum of Quantity by Category**: A pie chart showing the distribution of quantity by category. The segments are labeled: 17K (34.95%), 16K (33.84%), 9K (18.85%), and 6K (12.35%). The chart includes a narrative section about the highest quantity category.
- Forecast of Sales**: A line chart showing projected sales over time from 2018 to 2022. The Y-axis represents Sum of Sales. The chart includes a narrative section about the forecast period.
- FY2020 Q4**: A scatter plot showing Sum of Sales (Profit Margin and Sum of Quantity) by Business Type and Gender. The X-axis represents Business Type (Specialty Bike Shop, Value Added Reseller, Warehouse) and the Y-axis represents Gender (Male, Female). The chart includes a narrative section about the fourth quarter of the fiscal year.

The left sidebar shows the navigation menu with sections like Home, Create, Browse, Workspaces, and AdventureWorks. The top right corner displays a Fabric Trial status (59 days left) and various dashboard management icons.

14. Ways to help build better dashboard tiles

Tips:

1. Check the visuals from the "Quick Insight" as a reference.

2. Ask questions with natural language in the dashboard.

The screenshot shows the Power BI Q&A interface. On the left is a navigation bar with icons for Home, Create, Browse, OneLake data hub, Apps, Metrics, Monitoring hub, Deployment pipelines, Learn, Workspaces, and AdventureWorks. The main area has a search bar at the top with the text "Search" and a button "Ask a question about your data". Below it is a section titled "Try one of these to get started" containing eight cards with natural language queries:

- what is the avg price by reseller state-province
- what is the max price by reseller state-province
- top colors by profit margin
- top product subcategories by profit
- what is the min price by region group
- top product subcategories by sales YTD
- what is the sales % all region by background color format
- what is the orders by font color format
- what is the avg price by font color format
- top fiscals by profit

At the bottom right is a link "Show fewer suggestions".

The screenshot shows the Power BI Quick Insights feature. On the left is a navigation bar with icons for Home, Create, Browse, OneLake data hub, Apps, Metrics, Monitoring hub, Deployment pipelines, Learn, Workspaces, and AdventureWorks. The main area is titled "Quick Insights for AdventureWork-Suifeng" and displays several analytical visualizations:

- Count of City BY COUNTRY-REGION: Bar chart showing the count of cities for countries like United States, Canada, Germany, Australia, United Kingdom, and France.
- Quantity BY GROUP: Donut chart showing the distribution of quantity across North America, Europe, and Pacific regions.
- Max Price and Sales BY STANDARD COST: Scatter plot showing sales versus standard cost.
- Max Price BY STANDARD COST: Line chart showing the trend of maximum price over time.
- Sales BY SUBCATEGORY: Bar chart showing sales for subcategories like Road Bikes, Mountain Bikes, Touring Bikes, etc.
- Variance Margin BY DATE: Line chart showing variance margin over time.
- Count of Country BY TITLE: Bar chart showing the count of countries for titles like Sales Representative, European Sales, North America, etc.
- Count of Region BY GROUP: Donut chart showing the distribution of regions across North America, Europe, and Pacific.
- Count of City and Average of Cost BY STANDARD COST: Scatter plot showing average cost versus standard cost.

Each visualization includes descriptive text and a small icon.

Can pin any relevant visuals to the dashboard from these tips.