

Introduction to Power BI

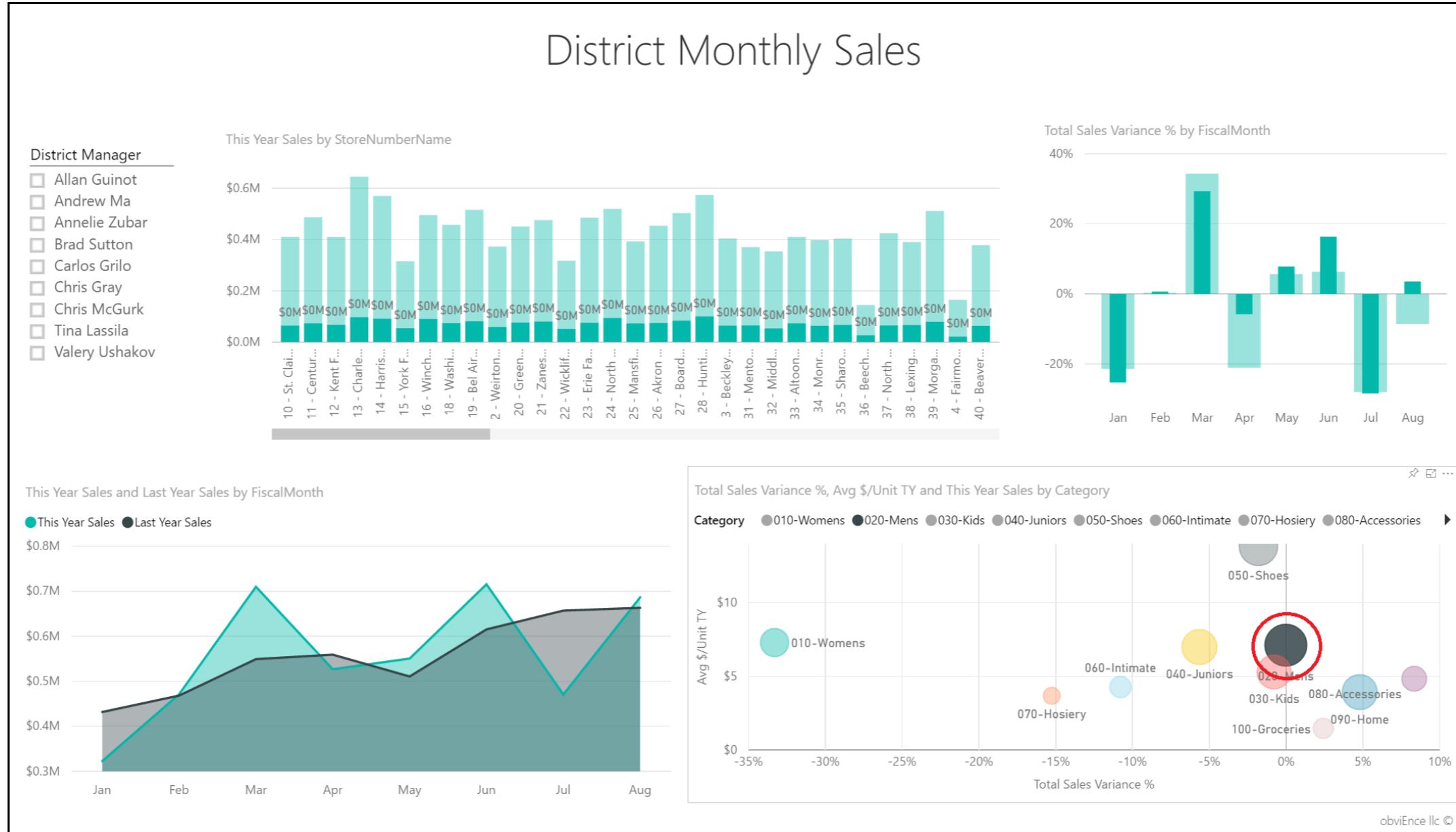
INTRODUCTION TO POWER BI



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What is Power BI?



¹ <https://docs.microsoft.com/en-us/power-bi/create-reports/sample-retail-analysis>

Data Visualization in Power BI

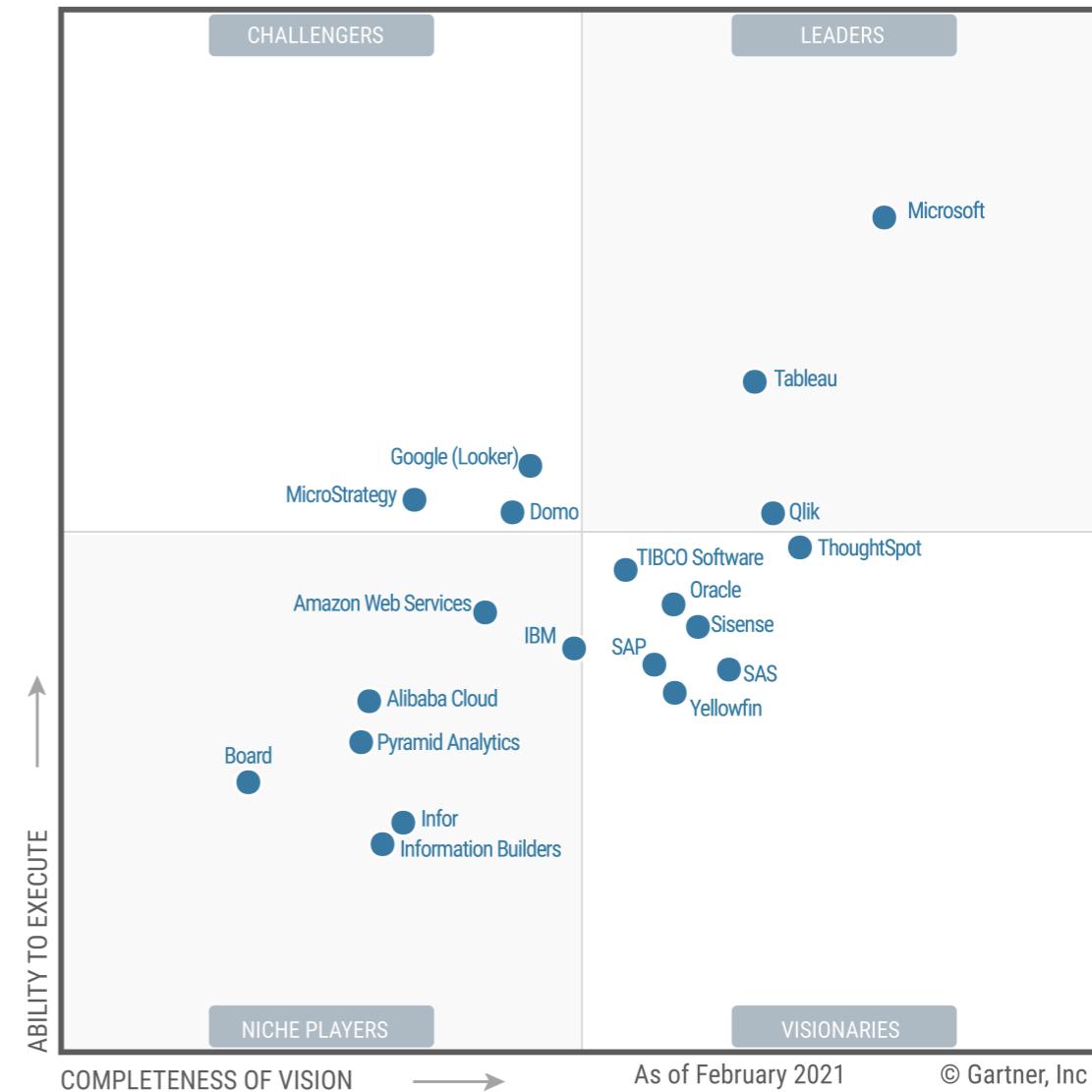


Total Excluding Tax	Tax Amount	Profit	Total Including Tax
129	19.35	67.5	148.35
258	38.7	135	296.7
301	45.15	157.5	346.15
172	25.8	90	197.8
86	12.9	45	98.9
387	58.05	202.5	445.05
387	58.05	202.5	445.05
387	58.05	202.5	445.05
344	51.6	180	395.6
344	51.6	180	395.6
344	51.6	180	395.6
344	51.6	180	395.6
258	38.7	135	296.7
258	38.7	135	296.7
258	38.7	135	296.7
258	38.7	135	296.7

Why Power BI?

- Leading BI tool according to Gartner
- Over 97% of Fortune 500 companies use Power BI
- Over 6 million customers

Figure 1: Magic Quadrant for Analytics and Business Intelligence Platforms



Power BI Components

Power BI Desktop

- Desktop version
- Data analysis and report creation tool
- Includes the Power Query Editor
- 100% free

Power BI service

- Cloud-based version
- Light report editing
- Share and distribute reports

Power BI Pro

Exclusive features:

- Publish and share across the Power BI cloud platform
- Mobile app
- Collaborate with other Power BI users

Power BI Interface

The image consists of three side-by-side screenshots of the Power BI interface.

- Power BI Desktop:** Shows the desktop application's main menu with options like "Get data" and "Recent sources". A red box highlights the "Get data" button. Below it is a list of recent reports, with the first one, "2.2.6ScreencastStart.pbix", highlighted by a red box. Another red box highlights the "Open other reports" button at the bottom.
- Sign in to collaborate and share content:** A large circular user icon is centered. Below it is the text "Sign in to collaborate and share content". A paragraph explains that Power BI Pro enables collaboration across departments and distributing content. It includes a "Try free" button and a yellow "Sign in" button.
- Home:** A yellow page with a "Close" button in the top right corner, indicated by a red arrow. It features sections for "WHAT'S NEW" (with a link to see what's new), "POWER BI BLOG" (with a link to keep up-to-date), "FORUMS" (with a link to visit the forum), and "TUTORIALS" (with a link to learn more). Each section has a brief description and a link.

Power BI Interface - Three views

The screenshot illustrates the Power BI Desktop interface with three main views:

- Report View (Left):** Displays a dashboard with three visualizations:
 - A large blue bar chart titled "Amount by AccountType" showing "Income" and "Expense". A value "53.64bn" is displayed above the chart.
 - A grouped bar chart titled "Amount by MonthName and ScenarioName" comparing "Actual", "Budget", and "Forecast" values across months from November to January.
 - A table titled "ScenarioName" showing sales figures for various product categories like Cameras and camcorders, Cell phones, Computers, etc., for four scenarios: Actual, Budget, Forecast, and Total.
- Data View (Middle):** Located in the top ribbon under "Home". It includes sections for Data (Get data, Power BI datasets, SQL Server, Enter data sources), Queries (Transform, Refresh data), Insert (New visual, Text box, More visuals), Calculations (New measure, Quick measure), and Share (Publish).
- Fields View (Right):** Located in the top ribbon under "Home". It includes sections for Visualizations (Search, Add data fields here) and Fields (Search, DimAccount, DimDate, DimProductCateg..., DimScenario, FactStrategyPlan). It also features sections for Filters, Values, Drill through, Cross-report, and Add drill-through fields here.

Power BI Interface - Report View

Report View

Amount by AccountType

Expense

Amount by MonthName and ScenarioName

ScenarioName ● Actual ● Budget ● Forecast

2bn

1bn

0bn

MonthName

November December May July August June October April September March February January

ScenarioName

Cameras and camcorders Cell phones Computers Games and Toys Home Appliances Music, Movies and Audio Books TV and Video

ScenarioName	Cameras and camcorders	Cell phones	Computers	Games and Toys	Home Appliances	Music, Movies and Audio Books	TV and Video	
Actual	273,081,757.15	3,587,092,338.37	1,287,810,461.47	4,593,694,374.88	218,933,396.02	5,665,988,969.42	230,738,587.69	2,485,487,457.19
Budget	256,826,621.81	3,347,605,529.68	1,208,041,332.59	4,307,849,337.57	207,049,792.29	5,299,115,246.06	215,317,906.62	2,330,834,374.94
Forecast	273,397,435.67	3,572,004,626.25	1,285,330,168.28	4,585,888,066.58	219,730,520.95	5,664,411,752.04	229,865,165.02	2,296,131,319.12
Total	803,305,814.64	10,506,702,494.30	3,781,181,962.35	13,487,431,779.03	645,713,709.26	16,629,515,967.52	675,921,659.33	7,112,453,151.25

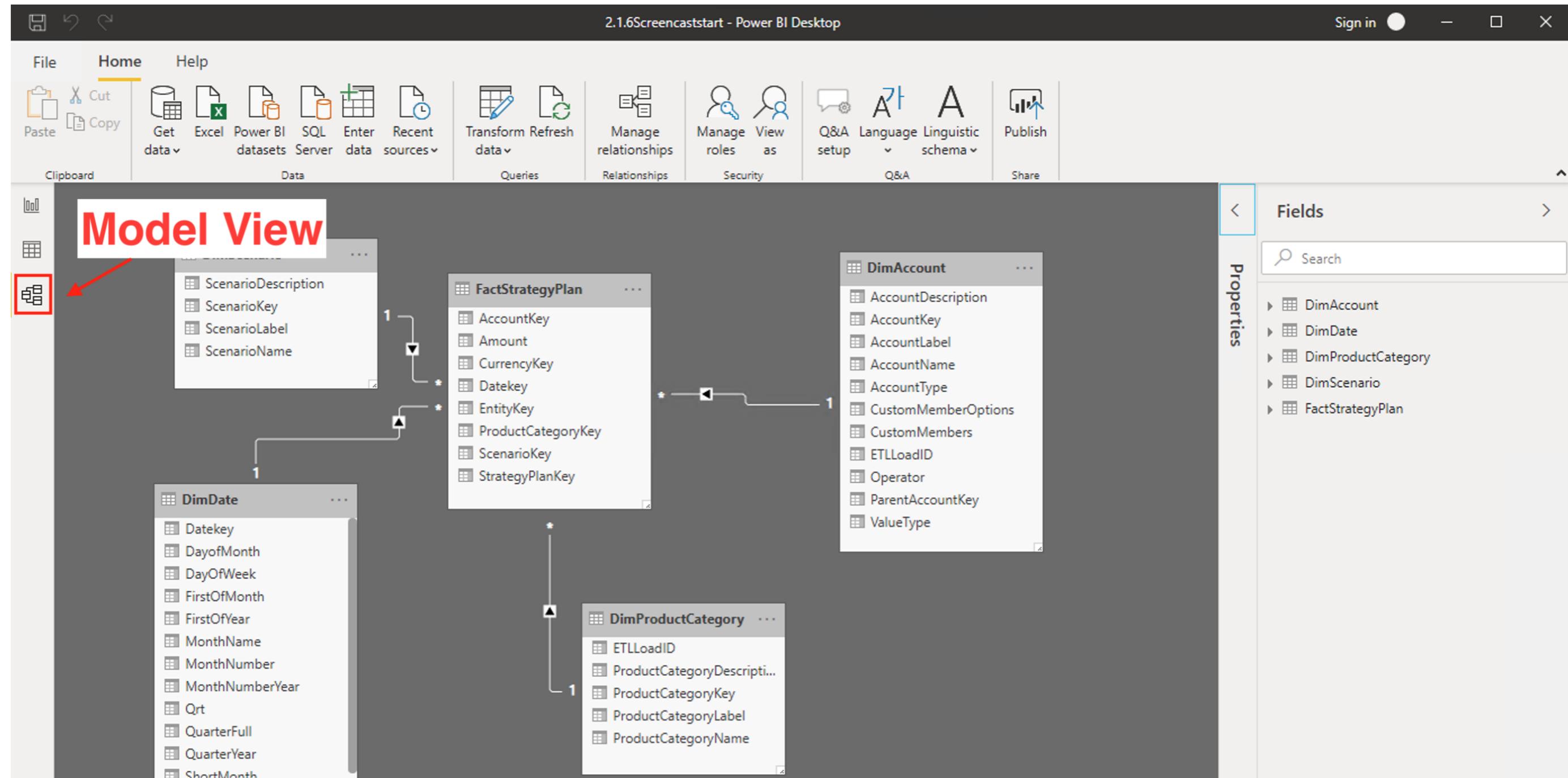
Power BI Interface - Data View

The screenshot shows the Power BI Desktop application window titled "2.1.6Screencaststart - Power BI Desktop". The "Table tools" tab is selected in the ribbon. A red box highlights the "New table" button in the "Calculated columns" group. The main area displays the "DimAccount" table with the following schema:

	AccountKey	ParentAccountKey	AccountLabel	AccountName	AccountDescription	AccountType	Operator	CustomMembers	ValueType	CustomM...
1	NULL			100000 Profit and Loss after tax	Profit and Loss after tax	NULL	NULL	NULL	NULL	NULL
2				111000 Income	Income	Income	+	NULL	Income	+
3				112000 Expense	Expense	Expense	-	NULL	Expense	-
4	2			110100 Sale Revenue	Sale Revenue	Income	+	NULL	Income	+
5	3			112100 Cost of Goods Sold	Cost of Goods Sold	Expense	+	NULL	Expense	+
6	3			112200 Selling, General & Administrative Expenses	Selling, General & Administrative Expenses	Expense	+	NULL	Expense	+
7	6			112300 Administration Expense	Administration Expense	Expense	+	NULL	Expense	+
8	6			112400 IT Cost	IT Cost	Expense	+	NULL	Expense	+
9	6			112500 Human Capital	Human Capital	Expense	+	NULL	Expense	+
10	6			112600 Light, Heat, Communication Cost	Light, Heat, Communication Cost	Expense	+	NULL	Expense	+
11	6			112700 Property Costs	Property Costs	Expense	+	NULL	Expense	+
12	6			112800 Other Expenses	Other Expenses	Expense	+	NULL	Expense	+
13	6			112900 Marketing Cost	Marketing & Advertisement Cost	Expense	+	NULL	Expense	+
14	13			112910 Holiday Ad Cost	Holiday Ad Cost	Expense	+	NULL	Expense	+
15	13			112920 Spring Ad Cost	Spring Ad Cost	Expense	+	NULL	Expense	+
16	13			112930 Back-to-School Ad Cost	Back-to-School Ad Cost	Expense	+	NULL	Expense	+
17	13			112940 Business Ad Cost	Business Ad Cost	Expense	+	NULL	Expense	+
18	13			112950 Tax Time / Summer Ad Cost	Tax Time / Summer Ad Cost	Expense	+	NULL	Expense	+
19	1			131000 Taxation	Taxation	Taxation	-	NULL	Taxation	-
20	14			112911 Radio & TV	Holiday Ad Cost by Radio & TV	Expense	+	NULL	Expense	+
21	14			112912 Print	Holiday Ad Cost by Print	Expense	+	NULL	Expense	+
22	14			112913 Internet	Holiday Ad Cost by Internet	Expense	+	NULL	Expense	+
23	14			112914 Other	Holiday Ad Cost by Other	Expense	+	NULL	Expense	+

A red box highlights the "New table" button in the ribbon's "Calculated columns" group. The word "Data View" is overlaid in red text on the left side of the table. The "Fields" pane on the right lists the columns of the DimAccount table.

Power BI Interface - Model View



Power BI Interface - Canvas area

2.1.6Screencaststart - Power BI Desktop

Sign in

File Home Insert Modeling View Help

Paste Cut Copy Format painter Clipboard

Get data Excel Power BI datasets SQL Server Enter data sources Recent

Transform Refresh data New visual Text box More visuals New measure Quick measure Publish Share

Amount by AccountType

53.64bn Amount

Income Expense

Select all
2020
2019
2018
2017
2016
2015

Amount by MonthName and ScenarioName

ScenarioName Actual Budget Forecast

2bn
1bn
0bn

MonthName November December May July August June October April September March February January

Actual Budget Forecast Total

ScenarioName	Audio	Cameras and camcorders	Cell phones	Computers	Games and Toys	Home Appliances	Music, Movies and Audio Books	TV and Video
Actual	273,081,757.15	3,587,092,338.37	1,287,810,461.47	4,593,694,374.88	218,933,396.02	5,665,988,969.42	230,738,587.69	2,485,487,457.19
Budget	256,826,621.81	3,347,605,529.68	1,208,041,332.59	4,307,849,337.57	207,049,792.29	5,299,115,246.06	215,317,906.62	2,330,834,374.94
Forecast	273,397,435.67	3,572,004,626.25	1,285,330,168.28	4,585,888,066.58	219,730,520.95	5,664,411,752.04	229,865,165.02	2,296,131,319.12
Total	803,305,814.64	10,506,702,494.30	3,781,181,962.35	13,487,431,779.03	645,713,709.26	16,629,515,967.52	675,921,659.33	7,112,453,151.25

Canvas

Filters

Visualizations

Fields

Drill through

Cross-report

Off

Keep all filters

On

Add drill-through fields here

Power BI Interface - Filters pane

The screenshot shows the Power BI Desktop application window titled "2.1.6Screencaststart - Power BI Desktop". The ribbon menu is visible at the top, with the "Home" tab selected. In the center, there are two visualizations: a treemap chart titled "Amount by AccountType" and a bar chart titled "Amount by MonthName and ScenarioName". Below these is a table titled "ScenarioN" with columns for "Actual", "Budget", "Forecast", and "Total" values across various categories like Audio, Cameras and camcorders, Cell phones, etc. On the right side, the "Filters" pane is open, highlighted with a red border. It contains sections for "Filters on this page" and "Filters on all pages", each with a "Add data fields here" button. The "Fields" pane is also visible, showing hierarchical lists for DimAccount, DimDate, DimProductCategory, DimScenario, and FactStrategyPlan. A large red watermark "Filters Pane" is overlaid on the bottom left of the pane.

Amount by AccountType

Income Expense

Amount by MonthName and ScenarioName

ScenarioName Actual Budget Forecast

ScenarioName	Actual	Budget	Forecast
November	2bn	1.5bn	1.5bn
December	2bn	1.5bn	1.5bn
May	1.5bn	1.5bn	1.5bn
July	1.5bn	1.5bn	1.5bn
August	1.5bn	1.5bn	1.5bn
June	1.5bn	1.5bn	1.5bn
October	1.5bn	1.5bn	1.5bn
April	1.5bn	1.5bn	1.5bn
September	1.5bn	1.5bn	1.5bn
March	1.5bn	1.5bn	1.5bn
February	1.5bn	1.5bn	1.5bn
January	1.5bn	1.5bn	1.5bn

ScenarioN Audio Cameras and camcorders Cell phones Computers Games and Toys Home Appliances Music, Movies and TV and Video

ScenarioN	Actual	Budget	Forecast	Total	Actual	Budget	Forecast	Total	Actual	Budget	Forecast	Total
Actual	273,081,757.15	3,587,092,338.37	1,287,810,461.47	4,593,694,374.88	218,933,396.02	5,665,988,969.42	230,738,587.69	2,485,487,457.19	803,305,814.64	10,506,702,494.30	3,781,181,962.35	13,487,431,779.03
Budget	256,826,621.81	3,347,605,529.68	1,208,041,332.59	4,307,849,337.57	207,049,792.29	5,299,115,246.06	215,317,906.62	2,330,834,374.94				
Forecast	273,397,435.67	3,572,004,626.25	1,285,330,168.28	4,585,888,066.58	219,730,520.95	5,664,411,752.04	229,865,165.02	2,296,131,319.12				
Total	803,305,814.64	10,506,702,494.30	3,781,181,962.35	13,487,431,779.03	645,713,709.26	16,629,515,967.52	675,921,659.33	7,112,453,151.25				

Filters

Search

Select all

2020

2019

2018

2017

2016

2015

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Visualizations

Fields

Search

DimAccount

DimDate

DimProductCategory

DimScenario

FactStrategyPlan

Values

Add data fields here

Drill through

Cross-report

Off

Keep all filters

On

Add drill-through fields here

Filters Pane

Power BI Interface - Visualizations pane

Visualizations Pane

Visualizations

Filters

Search

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Values

Add data fields here

Drill through

Cross-report

Off

Keep all filters

On

Add drill-through fields here

Fields

Search

DimAccount

DimDate

DimProductCateg...

DimScenario

FactStrategyPlan

Amount by AccountType

Income

Expense

Amount by MonthName and ScenarioName

ScenarioName

Actual

Budget

Forecast

MonthName

Amount

2bn

1bn

0bn

November December May July August June October April September March February January

ScenarioName

Actual

Budget

Forecast

Total

Cameras and camcorders

Cell phones

Computers

Games and Toys

Home Appliances

Music, Movies and Audio Books

TV and Video

ScenarioName	Actual	Cameras and camcorders	Cell phones	Computers	Games and Toys	Home Appliances	Music, Movies and Audio Books	TV and Video
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Power BI Interface - Fields pane

The screenshot shows the Power BI Desktop application window titled "2.1.6Screencaststart - Power BI Desktop". The interface includes a ribbon menu with tabs like File, Home, Insert, Modeling, View, and Help. Below the ribbon are various icons for data management, visualization creation, and publishing. On the left, there's a preview area displaying three visualizations: a large blue bar chart labeled "Amount by AccountType" with a value of "53.64bn", a smaller bar chart labeled "Amount by MonthName and ScenarioName", and a table labeled "ScenarioN". The right side of the screen features several panes: "Filters", "Visualizations", and the "Fields" pane, which is highlighted with a red border. The "Fields" pane contains sections for "Values" (with a "Add data fields here" button), "Drill through" (with a "Cross-report" section set to "Off"), and "Keep all filters" (with a switch set to "On"). A red box on the right side of the slide contains the text "Fields Pane".

53.64bn

Amount

Amount by AccountType

Income Expense

Select all
2020
2019
2018
2017
2016
2015

Amount by MonthName and ScenarioName

ScenarioName Actual Budget Forecast

2bn
1bn
0bn

MonthName November December May July August June October April September March February January

ScenarioName Audio Cameras and camcorders Cell phones Computers Games and Toys Home Appliances Music, Movies and TV and Video

Actual	273,081,757.15	3,587,092,338.37	1,287,810,461.47	4,593,694,374.88	218,933,396.02	5,665,988,969.42	230,738,587.69	2,485,487,457.19
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Filters

Visualizations

Fields

Values

Drill through

Cross-report

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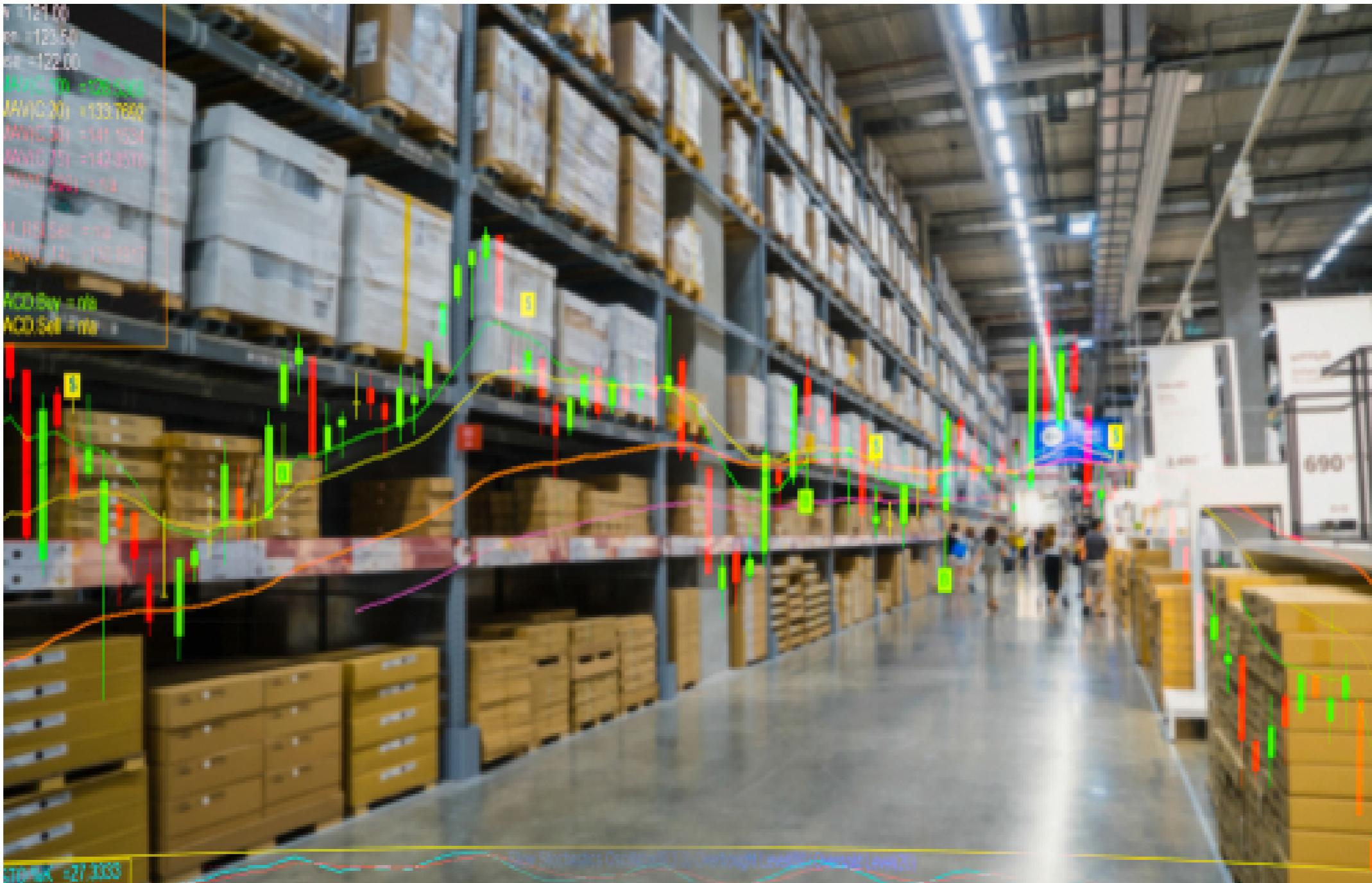
Keep all filters

On

Add drill-through fields here

Fields Pane

Wide World Importers (WWI) dataset



Wide World Importers (WWI) dataset structure

- Star schema
- **Fact Table:**
 - FactSales.csv
- **Dimension Tables:**
 - DimCustomer.csv
 - DimEmployee.xlsx
 - DimStockItem.csv
 - DimDate.csv
 - DimCity.csv

Let's practice!

INTRODUCTION TO POWER BI

Getting started!

INTRODUCTION TO POWER BI



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Let's practice!

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Slicers and Tables

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