

# Introduction to Power BI

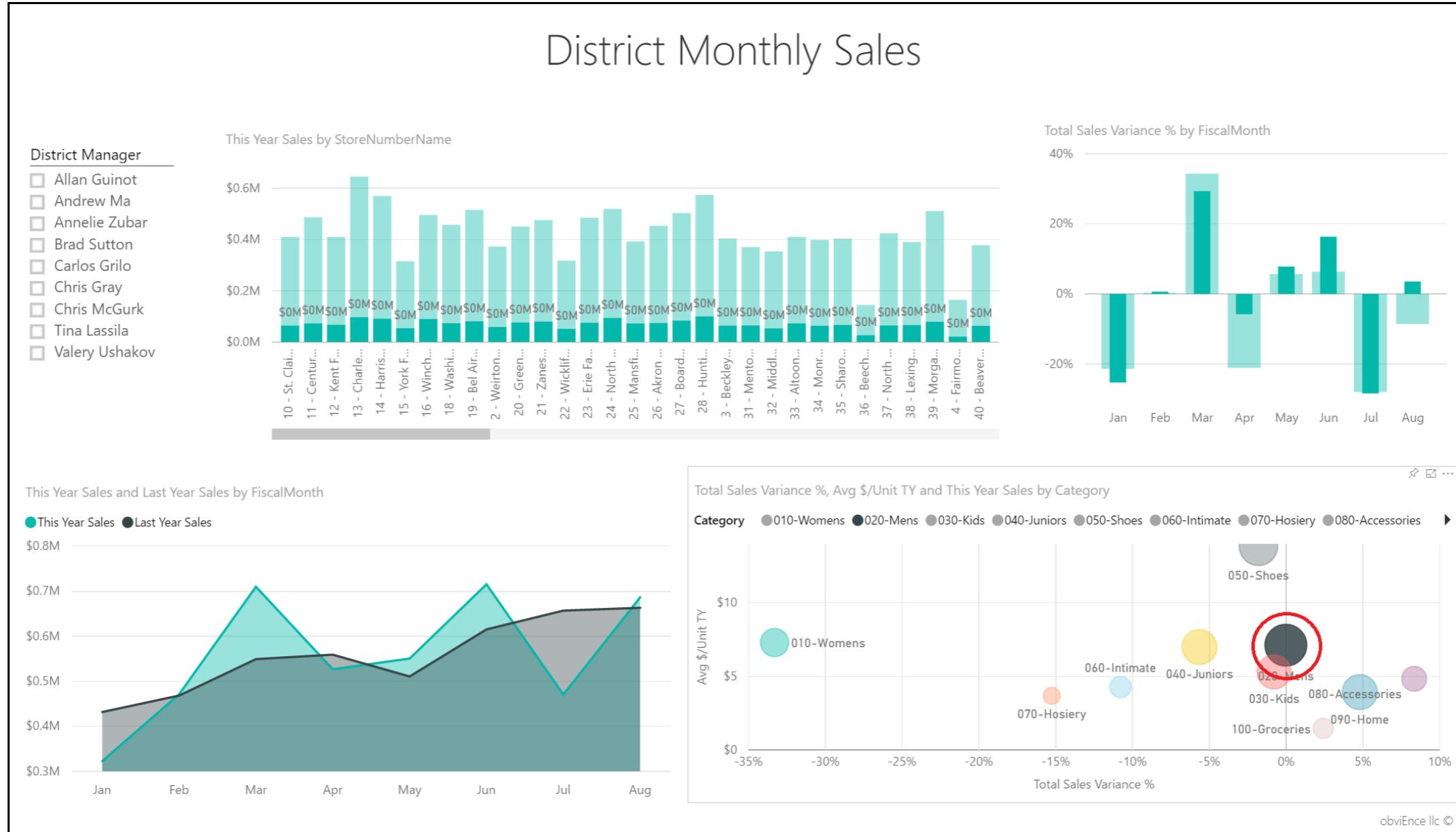
INTRODUCTION TO POWER BI



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# What is Power BI?



<sup>1</sup> <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



Source: Gartner (February 2021)

# 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 page:** A yellow header bar features a "Close" button with a red arrow pointing to it. Below the header are sections for "WHAT'S NEW" (with a note about monthly updates), "POWER BI BLOG" (with a note about staying updated with news and resources), "FORUMS" (with a note about the Power BI Forum for community interaction), and "TUTORIALS" (with a note about learning more about Power BI). A "WHAT'S NEW" section is also present here.

# Power BI Interface - Three views

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

- Home View:** The primary workspace where visualizations are displayed. It includes:
  - A large blue treemap visualization titled "Amount by AccountType" showing segments for Income and Expense.
  - A bar chart titled "Amount by MonthName and ScenarioName" comparing Actual, Budget, and Forecast values across months from November to January.
  - A detailed table at the bottom showing sales figures for various product categories (Cameras and camcorders, Cell phones, Computers, Games and Toys, Home Appliances, Music, Movies and Audio Books, TV and Video) across four scenarios: Actual, Budget, Forecast, and Total.
- Visualizations View:** A sidebar on the right containing:
  - A "Filters" section with a search bar and dropdown for selecting years from 2015 to 2020.
  - A "Values" section with a search bar and a placeholder for "Add data fields here".
  - A "Drill through" section with options for "Cross-report" (set to Off) and "Keep all filters" (set to On).
  - A "Add drill-through fields here" placeholder.
- Fields View:** Another sidebar on the right containing:
  - A "Search" bar.
  - A tree view of data sources:
    - DimAccount
    - DimDate
    - DimProductCateg...
    - DimScenario
    - FactStrategyPlan

# Power BI Interface - Report View

The screenshot shows the Power BI Desktop application window titled "2.1.6Screencaststart - Power BI Desktop". The ribbon is visible at the top with the "Home" tab selected. A red arrow points to the "Report View" icon in the ribbon. The main workspace contains three visualizations:

- Amount by AccountType:** A treemap chart showing the distribution of amounts by account type.
- Amount by MonthName and ScenarioName:** A grouped bar chart comparing actual, budget, and forecast values across different months.
- ScenarioN:** A table showing financial data for various categories like Audio, Cameras and camcorders, Cell phones, Computers, Games and Toys, Home Appliances, Music, Movies and Audio Books, and TV and Video.

The ribbon also shows the "Clipboard" section highlighted with a red box. The "Filters", "Visualizations", and "Fields" panes are visible on the right side of the interface.

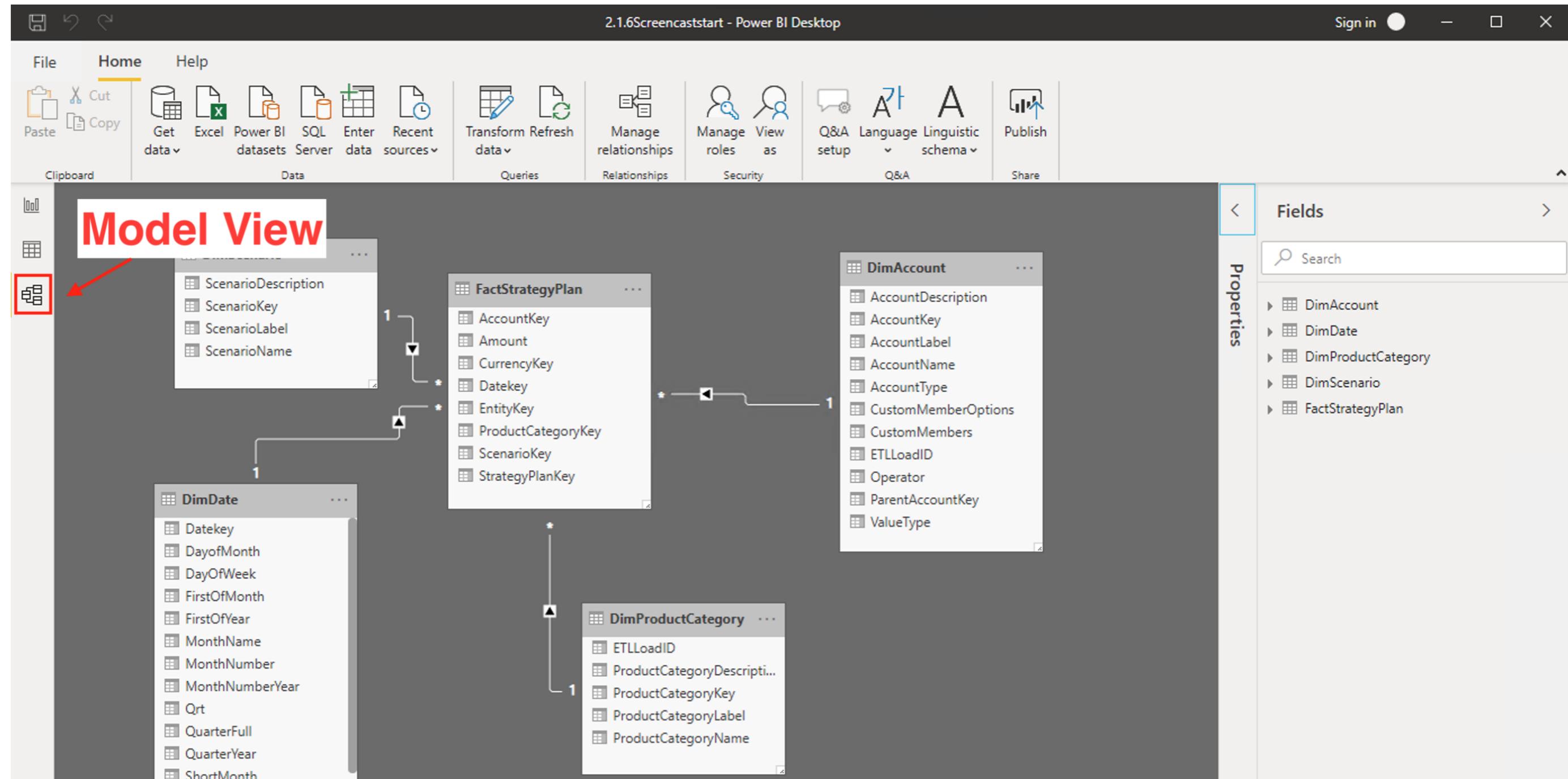
ScenarioName	Actual	Budget	Forecast	Cameras and camcorders	Cell phones	Computers	Games and Toys	Home Appliances	Music, Movies and Audio Books	TV and Video
Actual	273,081,757.15	3,587,092,338.37	1,287,810,461.47	4,593,694,374.88	218,933,396.02	5,665,988,969.42	230,738,587.69	2,485,487,457.19		
Budget	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 table icon in the "Structure" group of the ribbon. The main area displays a data view of account information, with a large red "Data View" watermark overlaid on the table. The table has columns: AccountKey, ParentAccountKey, AccountLabel, AccountName, AccountDescription, AccountType, Operator, CustomMembers, ValueType, and CustomM...". The data includes various account categories like Profit and Loss after tax, Income, Expense, etc. On the right side, there is a "Fields" pane showing the schema of the DimAccount table, including columns like AccountDescription, AccountKey, AccountLabel, AccountName, AccountType, CustomMemberO..., CustomMembers, ETLLoadID, Operator, ParentAccountKey, ValueType, and several Dim and Fact tables.

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
111000			111000 Income	Income	Income	+	NULL	Income	+
112000			112000 Expense	Expense	Expense	-	NULL	Expense	-
110100			110100 Sale Revenue	Sale Revenue	Income	+	NULL	Income	+
112100			112100 Cost of Goods Sold	Cost of Goods Sold	Expense	+	NULL	Expense	+
112200			112200 Selling, General & Administrative Expenses	Selling, General & Administrative Expenses	Expense	+	NULL	Expense	+
112300			112300 Administration Expense	Administration Expense	Expense	+	NULL	Expense	+
112400			112400 IT Cost	IT Cost	Expense	+	NULL	Expense	+
112500			112500 Human Capital	Human Capital	Expense	+	NULL	Expense	+
112600			112600 Light, Heat, Communication Cost	Light, Heat, Communication Cost	Expense	+	NULL	Expense	+
112700			112700 Property Costs	Property Costs	Expense	+	NULL	Expense	+
112800			112800 Other Expenses	Other Expenses	Expense	+	NULL	Expense	+
112900			112900 Marketing Cost	Marketing & Advertisement Cost	Expense	+	NULL	Expense	+
112910			112910 Holiday Ad Cost	Holiday Ad Cost	Expense	+	NULL	Expense	+
112920			112920 Spring Ad Cost	Spring Ad Cost	Expense	+	NULL	Expense	+
112930			112930 Back-to-School Ad Cost	Back-to-School Ad Cost	Expense	+	NULL	Expense	+
112940			112940 Business Ad Cost	Business Ad Cost	Expense	+	NULL	Expense	+
112950			112950 Tax Time / Summer Ad Cost	Tax Time / Summer Ad Cost	Expense	+	NULL	Expense	+
131000			131000 Taxation	Taxation	Taxation	-	NULL	Taxation	-
112911			112911 Radio & TV	Holiday Ad Cost by Radio & TV	Expense	+	NULL	Expense	+
112912			112912 Print	Holiday Ad Cost by Print	Expense	+	NULL	Expense	+
112913			112913 Internet	Holiday Ad Cost by Internet	Expense	+	NULL	Expense	+
112914			112914 Other	Holiday Ad Cost by Other	Expense	+	NULL	Expense	+

# Power BI Interface - Model View



# Power BI Interface - Canvas area

The screenshot shows the Power BI Desktop interface with the following details:

- Home Tab:** Selected in the ribbon menu.
- Clipboard:** Contains icons for Paste, Cut, Copy, and Format painter.
- Data:** Contains icons for Get data (with dropdown for Excel, Power BI datasets, SQL Server, Enter data sources), Transform Refresh data, New visual, Text box, More visuals, New measure, Quick measure, Publish, and Share.
- Insert:** Contains icons for Insert, Modeling, View, and Help.
- Canvas Area:** Displays a dashboard with:
  - A large blue bar chart titled "Amount by AccountType" with segments for Income and Expense.
  - A smaller bar chart titled "Amount by MonthName and ScenarioName" comparing Actual, Budget, and Forecast values across months from November to January.
  - A table at the bottom showing detailed data for various product categories like Audio, Cameras and camcorders, Cell phones, Computers, Games and Toys, Home Appliances, Music, Movies and Audio Books, and TV and Video.
- Filters Pane:** Shows a list of filters applied to the dashboard, including years from 2015 to 2020 and a "Select all" option.
- Visualizations Pane:** Shows a grid of visualization icons.
- Fields Pane:** Shows a list of fields categorized under DimAccount, DimDate, DimProductCateg..., DimScenario, and FactStrategyPlan.
- Right Side Panel:** Includes sections for Values, Drill through, Cross-report (set to Off), and Keep all filters (set to On).

# 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" for various product categories. On the right side, the "Filters" pane is open, highlighted with a red border. The pane contains sections for "Filters on this page" and "Filters on all pages", each with a "Add data fields here" button. It also includes sections for "Visualizations" and "Fields", both with search bars and lists of available fields like "DimAccount", "DimDate", etc. 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

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

ScenarioN

Actual	Budget	Forecast	Total	Cameras and camcorders	Cell phones	Computers	Games and Toys	Home Appliances	Music, Movies and Audio Books	TV and Video
273,081,757.15	256,826,621.81	273,397,435.67	803,305,814.64	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
256,826,621.81	3,347,605,529.68	3,572,004,626.25	10,506,702,494.30	1,208,041,332.59	1,285,330,168.28	4,307,849,337.57	207,049,792.29	5,299,115,246.06	215,317,906.62	2,330,834,374.94
273,397,435.67	3,572,004,626.25	3,781,181,962.35	13,487,431,779.03	645,713,709.26	16,629,515,967.52	4,585,888,066.58	219,730,520.95	5,664,411,752.04	229,865,165.02	2,296,131,319.12
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	4,585,888,066.58	219,730,520.95	5,664,411,752.04	229,865,165.02	2,296,131,319.12

Filters

Search

Select all

2020

2019

2018

2017

2016

2015

Visualizations

Fields

Search

DimAccount

DimDate

DimProductCateg...

DimScenario

FactStrategyPlan

Values

Add data fields here

Drill through

Cross-report

Off

Keep all filters

On

Add drill-through fields here

# Power BI Interface - Visualizations pane

The screenshot shows the Power BI Desktop application window. The ribbon at the top is set to the 'Home' tab. The main area displays several visualizations: a large blue bar chart for 'Amount by AccountType' (Income and Expense), a grouped bar chart for 'Amount by MonthName and ScenarioName' (Actual, Budget, Forecast), and a detailed table for 'ScenarioName' (Audio, Cameras and camcorders, Cell phones, Computers, Games and Toys, Home Appliances, Music, Movies and Audio Books) comparing Actual, Budget, Forecast, and Total values across various categories.

**Visualizations Pane:** A red box highlights the 'Visualizations' pane on the right side of the interface. This pane contains sections for 'Filters', 'Visualizations', 'Fields', and 'Values'. The 'Visualizations' section lists various visualization icons. The 'Fields' section lists data source tables like DimAccount, DimDate, DimProductCategory, DimScenario, and FactStrategyPlan. The 'Values' section has a placeholder 'Add data fields here'. The 'Drill through' section includes options for 'Cross-report' (set to 'Off') and 'Keep all filters' (set to 'On').

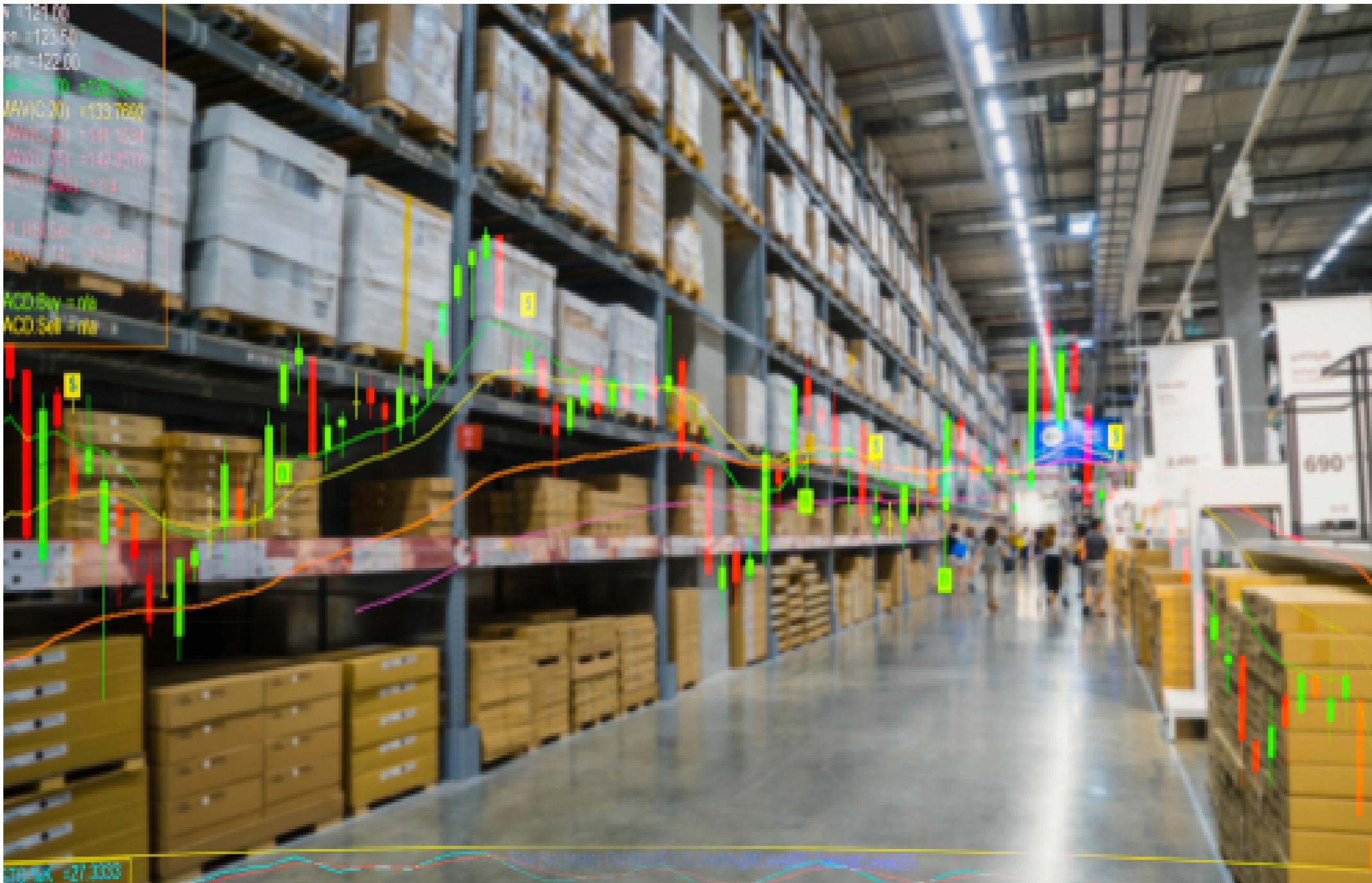
# Power BI Interface - Fields pane

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. Below the ribbon, there are three main visualizations: a treemap chart titled "Amount by AccountType" showing "Income" and "Expense" categories, a bar chart titled "Amount by MonthName and ScenarioName" comparing "Actual", "Budget", and "Forecast" values across months from November to January, and a table titled "ScenarioName" showing detailed financial data for various product categories like Audio, Cameras and camcorders, Cell phones, etc., across four scenarios: Actual, Budget, Forecast, and Total.

The "Fields" pane on the right side of the interface is highlighted with a red border. It contains sections for "Visualizations", "Values", "Drill through", "Cross-report", and "Keep all filters". The "Visualizations" section lists various data sources and tables such as DimAccount, DimDate, DimProductCategory, DimScenario, and FactStrategyPlan. The "Values" section has a placeholder "Add data fields here". The "Drill through" section has a placeholder "Add drill-through fields here". The "Cross-report" section has a switch set to "Off". The "Keep all filters" section has a switch set to "On".

**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!

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# **Let's practice!**

## **INTRODUCTION TO POWER BI**

# Slicers and Tables

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