

Microsoft Power BI



Power BI

Microsoft Power BI

INSTRUCTOR INFORMATION

Loy Vanich
084 007 5544
Line ID: laployv
laploy@gmaill.com
www.laploy.com



Microsoft Power BI

TIME FRAME

- Course duration
- Start time
- Coffee break
- Lunch break
- Course end

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REPOSITORY

<https://github.com/laploy/BI2018>

Microsoft Power BI

SOFTWARE REQUIREMENT

- Windows 10
- Microsoft Office latest version

Microsoft Power BI

Introducing Power BI

Microsoft Power BI

What is Power BI?

- A business analytics service provided by Microsoft.
- It provides interactive visualizations with self-service business intelligence capabilities
- End users can create reports and dashboards by themselves
- Without having to depend on information technology staff or database administrators.

Power BI VS SSRS

Overview			
Loy Vanich (laplo)	Primary purpose	Reporting Services	Power View / Power BI
	Architectural mode	Traditional structured reporting (pre-defined queries and drill paths)	Data discovery / interactive exploration

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Deployment and Delivery

	Reporting Services	Power View / Power BI
Delivery approach	On-premises (or IaaS)	Hybrid (full functionality) or On-premises (subset of functionality)
Access types	Report Manager web app (Native mode) or SharePoint	Excel (client) or SharePoint or Power BI portal (SaaS cloud app)

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Development

	Reporting Services	Power View / Power BI
Design approach	Data-First (report connects to an embedded or shared dataset query)	Data-First (report connects to an existing model or data source)
Development environment	Report Designer (Visual Studio/SSDT/BIDS) or Report Builder (click-once app)	Power BI Designer or Power View for Excel or Power View for SharePoint (web)
Typical content creator	IT developer or Proficient power user	Data analyst (created purposely to have a minimal learning curve)
Creation of underlying report query	Need to create query which is contained within a dataset (can write syntax or use a UI)	Drag and drop (cannot write specific underlying query)
Designer	Free-form layout (with precise alignment ability in body, header, and footer)	Free-form layout (without precise alignment ability)
File extension	.RDL	.XLSX (Excel) or .PBIX (Power BI Designer) or .RDLX (Power View for SharePoint)

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Features

	Reporting Services	Power View / Power BI
Parameterization	Parameter pane	Slicers (placed on the report body) or Filters pane (page level or for individual table/chart)
Color palette	Standard color selections for individual charts Can customize colors using custom color palettes, expressions, or custom code	Style selections applicable to entire report
Pixel-perfect formatting control	Yes	No
Switch chart types on the fly	No (potential workaround with parameterization and show/hide properties)	Yes
Interactive cross-filtering and highlighting behavior	No	Yes
Calculations and expressions	Many options within the dataset, expressions, and custom code	Straightforward options (Sum, Avg, Min, Max, Count)
Built-in maps	Bubble map, Filled map, Line map, Marker map, Custom ESRI shapefile	Bubble map, Filled map Uses Bing Maps API
Multiple data sources allowed per individual report / dashboard	Yes (one data source per dataset is general rule, though a tablix expression can reference another dataset and/or lookups can be utilized)	No (workaround is to integrate data first in underlying data model)

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Shared datasets (i.e., reusable queries across multiple reports / dashboards)	Yes (embedded dataset can be promoted to be a shared dataset)	Yes (In V2, datasets published to the Power BI service are independent objects from reports and dashboards)
Shared report elements (i.e., reusable charts and tables across multiple reports / dashboards)	Yes (report parts which are elements such as tables, charts, gauges, images, maps, parameters, etc. published for reuse)	Yes (Power BI v2 portal supports the ability to 'pin' a report element onto one or more dashboards after the report has been published to the Power BI site)
KPI repository	Indirectly (a KPI can be used from the underlying SSAS or Power Pivot data model, or an indicator can be defined inside of an individual report)	Indirectly (a KPI can be referenced from the underlying SSAS or Power Pivot data model)
Drill-down (additional detail on the same report)	Yes	Yes (basic; affects single object on page only)
Drill-through (additional detail on a different report)	To another report or To custom URL (incl to other reporting tools)	Custom URL (only on Dashboard tiles)

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Alerts	Yes (data-driven alerts in SharePoint mode only)	Yes (simple high/low alerting on a single numeric tile - available in v2 mobile app only)
Subscriptions / automated report delivery	Yes (E-mail, file share, SharePoint doc library, preload a cache)	No
Snapshot reporting	Yes (report execution snapshot to improve performance, or report history snapshot to store report as of a point in time)	No (even a Power Point export from SharePoint retains a live connection so it's not an ideal tool for a point-in-time snapshot)
Pinning of report elements	No	Yes (in Power BI v2 portal, an item on a report can be pinned to one or more dashboard pages)
Support for Analysis Services Multidimensional	Yes (requires a flattened dataset with only two axes)	Yes if data brought into embedded model first (i.e., not direct connect in Power BI V2). Live connectivity supported in Power View for SharePoint
Support for Analysis Services Tabular	Yes	Yes

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Power BI editions

	SQL Server Reporting Services	Power BI Report Server	Power BI Service
Deployment	On-premises	On-premises	Cloud
Power BI dashboards			✓
Power BI apps			✓
Natural language query (Q&A)			✓
Power BI reports		✓	✓
Paginated reports (RDL)	✓	✓	
Mobile reports (Datazen-based)	✓	✓	
How to buy	SQL Server ^[1]	Power BI/SQL Server ^[2]	Power BI
Feature updates	SQL Server release cycle	Rapid release cycle	Rapid release cycle
Support lifecycle	SQL Server support policy	Modern Lifecycle Policy	Managed service

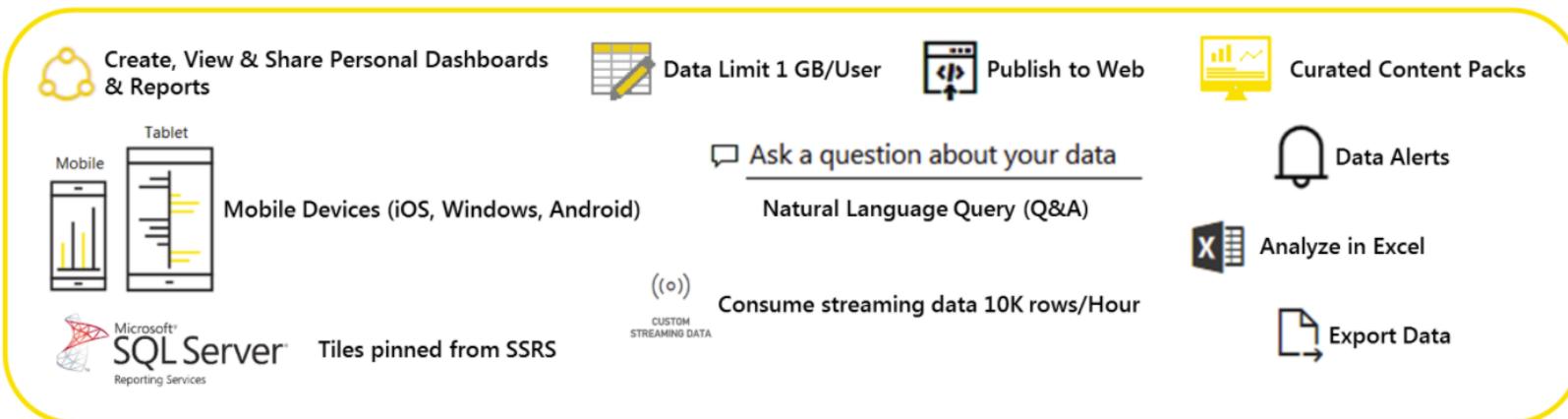
1. SQL Server Standard or Enterprise.

2. Power BI Premium (or SQL Server Enterprise with Software Assurance) per core + Power BI Pro per report publisher

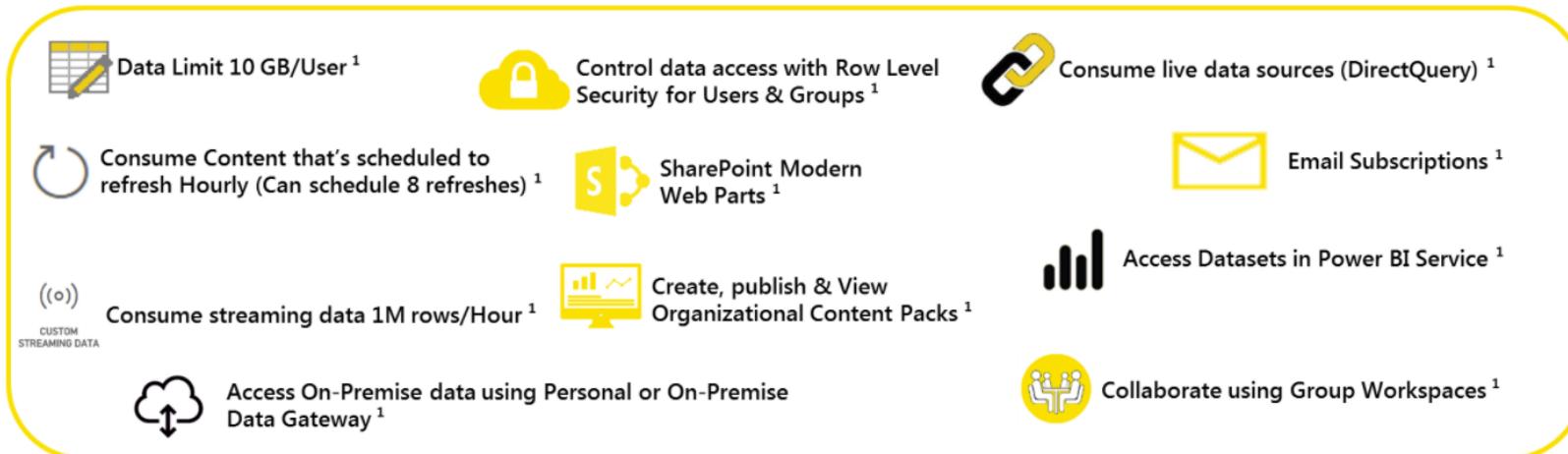
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Power BI Free vs Pro

FREE



PRO ¹



Example Scenario

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Example scenario

- manager of budgeting
- Company = Contoso
- Sells = electronic products
- Where = worldwide
- Channel = retail shops and a website
- Scenario = David aggregates budget data from country/region managers around the globe
- Target = produce the big picture to show to his boss.

Report scenario

- Work start = October 2015

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- Job = 2016 budget
- Data Tool = Microsoft Excel workbook
- Presentation tool = Microsoft PowerPoint
- Where = internal meetings
- New approach = This year, however, David wants to take advantage of the new Power BI service provided by Microsoft

Topic Scope

- This course = walkthrough with Power BI can help to build a rather sophisticated reporting solution

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- Out of scope = budget building technique
- In scope = teamwork, data modeling, and reporting
- To do = replicate activities

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Data file

- Data file = 2015 Sales.xlsx
- Data = sales for the past three years
- Divided = country/region, brand, and month

CountryRegion	Brand	Month	Sale 2013	Sale 2014	Sale 2015
China	A. Datum	January	3,234.00		1,935.00
China	A. Datum	February	6,270.00	7,059.00	
China	A. Datum	March	4,352.00		
China	A. Datum	April	3,814.00		
China	A. Datum	May	6,234.00		
China	A. Datum	June	5,571.00	3,216.00	
China	A. Datum	July	7,424.00		
China	A. Datum	August	8,000.00		

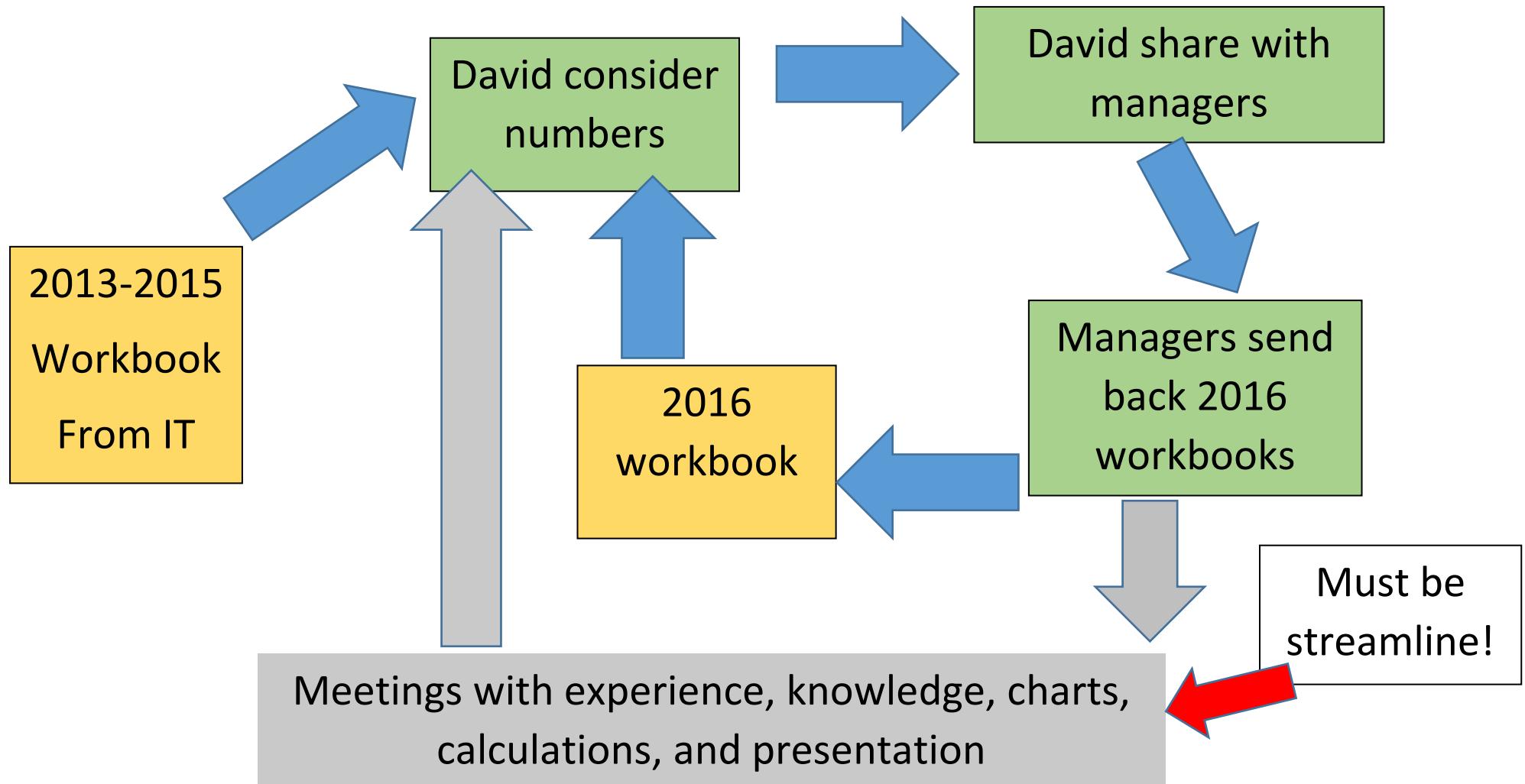
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Some brands are prone to seasonal effects

		<u>Adventure Works</u>	<u>Contoso</u>
United States	January	8,459.46	8,506.88
United States	February	11,749.25	5,629.26
United States	March	16,598.22	6,733.86
United States	April	22,067.57	17,433.79
United States	May	9,869.37	7,133.14
United States	June	10,757.16	5,356.89
United States	July	9,869.37	4,770.20
United States	August	939.94	15,159.15
United States	September	3,759.76	6,232.99
United States	October		18,206.65
United States	November	4,699.70	8,218.20
United States	December	19,734.89	42,184.42

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Budget plan's Workflow



Setting up Power BI

Microsoft Power BI

Go to Microsoft Power BI home page

<https://powerbi.microsoft.com/en-us/>

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Sign in Sign up free

New advanced data prep and enterprise capabilities coming to Power BI

Power BI is expanding self-service data prep to help business analysts extract insights from big data and introducing enterprise BI platform capabilities.

READ MORE >

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Getting started with Power BI Desktop

Less data prep, more data wow

Visually explore your data with a freeform drag-and-drop canvas, modern data visualizations, and simple report authoring.

[DOWNLOAD FREE >](#)

Start sharing your data visualizations and insights

POWER BI

Cloud collaboration and sharing

Use Power BI Pro to share and distribute reports with others, without any complicated setup. Get started now with a free 60-day trial of Power BI Pro.

[TRY FREE >](#)

POWER BI REPORT SERVER

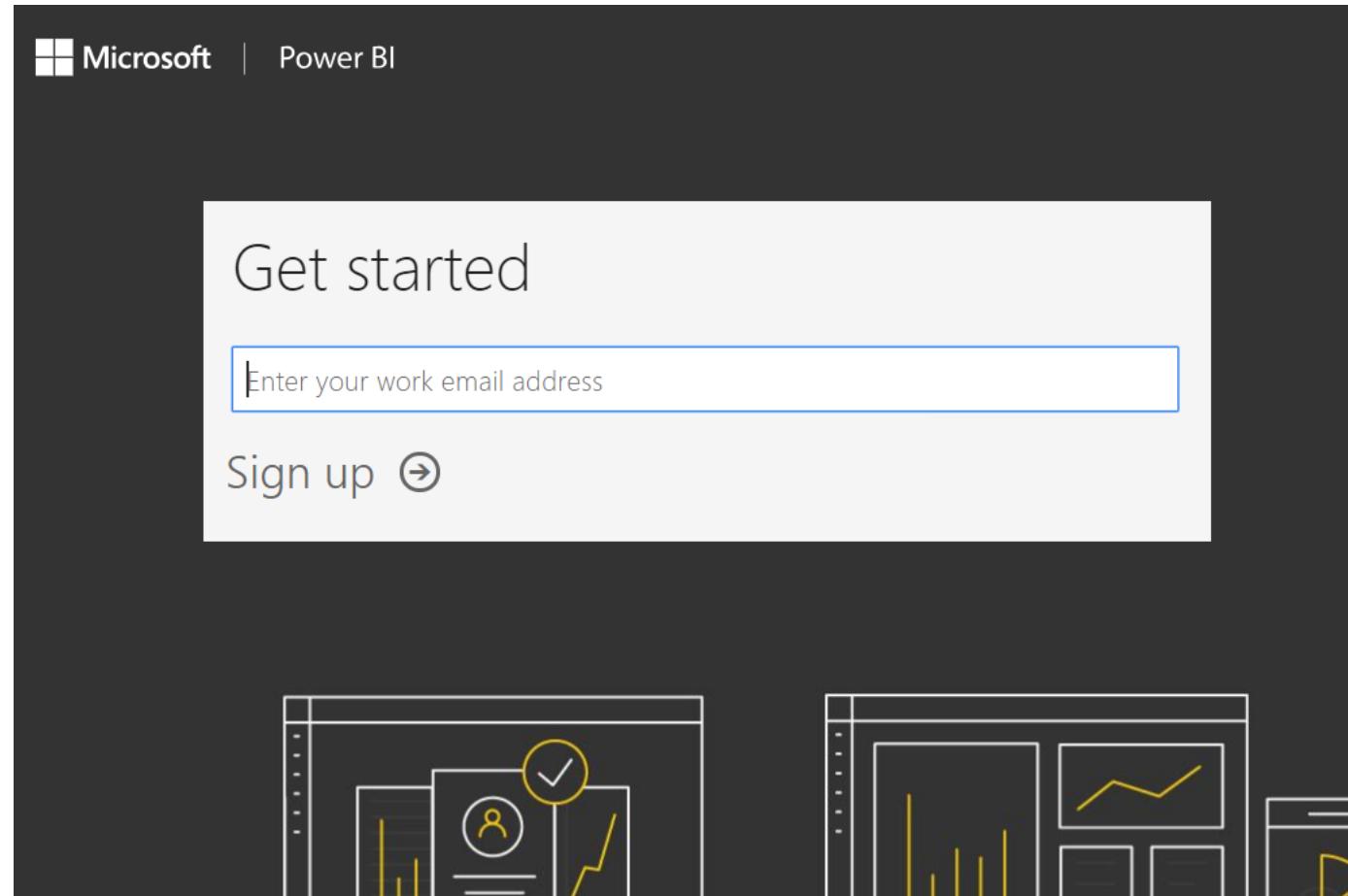
On-premises report deployment

Deploy and distribute interactive Power BI reports—and traditional paginated reports—within the boundaries of your organization's firewall.

[LEARN MORE >](#)

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Sign up using Cooperate or Academic email



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Get Data

Need more guidance? [Try this tutorial](#) or [watch a video](#)

Discover content

My organization
Discover apps published by other people in your organization.

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Choose apps from online services that you use.

Get

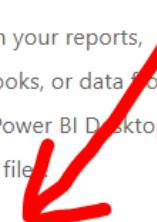
Create new content

Files
Bring in your reports, workbooks, or data from Excel, Power BI Desktop or CSV file

Get

Databases
Use Power BI Desktop to connect to data in Azure SQL Database and more.

Get

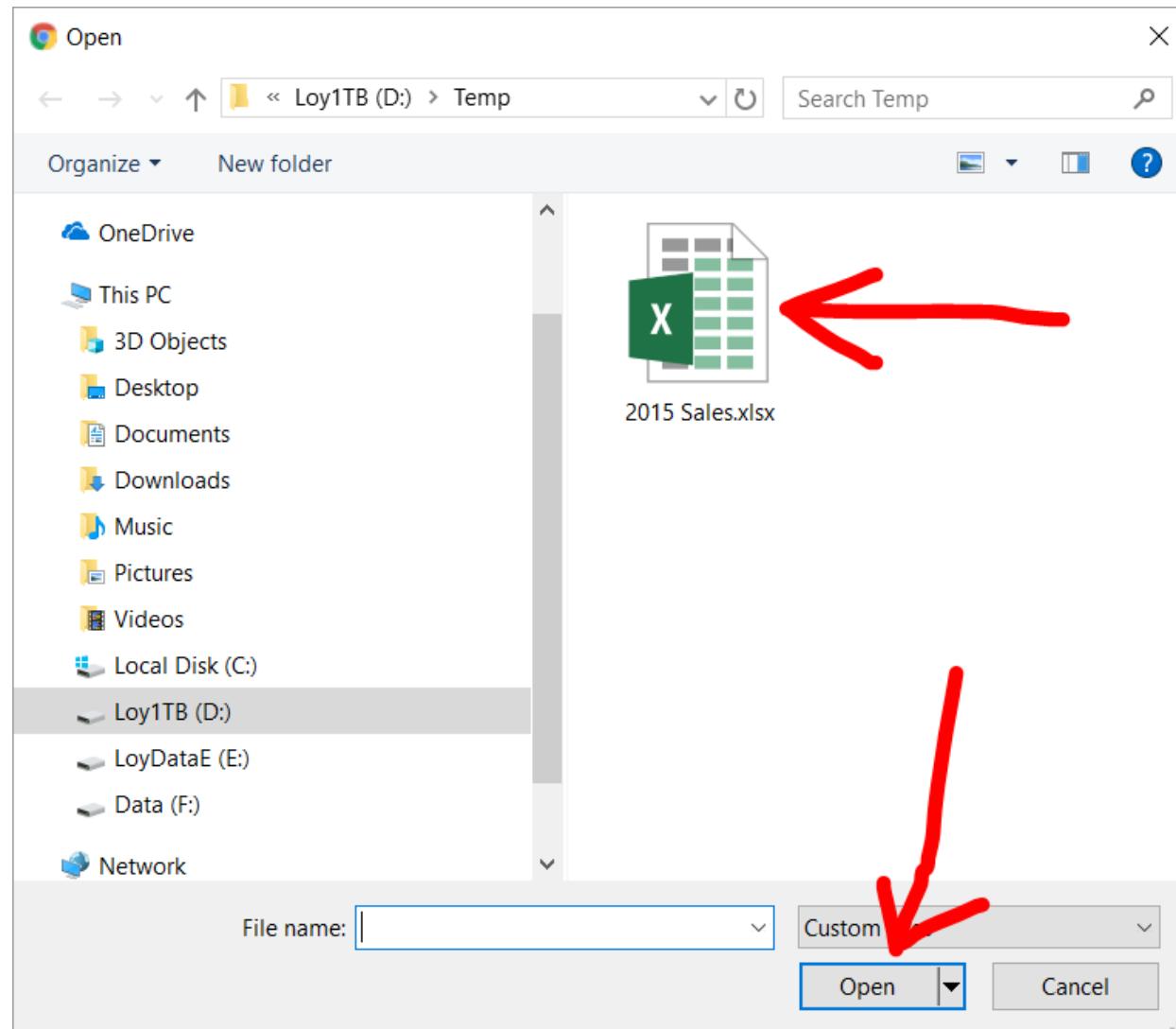


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The screenshot shows the 'Import Data' screen in Microsoft Power BI. It features a grid of four data source icons: 'Local File' (laptop icon), 'OneDrive - Business' (cloud icon), 'OneDrive - Personal' (cloud icon), and 'SharePoint - Team Sites' (SharePoint logo). A red arrow points to the 'Local File' icon. Below the grid is a dark grey button labeled 'Learn about importing files' with a graduation cap icon.

Local File	OneDrive - Business	OneDrive - Personal	SharePoint - Team Sites
Learn about importing files			

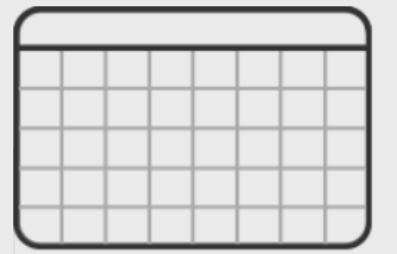
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Local File

Choose how to connect to your Excel workbook



Import Excel data into Power BI

Connect to the data in your workbook so you can create Power BI reports and dashboards for it.

Import



or

Upload your Excel file to Power BI

Bring your Excel file into Power BI to view and interact with it just as you would in Excel Online. Pin ranges to dashboards.

Upload



Supplier Quality Analysis sample

Microsoft Power BI

Supplier Quality Analysis

- Understand who the best and worst suppliers are, with respect to quality
- Identify which plants do a better job finding and rejecting defects, to minimize downtime

Vendor	Plant	Material Type	Defect Type	Defect	Date	Category
acequote	Detriot, MI	Raw Materials	Impact	Misc	7/17/2014 12:00:00 AM	Packaging
Alphadax	Skokie, IL	Film	Impact	Foreign Material	4/12/2014 12:00:00 AM	Mechanicals
Alphadax	Skokie, IL	Film	Impact	Incorrect Material	4/1/2014 12:00:00 AM	Mechanicals
Alphadax	Skokie, IL	Film	Impact	Splice	6/18/2014 12:00:00 AM	Mechanicals
Anmedia	Gary, IN	Raw Materials	Rejected	Misc	7/3/2013 12:00:00 AM	Mechanicals
Anzammedia	Monon, IN	Raw Materials	Rejected	Dimensions Wrong	4/20/2014 12:00:00 AM	Goods & Services
Anzammedia	Monon, IN	Raw Materials	No Impact	Not Certified	11/16/2014 12:00:00 AM	Goods & Services
Aptaxon	Chicago, IL	Corrugate	No Impact	Corrugate Falling Apart	10/28/2014 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	Rejected	Foreign Material	3/6/2013 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	Rejected	Foreign Material	11/6/2013 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	Rejected	Foreign Material	2/14/2014 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	No Impact	Damaged Secondary Packaging	4/24/2014 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	No Impact	Foreign Material	2/6/2014 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	No Impact	Incorrect Labeling	3/21/2013 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	No Impact	Incorrect Labeling	4/3/2013 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	No Impact	Incorrect Labeling	11/21/2013 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	No Impact	Incorrect Labeling	12/3/2013 12:00:00 AM	Materials & Components
Aptaxon	Chicago, IL	Raw Materials	No Impact	No Slip Sheets	2/2/2013 12:00:00 AM	Materials & Components

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Get Data

The screenshot shows the Microsoft Power BI desktop application. The top navigation bar includes 'Power BI', 'My Workspace > 2015 Sales', 'Pro trial: 59 days left', and various icons for file operations. The left sidebar lists 'Favorites', 'Recent', 'Apps', 'Shared with me', 'Workspaces', and 'My Workspace'. Under 'My Workspace', there are sections for 'DASHBOARDS', 'REPORTS', 'WORKBOOKS' (with a note 'You have no workbooks'), and 'DATASETS'. A red arrow points to the '2015 Sales' dataset. At the bottom of the sidebar is a 'Get Data' button. The main workspace is currently empty, indicated by a dotted border. To the right, the 'VISUALIZATIONS' and 'FIELDS' panes are open. The 'FIELDS' pane shows a tree structure under 'Sales' with nodes for Brand, Budget, CountryRegion, Month, Sale 2013, Sale 2014, and Sale 2015.

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Sample

Discover content

Create new

My organization

Discover apps published by other people in your organization.

Get

Services

Choose apps from online services that you use.

Get

Files

Bring in your rep workbooks, or da Excel, Power BI D or CSV files.

Get

More ways to create your own content

[Samples](#)

[Solution Templates](#)

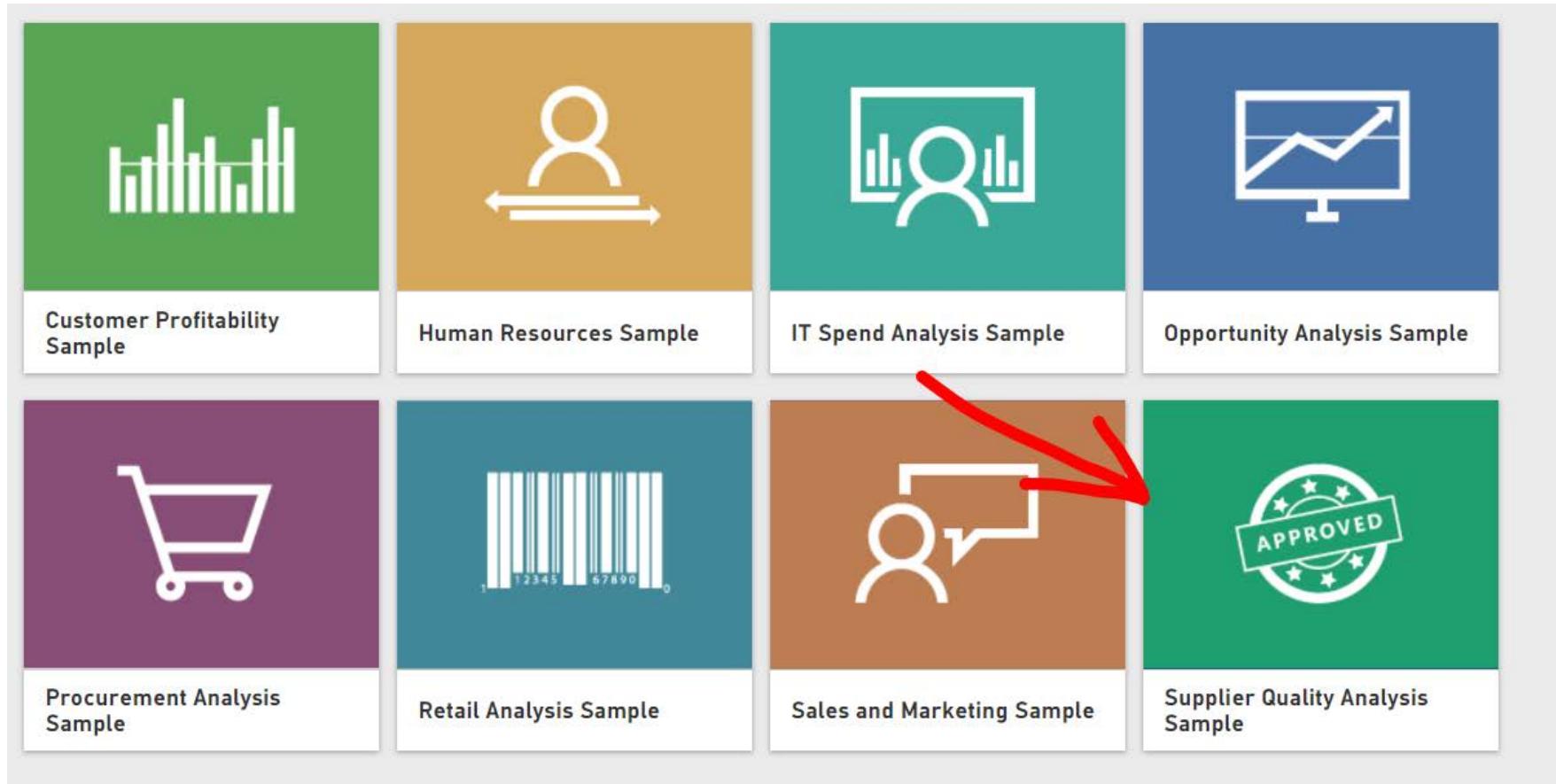
[Partner Showcase](#)

[Organizational Content Packs](#)

[Service Content Packs](#)

Microsoft Power BI

Supplier Quality Analysis Sample



Microsoft Power BI

Connect

Supplier Quality Analysis Sample

This industry sample dashboard and underlying report focus on one of the typical supply chain challenges — supplier quality analysis. Two primary metrics are at play in this analysis: total number of defects and the total downtime that these defects caused. This sample has two main objectives. The first is to understand who the best and worst suppliers are, with respect to quality. The second is to identify

Connect 

[Learn more](#)



Microsoft Power BI

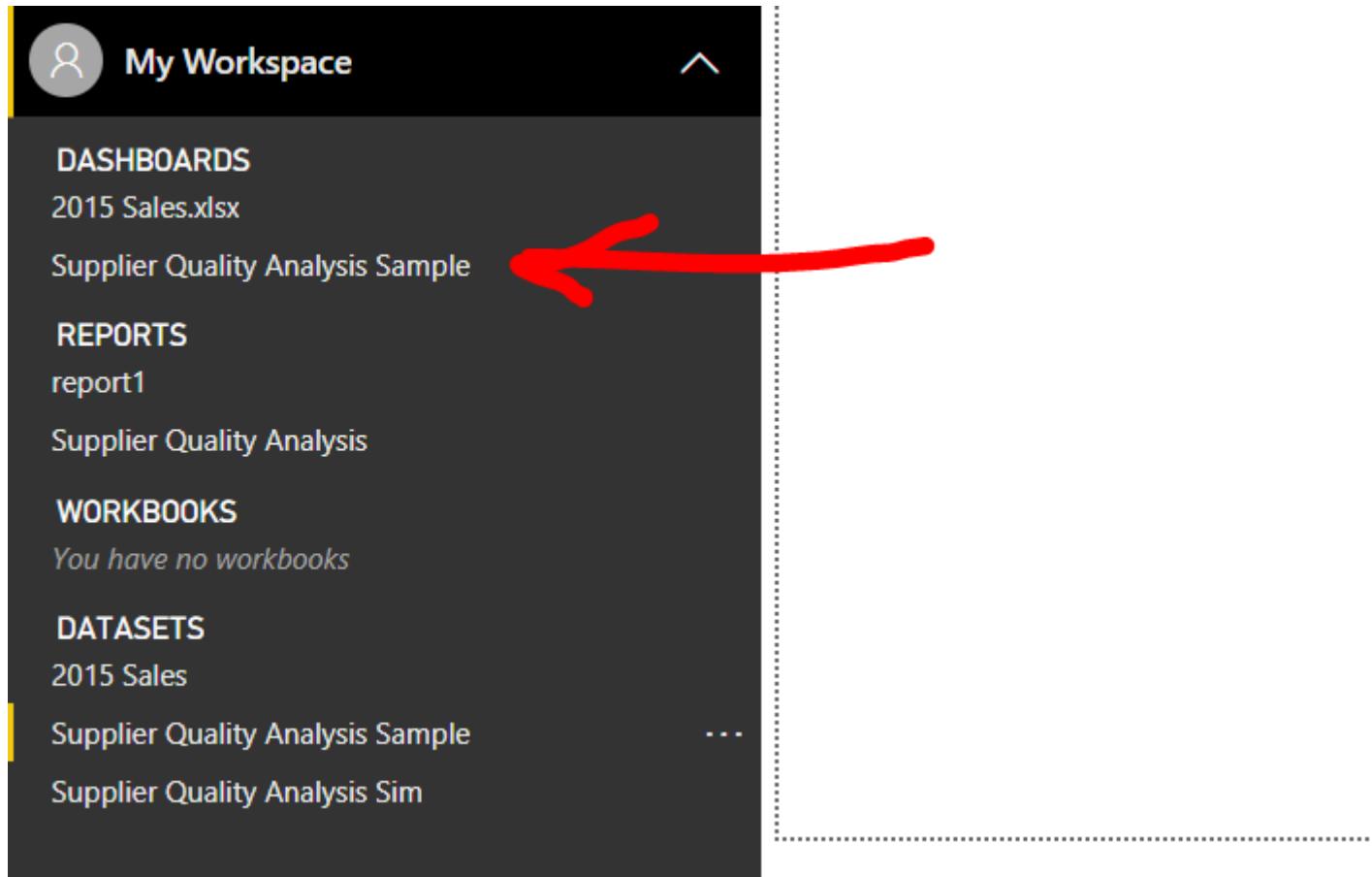
Successfully connected

The screenshot shows the Microsoft Power BI workspace interface. On the left, there's a sidebar with a user icon and the title "My Workspace". Below it, there are sections for "DASHBOARDS", "REPORTS", "WORKBOOKS", and "DATASETS". Under "DATASETS", two items are listed: "2015 Sales" and "Supplier Quality Analysis Sample". A red arrow points from the "Supplier Quality Analysis Sample" link towards a preview table on the right. The preview table displays data from the dataset, with columns for Company Name, Location, and Product Type. The data shows multiple entries for "Aptaxon" in Chicago, IL, and "Anzammedia" in Monon, IN, all categorized as "Raw Materials".

Anzammedia	Monon, IN	Raw Materials
Anzammedia	Monon, IN	Raw Materials
Aptaxon	Chicago, IL	Corrugate
Aptaxon	Chicago, IL	Raw Materials
Aptaxon	Chicago, IL	Raw Materials
Aptaxon	Chicago, IL	Raw Materials
Aptaxon	Chicago, IL	Raw Materials
Aptaxon	Chicago, IL	Raw Materials
Aptaxon	Chicago, IL	Raw Materials
Aptaxon	Chicago, IL	Raw Materials
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Aptaxon	Chicago, IL	Raw Materials
Aptaxon	Chicago, IL	Raw Materials
Aptaxon	Chicago, IL	Raw Materials

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View Dashboard



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Click Total Defect Quantity

+ Add tile Usage metrics View related Set as featured Favorite Subscribe Share

Ask a question about your data

Total Defect Quantity

33M

Total Downtime Minutes

77K

Total Defect Qty
WITH NO IMPACT

17M

Total Defect Reports

BY PLANT, DEFECT TYPE

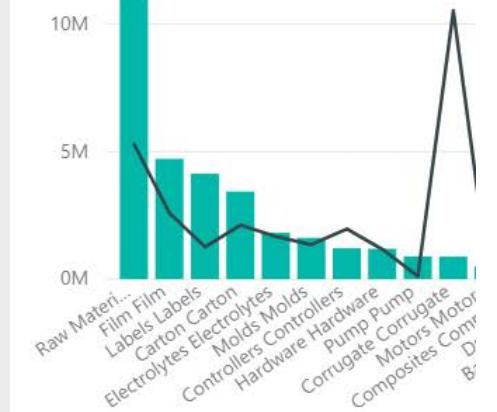
Defect Type ● Rejected ● Impact ● No Impact



Total Defect Qty, Total Downtime Minu

BY MATERIAL TYPE

● Total Defect Qty ● Total Downtime Minutes



Total Defect Quantity

BY MONTH, YEAR

Year ● 2013 ● 2014

6M

AM



Total Defect: Reports, Quantity, Downti

BY CATEGORY

Category ● Electrical ● Goods & Services ● Logistic



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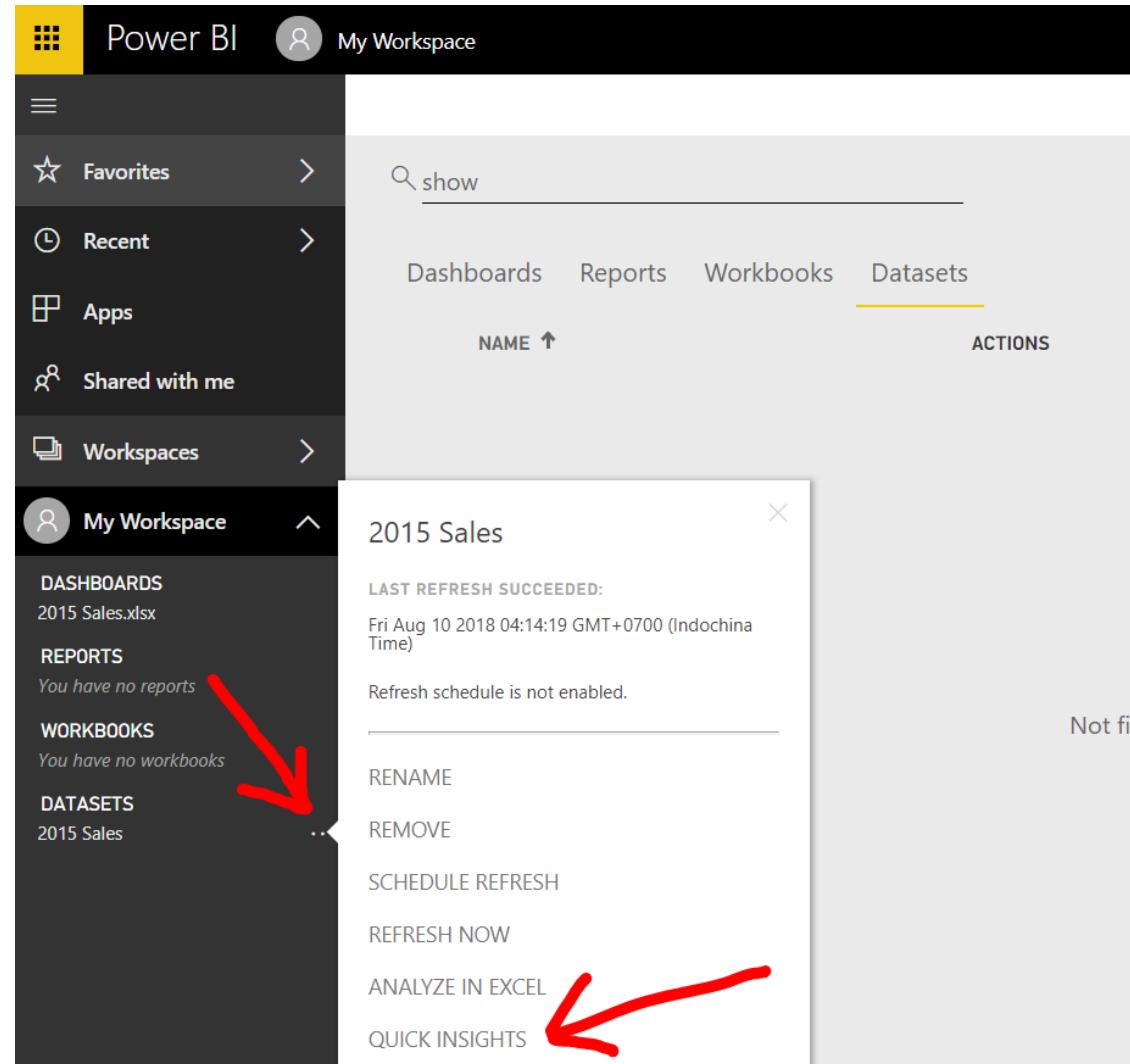
View Downtime caused by defective materials



Introducing Quick Insights

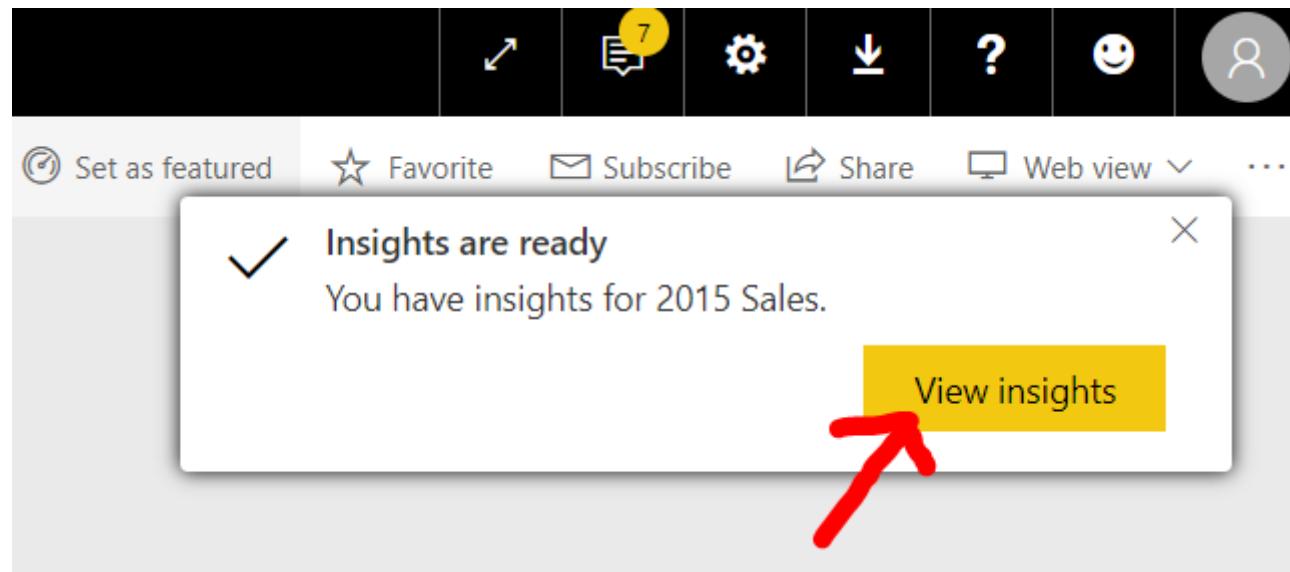
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Introducing Quick Insights



Microsoft Power BI

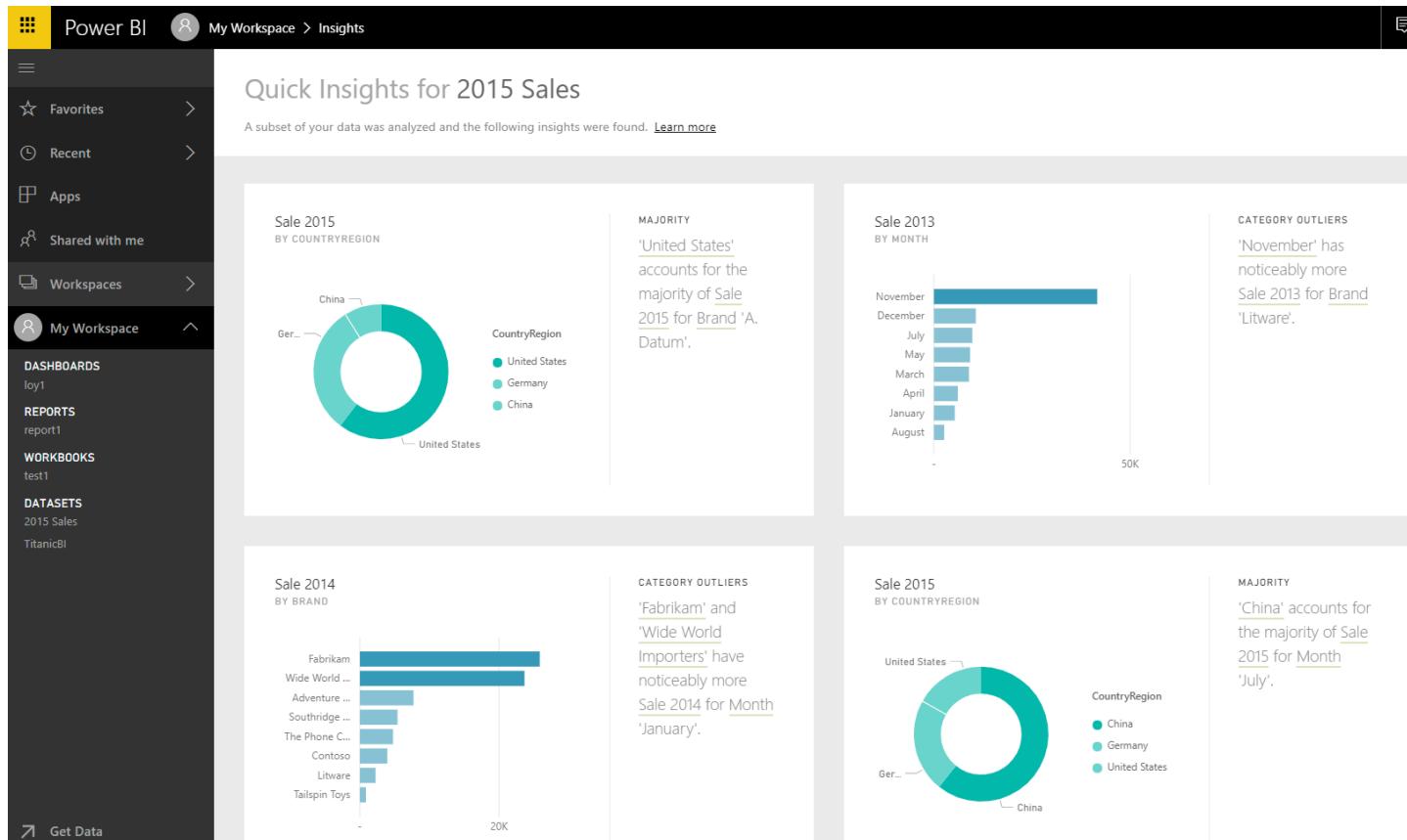
Insights are ready



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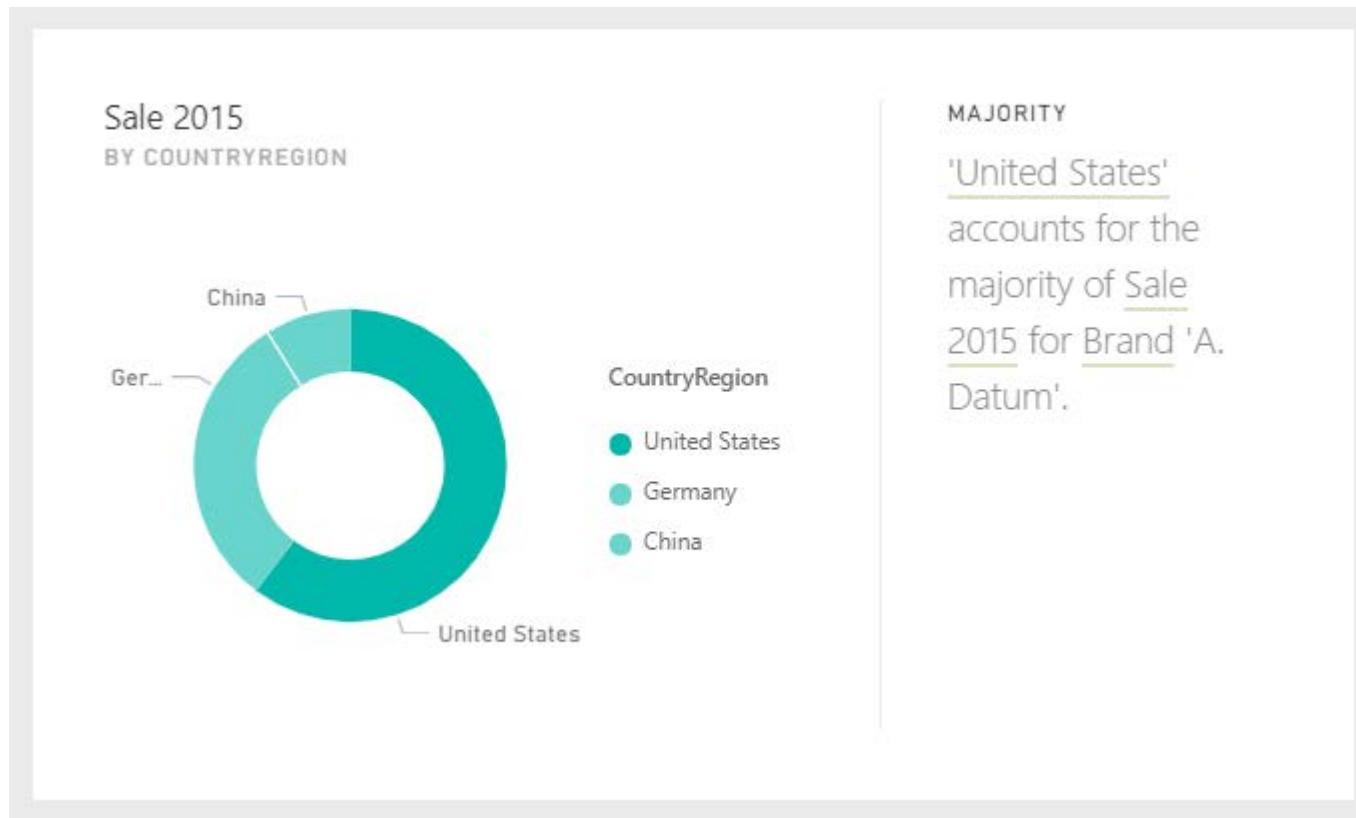
What is insight?

- Use artificial intelligence to analyze your data
- Searching for some useful or interesting patterns
- Very sophisticated algorithms



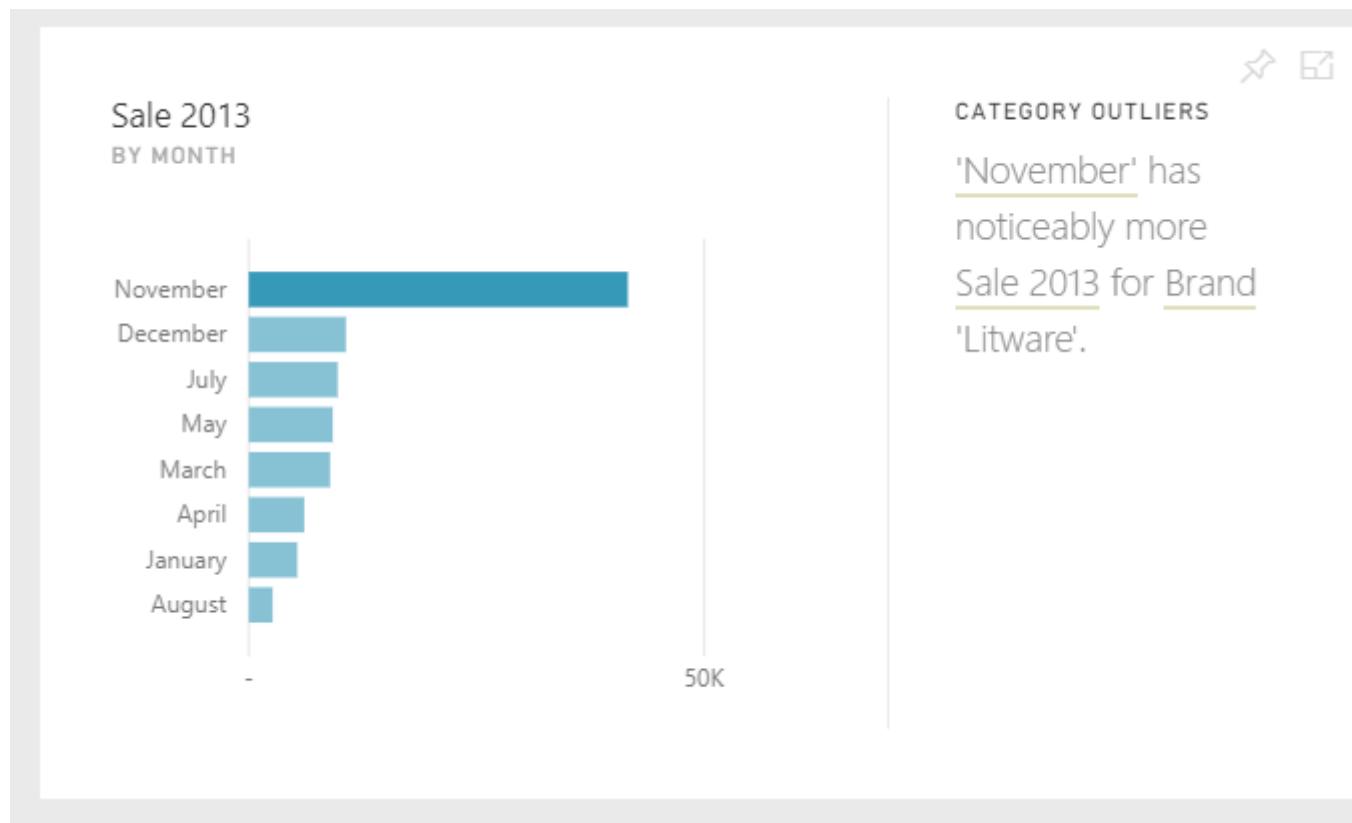
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The first insight shows
United States accounts for most of the sales of the A. Datum brand
Compared with China and Germany



Microsoft Power BI

The second insight reveals a substantial seasonal-effect increase in sales for the month of November 2013 for Litware

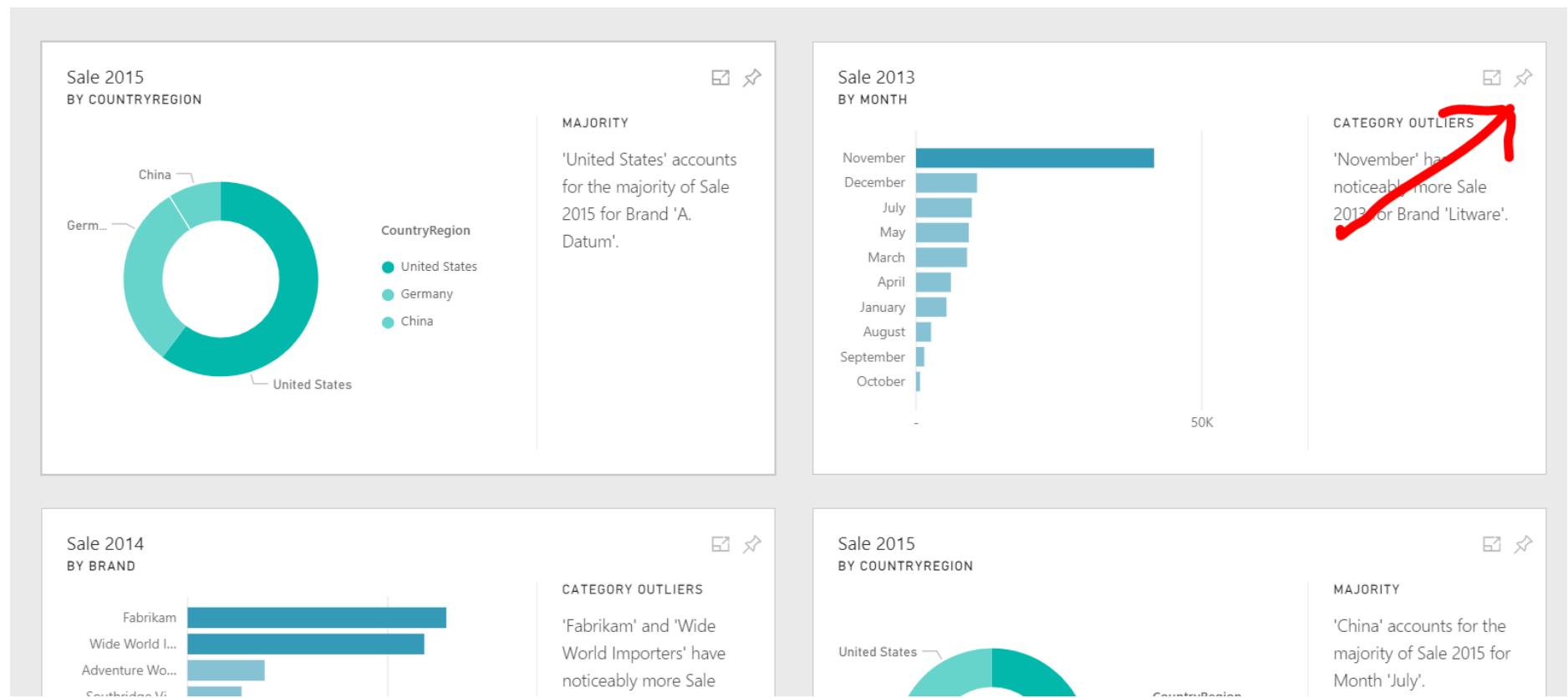


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Pin Sale 2013 by month to dashboard

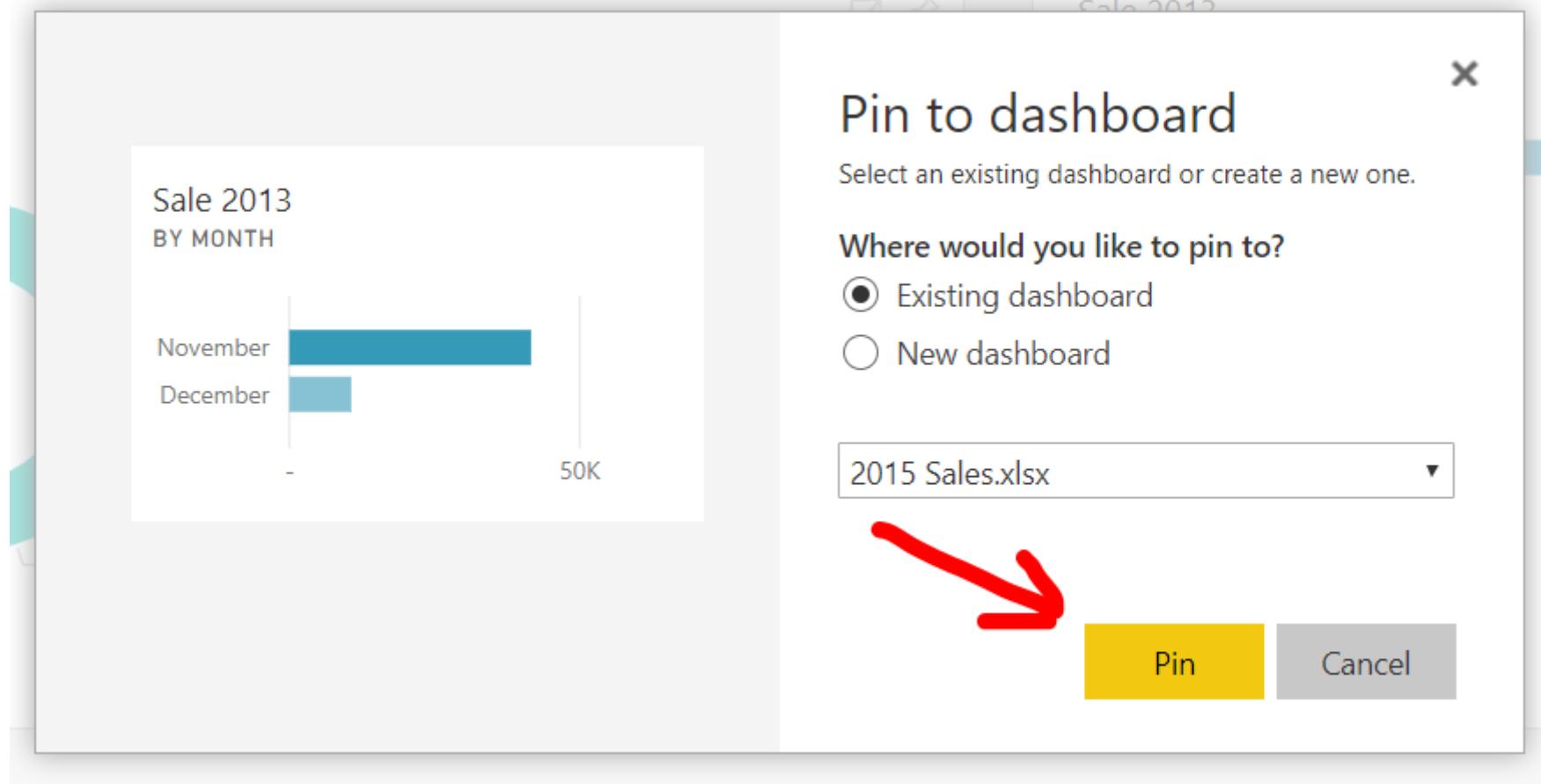
Quick Insights for 2015 Sales

A subset of your data was analyzed and the following insights were found. [Learn more](#)



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Click Pin



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Click DASHBOARDS

The screenshot shows the Microsoft Power BI interface. The top navigation bar includes the Power BI logo, a user profile icon, and the workspace name "My Workspace > 2015 Sales.xlsx". The left sidebar has sections for Favorites, Recent, Apps, Shared with me, Workspaces, and My Workspace. Under My Workspace, there are sections for DASHBOARDS, REPORTS, WORKBOOKS, and DATASETS. The DASHBOARDS section contains a link to "2015 Sales.xlsx". The main content area displays a dashboard titled "2015 Sales.xlsx" with a bar chart titled "Sale 2013 BY MONTH". The bar chart shows sales figures for each month from November to February. A red arrow points from the "DASHBOARDS" section in the sidebar to the dashboard tile. Another red arrow points from the "DASHBOARDS" section in the sidebar to the bar chart.

Ask a question about your data

2015 Sales.xlsx

Sale 2013
BY MONTH

Month	Sales
November	40K
December	10K
July	10K
May	10K
March	10K
April	8K
January	7K
August	3K
September	2K
October	1K
February	1K

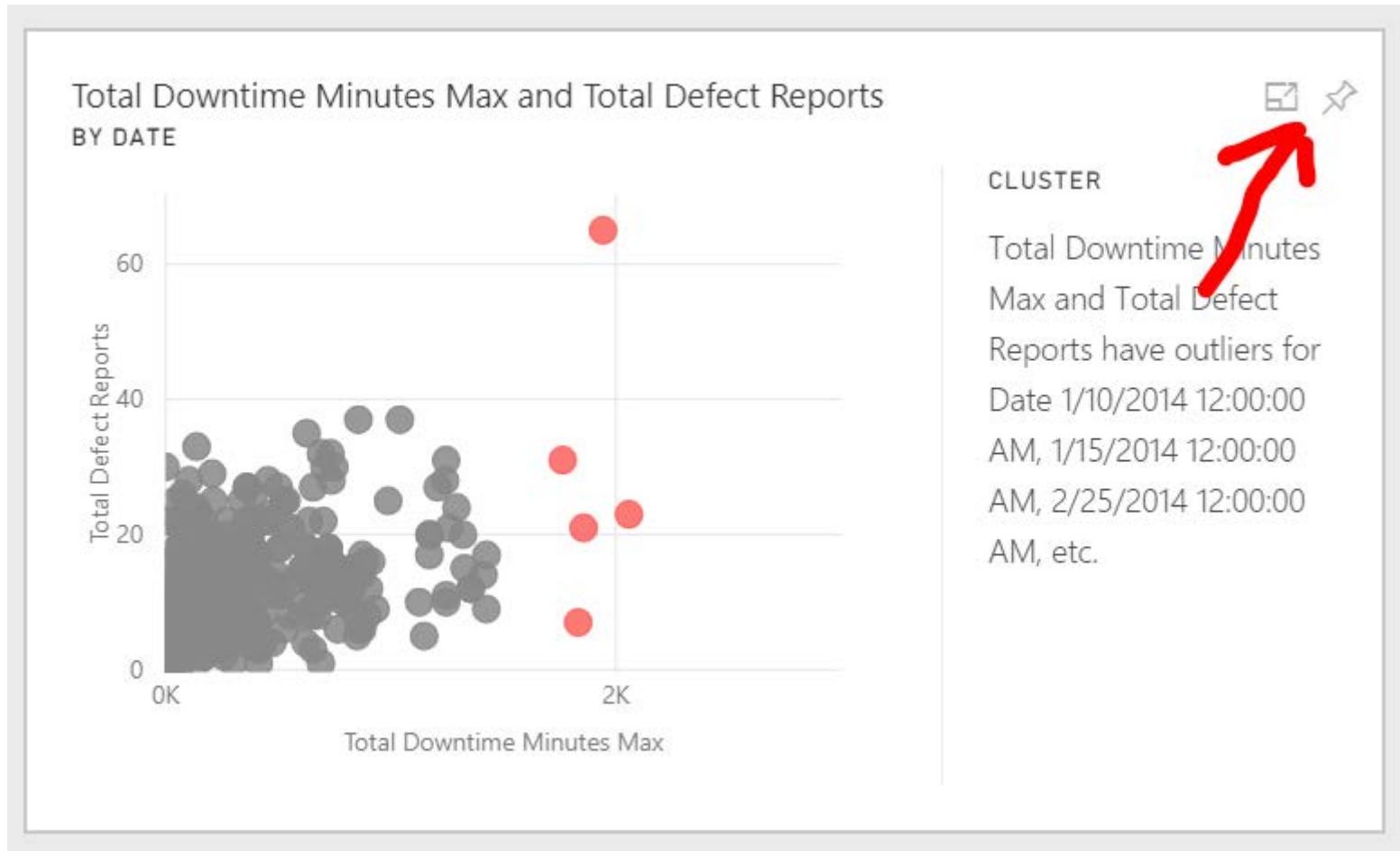
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Get Quick Insights from Supplier Quality Analysis sample

The screenshot shows the Microsoft Power BI workspace interface. On the left, there's a sidebar with sections for DASHBOARDS, REPORTS, WORKBOOKS, DATASETS, and a 'Get Data' button. A red arrow points from the 'Supplier Quality Analysis Sample' dataset in the DATASETS section towards the context menu. The main area displays a card for the 'Supplier Quality Analysis Sa...' dataset, which was last refreshed successfully on Saturday, August 11, 2018, at 15:44:24 GMT+0700 (Indochina Time). The card also indicates that the refresh schedule is not enabled. A context menu is open on the right side of the card, listing options: RENAME, REMOVE, SCHEDULE REFRESH, REFRESH NOW, ANALYZE IN EXCEL, and QUICK INSIGHTS. A second red arrow points from the 'QUICK INSIGHTS' option in the menu towards the bottom right corner of the slide.

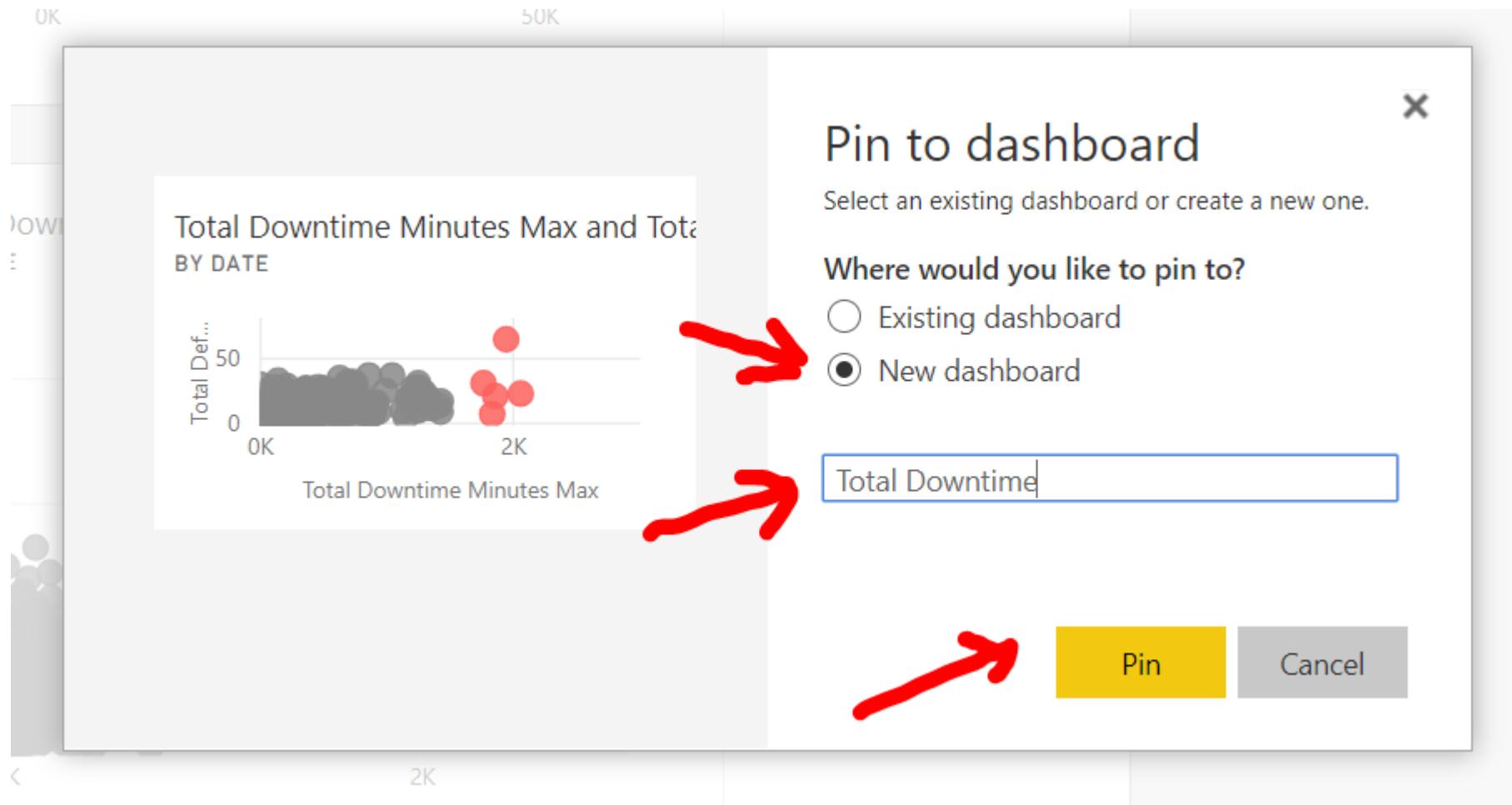
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Pin insight to new dashboard



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Create New dashboard



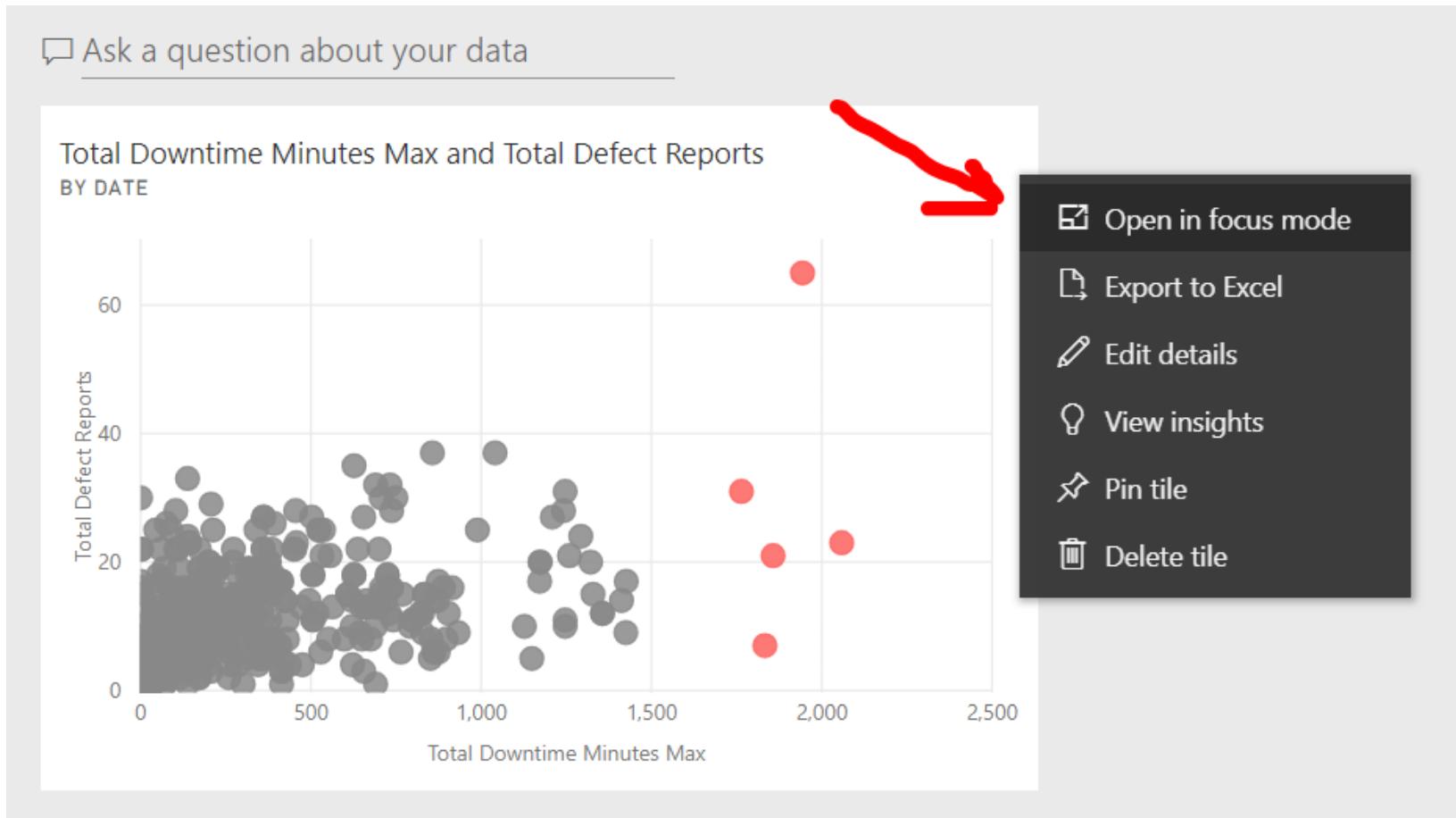
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Click Total Downtime dashboard

The screenshot shows the Microsoft Power BI interface. At the top, there is a navigation bar with a yellow square icon, the text "Power BI", and "My Workspace > Insights". On the left, a sidebar menu is open under "My Workspace". The "DASHBOARDS" section contains "2015 Sales.xlsx" and "Supplier Quality Analysis Sample". Below it, the "REPORTS" section is expanded, showing "Total Downtime" (which has a red arrow pointing to it), "report1", and "Supplier Quality Analysis". The "WORKBOOKS" section says "You have no workbooks". The "DATASETS" section is partially visible at the bottom. The main content area displays a "Quick Insights for Supplier Quality Analysis" card with a message about analyzed data and a link to learn more. Below this, a scatter plot titled "Total Downtime Minutes Max and Total Defect Reports BY DATE" is shown. The x-axis is labeled "Total Downtime Minutes Max" and ranges from 0K to 2K. The y-axis is labeled "Total Defect Reports" and ranges from 0 to 60. The plot contains numerous dark gray dots representing regular data points and several larger red dots representing outliers. To the right of the plot, a legend titled "CLUSTER" lists categories: "Total Dow", "Max and", "Reports h", "Date 1/10/", "AM, 1/15/", "AM, 2/25/", and "AM, etc.". The red arrow from the sidebar points to the "Total Downtime" report in the "REPORTS" section.

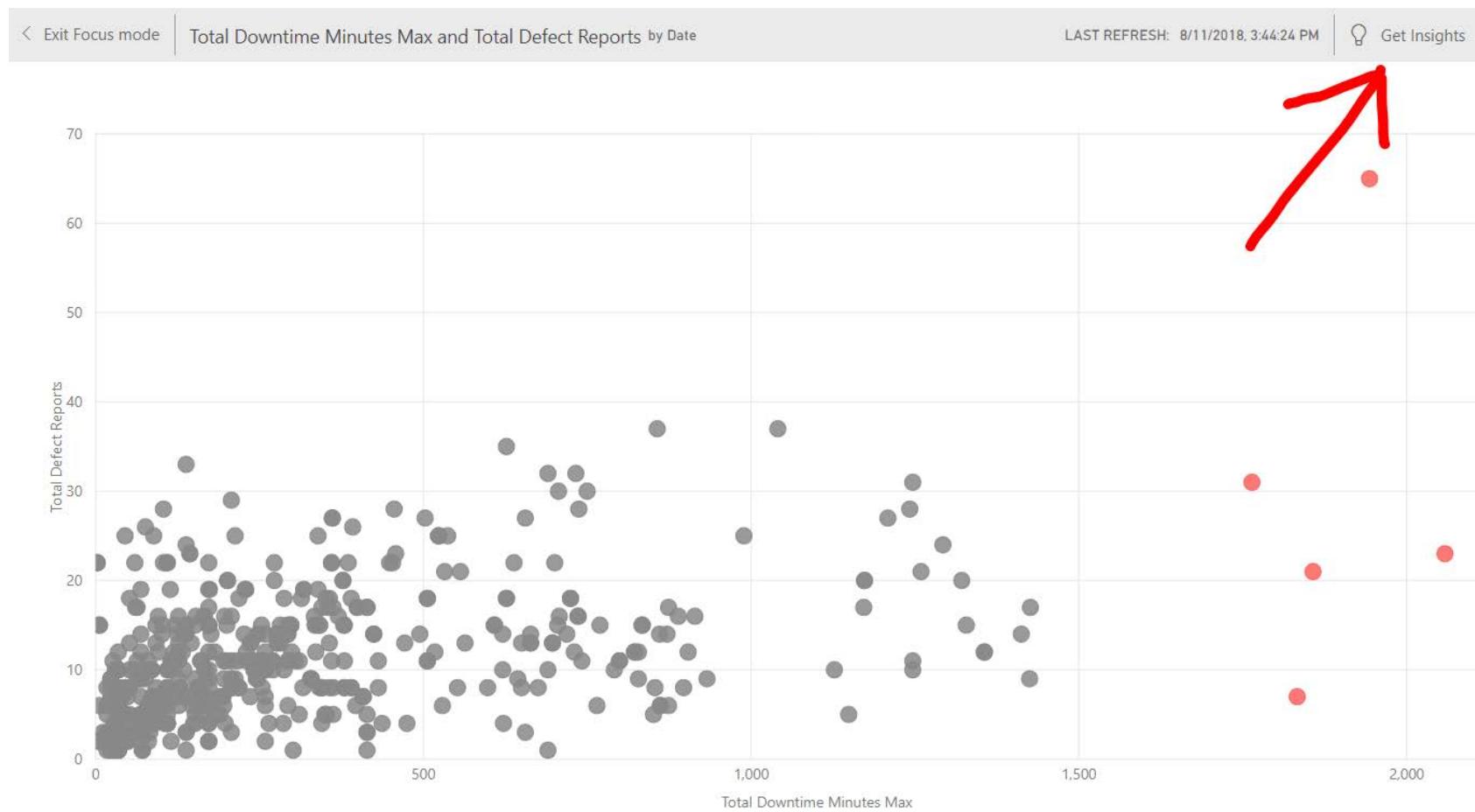
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Open in focus mode



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Get Scoped Insights



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Pin More Quick insight

The screenshot shows the Microsoft Power BI workspace interface. On the left, there's a sidebar with sections for DASHBOARDS, REPORTS, WORKBOOKS, DATASETS, and a 'Get Data' button. A red arrow points from the 'Get Data' button towards the main content area. In the center, a report titled 'Supplier Quality Analysis Sample' is pinned. The pinning interface includes a close button (X), a refresh icon, and a bar chart visualization. To the right of the pinning interface is a context menu with options: RENAME, REMOVE, SCHEDULE REFRESH, REFRESH NOW, ANALYZE IN EXCEL, and VIEW INSIGHTS. A red arrow points from the 'VIEW INSIGHTS' option towards the bottom right of the image.

My Workspace

DASHBOARDS

- 2015 Sales.xlsx
- Supplier Quality Analysis Sample
- Total Downtime

REPORTS

- report1
- Supplier Quality Analysis

WORKBOOKS

You have no workbooks

DATASETS

- 2015 Sales
- Supplier Quality Analysis Sample

Get Data

Supplier Quality Analysis Sa...

LAST REFRESH SUCCEEDED:
Sat Aug 11 2018 15:44:24 GMT+0700 (Indochina Time)

Refresh schedule is not enabled.

RENAME

REMOVE

SCHEDULE REFRESH

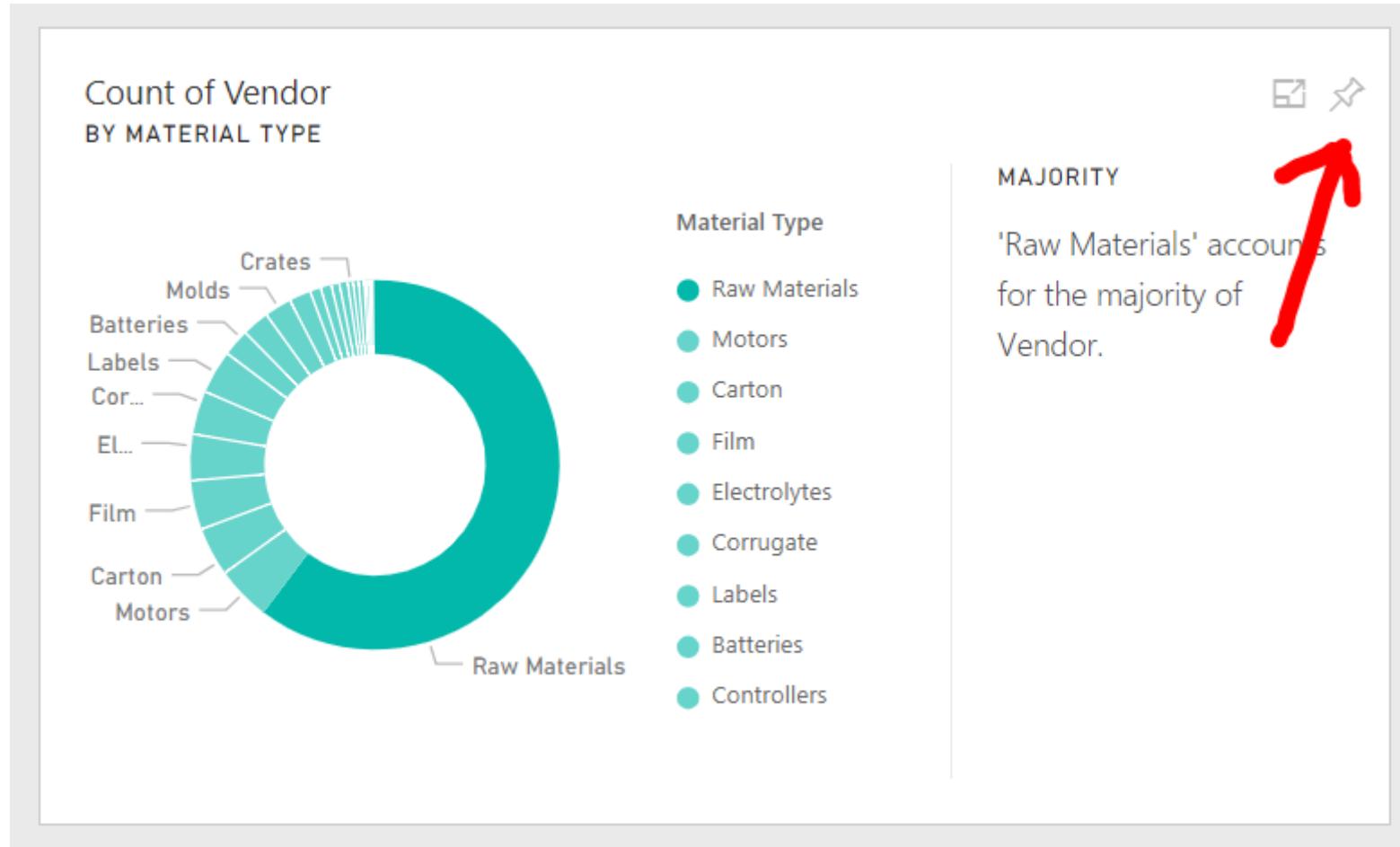
REFRESH NOW

ANALYZE IN EXCEL

VIEW INSIGHTS

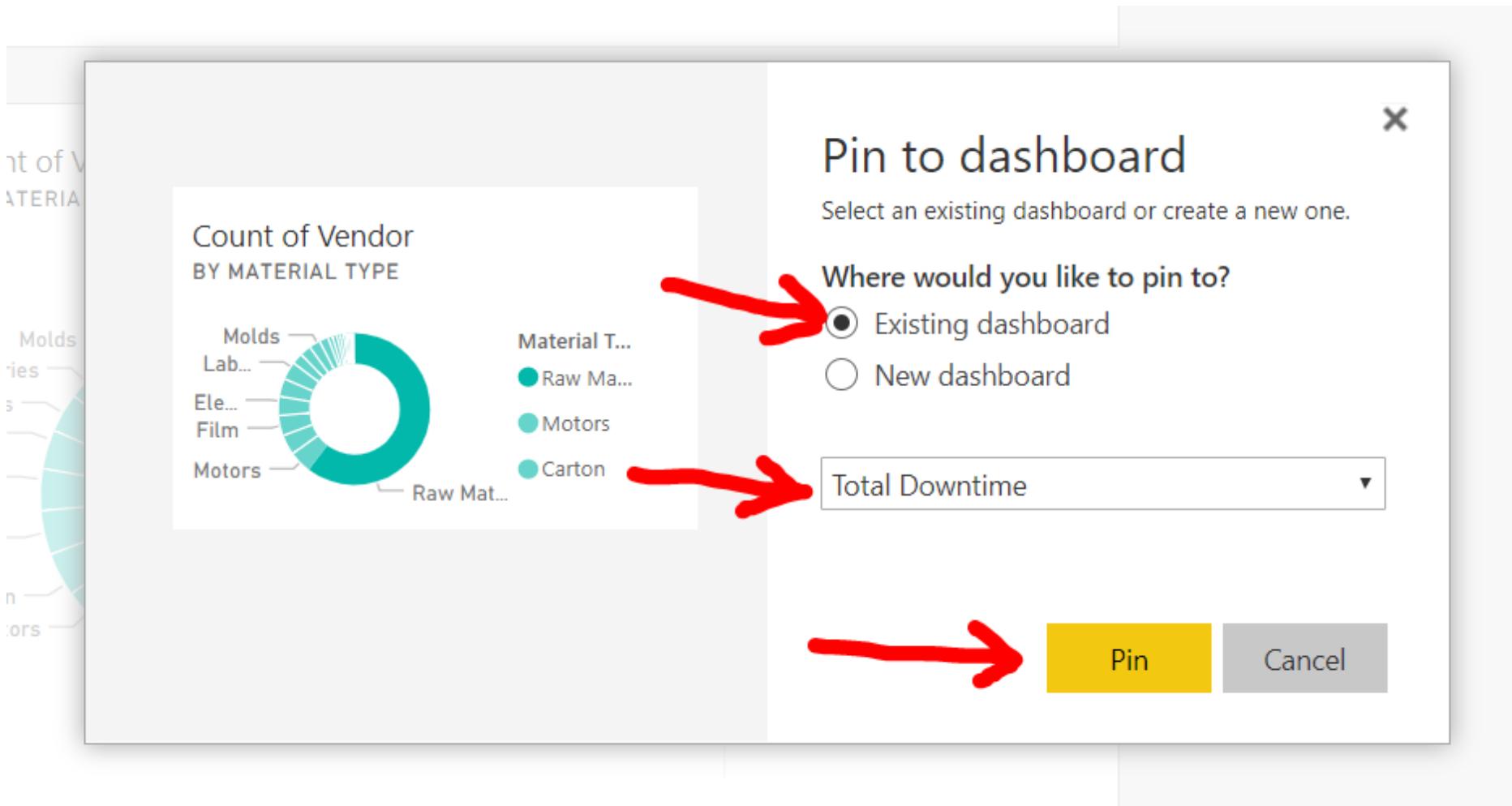
Microsoft Power BI

Pin Count of vendor by material type



Microsoft Power BI

Pin to Total Downtime



Microsoft Power BI

Open Total Downtime

My Workspace

DASHBOARDS

- 2015 Sales.xlsx
- Supplier Quality Analysis Sample
- Total Downtime

REPORTS

- report1
- Supplier Quality Analysis

WORKBOOKS

You have no workbooks

DATASETS

- 2015 Sales
- Supplier Quality Analysis Sample

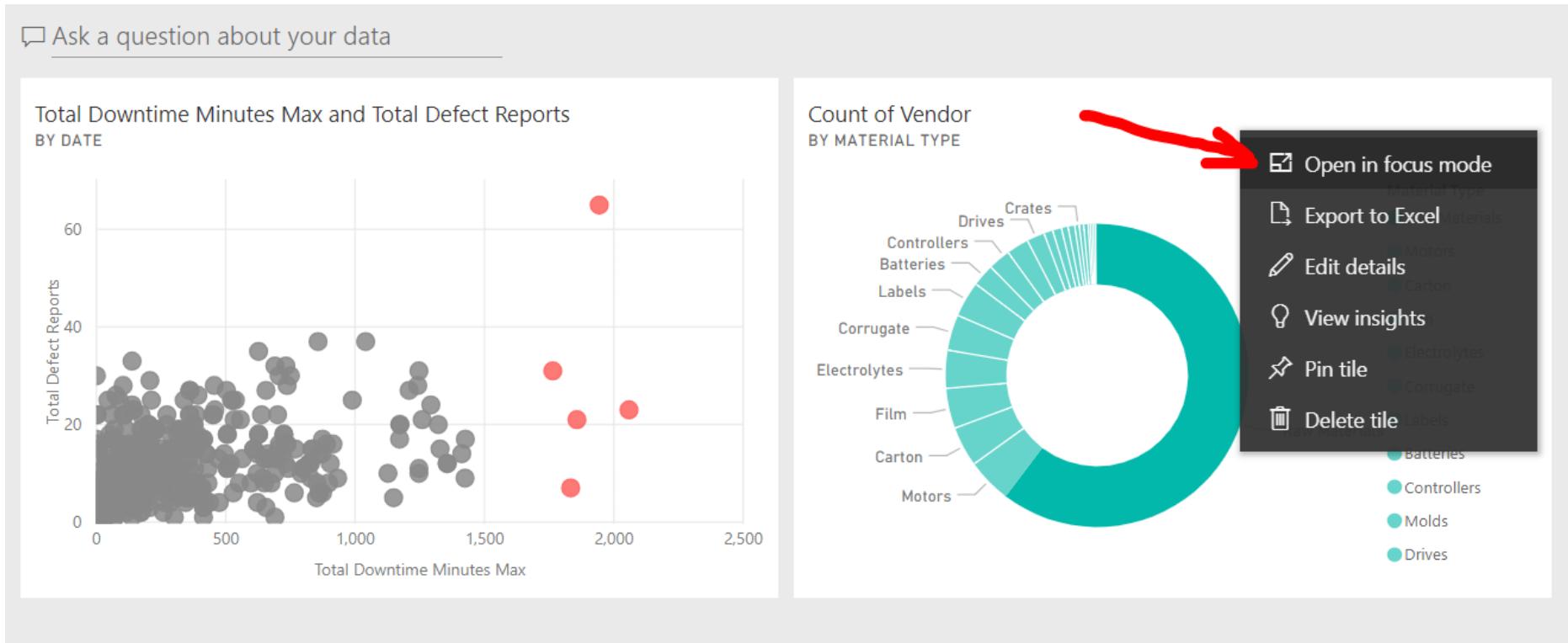
The donut chart displays the distribution of total downtime minutes across different defect types. The segments are labeled as follows:

Defect Type	Approximate Segment Size
Raw Materials	Large (estimated 40-50%)
Crates	Small (estimated 5-10%)
Molds	Very Small (estimated 2-5%)
Batteries	Medium (estimated 10-15%)
Labels	Small (estimated 5-10%)
Cor...	Very Small (estimated 2-5%)
EL...	Very Small (estimated 2-5%)
Film	Medium (estimated 10-15%)
Carton	Small (estimated 5-10%)
Motors	Very Small (estimated 2-5%)

Total Downtime Minutes Max
BY DEFECT TYPE

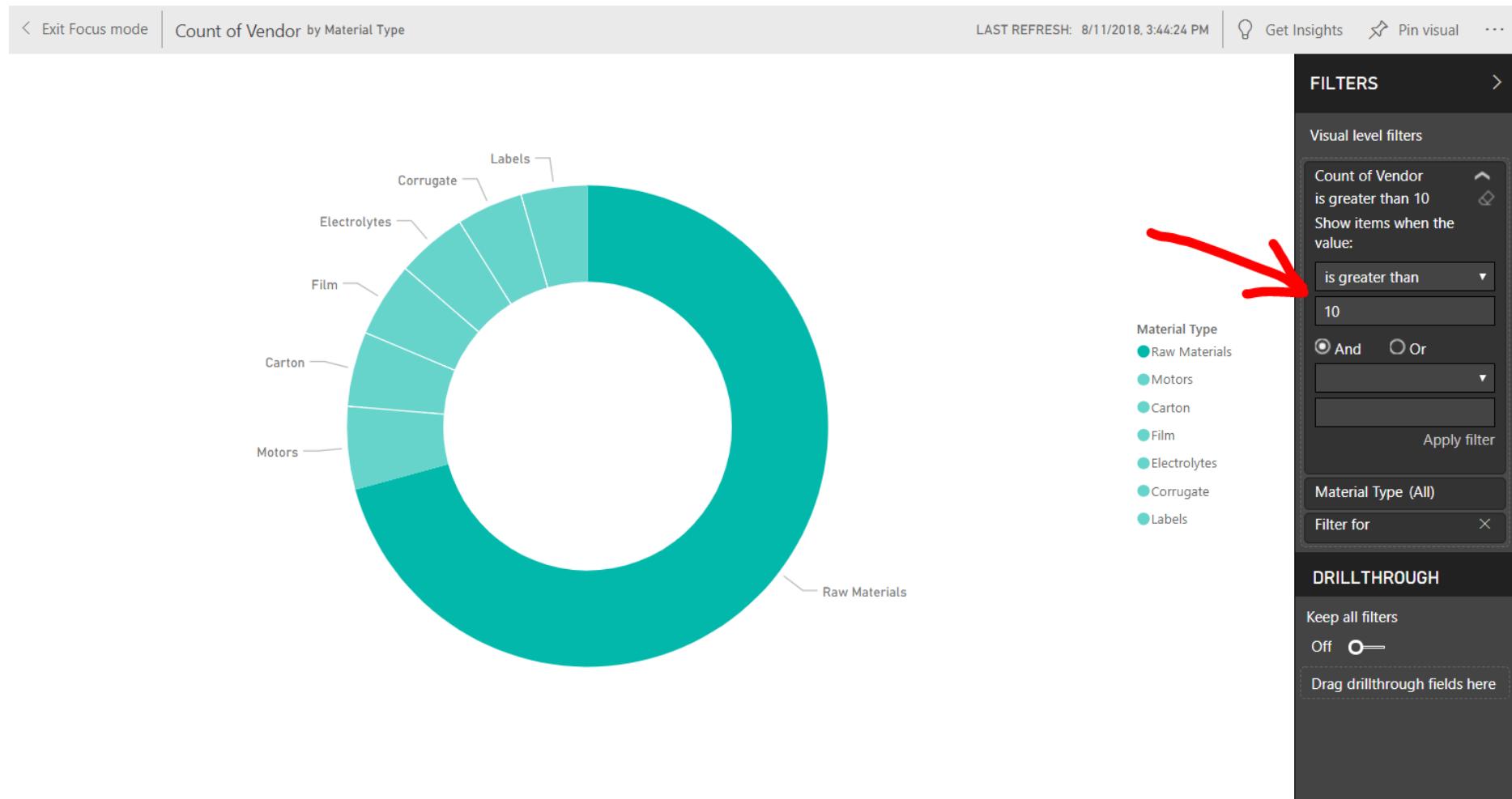
Microsoft Power BI

Open in focus mode



Microsoft Power BI

Filter Count of Vendor is greater than 10



Microsoft Power BI

Exercise

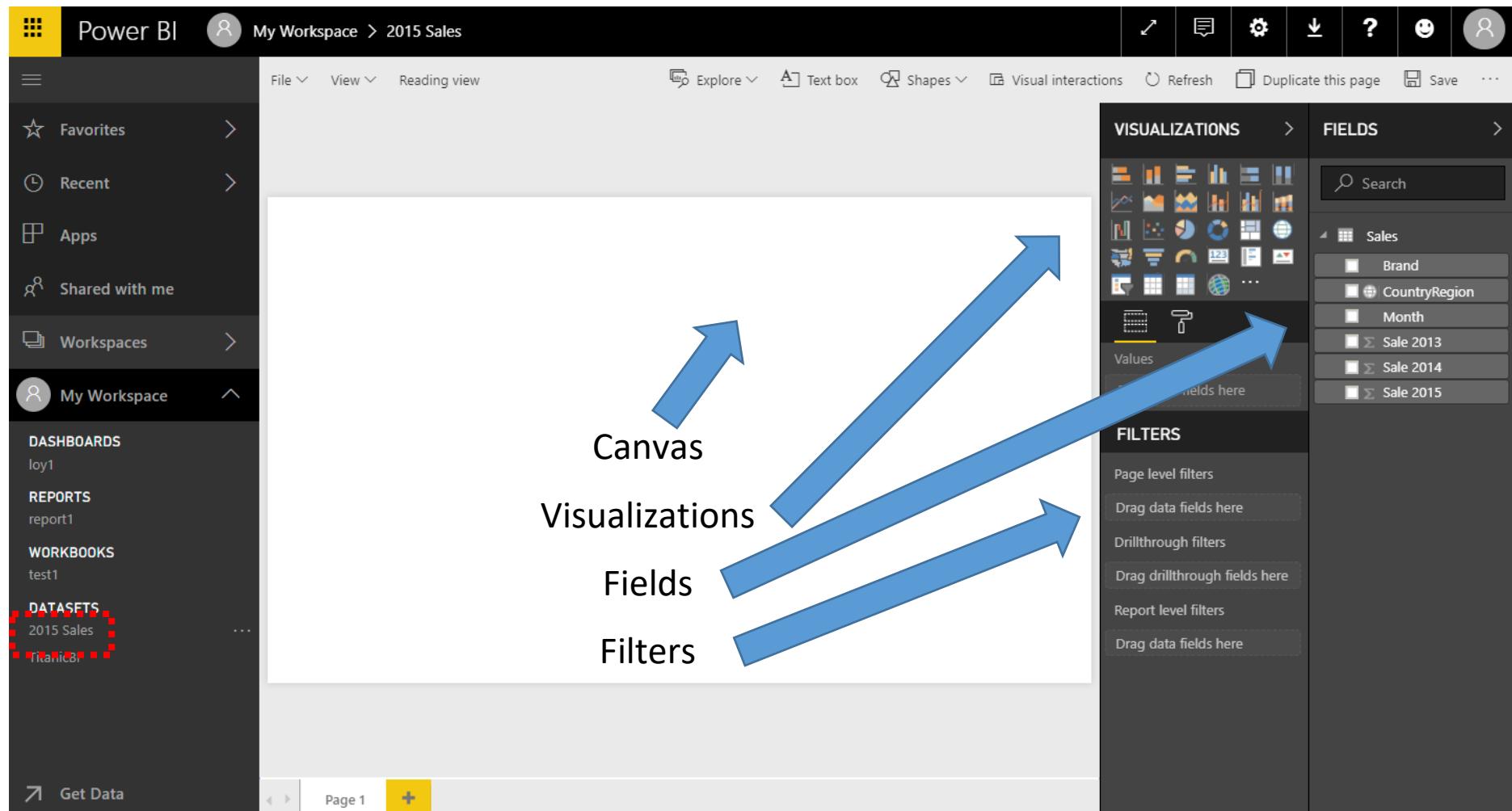
- New and Repeat all steps
- Pin multiple quick insights

Introduction to reports

Microsoft Power BI

Introduction to reports

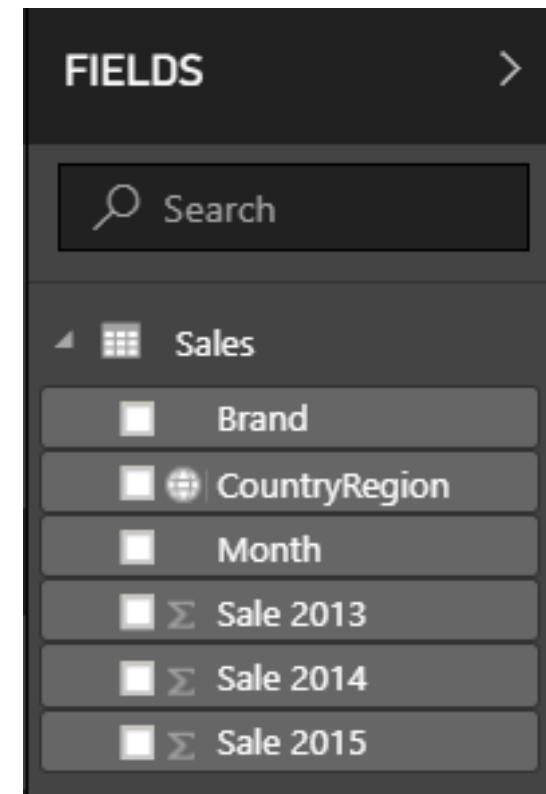
Click 2015 sales dataset



Microsoft Power BI

FIELDS

- Some of them have a small icon beside their names.
- This icon identifies the main usage of the field.
- For example, the fields Sale 2013, Sale 2014, and Sale 2015 each have a summarization icon (a Greek sigma), indicating that the total for each column will be displayed if used in a report.
- The CountryRegion field shows a small globe, indicating that this field contains geographical data, and it will be used to draw data on maps.



Microsoft Power BI

- Click Brand
- Click Sale 2015

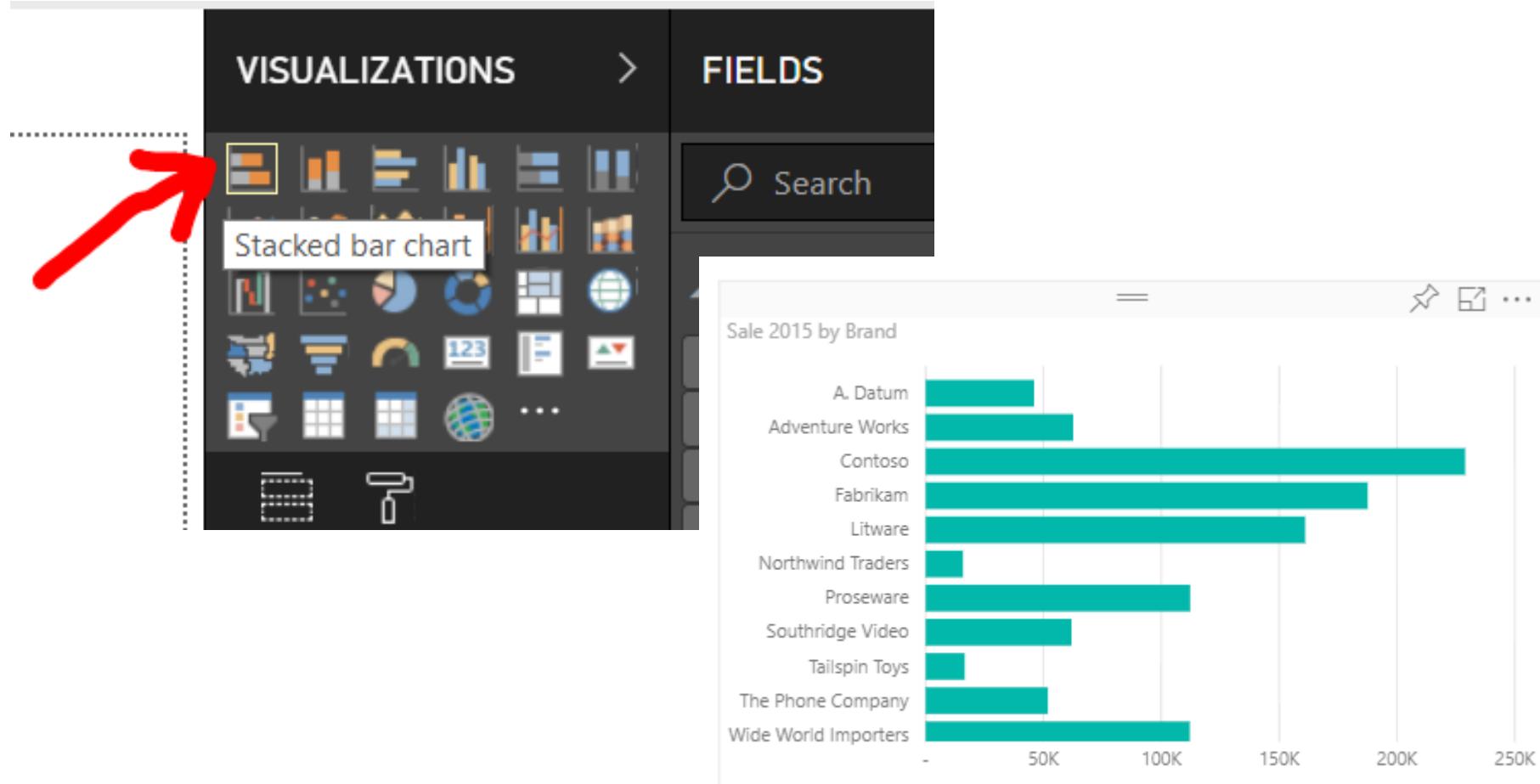
The image shows the Microsoft Power BI interface. On the left, the 'FIELDS' pane is open, showing a search bar and a list of fields under the 'Sales' category. The fields listed are: Brand (checked), CountryRegion (unchecked), Month (unchecked), Σ Sale 2013 (unchecked), Σ Sale 2014 (unchecked), and Σ Sale 2015 (checked). On the right, a 'Table' visualization is displayed, showing sales data by brand. The table has two columns: 'Brand' and 'Sale 2015'. The data rows are: A. Datum (46,051.30), Adventure Works (62,641.73), Contoso (228,978.33), Fabrikam (187,597.45), Litware (161,097.75), Northwind Traders (15,901.55), Proseware (112,310.71), Southridge Video (61,924.16), Tailspin Toys (16,653.67), The Phone Company (51,919.00), and Wide World Importers (112,151.40). A 'Total' row at the bottom shows a value of 1,057,227.05.

Brand	Sale 2015
A. Datum	46,051.30
Adventure Works	62,641.73
Contoso	228,978.33
Fabrikam	187,597.45
Litware	161,097.75
Northwind Traders	15,901.55
Proseware	112,310.71
Southridge Video	61,924.16
Tailspin Toys	16,653.67
The Phone Company	51,919.00
Wide World Importers	112,151.40
Total	1,057,227.05

Table is default visualization

Microsoft Power BI

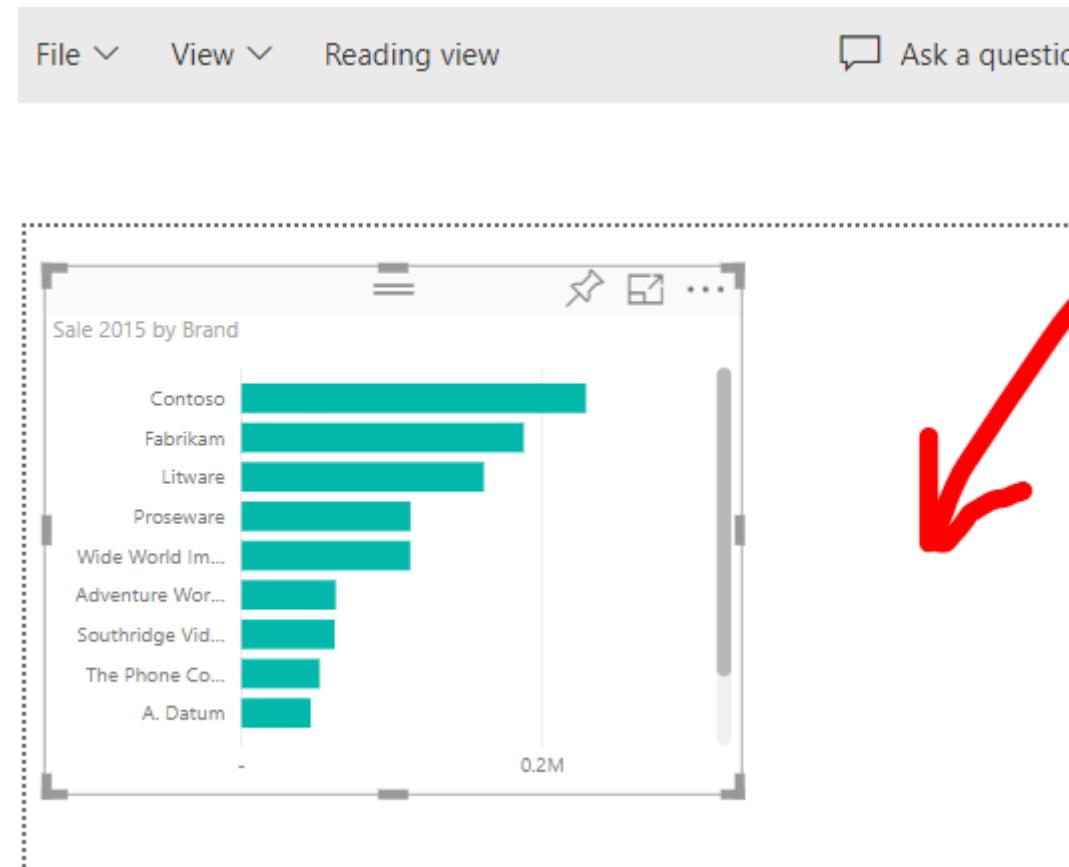
Click Stacked bar chart



Microsoft Power BI

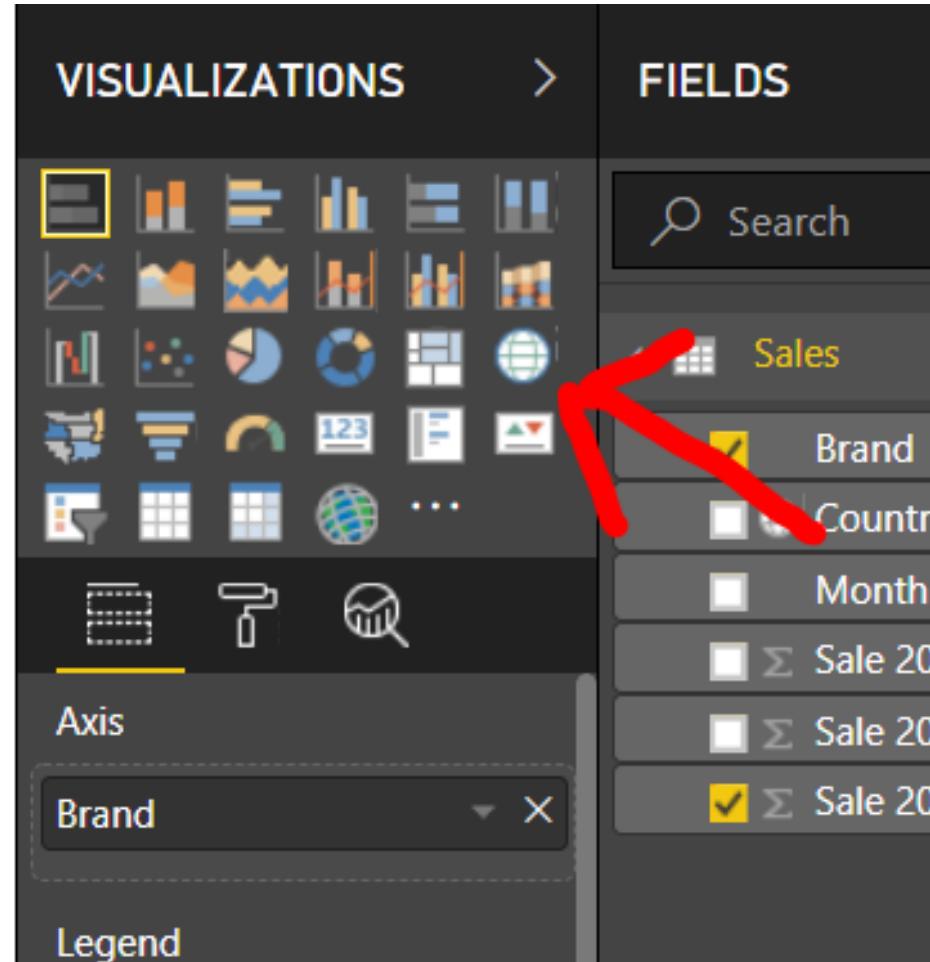
Creating Map

Click empty space



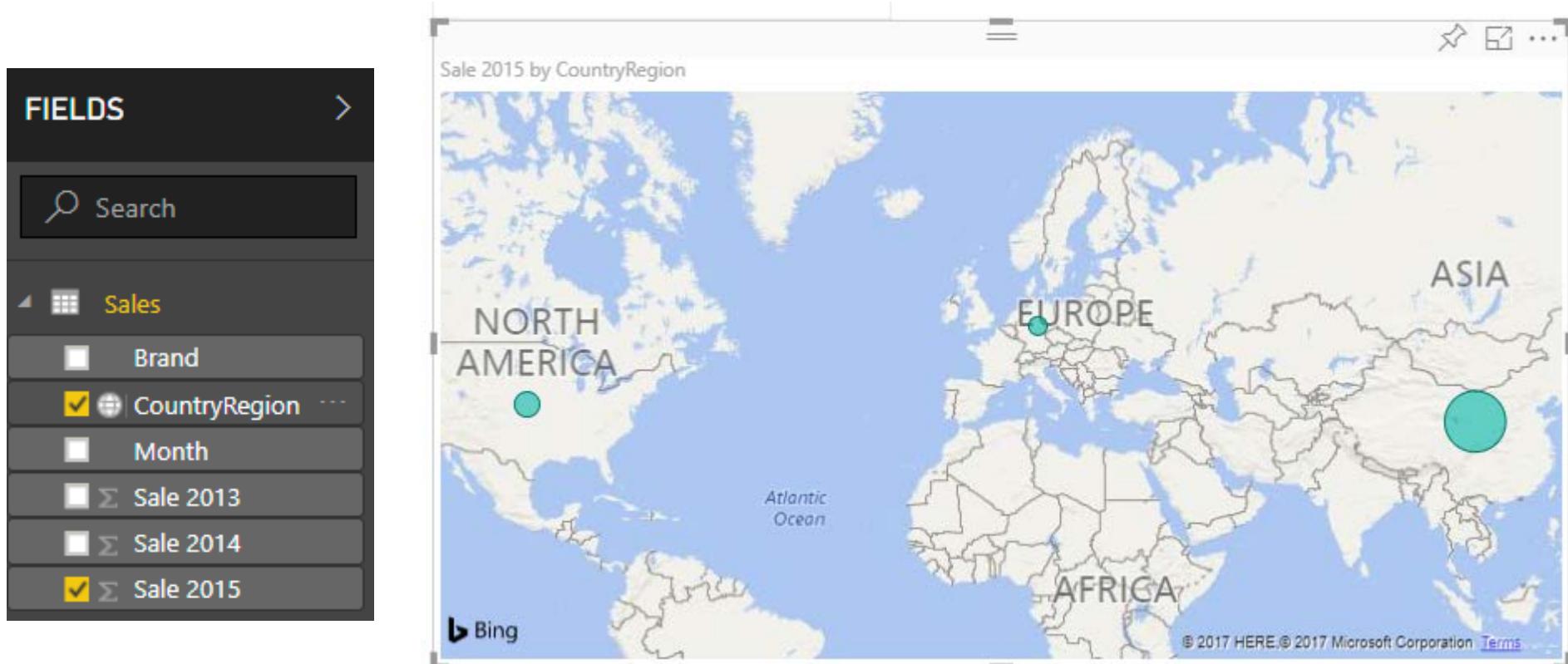
Microsoft Power BI

Click Map Icon



Microsoft Power BI

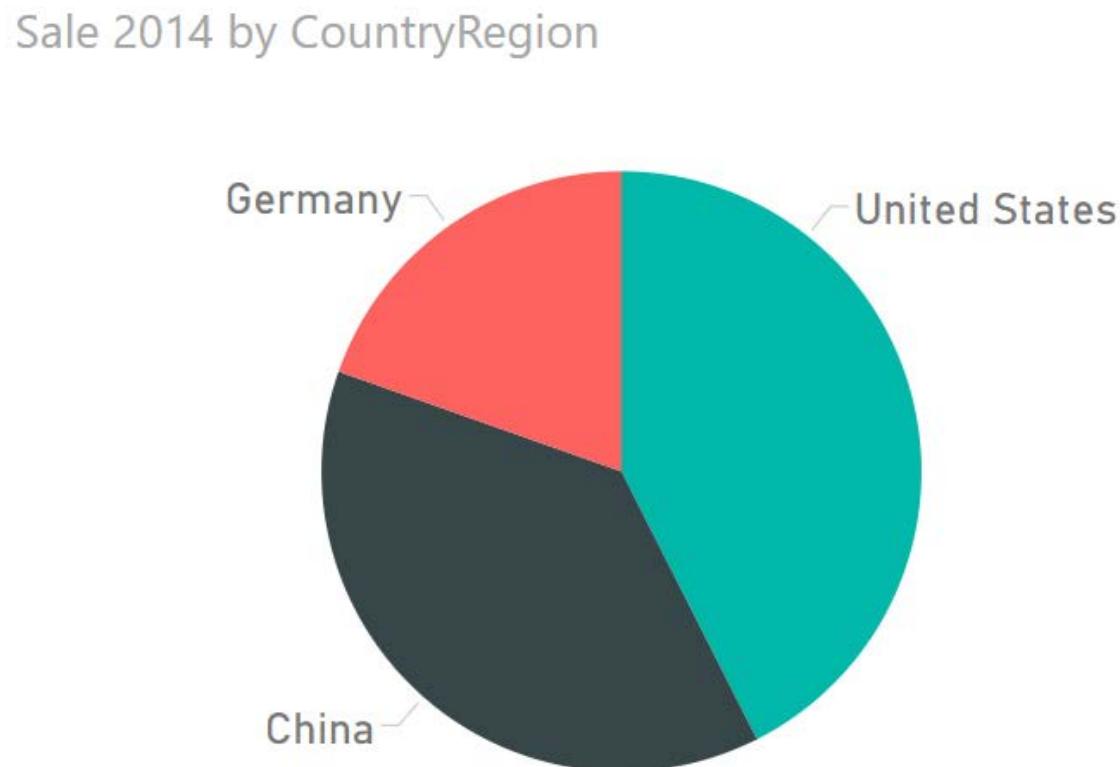
Click Field CountryRegion AND Sales 2015



Microsoft Power BI

Exercise

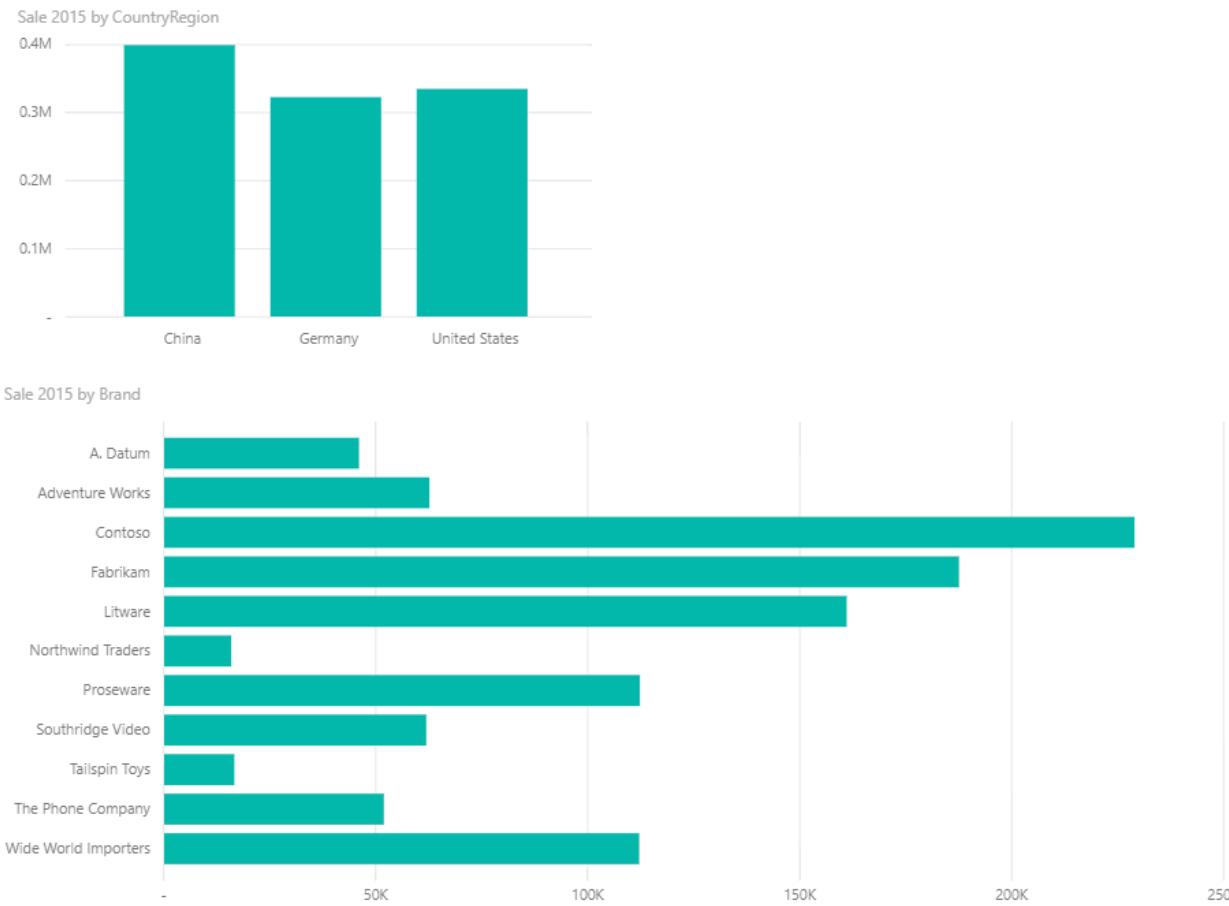
- Remove data and repeat all steps
- Create report with pie chart



Introducing to Visual Interactions

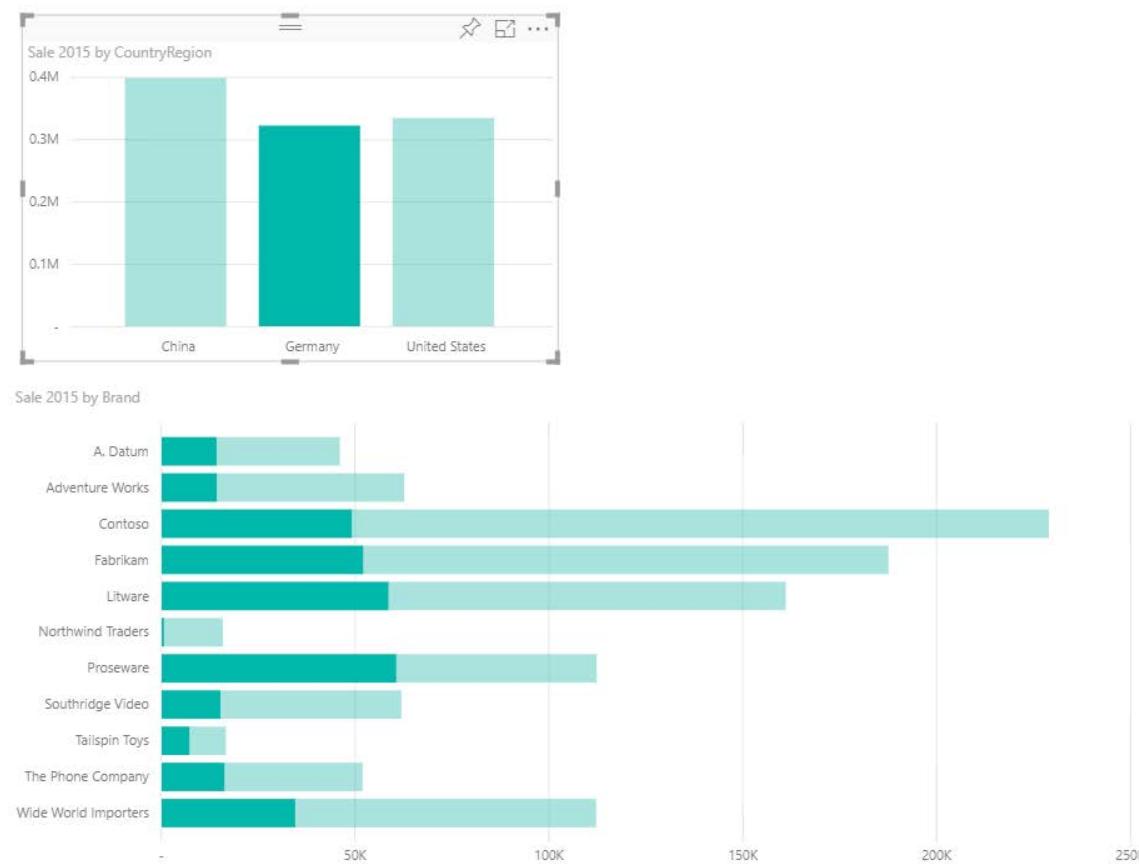
Microsoft Power BI

1. Create Sale 2015 by CountryRegion / Stacked column chart
2. Create sale 2015 by Brand / Stacked bar chart



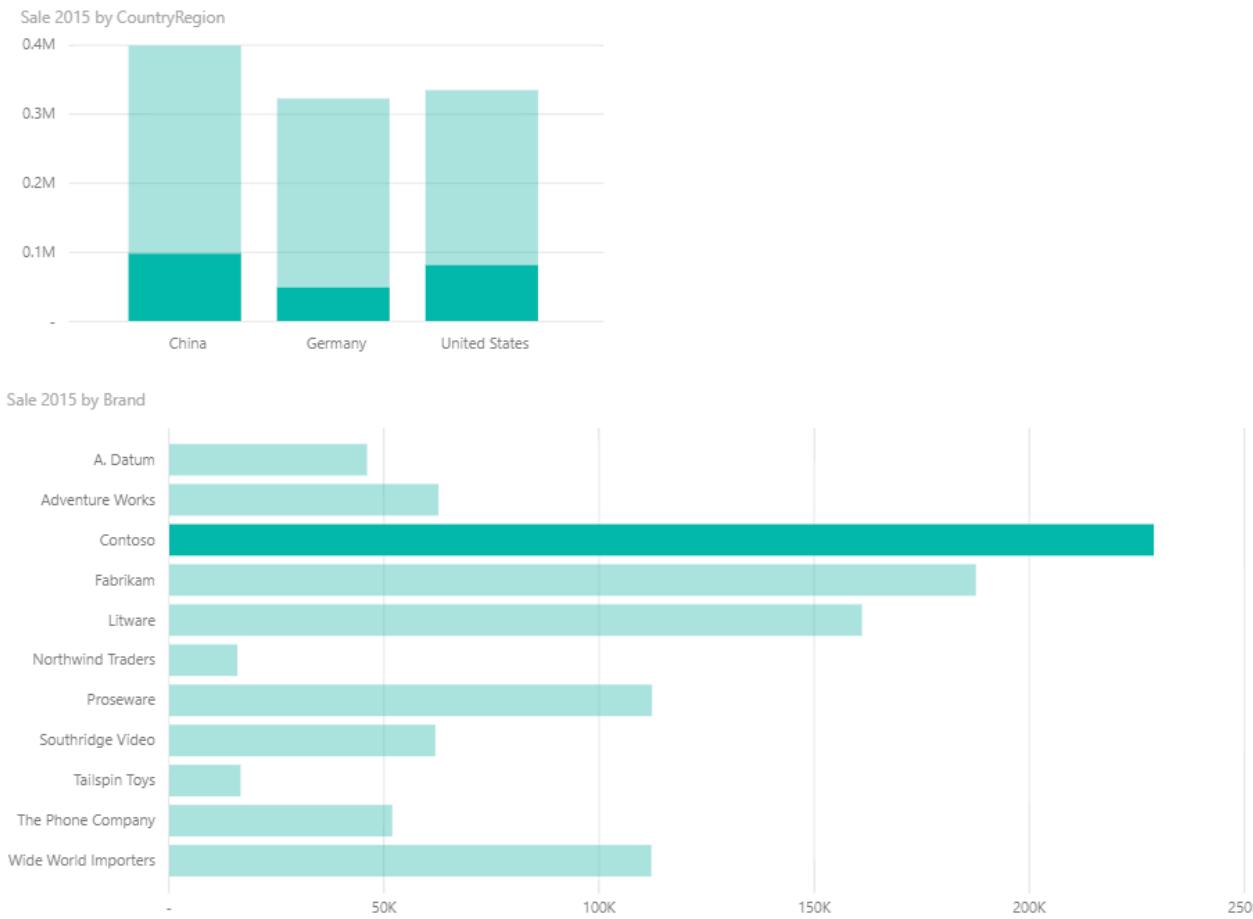
Microsoft Power BI

- Click Germany column at the top chart
- Notice changing color of the below chart
- To select more than 1 column press and hold Ctrl key



Microsoft Power BI

- Click Contoso bar at the below chart
- Notice changing color of the top chart
- To select more than 1 column press and hold Ctrl key



Microsoft Power BI

Turn on/off Visual Interactions

Interactions filters

Click to turn on Visual Interactions

The screenshot shows the Microsoft Power BI interface with two visualizations: a bar chart titled "Sale 2015 by CountryRegion" and a horizontal bar chart titled "Sale 2015 by Brand". The "Visual Interactions" ribbon tab is selected, indicated by a red box and arrow. The "Visualizations" pane on the right lists various chart types, and the "Fields" pane shows fields like Sales, Brand, and CountryRegion. A red box highlights the "Visual level filters" section under the "Filters" category.

Sale 2015 by CountryRegion

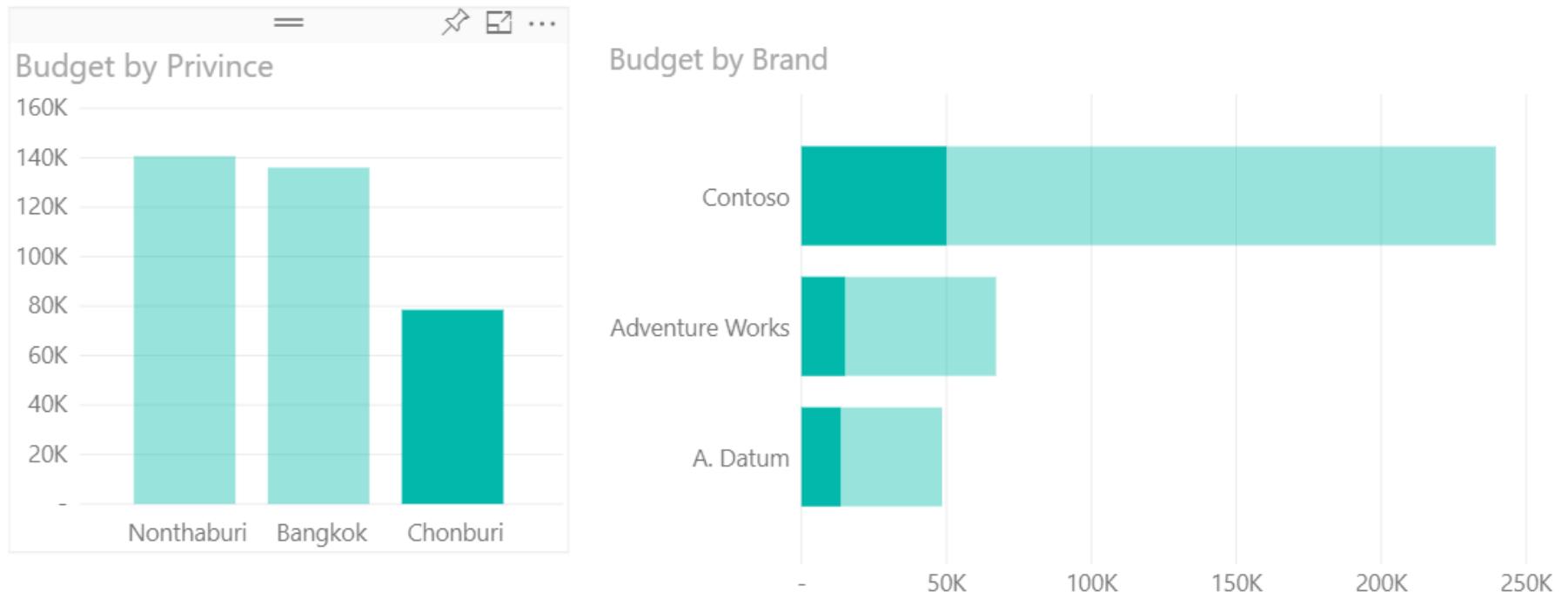
CountryRegion	Sale 2015
China	0.4M
Germany	0.3M
United States	0.3M

Sale 2015 by Brand

Brand	Sale 2015
A. Datum	~0.1M
Adventure Works	~0.15M
Contoso	~0.4M
Fabrikam	~0.3M
Litware	~0.25M
Northwind Traders	~0.05M
Proseware	~0.15M
Southridge Video	~0.05M

Microsoft Power BI

Exercise Thai Budget.xlsx



Decorating the report

Microsoft Power BI

Adding text box

- Change font size
- Add border and background color

The screenshot shows the Microsoft Power BI interface. A text box containing the text "Nortwind Tranders" is selected and highlighted with a red dashed border. The ribbon menu at the top has the "Text box" icon selected, also highlighted with a red dashed border. On the far right, the "VISUALIZATIONS" pane is open, showing settings for the text box. The "Border" setting is currently set to "Off" and is also highlighted with a red dashed border. The text box itself contains the following text:

Nortwind Tranders

Sales of Northwind Traders are not very good. Moreover, it sells only in United States. What is preventing development of sales in other countries?

The "VISUALIZATIONS" pane includes settings for Title, Background, Lock aspect, Border, and General.

Microsoft Power BI

Adding arrow

The screenshot shows the Microsoft Power BI interface. At the top, there's a ribbon with tabs like 'Ask a question', 'Explore', 'Text box', 'Shapes', 'Buttons', and 'Visuals'. A tooltip is open over the 'Shapes' tab, listing five options: 'Rectangle', 'Oval', 'Line', 'Triangle', and 'Arrow'. A red arrow points to the 'Arrow' option. In the center, there are two bar charts. The top chart is titled 'Sale 2015 by CountryRegion' and shows sales for China (~2K), Germany (~1.5K), and United States (~14K). The bottom chart is titled 'Sale 2015 by Brand' and shows sales for various brands, with Contoso having the highest sales (~220K). To the right of the charts, there's a callout box with a purple border containing the text: 'Nortwind Traders' and 'Sales of Nortwind Traders are not very good. Moreover, it sells only in United States. What is preventing development of sales in other countries?'

Sale 2015 by CountryRegion

CountryRegion	Sales
China	~2K
Germany	~1.5K
United States	~14K

Sale 2015 by Brand

Brand	Sales
A. Datum	~10K
Adventure Works	~10K
Contoso	~220K
Fabrikam	~10K
Litware	~10K
Northwind Traders	~2K
Proseware	~100K
Southridge Video	~50K
Talispin Toys	~10K
The Phone Company	~50K
Wide World Importers	~100K

Microsoft Power BI

Saving the report

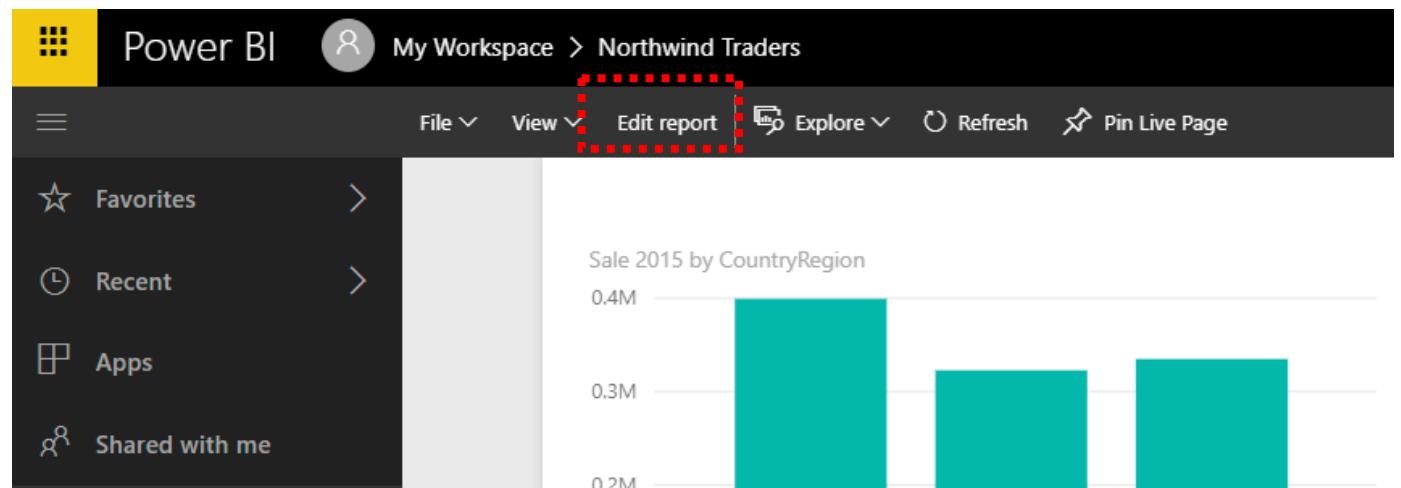
Report name = Northwind Trader

The screenshot shows the Microsoft Power BI desktop application. The left sidebar lists workspaces, dashboards, reports, workbooks, datasets, and favorites. The main area displays a bar chart titled "Sale 2015 by Brand". A large orange arrow points from the top right towards the "Save" option in the file menu. The "Save" option is highlighted with a red dashed box. The chart shows sales data for various brands, with "Contoso" having the highest sales.

Brand	Sale 2015
A. Datum	100
Adventure Works	150
Contoso	250
Fabrikam	180
Litware	120
Northwind Traders	50
Dominos	80

Microsoft Power BI

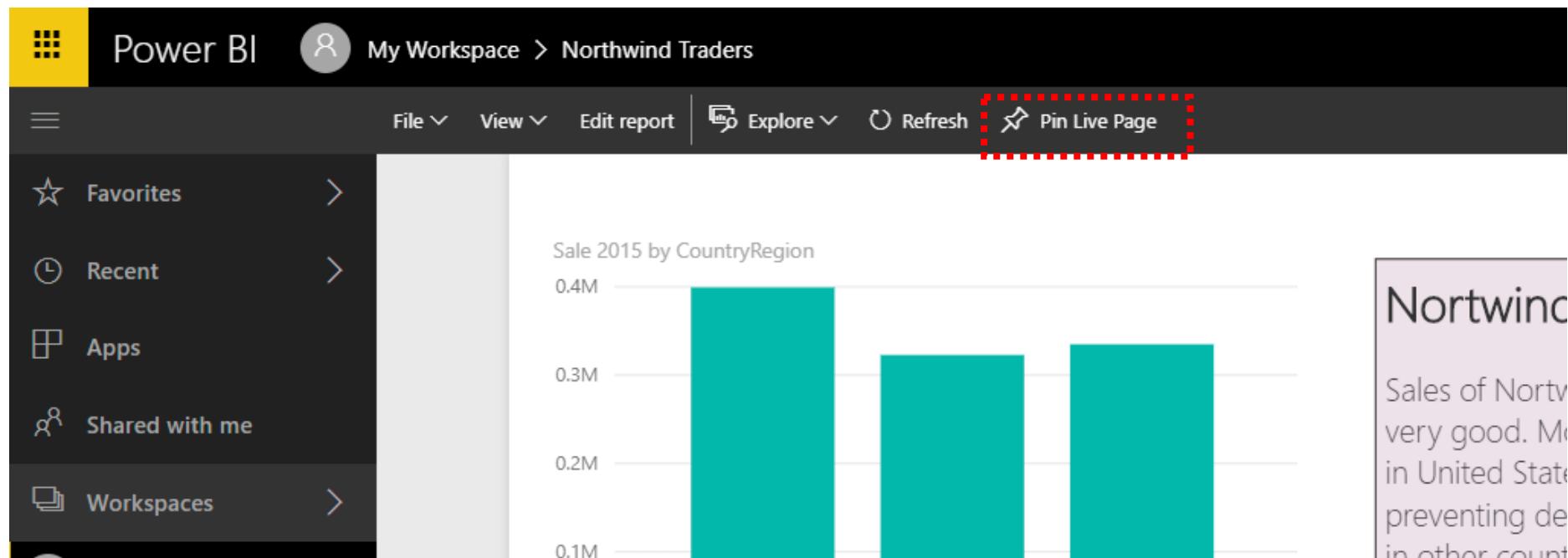
- After you save the report, it appears in the My Workspace pane, in the Reports section.
- You can now access it any time you sign in to Power BI.
- When you select a saved report, it opens and remains in read-only mode until you explicitly activate it for editing by clicking the Edit Report button.



Microsoft Power BI

Pinning a report

Click to pin a report as a live page



Microsoft Power BI

Pin Visual VS Pin Live Page

Pinning a visualization

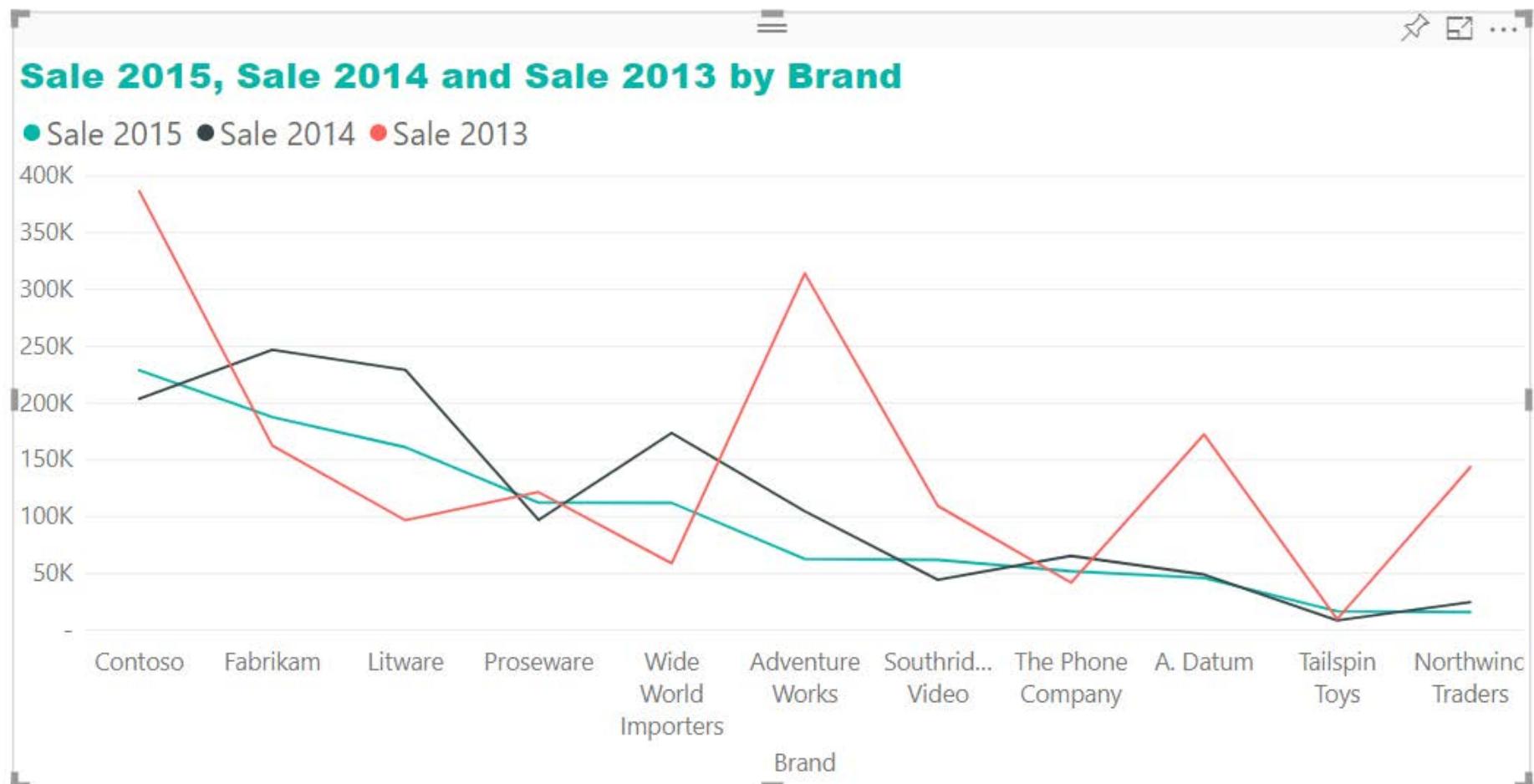
- Power BI saves it as it is
- Not include the visual interactions
- Click a visualization to open the source report

Pinning Live Page

- Keep visual interactions between components
- Click Live Page will not open the source report

Microsoft Power BI

Exercise



Refreshing the budget workbook

Microsoft Power BI

Refreshing the budget workbook

- How he will refresh his data when new figures become available
- He began building the budget in October
- New data will be arriving over time
- Sales and the country/region managers will provide new forecasts
- David will need to add to his workbook
- How will he upload new data to refresh the existing data?

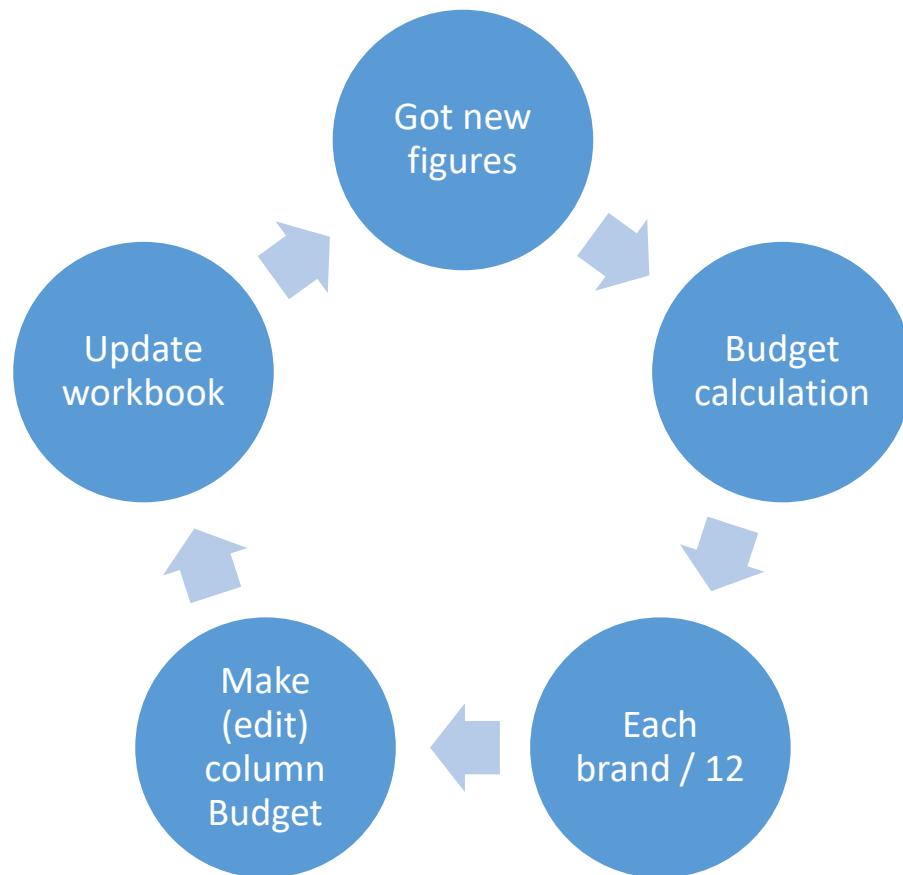
Microsoft Power BI

- Country/region managers send update data
- Forecast base on the brand
- No monthly detail
- This forecast is at year level

CountryRegion	Brand	Budget
China	A. Datum	5,000.00
China	Adventure Works	36,500.00
China	Contoso	94,500.00
China	Fabrikam	90,800.00
China	Litware	65,000.00
China	Northwind Traders	12,000.00
China	Proseware	20,000.00
China	Southridge Video	22,500.00
China	Tailspin Toys	8,000.00
China	The Phone Company	30,000.00
China	Wide World Importers	45,000.00

Microsoft Power BI

Make budget with forecast



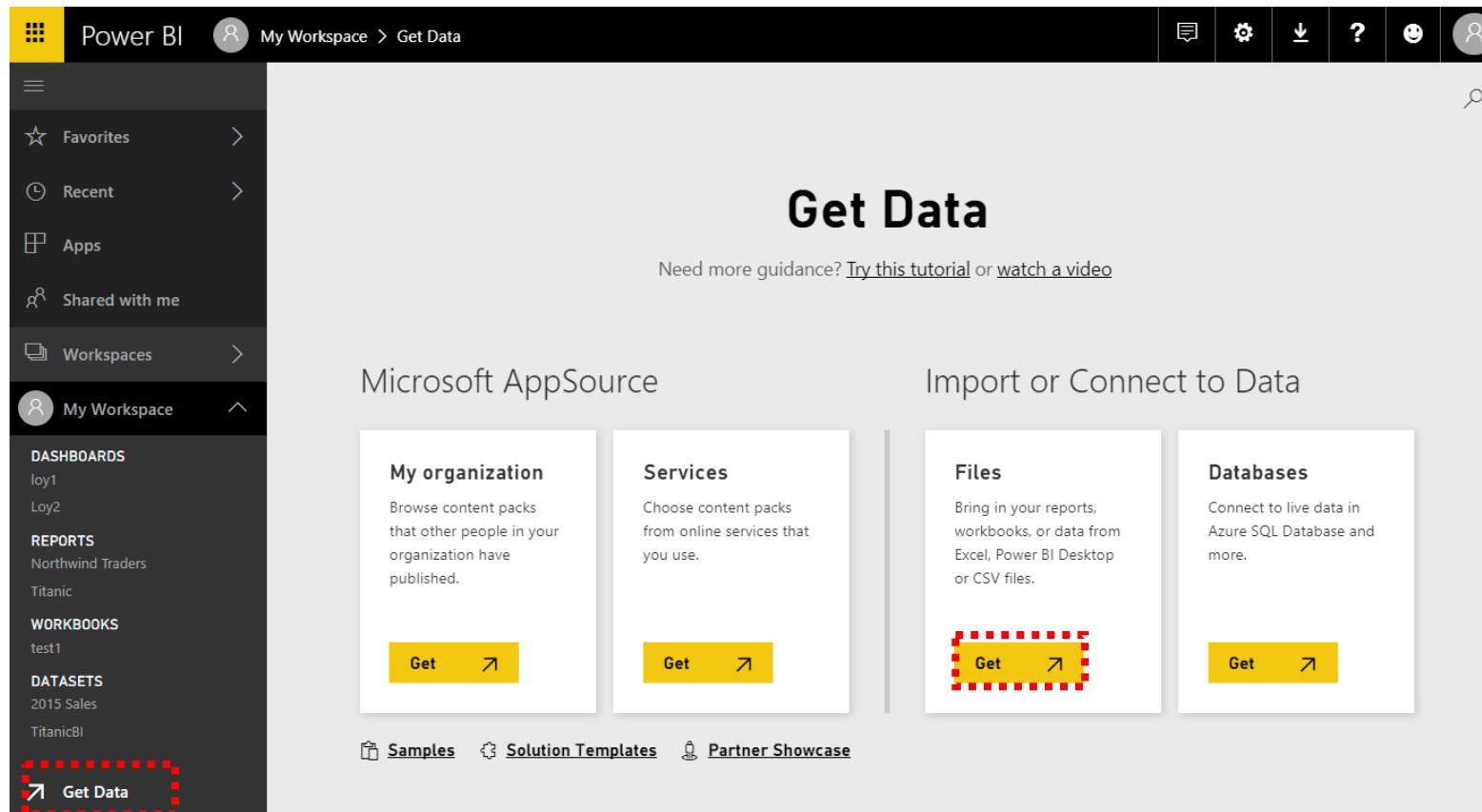
Microsoft Power BI

- The workbook with the new Budget column
- Numbers do not reflect the seasonal nature of sales
- Number are not correct.
- We will fix this and use a better technique later

CountryRegion	Brand	Month	Sale 2013	Sale 2014	Sale 2015	Budget
China	A. Datum	January	3,234.00	1,935.00	416.67	
China	A. Datum	February	6,270.00	7,059.00		416.67
China	A. Datum	March	4,352.00			416.67
China	A. Datum	April	3,814.00			416.67
China	A. Datum	May	6,234.00			416.67
China	A. Datum	June	5,571.00	3,216.00		416.67
China	A. Datum	July	7,424.00			416.67
China	A. Datum	August		800.00		416.67
China	A. Datum	September	1,254.00	1,617.00	396.00	416.67
China	A. Datum	October	1,881.00	3,042.00	936.00	416.67
China	A. Datum	November		3,653.00		416.67
China	A. Datum	December	6,135.00	2,810.00		416.67
China	Adventure Works	January	12,418.26	5,735.48	1,559.87	3,041.67
China	Adventure Works	February	31,770.26		2,937.90	3,041.67
China	Adventure Works	March	3,689.85	5,489.23	11,163.94	3,041.67

Microsoft Power BI

- Download file : Sales and Budget Manually Combined.xlsx
- Change name to 2015 Sales.xlsx



Microsoft Power BI

Local File, Import, Replace it



A dataset with the same name exists

You already have a file named "2015 Sales.xlsx". If you replace the existing file, some tiles might be impacted. Do you want to replace the existing file with this one? [Learn more](#)

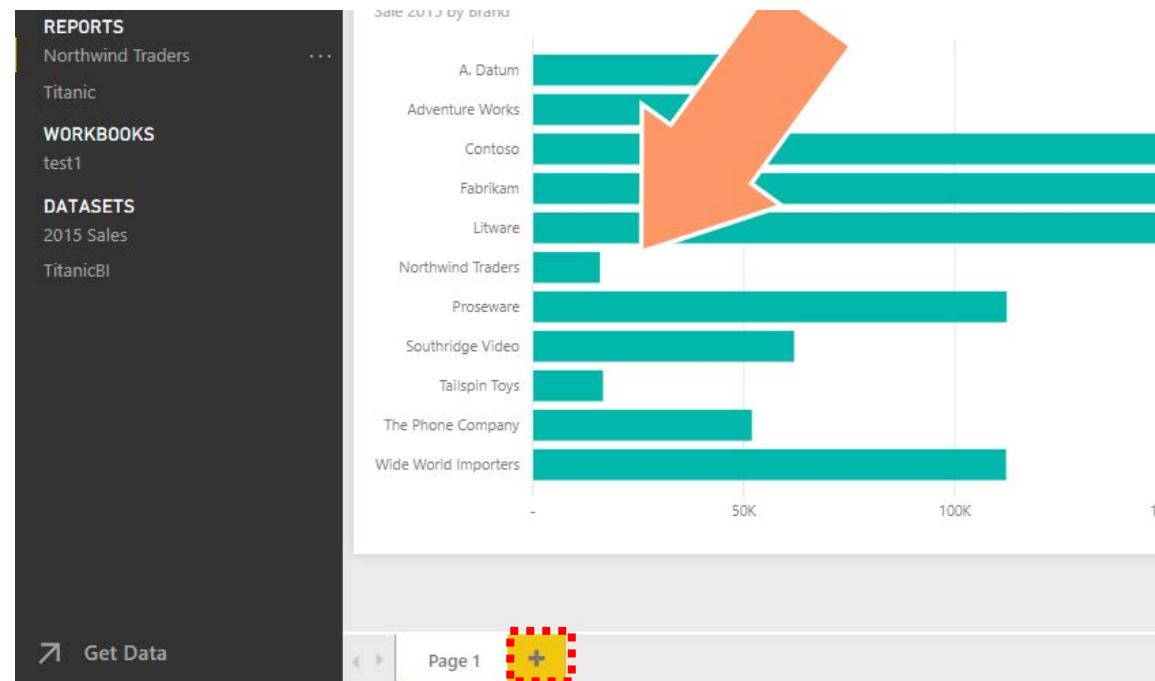
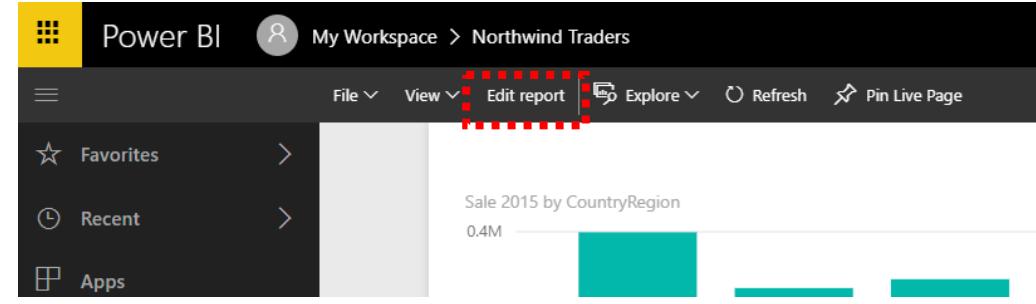
Replace it

Cancel

Microsoft Power BI

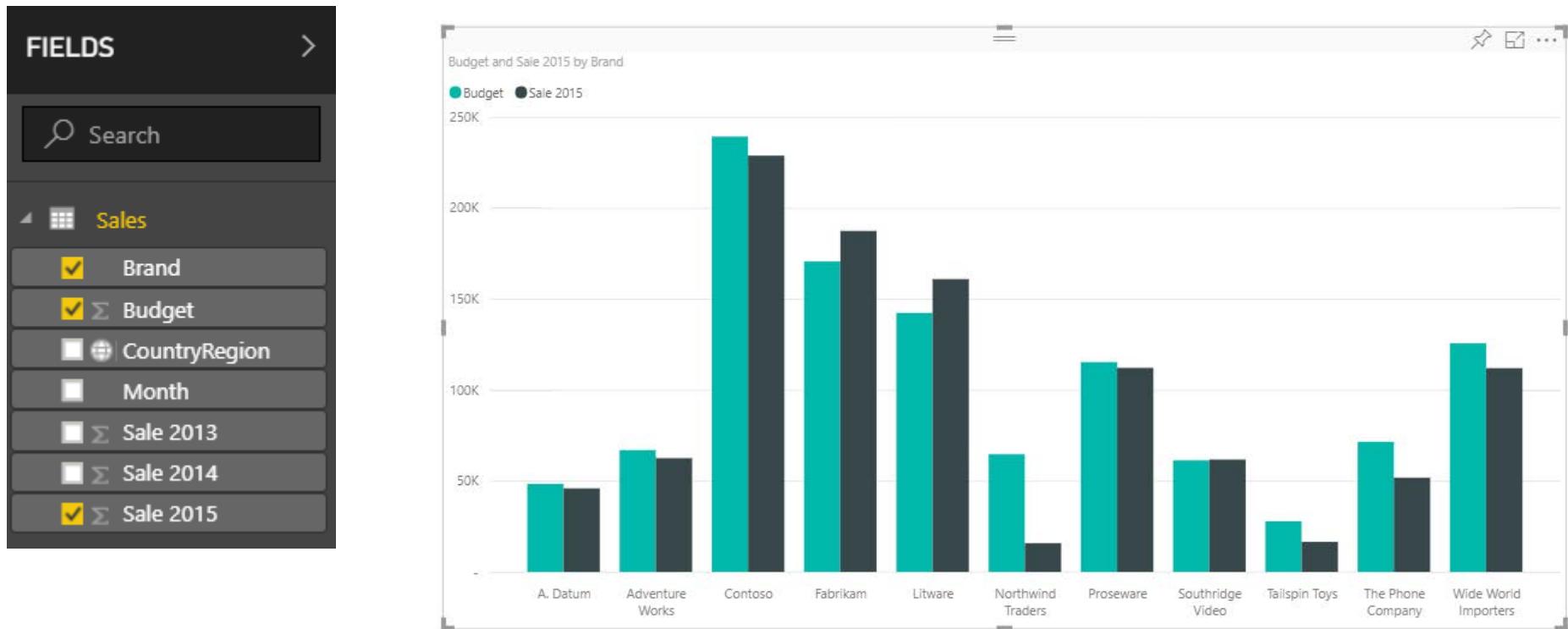
Add new page to report

- Click report
- Click Edit report
- Click + to add Page 2



Microsoft Power BI

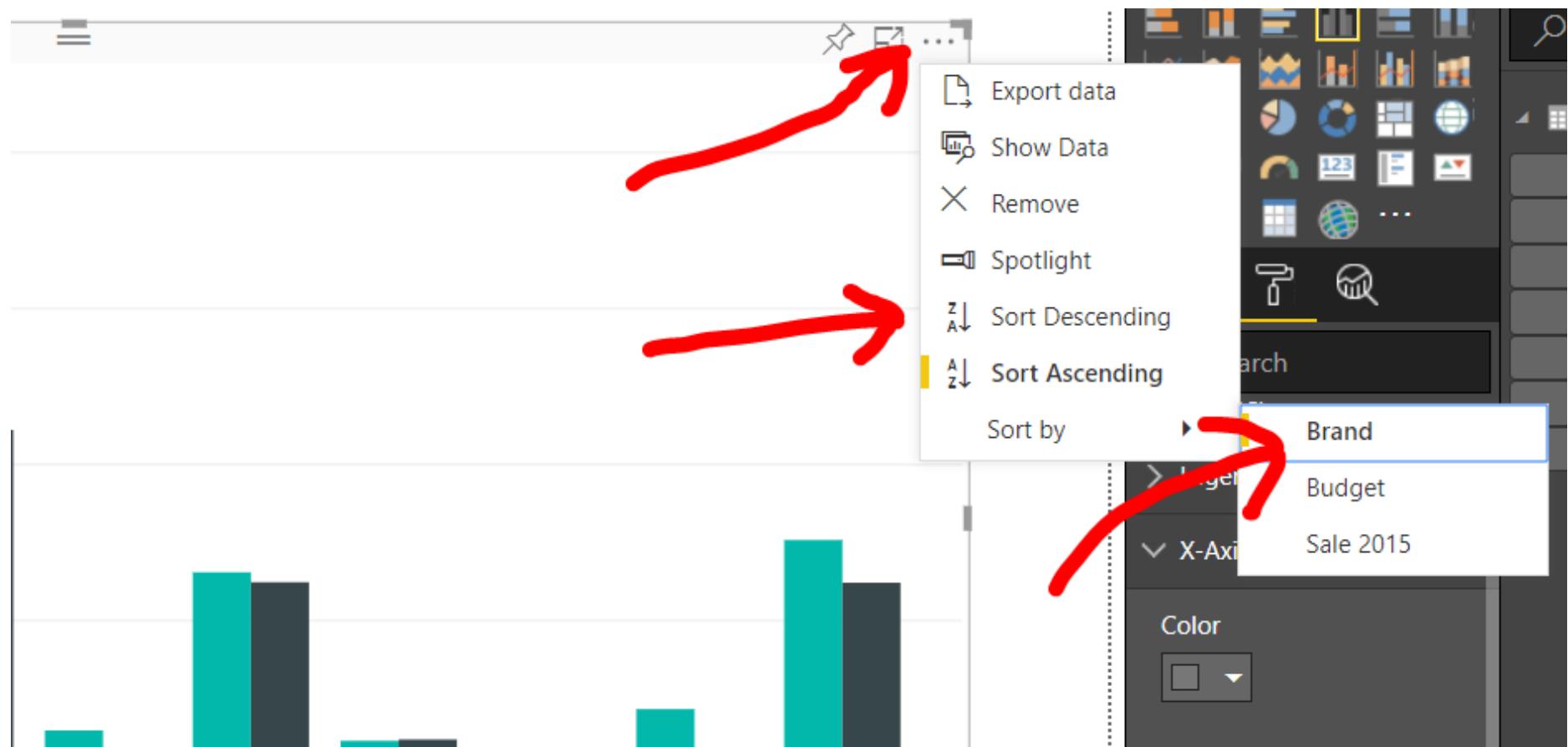
Budget and Sale 2015 by Brand



Clustered column chart

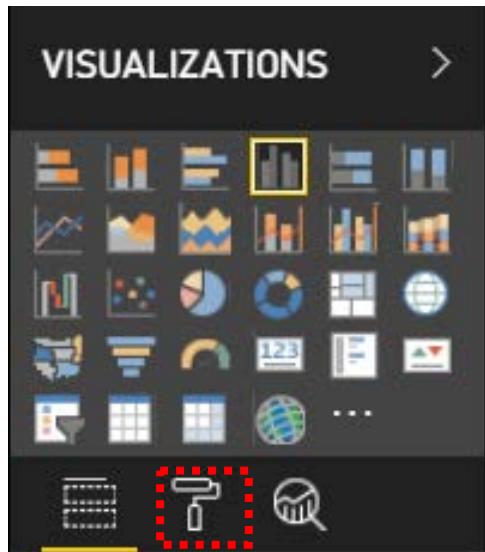
Microsoft Power BI

Sorting

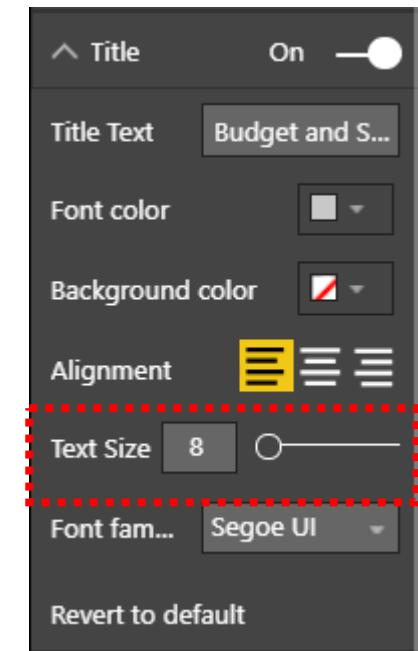
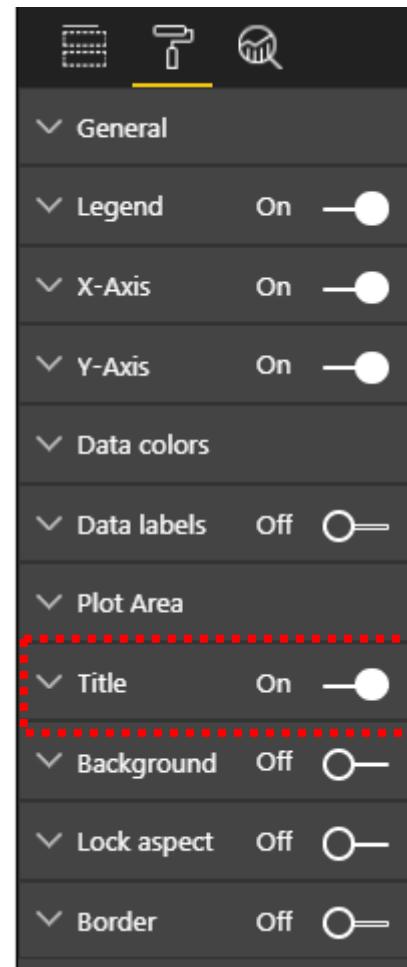


Microsoft Power BI

Change Title font size

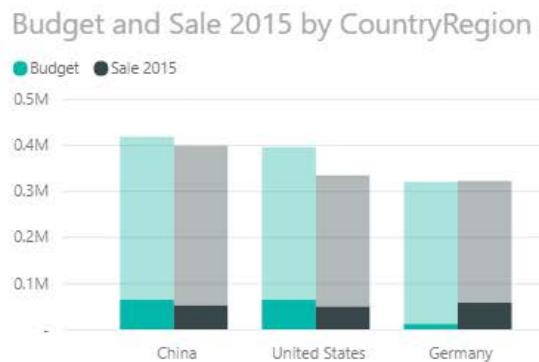
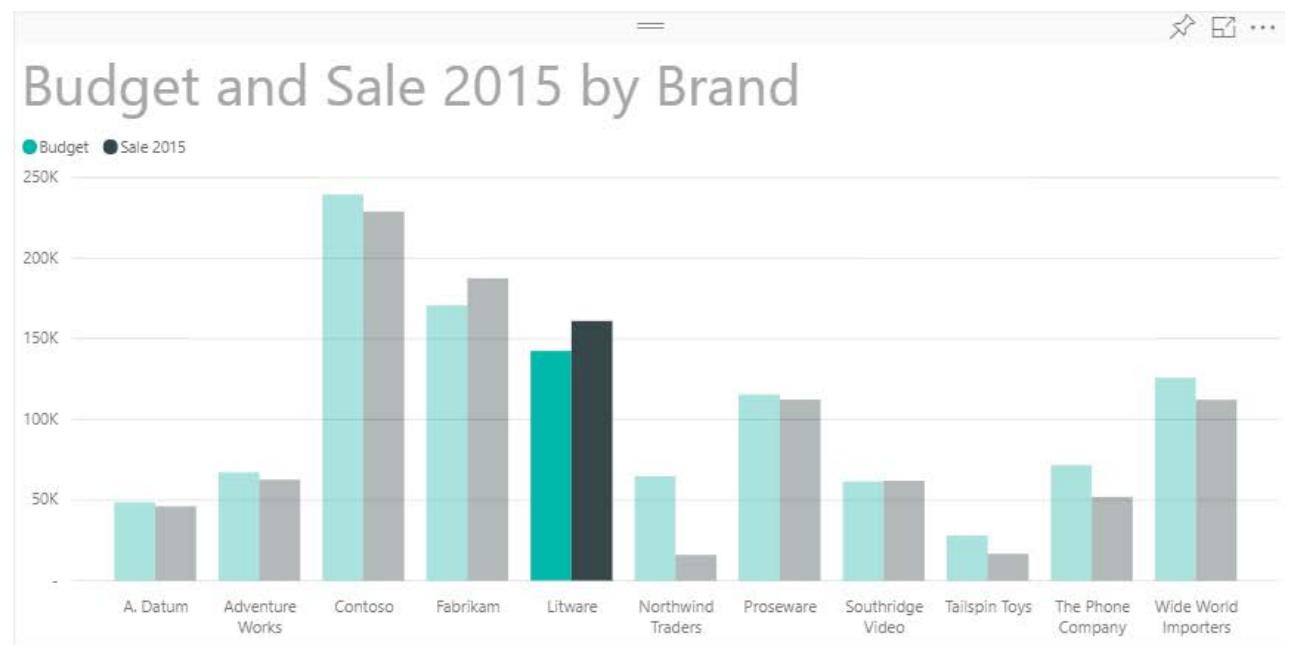


Click format



Microsoft Power BI

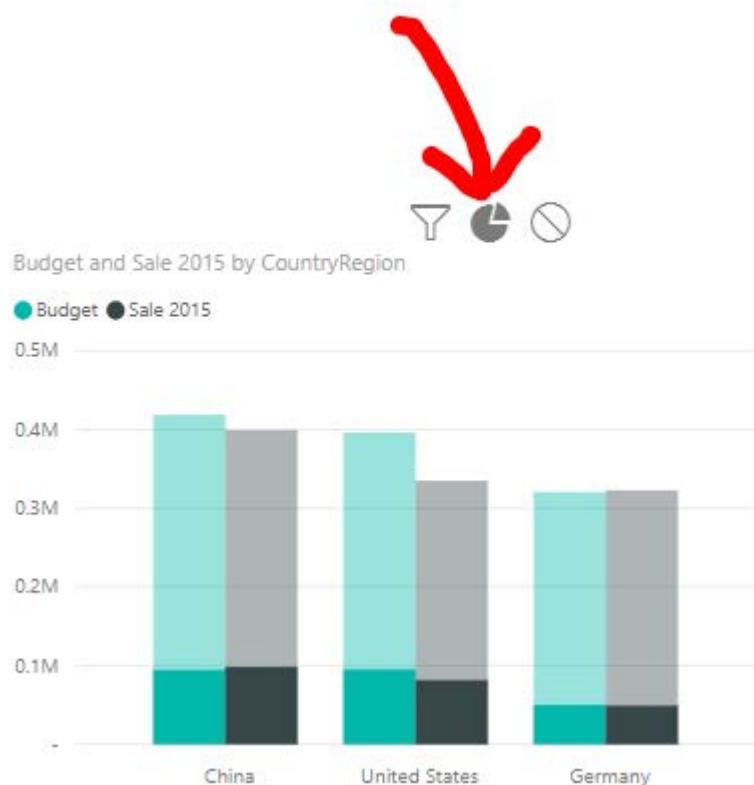
Add Budget and Sale 2015 by CountryRegion



Microsoft Power BI

Add filter by brand

- Copy and pastes to create new chart
- Change title to Sale and Budget byCountryRegion filtered by Brand
- Change Visual Interaction to Filter



Microsoft Power BI

Filtering a report

Visual interactions:

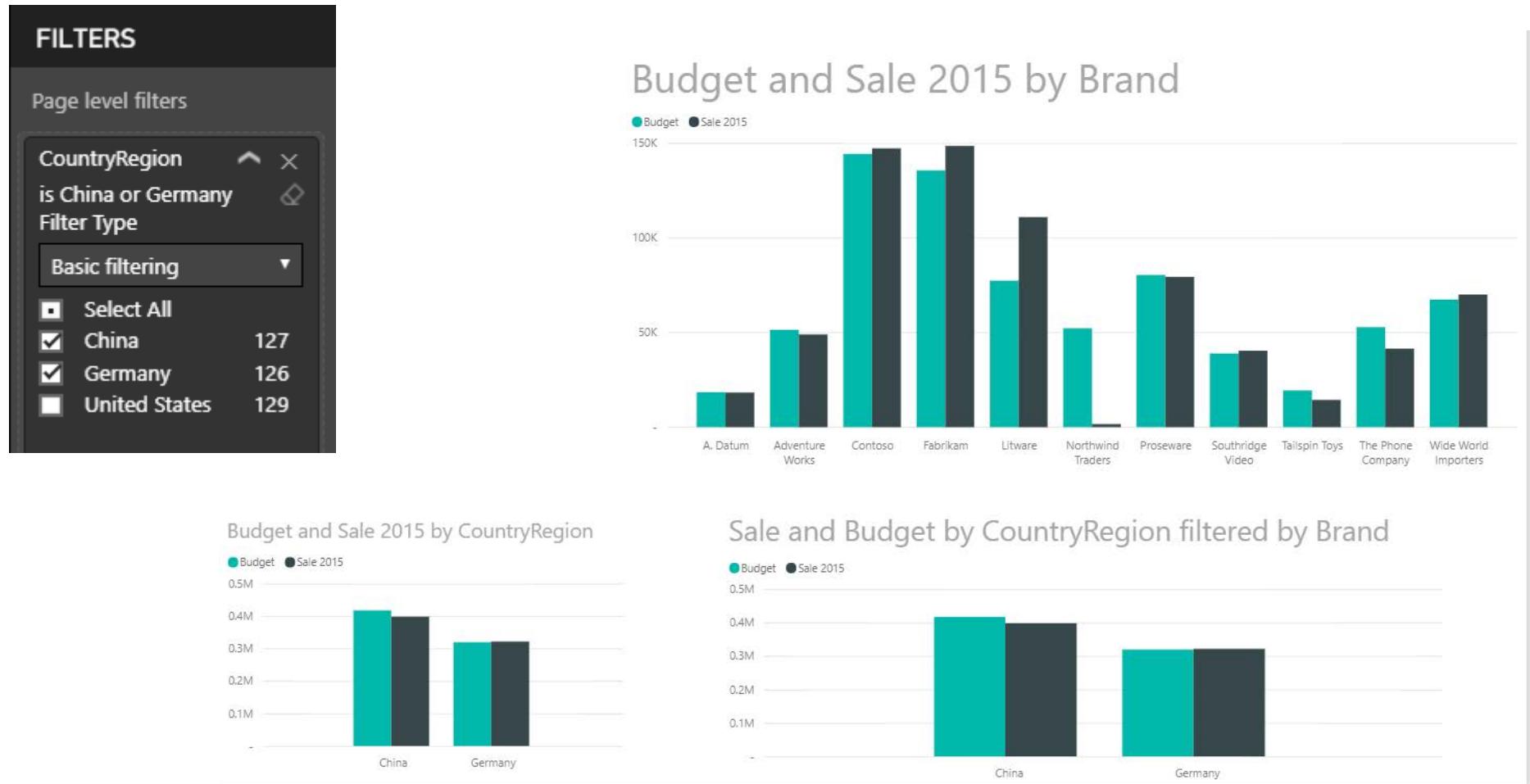
- The filter is not saved as part of the report
- The filter is always visible

Standard filters:

- Visual-level filters: work on only an individual visualization
- Page-level filters: work at the report-page level
- Report-level filters: works on the entire report

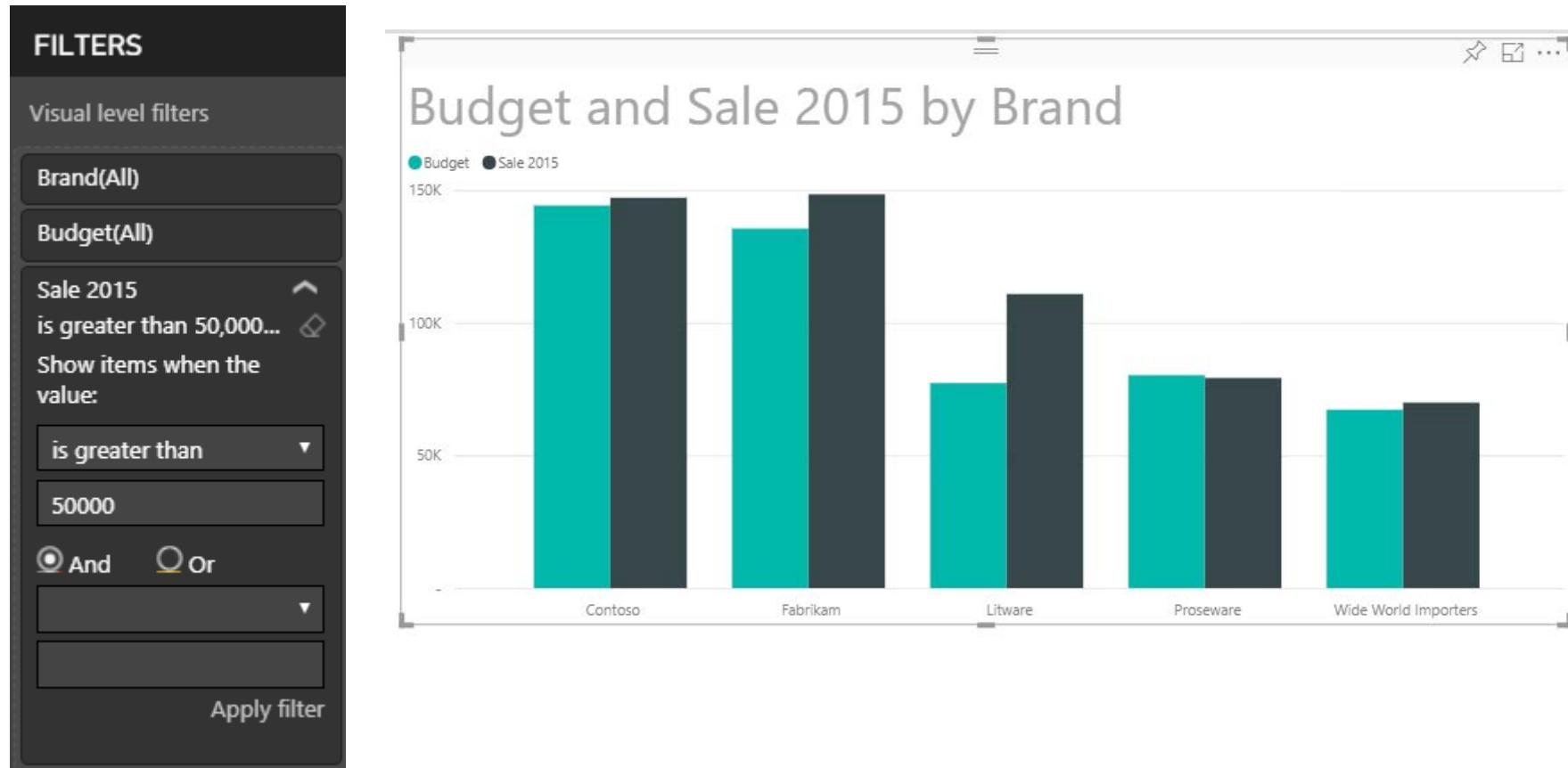
Microsoft Power BI

Add page level filter to show only China and Germany



Microsoft Power BI

Add Visual-level filters to show only Sale greater than 50,000

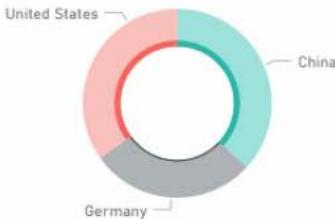


Microsoft Power BI

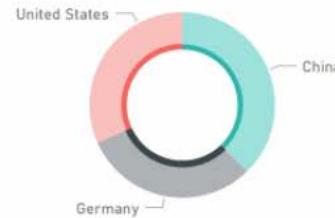
Exercise

Add Donut charts to the report

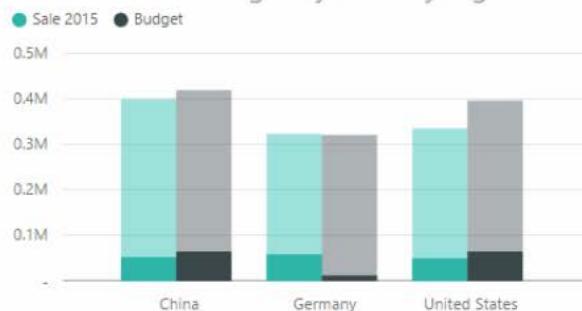
Budget by CountryRegion



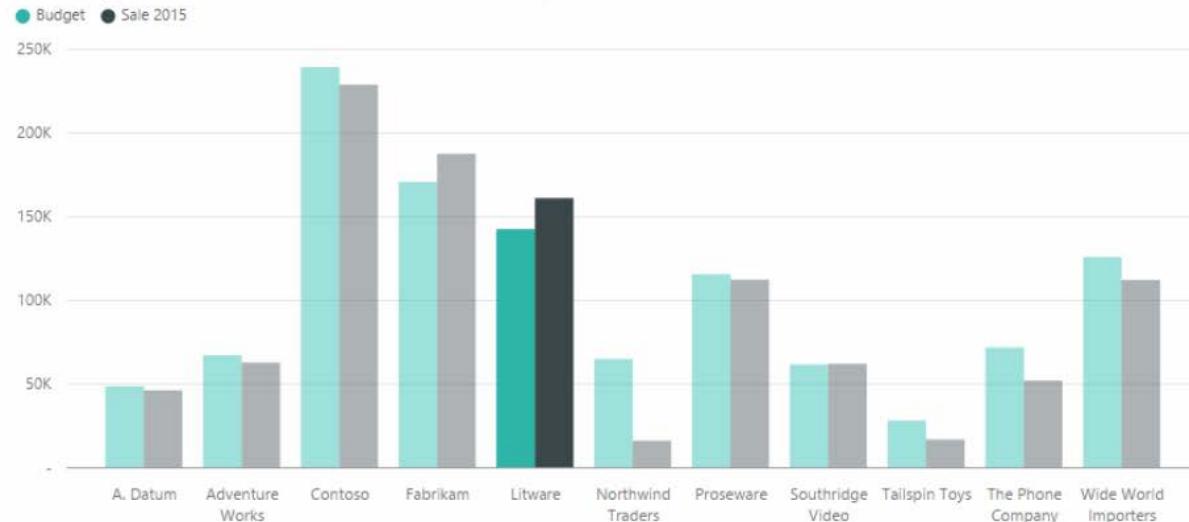
Sale 2015 by CountryRegion



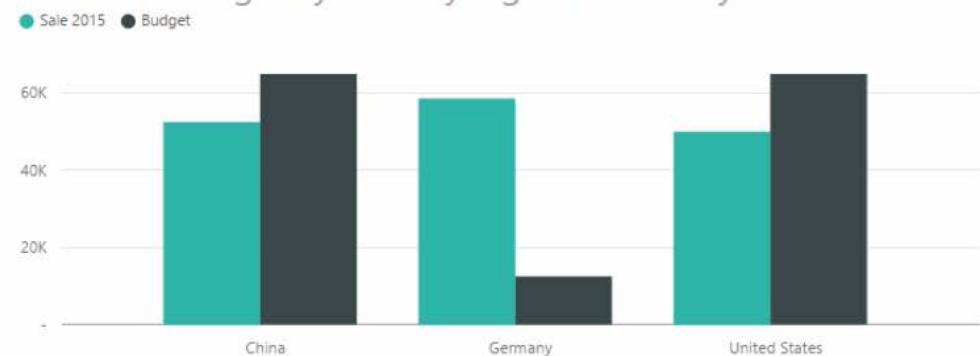
Sale 2015 and Budget by CountryRegion



Budget and Sale 2015 by Brand



Sales and Budget by CountryRegion filtered by Brand



Sharing and Publish Report

Microsoft Power BI

Sharing the dashboard

- Inviting a user to see a dashboard
- Creating a group workspace in Power BI
- Turning on sharing with Microsoft OneDrive for Business
- Viewing reports and dashboards on mobile devices

Microsoft Power BI

Inviting a user to see a dashboard

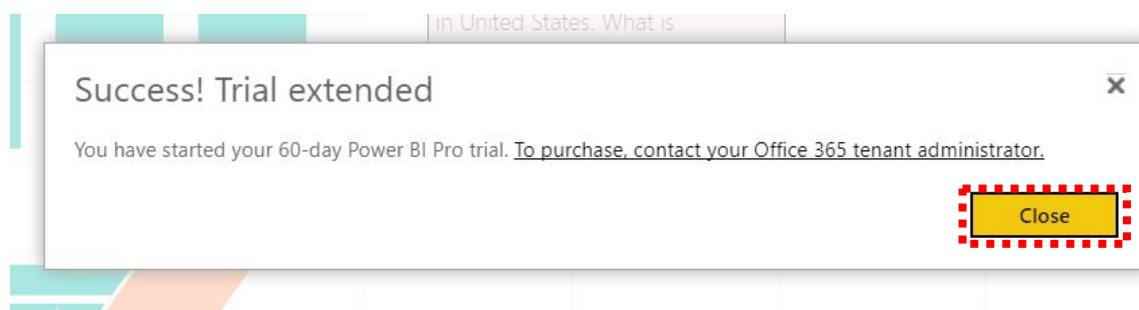
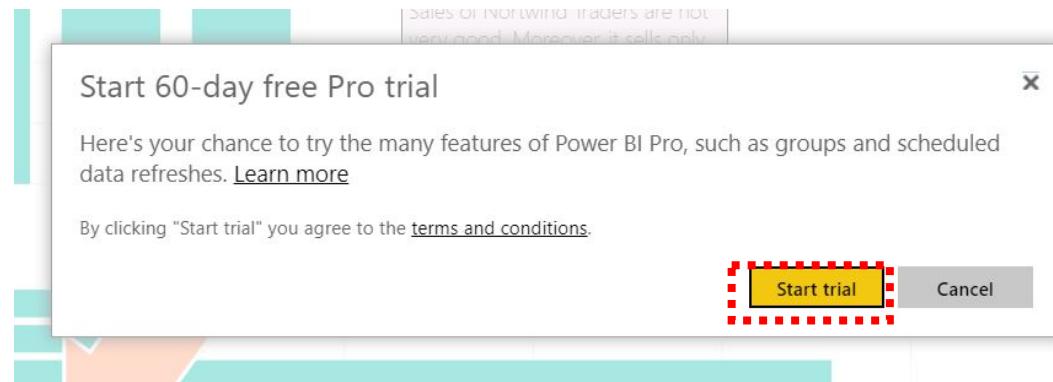
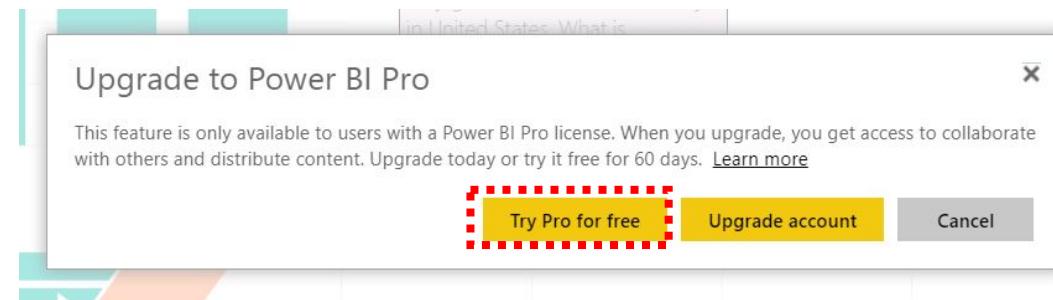
Click dashboard and Share

The screenshot shows a Microsoft Power BI dashboard for 'Northwind Traders'. At the top, there's a navigation bar with options like 'Add tile', 'Usage Metrics', 'View related', 'Set as featured', 'Favorite', 'Subscribe', **Share** (which is highlighted with a red dashed box), 'Web view', and more. Below the navigation bar, there's a search bar with the placeholder 'Ask a question about your data'. The main content area is titled 'Northwind Traders' and 'PAGE 1'. It features a bar chart titled 'Sale 2015 by CountryRegion' with the following data:

CountryRegion	Sales
China	~0.4M
Germany	~0.3M
United States	~0.35M

To the right of the chart, there's a callout box with a pink background containing the text: 'Nortwind Traders' and 'Sales of Nortwind Traders are not very good. Moreover, it sells only in United States. What is preventing development of sales in other countries?'

Microsoft Power BI



Microsoft Power BI

Share dashboard

2015 SALES.XLSX

Share Access

Recipients will have the same access as you unless row-level security on the dataset further restricts them. [Learn more](#)

Grant access to

loy1@tactechthai.com X Enter email addresses

Hello, get your report here

Allow recipients to share your dashboard

Send email notification to recipients

Dashboard Link ⓘ

<https://app.powerbi.com/groups/me/dashboards/d4420f39-1fc4-4a30-b301-b51>

Share

Cancel

Microsoft Power BI

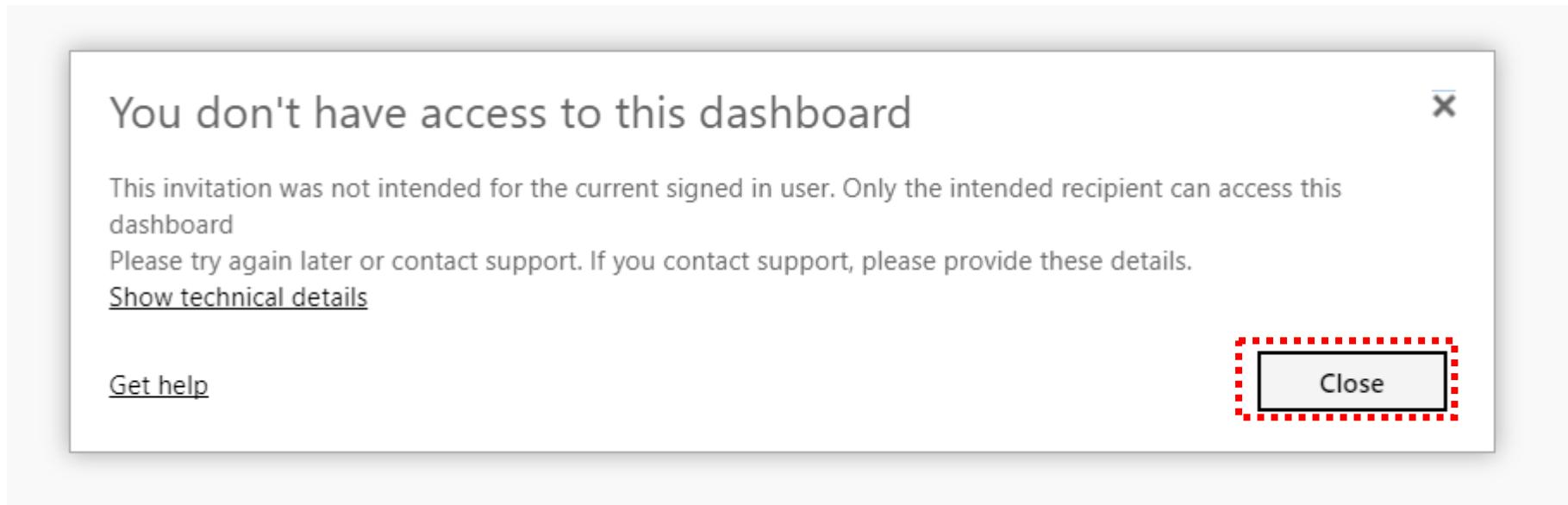
Check mail

The screenshot shows an email message. At the top, it says "loy vanich has shared Power BI Dashboard '2015 Sales.xlsx". Below this are four details: "ผู้ส่ง Microsoft Power BI", "ผู้รับ loy1@tactechthai.com", "ตอบกลับ no-reply-powerbi@microsoft.com", and "วันที่ วันนี้ 04:32". A yellow banner at the bottom contains a warning icon and text in Thai: "เพื่อปกป้องความส่วนตัว รูปจากภายนอกในจดหมายนี้จะถูกปิดบังไว้" followed by a "แสดงรูป" button. Below the banner, the text "Hello, get your report here" is displayed in bold black font, with a red arrow pointing to the word "here". Underneath, there is a blue link "View 2015 Sales.xlsx in Power BI".

Take your dashboards and reports with you—download the app.



Microsoft Power BI



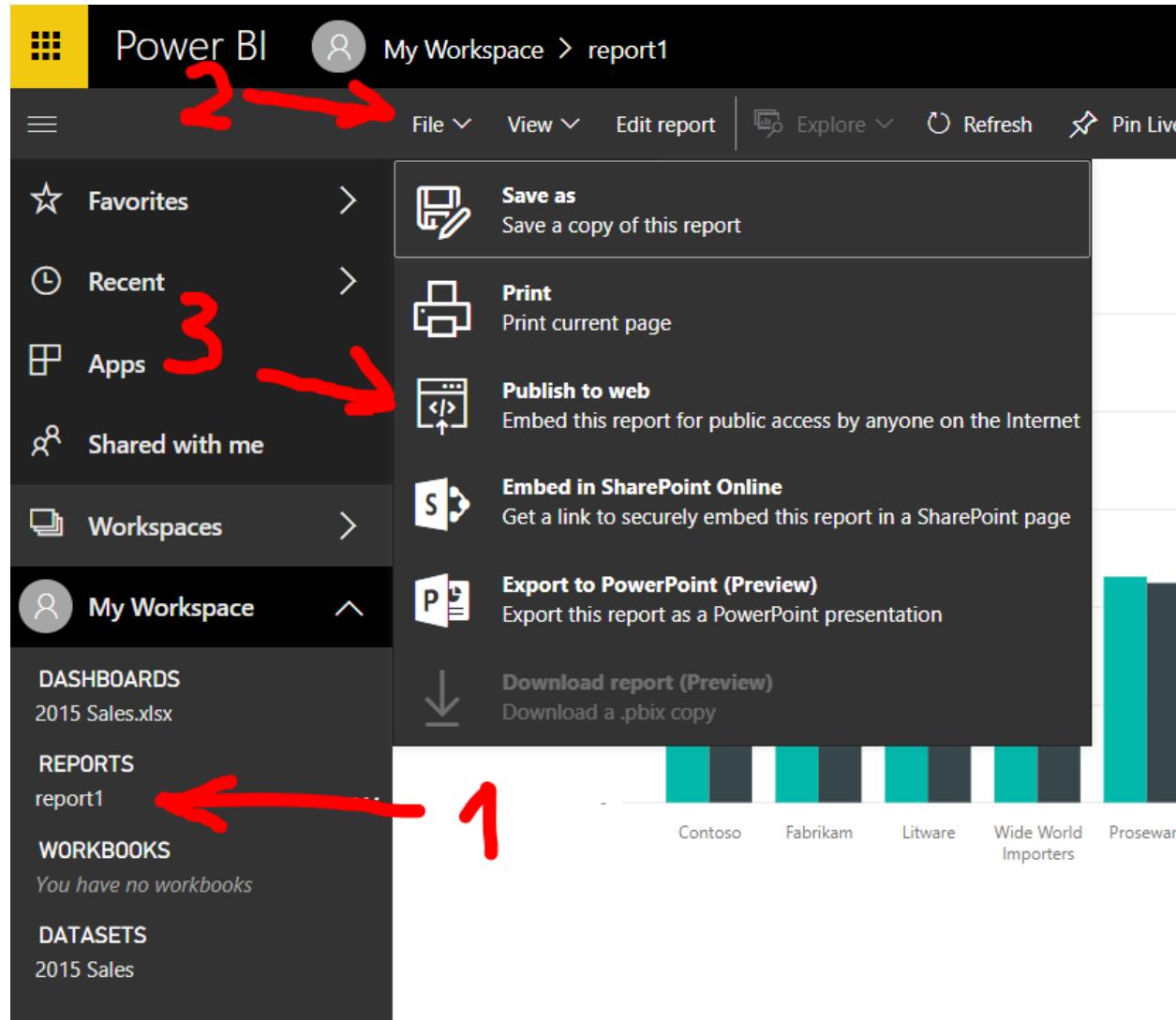
Microsoft Power BI

Inviting users outside your organization

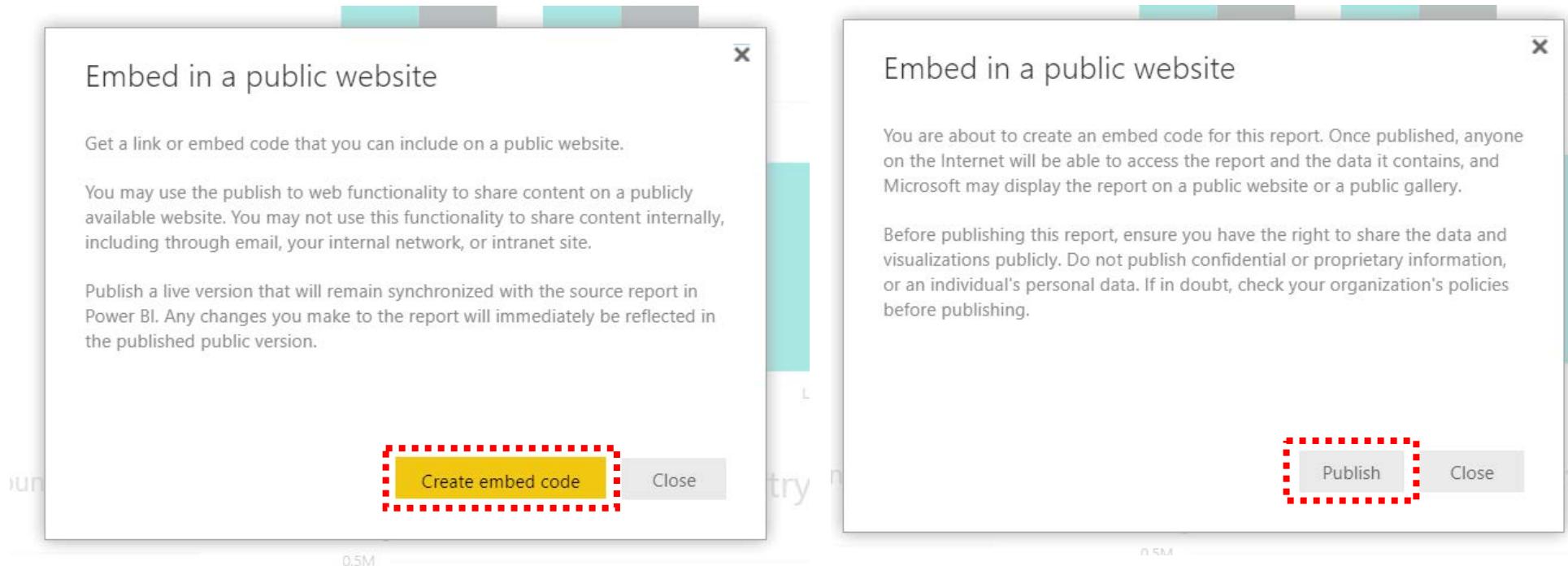
- Internal users You can invite internal users to share a dashboard by email or by sending them the URL of the dashboard. In the latter case, users must be authorized. If a user does not have authorization, she can ask for permission when she clicks the dashboard URL.
- External users You can share a dashboard with external users only by inviting them by email. When an external user receives the email, she must sign in to Power BI using the same email account used in the invitation. If she never previously used Power BI, she can create a free account the first time she signs in.

Microsoft Power BI

Publish a report

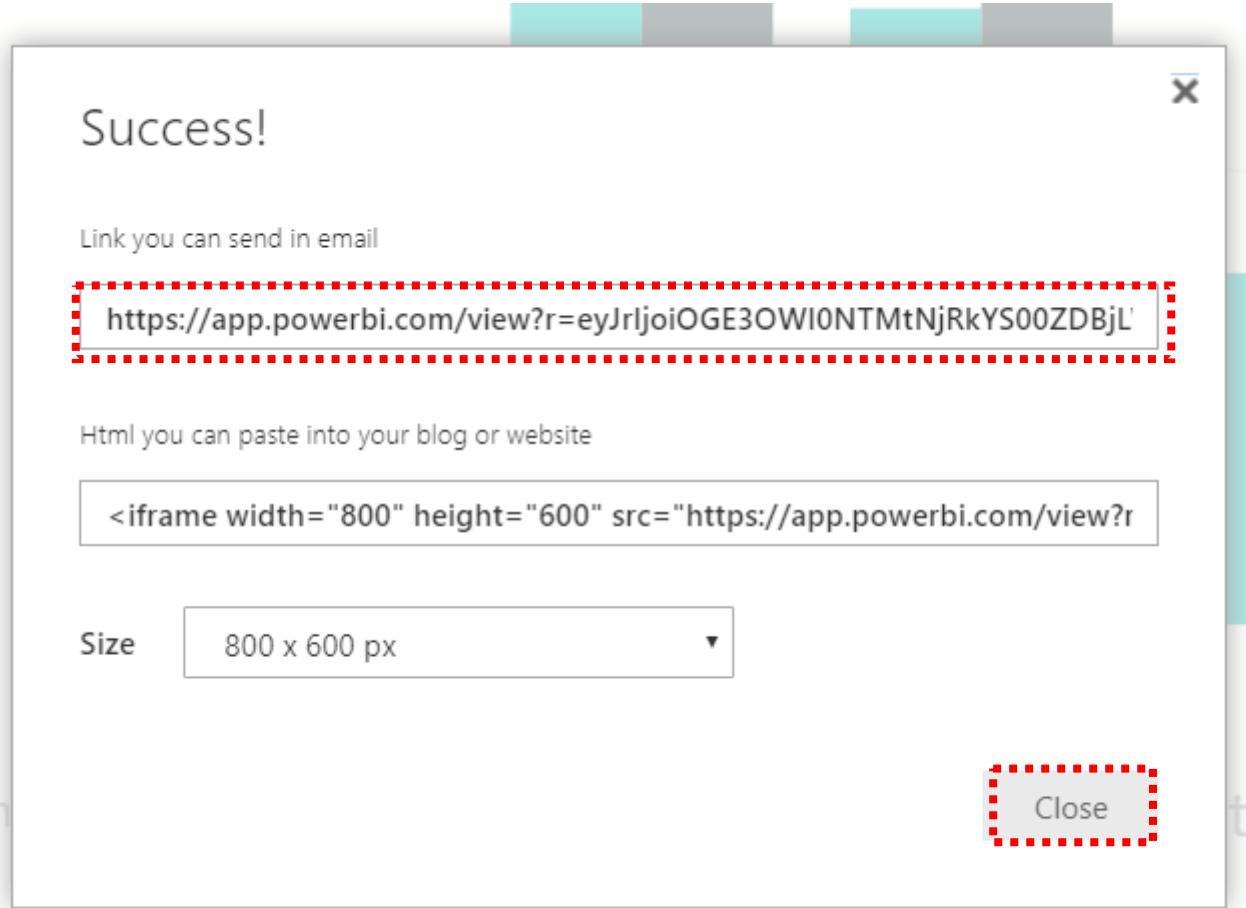


Microsoft Power BI



Microsoft Power BI

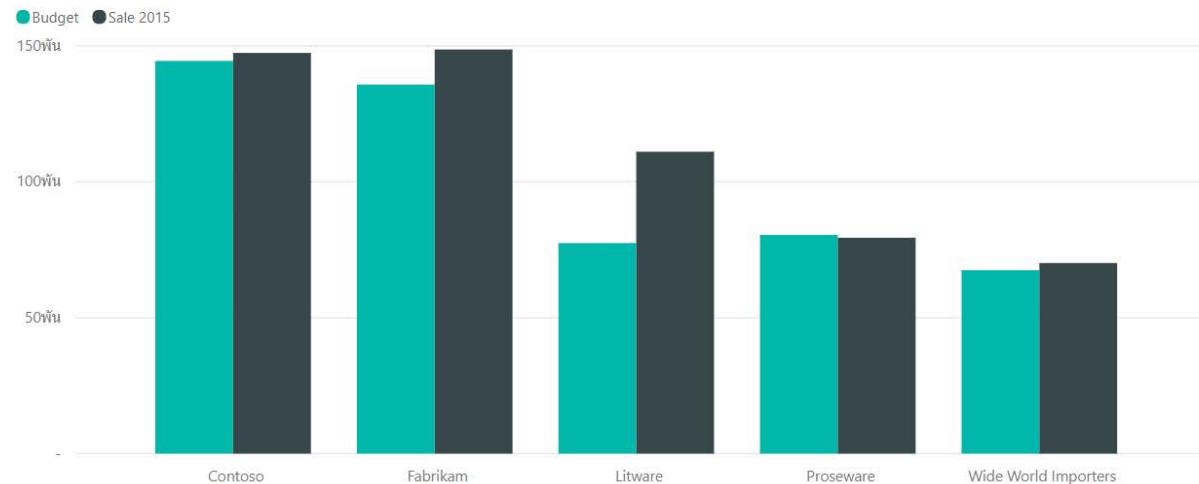
Copy Link and open in new browser tab to view report



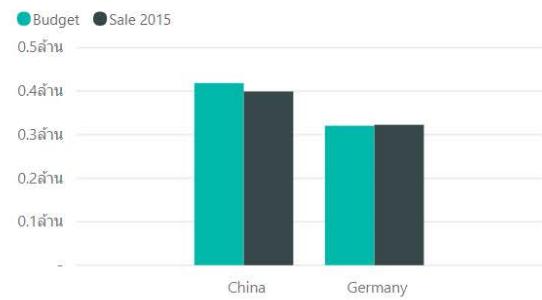
Microsoft Power BI

Anyone who has the URL can view your data

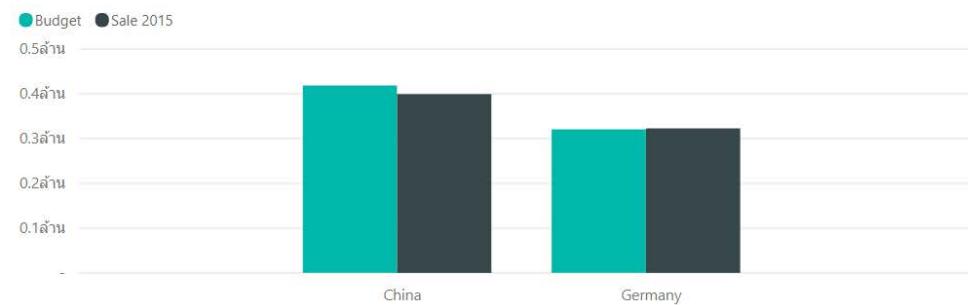
Budget และ Sale 2015 โดย Brand



Budget และ Sale 2015 โดย CountryRegion



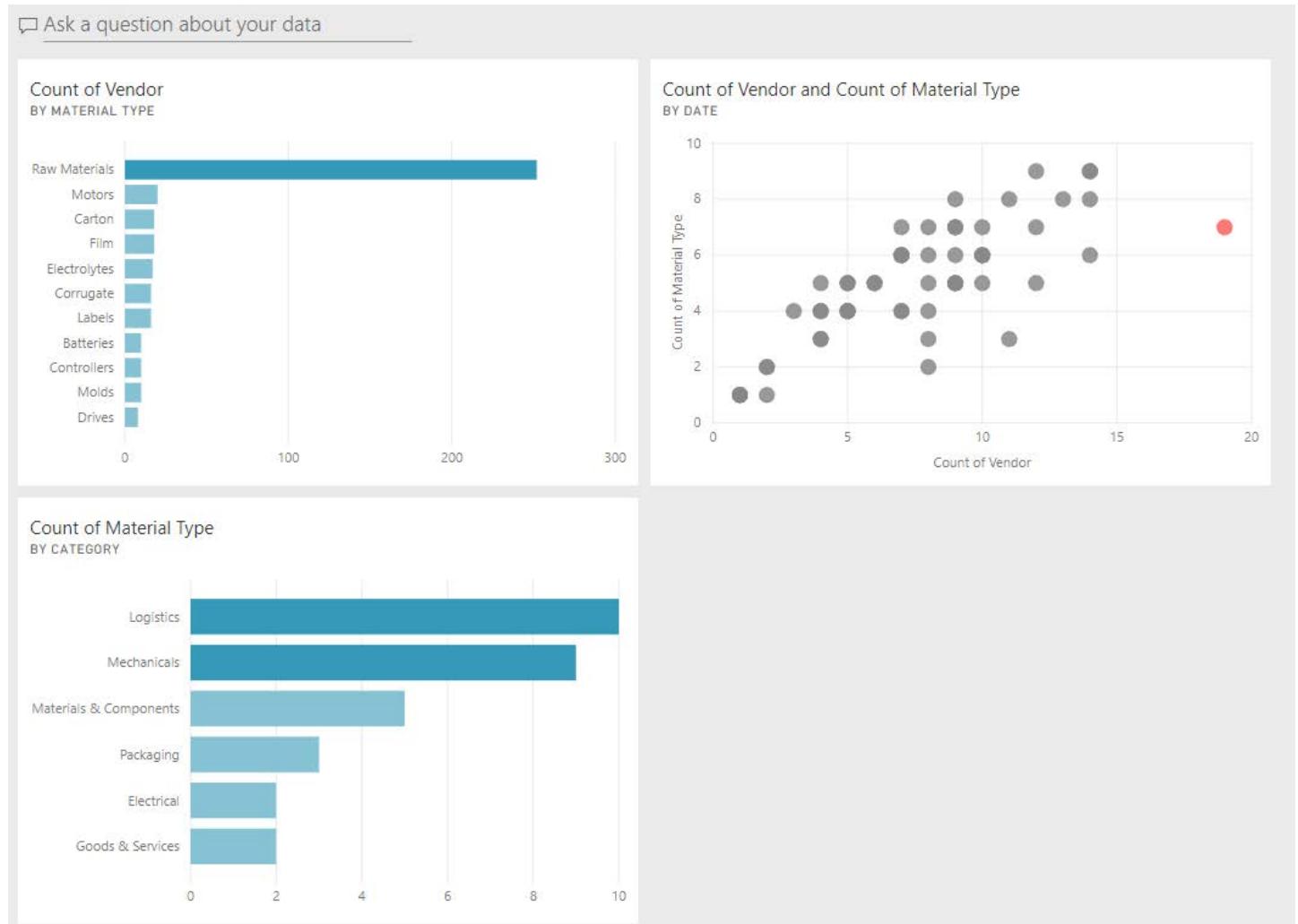
Sale and Budget by CountryRegion filtered by Brand



Microsoft Power BI

Exercise

- Create this report from Supplier Quality Analysis Sim.xlsx
- Pin to dashboard
- Publish



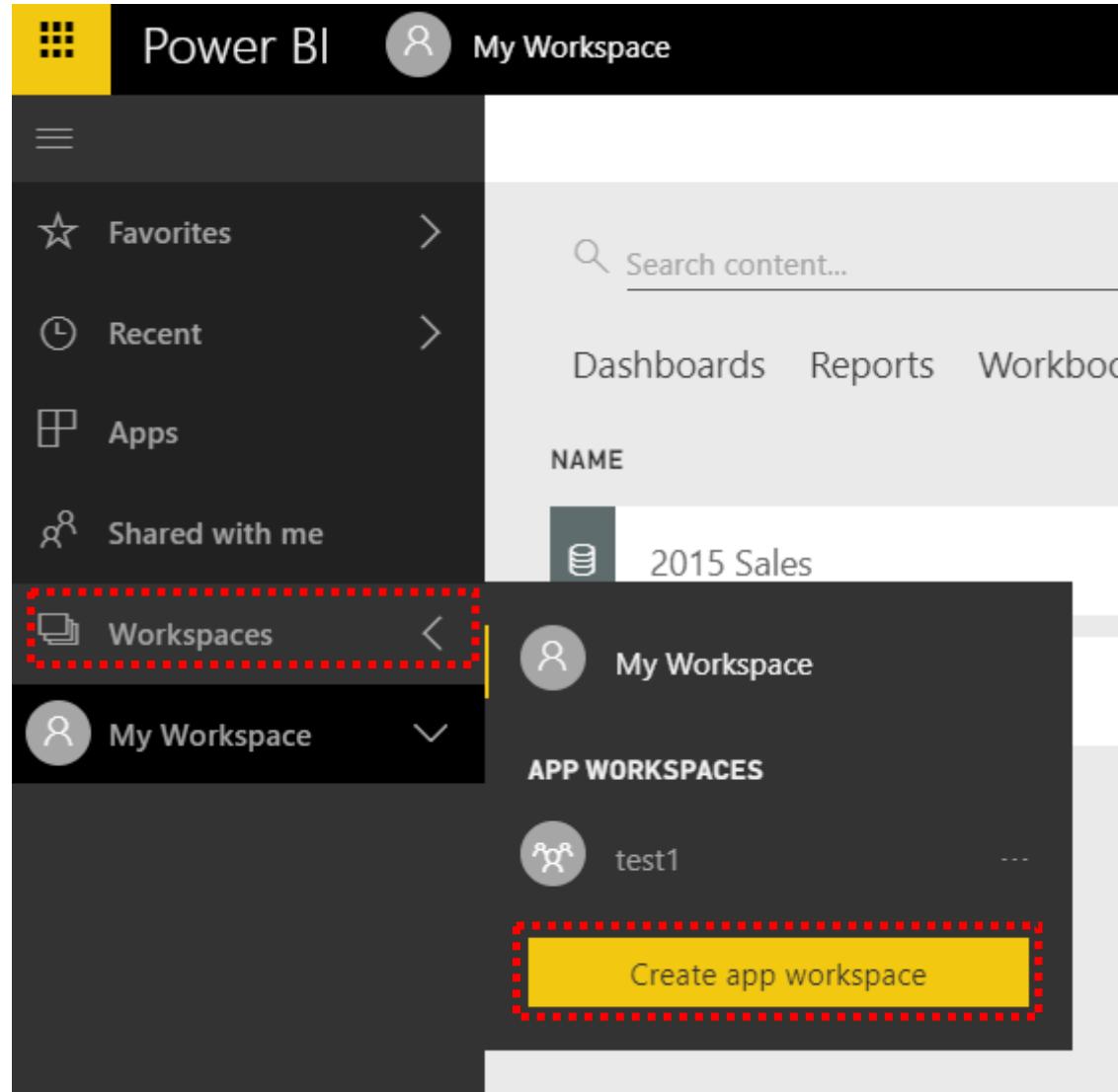
Creating a group workspace

Microsoft Power BI

Creating a group workspace in Power BI

- He will need to repeat the same share operation for every dashboard he creates
- When new person join. He will need to send the invitation for all of the dashboards he shares with the group.
- Good news. He can create a group of users with whom he can automatically share all of his dashboards
- And also provide editing rights to certain users within that group.
- By creating groups of users in Power BI, you increase the level of collaboration among them.
- You must have a Power BI Pro license to create group workspace

Microsoft Power BI



Microsoft Power BI

Create an app workspace

Name your workspace

Workspace ID

Available

Public - Anyone can see what's inside

Members can edit Power BI content

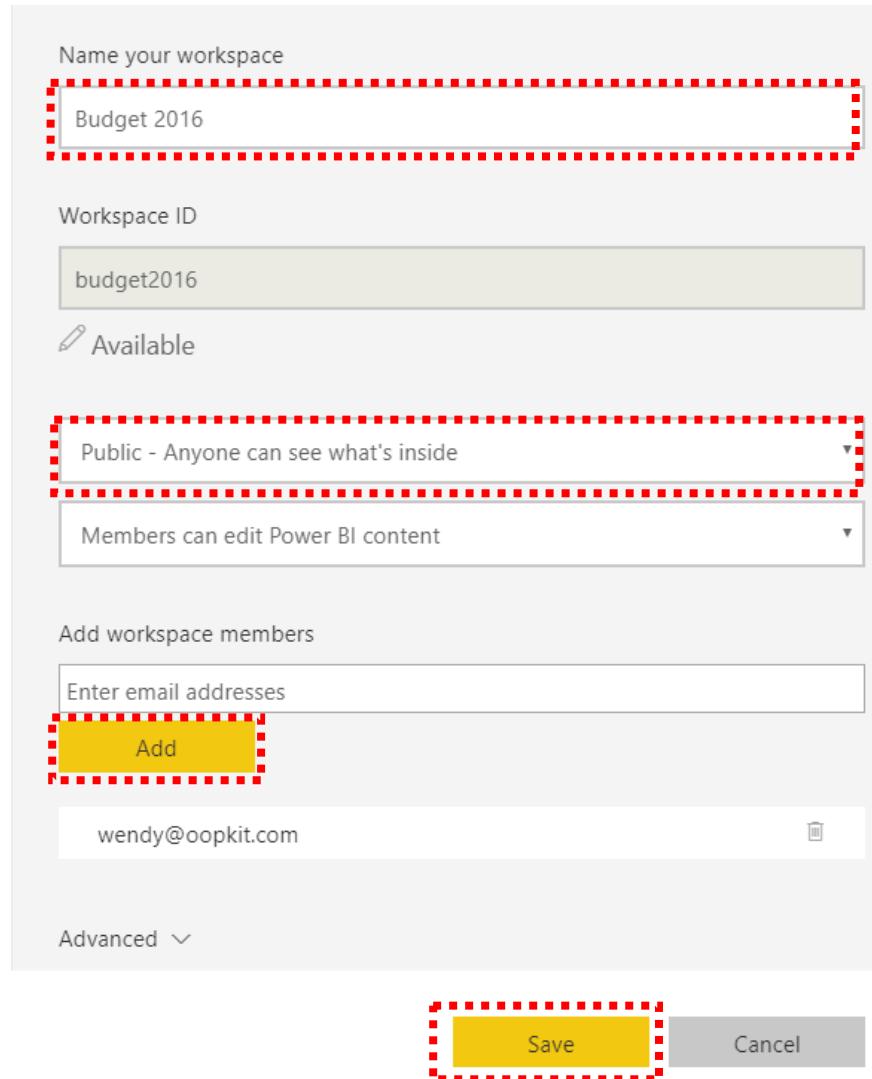
Add workspace members

Enter email addresses

Advanced ▾

Save  Cancel



Microsoft Power BI

- We must create group before import and create report
- Import data to this group
- Create Report for this group

The screenshot shows the 'Welcome to the Budget 2016 workspace' page. At the top, it says 'Welcome to the Budget 2016 workspace'. Below that, a message reads: 'You're on your way to exploring your data and monitoring what matters with all your group members. Let's start by getting some data.' A link below the message says 'Need more guidance? Try this tutorial or watch a video'. The page is divided into two main sections: 'Microsoft AppSource' on the left and 'Import or Connect to Data' on the right. Under 'Microsoft AppSource', there are four cards: 'My organization', 'Services', 'Files', and 'Databases'. Each card has a 'Get' button with an arrow icon. At the bottom of this section are links for 'Samples', 'Solution Templates', and 'Partner Showcase'. On the right, under 'Import or Connect to Data', there is a single 'Skip for now' link.

Welcome to the Budget 2016 workspace

You're on your way to exploring your data and monitoring what matters with all your group members. Let's start by getting some data.

Need more guidance? [Try this tutorial](#) or [watch a video](#)

Microsoft AppSource

Import or Connect to Data

My organization
Browse content packs that other people in your organization have published.

Services
Choose content packs from online services that you use.

Files
Bring in your reports, workbooks, or data from Excel, Power BI Desktop or CSV files.

Databases
Connect to live data in Azure SQL Database and more.

[Get ↗](#) [Get ↗](#) [Get ↗](#) [Get ↗](#)

[Samples](#) [Solution Templates](#) [Partner Showcase](#)

[Skip for now](#)

Microsoft Power BI

Power BI Desktop

Microsoft Power BI

Download Power BI Desktop

<https://powerbi.microsoft.com/en-us/desktop/>

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Go from data to insight to action with Power BI Desktop

Create rich, interactive reports with visual analytics at your fingertips—for free.

DOWNLOAD FREE >

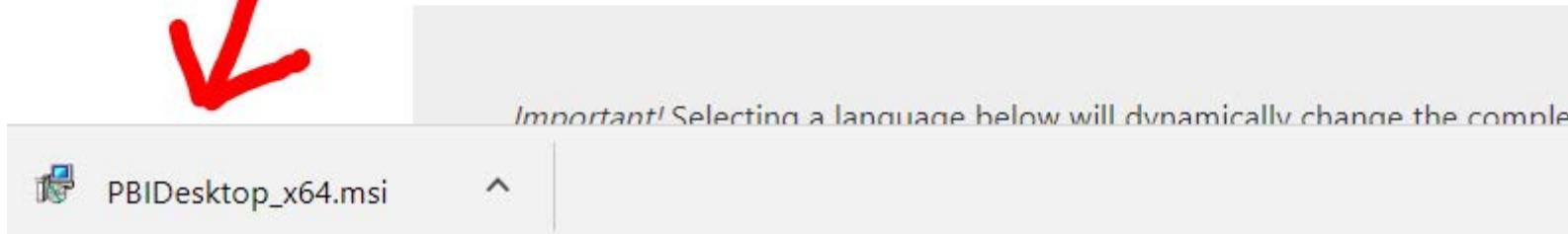
ADVANCED DOWNLOAD OPTIONS >

Microsoft Power BI

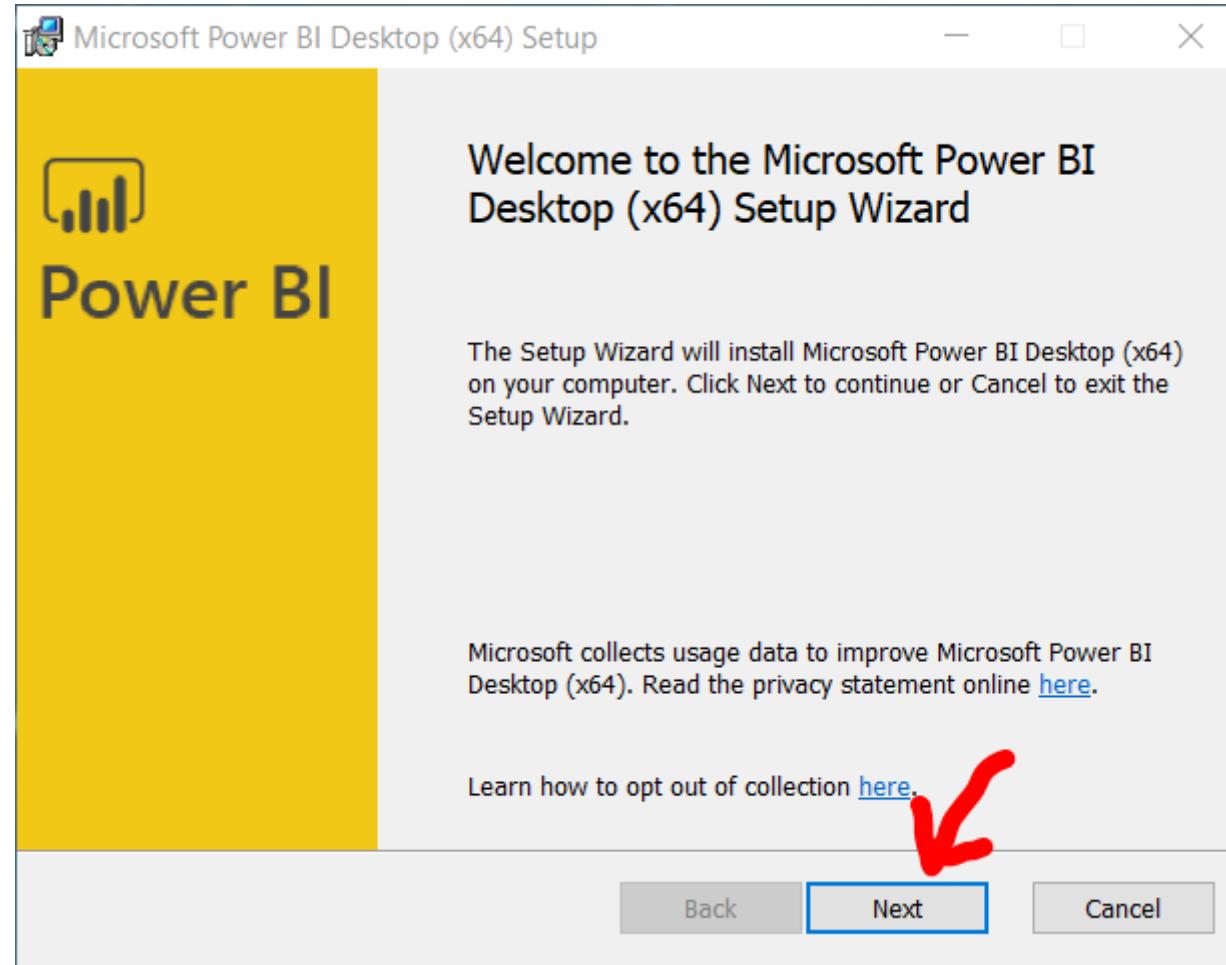
Click to install



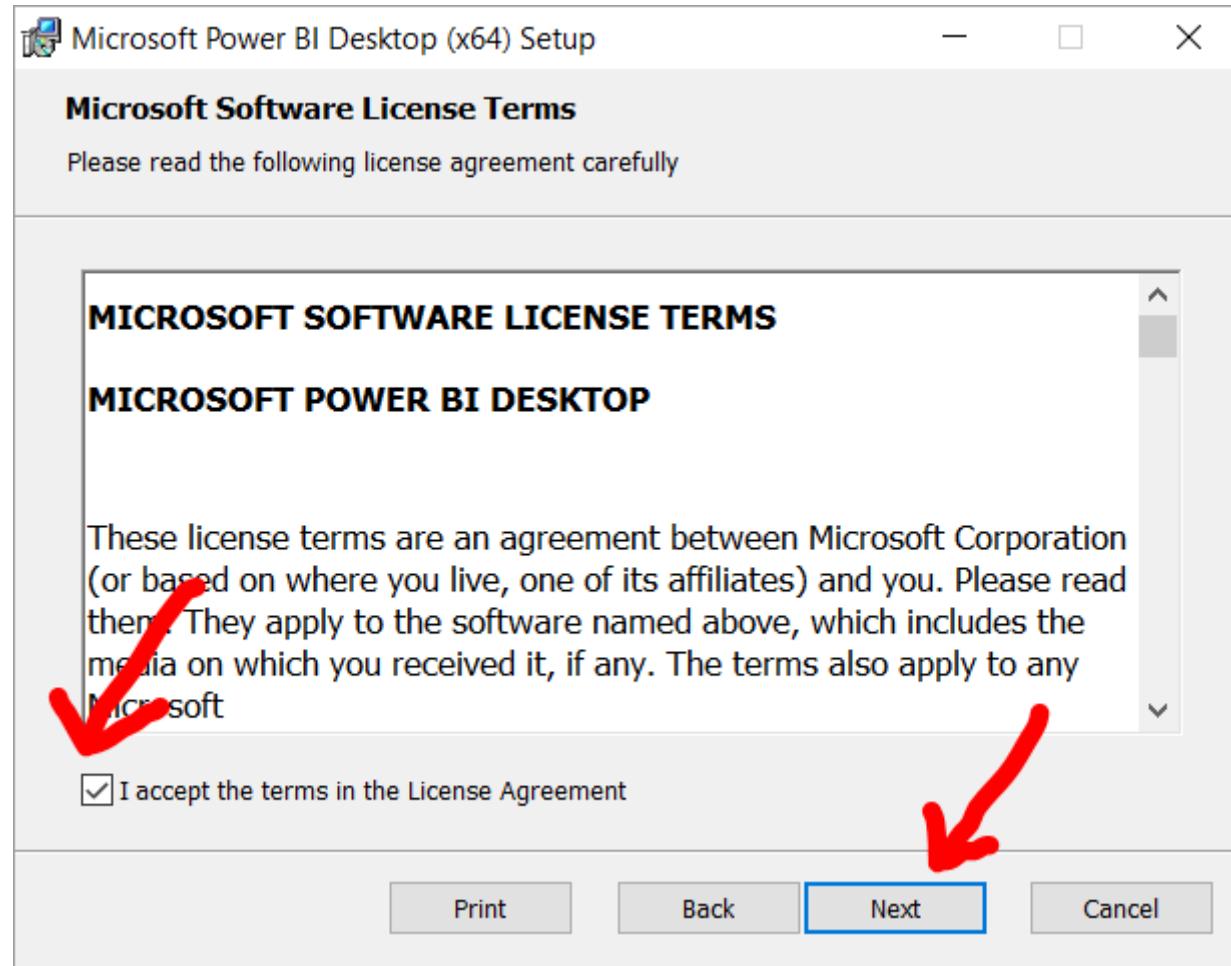
Microsoft Power BI Desktop



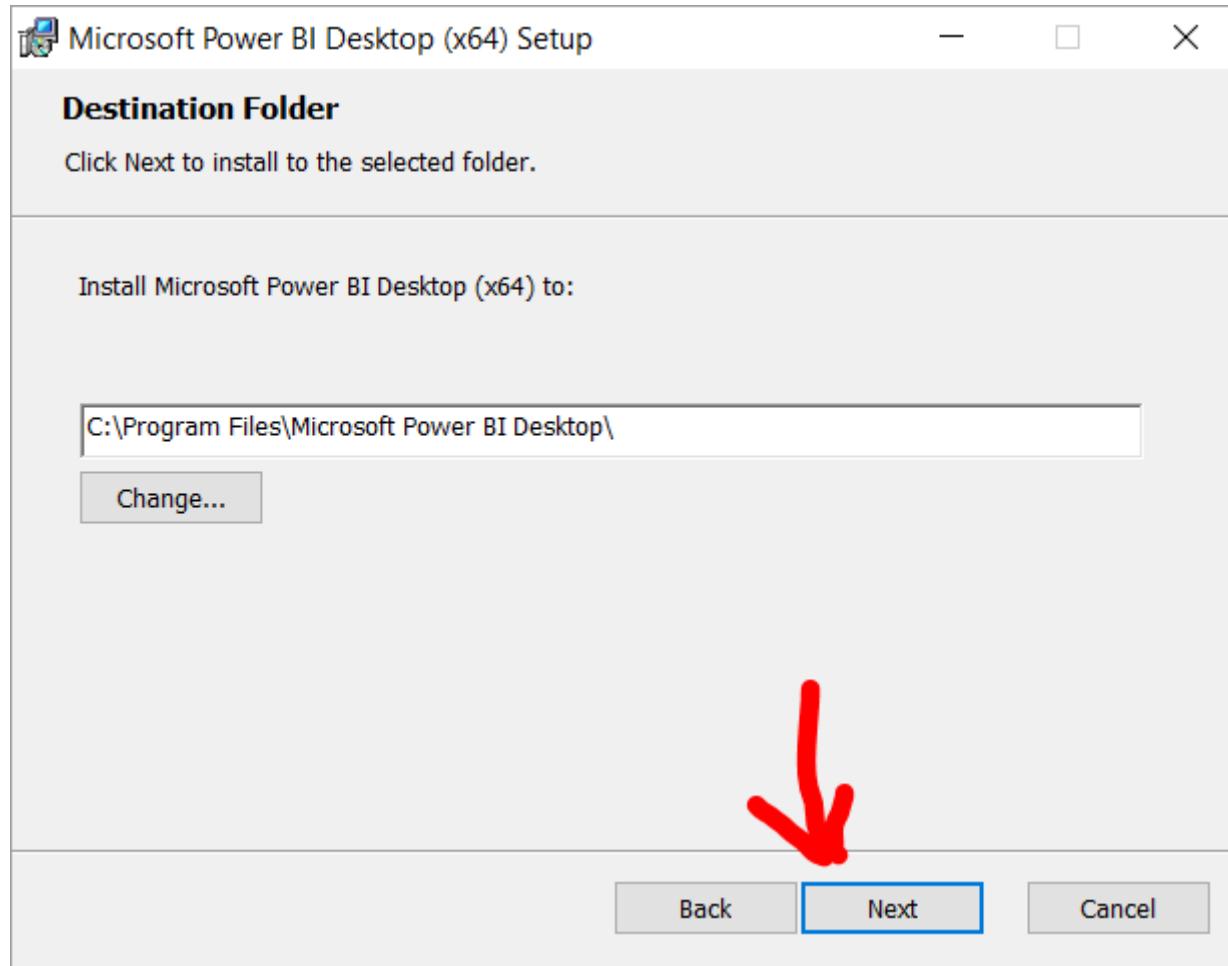
Microsoft Power BI



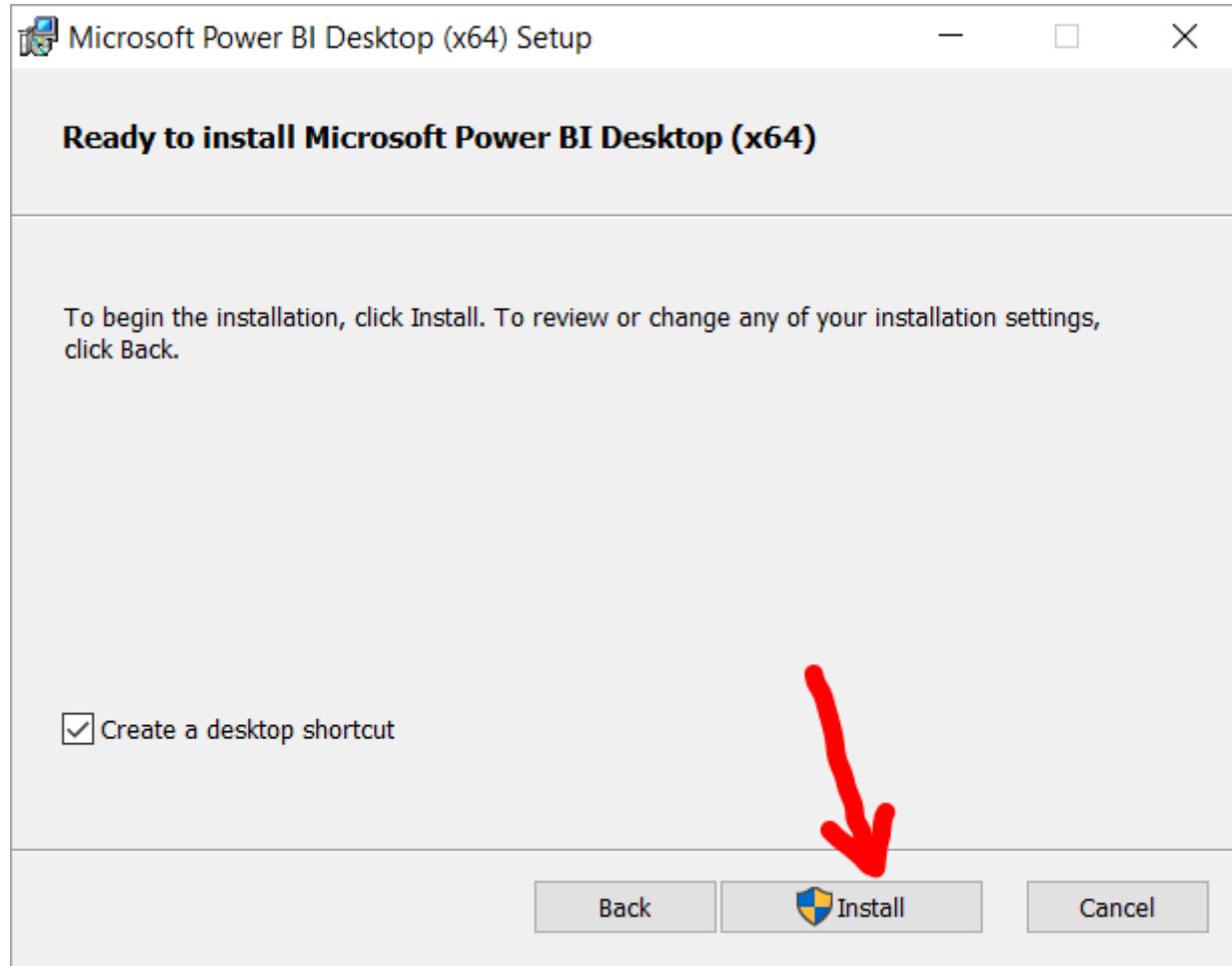
Microsoft Power BI



Microsoft Power BI



Microsoft Power BI



Microsoft Power BI



Microsoft Power BI

Already have a Power BI account? Sign in

Welcome to Power BI Desktop

Where can we send you the latest tips and tricks for Power BI?

First Name *

Last Name *

Email Address *

Enter your phone number *

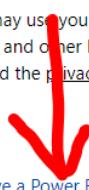
Country/region *

Company name *

Company size... *

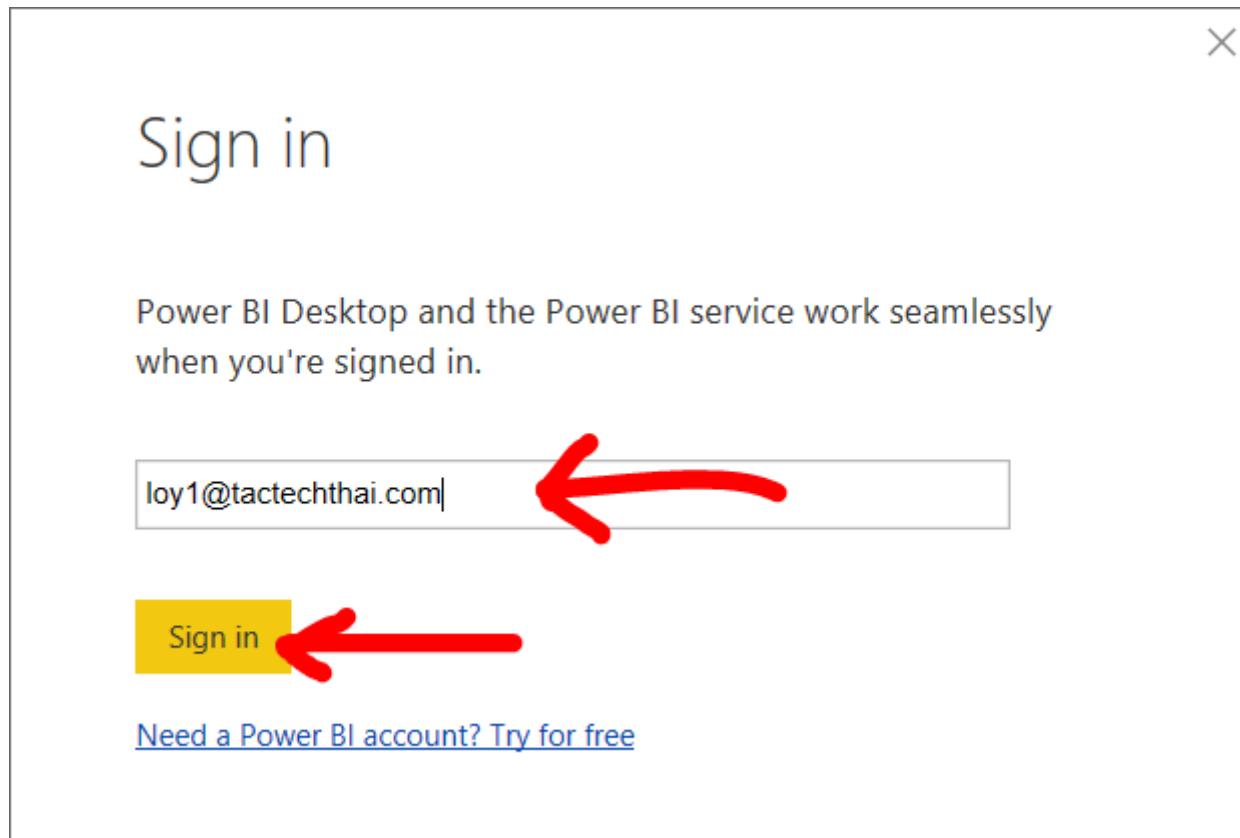
Job Title*

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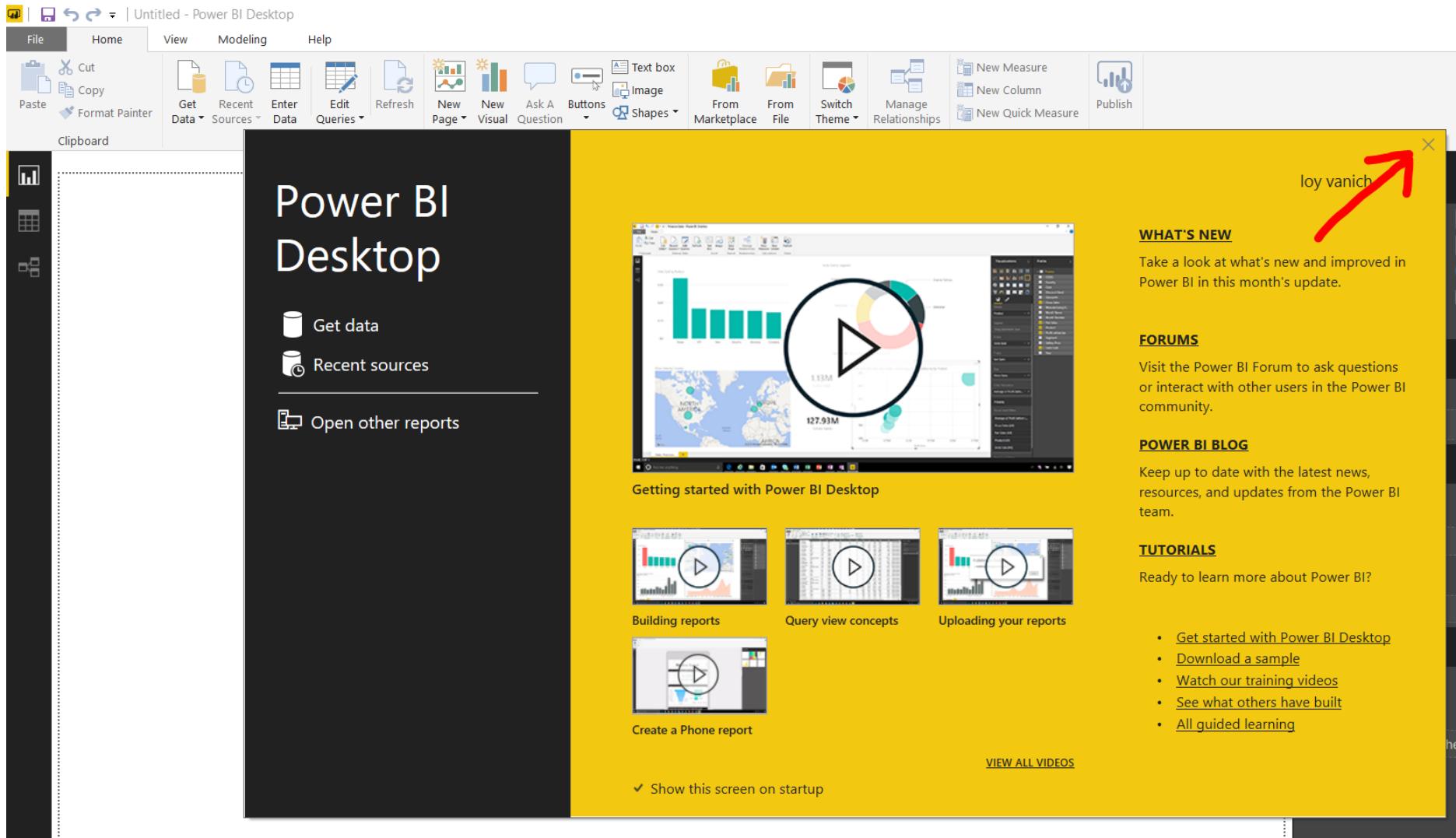
 Already have a Power BI account? Sign in

Done

Microsoft Power BI

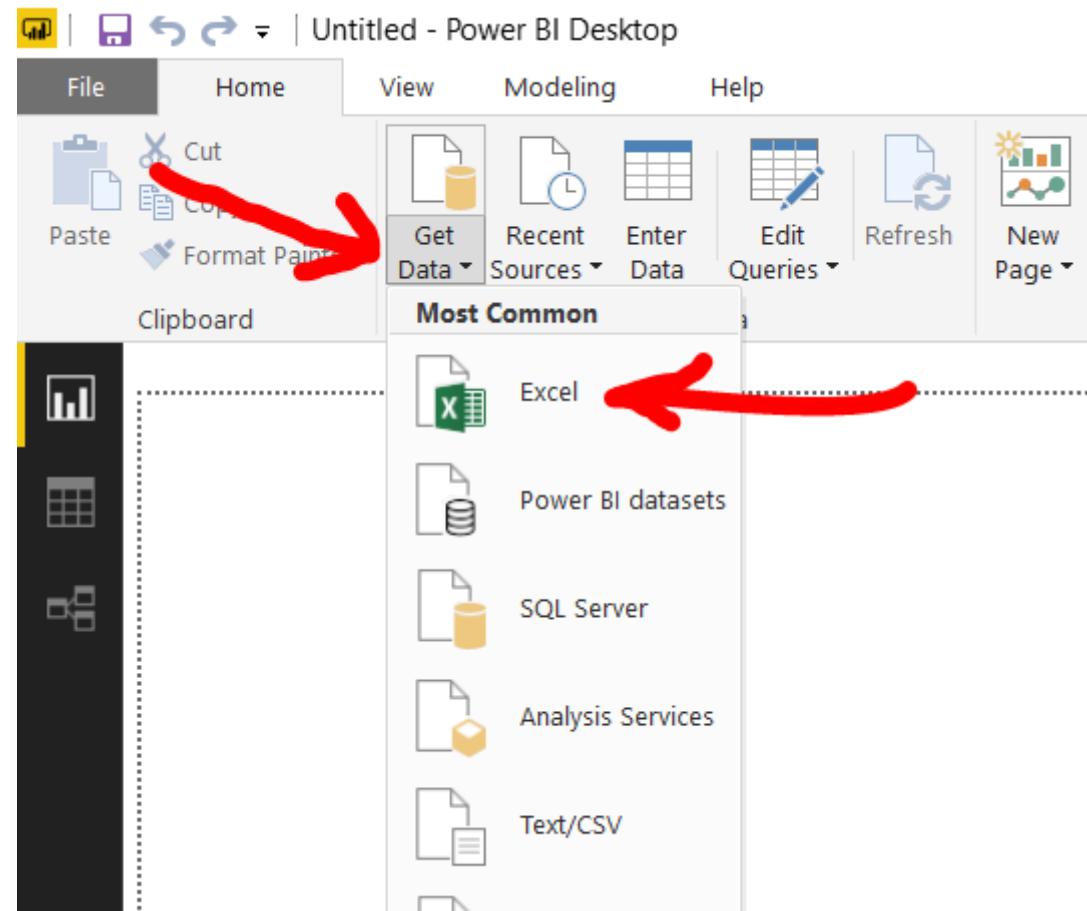


Microsoft Power BI

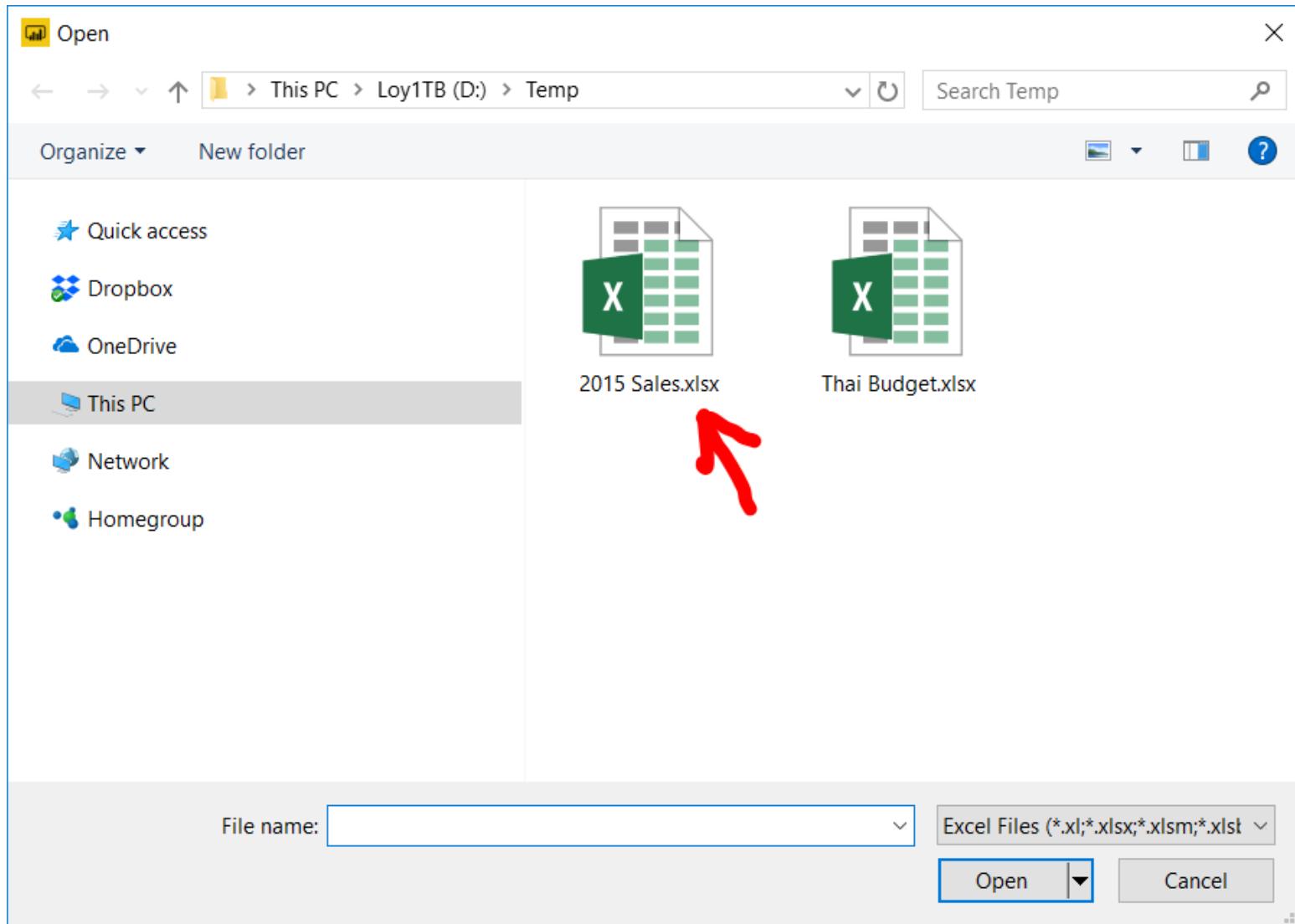


Microsoft Power BI

Get Data



Microsoft Power BI



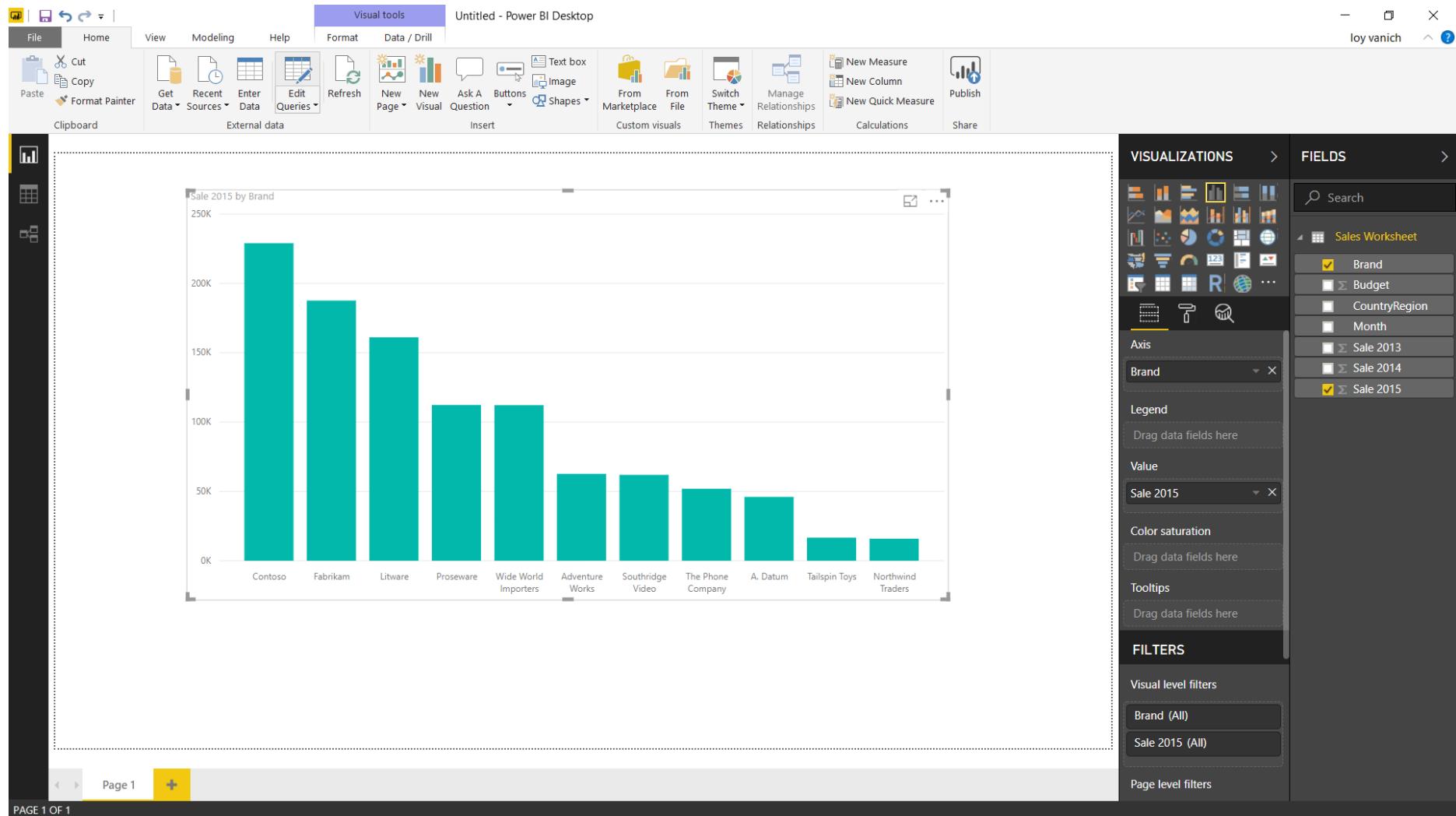
Microsoft Power BI

The screenshot shows the Microsoft Power BI interface. On the left, the 'Navigator' pane displays a file structure for '2015 Sales.xlsx [2]'. Under the 'Sales' folder, 'Sales Worksheet' is selected, indicated by a red arrow. On the right, the 'Sales Worksheet' pane shows a table with data from January to November. The table has columns: CountryRegion, Brand, Month, Sale 2013, and Sale 2014. A red arrow points to the 'Load' button at the bottom of the table preview. The table data is as follows:

CountryRegion	Brand	Month	Sale 2013	Sale 2014
China	A. Datum	January	3234	
China	A. Datum	February	6270	
China	A. Datum	March	4352	
China	A. Datum	April	3814	
China	A. Datum	May	6234	
China	A. Datum	June	5571	
China	A. Datum	July	7424	
China	A. Datum	August	null	
China	A. Datum	September	1254	
China	A. Datum	October	1881	
China	A. Datum	November	null	
China	A. Datum	December	6135	
China	Adventure Works	January	12418.26	
China	Adventure Works	February	31770.26	
China	Adventure Works	March	3689.85	
China	Adventure Works	April	499.9	
China	Adventure Works	May	null	
China	Adventure Works	June	15790	
China	Adventure Works	July	9938.12	
China	Adventure Works	August	14035.71	
China	Adventure Works	September	16638.85	
China	Adventure Works	October	11864.76	
China	Adventure Works	November	2819.82	

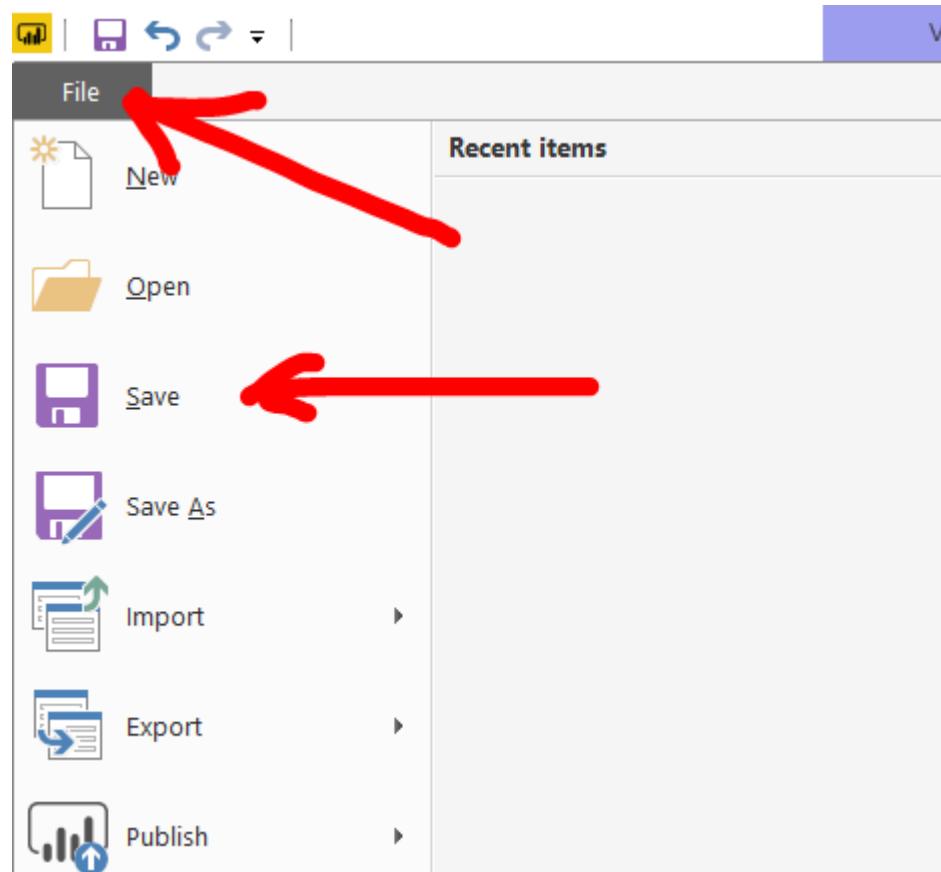
Microsoft Power BI

Sale 2015 by Brand



Microsoft Power BI

Save Report



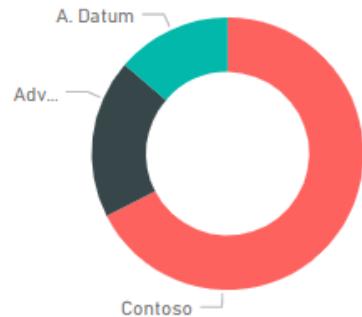
Microsoft Power BI

Exercise

Create this report from Thai Budget.xlsx in Desktop Power BI and Save to C:\temp\ThaiReport2.pbix

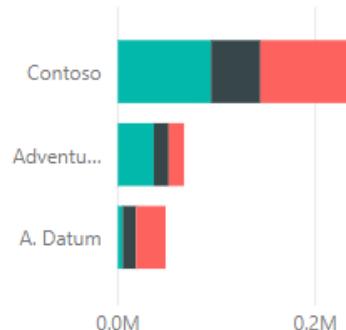
Brand	Budget	Prvincie
A. Datum	5000	Bangkok
A. Datum	13500	Chonburi
A. Datum	30000	Nonthaburi
Adventure Works	36500	Bangkok
Adventure Works	15000	Chonburi
Adventure Works	15600	Nonthaburi
Contoso	94500	Bangkok
Contoso	50000	Chonburi
Contoso	95000	Nonthaburi
Total	355100	

Budget by Brand

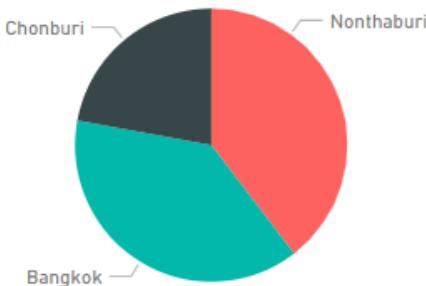


Budget by Brand and Prvincie

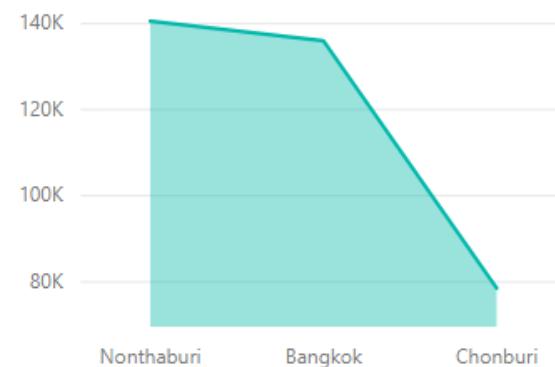
Prvincie ● Bangkok ● Chonburi ● Nonthaburi



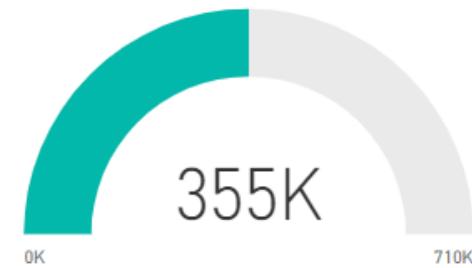
Budget by Prvincie



Budget by Prvincie



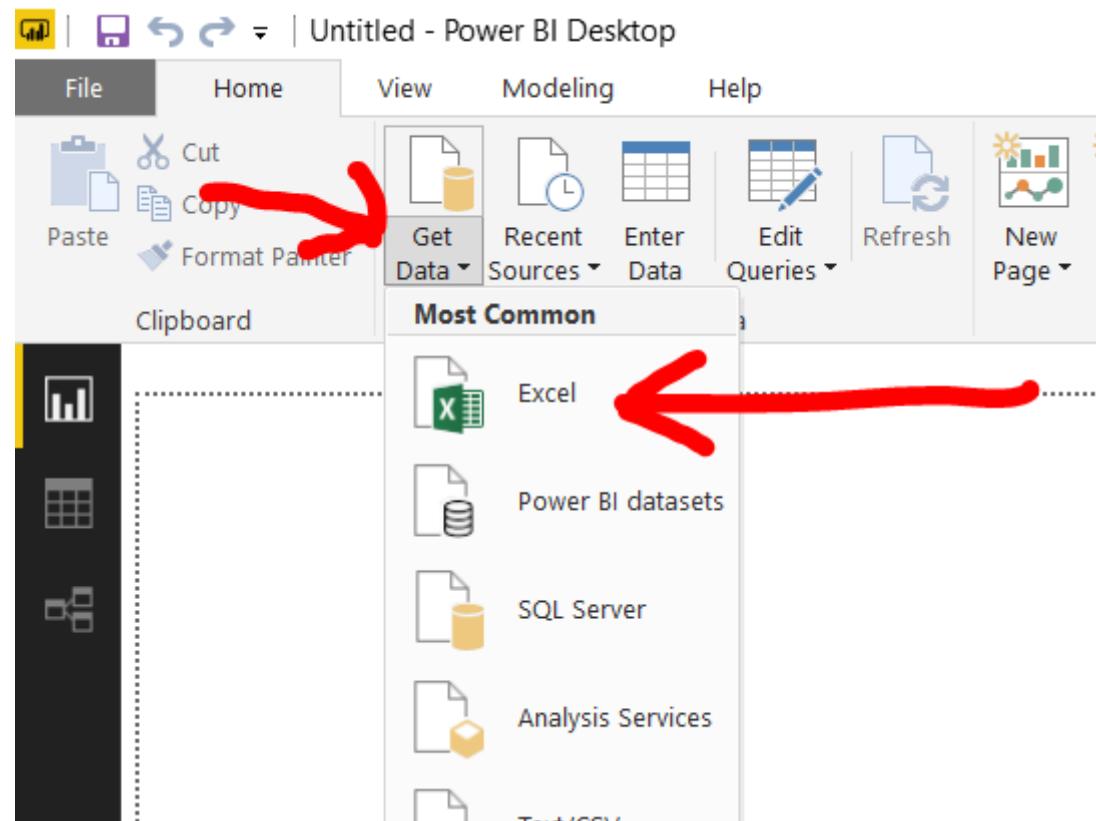
Budget



Map

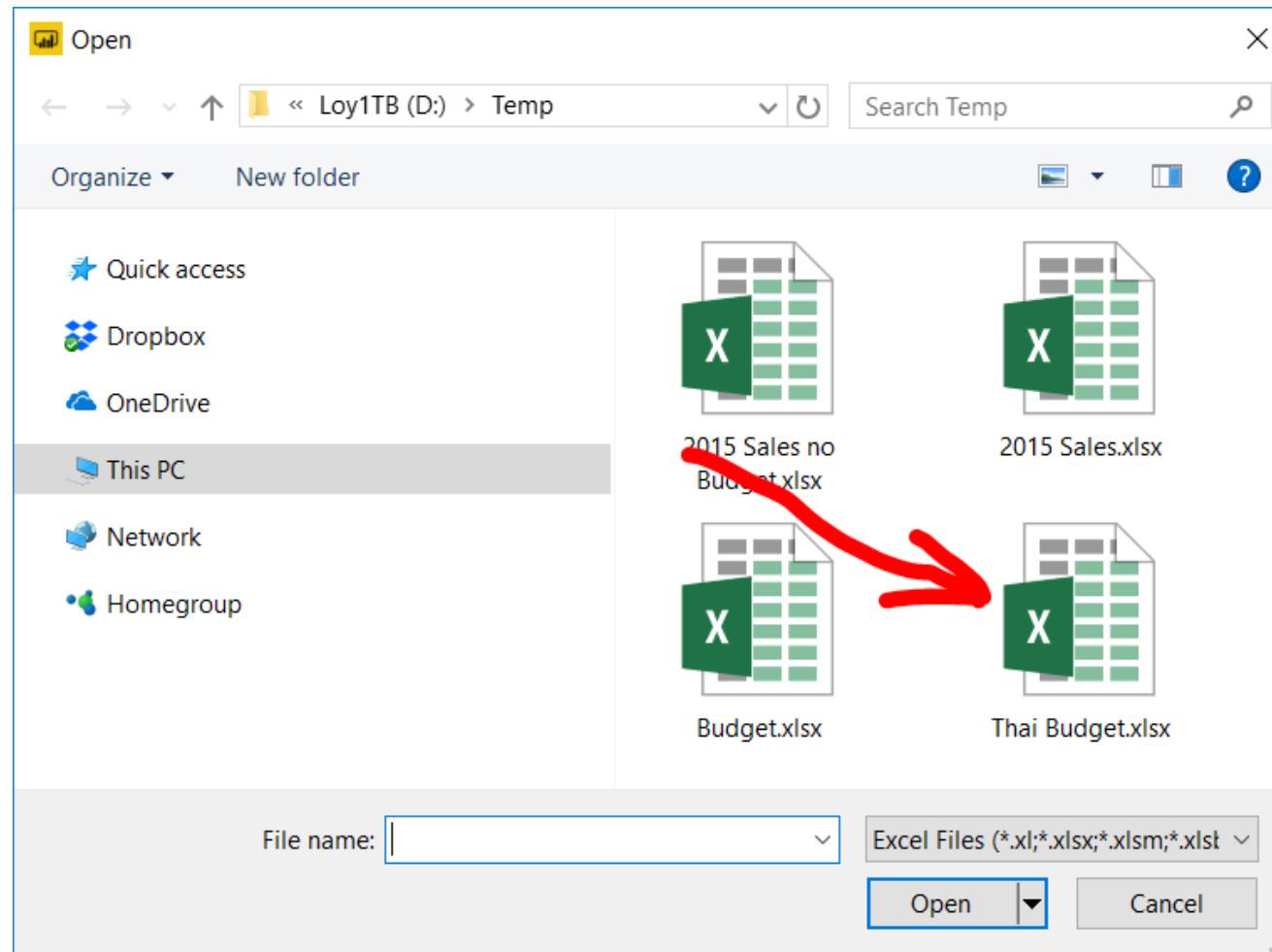
Microsoft Power BI

Get Data / Excel



Microsoft Power BI

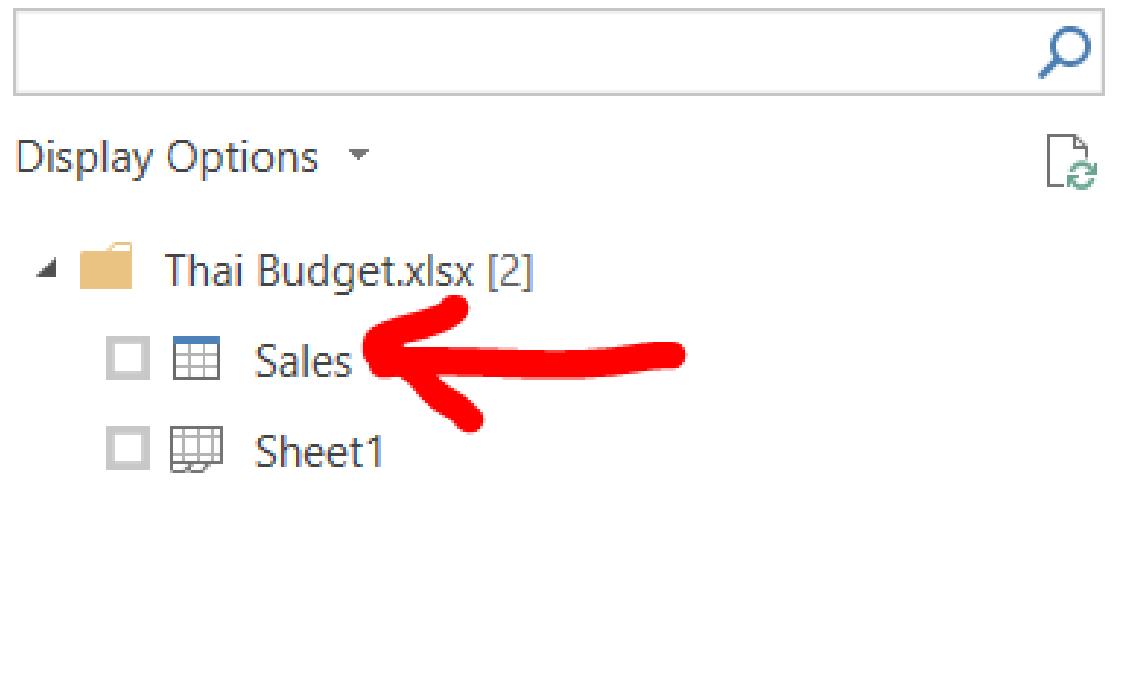
Thai Budget.xlsx



Microsoft Power BI

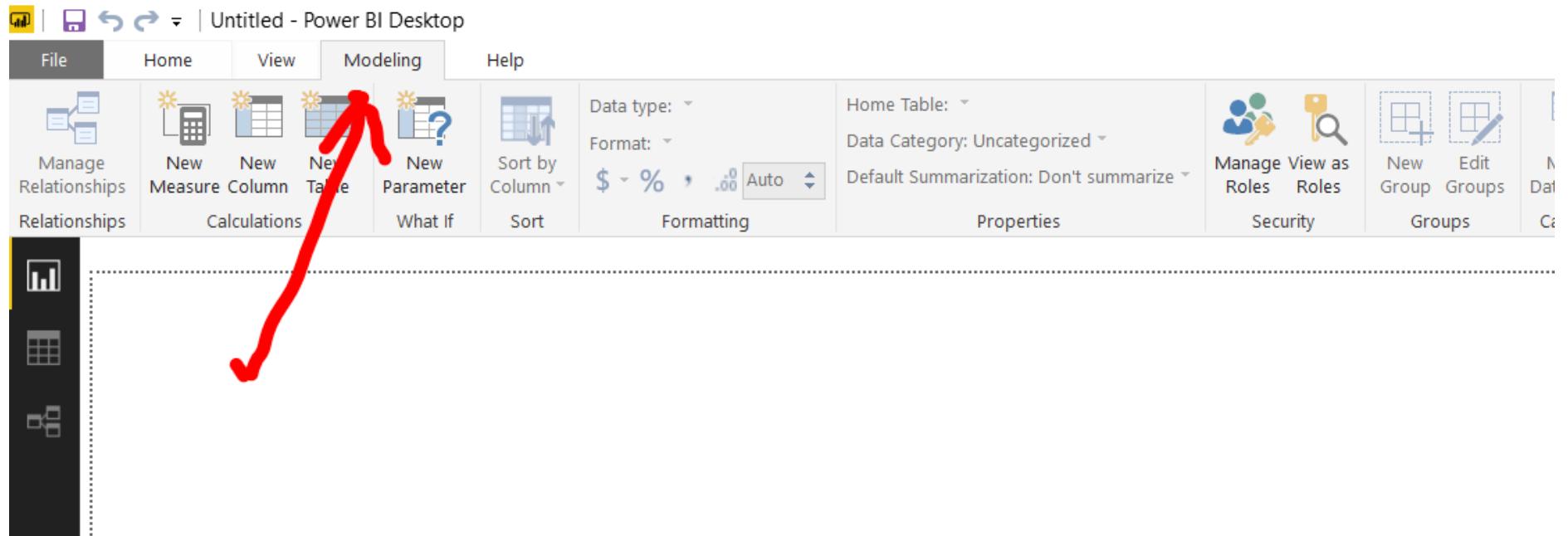
Sales / Load

Navigator



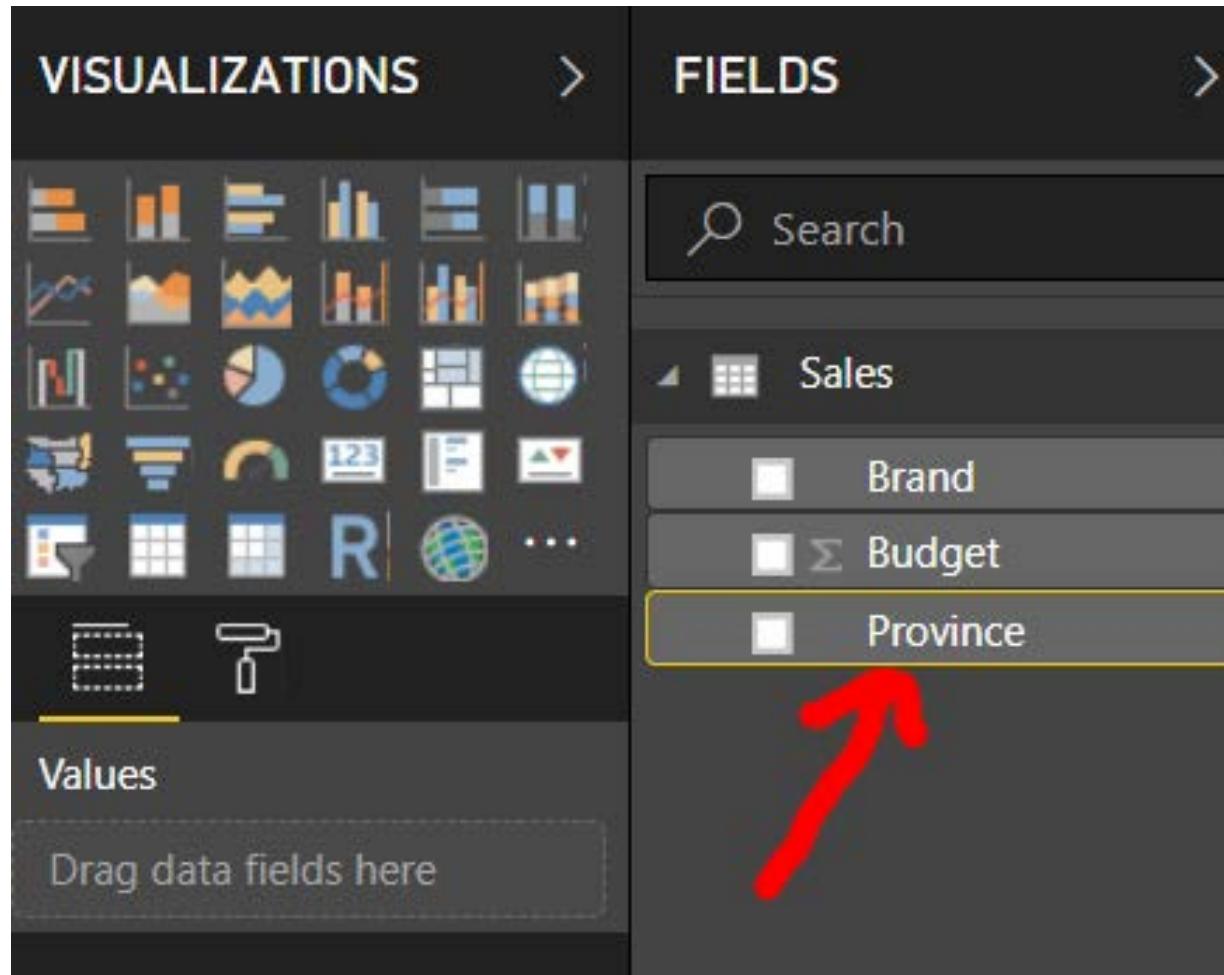
Microsoft Power BI

Click tab Modeling



Microsoft Power BI

Click Province



Microsoft Power BI

Data Category / City

The screenshot shows the Microsoft Power BI Desktop interface. The ribbon is visible at the top with tabs: File, Home, View, Modeling (selected), and Help. The left sidebar has icons for Relationships, Calculations, and Data. The main area is currently empty. On the right, there's a 'Data Category' dropdown menu open, listing various categories like Uncategorized, Address, City, Continent, Country/Region, County, Latitude, Longitude, Place, Postal Code, State or Province, Web URL, Image URL, and Barcode. The 'City' option is highlighted with a red arrow.

Untitled - Power BI Desktop

File Home View Modeling Help

Manage Relationships New Measure Calculations New Column New Table New Parameter What If Sort Formatting

Data type: Text Format: Text \$ % , .

Home Table: Data Category: Uncategorized

Uncategorized

Address

City

Continent

Country/Region

County

Latitude

Longitude

Place

Postal Code

State or Province

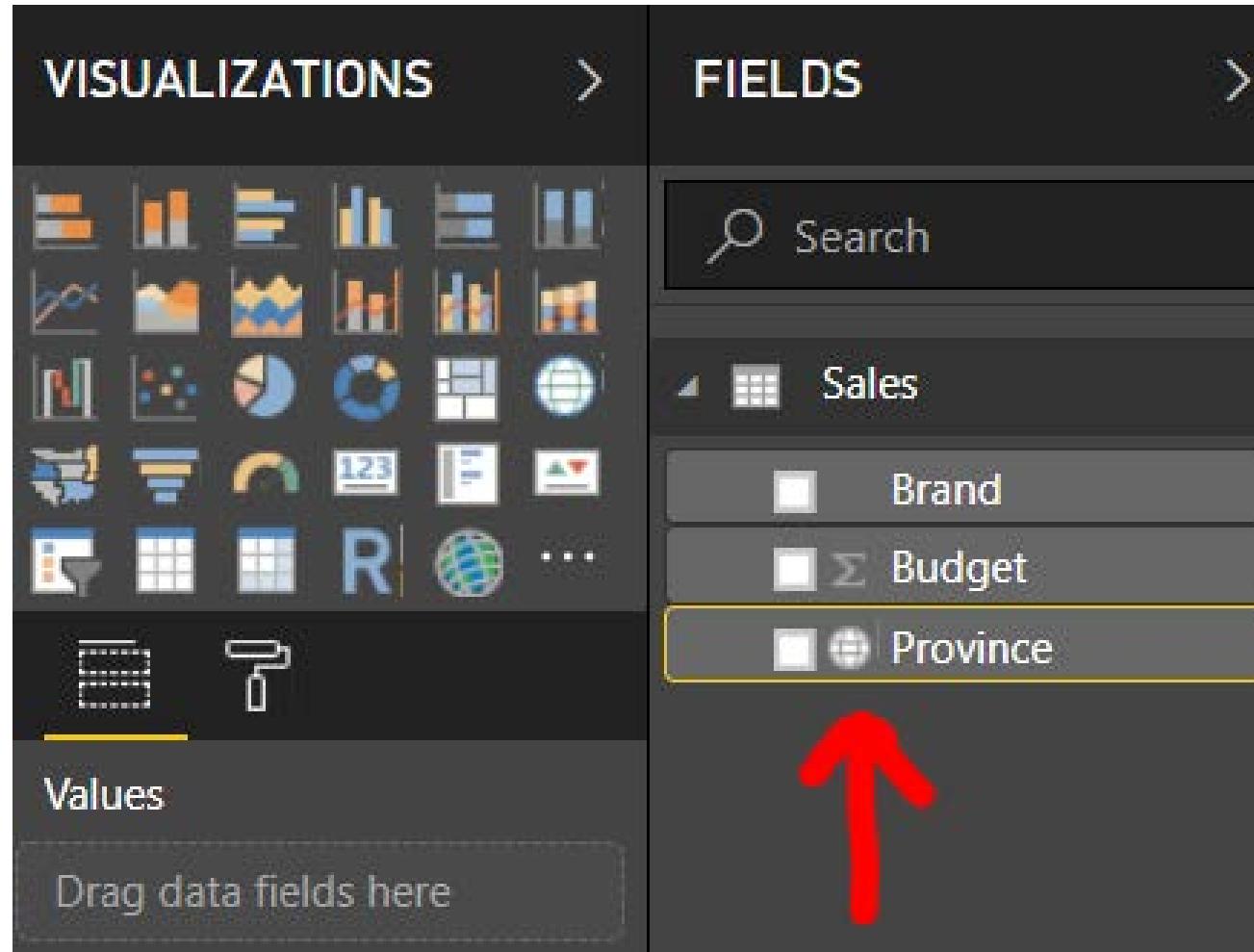
Web URL

Image URL

Barcode

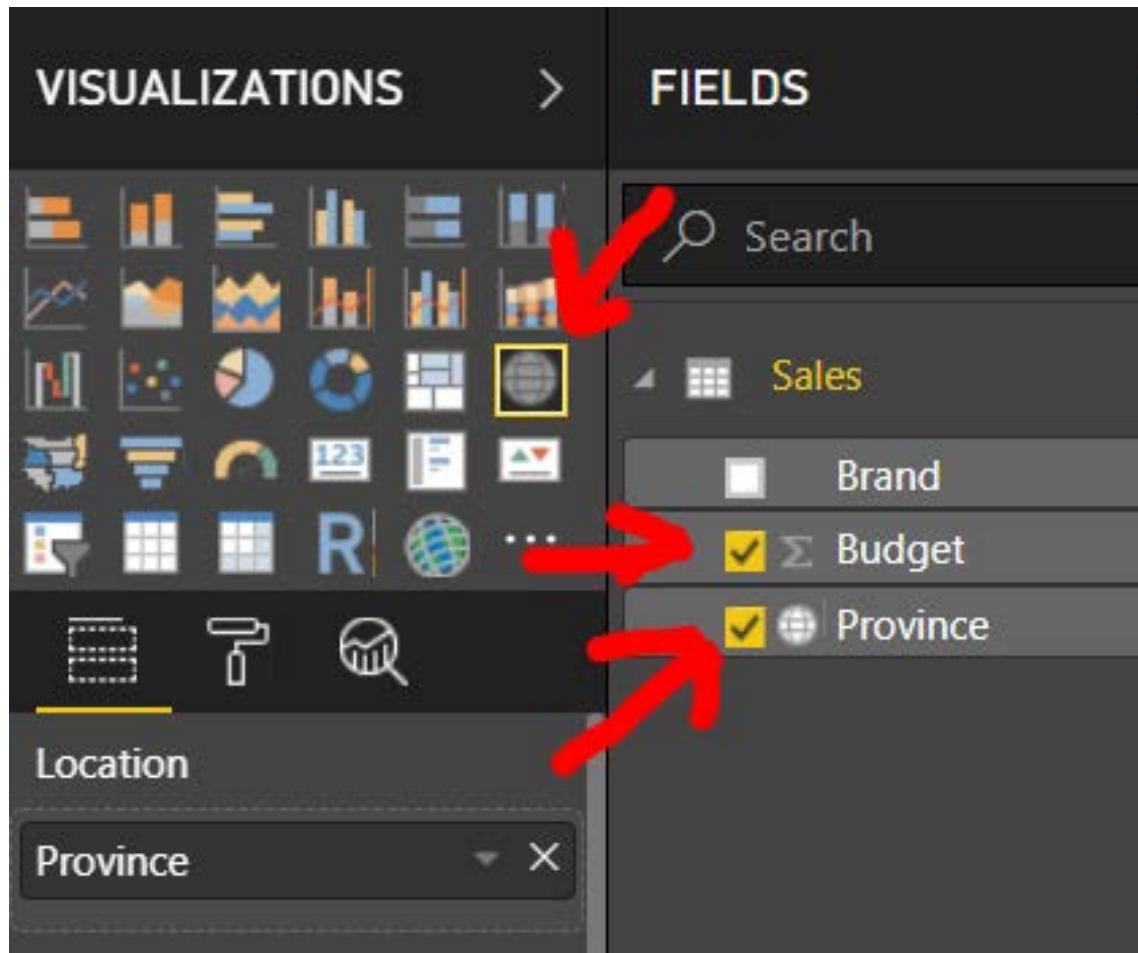
Microsoft Power BI

Notice Globe icon



Microsoft Power BI

Province / Budget / Map



Microsoft Power BI

Adjust Map's size

The screenshot shows the Microsoft Power BI Desktop interface. The main area displays a map of Bangkok, Thailand, with various districts labeled such as Nonthaburi, Lat Phrao District, Bang Kapi District, Phra Khanong District, Phra Pradaeng, and Samut Prakan. Overlaid on the map are several green circles of varying sizes, representing data points. The title of the visualization is "Budget by Province". The top ribbon menu includes File, Home, View, Modeling, Help, Format, and Data / Drill. The left sidebar contains icons for Manage Relationships, New Measure Column, New Table, New Parameter, What If, Sort by Column, Sort, and Formatting. The right sidebar features sections for Visualizations and Fields. Under Visualizations, there are icons for different chart types like bar charts, line graphs, and pie charts. Under Fields, the "Sales" table is selected, showing columns for Brand (checkbox), Budget (checkbox, checked), and Province (checkbox, checked). The Fields section also includes dropdowns for Location (Province), Legend, Latitude, Longitude, Size (set to Budget), Color saturation, and Tooltips.

Microsoft Power BI

Add Filled Map

The screenshot shows the Microsoft Power BI interface. On the left is a map visualization titled "Budget by Province". The map displays the Bangkok area and surrounding provinces (Pathum Thani, Nonthaburi, Samut Prakan, Samut Sakhon) with colored regions representing different budget levels. A red arrow points from the map to the "Visualizations" pane on the right.

Visualizations

- Map icon (highlighted with a red box)
- Other chart and visualization icons

FIELDS

Search:

Sales

- Brand
- Budget
- Province

Location

Province: X

Legend

Drag data fields here

Latitude

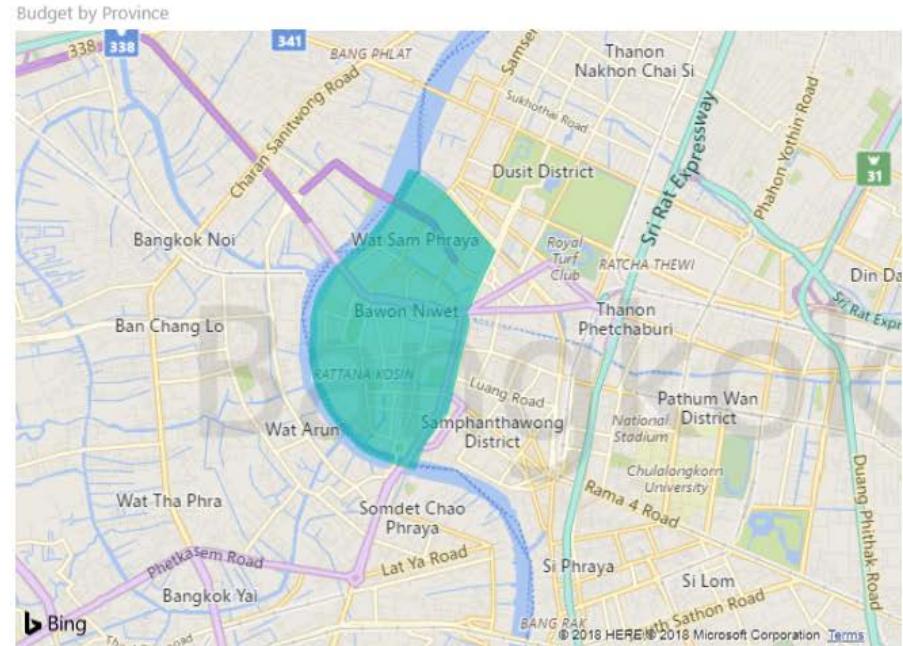
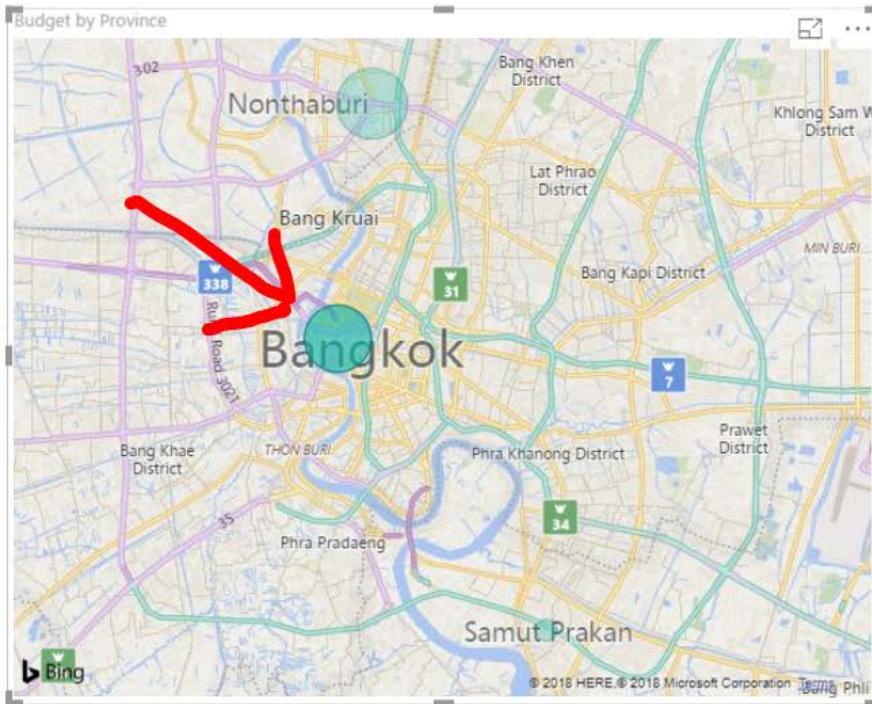
Drag data fields here

Longitude

Drag data fields here

Microsoft Power BI

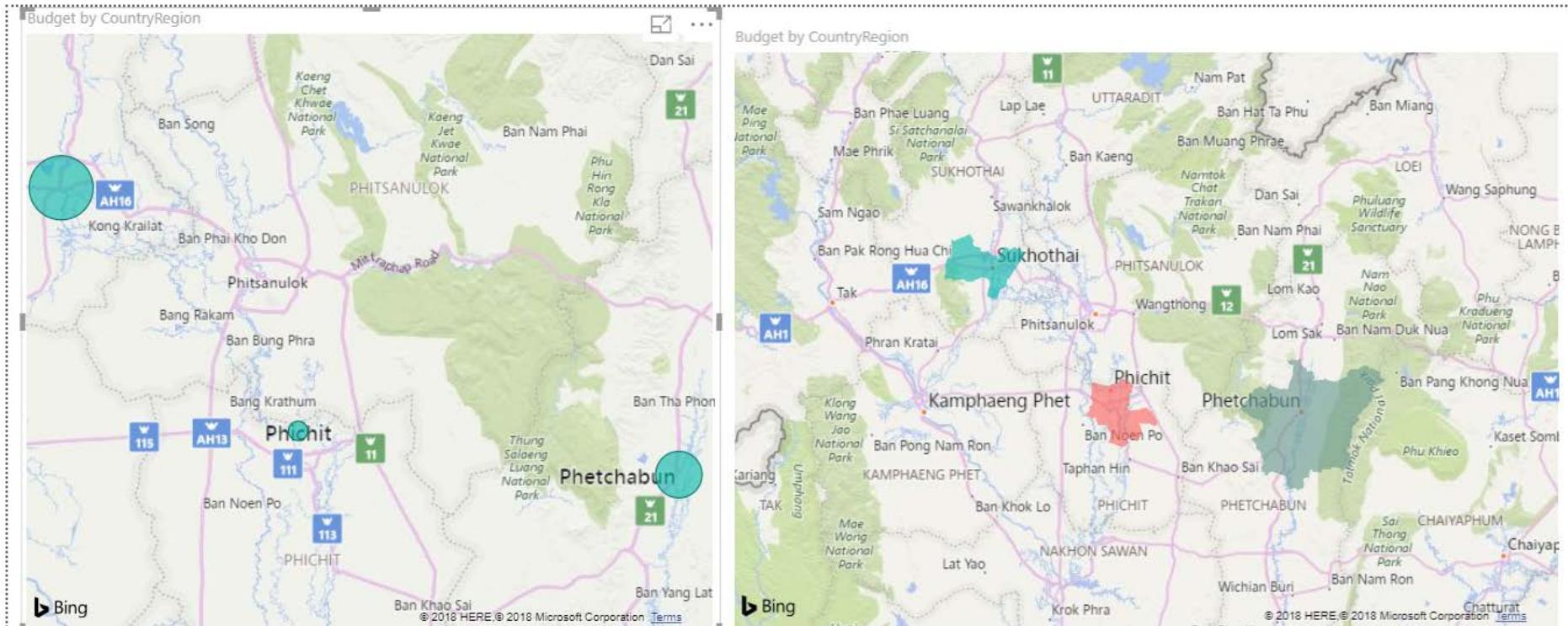
Click each province to see interaction



Microsoft Power BI

Exercise

Use North Budget.xlsx to create map as shown below



Query Editor Introduction

Microsoft Power BI

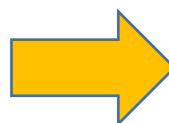
Join two data source

Budget

	CountryRegion	Brand	Budget
1	China	A. Datum	5000
2	China	Adventure Works	36500
3	China	Contoso	94500
4	China	Fabrikam	90800
5	China	Litware	65000
6	China	Northwind Traders	12000
7	China	Proseware	20000
8	China	Southridge Video	22500
9	China	Tailspin Toys	8000
10	China	The Phone Company	30000
11	China	Wide World Importers	45000
12	Germany	A. Datum	13500

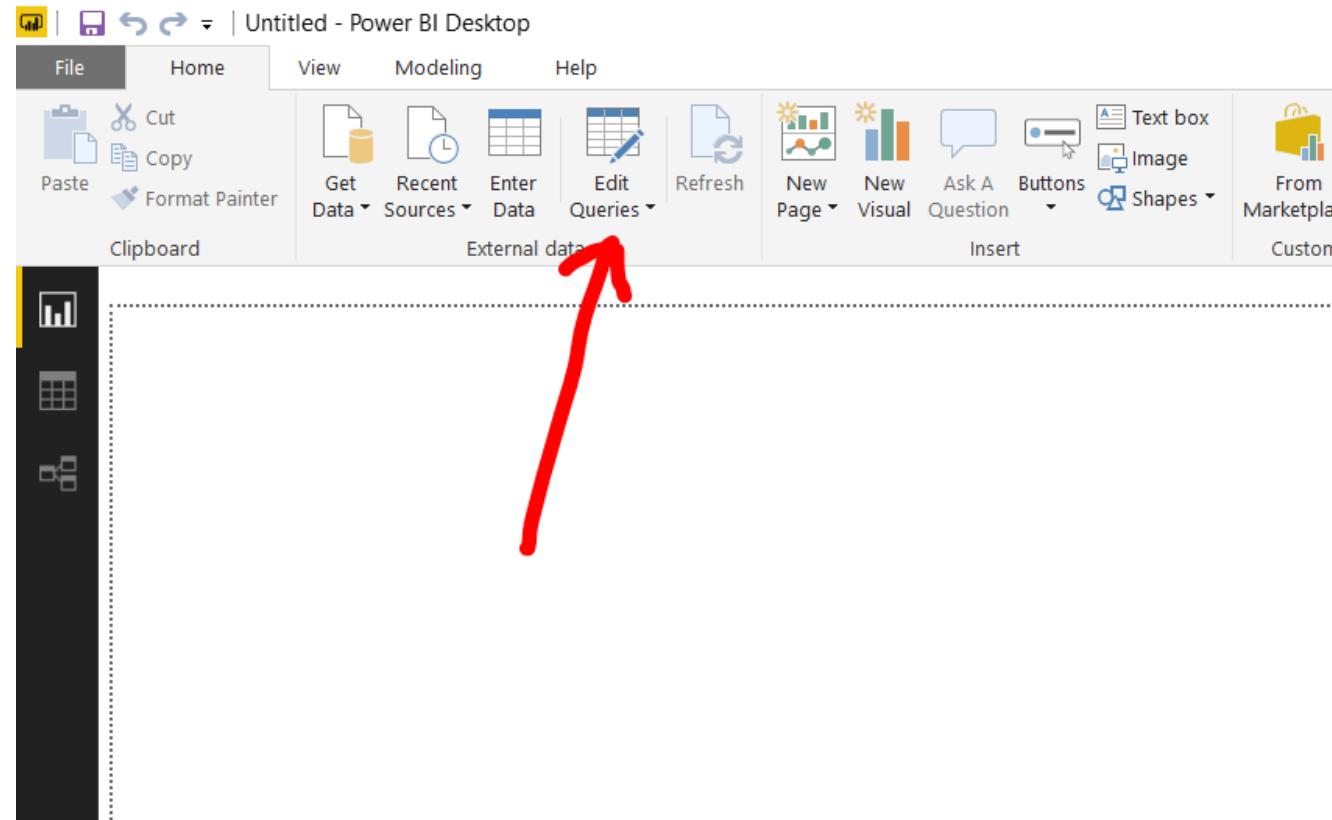
Sales 2015

	CountryRegion	Brand	Month	Sale 2013	Sale 2014	Sale 2015
1	China	A. Datum	January	3234	NULL	1935
2	China	A. Datum	February	6270	7059	NULL
3	China	A. Datum	March	4352	NULL	NULL
4	China	A. Datum	April	3814	NULL	NULL
5	China	A. Datum	May	6234	NULL	NULL
6	China	A. Datum	June	5571	3216	NULL
7	China	A. Datum	July	7424	NULL	NULL
8	China	A. Datum	August	NULL	NULL	800
9	China	A. Datum	September	1254	1617	396
10	China	A. Datum	October	1881	3042	936
11	China	A. Datum	November	NULL	3653	NULL
12	China	A. Datum	December	6135	2810	NULL
13	China	Adventure Works	January	12418.26	5735.48	1559.87



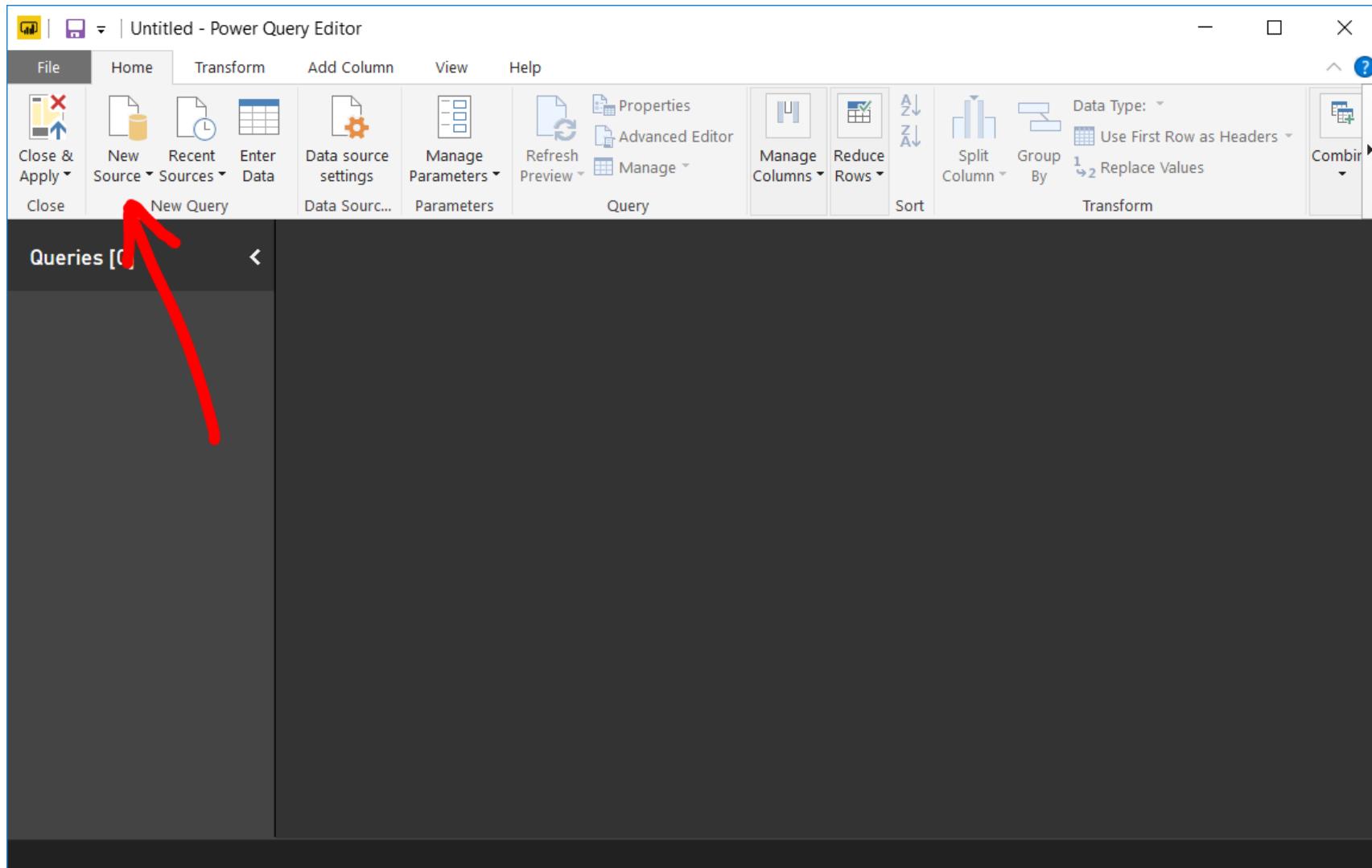
Microsoft Power BI

File / New / Edit Queries



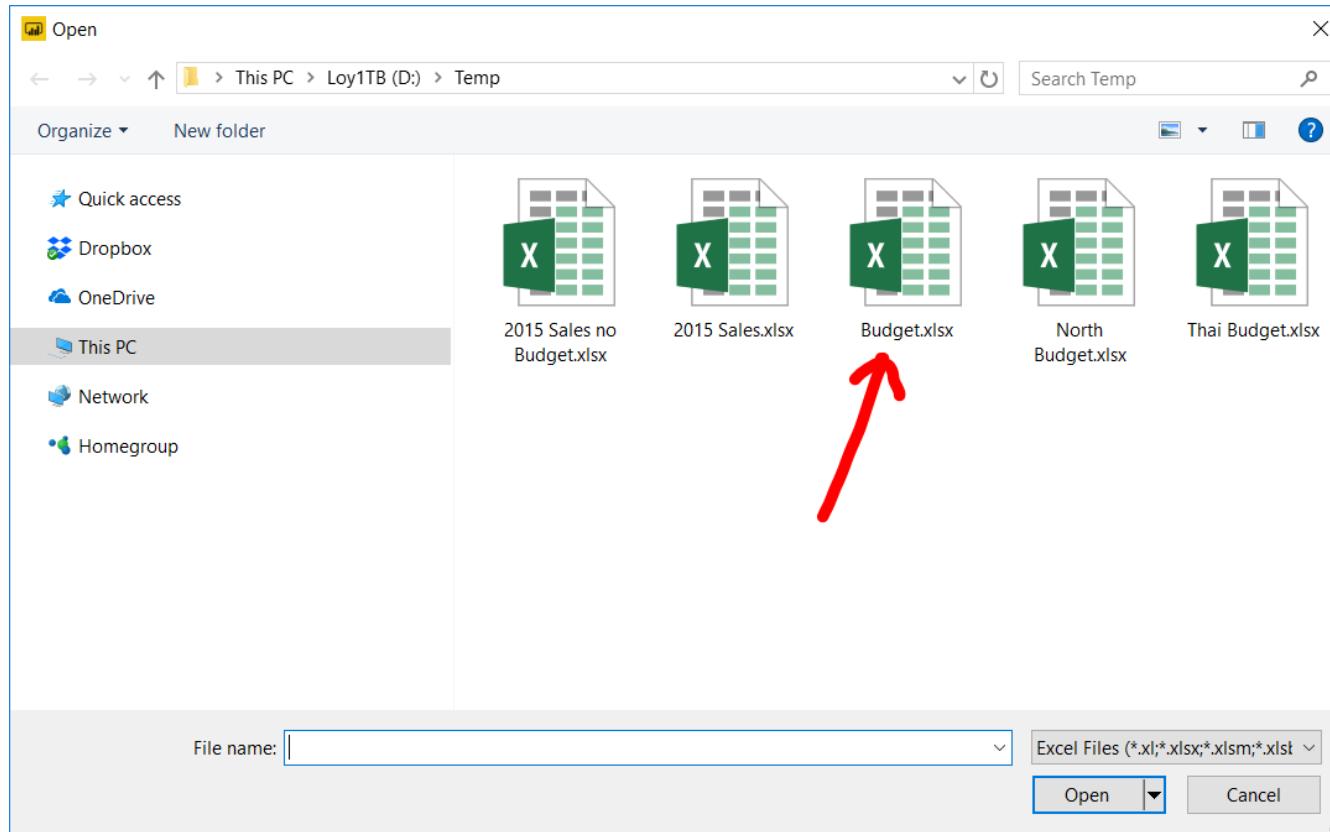
Microsoft Power BI

Query Editor / New Source



Microsoft Power BI

Budget.xlsx



Microsoft Power BI

Sales

Navigator

The screenshot shows the Microsoft Power BI Navigator interface. On the left, there is a search bar with a magnifying glass icon and a 'Display Options' dropdown. Below these are two items in a list:

- Budget.xlsx [2]
- Sales

A red arrow points from the text "Sales" in the list to the word "Sales" in the column header on the right. On the right side, there is a vertical list of country names:

Sales
Country
China

Microsoft Power BI

Rename Budget to Budget YTD

A screenshot of the Microsoft Power BI desktop interface. A context menu is open over the 'Budget' column header, which is highlighted with a yellow background. Two red arrows point from the text labels below to the corresponding menu items: one arrow points from 'Rename...' to the 'Rename...' option in the menu, and another arrow points from 'Move' to the 'Move' option in the menu.

	CountryRegion	Brand	Budget
1	China	A. Datum	5
2	China	Adventure Works	36
3	China	Contoso	94
4	China	Fabrikam	90
5	China	Litware	65
6	China	Northwind Traders	12
7	China	Proseware	20
8	China	Southridge Video	22
9	China	Tailspin Toys	8
10	China	The Phone Company	30
11	China	Wide World Importers	45
12	Germany	A. Datum	13
13	Germany	Adventure Works	15
14	Germany	Contoso	50
15	Germany	Fabrikam	45
16	Germany	Litware	12
17	Germany	Northwind Traders	65
18	Germany	Proseware	50
19	Germany	Southridge Video	16
20	Germany	Tailspin Toys	12
21	Germany	The Phone Company	25
22	Germany	Wide World Importers	30000
23	United States	A. Datum	30000

Microsoft Power BI

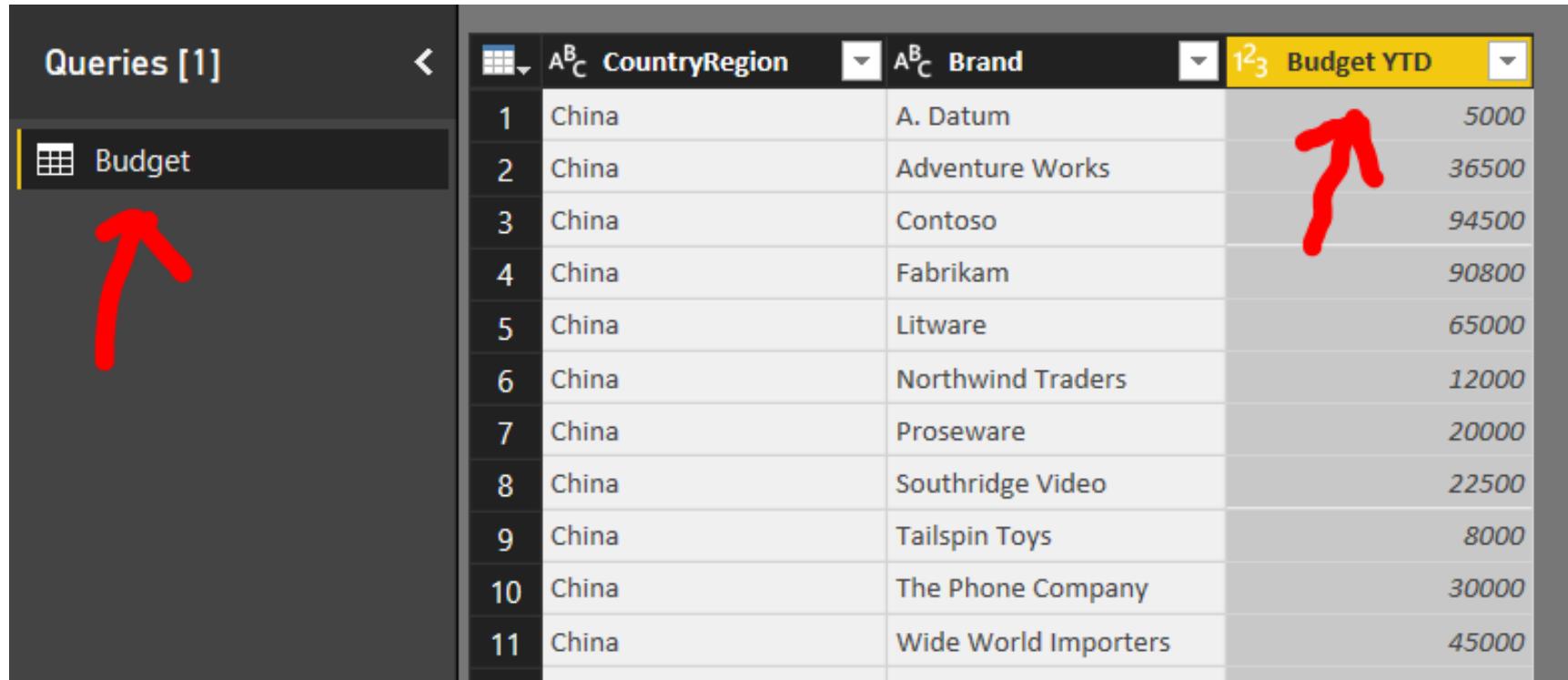
Rename Sales to Budget

The screenshot shows the Microsoft Power Query Editor interface. The 'File' tab is selected in the ribbon. On the left, the 'Queries [1]' pane shows a single query named 'Sales'. A red arrow points from the text 'Sales' to the 'Rename' option in the context menu that has been opened for this query. The context menu also includes options like 'Copy', 'Paste', 'Delete', 'Enable load', 'Include in report refresh', 'Duplicate', 'Reference', 'Move To Group', 'Move Up', 'Move Down', 'Create Function...', 'Convert To Parameter', 'Advanced Editor', and 'Properties...'. The main area displays a table with columns 'CountryRegion', 'Brand', and 'Budget YTD'. The data shows various companies and their budget values.

	CountryRegion	Brand	Budget YTD
1	China	A. Datum	5000
2	China	Adventure Works	36500
		Contoso	94500
		Fabrikam	90800
		Litware	65000
		Northwind Traders	12000
		Proseware	20000
		Southridge Video	22500
		Tailspin Toys	8000
		The Phone Company	30000
		Wide World Importers	45000
		A. Datum	13500
		Adventure Works	15000
		Contoso	50000
		Fabrikam	45000
		Litware	12500
		Northwind Traders	65000
		Proseware	60500
		Southridge Video	16500

Microsoft Power BI

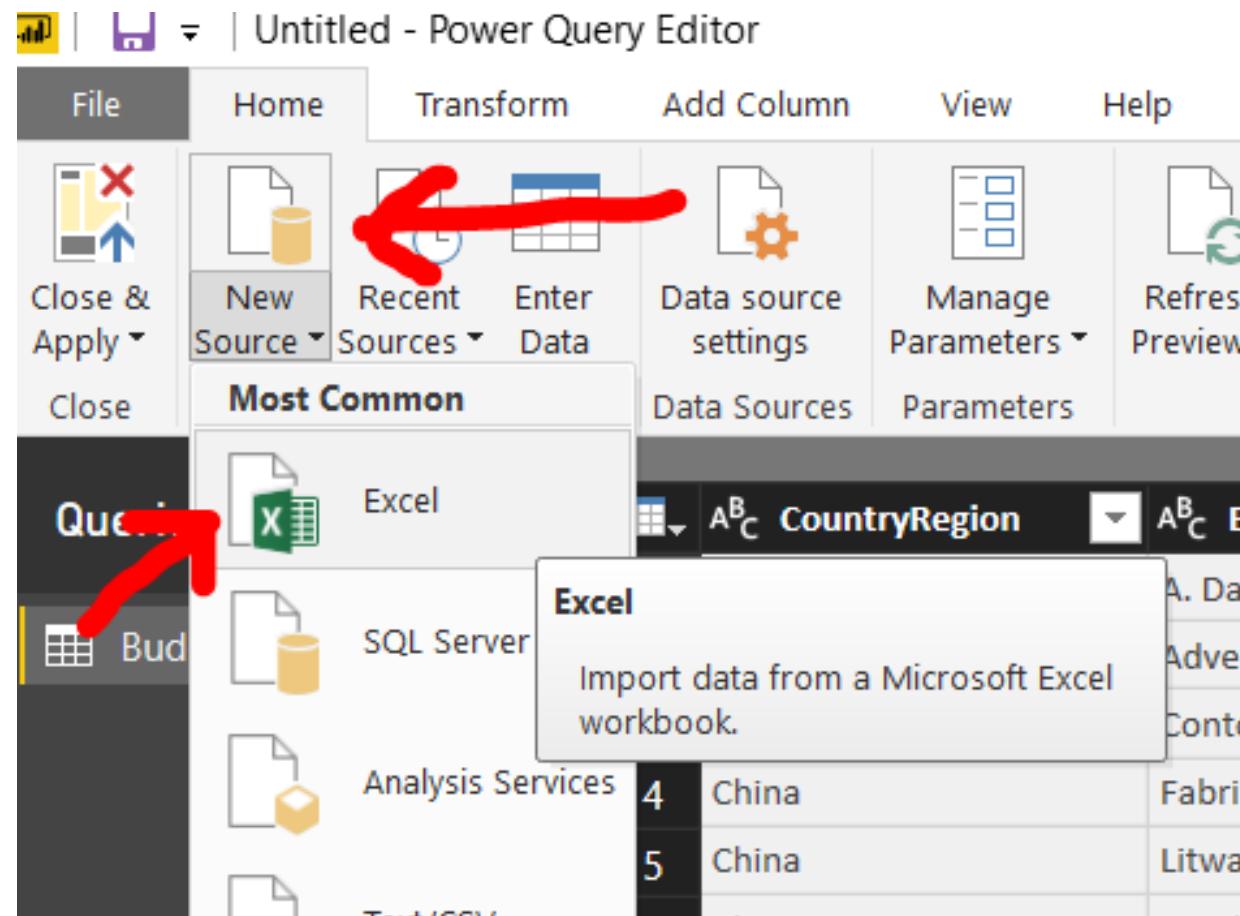
Result after renaming



1	A ^B _C CountryRegion	A ^B _C Brand	1 ² ₃ Budget YTD
1	China	A. Datum	5000
2	China	Adventure Works	36500
3	China	Contoso	94500
4	China	Fabrikam	90800
5	China	Litware	65000
6	China	Northwind Traders	12000
7	China	Proseware	20000
8	China	Southridge Video	22500
9	China	Tailspin Toys	8000
10	China	The Phone Company	30000
11	China	Wide World Importers	45000

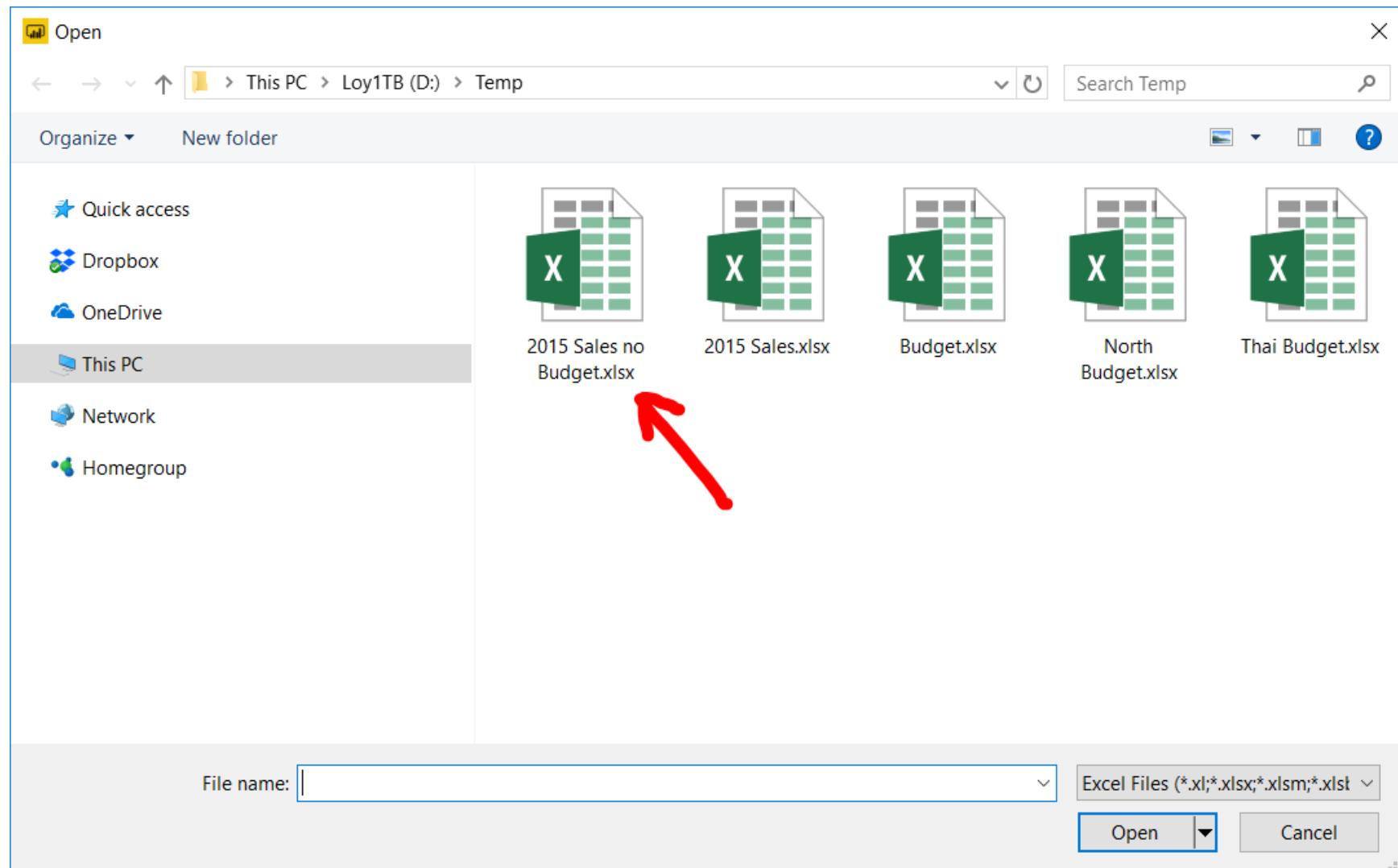
Microsoft Power BI

New Source / Excel



Microsoft Power BI

2015 Sales no Budget.xlsx



Microsoft Power BI

Sales / Load

Navigator

The screenshot shows the Microsoft Power BI Navigator interface. On the left, there is a search bar with a magnifying glass icon and a 'Display Options' dropdown. Below these are two items: '2015 Sales no Budget.xlsx [2]' and 'Sales'. The 'Sales' item has a checked checkbox icon and a table icon next to it, indicating it is selected. A red arrow points from the text 'Sales' in the main title back to the 'Sales' entry in the Navigator. On the right, there is a table titled 'CountryRegion' with a single column containing the value 'China' repeated seven times.

CountryRegion
China

Microsoft Power BI

Make sure that you have two data source

The screenshot shows the Microsoft Power Query Editor interface. The top navigation bar includes File, Home, Transform, Add Column, View, and Help. Below the navigation bar are several icons: Close & Apply, New Source, Recent Sources, Enter Data, Data source settings, Manage Parameters, Refresh Preview, Properties, Advanced Editor, and Manage. The main area is divided into two sections: 'Queries [2]' on the left and a data grid on the right.

The 'Queries [2]' section lists two queries: 'Budget' and 'Sales'. A red arrow points from the text 'Make sure that you have two data source' to the 'Sales' query entry.

The data grid on the right displays 12 rows of data with columns labeled 'CountryRegion', 'Brand', and 'Datum'. The data is as follows:

	CountryRegion	Brand	Datum
1	China	A. Datum	Jan
2	China	A. Datum	Feb
3	China	A. Datum	Mar
4	China	A. Datum	Apr
5	China	A. Datum	May
6	China	A. Datum	Jun
7	China	A. Datum	July
8	China	A. Datum	Aug
9	China	A. Datum	Sep
10	China	A. Datum	Oct
11	China	A. Datum	Nov
12	China	A. Datum	Dec

Microsoft Power BI

Click Merge Queries

The screenshot shows the Microsoft Power Query Editor interface. The ribbon at the top has tabs for File, Home, Transform, Add Column, View, and Help. The 'Transform' tab is selected. The toolbar below the ribbon contains various icons for data operations like Close & Apply, New Source, Refresh, Choose Columns, Keep Rows, Sort, and Merge Queries. A red arrow points to the 'Merge Queries' icon in the toolbar. On the left, a sidebar shows 'Queries [2]' with 'Budget' and 'Sales' listed. The main area displays a table with columns: CountryRegion, Brand, Month, 1.2 Sale 2013, 1.2 Sale 2014, and 1.2 Sale 2015. The data rows show sales figures for China and Adventure Works across different months from January to October.

	CountryRegion	Brand	Month	1.2 Sale 2013	1.2 Sale 2014	1.2 Sale 2015
1	China	A. Datum	January	3234	null	1935
2	China	A. Datum	February	6270	7059	null
3	China	A. Datum	March	4352	null	null
4	China	A. Datum	April	3814	null	null
5	China	A. Datum	May	6234	null	null
6	China	A. Datum	June	5571	3216	null
7	China	A. Datum	July	7424	null	null
8	China	A. Datum	August	null	null	800
9	China	A. Datum	September	1254	1617	396
10	China	A. Datum	October	1881	3042	936
11	China	A. Datum	November	null	3653	null
12	China	A. Datum	December	6135	2810	null
13	China	Adventure Works	January	12418.26	5735.48	1559.87
14	China	Adventure Works	February	31770.26	null	2937.9
15	China	Adventure Works	March	3689.85	5489.23	11163.94
16	China	Adventure Works	April	499.9	9087	2298.7
17	China	Adventure Works	May	null	9203.92	null
18	China	Adventure Works	June	15790	119.99	1948.5
19	China	Adventure Works	July	9938.12	2819.82	null
20	China	Adventure Works	August	14035.71	6881	12775.4
21	China	Adventure Works	September	16638.85	null	null
22	China	Adventure Works	October	11864.76	null	2085

Microsoft Power BI

Join two data sources

Merge

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

Sales

CountryRegion	1	Brand	2	Month	Sale 2013	Sale 2014	Sale 2015
China	A. Datum			January	3234	null	1935
China	A. Datum			February	6270	7059	null
China	A. Datum			March	4352	null	null
China	A. Datum			April	3814	null	null
China	A. Datum			May	6234	null	null

Budget

CountryRegion	1	Brand	2	Budget YTD
China		A. Datum		5000
China		Adventure Works		36500
China		Contoso		94500
China		Fabrikam		90800
China		Litware		65000

Join Kind

Left Outer (all from first, matching from second)

The selection has matched 362 out of the first 382 rows.

OK Cancel

Microsoft Power BI

Select Budget YTD

The screenshot shows the Microsoft Power BI Data Editor interface. At the top, there's a ribbon with various tools like 'Choose Columns', 'Remove Columns', 'Keep Rows', 'Remove Rows', 'Sort', 'Group By', and 'Transform'. A red arrow points from the 'Transform' tab to the 'Combine' button on the far right of the ribbon.

The main area displays a table with columns: Month, 1.2 Sale 2013, 1.2 Sale 2014, 1.2 Sale 2015, and Budget. The 'Budget' column is highlighted in yellow. A red arrow points from the 'Expand' button in the dropdown menu for the 'Budget' column to the list of options below.

The 'Expand' dialog box is open, showing the following options:

- Expand Aggregate
- (Select All Columns)
- CountryRegion
- Brand
- Budget YTD

Below the list is a checked checkbox for 'Use original column name as prefix'. At the bottom right of the dialog are 'OK' and 'Cancel' buttons, with a red arrow pointing to the 'OK' button.

Month	1.2 Sale 2013	1.2 Sale 2014	1.2 Sale 2015	Budget
January	323			
February	621			
March	435			
April	381			
May	623			
June	557			
July	742			
August	nu			
September	125			
October	188			
November	nu			
December	6135	2810		
January	12418.26	5735.48		
			1559.87	Table

Microsoft Power BI

Rename Budget.Budget YTD to Budget YTD

2015	123	Budget.Budget YTD	123
		5000	
		5000	
		5000	
		5000	
		5000	
		5000	
		5000	

1.2	Sale 2015	123	Budget YTD	123
		1935	5000	
059		null	5000	
		null	5000	
		null	5000	
		null	5000	
216		null	5000	
		null	5000	
		800	5000	

Microsoft Power BI

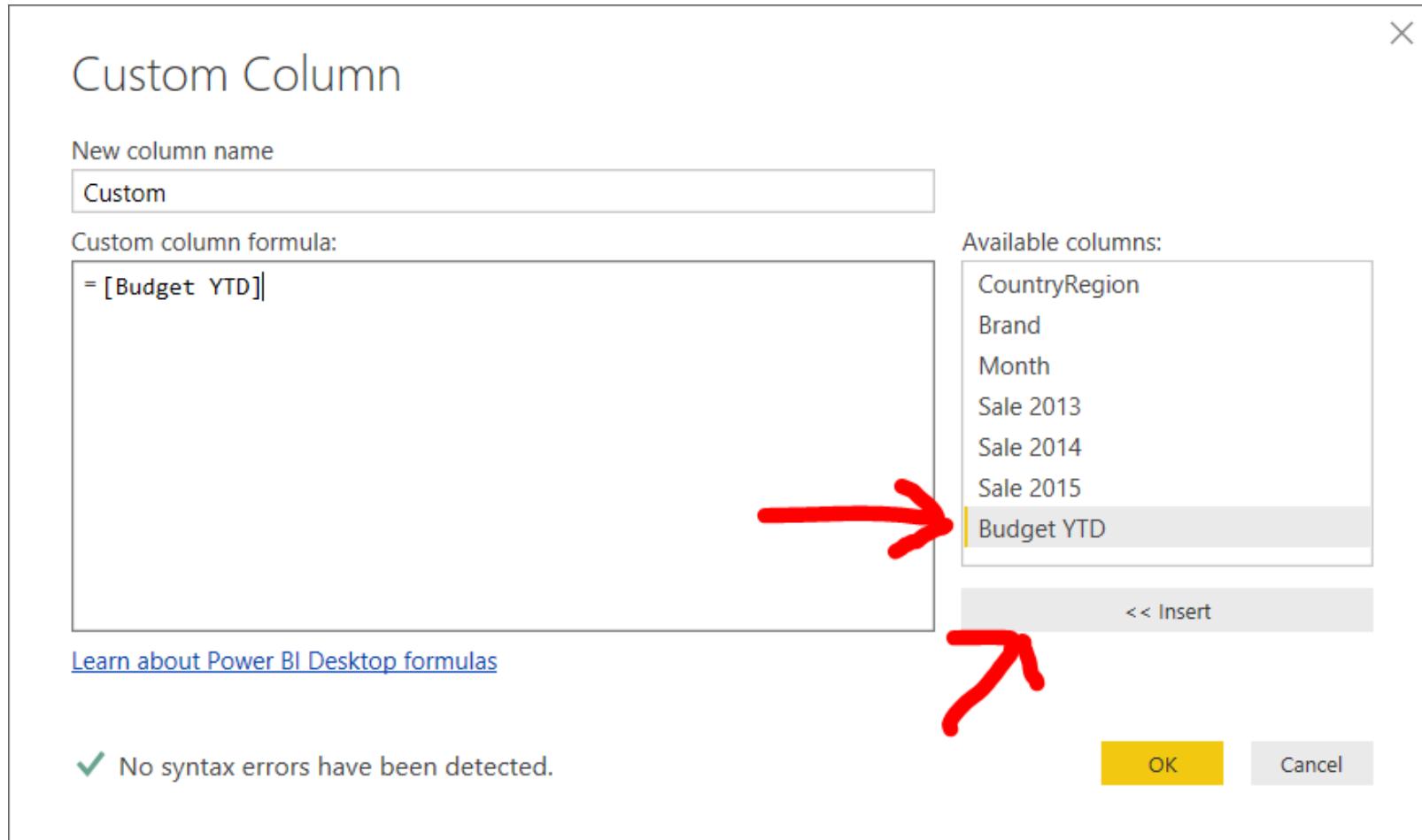
Add Column / Custom Column

The screenshot shows the Microsoft Power Query Editor interface. At the top, the title bar reads "Untitled - Power Query Editor". Below it is the ribbon menu with tabs: File, Home, Transform, Add Column (which is highlighted in blue), View, and Help. The "Add Column" tab has several options under its icon: Column From Examples, Custom Column, Invoke Function, Conditionally Format, Index Column, Duplicate Column, Merge Columns, Extract, Parse, and From Text. A red arrow points from the left towards the "Custom Column" option. Another red arrow points from the right towards the "From Text" option. On the left side, there's a "Queries [2]" pane listing "Budget" and "Sales". The main area displays a table with columns: CountryRegion, Brand, and Date. The data shows 6 rows of "China" in the first column, "A. Datum" in the second, and months from January to June in the third.

	CountryRegion	Brand	Date
1	China	A. Datum	Jan
2	China	A. Datum	Feb
3	China	A. Datum	Mar
4	China	A. Datum	Apr
5	China	A. Datum	May
6	China	A. Datum	Jun

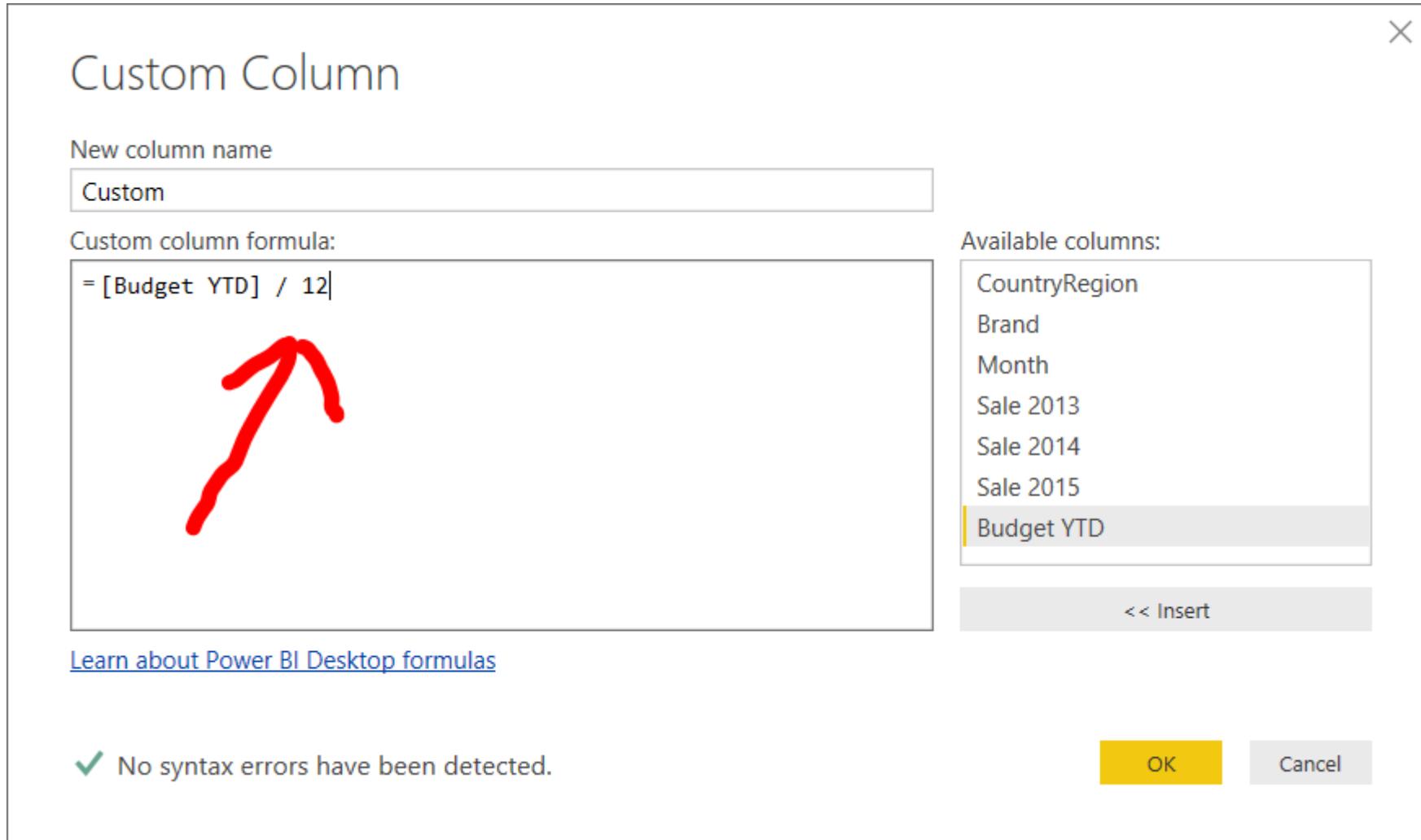
Microsoft Power BI

Budget YTD / << Insert



Microsoft Power BI

Type / 12 press OK



Microsoft Power BI

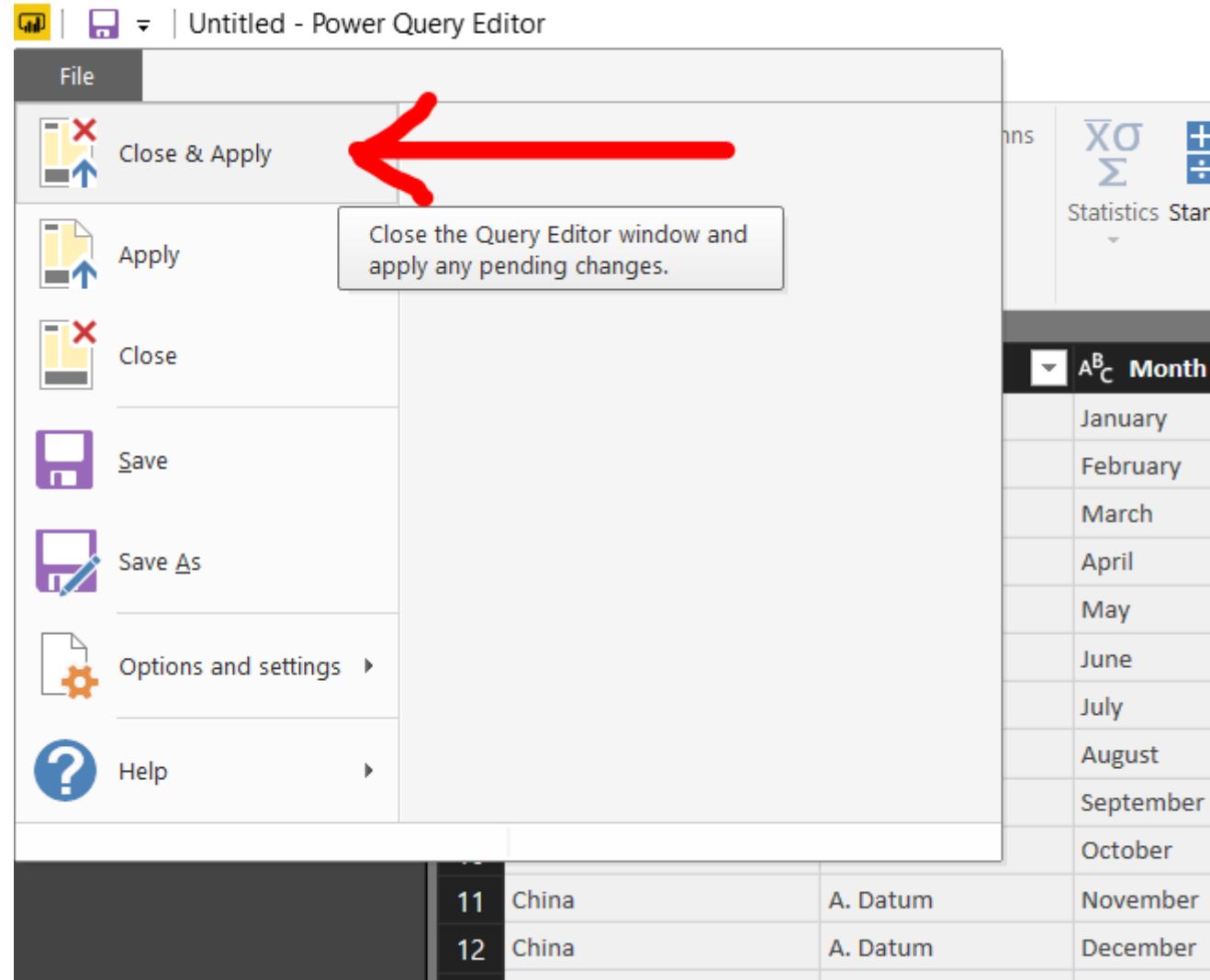
Make sure you have new column name Custom / Rename to Budget

2015	1 ² 3	Budget YTD	ABC 123	Custom
1935		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
800		5000		416.6666667
396		5000		416.6666667

2015	1 ² 3	Budget YTD	ABC 123	Budget
1935		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
null		5000		416.6666667
800		5000		416.6666667

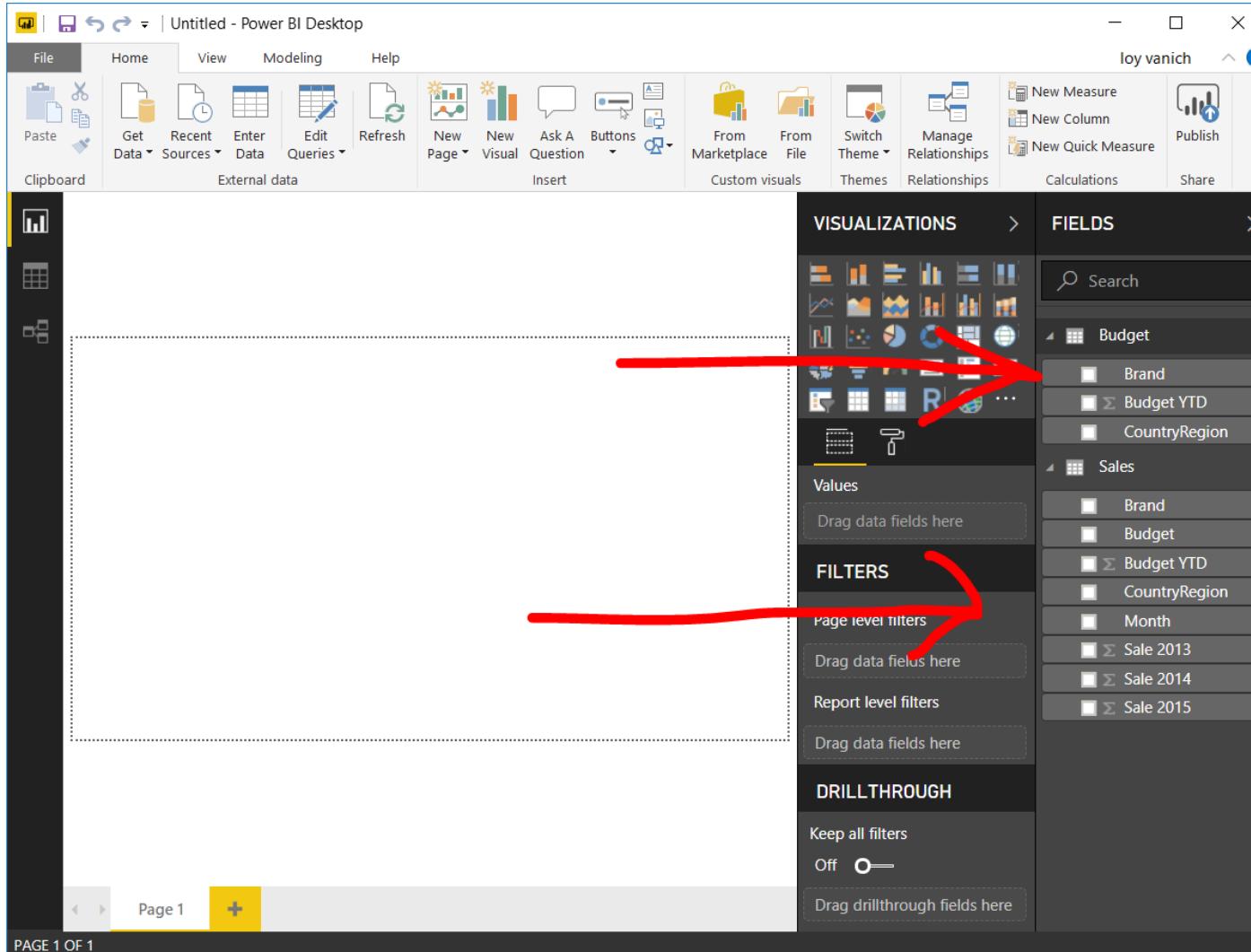
Microsoft Power BI

File / Close & Apply



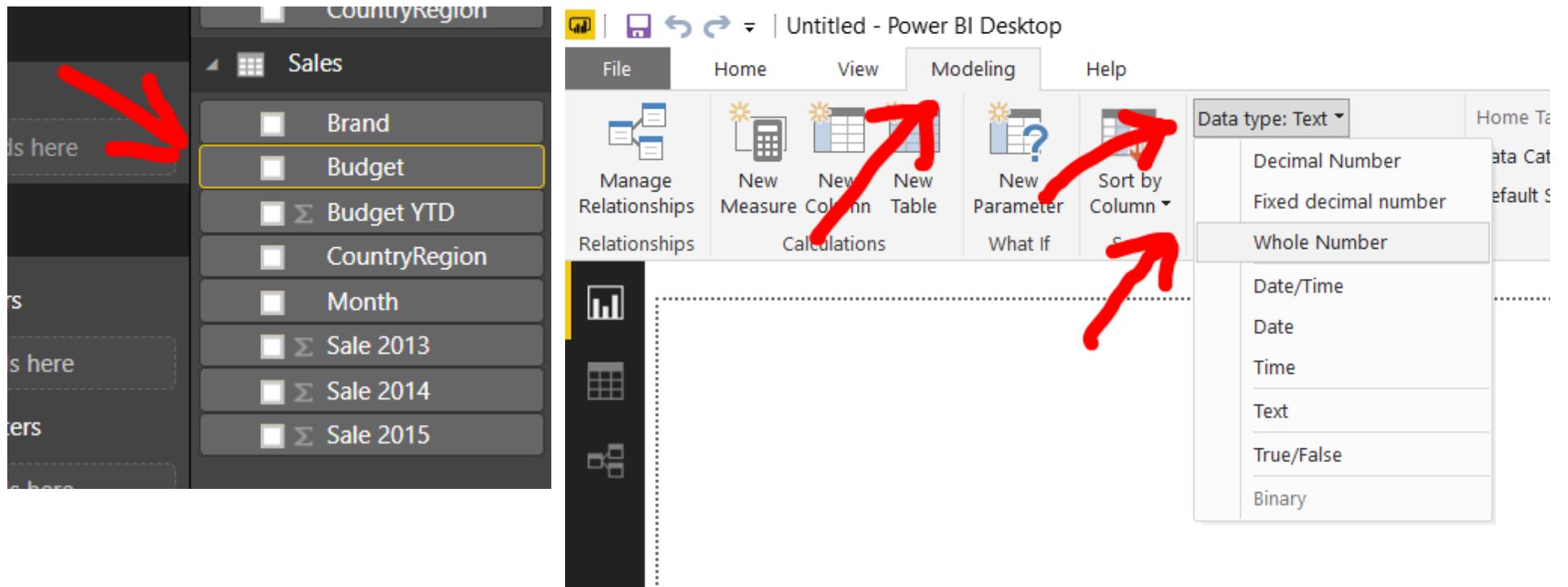
Microsoft Power BI

Make sure you have two data source / Sale have column Budget



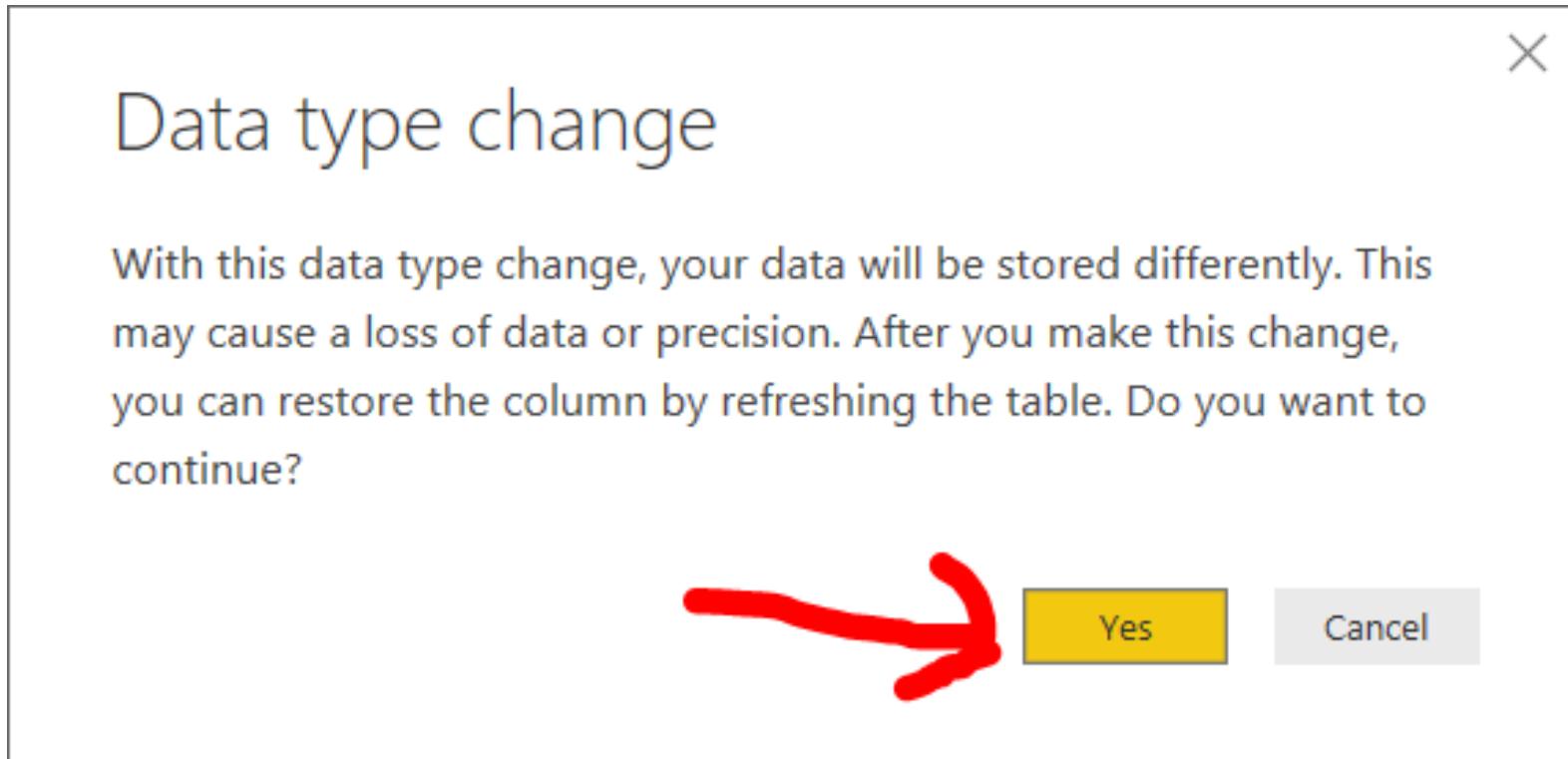
Microsoft Power BI

Click Budget / Modeling, Data type, Whole Number



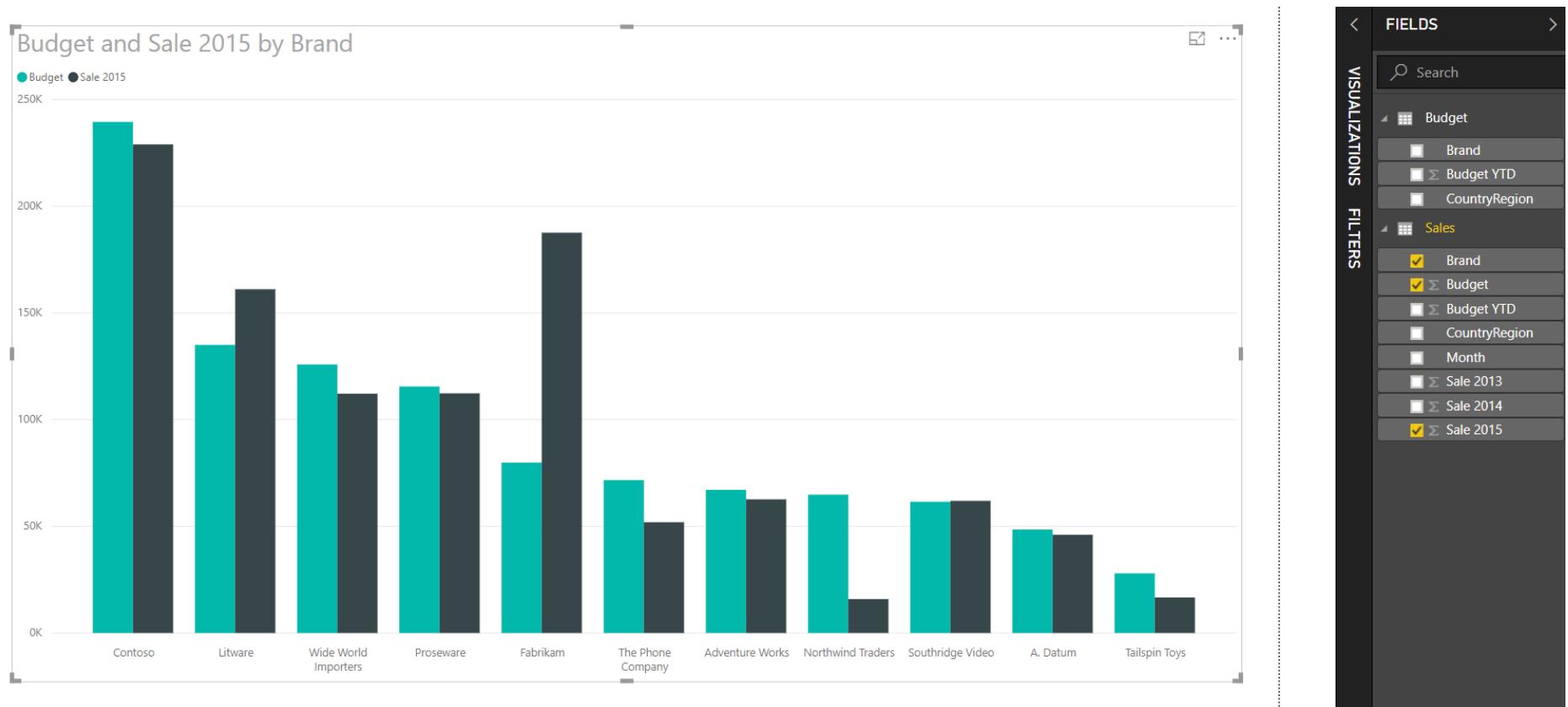
Microsoft Power BI

Confirm data type change



Microsoft Power BI

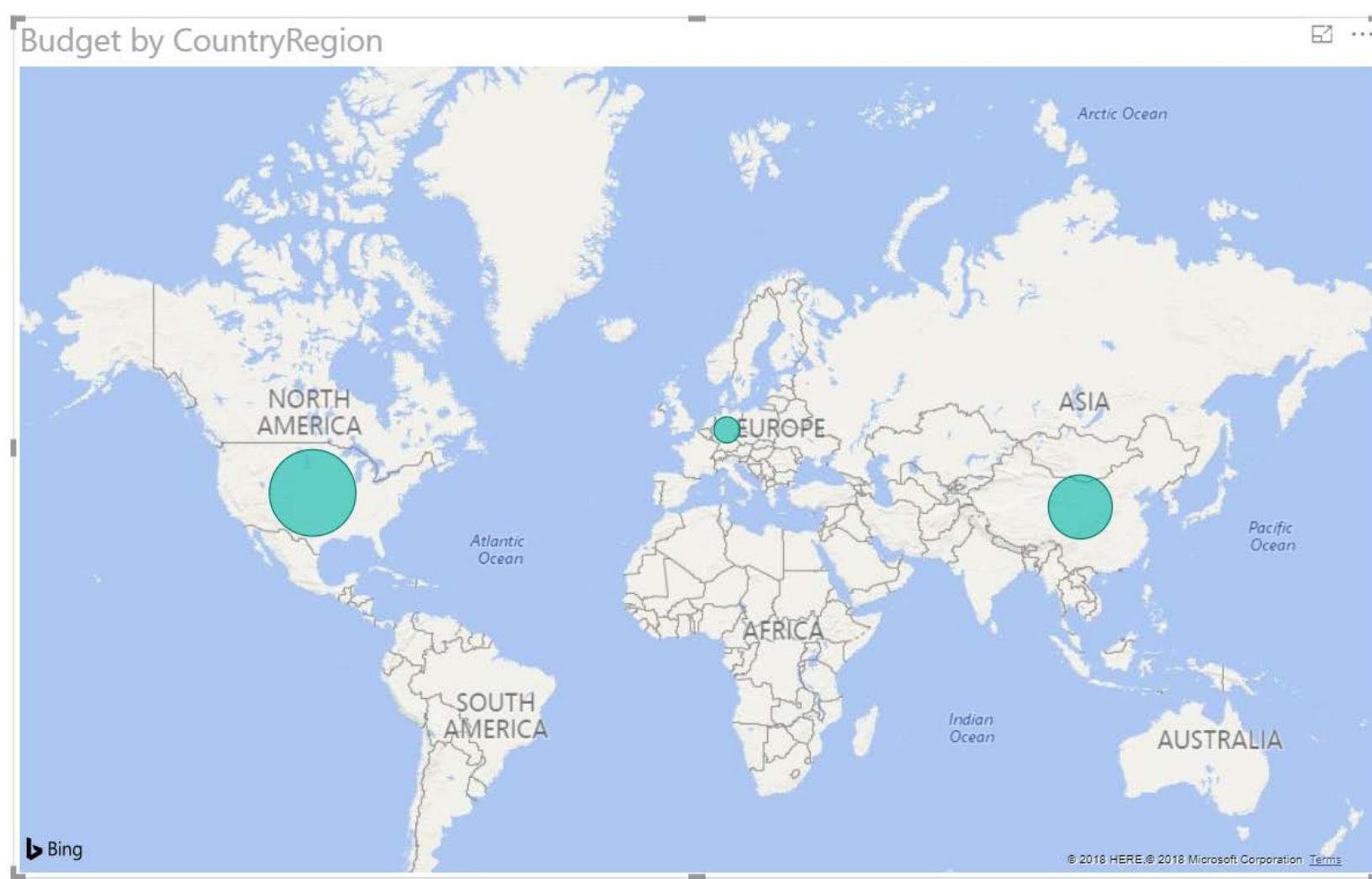
Make Clustered column chart Budget and Sale 2015 by Brand



Microsoft Power BI

Exercise

New / Create all steps / Make Budget by CountryRegion map

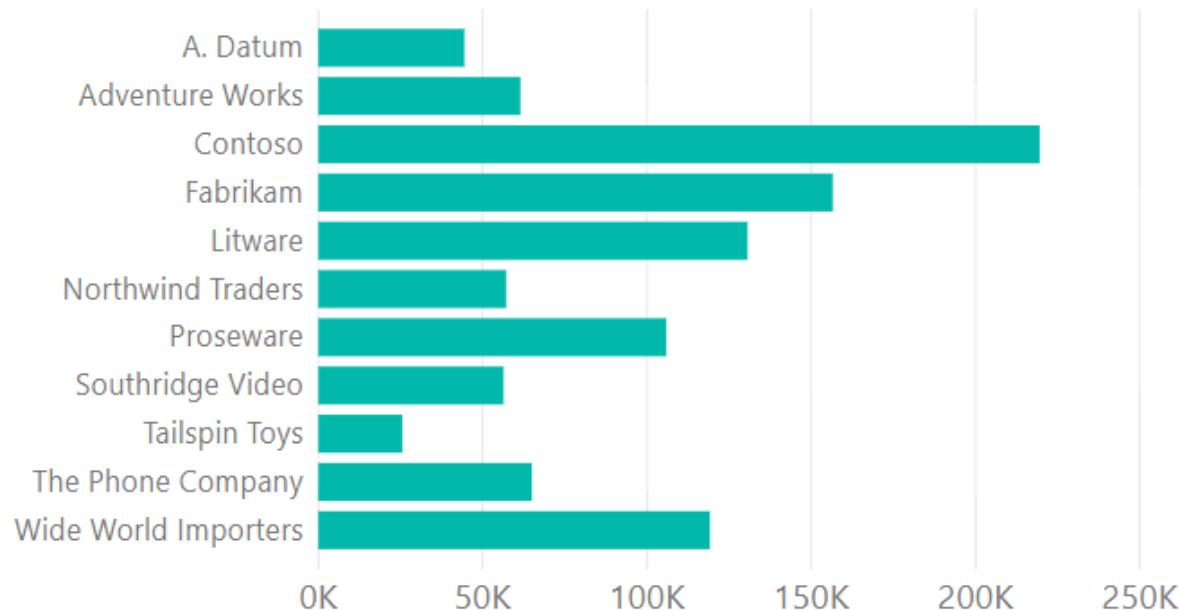


Sorting

Microsoft Power BI

Create this visual from 2015 Sales for Sort.xlsx

Budget by Brand



Month	Sale 2015	Budget
April	116,320.35	97,616.67
August	104,985.34	88,866.67
December		95,950.00
February	65,389.24	97,616.67
July	148,100.26	92,200.00
June	96,737.46	96,616.67
March	78,959.30	95,533.33
May	163,396.26	96,366.67
November	10,788.00	94,325.00
October	93,229.21	89,116.67
September	96,717.64	97,616.67
Total	974,623.06	1,041,825.00

Microsoft Power BI

Enter Data / Month Number

The screenshot shows the Microsoft Power BI Desktop interface. On the left, there is a visual titled "Budget by Brand" displaying horizontal bars for various companies. The ribbon menu at the top includes File, Home, View, Modeling, Help, Format, and Data / Drill. The "Home" tab is selected. In the "Data" section of the ribbon, the "Enter Data" button is highlighted with a red arrow. A "Create Table" dialog box is open in the center-right. It contains a table with columns for Month and Month Number, listing months from January to December. A red arrow points to the "Month Num..." column header. Another red arrow points to the "Name:" field where "Month Number" is typed. At the bottom right of the dialog are "Load", "Edit", and "Cancel" buttons. The status bar at the bottom shows "1 Day" and "November".

	Month	Month Num...
1	January	1
2	Febuary	2
3	March	3
4	April	4
5	May	5
6	June	6
7	July	7
8	August	8
9	September	9
10	October	10
11	November	11
12	December	12
*		

Microsoft Power BI

Make sure you have this new Data set

A screenshot of the Microsoft Power BI interface. On the left, there is a table view with two columns: 'Month' and 'Month Number'. The data rows are: April (4), August (8), December (12), Feubuary (2), January (1), July (7), June (6), March (3), May (5), November (11), October (10), and September (9). A red arrow points from the top of the slide towards the 'Month' column header in the table. On the right, there is a 'FIELDS' pane. It contains a search bar at the top. Below it, under the 'Month Number' category, are two checked items: 'Month' and 'Month Number'. Under the 'Sales' category, there are several items: Brand, Budget, CountryRegion, Month, Sale 2013, Sale 2014, and Sale 2015. A red arrow points from the top of the slide towards the 'Month' item in the 'Month Number' section of the Fields pane.

Month	Month Number
April	4
August	8
December	12
Feubuary	2
January	1
July	7
June	6
March	3
May	5
November	11
October	10
September	9

FIELDS

- Month Number
 - Month
 - Month Number
- Sales
 - Brand
 - Budget
 - CountryRegion
 - Month
 - Sale 2013
 - Sale 2014
 - Sale 2015

Microsoft Power BI

Sort by Month Number

A screenshot of a Microsoft Power BI interface. On the left, there is a table with two columns: "Month" and "Month Number". The table lists the months from January to December, with their corresponding month numbers (1 through 12) in the adjacent column. The "Month" column is currently sorted in ascending order, as indicated by the upward-pointing arrow icon above the column header. A red arrow points to this icon. To the right of the table is a context menu with several options: Export data, Show Data, Remove, Automatically find clusters, Spotlight, Sort Descending, Sort Ascending, and Sort by. The "Sort by" option is highlighted with a blue box, and a red arrow points to it. Below the "Sort by" option, there are two choices: "Month" and "Month Number", with "Month Number" being the selected option, also highlighted with a blue box, and another red arrow pointing to it.

Month	Month Number
January	1
February	2
March	3
April	4
May	5
June	6
July	7
August	8
September	9
October	10
November	11
December	12

Export data
Show Data
Remove
Automatically find clusters
Spotlight
Sort Descending
Sort Ascending
Sort by

Month
Month Number

Microsoft Power BI

Edit Queries

The screenshot shows the Microsoft Power BI Desktop interface. The title bar reads "01140 Sort Month - Power BI Desktop". The ribbon is visible with the "Home" tab selected. In the "Clipboard" section, there are icons for Paste, Cut, Copy, and Format Painter. The "External Data" group contains icons for Get Data, Recent Sources, Enter Data, and Edit Queries. The "Edit Queries" icon is highlighted with a red arrow pointing to it. To the right of the ribbon, there is a data grid showing months from January to April. The first column is labeled "Month". The rows are January, February, March, and April. The second column starts with "Mo".

Month	Mo
January	
Febuary	
March	
April	

Microsoft Power BI

Make sure you have both Sales and Month Number in Query Editor

The screenshot shows the Microsoft Power BI Query Editor interface. The ribbon at the top includes File, Home, Transform, Add Column, View, and Help tabs. Below the ribbon are various icons for file operations like Close & Apply, New Source, Recent Sources, Enter Data, Data source settings, Manage Parameters, Refresh Preview, Properties, Advanced Editor, Choose Columns, and Manage Columns. The main area is titled "Queries [2]" and lists two entries: "Sales" and "Month Number". A red arrow points from the text "Make sure you have both Sales and Month Number in Query Editor" to the "Sales" entry. To the right of the query list is a data grid with columns: CountryRegion, Brand, Month, and Datum. The data shows 12 rows for China, each with a different month name (January through December) and the same "A. Datum" value.

	CountryRegion	Brand	Month	Datum
1	China	A. Datum	January	
2	China	A. Datum	February	
3	China	A. Datum	March	
4	China	A. Datum	April	
5	China	A. Datum	May	
6	China	A. Datum	June	
7	China	A. Datum	July	
8	China	A. Datum	August	
9	China	A. Datum	September	
10	China	A. Datum	October	
11	China	A. Datum	November	
12	China	A. Datum	December	

Microsoft Power BI

Merge Sale to Month Number on Month

Merge

Select available and matching columns to create a merged table.

Sales

CountryRegion	Brand	Month	Sale 2013	Sale 2014	Sale 2015	Budget
China	A. Datum	January	3234	null	1935	416.6666667
China	A. Datum	February	6270	7059	null	416.6666667
China	A. Datum	March	4352	null	null	416.6666667
China	A. Datum	April	3814	null	null	416.6666667
China	A. Datum	May	6234	null	null	416.6666667

Month Number

Month	Month Number
January	1
February	2
March	3
April	4
May	5

Join Kind

Left Outer (all from first, matching from second)

The selection has matched 349 out of the first 382 rows.

OK Cancel

The screenshot shows the Microsoft Power BI 'Merge' dialog box. At the top, it says 'Merge' and 'Select available and matching columns to create a merged table.' Below this, there's a table labeled 'Sales' with columns: CountryRegion, Brand, Month, Sale 2013, Sale 2014, Sale 2015, and Budget. The 'Month' column is highlighted with a red arrow. Below the Sales table is another table labeled 'Month Number' with columns: Month and Month Number. The 'Month' column is highlighted with a red arrow. To the right of the Month Number table is a dropdown menu showing the same data, with the 'Month' column also highlighted with a red arrow. At the bottom of the dialog, there's a 'Join Kind' dropdown set to 'Left Outer (all from first, matching from second)', a status message 'The selection has matched 349 out of the first 382 rows.', and 'OK' and 'Cancel' buttons. A red arrow points to the 'OK' button.

Microsoft Power BI

Select Month Number

The screenshot shows the Microsoft Power BI interface with the 'Transform' ribbon tab selected. A context menu is open over a column named 'Month Number'. The menu includes options like 'Remove Columns', 'Keep Rows', 'Remove Rows', 'Sort', 'Split Column', 'Group By', 'Replace Values', 'Merge Queries', 'Append Queries', and 'Combine Files'. The 'Month Number' column is highlighted in yellow. Red arrows point to the 'OK' button and the 'Use original column name as prefix' checkbox in the dialog box.

1.2 Sale 2013 1.2 Sale 2014 1.2 Sale 2015 1.2 Budget Month Number

1.2 Sale 2013	1.2 Sale 2014	1.2 Sale 2015	1.2 Budget	Month Number
3234		null		
6270		7059		
4352		null		
3814		null		
6234		null		
5571		321		
7424		null		
null		null		
1254		1617		
1881		3042		
null		3653		
6135		2810		
12418.26		5735.48		
31770.26		null		
3200.00		5100.00		
		11150.00		
		2014.000000		
		410.000000		

Search Columns to Expand

Expand Aggregate

(Select All Columns) Month Month Number

Use original column name as prefix

OK Cancel

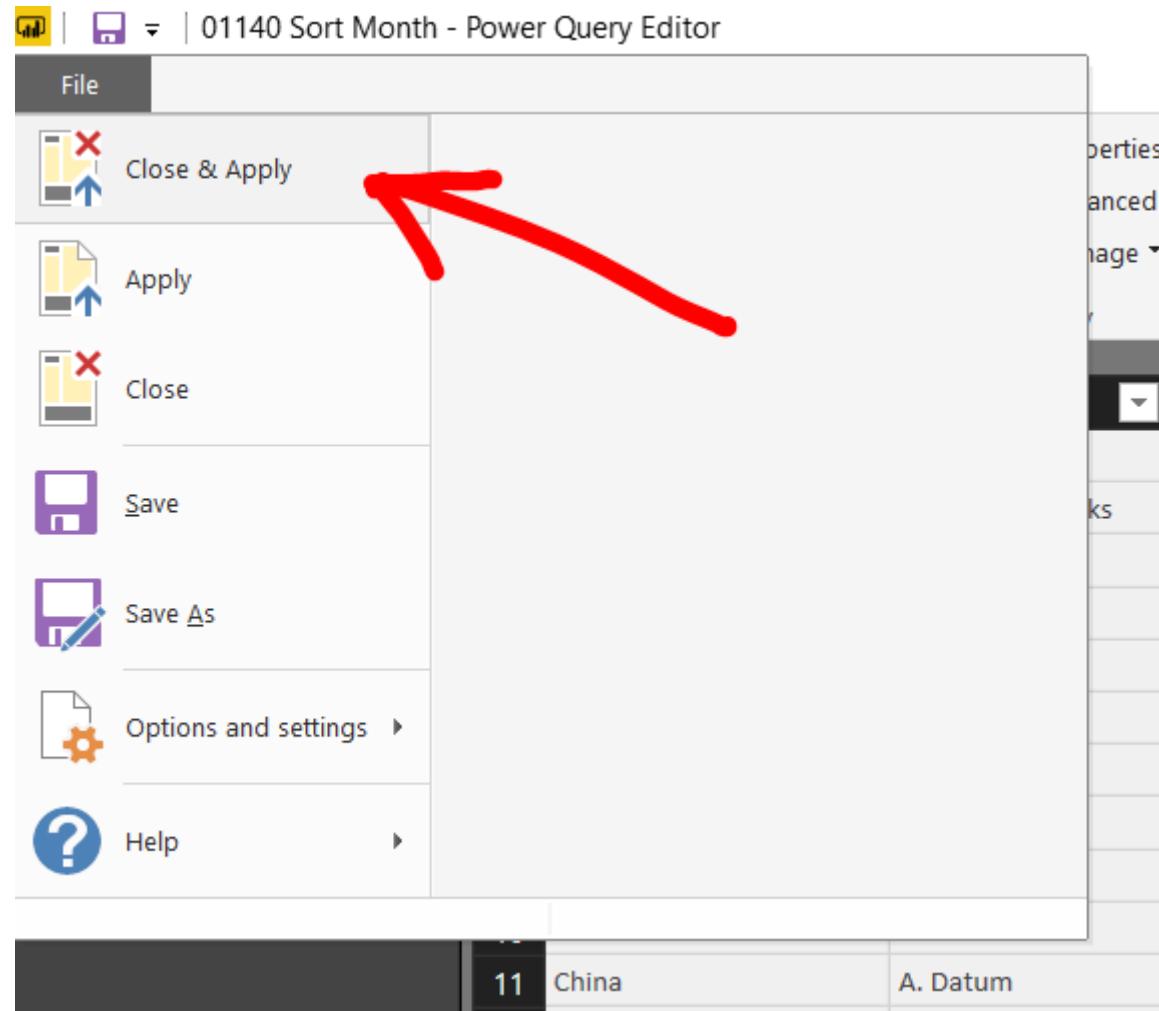
Microsoft Power BI

Rename the column

14	1.2 Sale 2015	1.2 Budget	1 ² 3 Month Number
	null	1935	416.6666667
	5735.48	1559.87	3041.666667
	7059	null	416.6666667
	null	null	416.6666667
	null	null	416.6666667
	null	null	416.6666667
	3216	null	416.6666667
	null	null	416.6666667
	null	800	416.6666667
	1617	396	416.6666667
	3042	936	416.6666667
	3653	null	416.6666667
	2810	null	416.6666667
	null	2937.9	3041.666667

Microsoft Power BI

Close & Apply



Microsoft Power BI

Click Visualize / Click Month

The screenshot illustrates the 'Click Visualize / Click Month' feature in Microsoft Power BI. On the left, a table visualization displays monthly sales data for 2015 against budget figures. The table has columns for Month, Sale 2015, and Budget. The rows show data for July, October, April, August, September, May, June, and January. A red arrow labeled '1' points from the table to the 'Month' column header. On the right, the Fields pane shows various fields categorized under Month Number and Sales. Under Sales, the 'Month' field is selected, indicated by a checked checkbox. A red arrow labeled '2' points from the Fields pane to the 'Month' field in the Sales category.

Month	Sale 2015	Budget
July	89,990.85	35,775.00
October	60,055.80	34,775.00
April	55,446.94	35,775.00
August	44,855.46	35,775.00
September	34,111.58	35,775.00
May	32,589.83	35,775.00
June	32,526.40	34,775.00
January	18,997.53	32,025.00

FIELDS

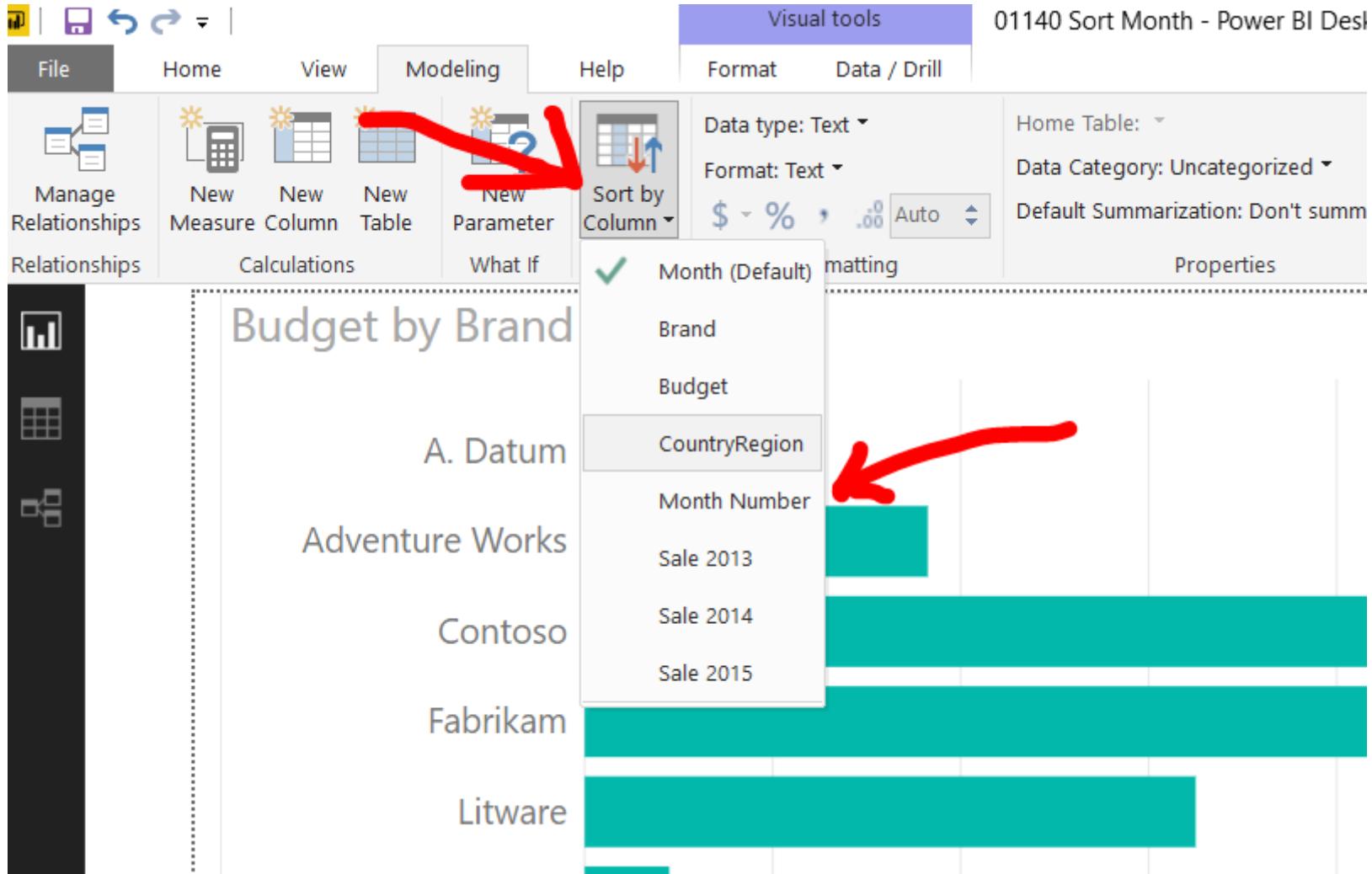
- Search
- Month Number
 - Month
 - Month Number
- Sales
 - Brand
 - Σ Budget
 - CountryRegion
 - Month
 - Σ Month Number
 - Σ Sale 2013
 - Σ Sale 2014
 - Σ Sale 2015

VISUALIZATIONS

FILTERS

Microsoft Power BI

Click Sort by Column / Month Number



Microsoft Power BI

Sort by Month

The screenshot shows a Microsoft Power BI interface. On the left is a table with three columns: Month, Sale 2015, and Budget. The table lists monthly sales data from February to December, along with a total row at the bottom. A red arrow points from the top of the table towards a context menu. The context menu is open and contains several options: Export data, Show Data, Remove, Automatically find clusters, Spotlight, Sort Descending, Sort Ascending, and Sort by. A second red arrow points from the 'Sort by' option in the menu towards the 'Month' column header in the table. To the right of the table is a vertical pane titled 'FILTERS' which contains a list of fields: Month, Month Number, Sales, Brand, Budget (with a checked checkbox), CountryRegion, Month (with a checked checkbox), Month Number, and Sale 2013. The 'Month' field is currently selected, as indicated by a blue selection bar. A third red arrow points from the 'Month' field in the filters pane towards the 'Month' column header in the table.

Month	Sale 2015	Budget
February	11,875.41	35,775.00
January	18,997.53	32,025.00
March	18,939.07	35,775.00
April	55,446.94	35,775.00
May	32,589.83	35,775.00
June	32,526.40	34,775.00
July	89,990.85	35,775.00
August	44,855.46	35,775.00
September	34,111.58	35,775.00
October	60,055.80	34,775.00
November		34,775.00
December		32,025.00
Total	399,388.87	418,800.00

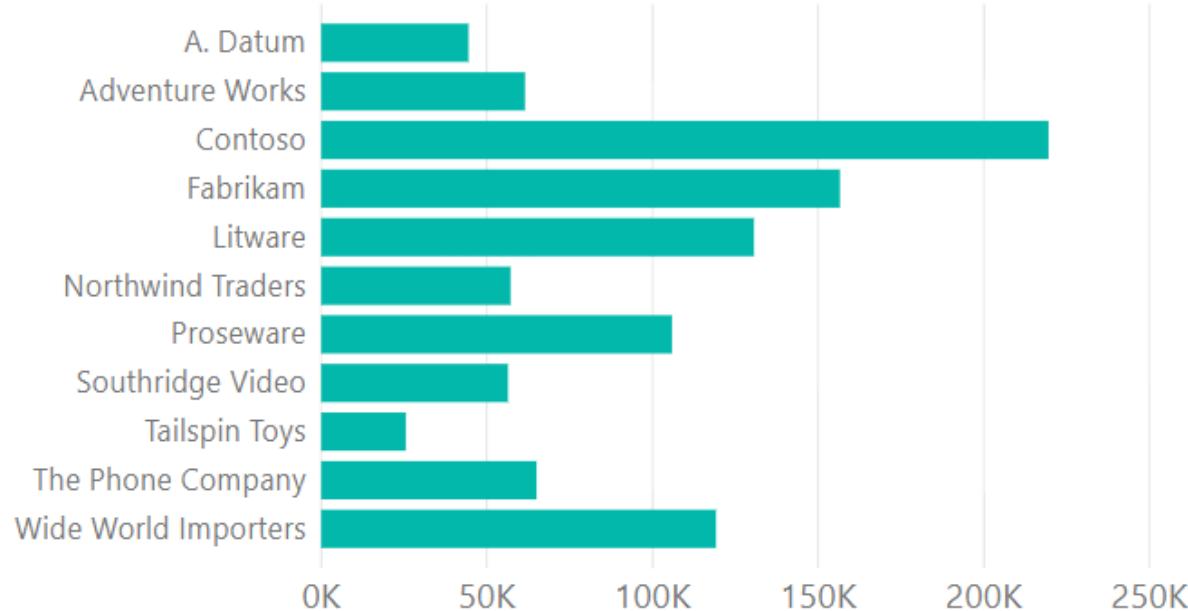
Export data
Show Data
Remove
Automatically find clusters
Spotlight
Sort Descending
Sort Ascending
Sort by

Month
Month Number
Sales
Brand
 Budget
CountryRegion
 Month
 Month Number
 Sale 2013

Microsoft Power BI

Final Result

Budget by Brand



Month	Sale 2015	Budget
February	65,389.24	97,616.67
March	78,959.30	95,533.33
April	116,320.35	97,616.67
May	163,396.26	96,366.67
June	96,737.46	96,616.67
July	148,100.26	92,200.00
August	104,985.34	88,866.67
September	96,717.64	97,616.67
October	93,229.21	89,116.67
November	10,788.00	94,325.00
December		95,950.00
Total	974,623.06	1,041,825.00

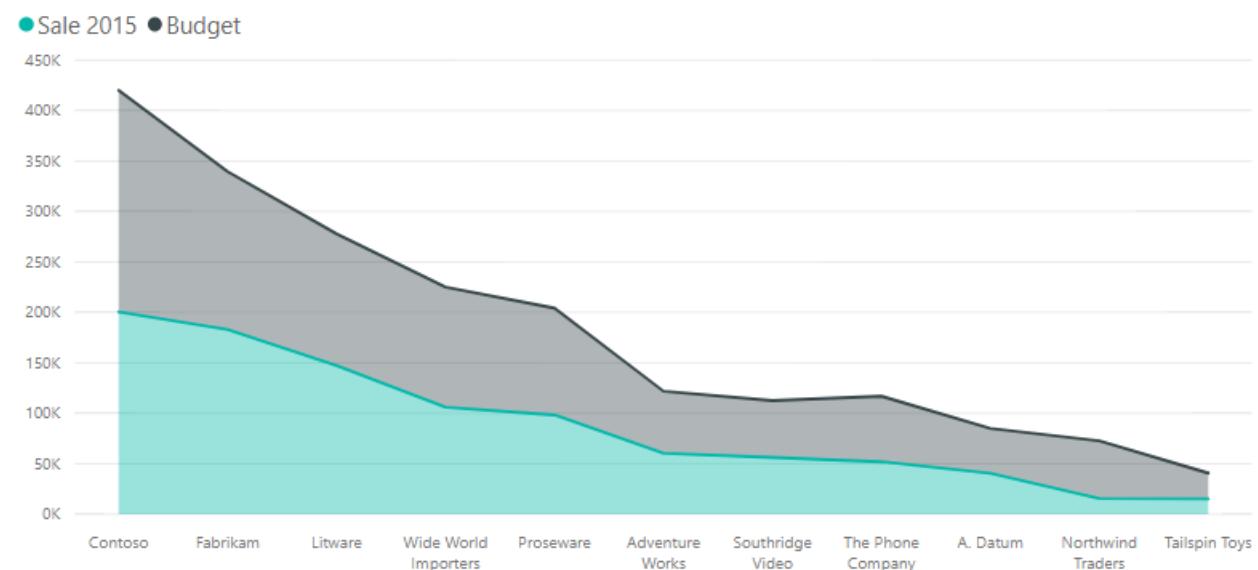
Microsoft Power BI

Exercise

New / Repeat all steps / Create below visuals

Month	Budget	Sale 2015
February	97,616.67	65,389.24
March	95,533.33	78,959.30
April	97,616.67	116,320.35
May	96,366.67	163,396.26
June	96,616.67	96,737.46
July	92,200.00	148,100.26
August	88,866.67	104,985.34
September	97,616.67	96,717.64
October	89,116.67	93,229.21
November	94,325.00	10,788.00
December	95,950.00	
Total	1,041,825.00	974,623.06

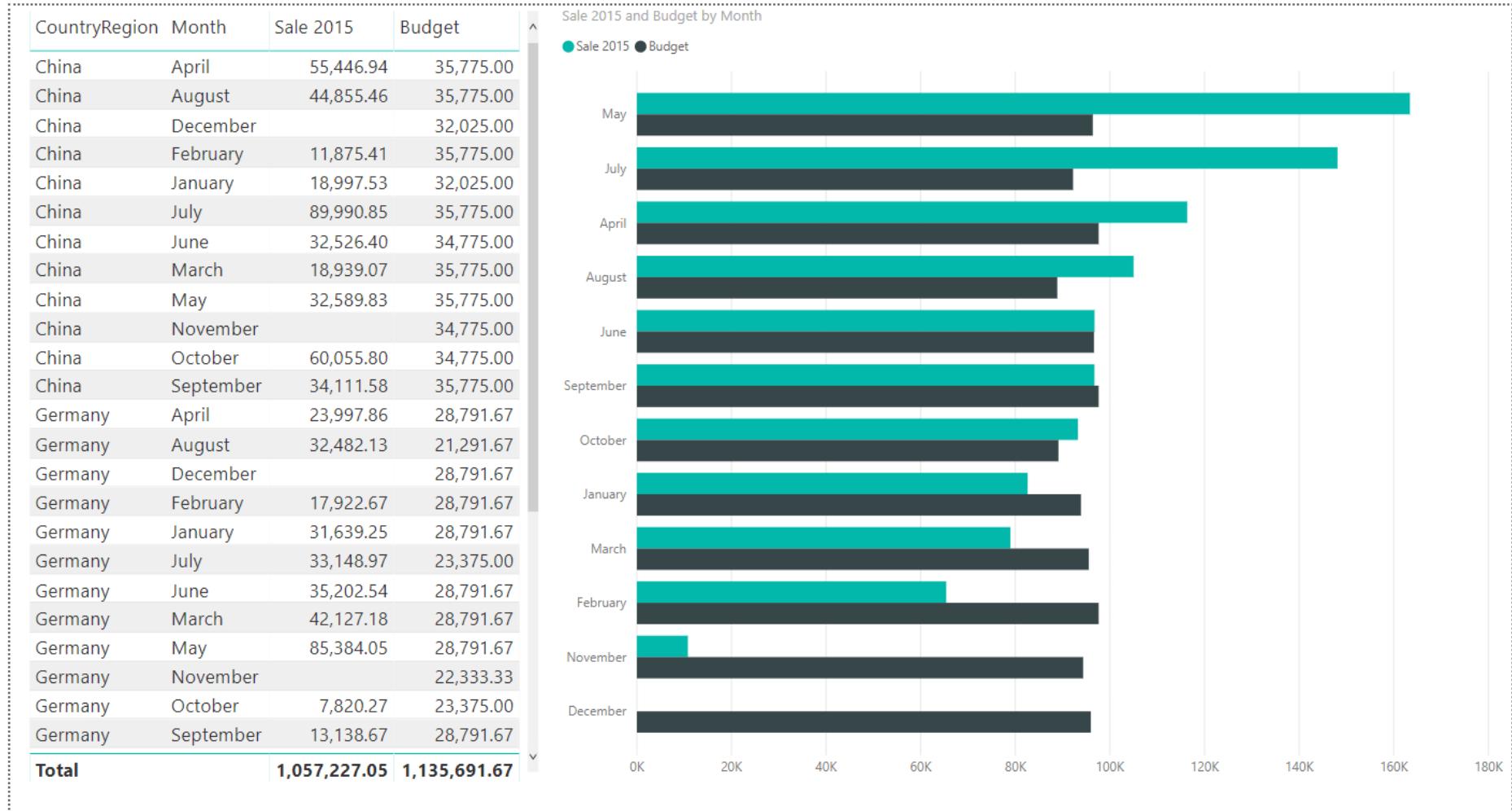
Sale 2015 and Budget by Brand



Custom Column

Microsoft Power BI

Create this visual from 2015 Sales.xlsx



Microsoft Power BI

We want to clear Budget if Sale = 0

CountryRegion	Month	Sale 2015	Budget
China	April	55,446.94	35,775.00
China	August	44,855.46	35,775.00
China	December		32,025.00
China	February	11,875.41	35,775.00
China	January	18,997.53	32,025.00
China	July	89,990.85	35,775.00
China	June	32,526.40	34,775.00
China	March	18,939.07	35,775.00
China	May	32,589.83	35,775.00
China	November		34,775.00

Microsoft Power BI

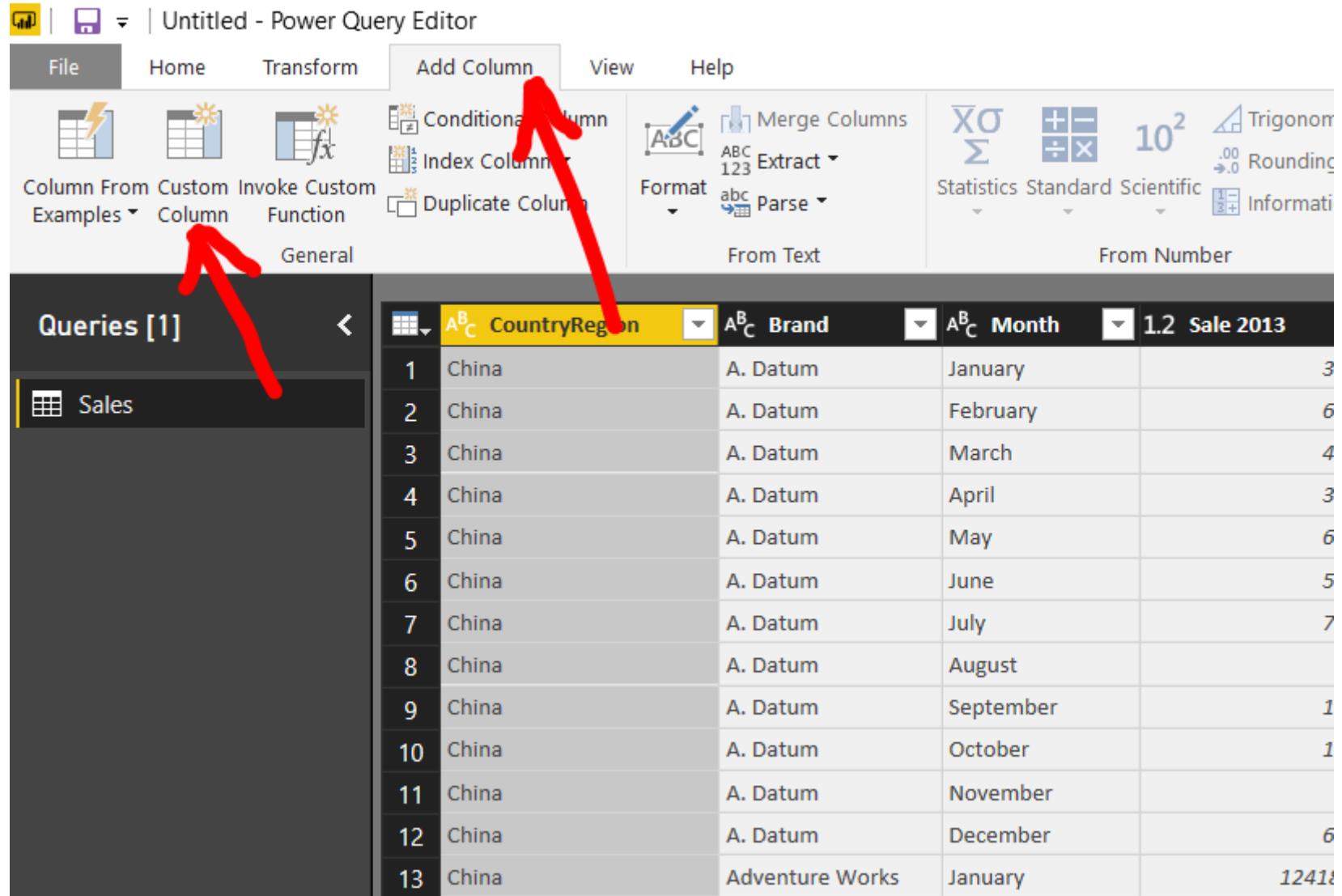
Edit queries

A screenshot of the Microsoft Power BI Desktop application. The window title is "Untitled - Power BI Desktop". The ribbon menu is open, showing tabs: File, Home, View, Modeling, and Help. The "Home" tab is currently selected. Below the ribbon, there are several icons: Paste, Cut, Copy, Format Painter, Get Data, Recent Sources, Enter Data, Edit Queries (which has a red arrow pointing to it), Refresh, New Page, and New Visual. A sidebar on the left contains icons for Report, Data, and Fields. The main area displays a table with the following data:

CountryRegion	Month	Sale 2015	Budget
China	April	55,446.94	35,775.00
China	August	44,554.46	35,775.00
China	December		32,025.00
China	February	11,875.41	35,775.00
China	January	18,997.53	32,025.00
China	July	89,990.85	35,775.00

Microsoft Power BI

Add Column / Custom Column

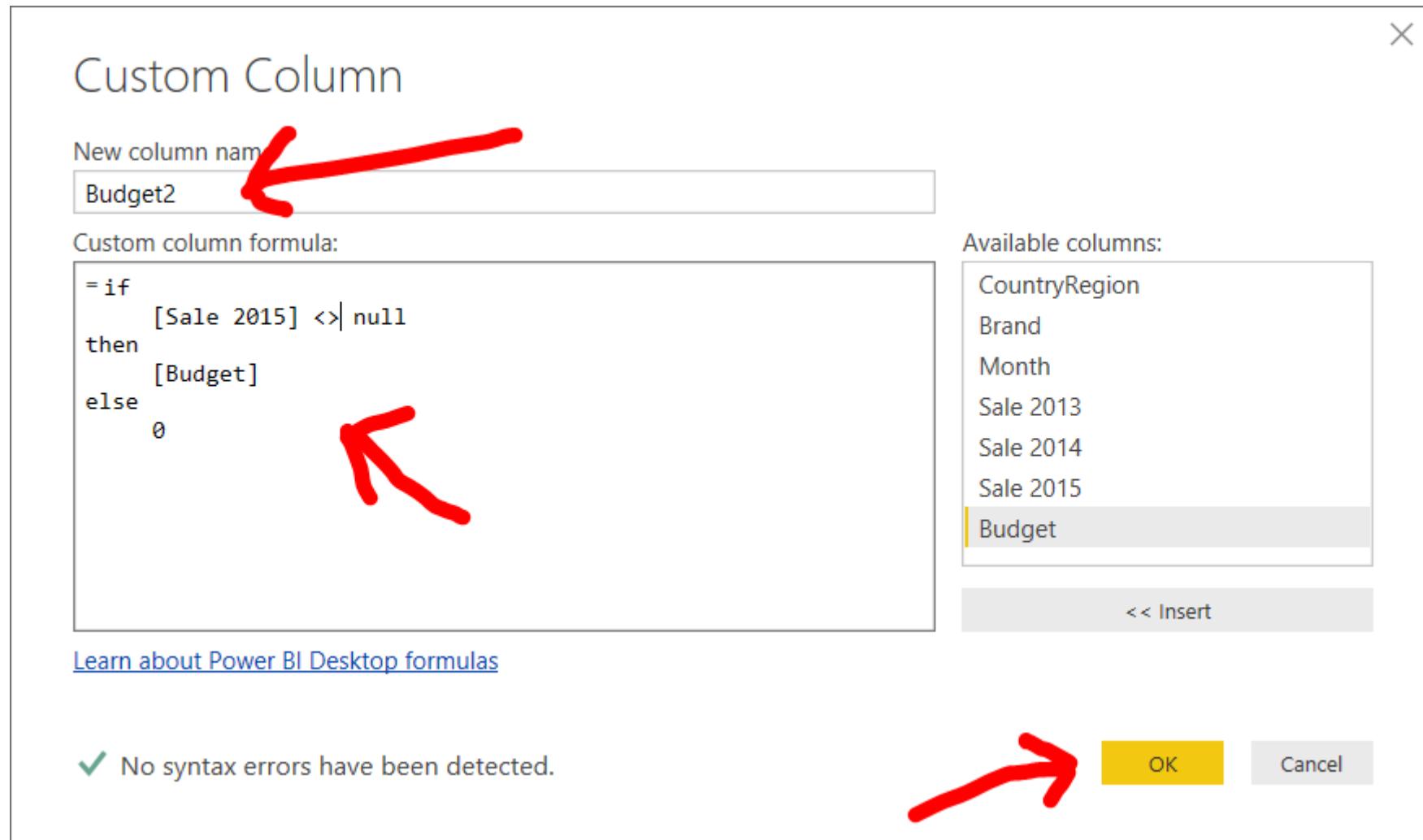


The screenshot shows the Microsoft Power Query Editor interface. The ribbon at the top has tabs: File, Home, Transform, Add Column (which is highlighted with a red arrow), View, and Help. Below the ribbon, there are several icons and buttons. One button, 'Custom Column', is also highlighted with a red arrow. The main area shows a table with columns: CountryRegion, Brand, Month, and Sale 2013. The 'CountryRegion' column contains values like China, A. Datum, and Adventure Works. The 'Month' column contains months from January to December. The 'Sale 2013' column contains numerical values. The 'Queries [1]' pane on the left shows a single query named 'Sales'.

	CountryRegion	Brand	Month	Sale 2013
1	China	A. Datum	January	3
2	China	A. Datum	February	6
3	China	A. Datum	March	4
4	China	A. Datum	April	3
5	China	A. Datum	May	6
6	China	A. Datum	June	5
7	China	A. Datum	July	7
8	China	A. Datum	August	1
9	China	A. Datum	September	1
10	China	A. Datum	October	1
11	China	A. Datum	November	6
12	China	A. Datum	December	12418
13	China	Adventure Works	January	

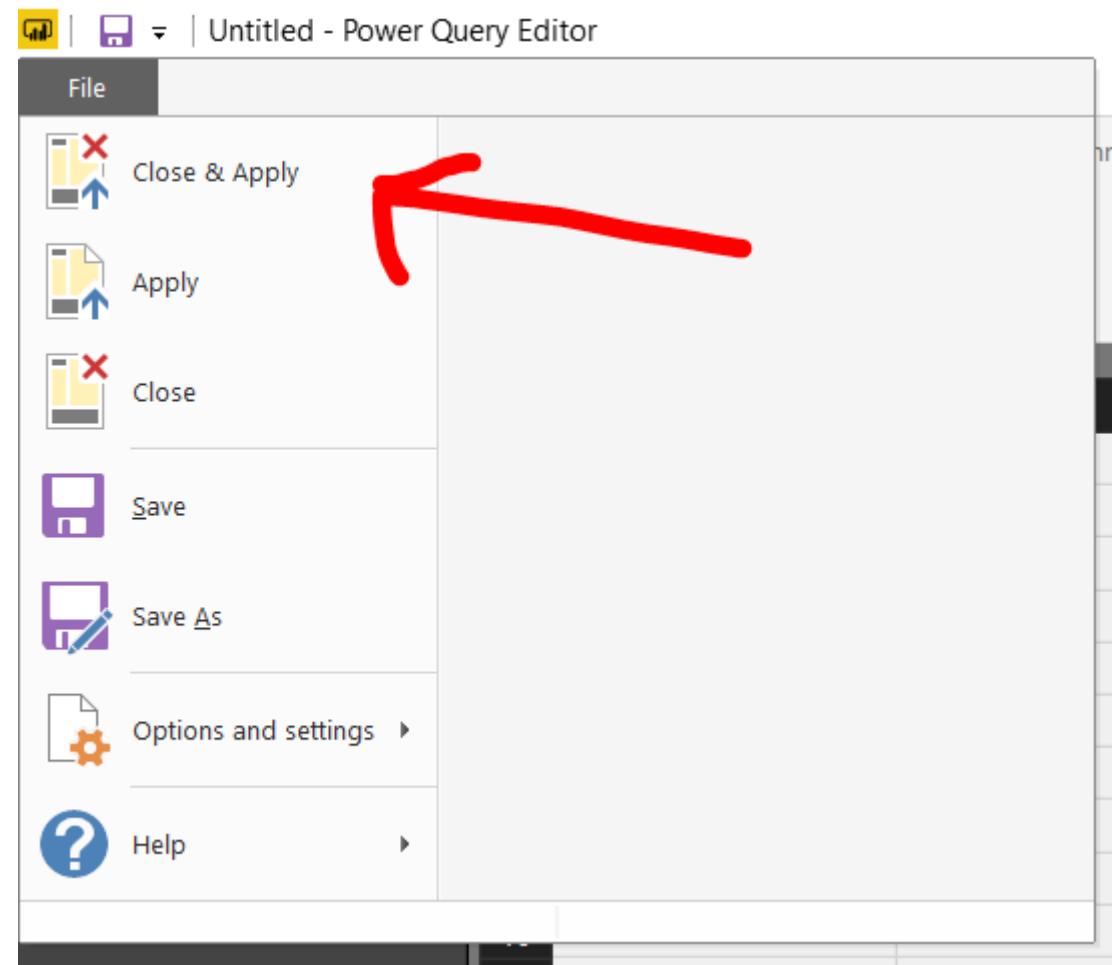
Microsoft Power BI

Enter name and formula



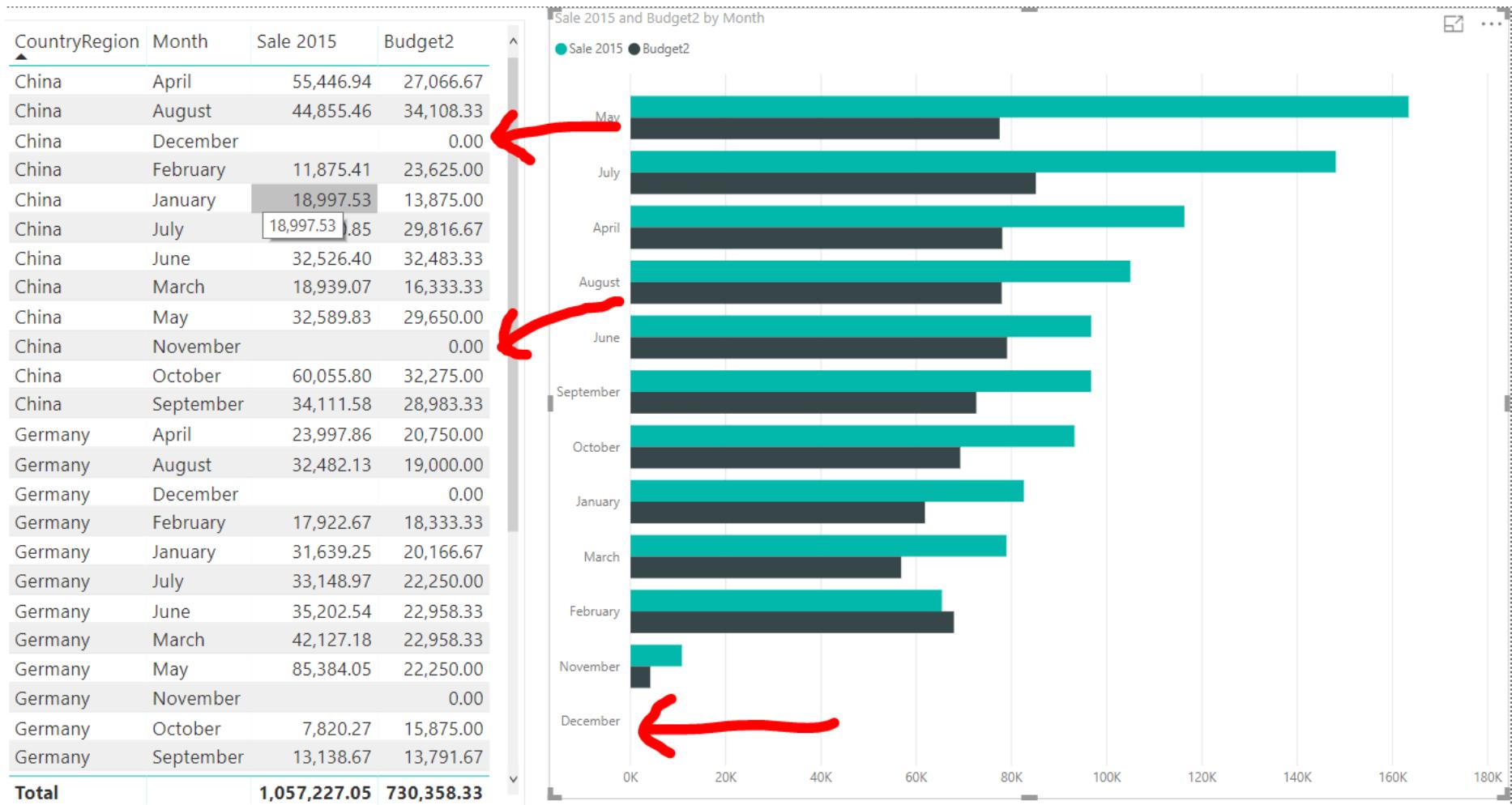
Microsoft Power BI

Close & Apply



Microsoft Power BI

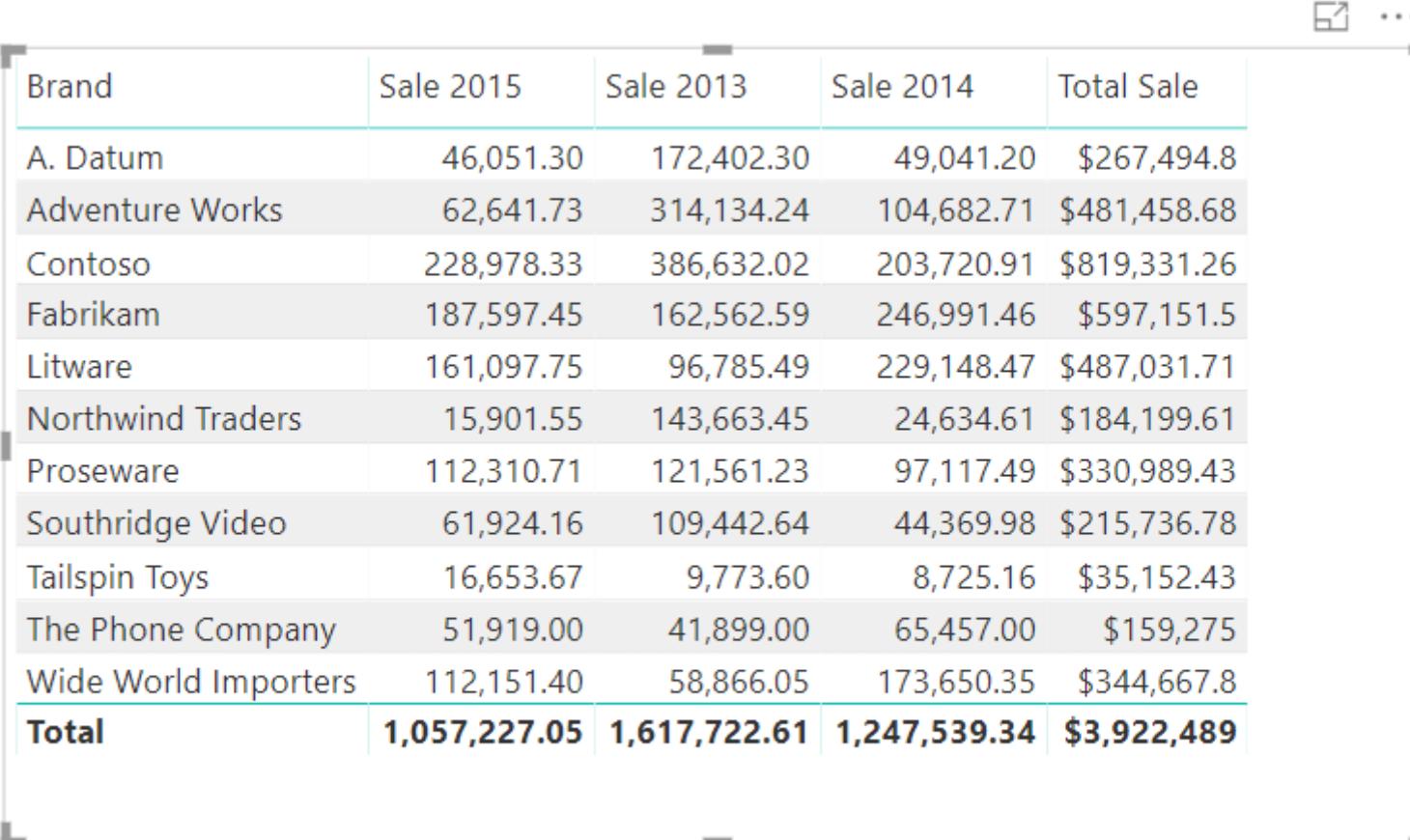
Final result



Microsoft Power BI

Exercise

Add custom column Total Sale which the value come from 3 years sale of each brand



Brand	Sale 2015	Sale 2013	Sale 2014	Total Sale
A. Datum	46,051.30	172,402.30	49,041.20	\$267,494.8
Adventure Works	62,641.73	314,134.24	104,682.71	\$481,458.68
Contoso	228,978.33	386,632.02	203,720.91	\$819,331.26
Fabrikam	187,597.45	162,562.59	246,991.46	\$597,151.5
Litware	161,097.75	96,785.49	229,148.47	\$487,031.71
Northwind Traders	15,901.55	143,663.45	24,634.61	\$184,199.61
Proseware	112,310.71	121,561.23	97,117.49	\$330,989.43
Southridge Video	61,924.16	109,442.64	44,369.98	\$215,736.78
Tailspin Toys	16,653.67	9,773.60	8,725.16	\$35,152.43
The Phone Company	51,919.00	41,899.00	65,457.00	\$159,275
Wide World Importers	112,151.40	58,866.05	173,650.35	\$344,667.8
Total	1,057,227.05	1,617,722.61	1,247,539.34	\$3,922,489