Microsoft Power BI

Power BI

INSTRUCTOR INFORMATION

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www.laploy.com

TIME FRAME

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

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REPOSITORY

https://github.com/laploy/BI2018

SOFTWARE REQUIREMENT

- Windows 10
- Microsoft Office latest version

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

	Reporting Services	Power View / Power BI
Primary purpose	Traditional structured reporting (pre-defined queries and drill paths)	Data discovery / interactive exploration
Architectural mode	Native Mode	Power View for Excel

Loy Vanich (laplo

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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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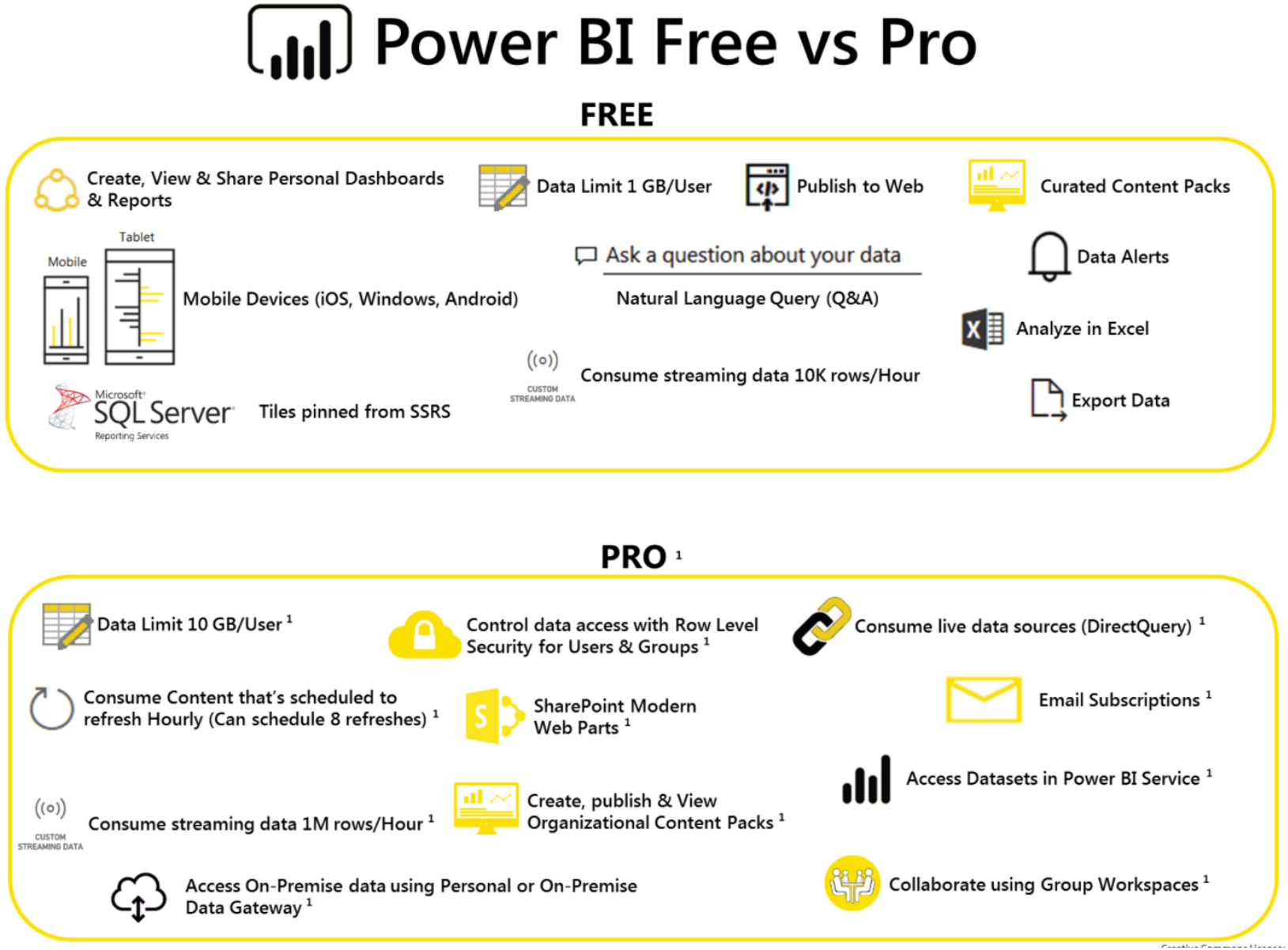

Example Scenario

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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			800.00

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Some brands are prone to seasonal effects

		Adventure Works	Contoso
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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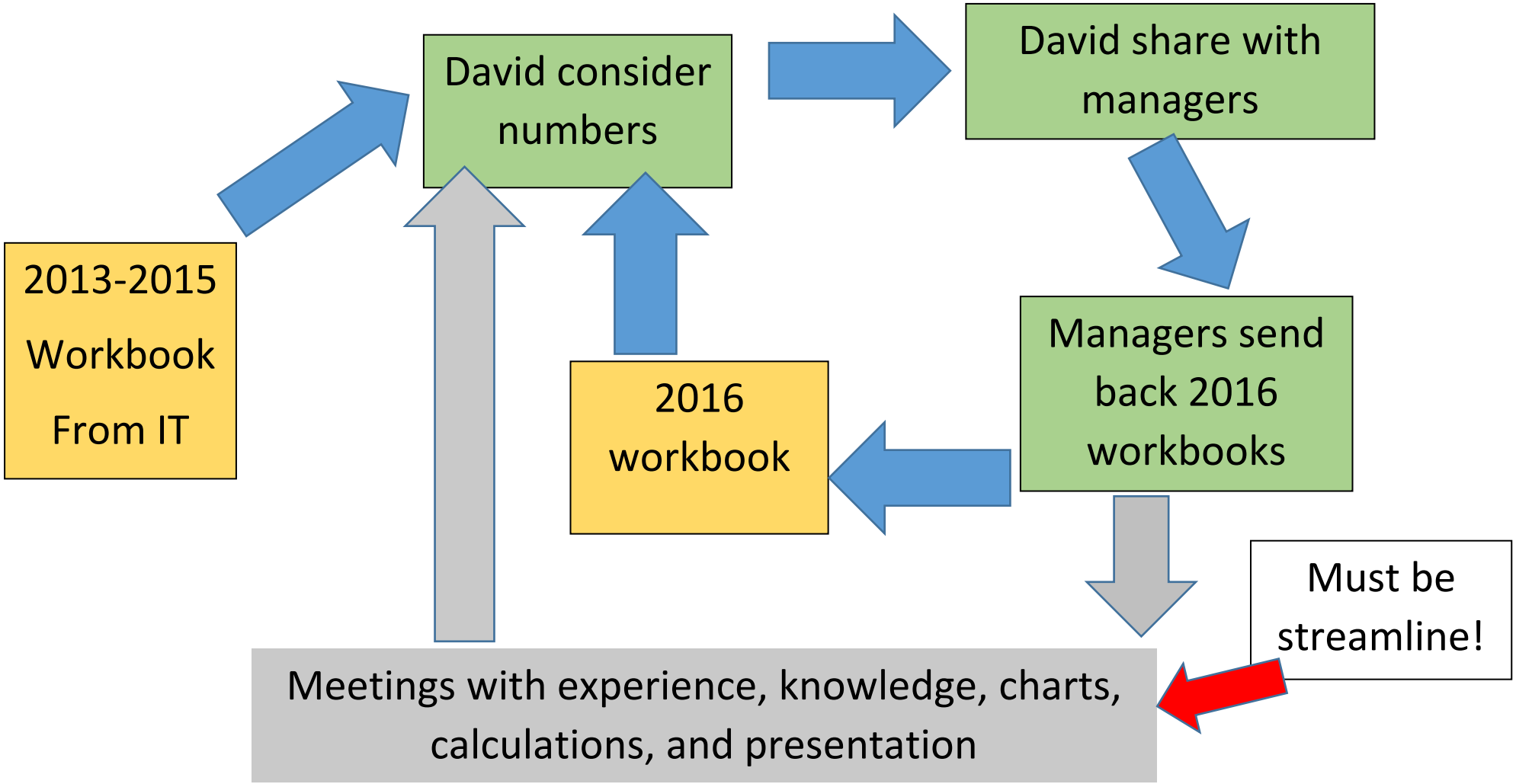
Budget plan's Workflow



Setting up Power BI

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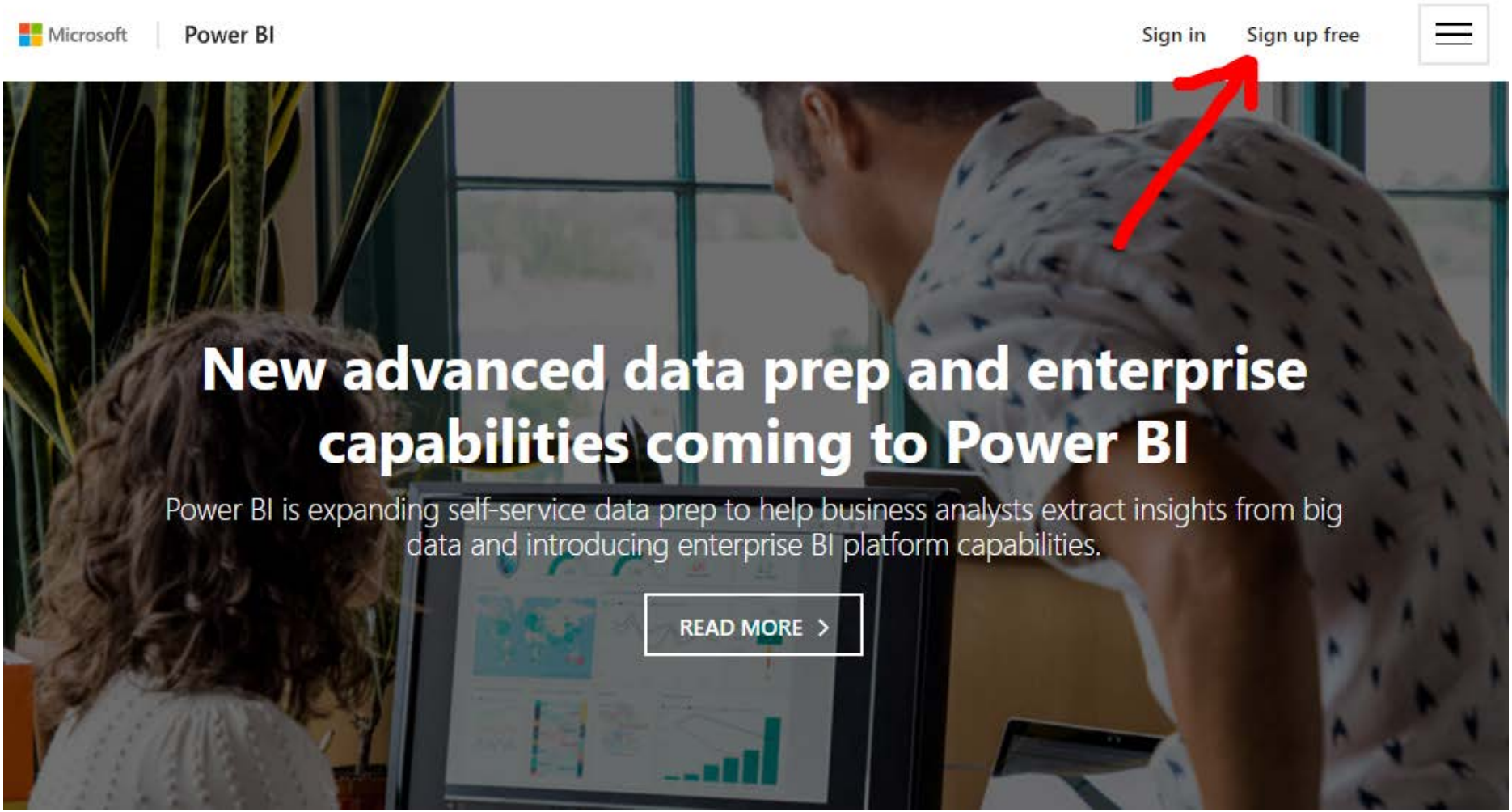
Go to Microsoft Power BI home page
https://powerbi.microsoft.com/en-us/



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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.

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On-premises report deployment

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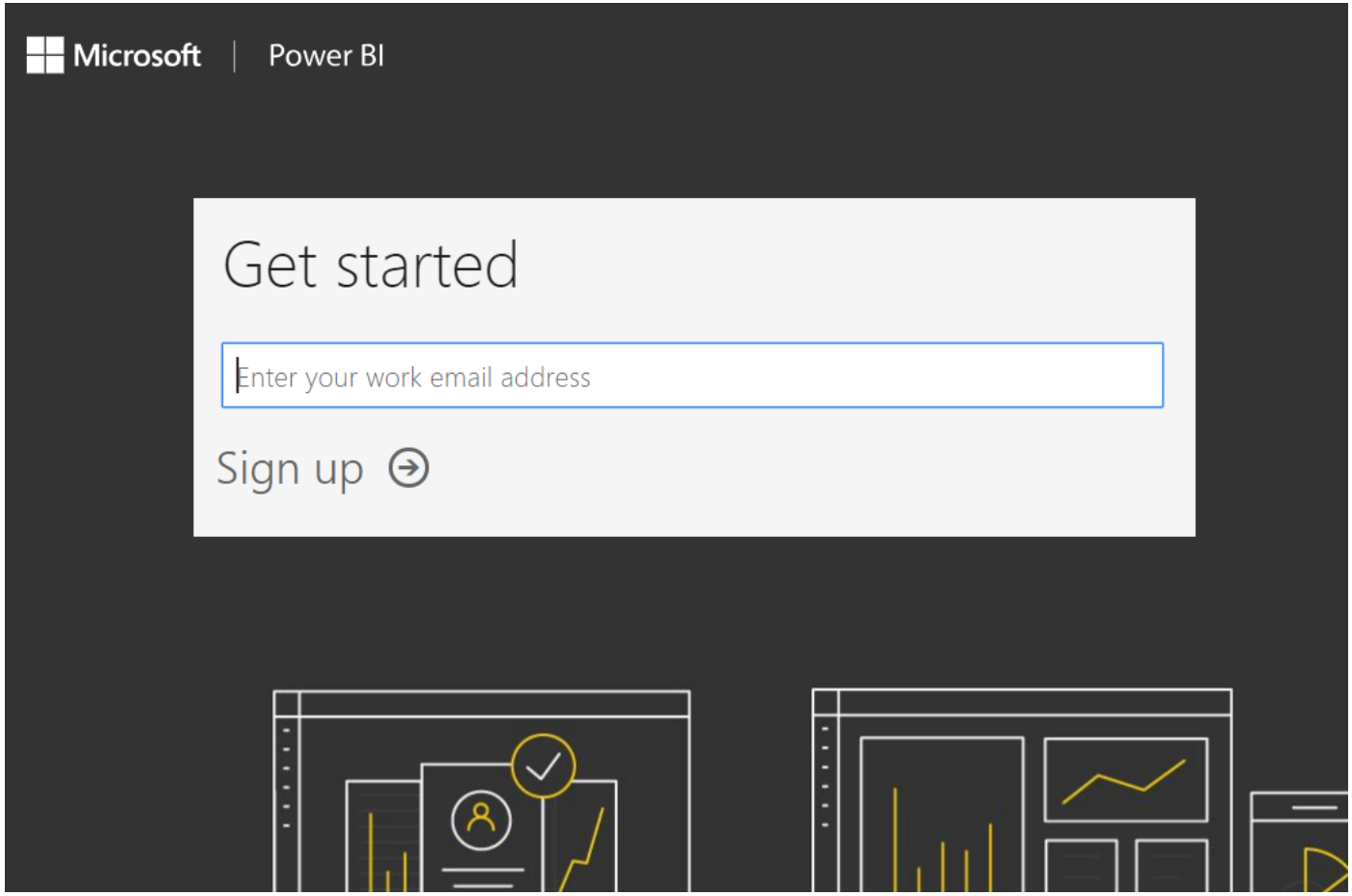

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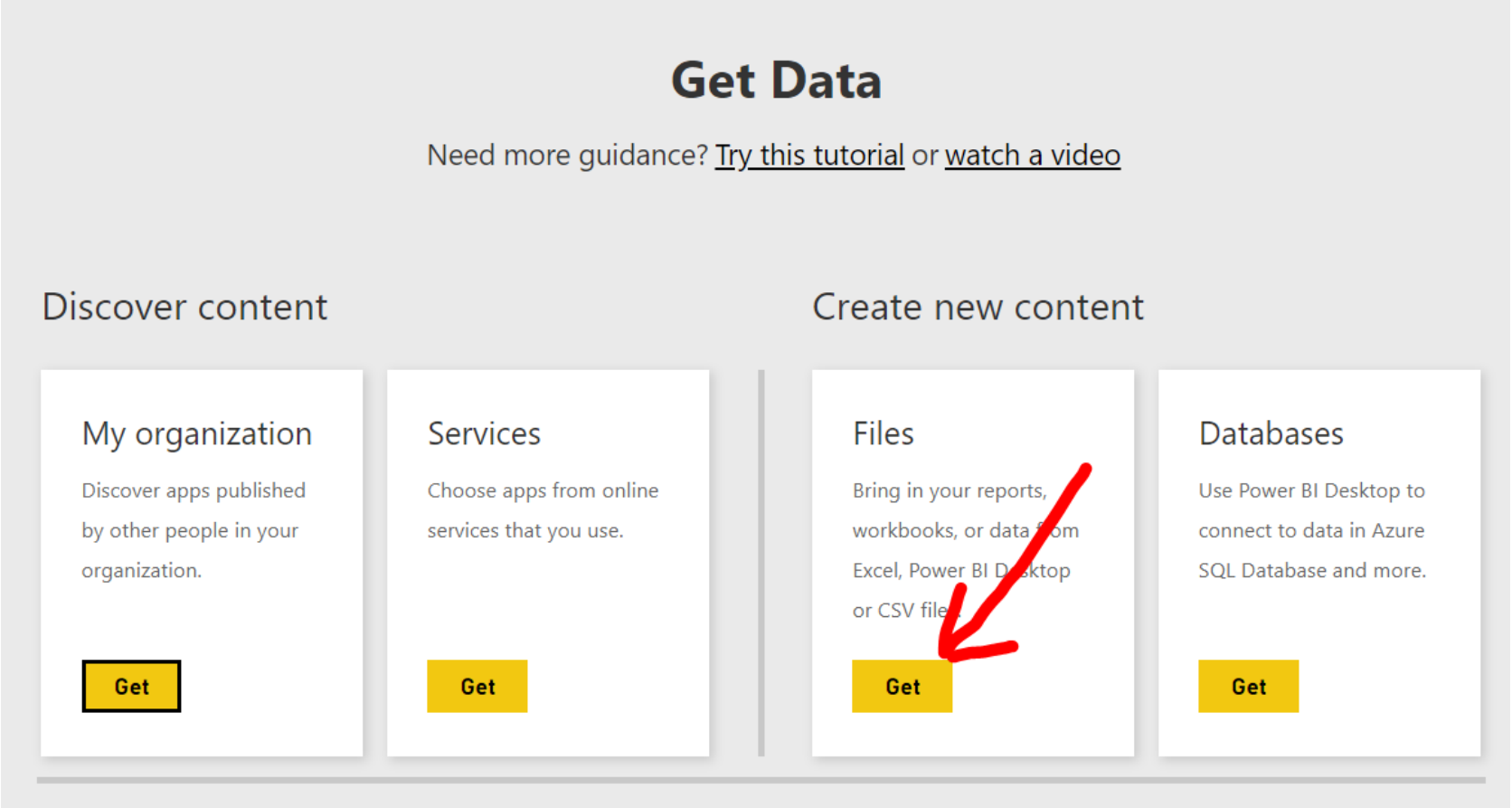

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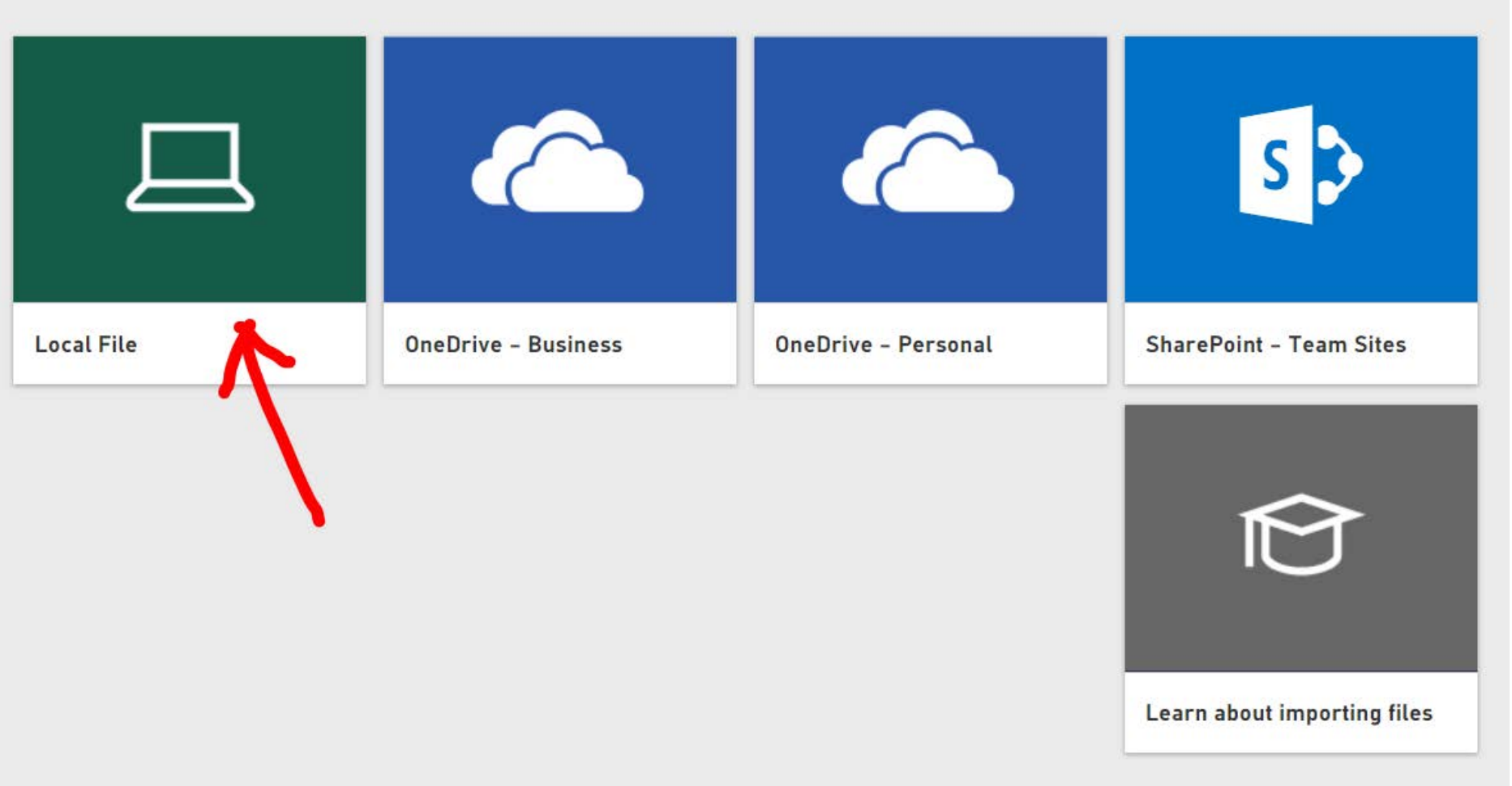

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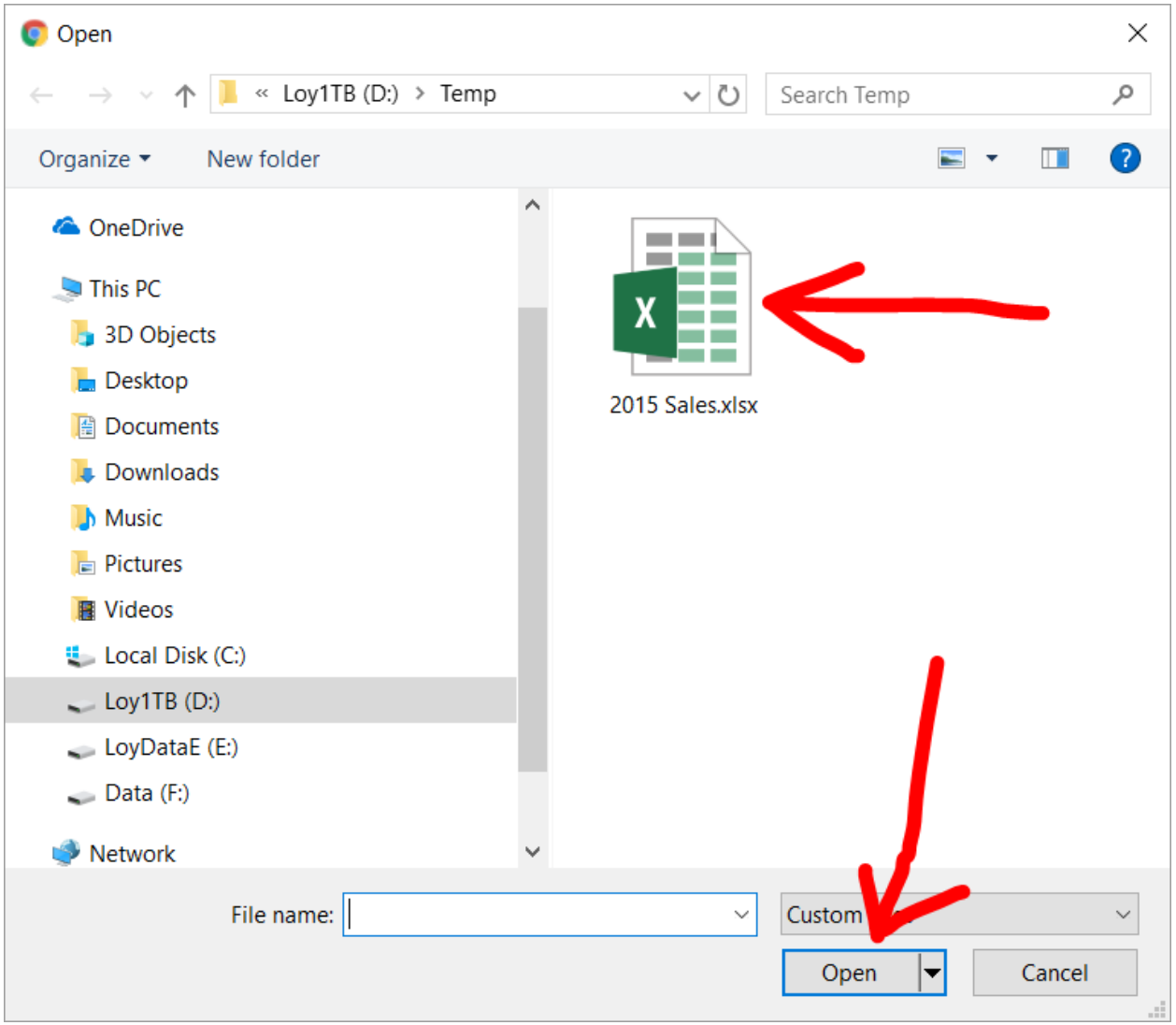

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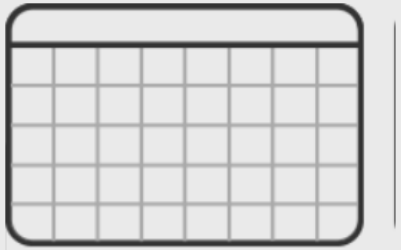
Local File

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

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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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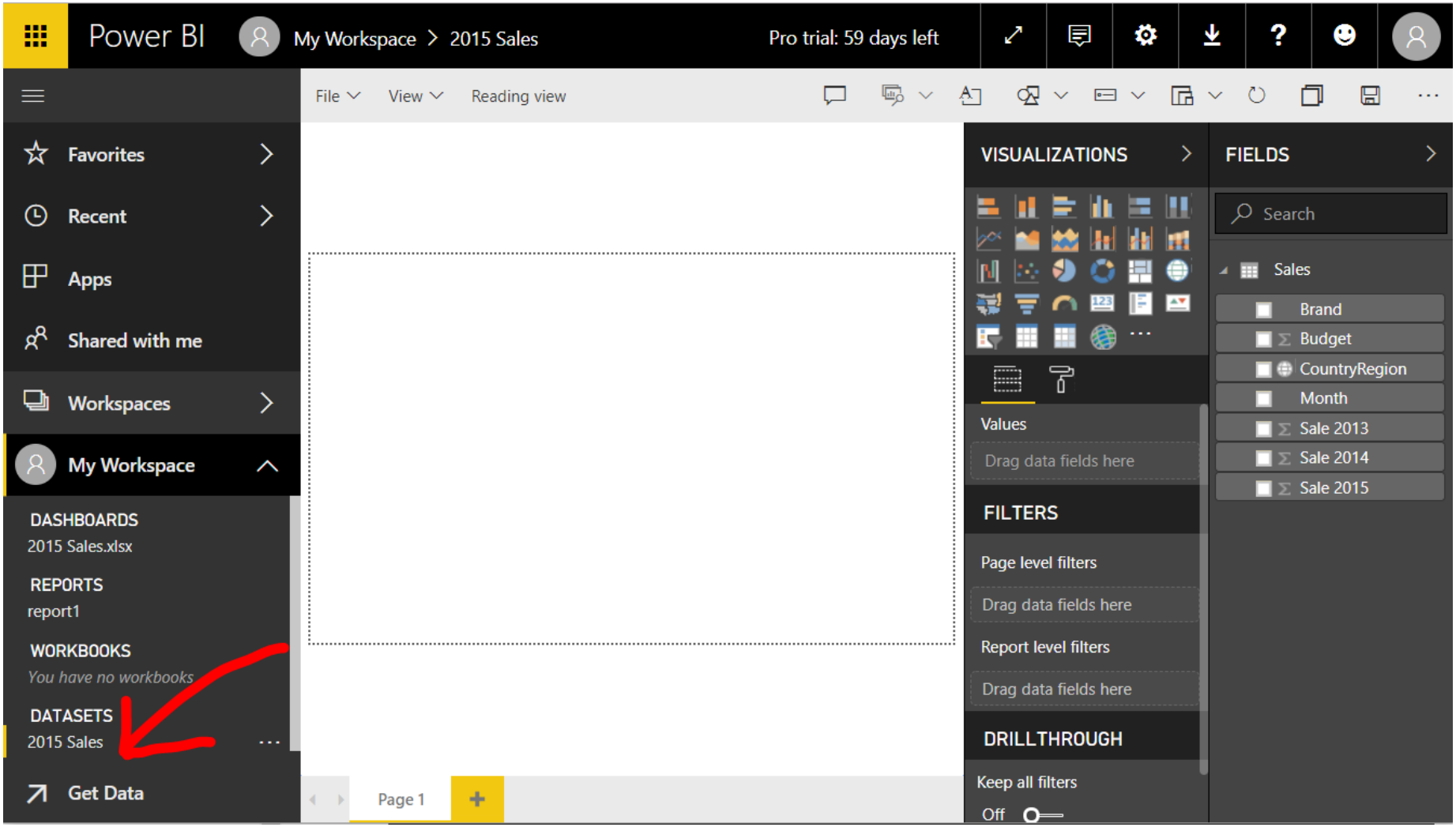
Get Data



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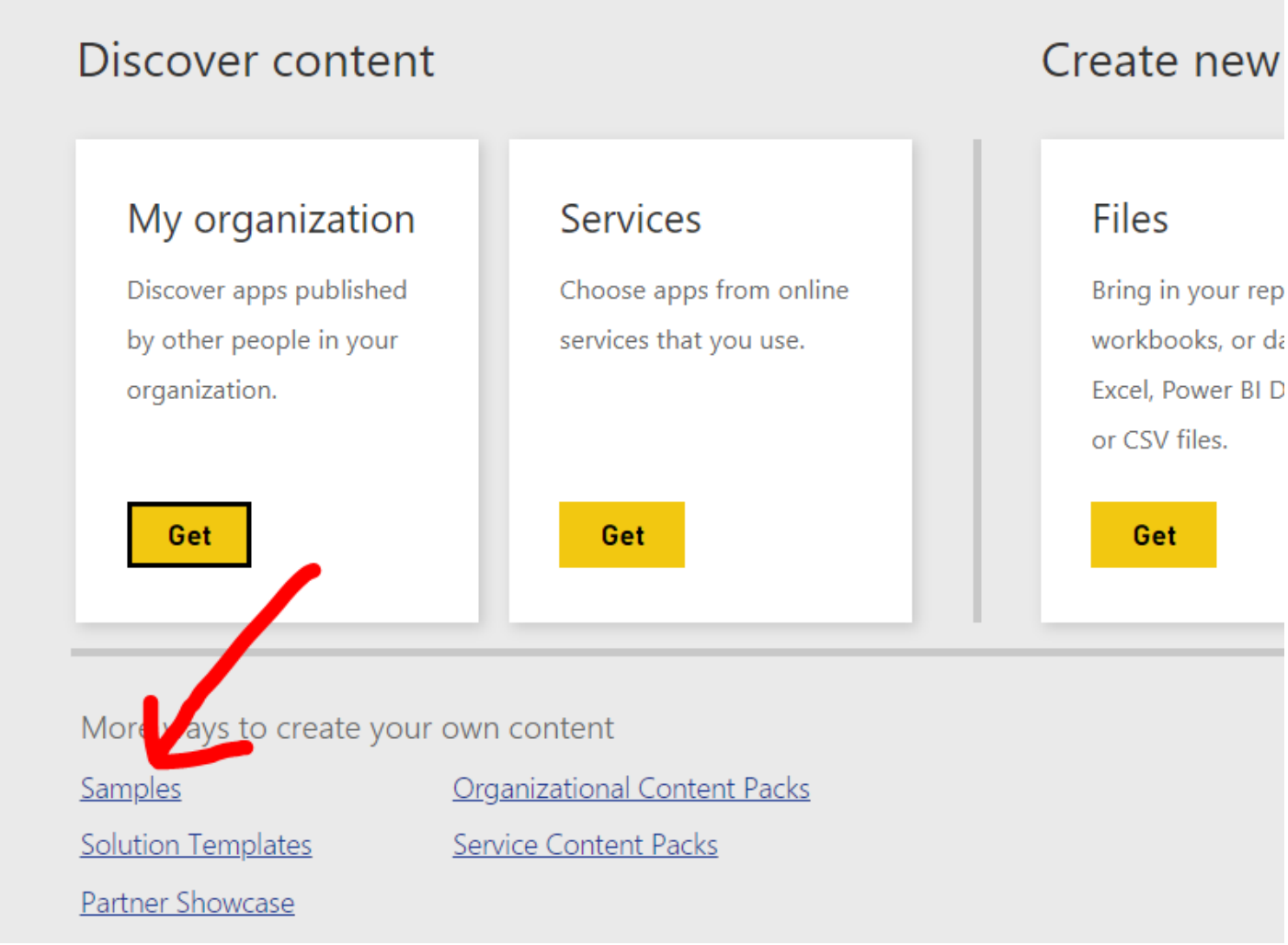
Sample



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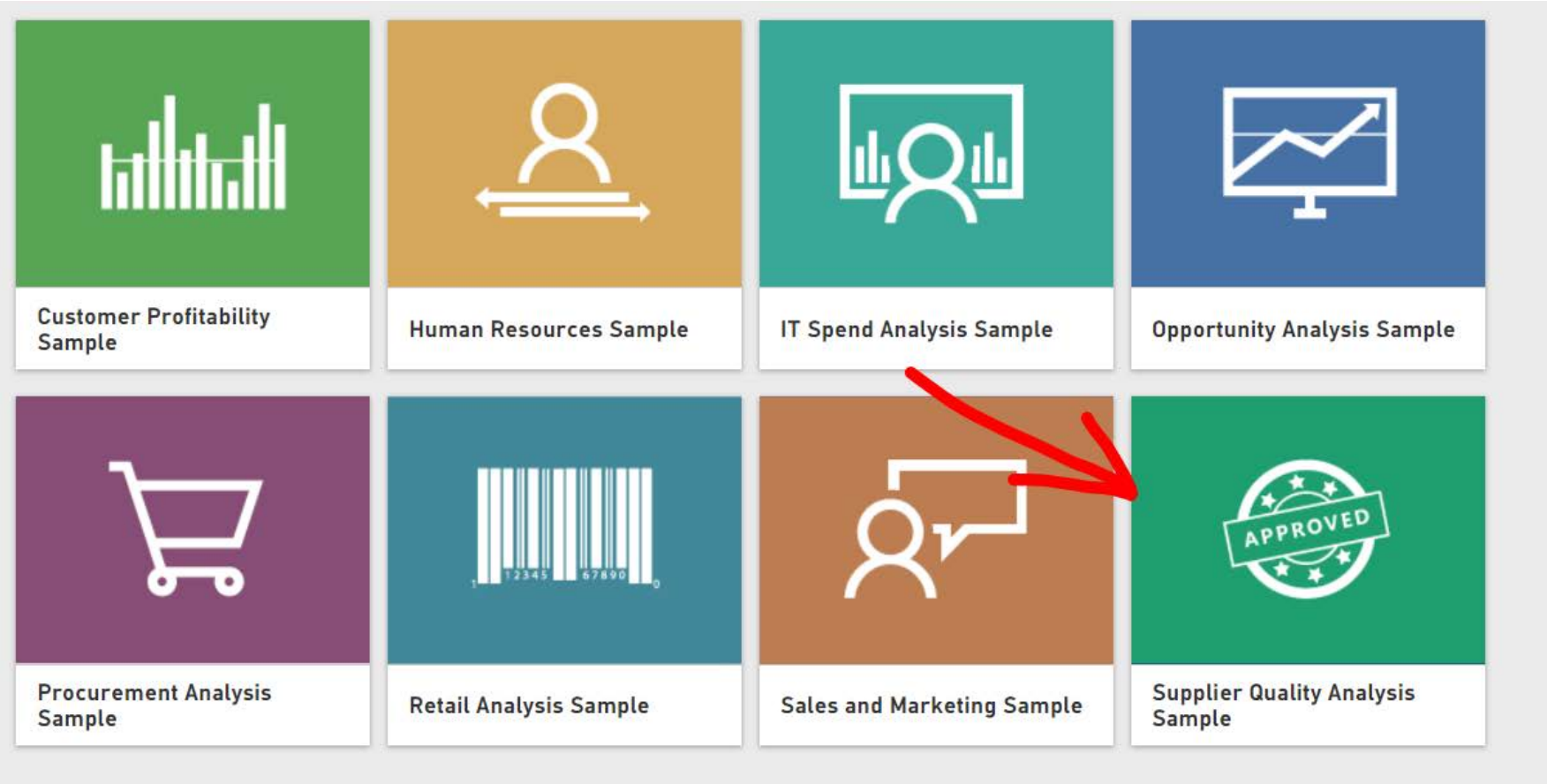
Supplier Quality Analysis Sample



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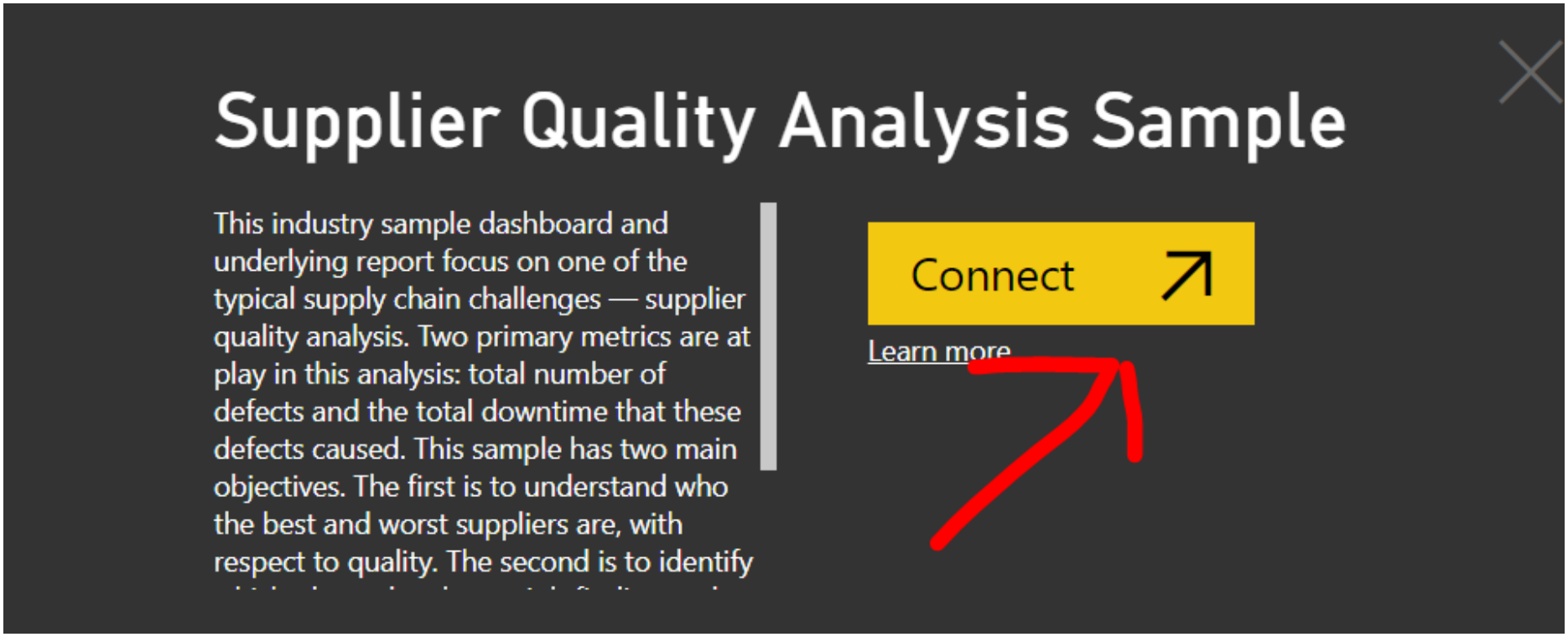
Connect



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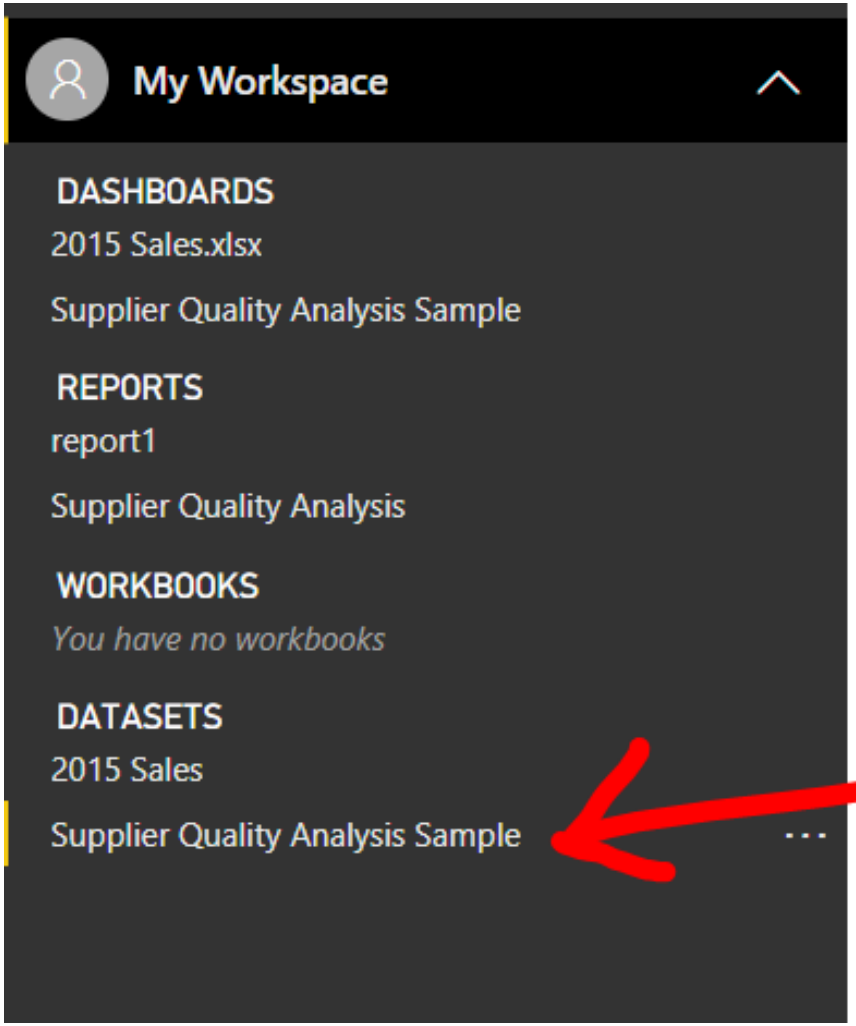
Successfully connected



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
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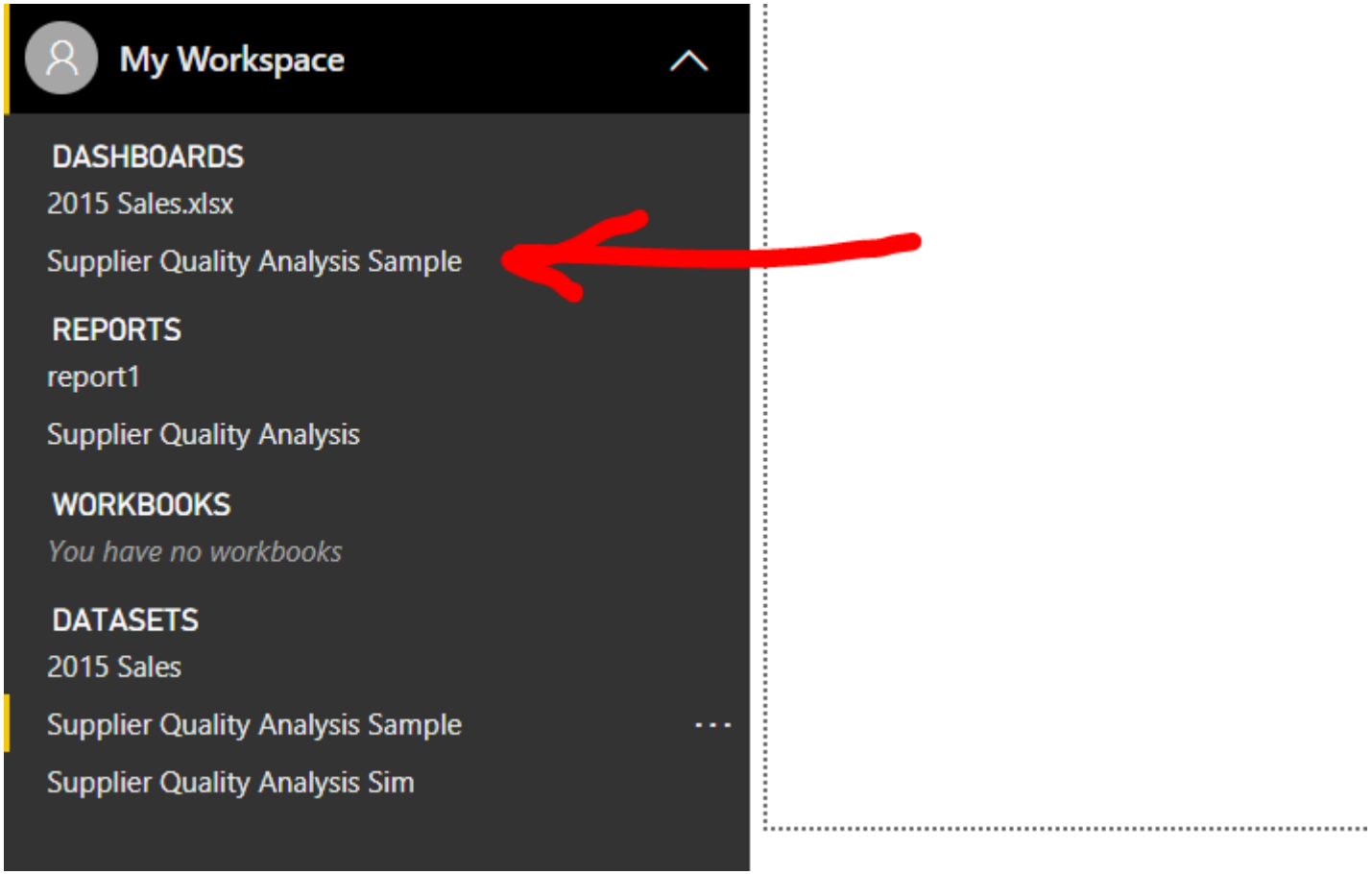
View Dashboard



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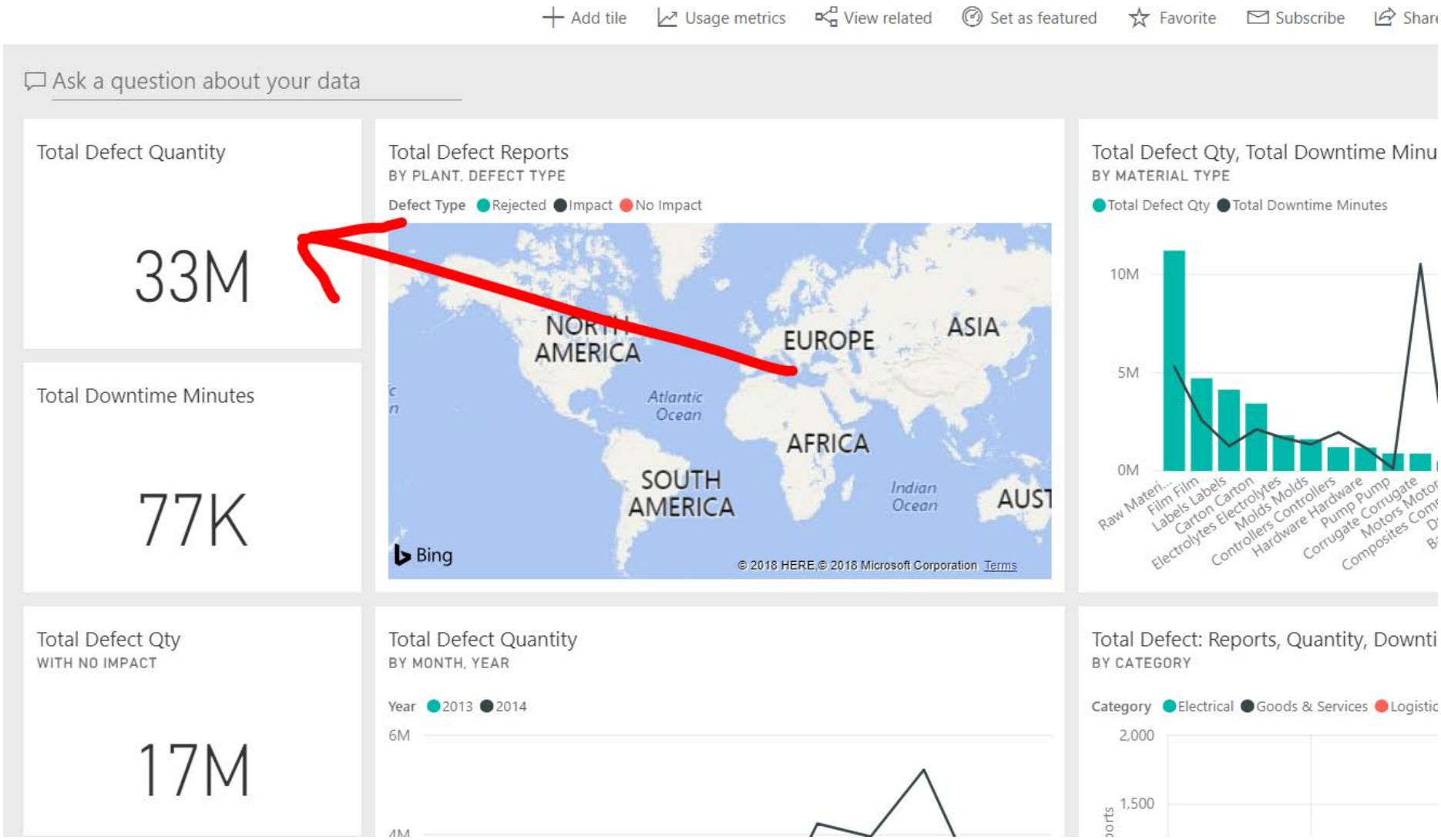
Click Total Defect Quantity



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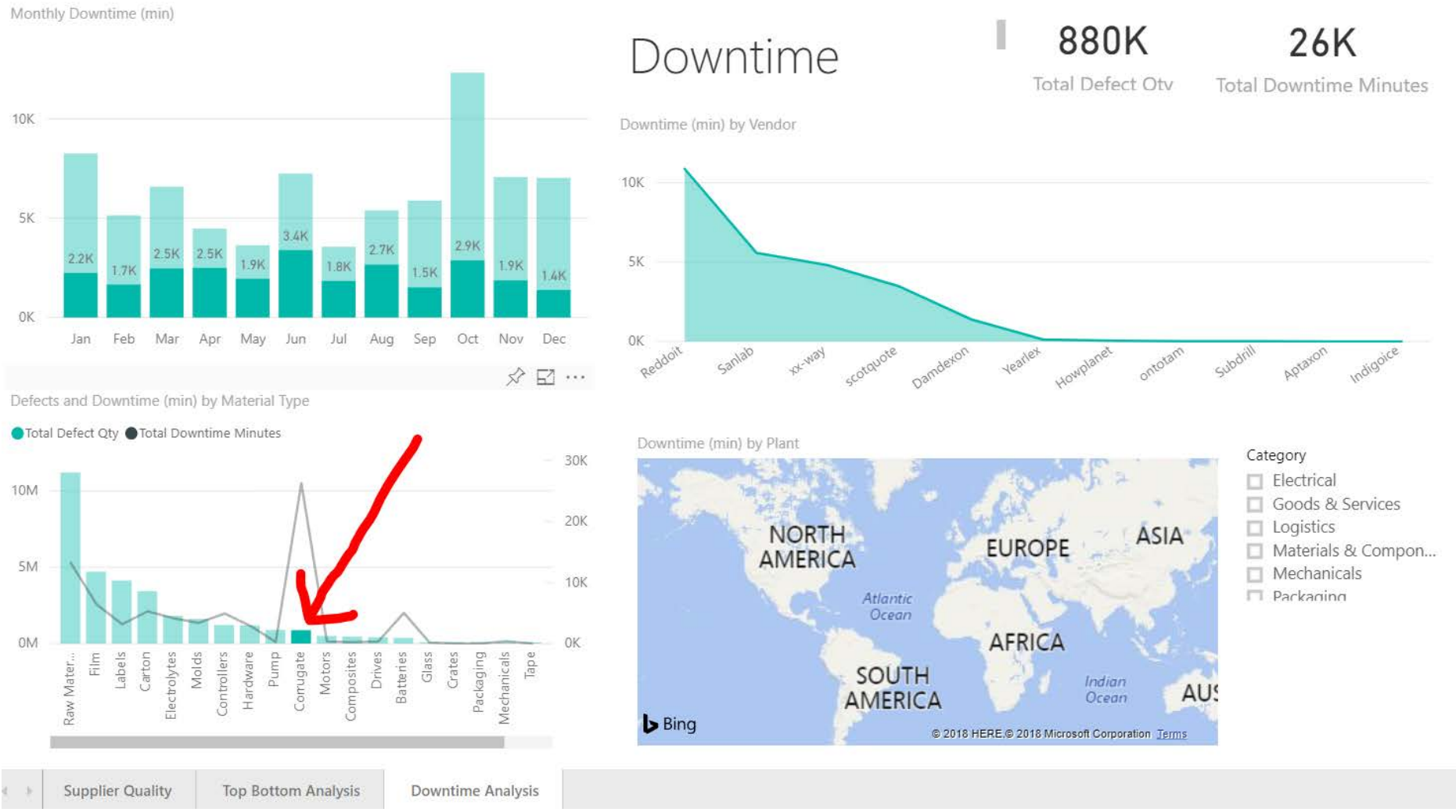
View Downtime caused by defective materials



Introducing Quick Insights

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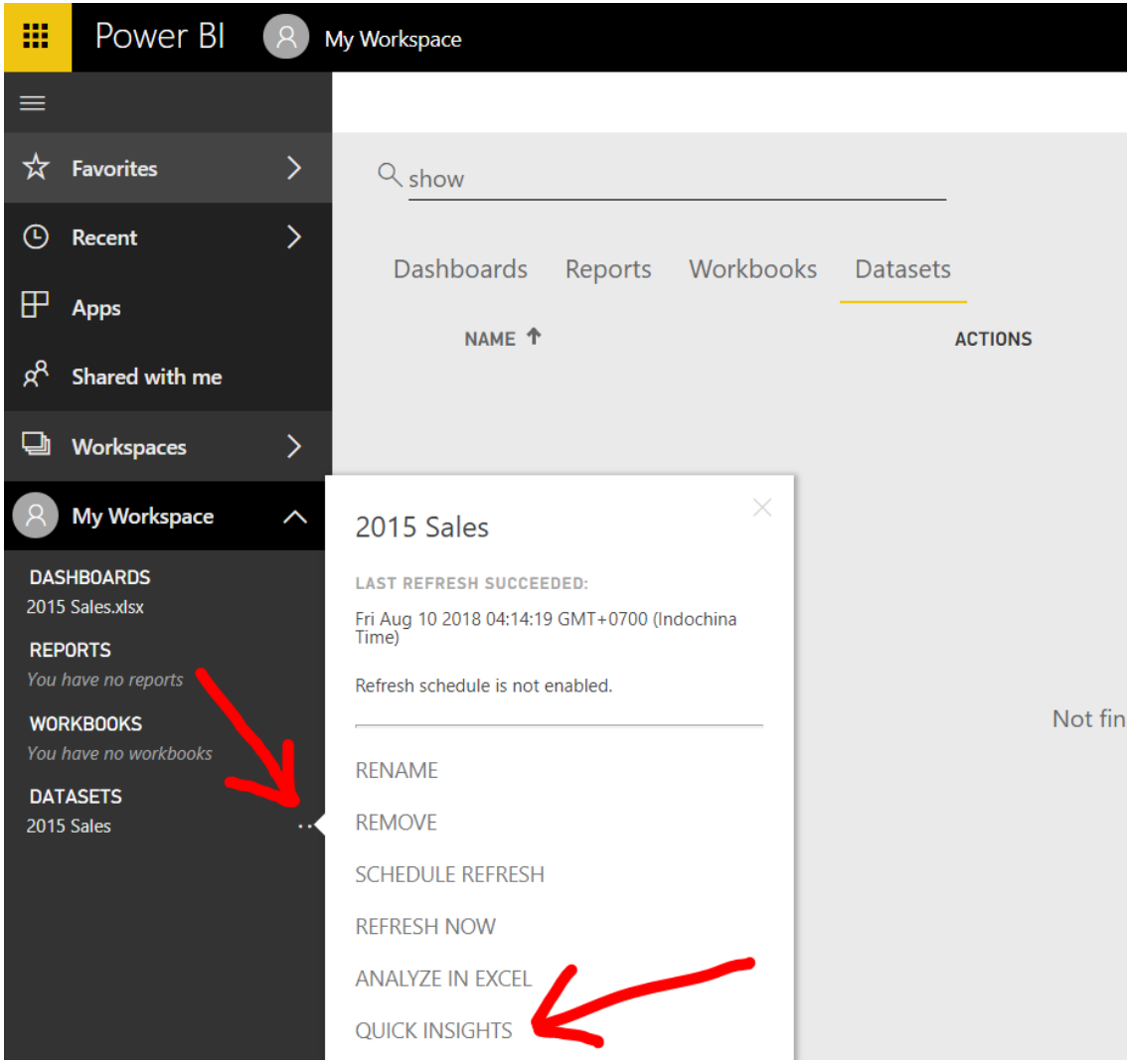
Introducing Quick Insights



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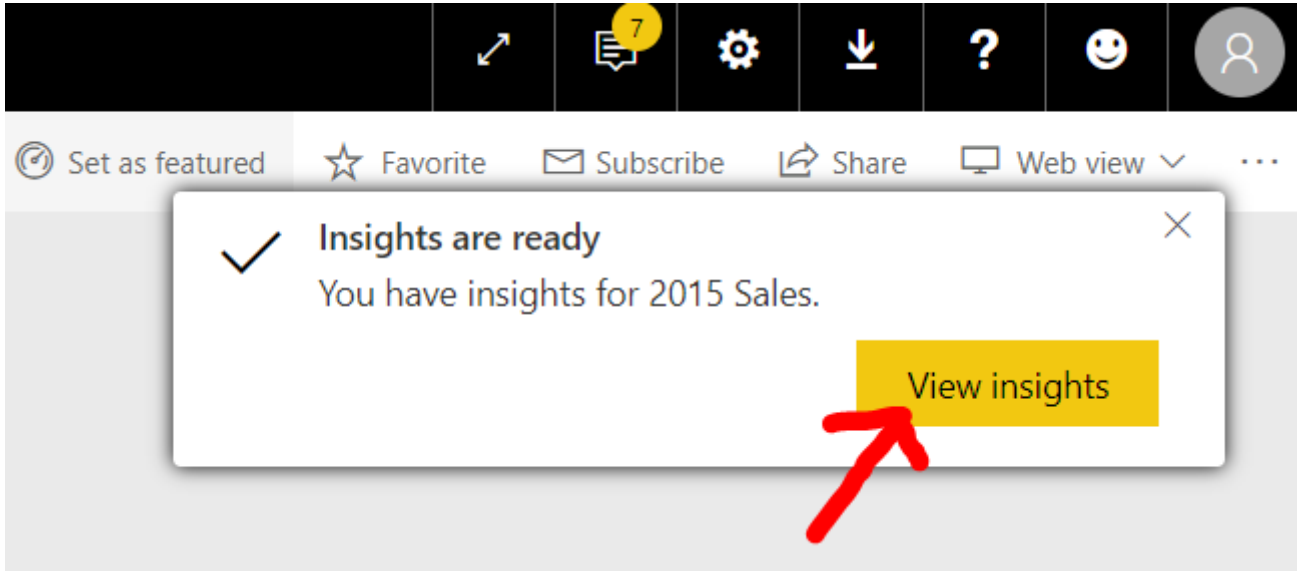
Insights are ready



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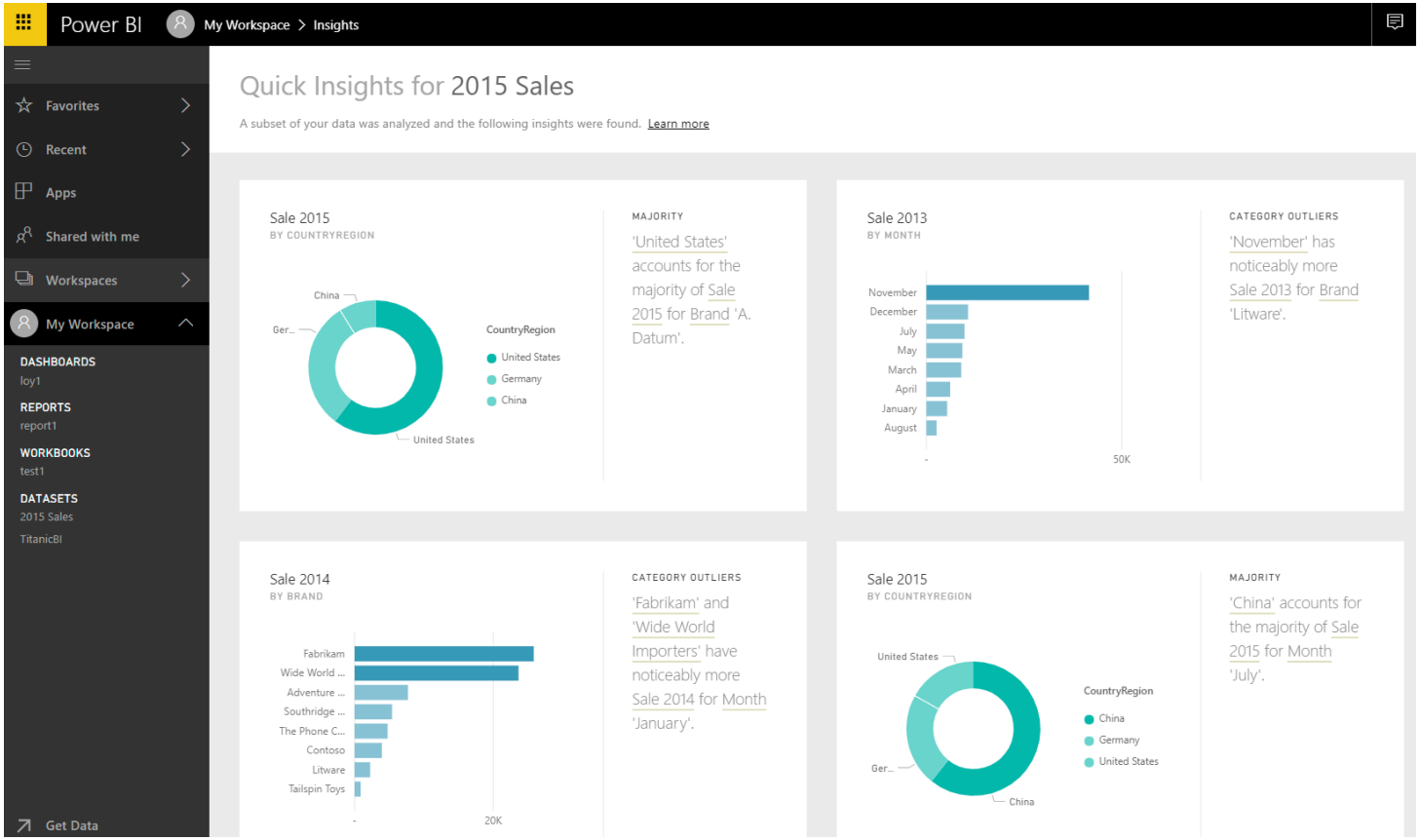
What is insight?

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



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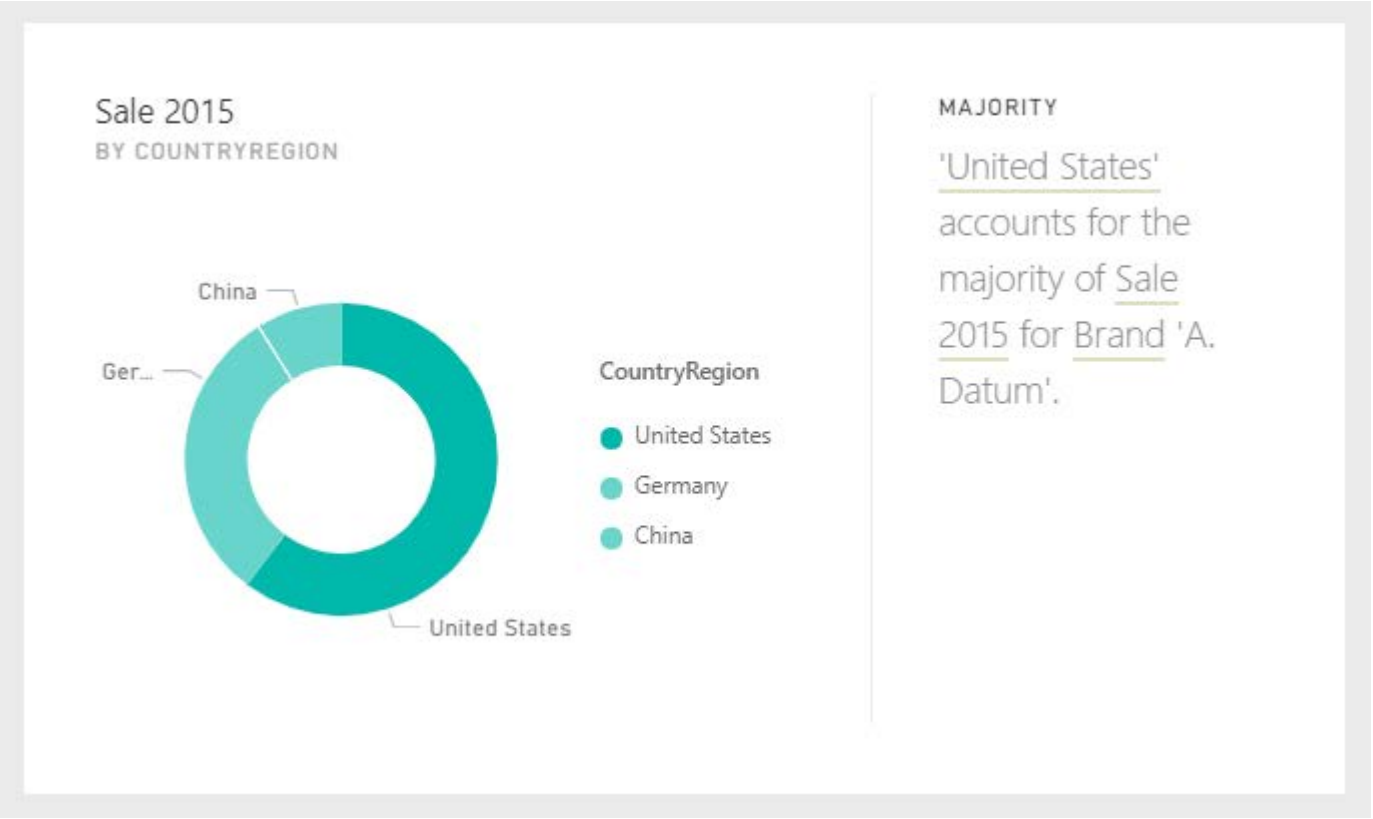
The first insight shows
United States accounts for most of the sales of the A. Datum brand
Compared with China and Germany



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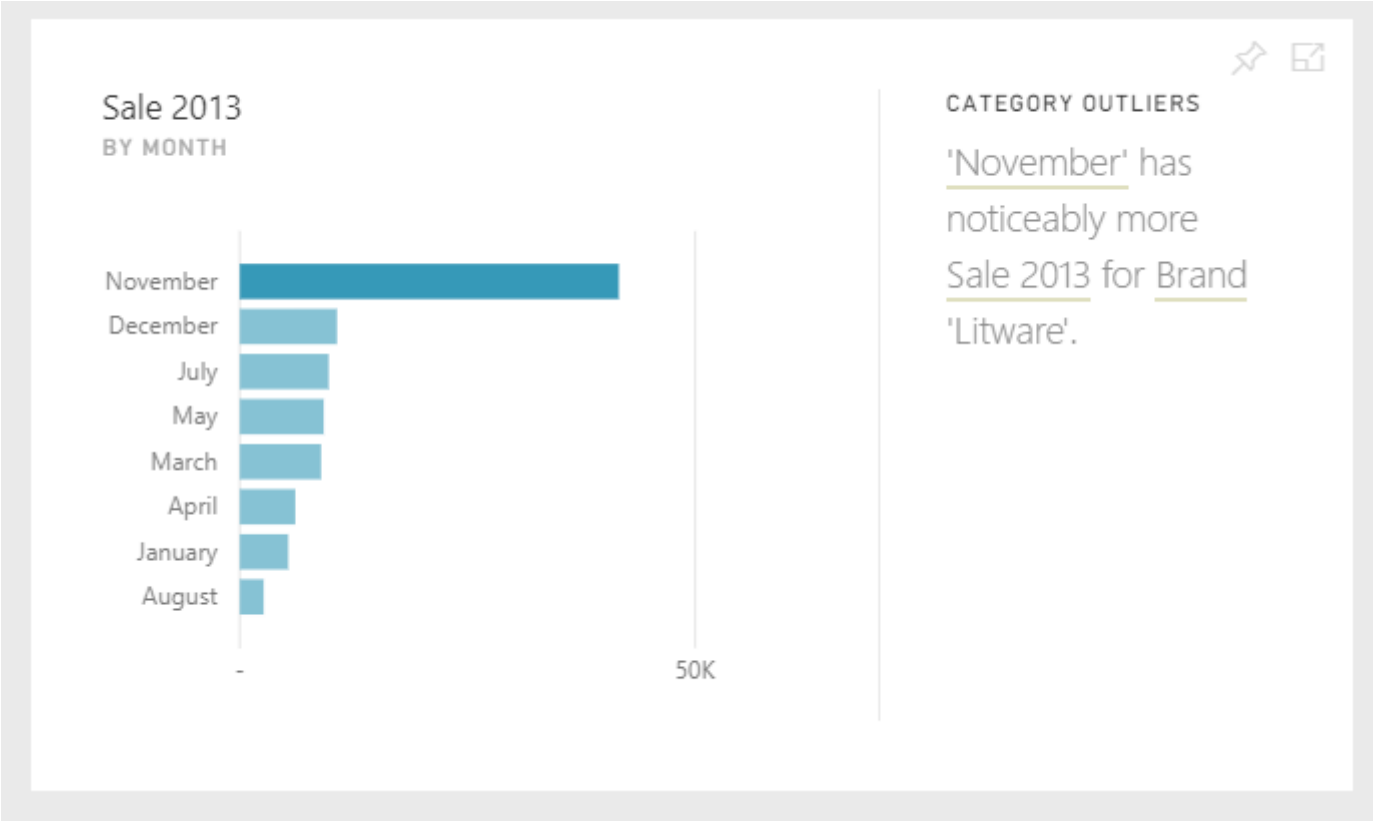
The second insight reveals a substantial seasonal-effect increase in sales for the month of November 2013 for Litware



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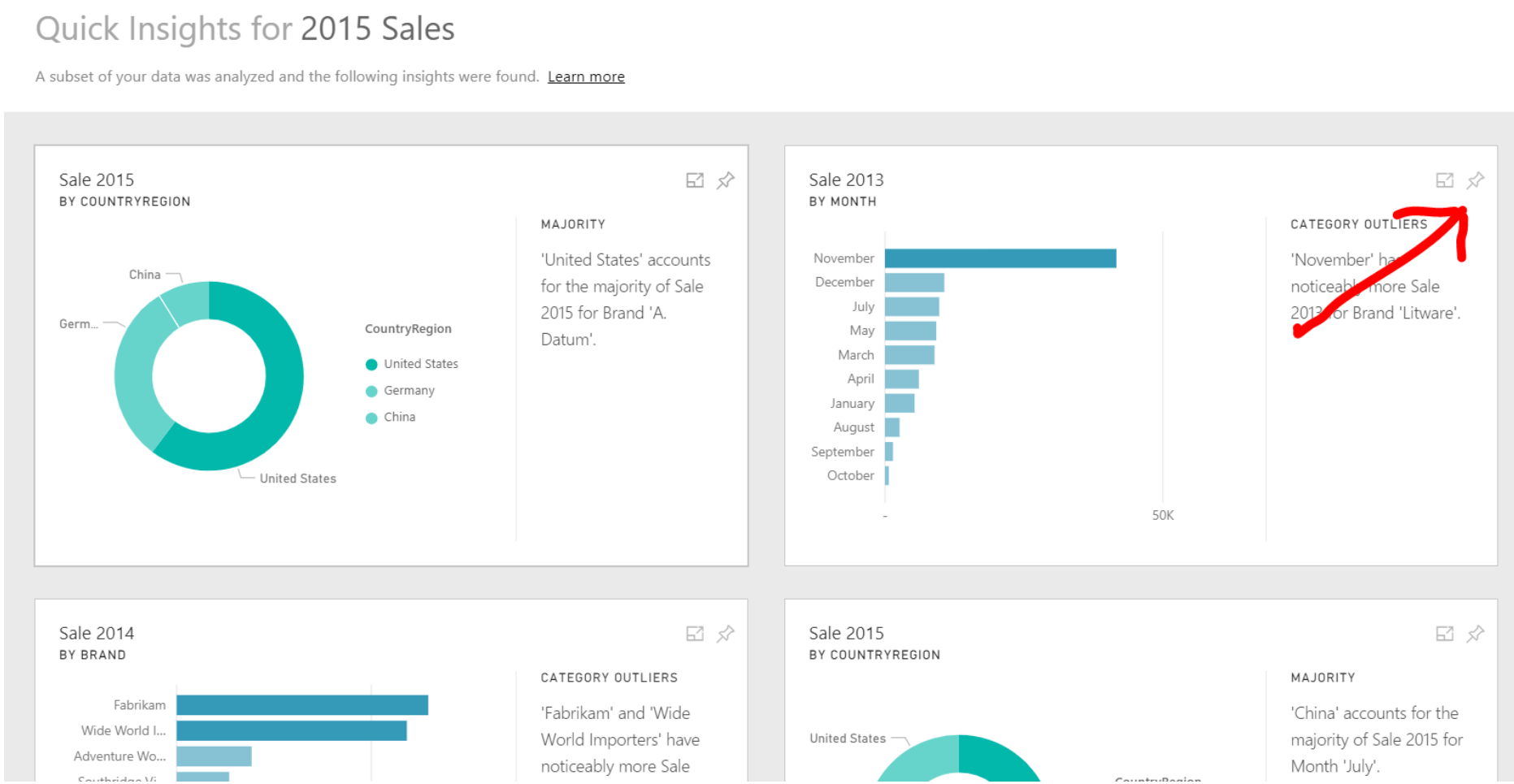
Pin Sale 2013 by month to dashboard



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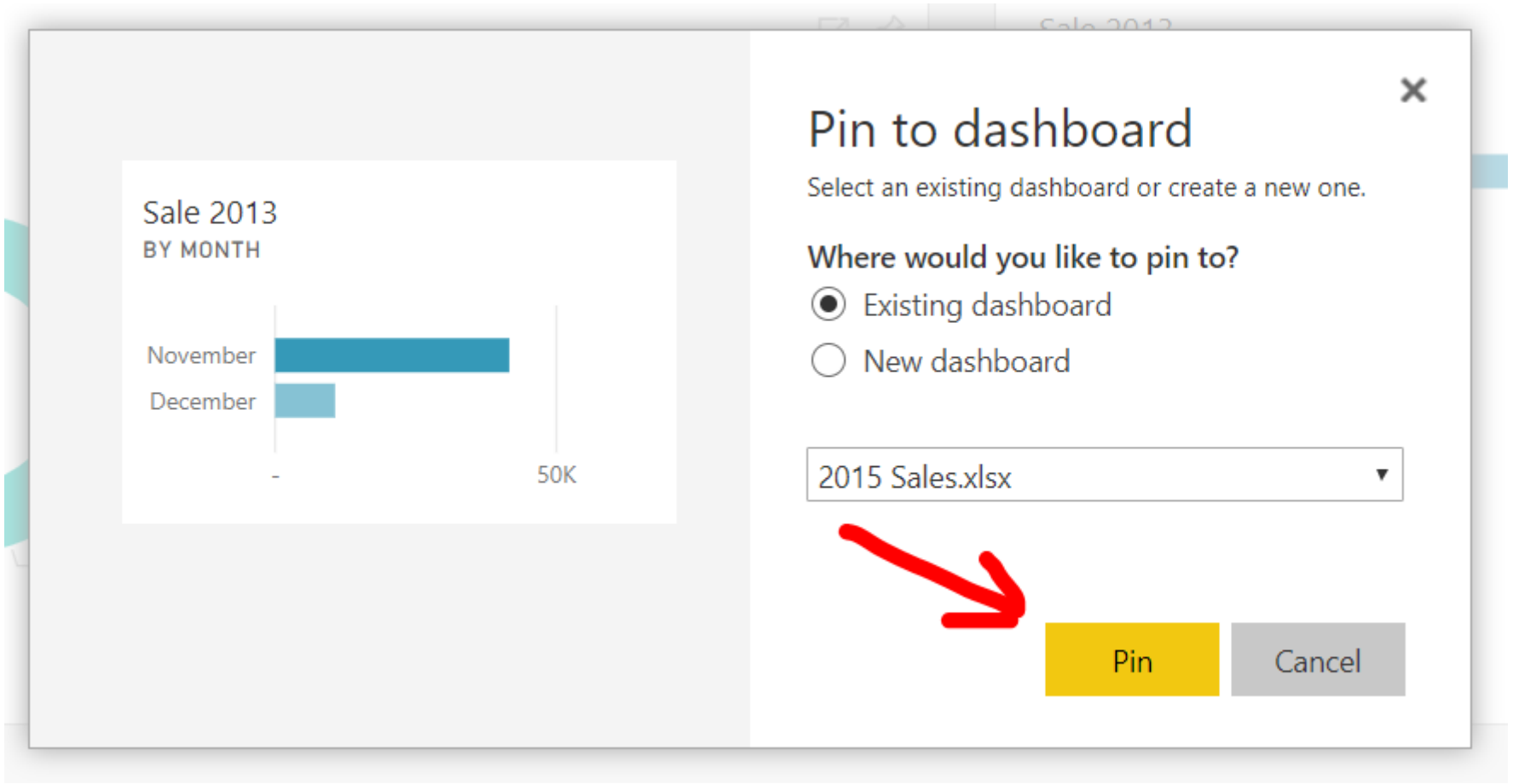
Click Pin



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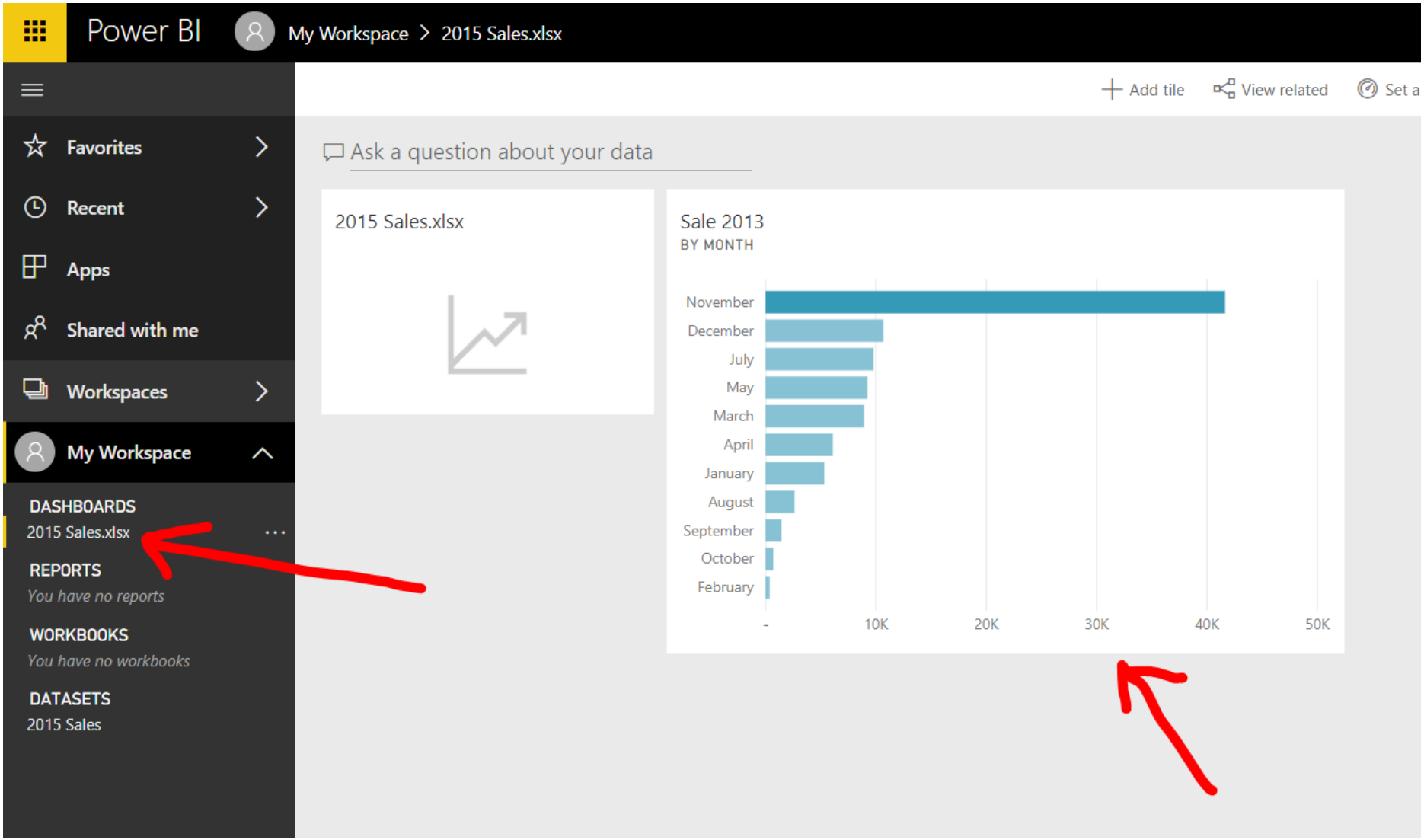
Click DASHBOARDS



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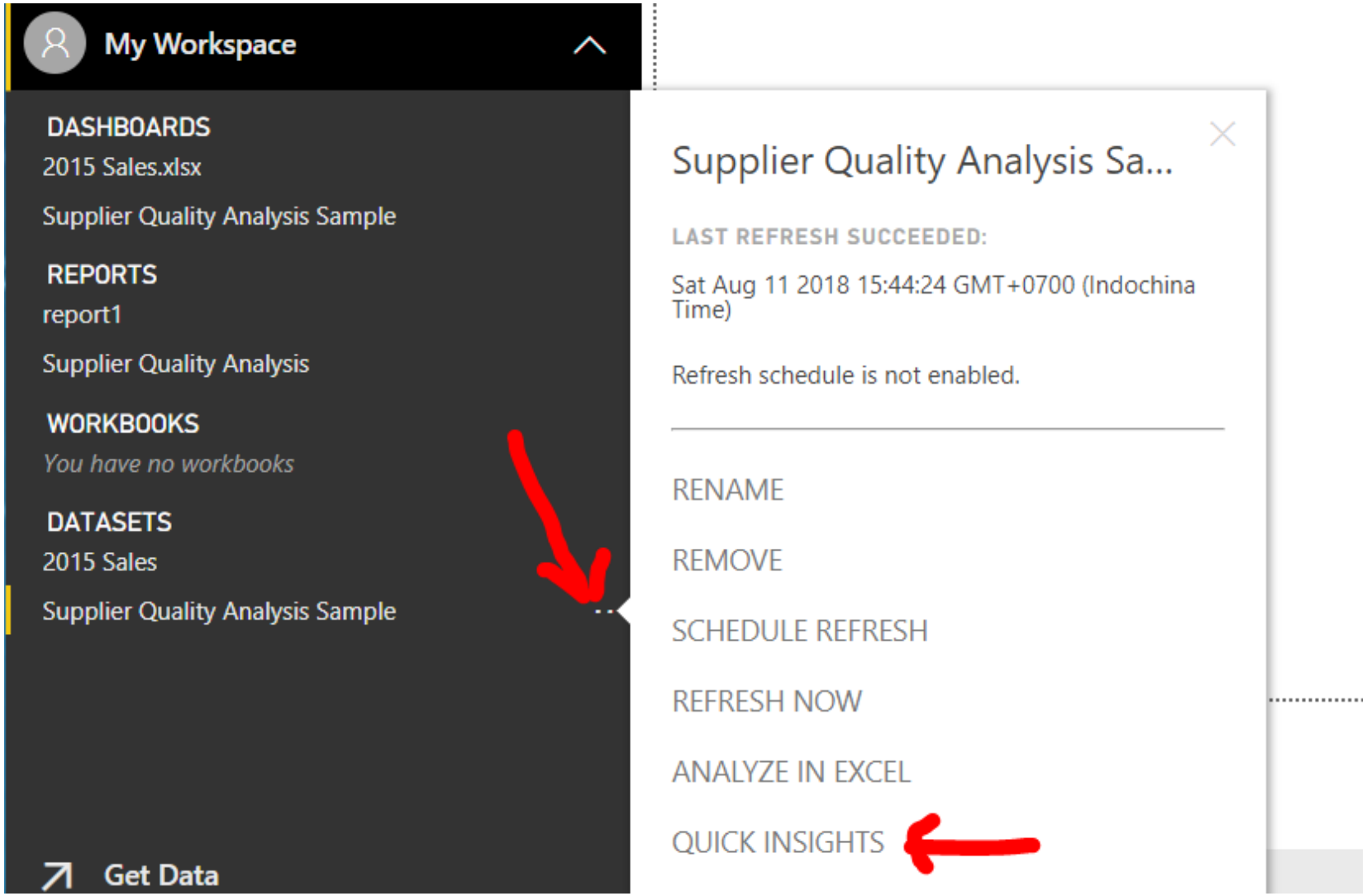
Get Quick Insights from Supplier Quality Analysis sample



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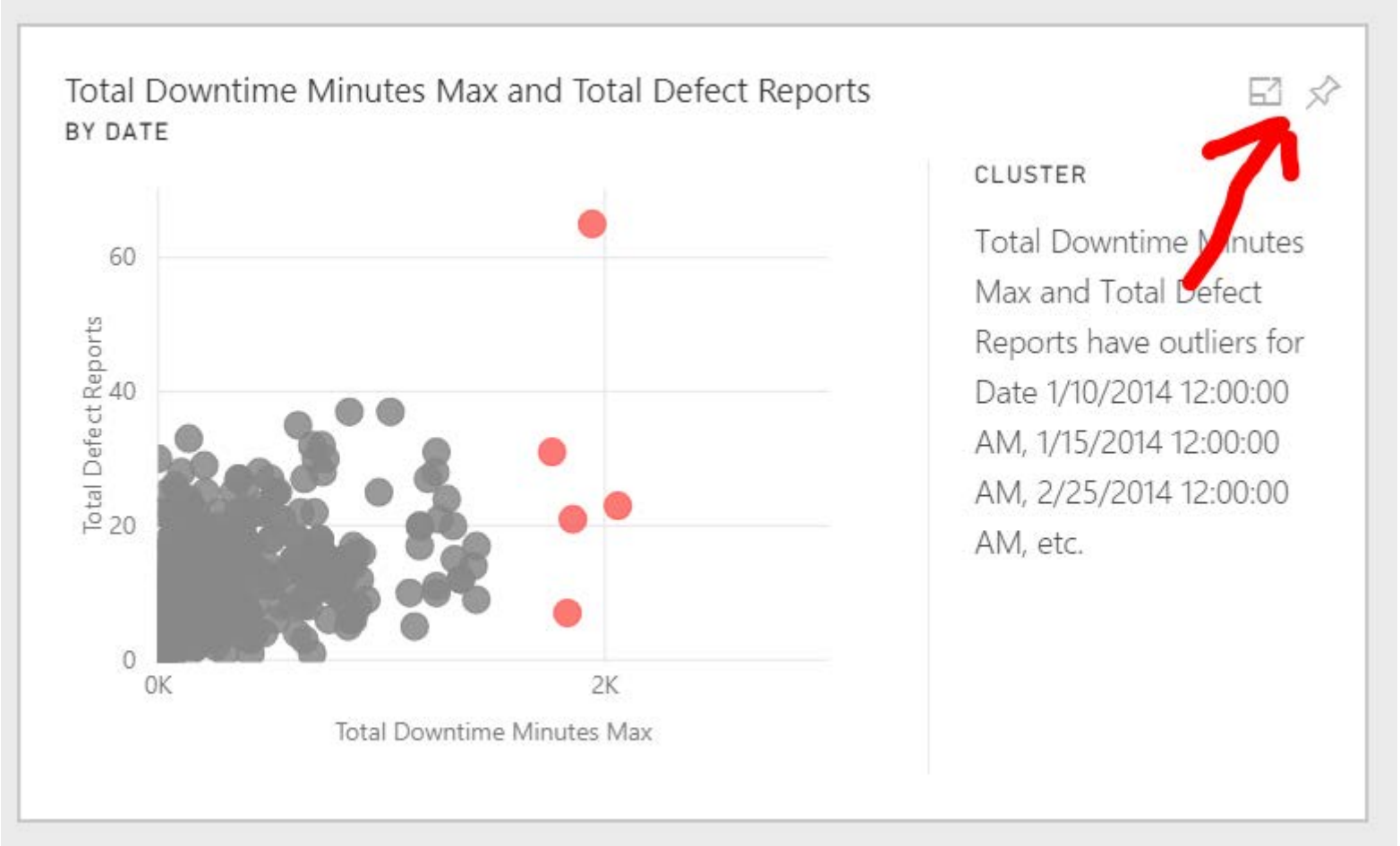
Pin insight to new dashboard



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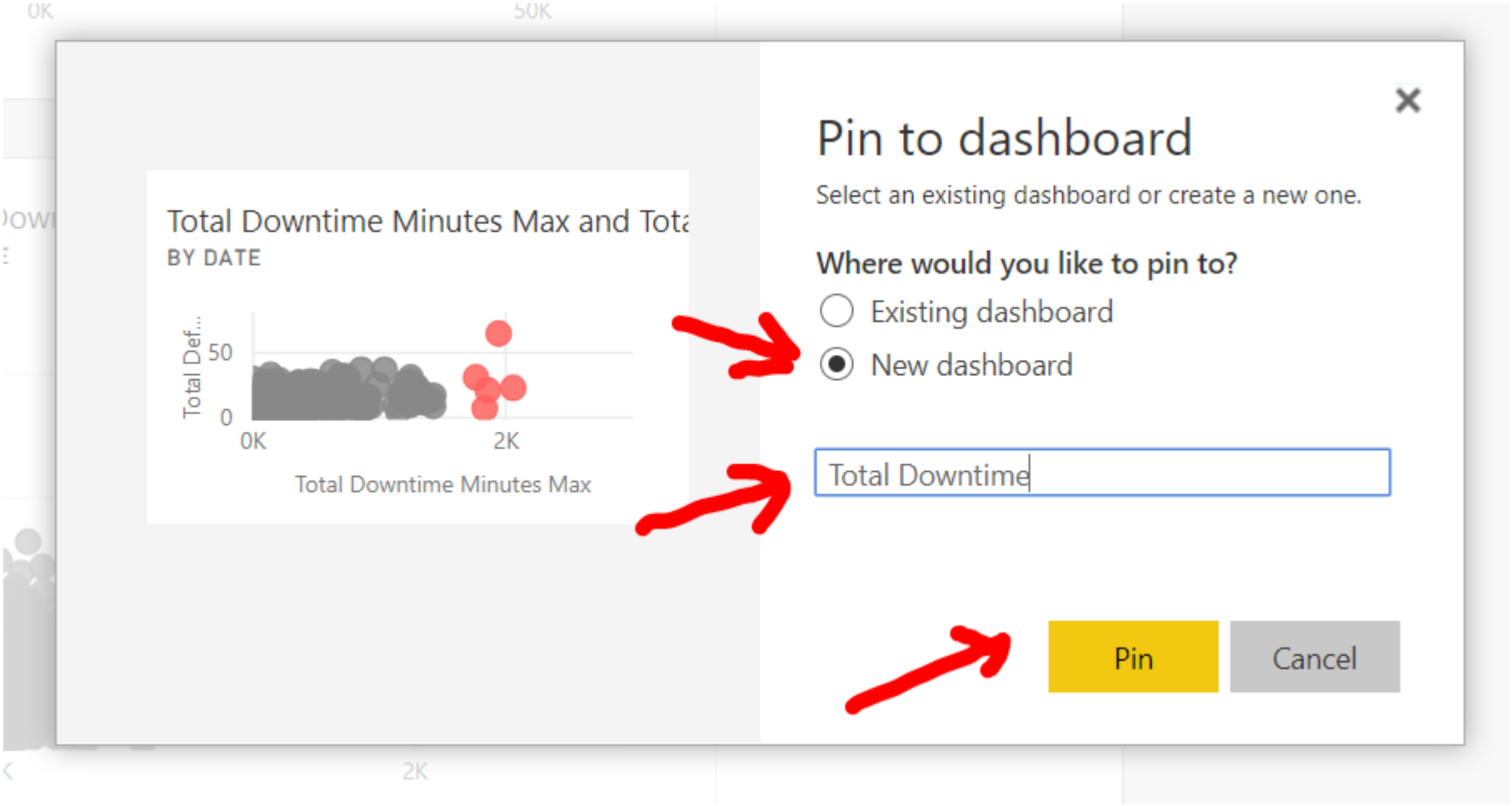
Create New dashboard



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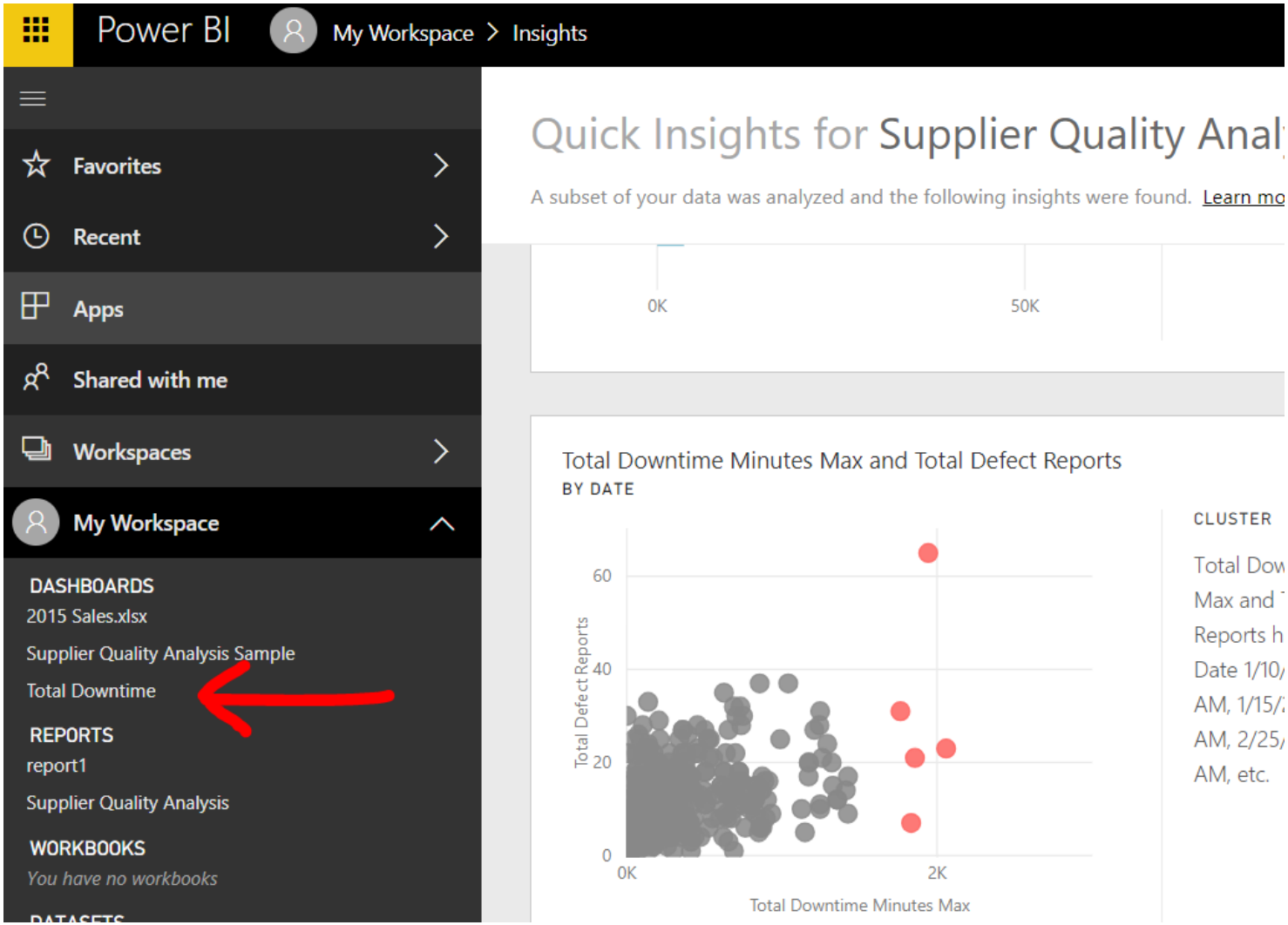
Click Total Downtime dashboard



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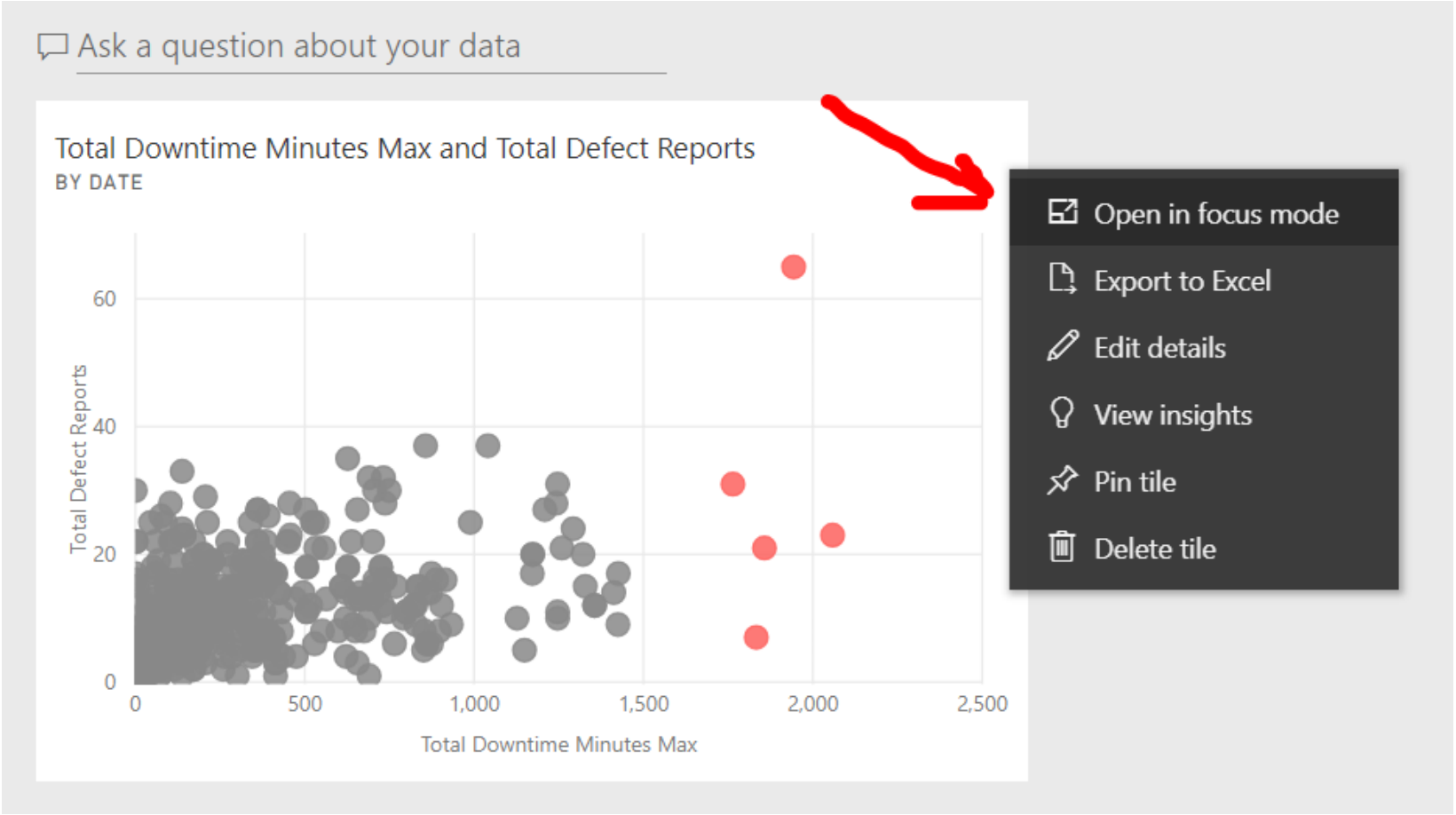
Open in focus mode



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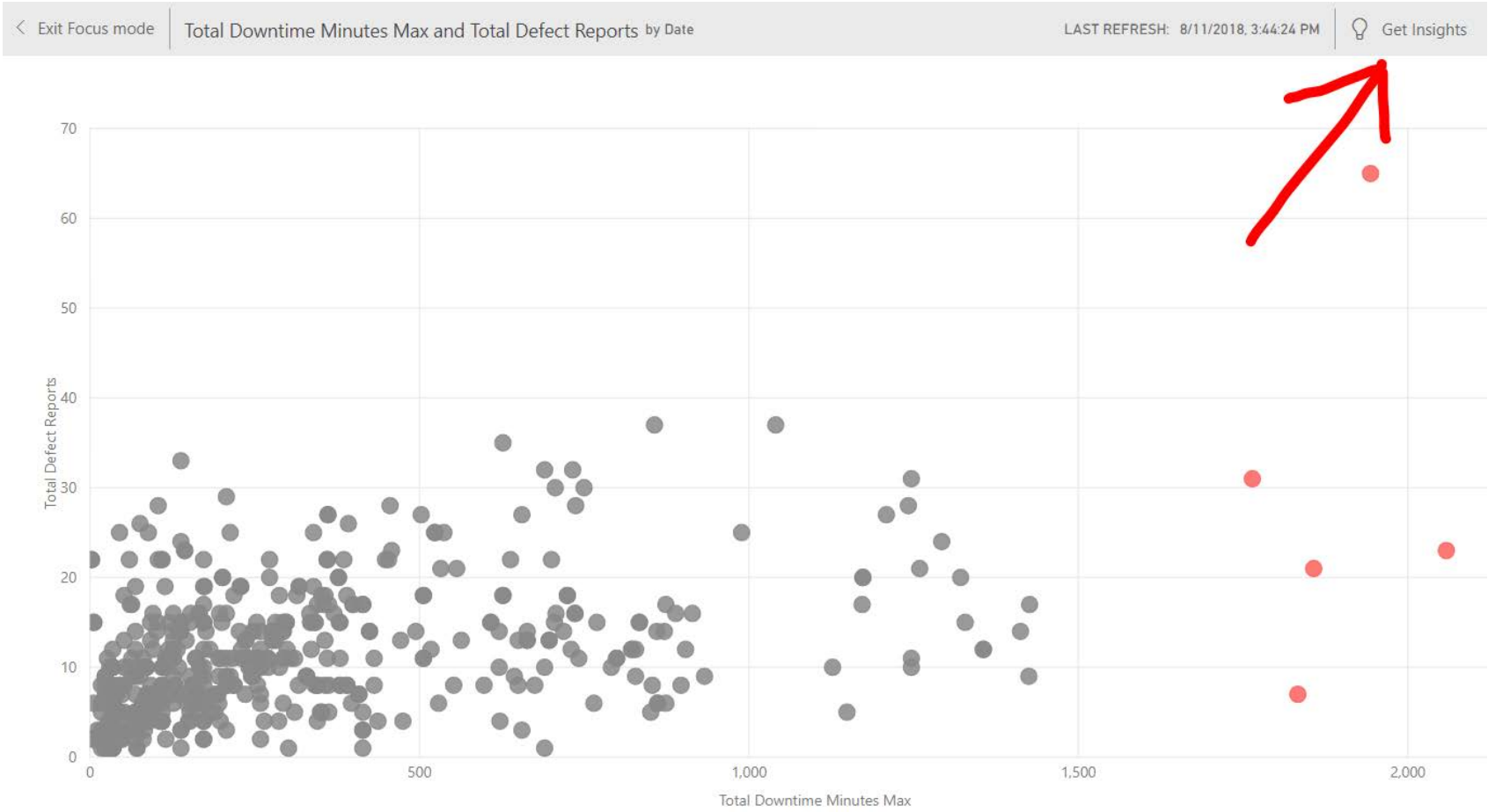
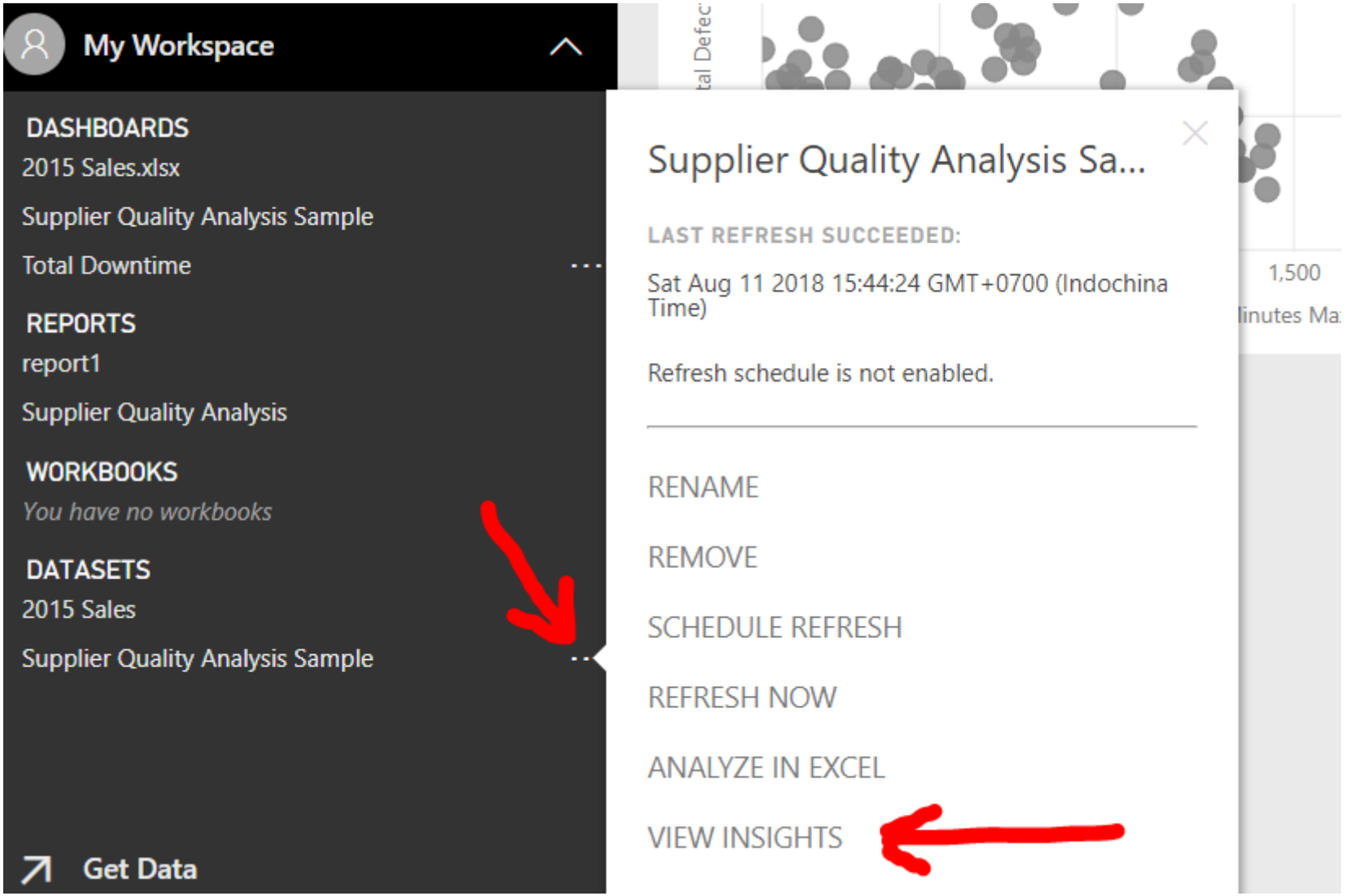
Get Scoped Insights



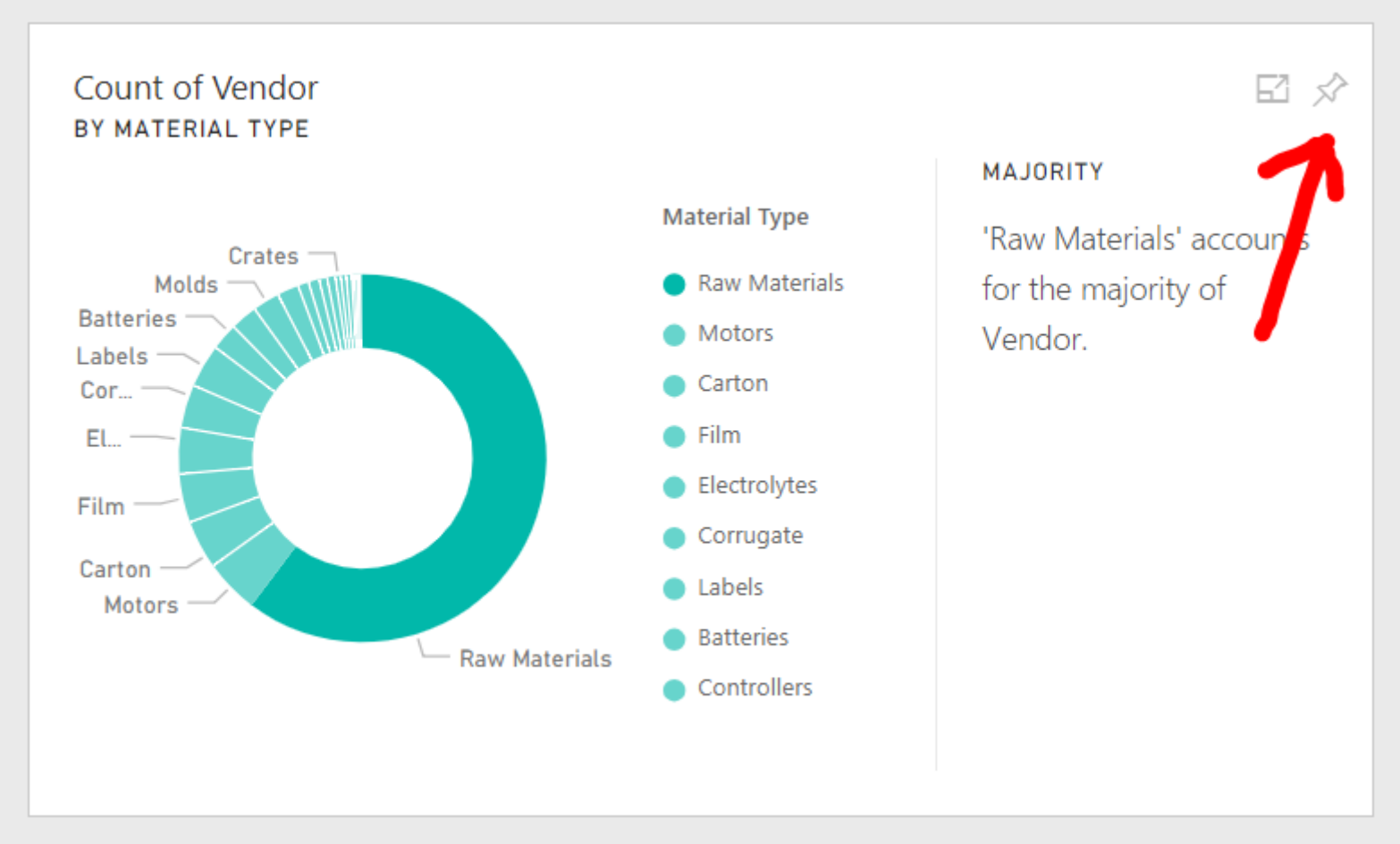
Microsoft Power BI

Pin More Quick insight



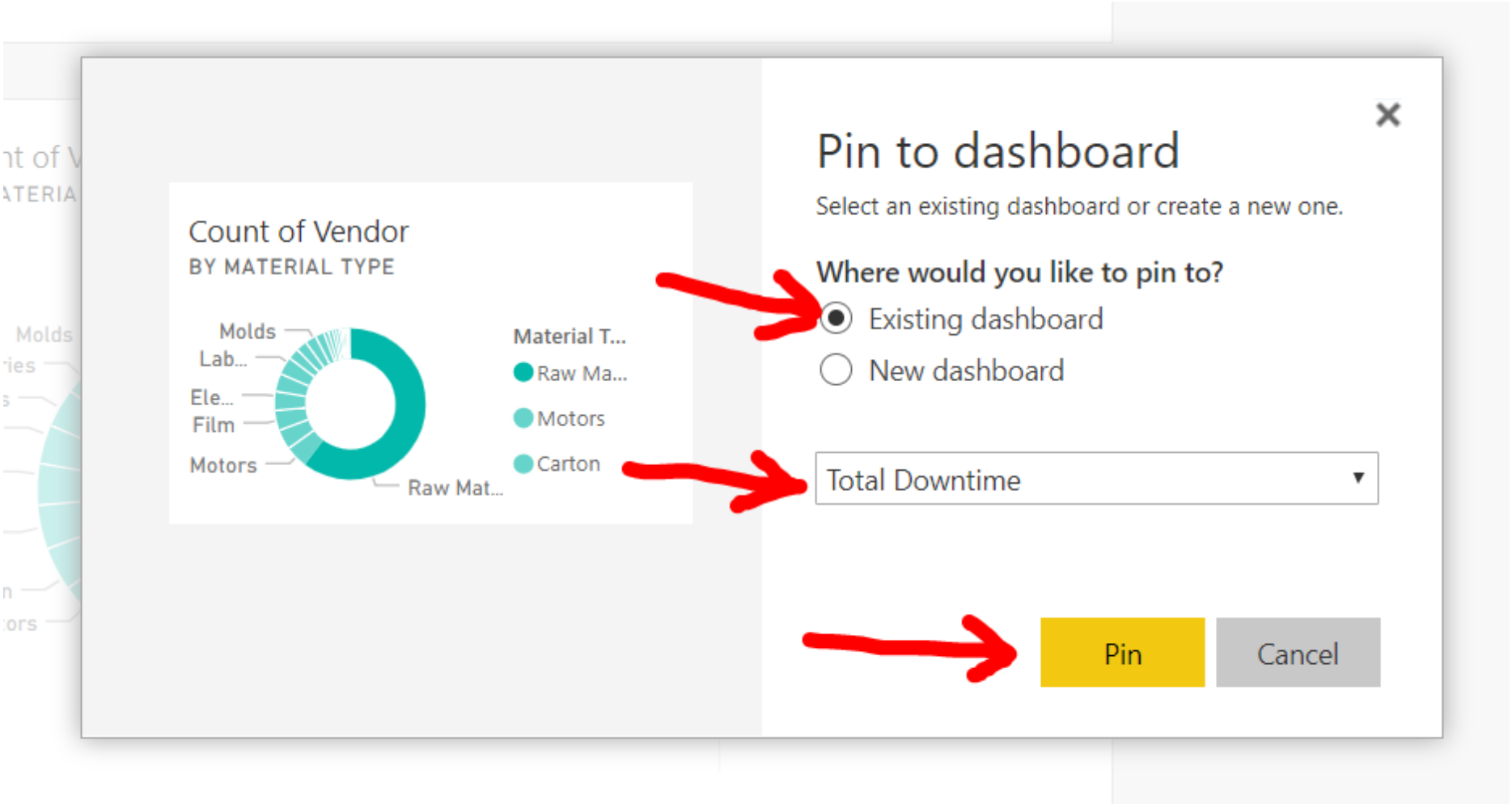
Microsoft Power BI

Pin Count of vendor by material type



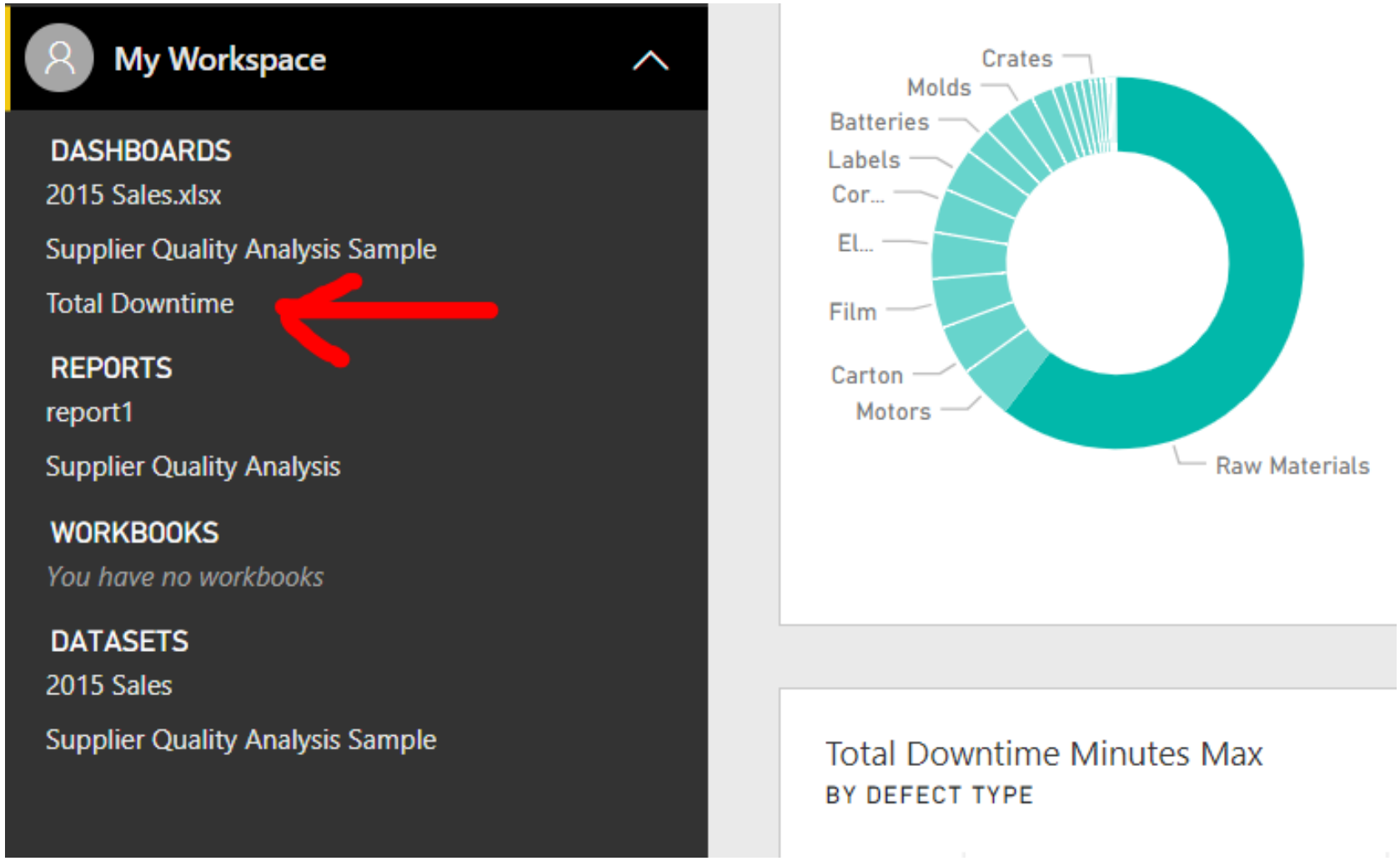
Microsoft Power BI

Pin to Total Downtime



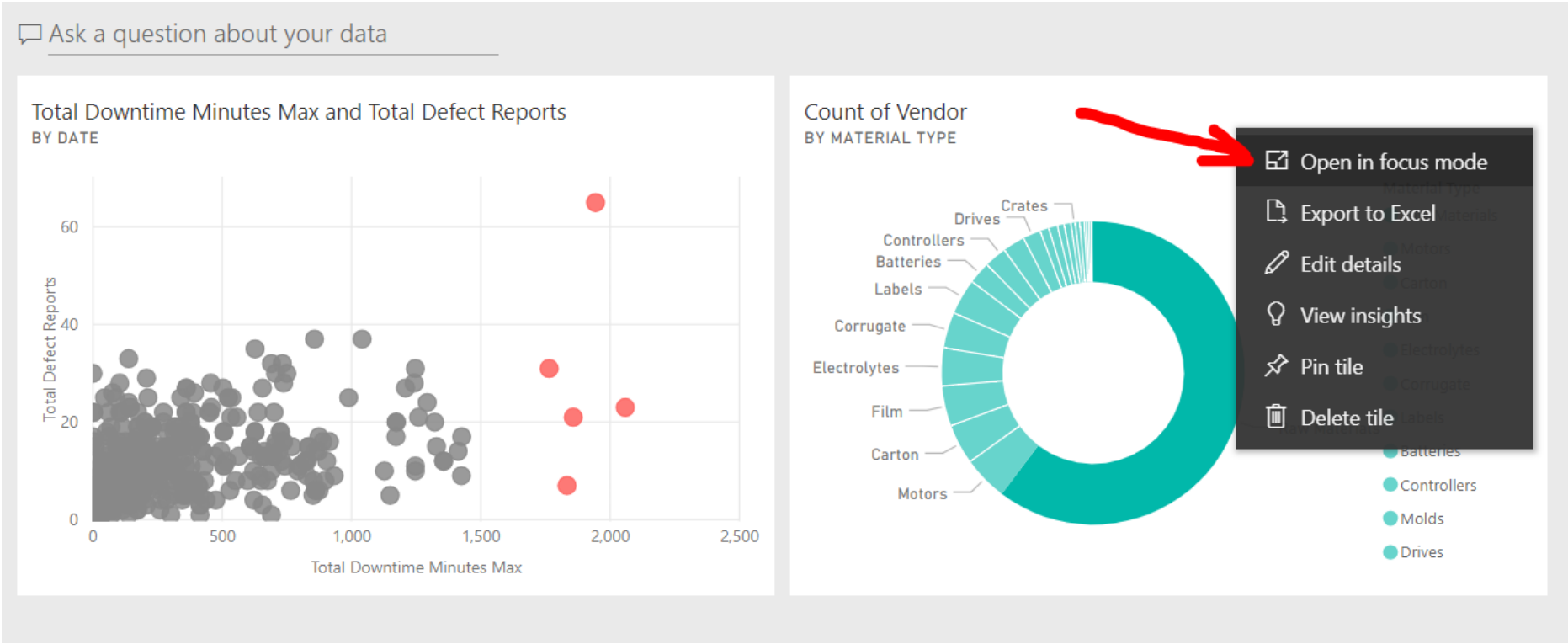
Microsoft Power BI

Open Total Downtime



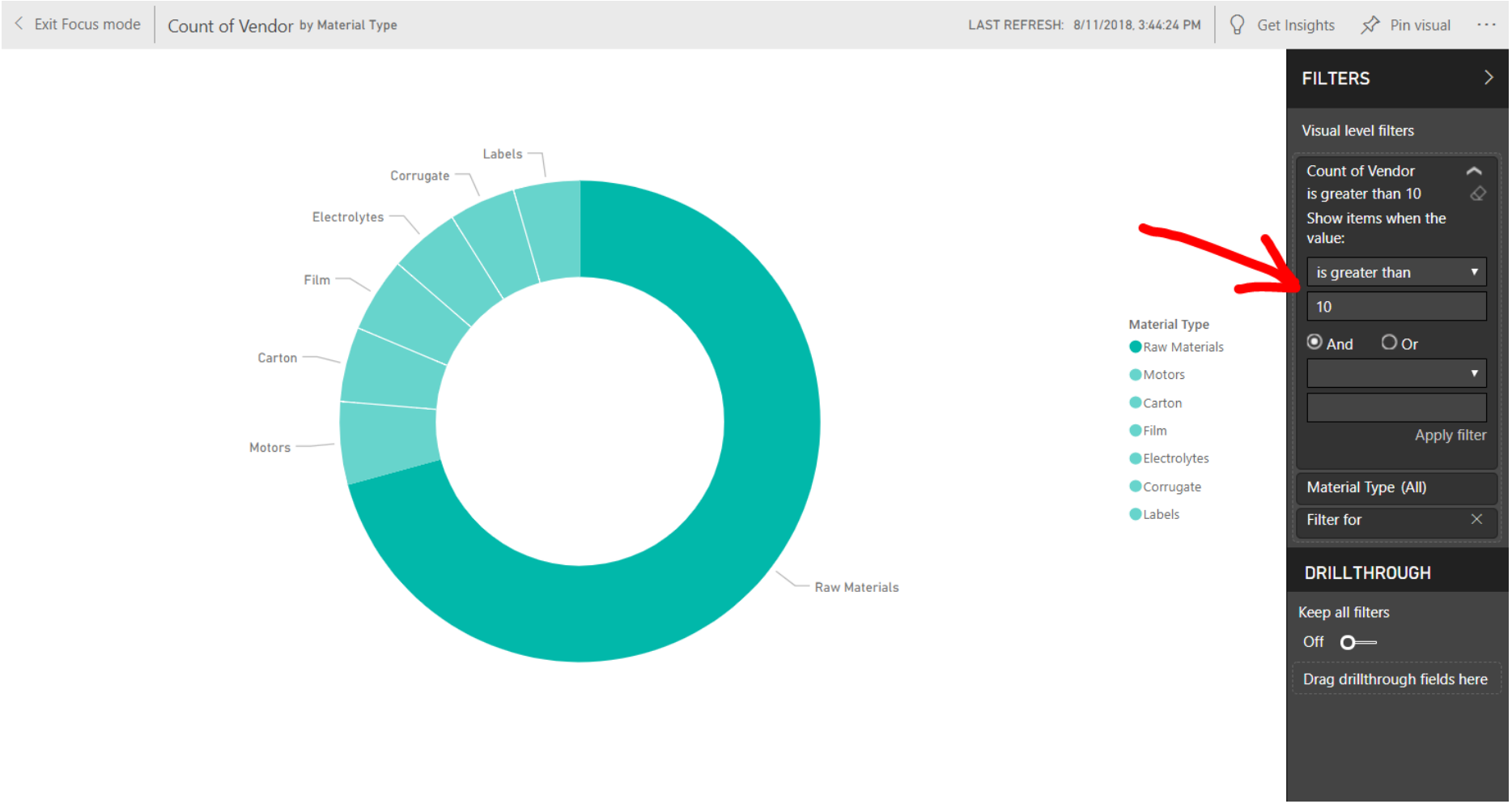
Microsoft Power BI

Open in focus mode



Microsoft Power BI

Filter Count of Vendor is greater than 10



Exercise

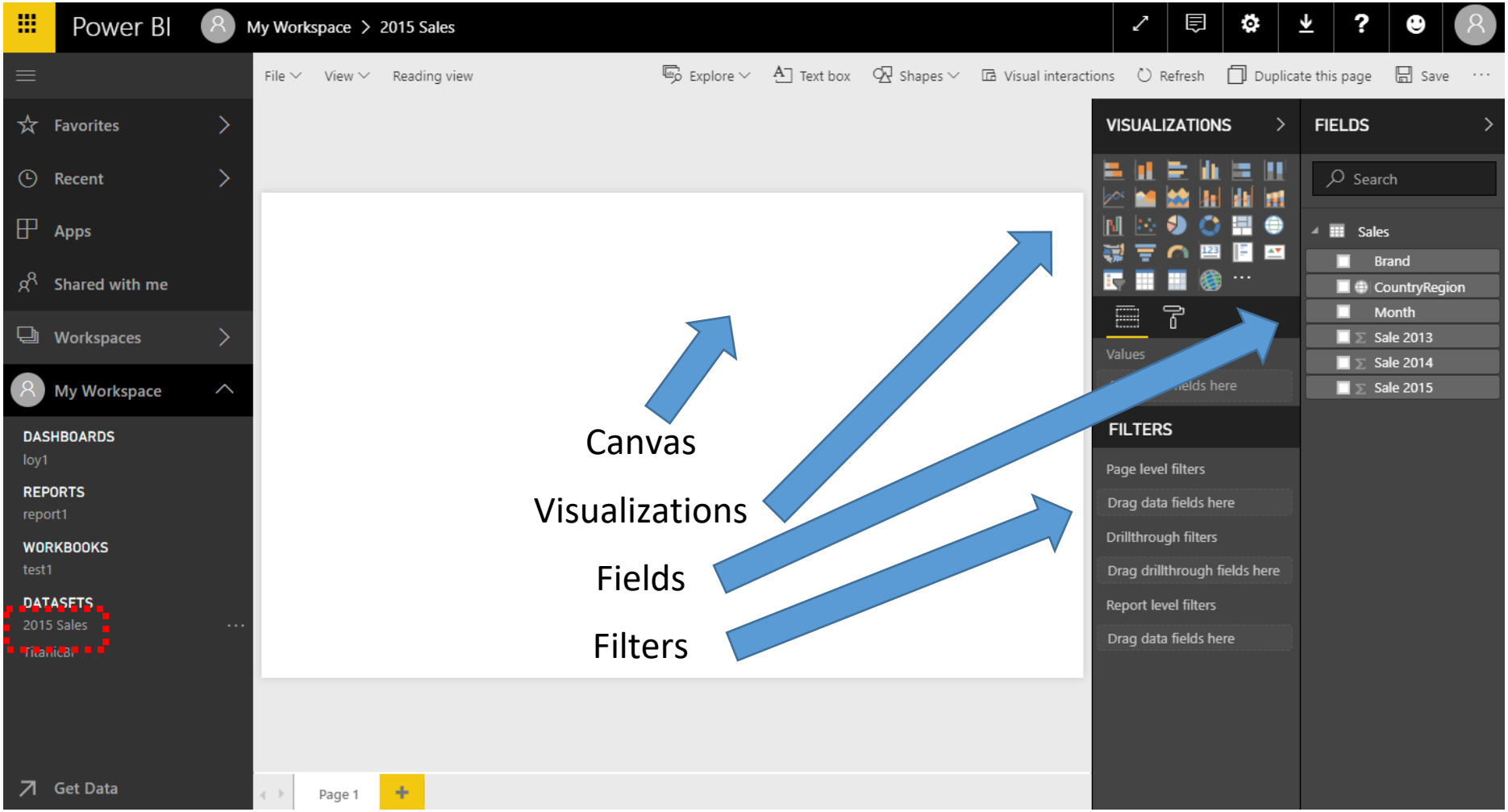
- New and Repeat all steps
- Pin multiple quick insights

Introduction to reports

Microsoft Power BI

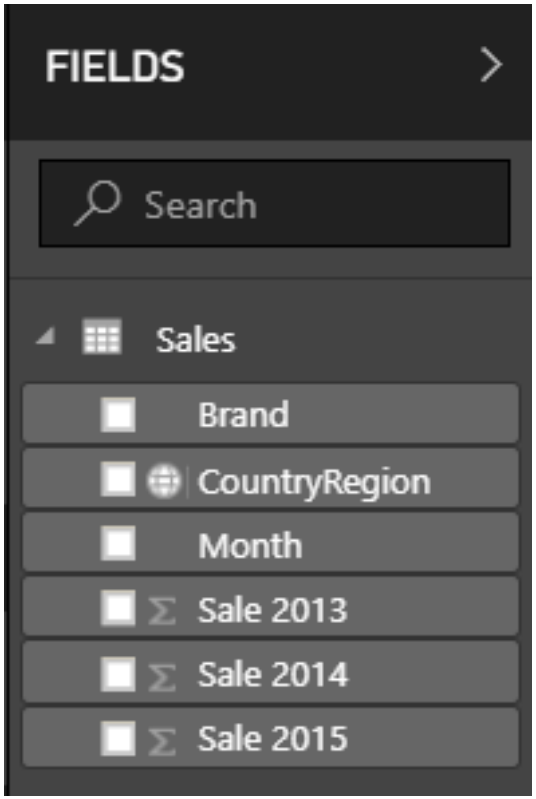
Introduction to reports

Click 2015 sales dataset



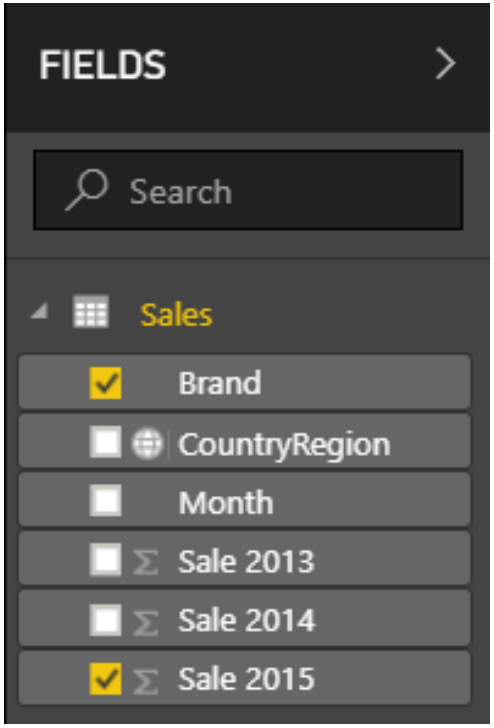
FIELDS

- 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

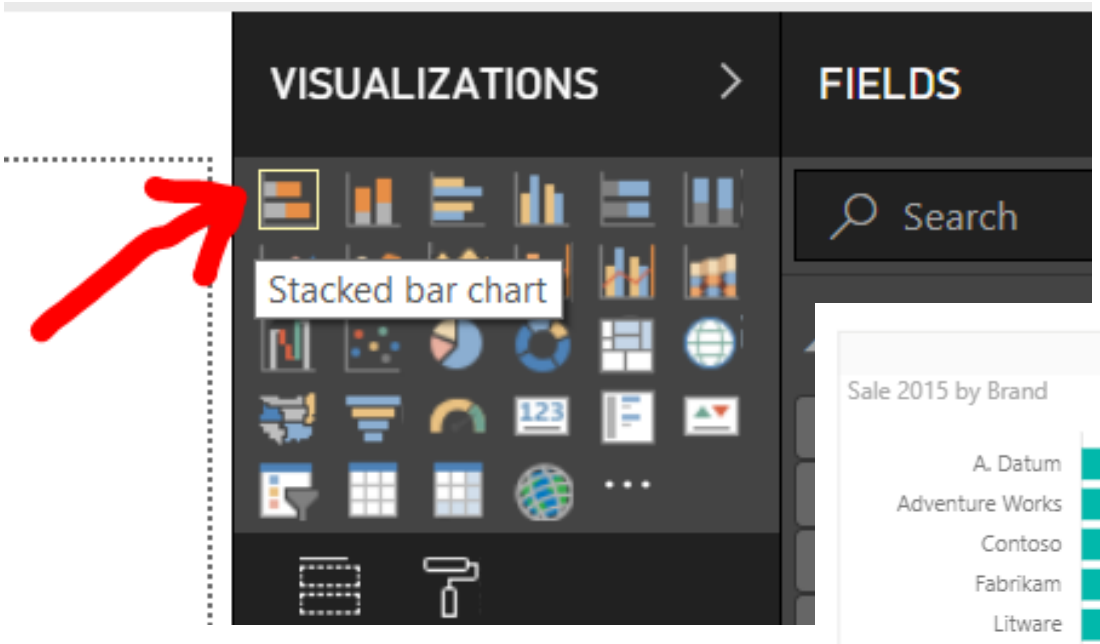


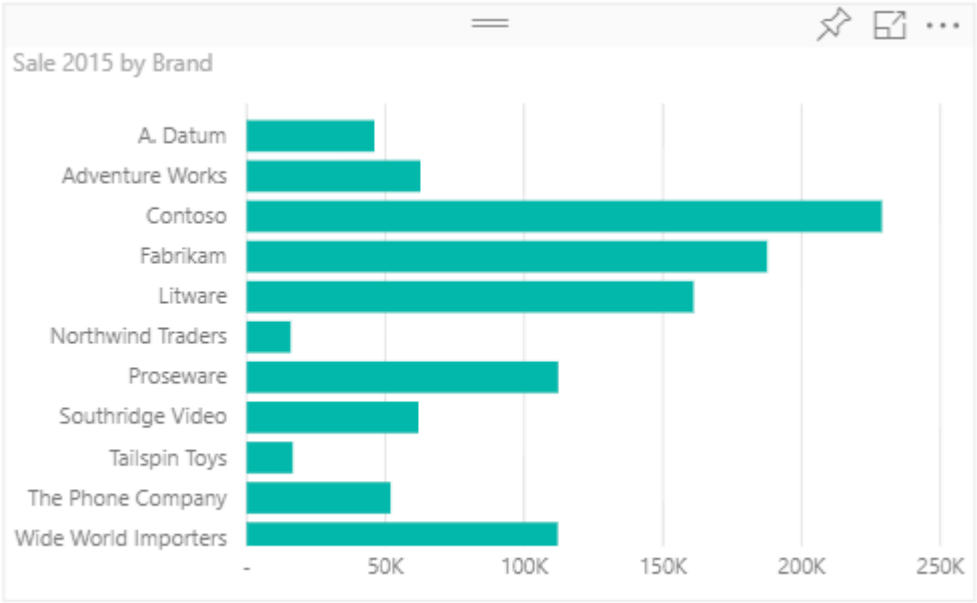
Brand	Sale 2015
A. Datum	46,051.30
Adventure Works	62,641.73
Contoso	228,978.33
Fabrikam	187,597.45
Litware	161,097.75
Northwind Traders	15,901.55
Proseware	112,310.71
Southridge Video	61,924.16
Tailspin Toys	16,653.67
The Phone Company	51,919.00
Wide World Importers	112,151.40
Total	**1,057,227.05**

Table is default visualization

Microsoft Power BI

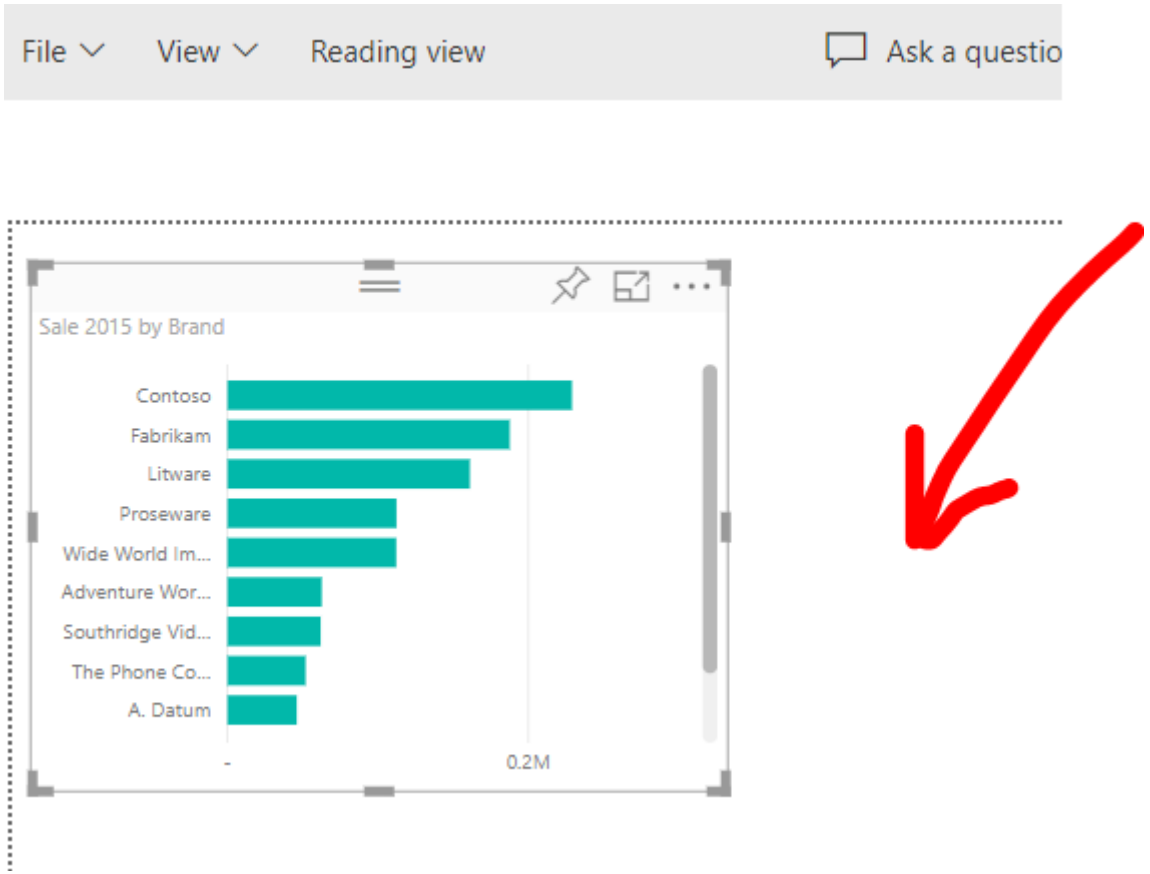
Click Stacked bar chart



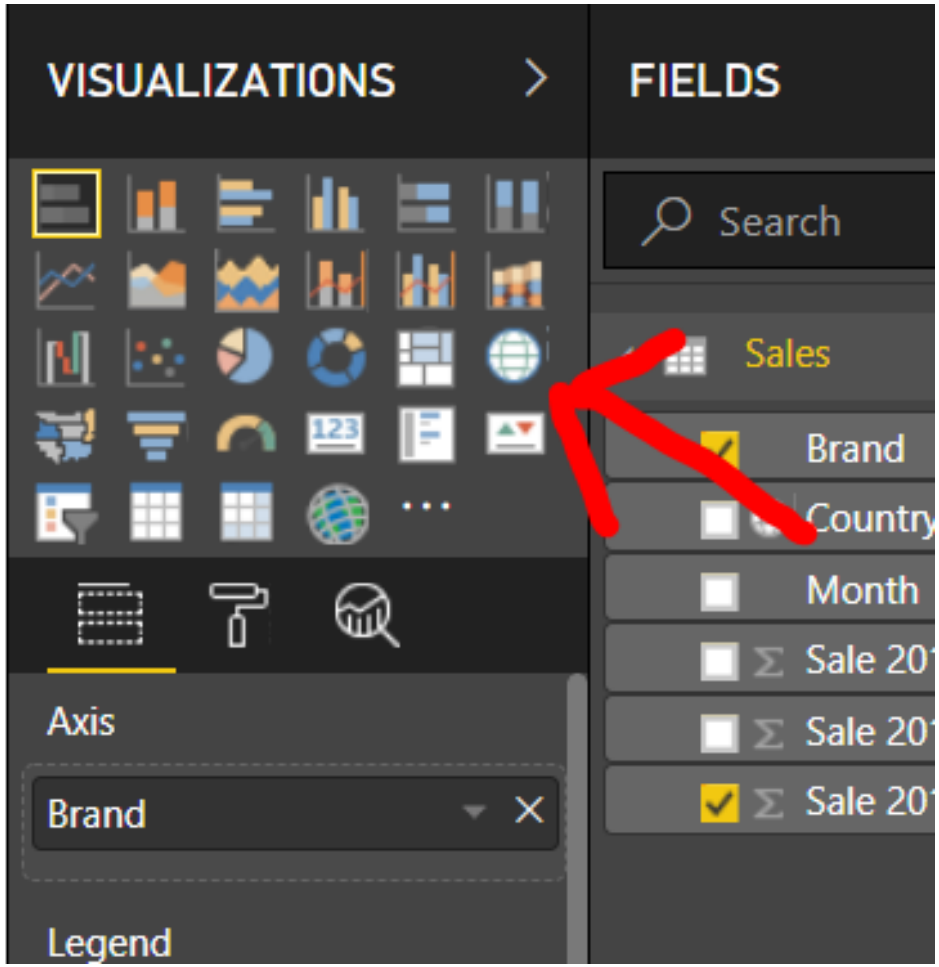


Creating Map

Click empty space

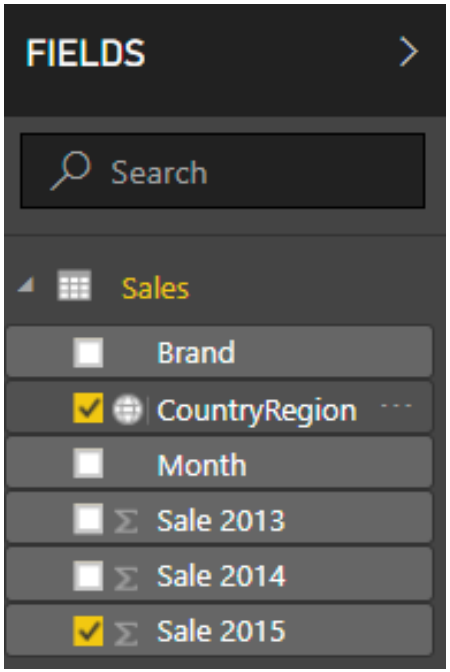


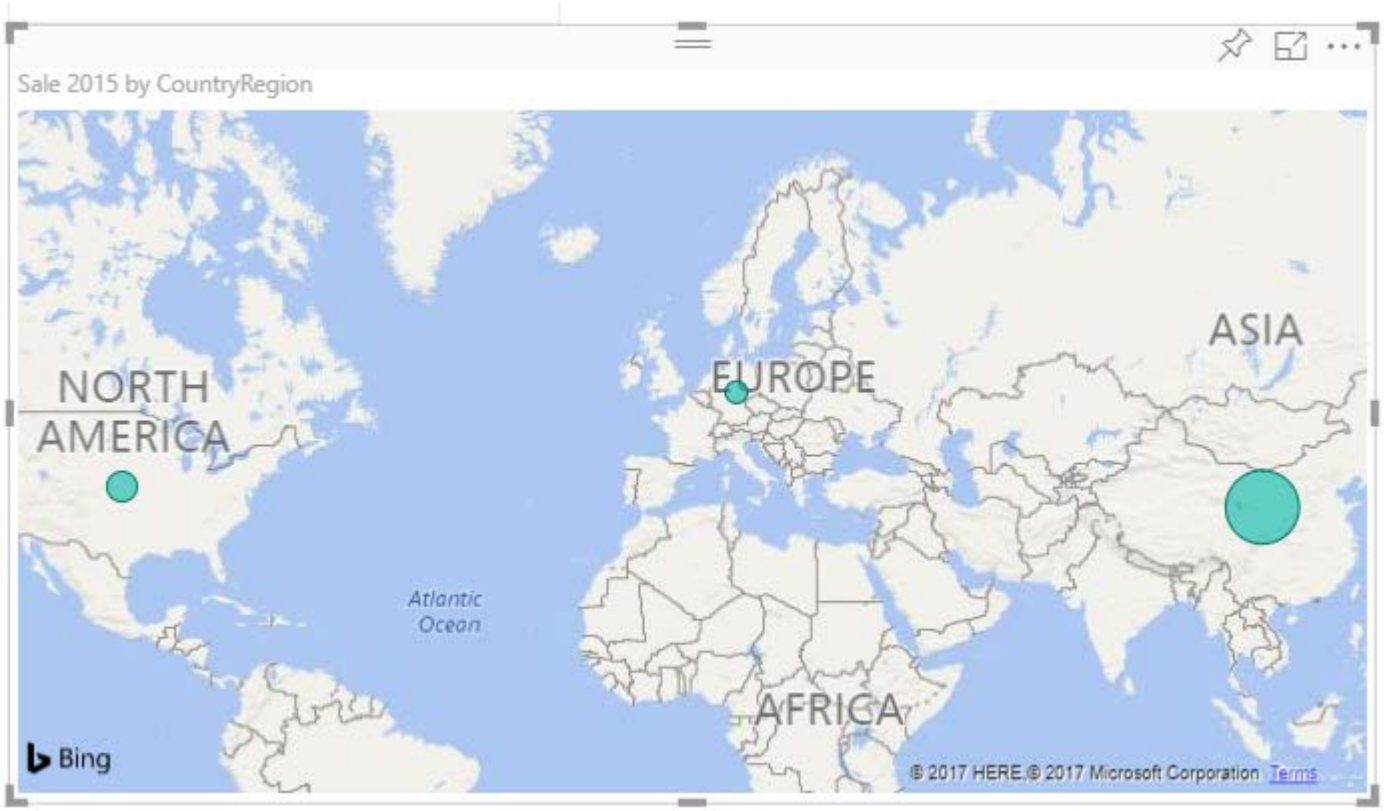
Click Map Icon



Microsoft Power BI

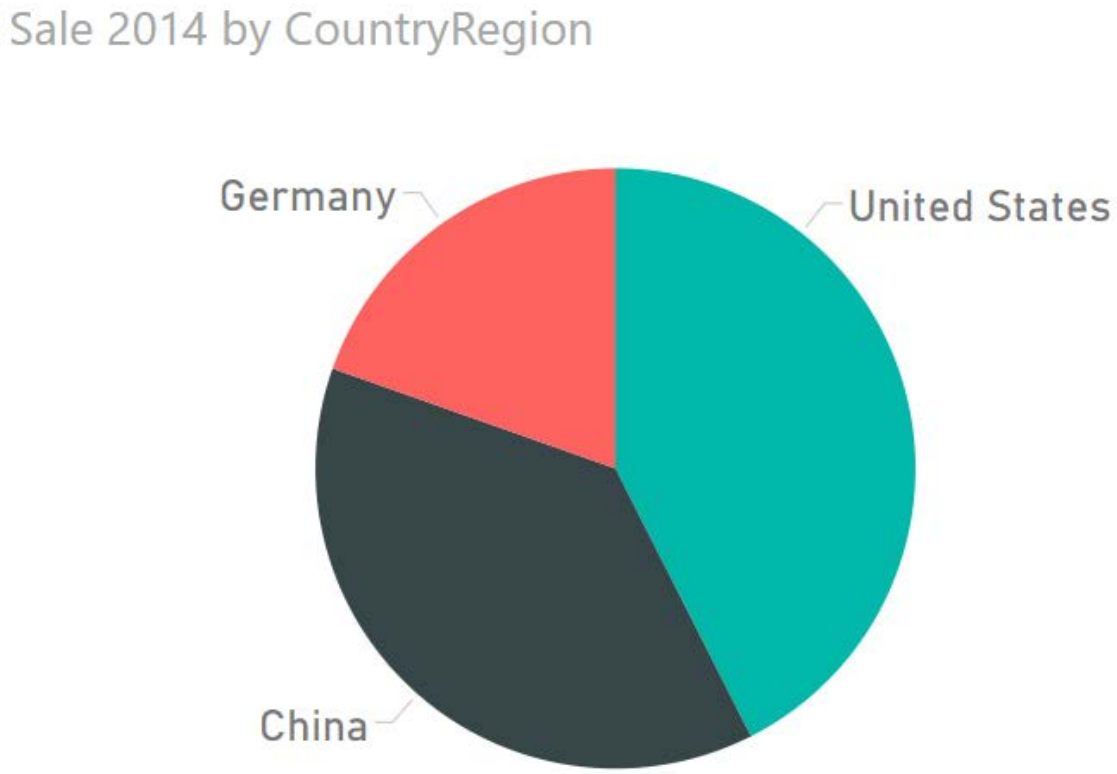
Click Field CountryRegion AND Sales 2015





Exercise

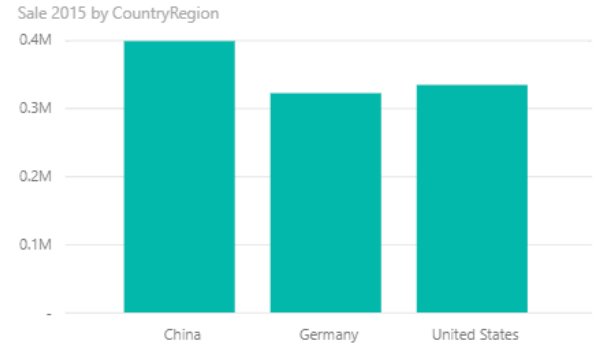
- Remove data and repeat all steps
- Create report with pie chart

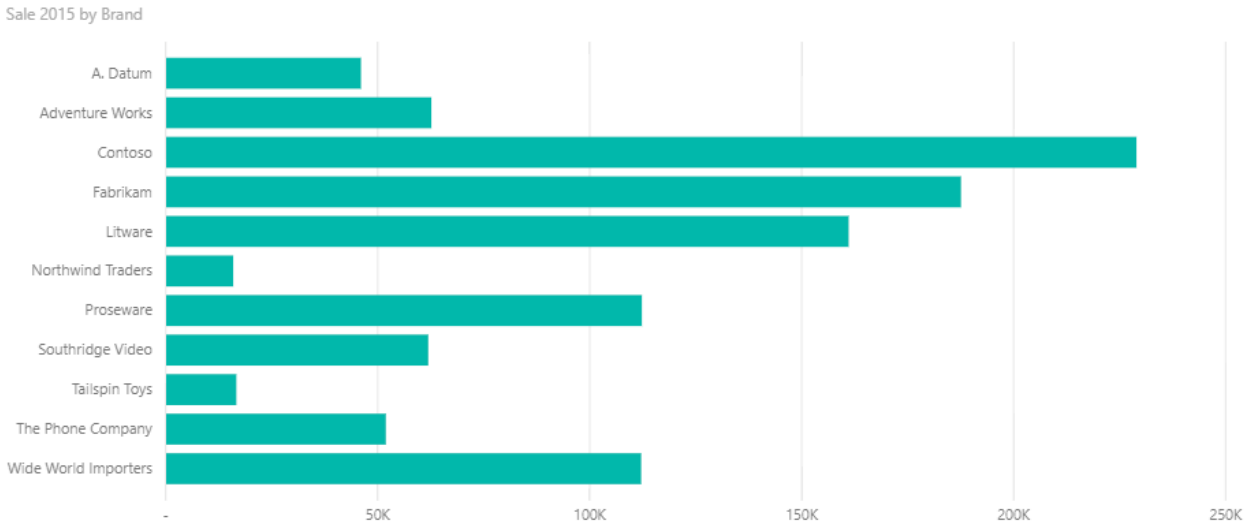


Introducing to Visual Interactions

Microsoft Power BI

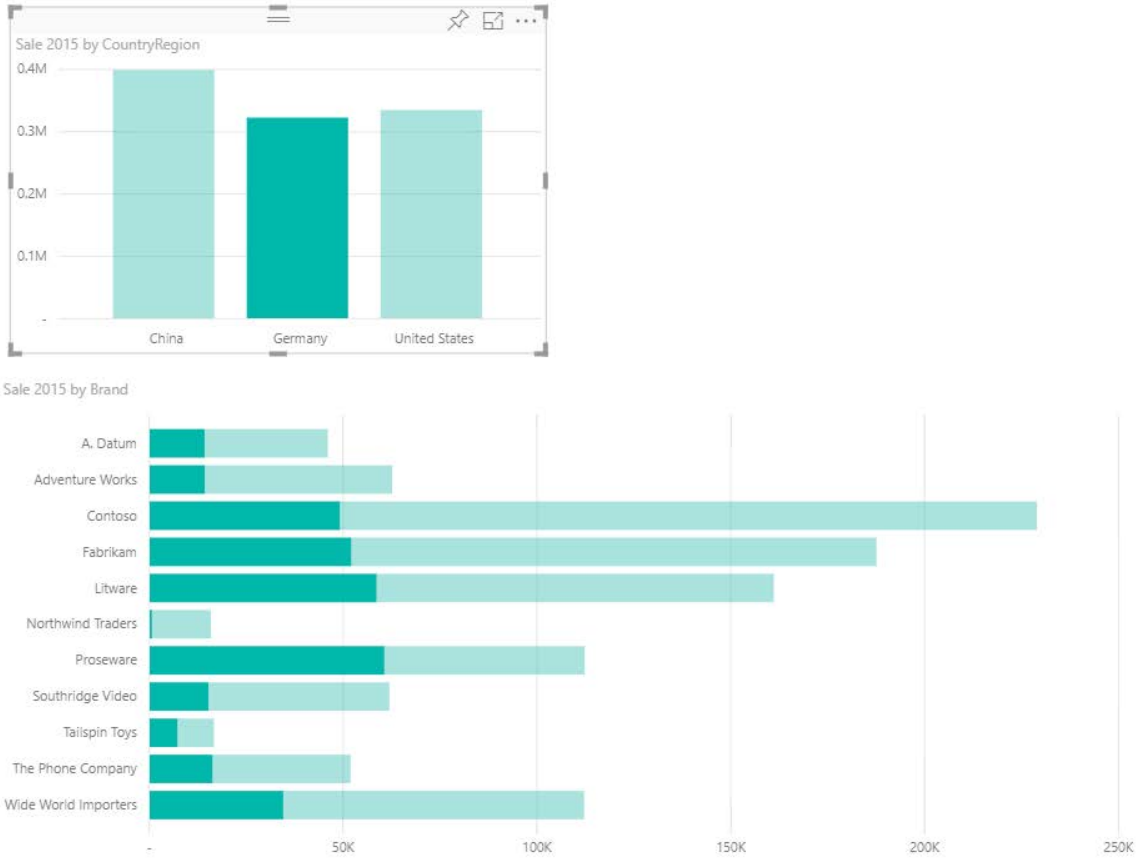
1. Create Sale 2015 by ContryRegion / Stacked column chart
2. Create sale 2015 by Brand / Stacked bar chart





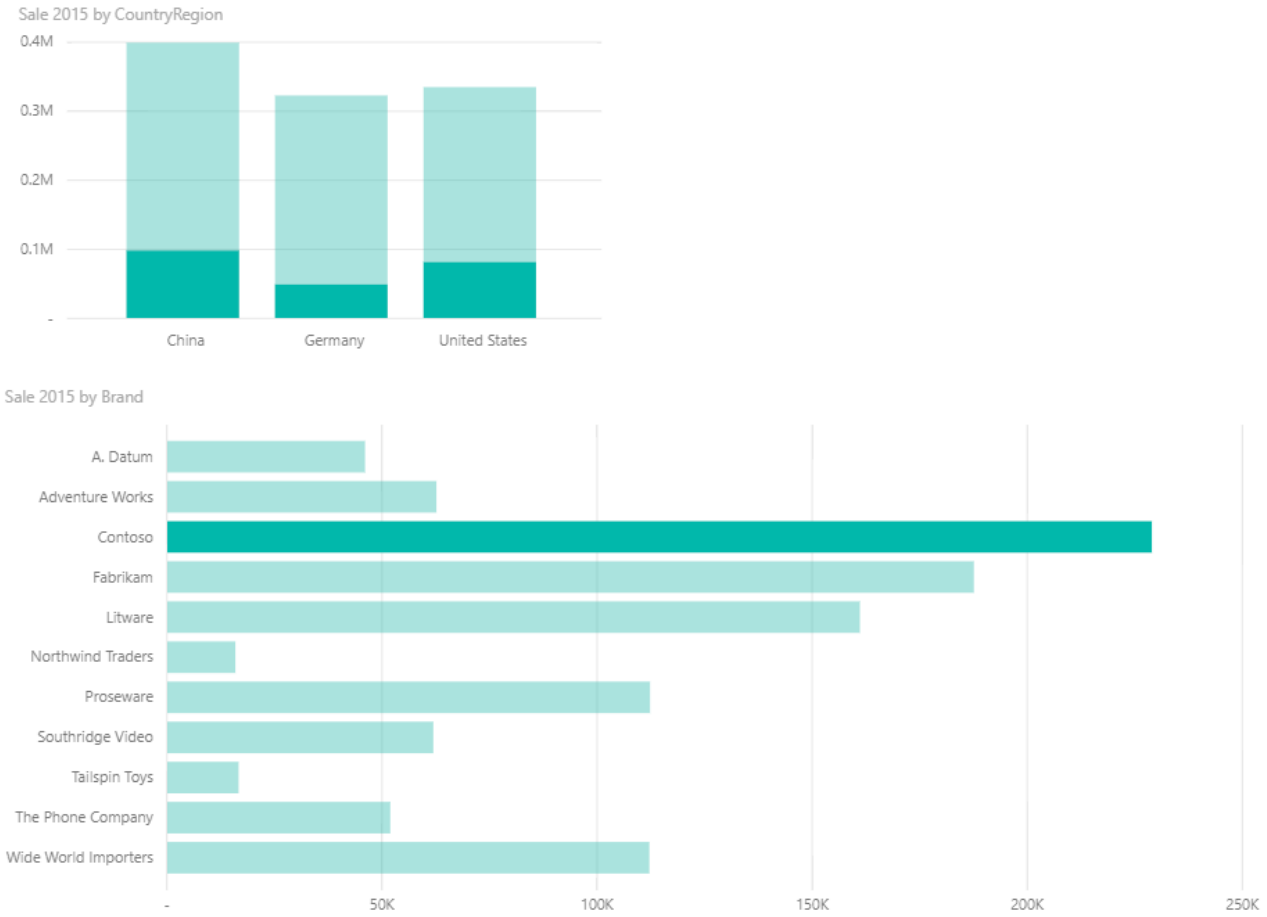
Microsoft Power BI

- 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



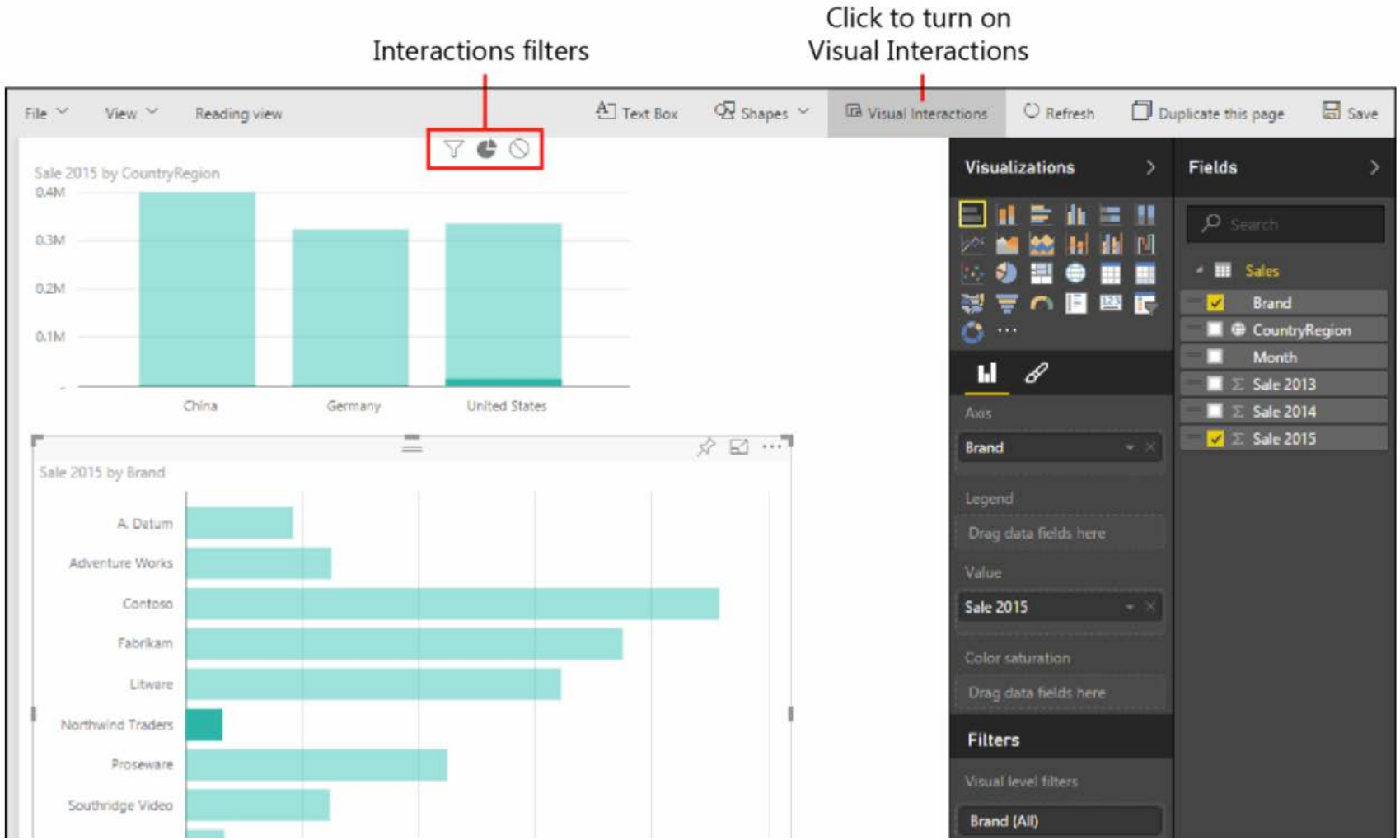
Microsoft Power BI

- 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



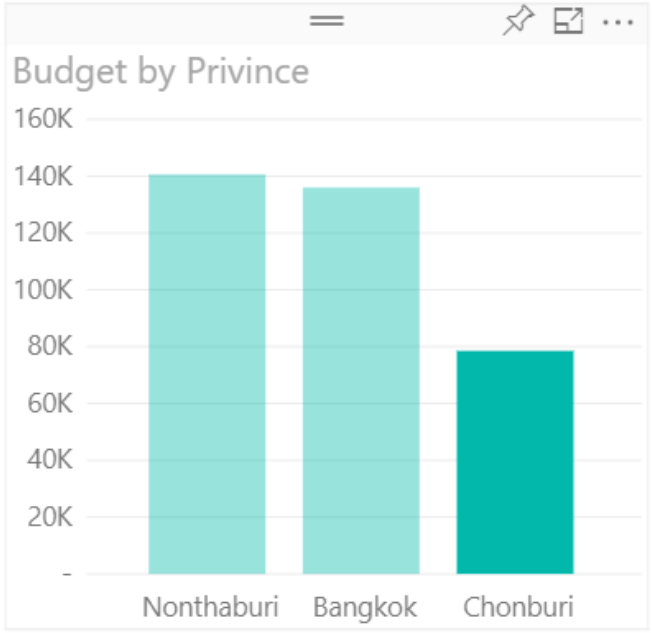
Microsoft Power BI

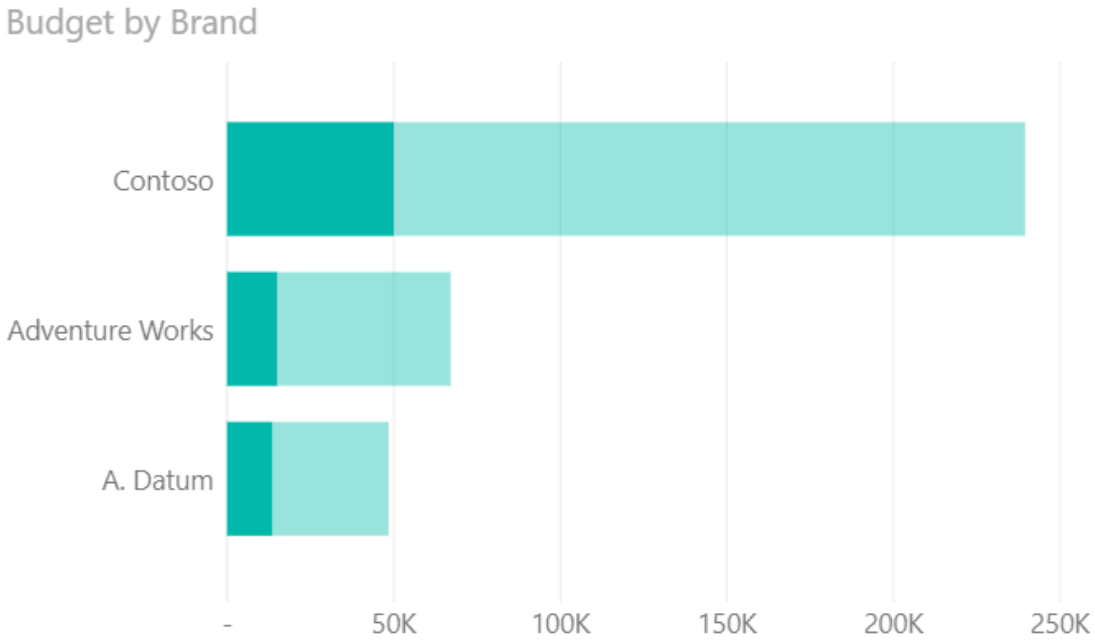
Turn on/off Visual Interactions



Microsoft Power BI

Exercise
Thai Budget.xlsx



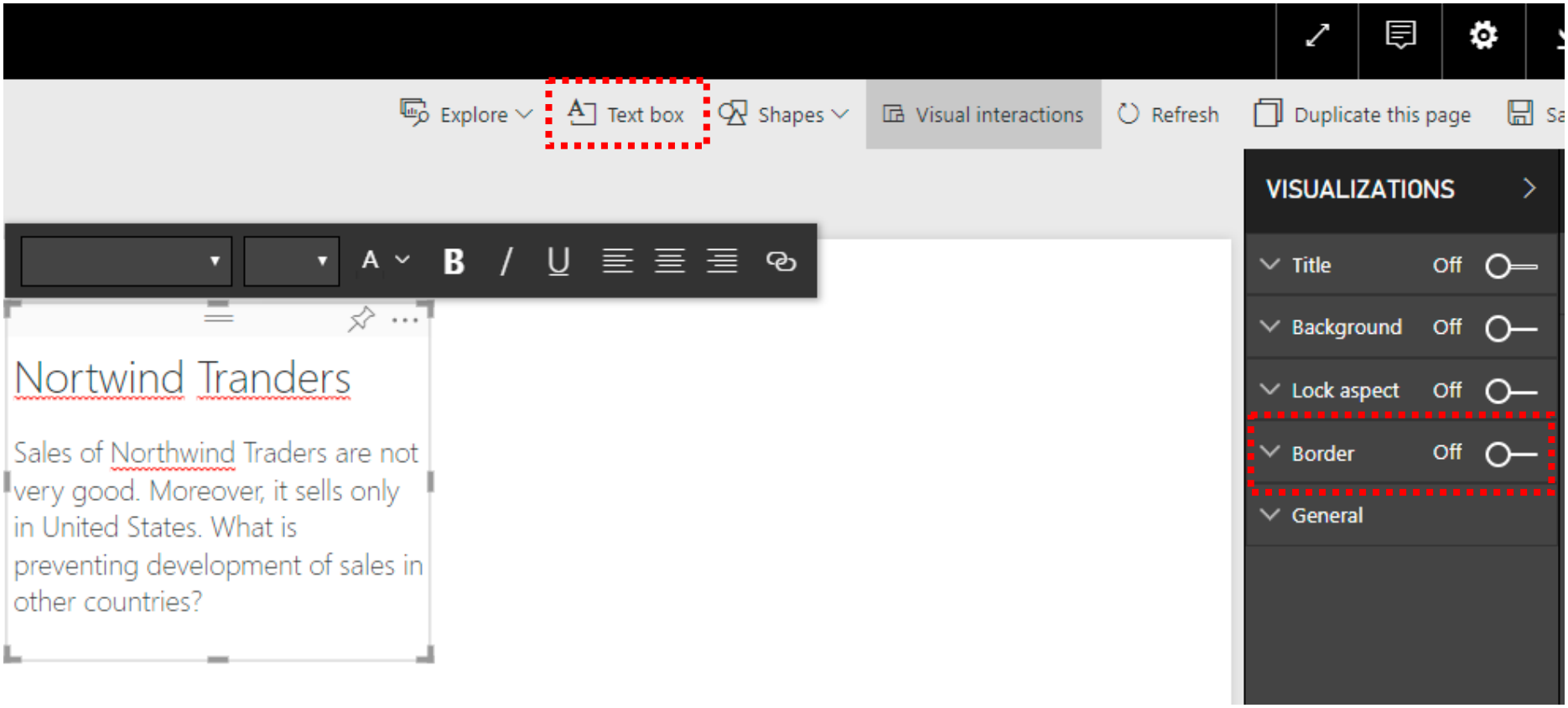


Decorating the report

Microsoft Power BI

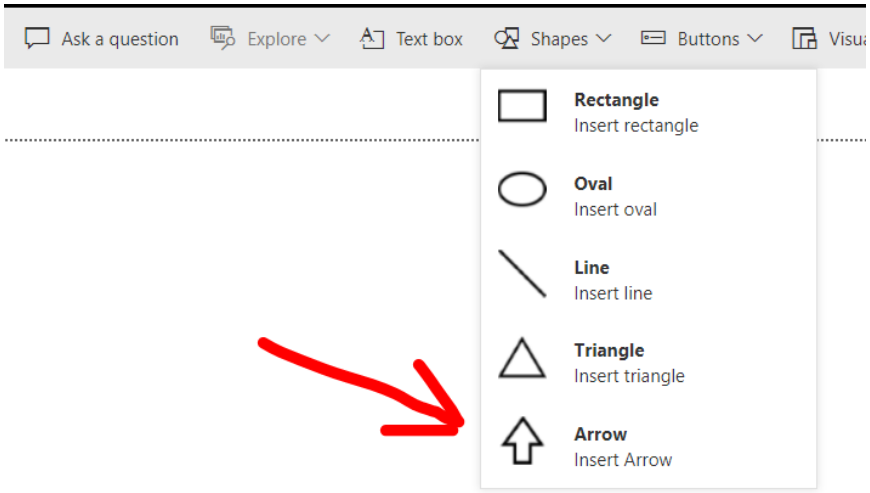
Adding text box

- Change font size
- Add border and background color



Microsoft Power BI

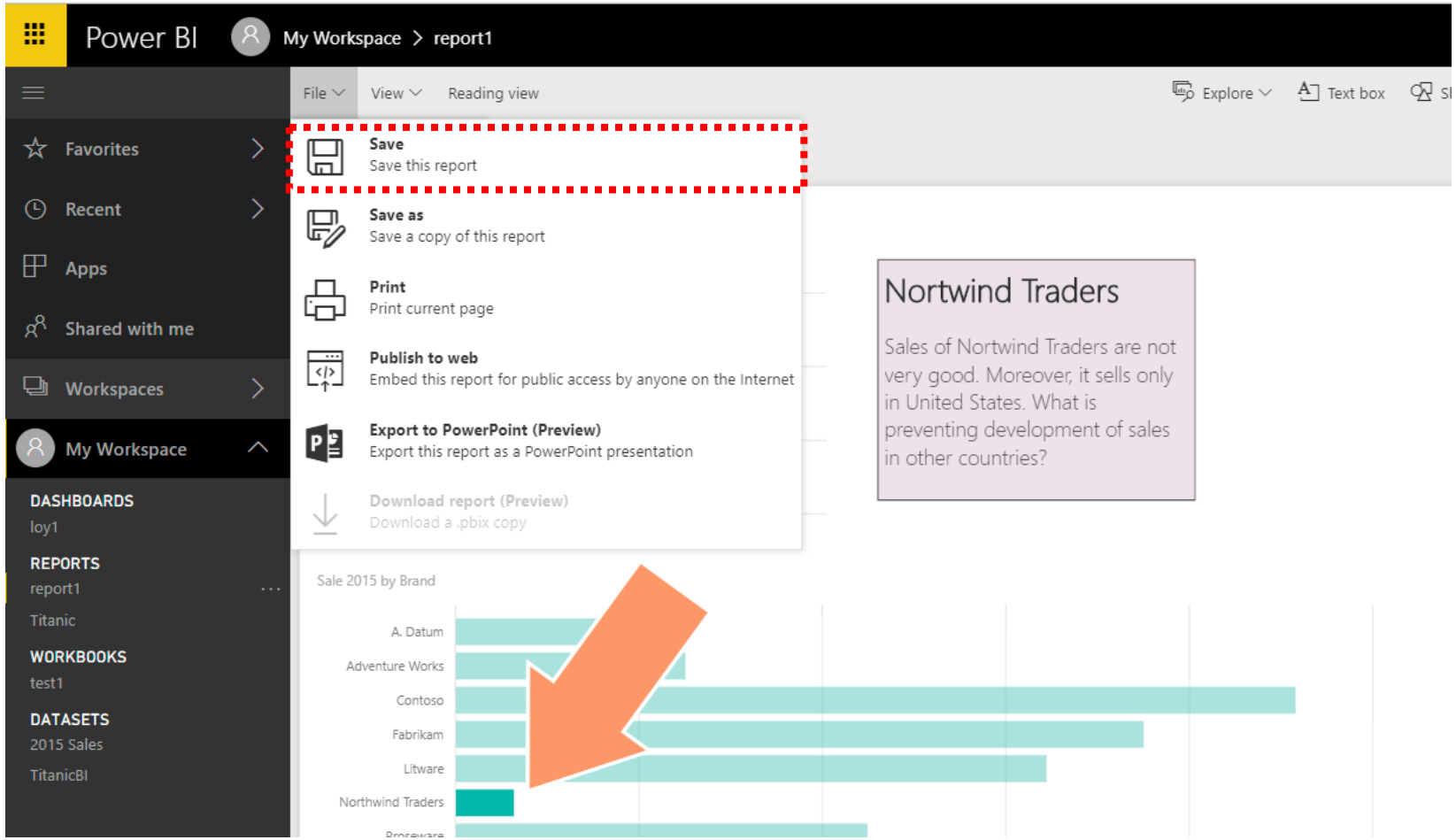
Adding arrow



Microsoft Power BI

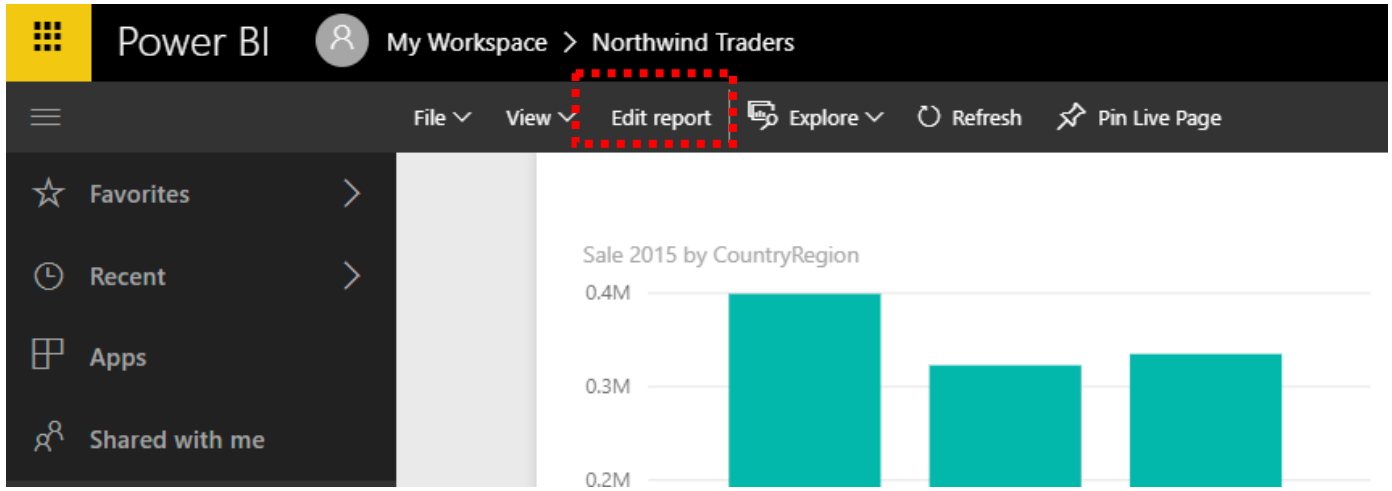
Saving the report

Report name = Northwind Trader



Microsoft Power BI

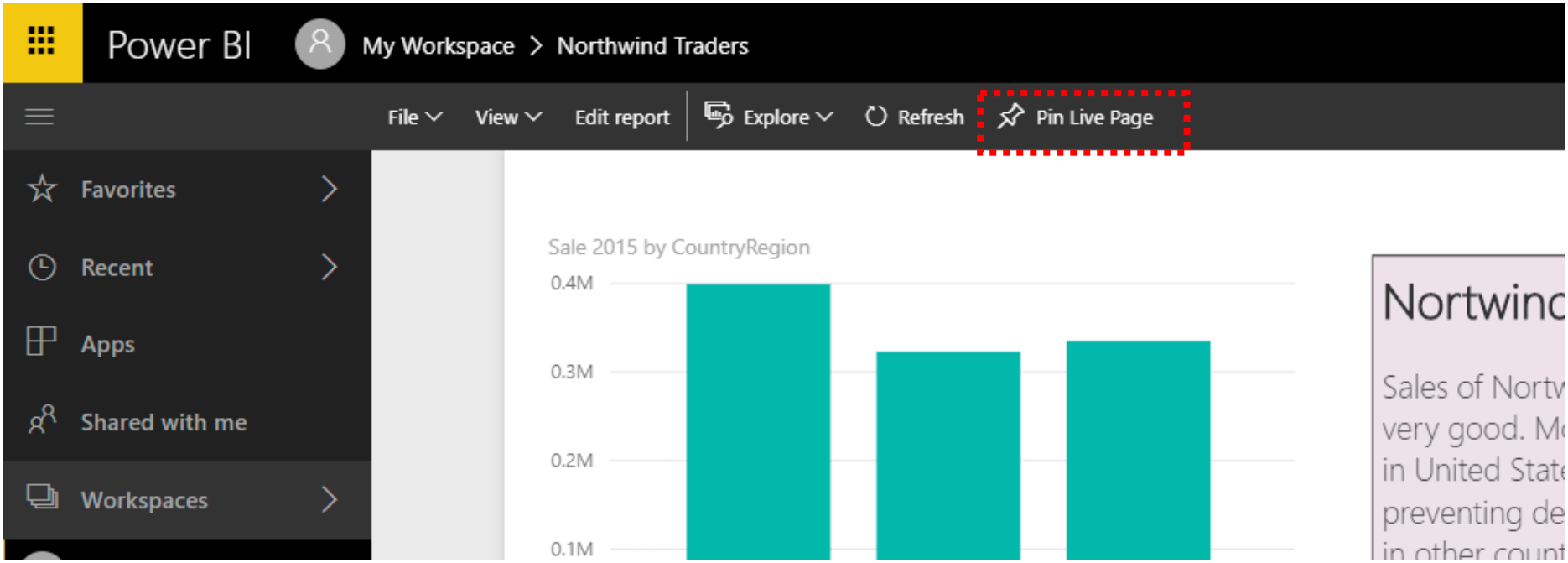
- After you save the report, it appears in the My Workspace pane, in the Reports section.
- You can now access it any time you sign in to Power BI.
- When you select a saved report, it opens and remains in read-only mode until you explicitly activate it for editing by clicking the Edit Report button.



Microsoft Power BI

Pinning a report

Click to pin a report as a live page



Pin Visual VS Pin Live Page

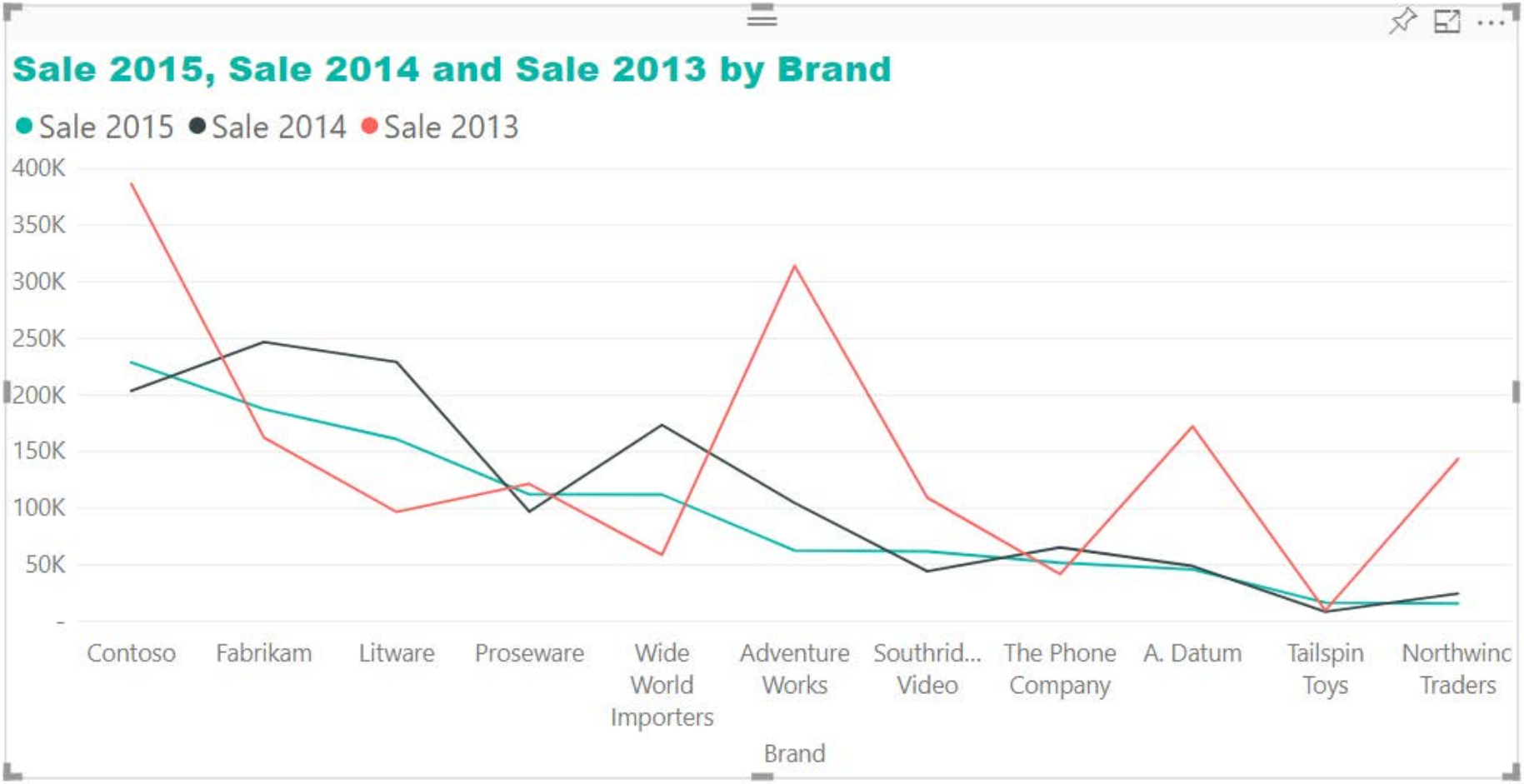
Pinning a visualization

- 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

Exercise


Sale 2015, Sale 2014 and Sale 2013 by Brand
Sale 2015
Sale 2014
Sale 2013
400K
350K
300K
250K
200K
150K
100K
50K
-
Contoso
Fabrikam
Litware
Proseware
Wide World Importers
Adventure Works
Southrid... Video
The Phone Company
A. Datum
Tailspin Toys
Northwinc Traders
Brand

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?

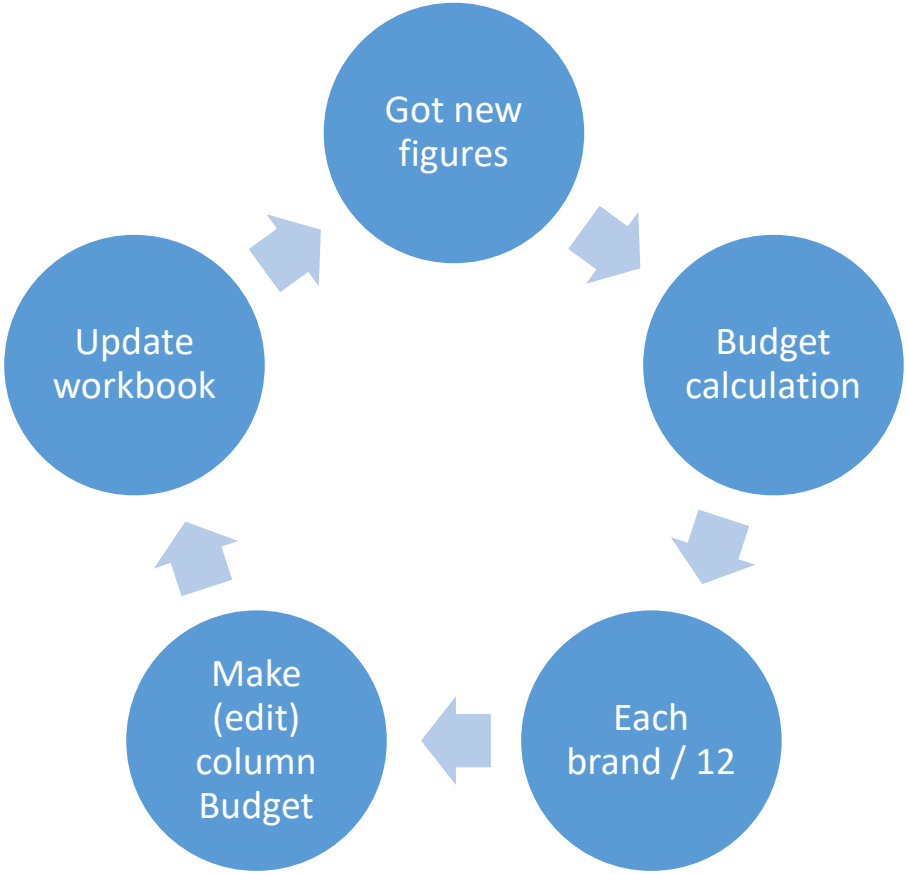
Microsoft Power BI

- 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



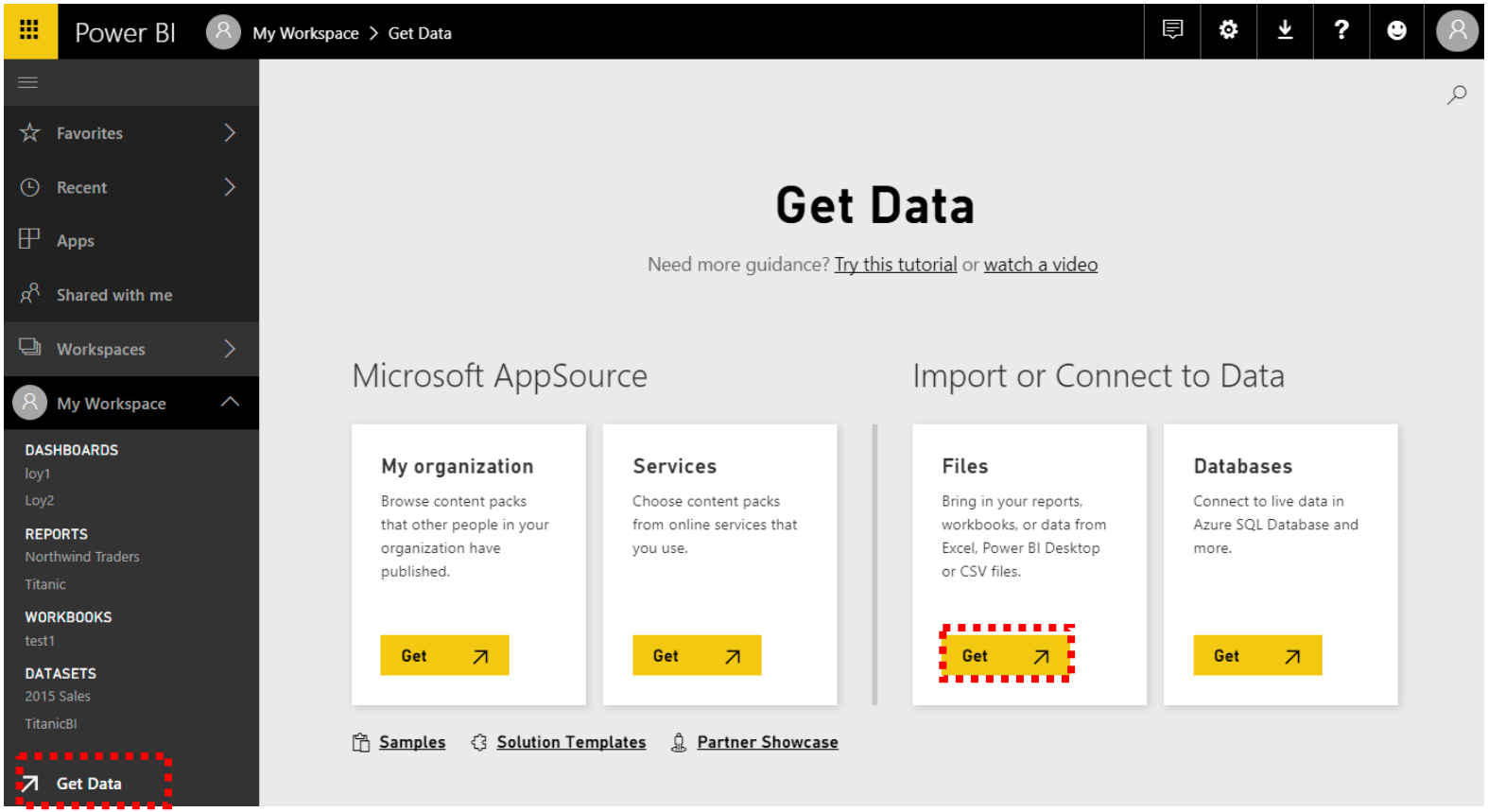
Microsoft Power BI

- 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

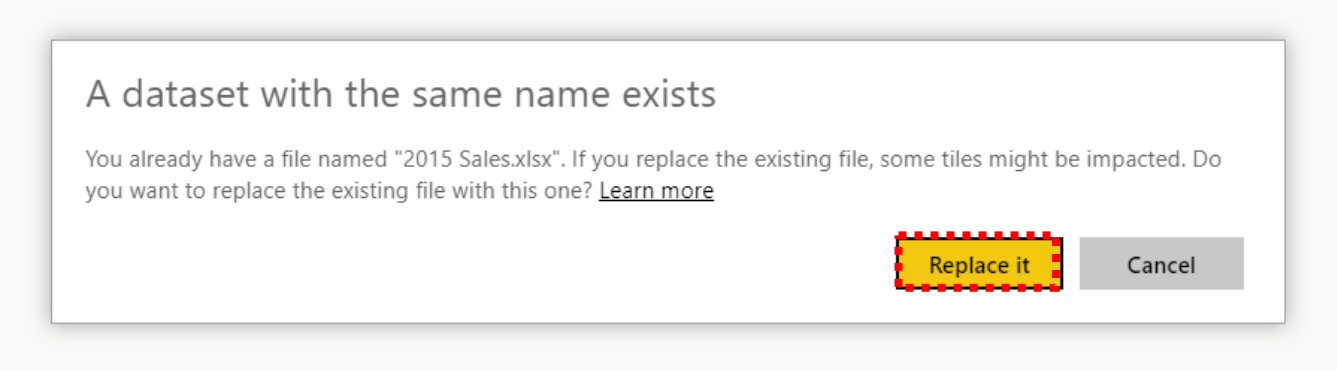
CountryRegion	Brand	Month	Sale 2013	Sale 2014	Sale 2015	Budget
China	A. Datum	January	3,234.00		1,935.00	416.67
China	A. Datum	February	6,270.00	7,059.00		416.67
China	A. Datum	March	4,352.00			416.67
China	A. Datum	April	3,814.00			416.67
China	A. Datum	May	6,234.00			416.67
China	A. Datum	June	5,571.00	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



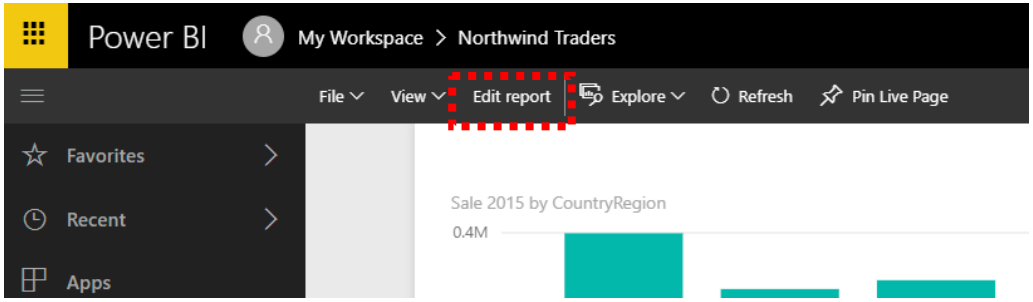
Local File, Import, Replace it

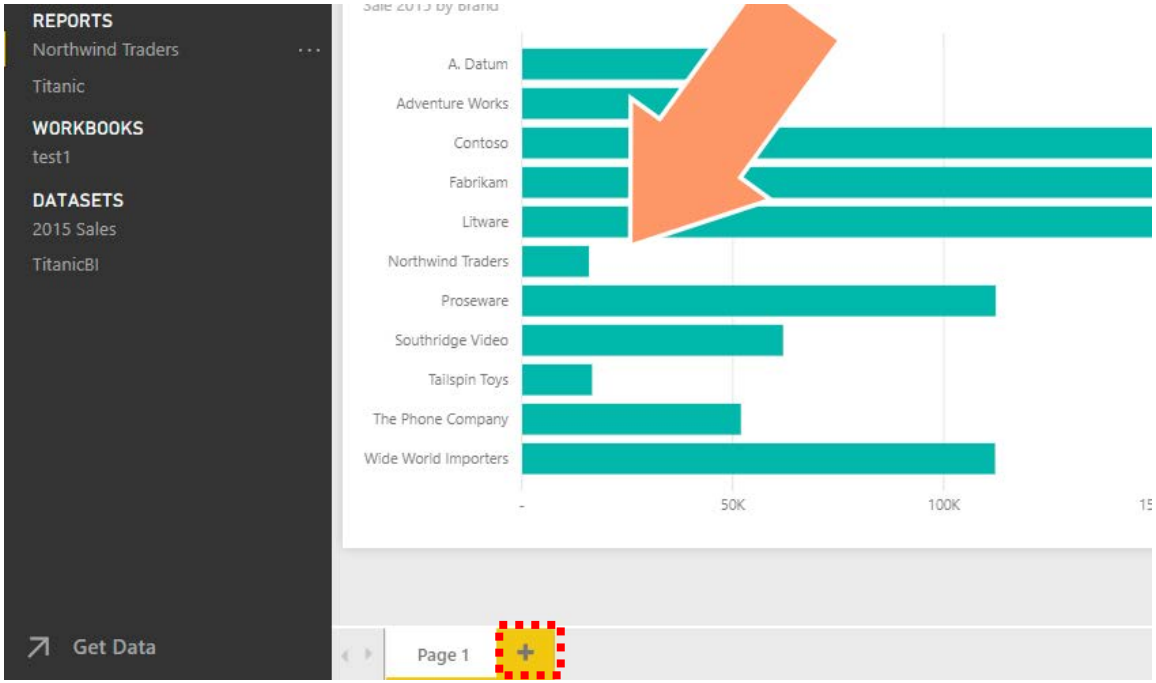


Microsoft Power BI

Add new page to report

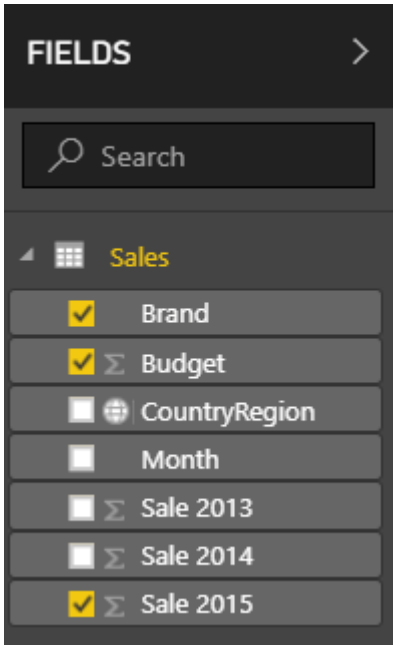
- Click report
- Click Edit report
- Click + to add Page 2

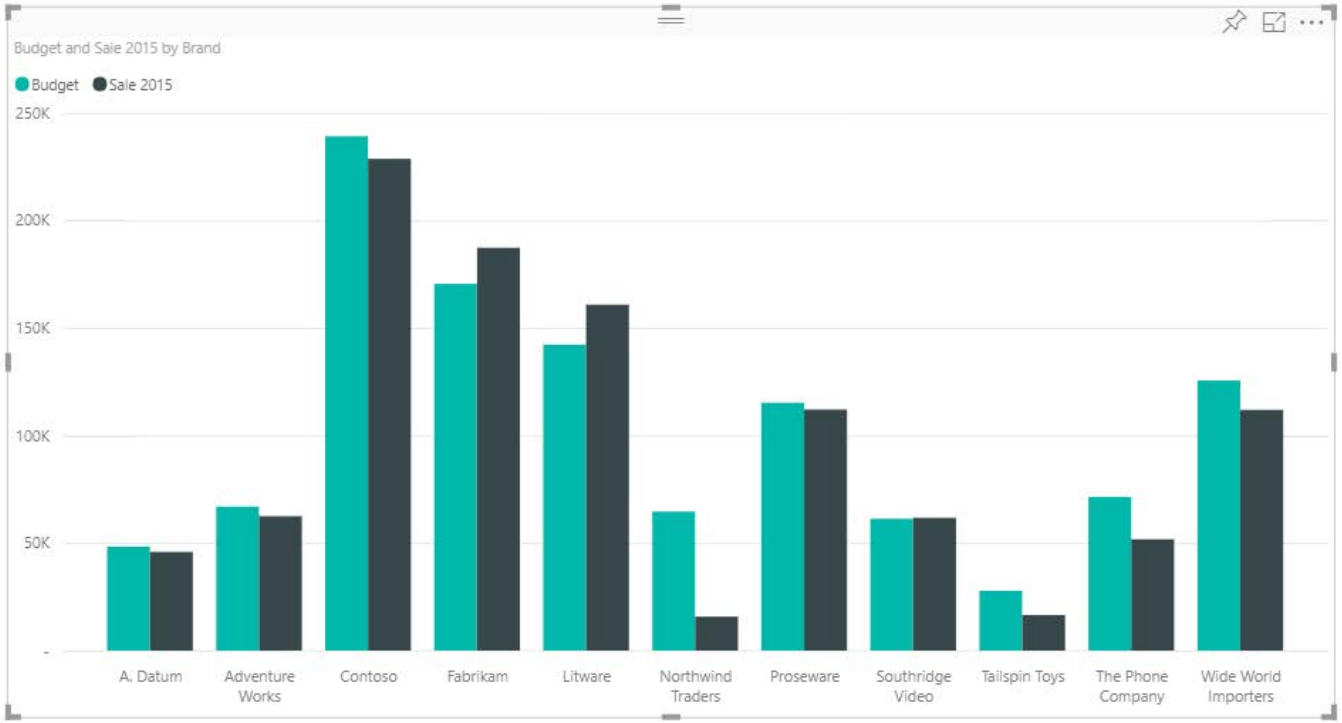




Microsoft Power BI

Budget and Sale 2015 by Brand

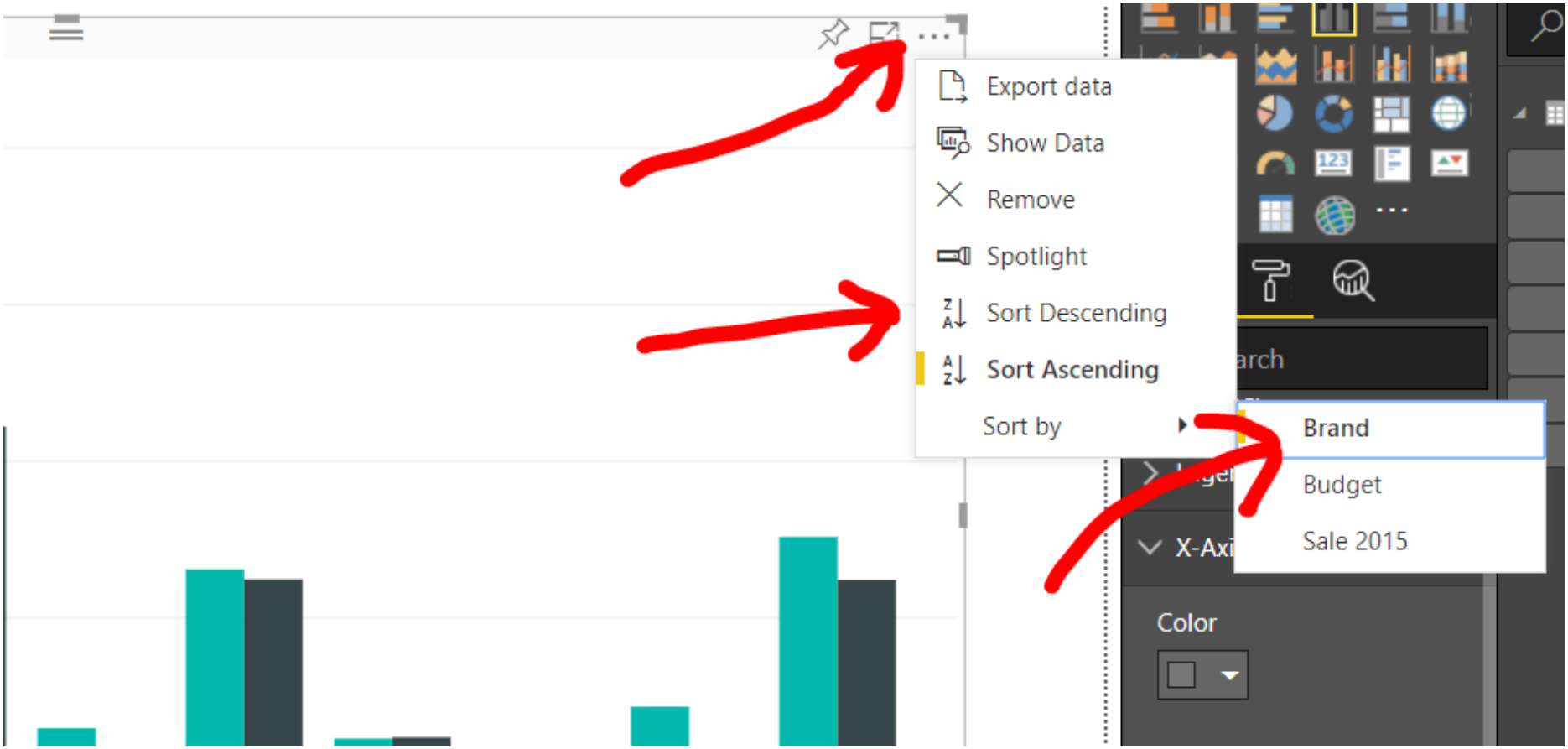




Clustered column chart

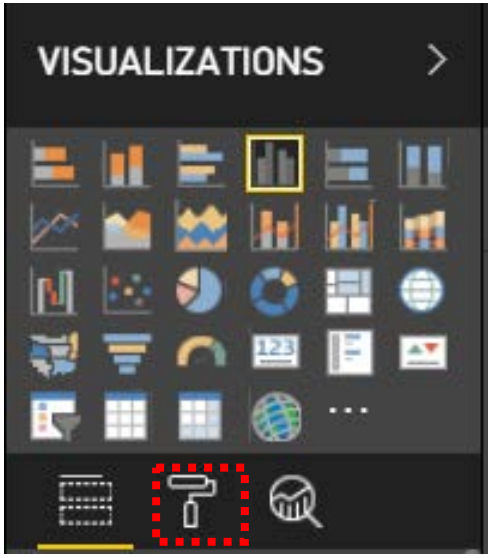
Microsoft Power BI

Sorting

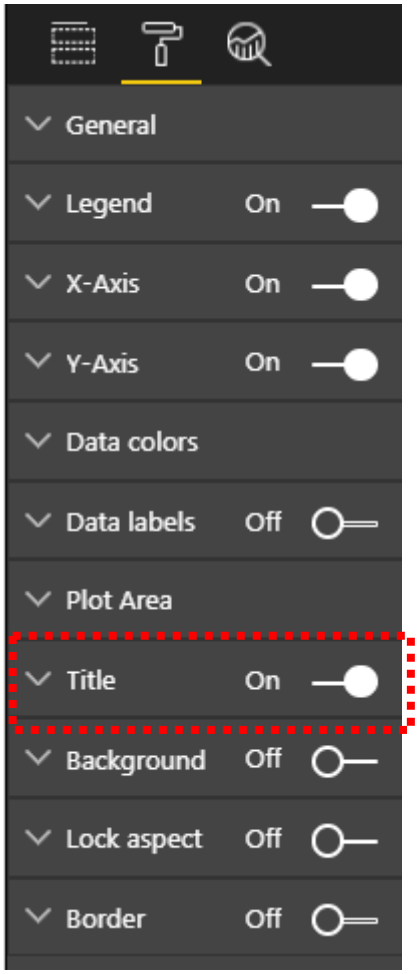


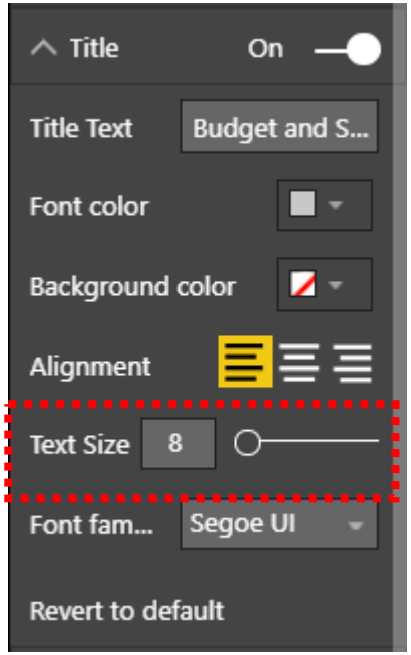
Microsoft Power BI

Change Title font size



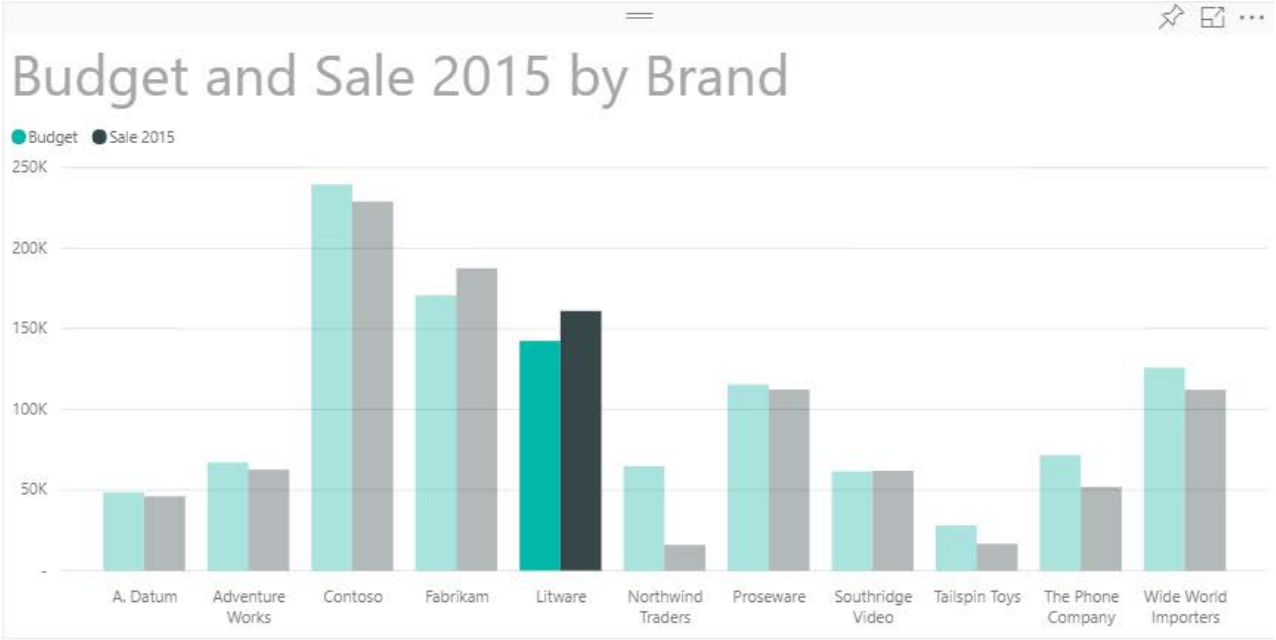
Click format

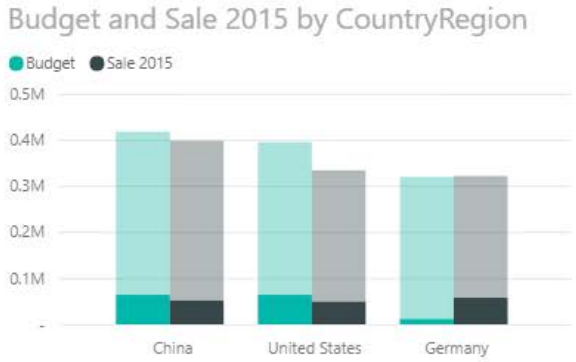




Microsoft Power BI

Add Budget and Sale 2015 by CountryRegion

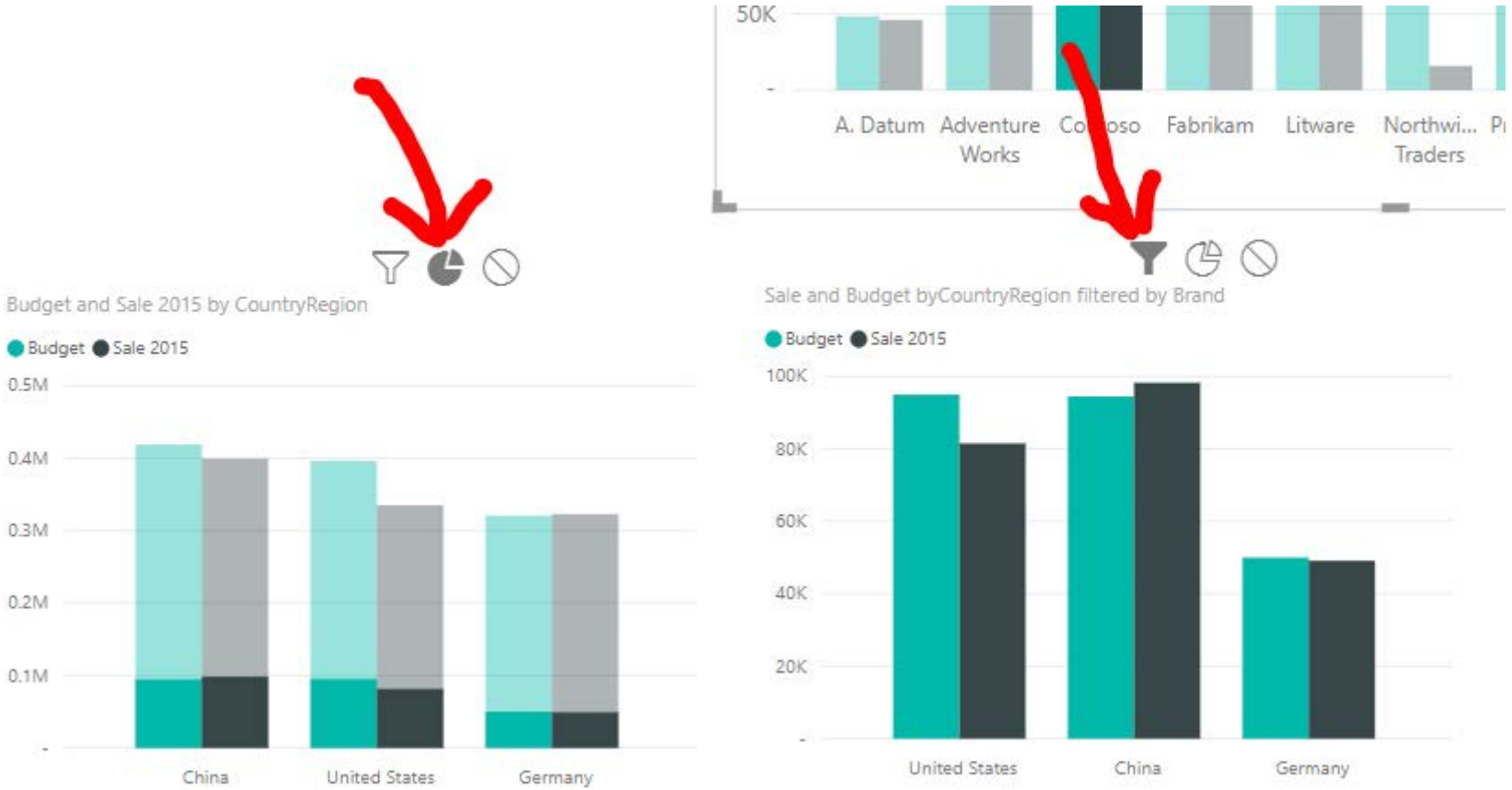




Microsoft Power BI

Add filter by brand

- Copy and pates 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:

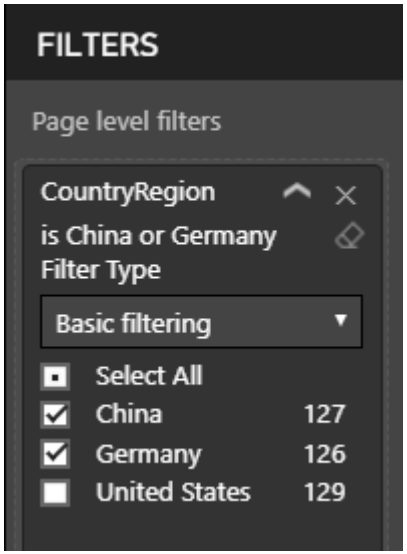
- The filter is not saved as part of the report
- The filter is always visible

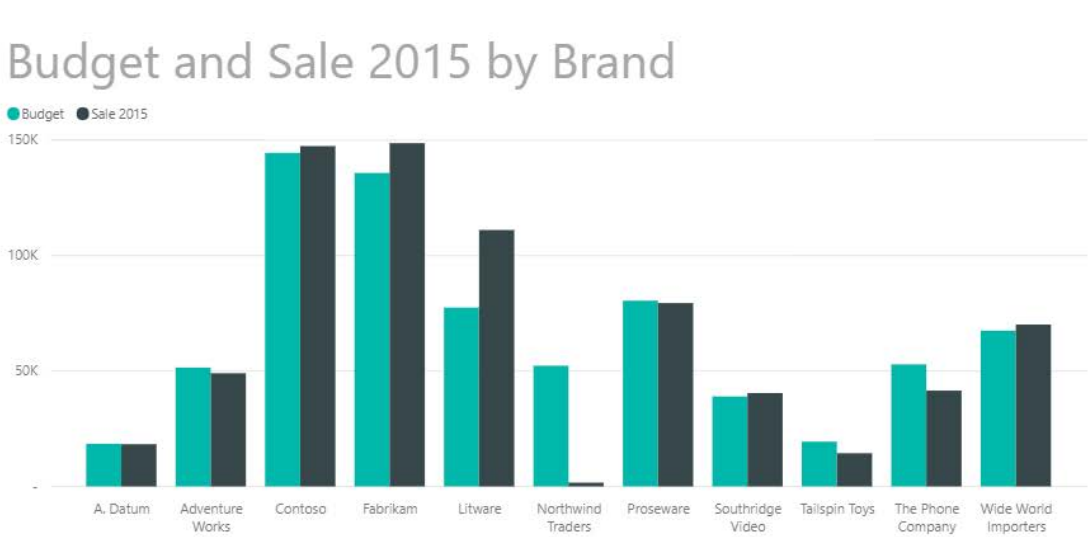
Standard filters:

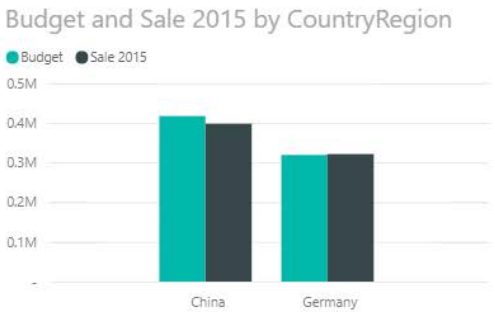
- Visual-level filters: work on only an individual visualization
- Page-level filters: work at the report-page level
- Report-level filters: works on the entire report

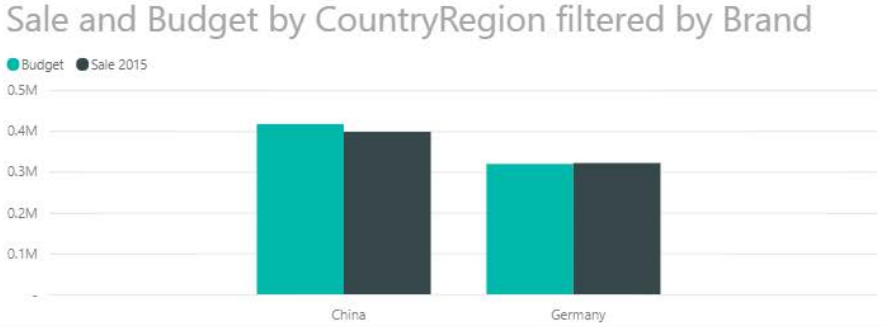
Microsoft Power BI

Add page level filter to show only China and Germany



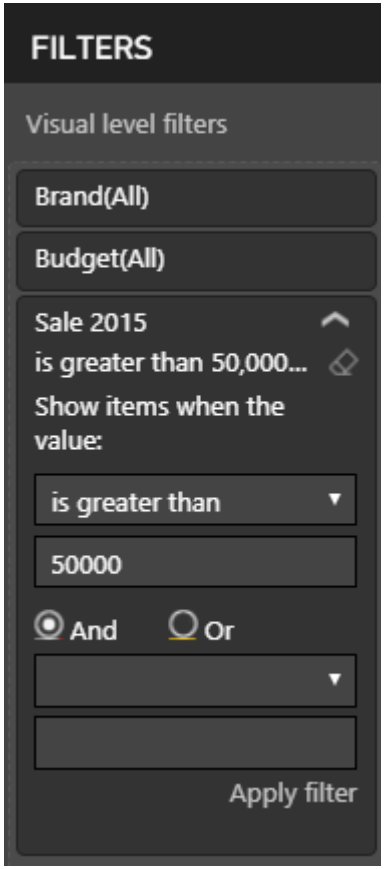


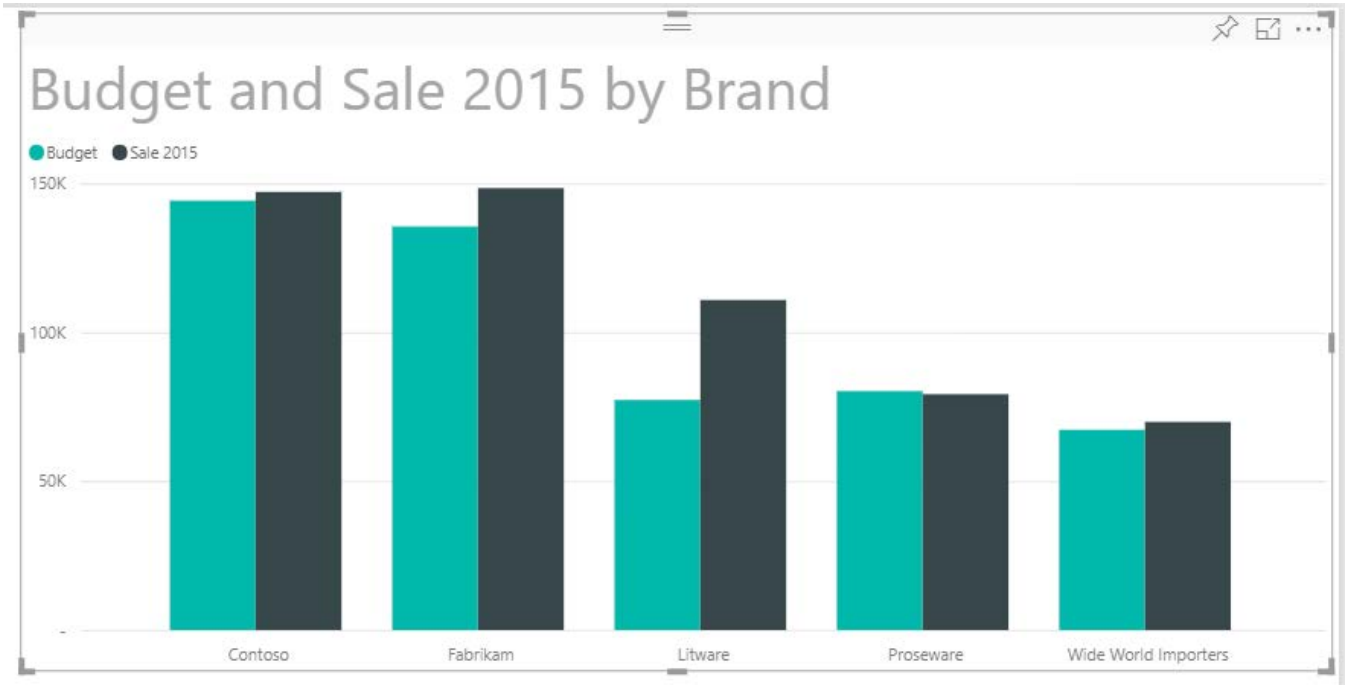




Microsoft Power BI

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

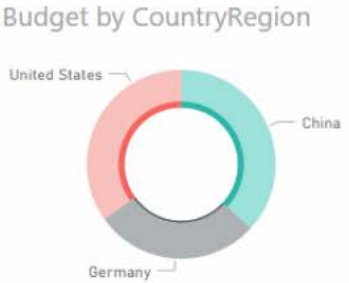


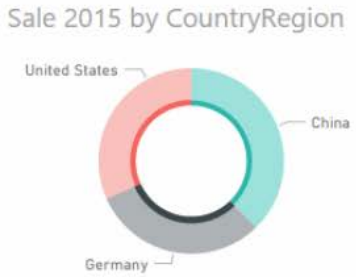


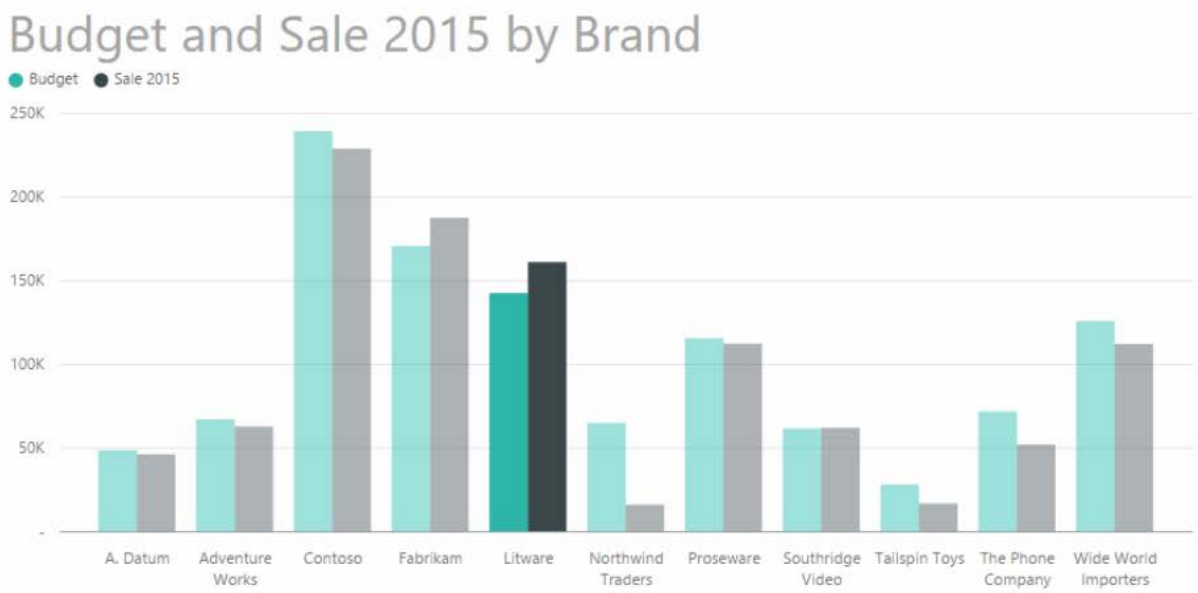
Microsoft Power BI

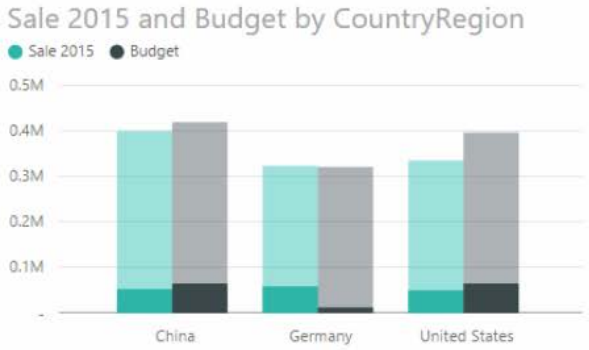
Exercise

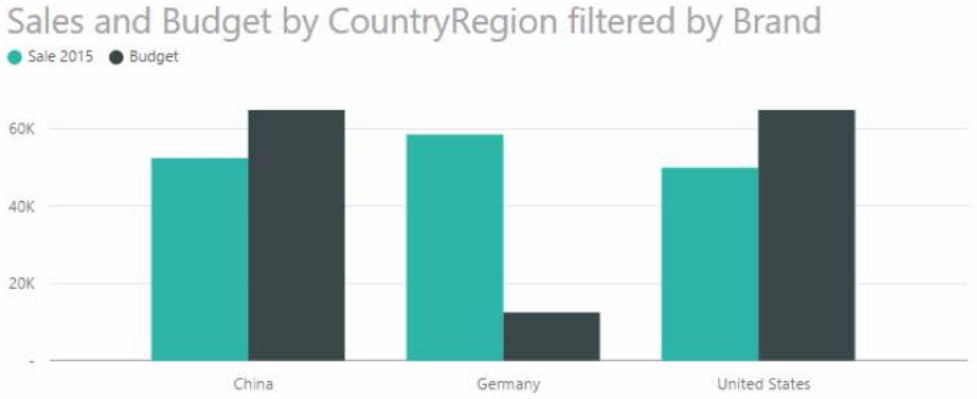
Add Donut charts to the report











Sharing and Publish Report

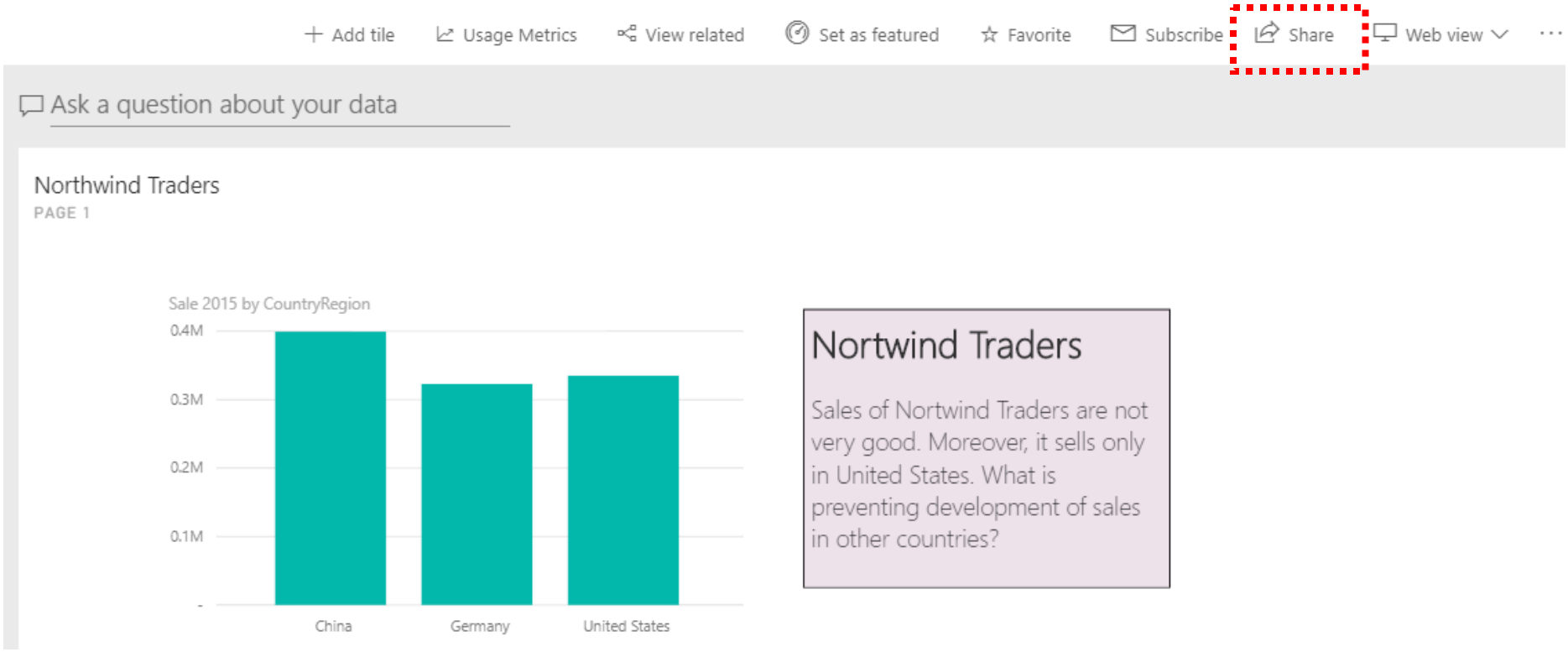
Sharing the dashboard

- 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

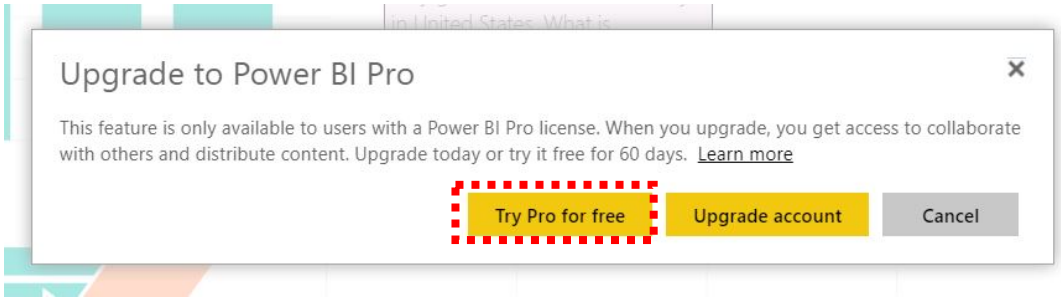
Microsoft Power BI

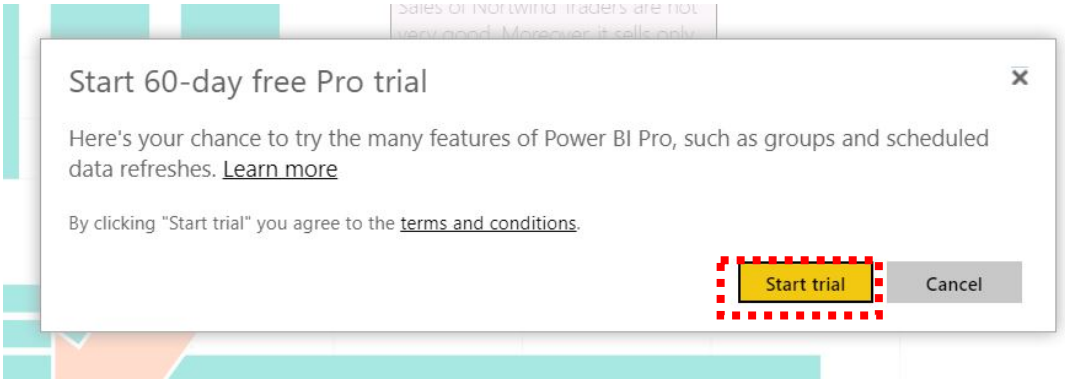
Inviting a user to see a dashboard

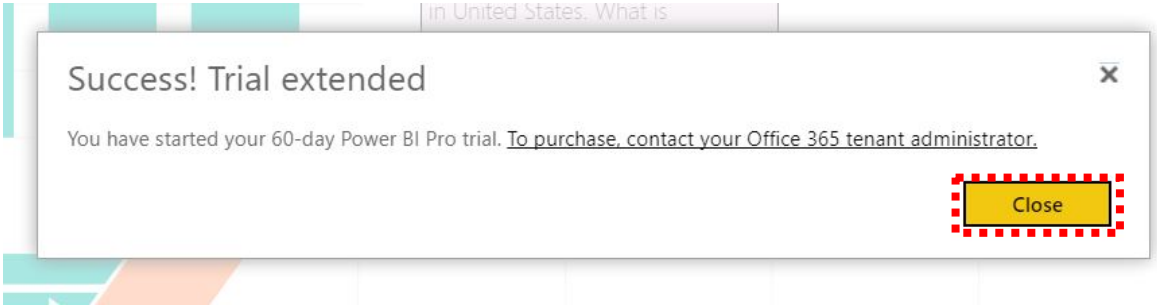
Click dashboard and Share



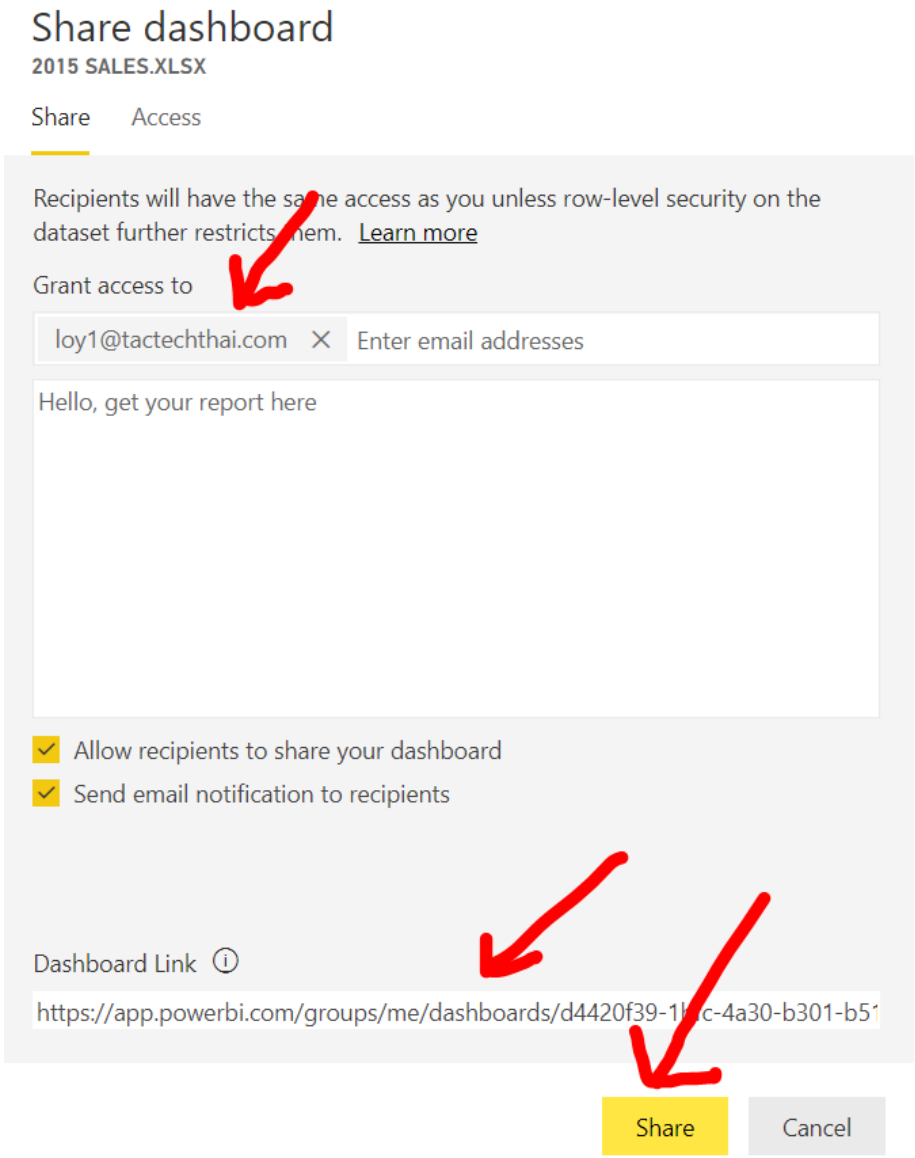
Microsoft Power BI





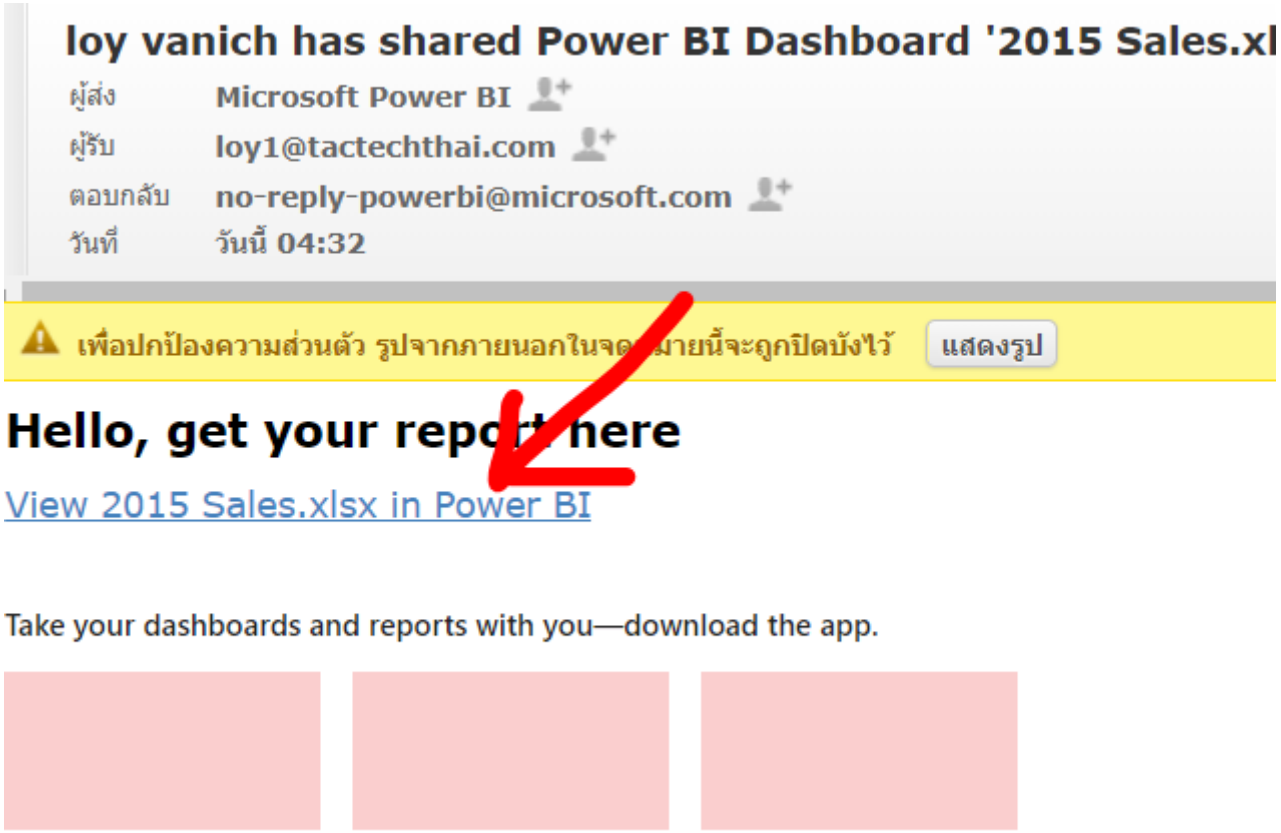


Microsoft Power BI

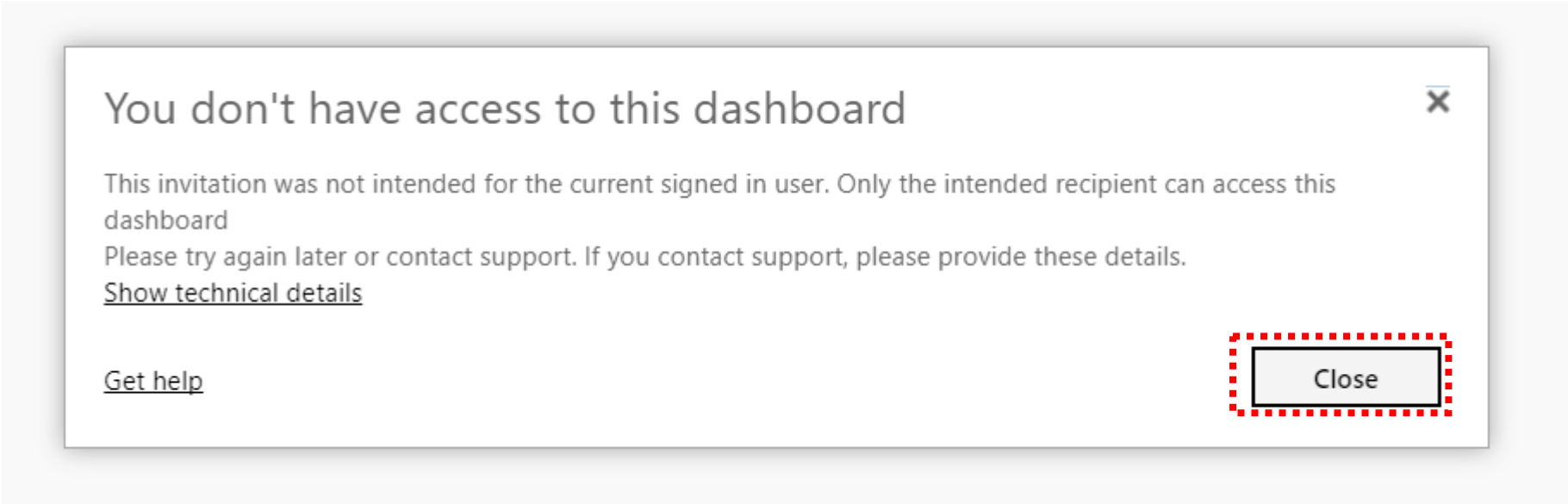


Microsoft Power BI

Check mail



Microsoft Power BI



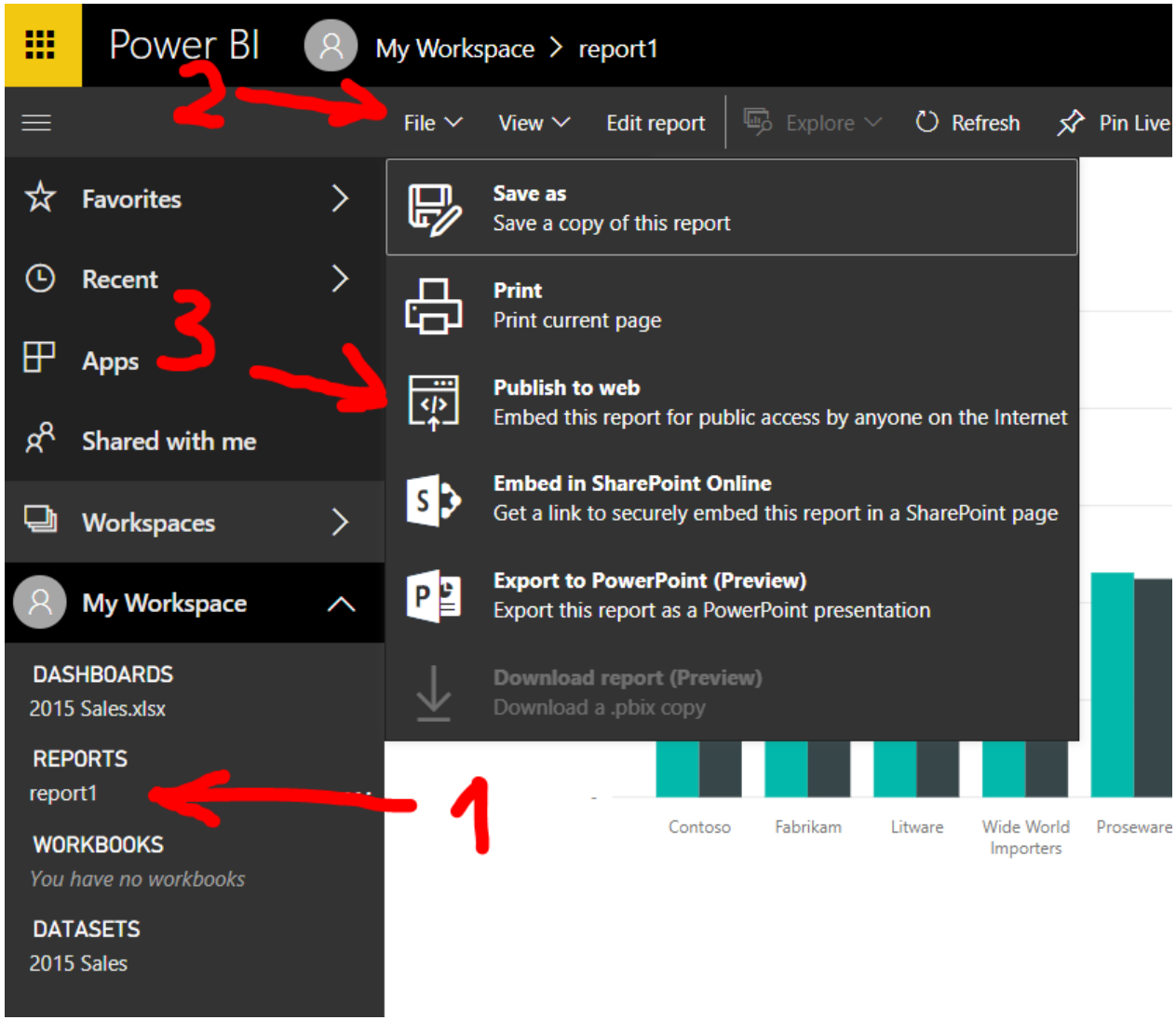
Inviting users outside your organization

- 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.

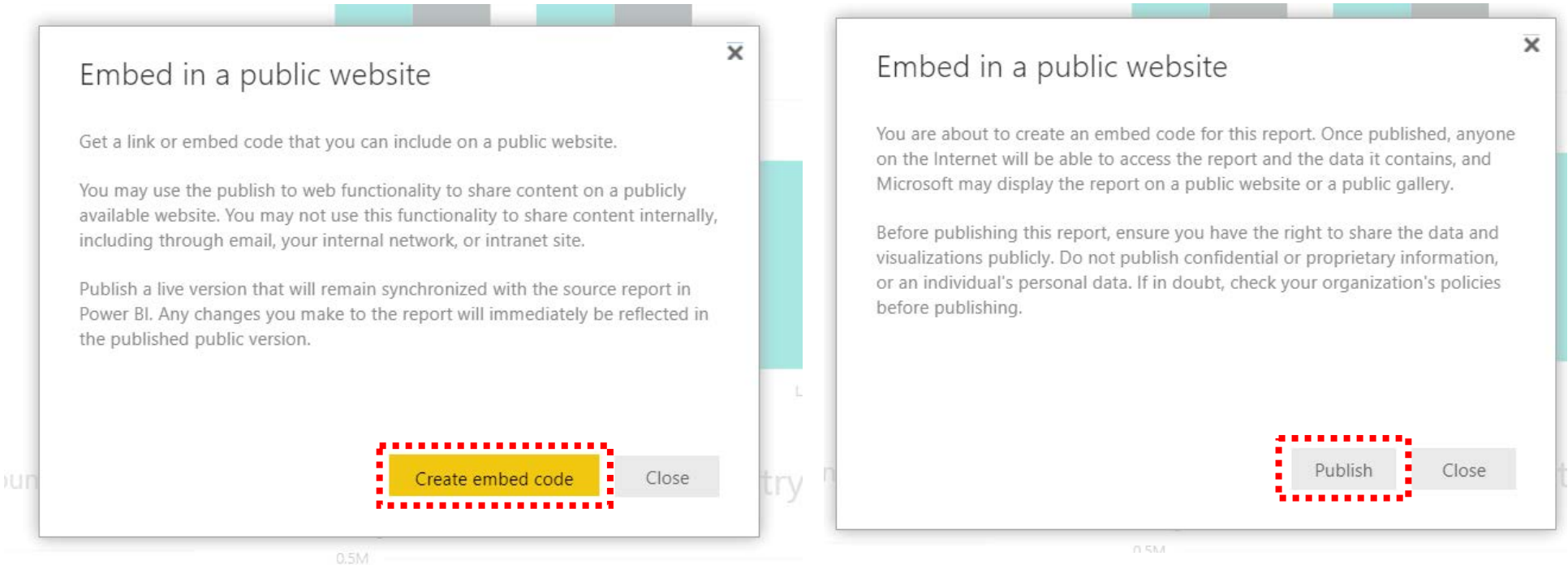
- External users You can share a dashboard with external users only by inviting them by email. When an external user receives the email, she must sign in to Power BI using the same email account used in the invitation. If she never previously used Power BI, she can create a free account the first time she signs in.

Microsoft Power BI

Publish a report

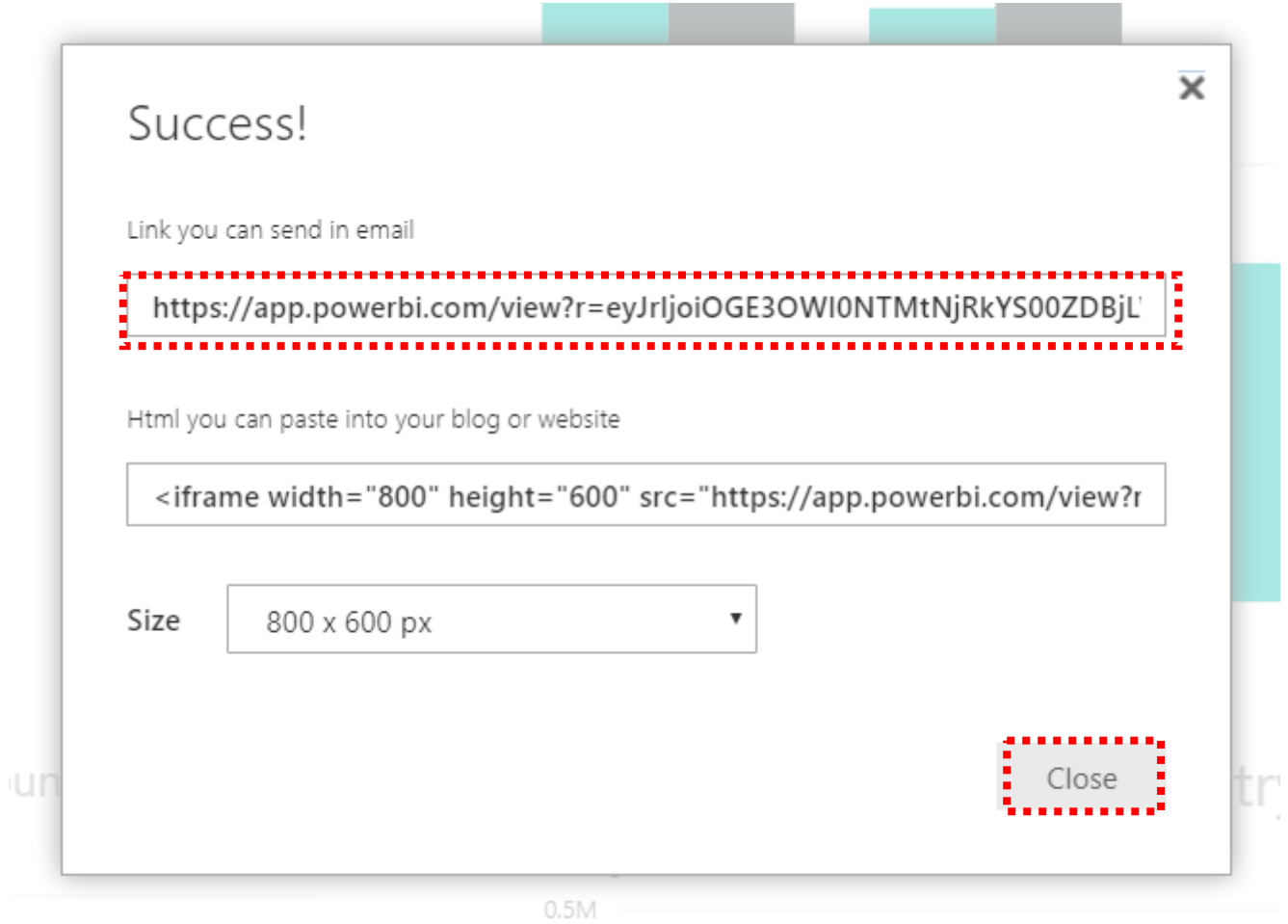


Microsoft Power BI



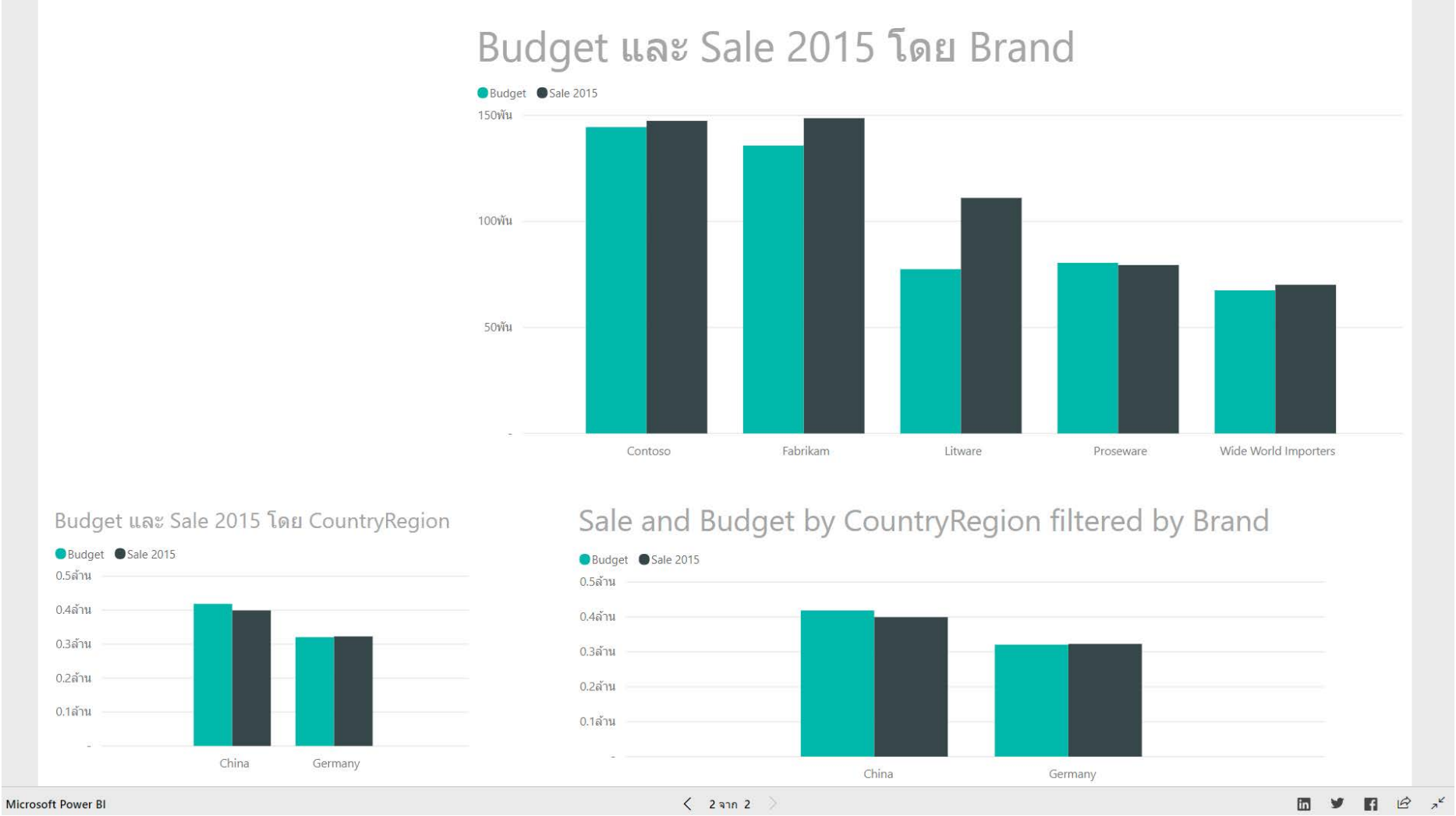
Microsoft Power BI

Copy Link and open in new browser tab to view report



Microsoft Power BI

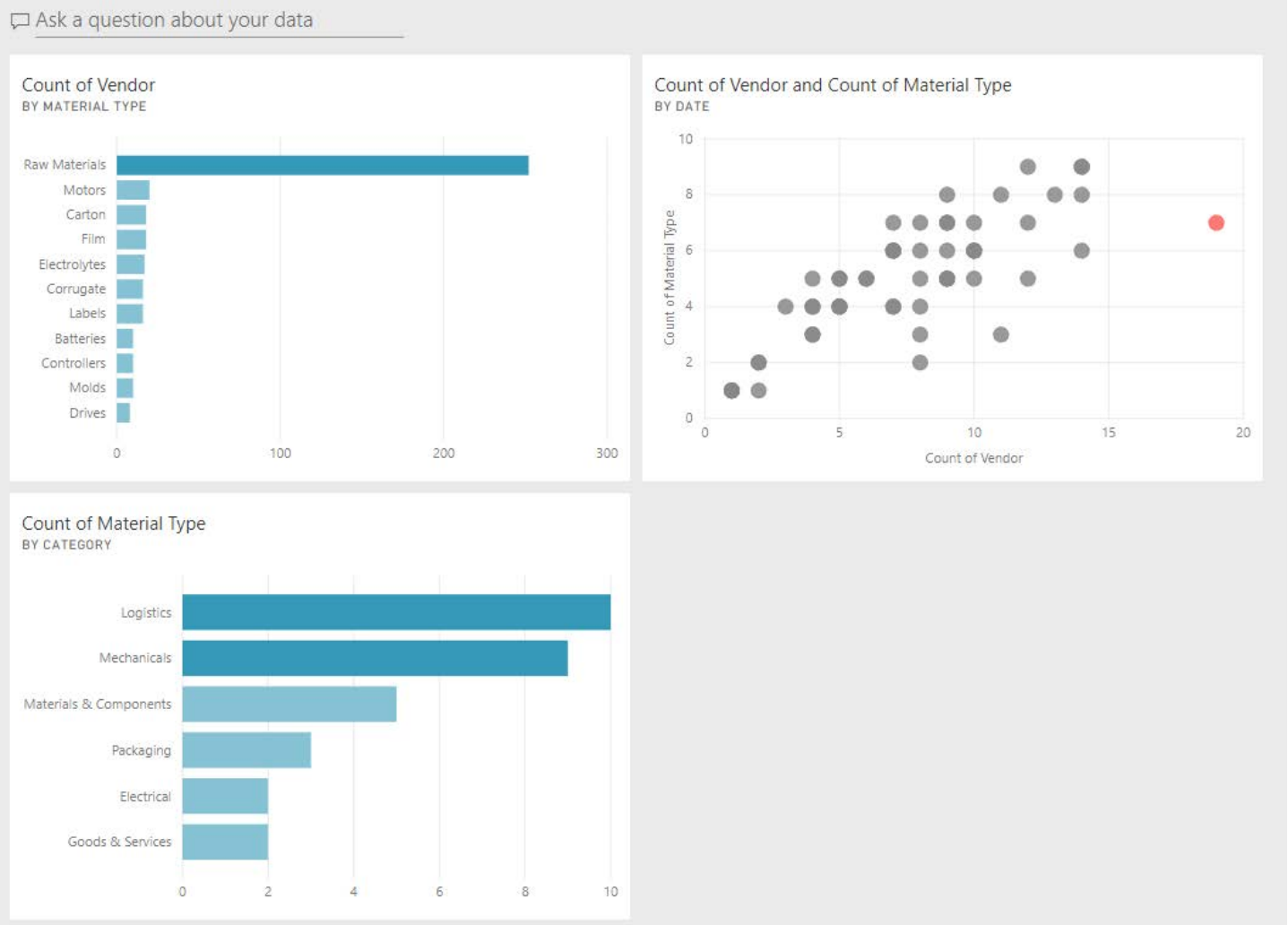
Anyone who has the URL can view your data



Microsoft Power BI

Exercise

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



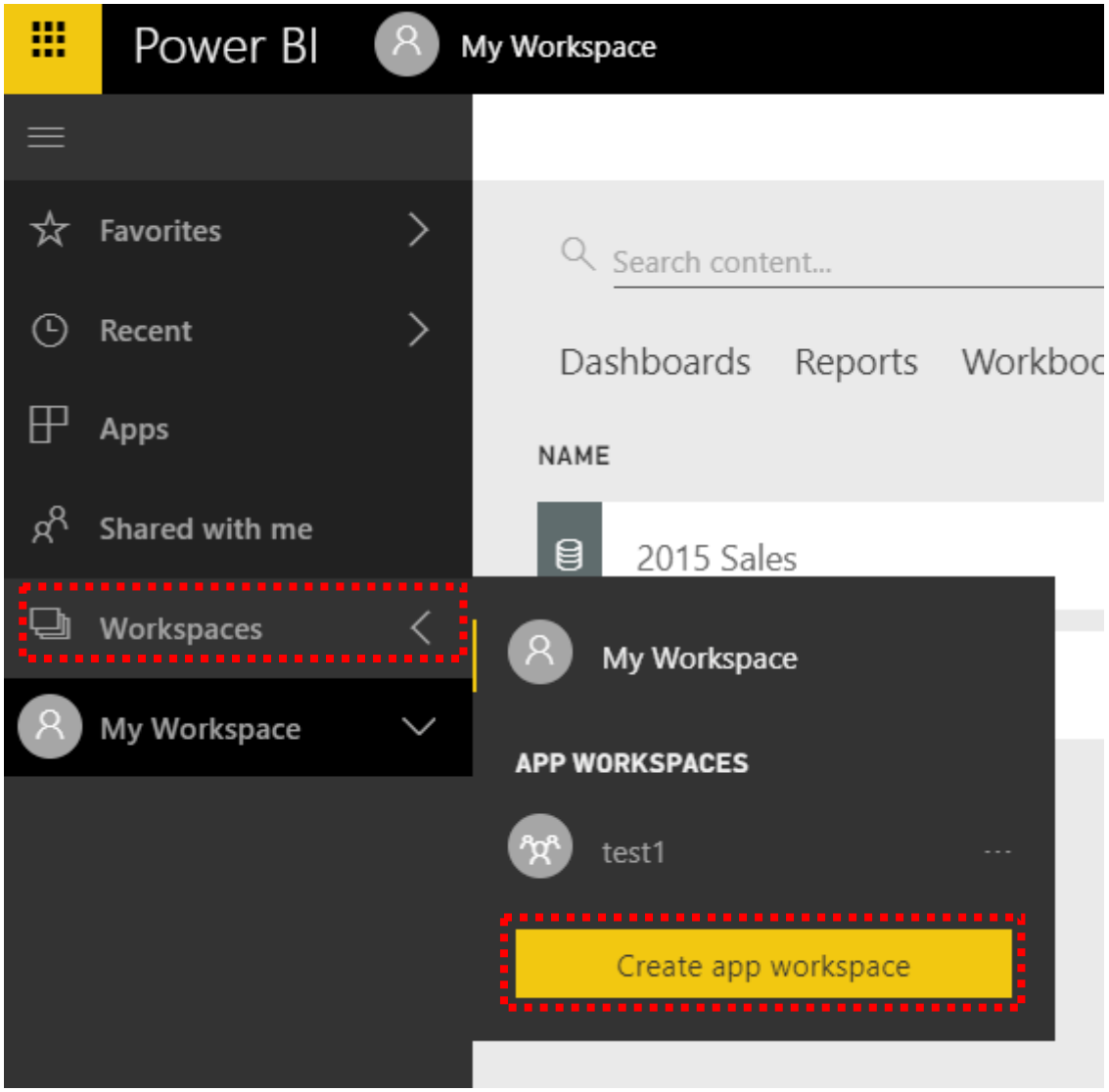
Creating a group workspace

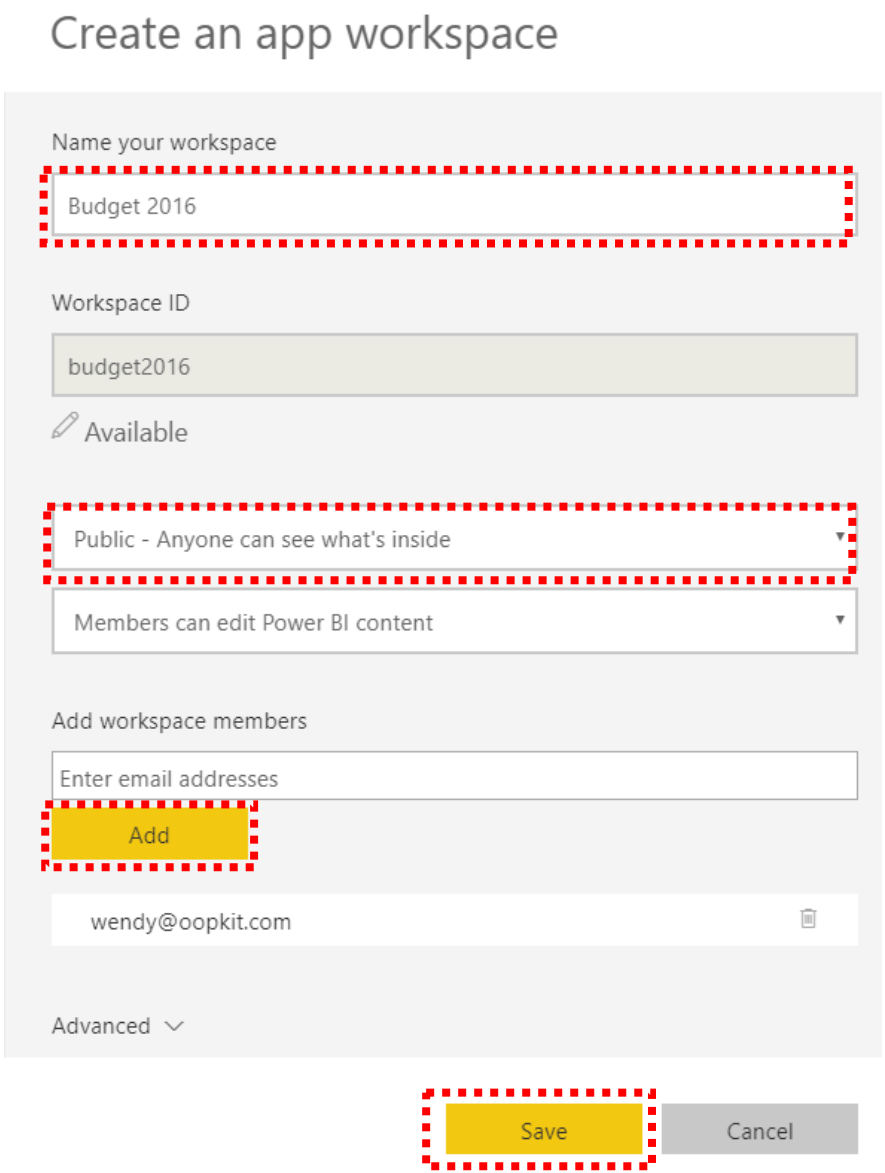
Microsoft Power BI

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

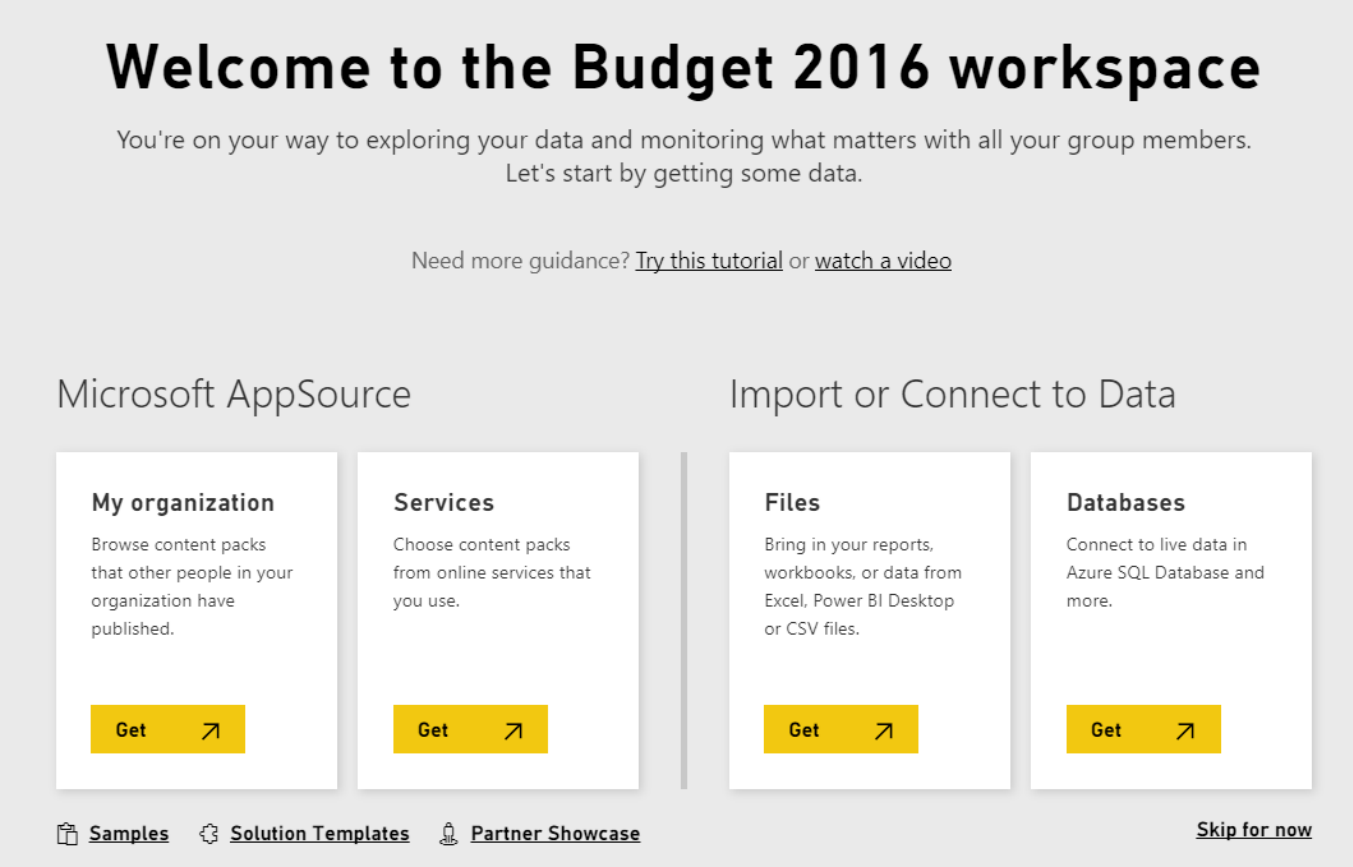
Microsoft Power BI




Create an app workspace
Name your workspace
Budget 2016
Workspace ID
budget2016
Available
Public - Anyone can see what's inside
Members can edit Power BI content
Add workspace members
Enter email addresses
Add
wendy@oopkit.com
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

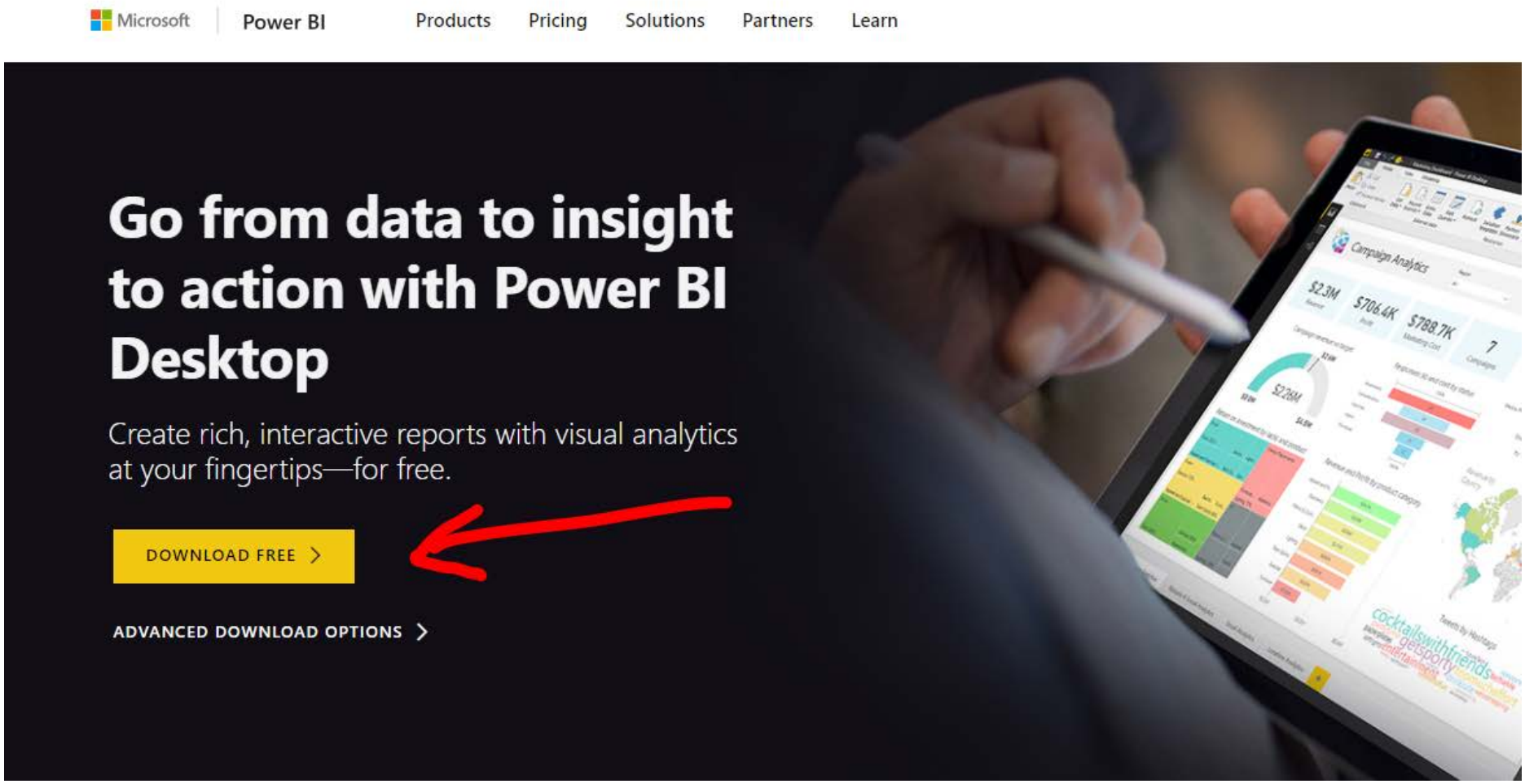


Power BI Desktop

Microsoft Power BI

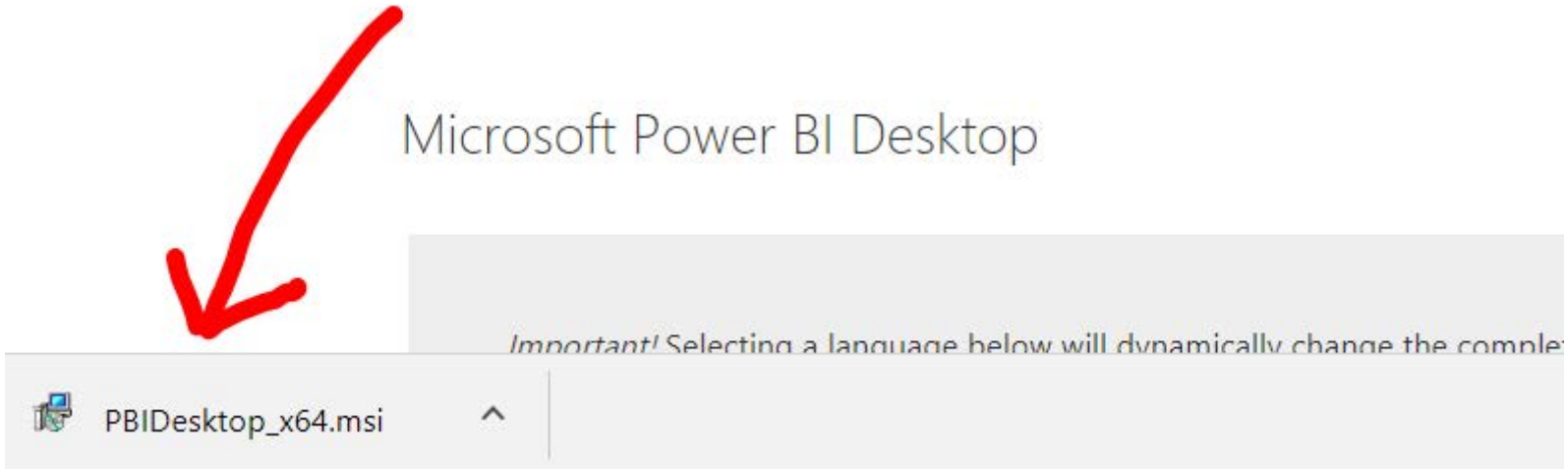
Download Power BI Desktop

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

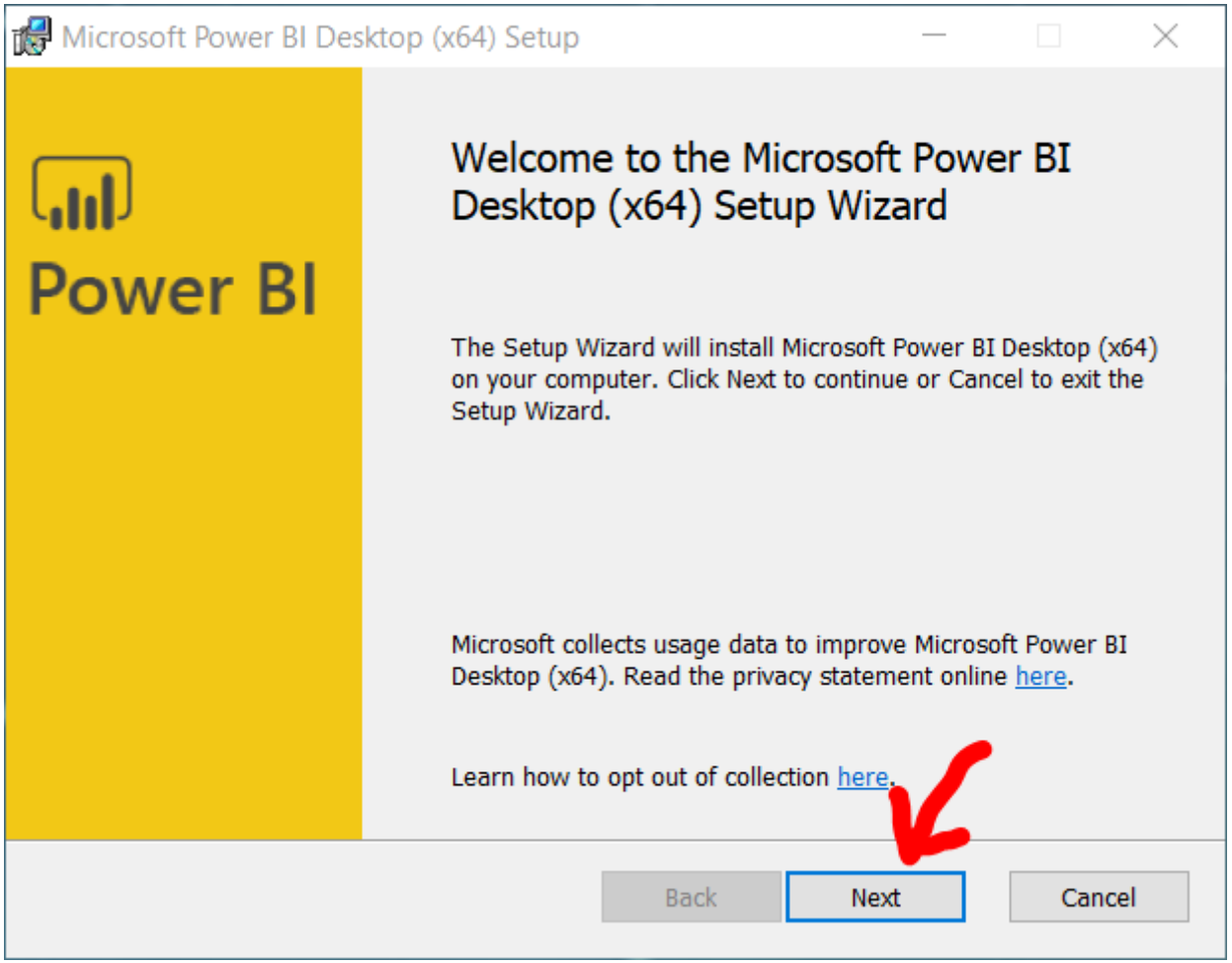


Microsoft Power BI

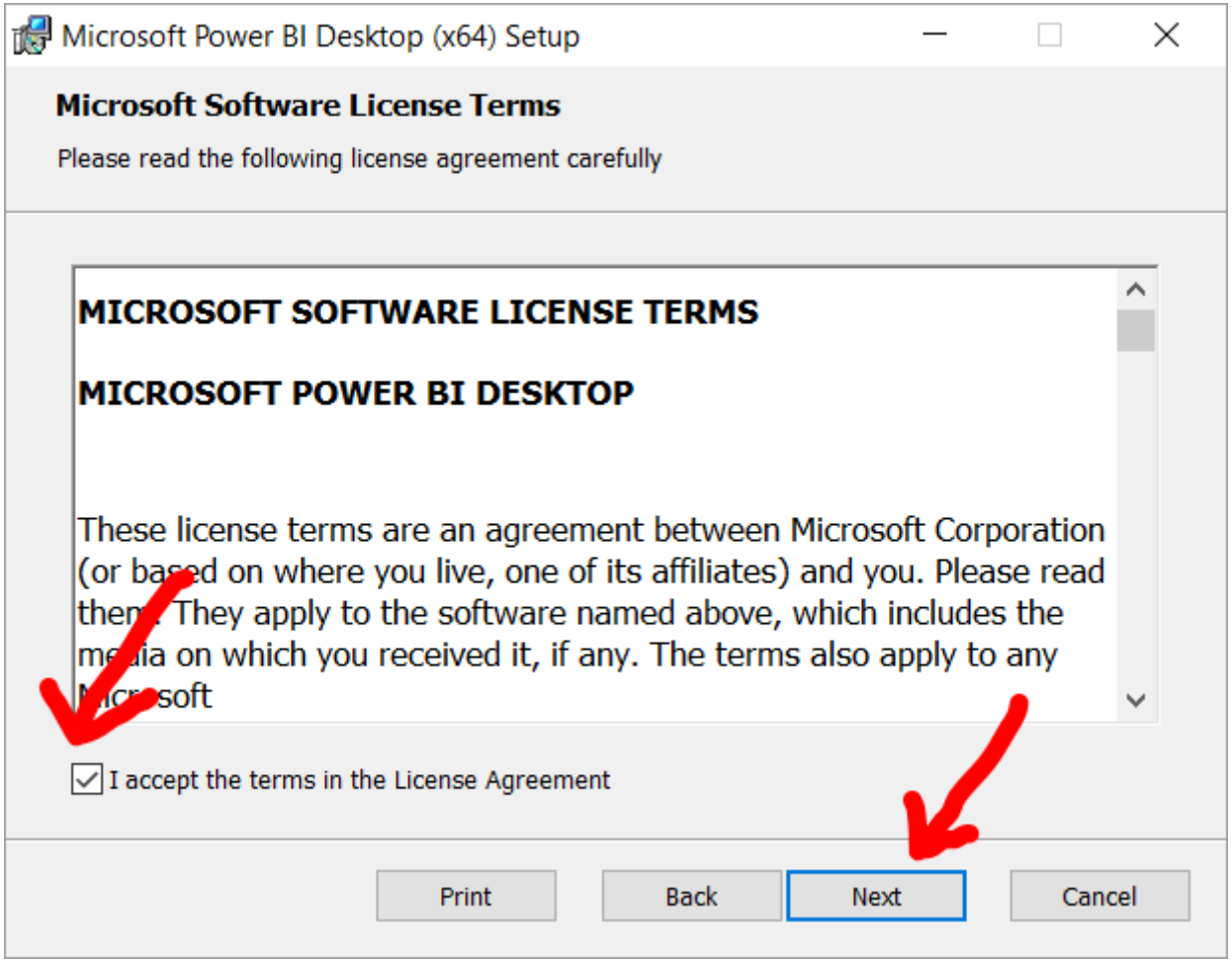
Click to install



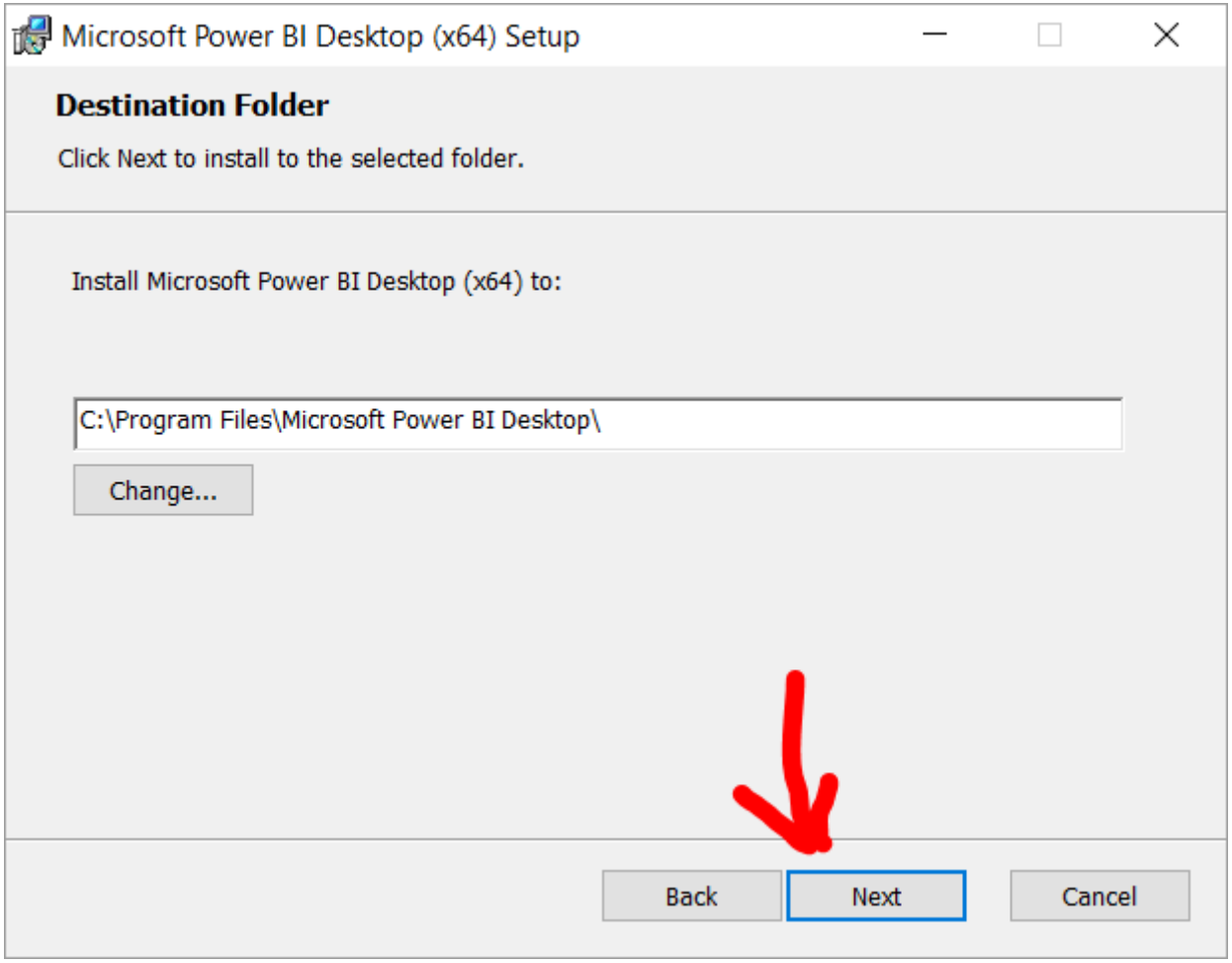
Microsoft Power BI



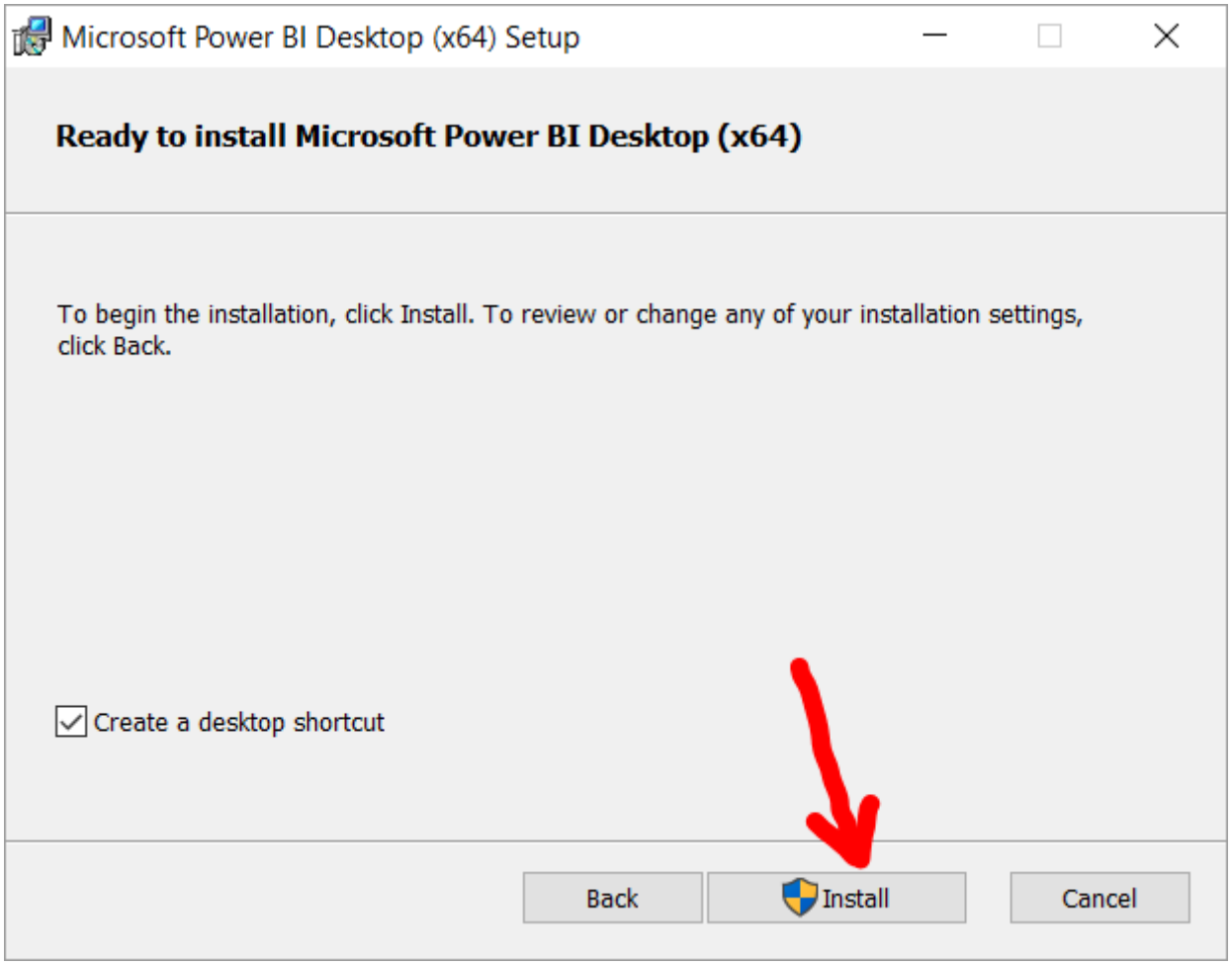
Microsoft Power BI



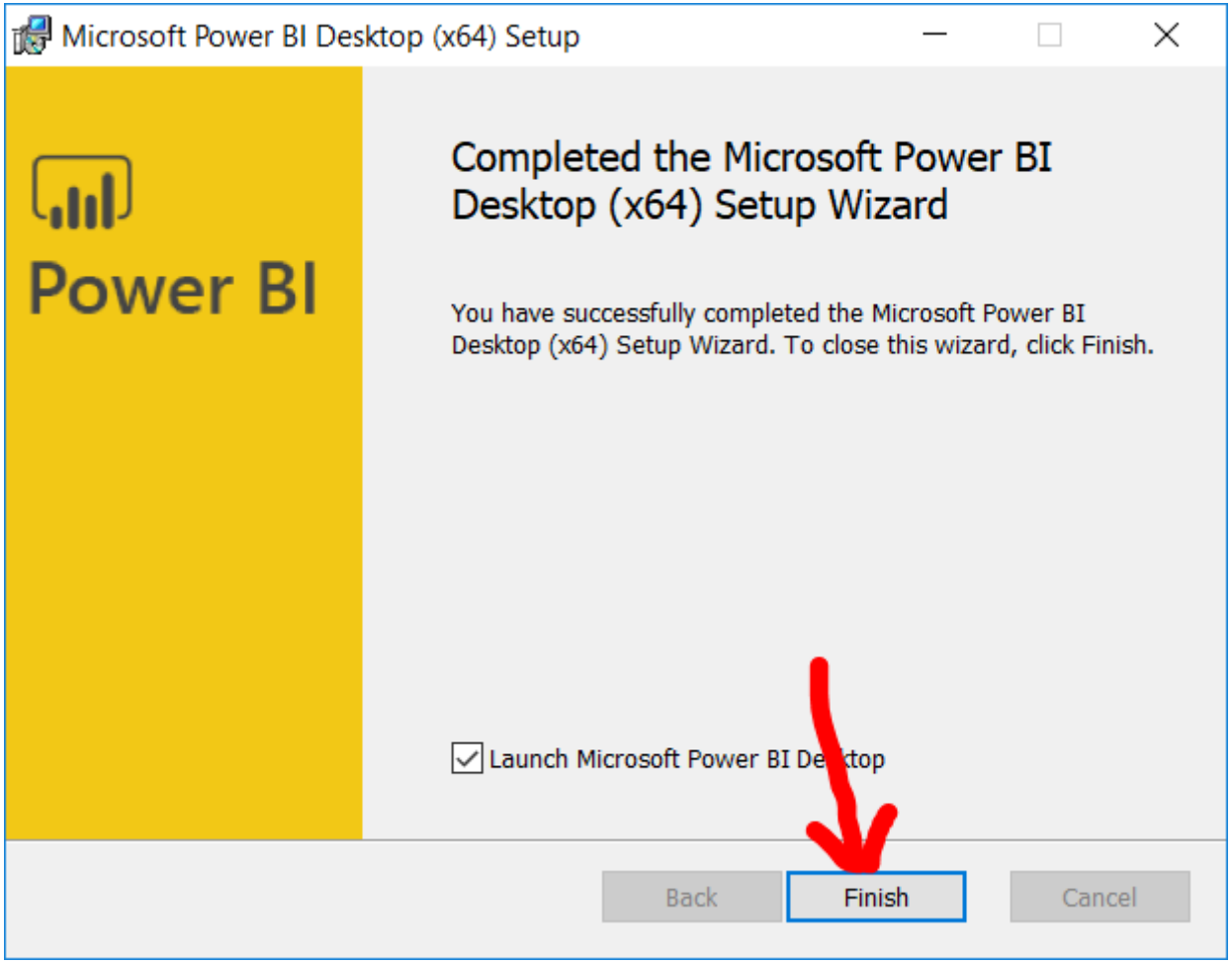
Microsoft Power BI



Microsoft Power BI

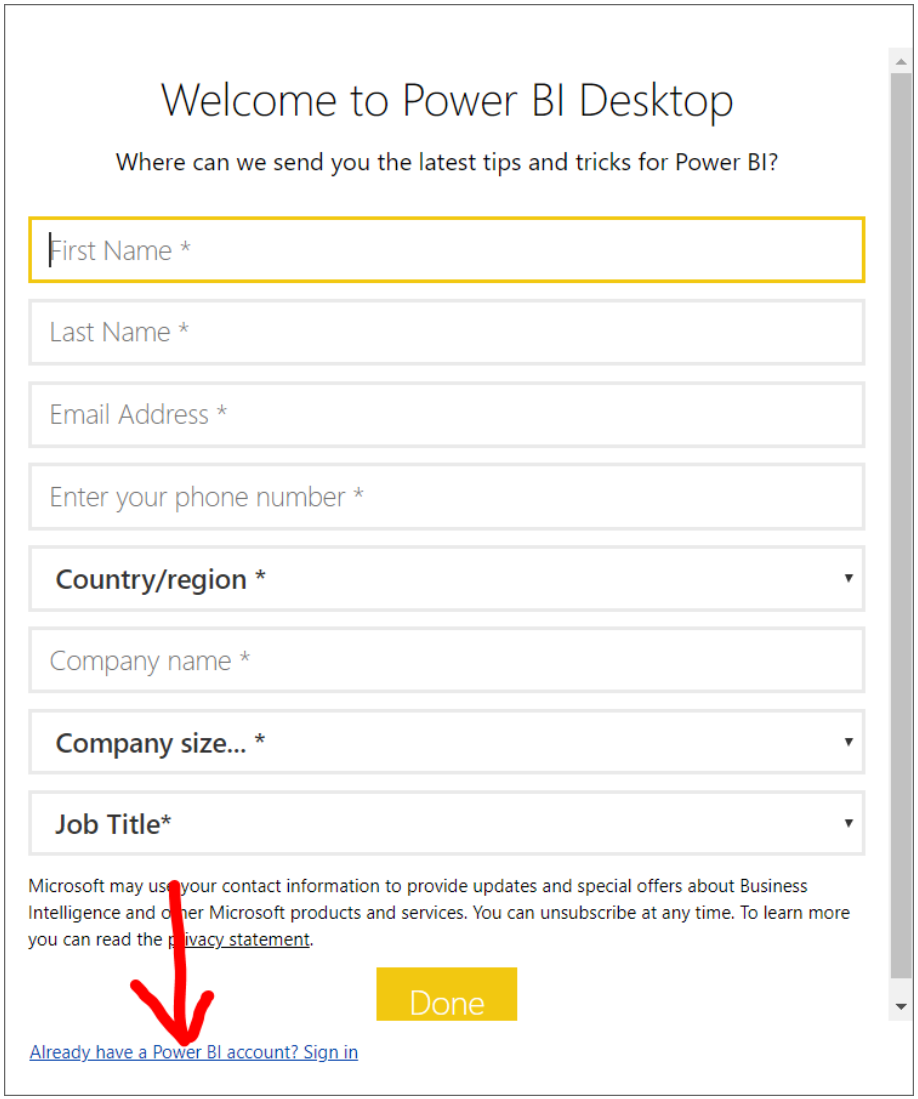


Microsoft Power BI

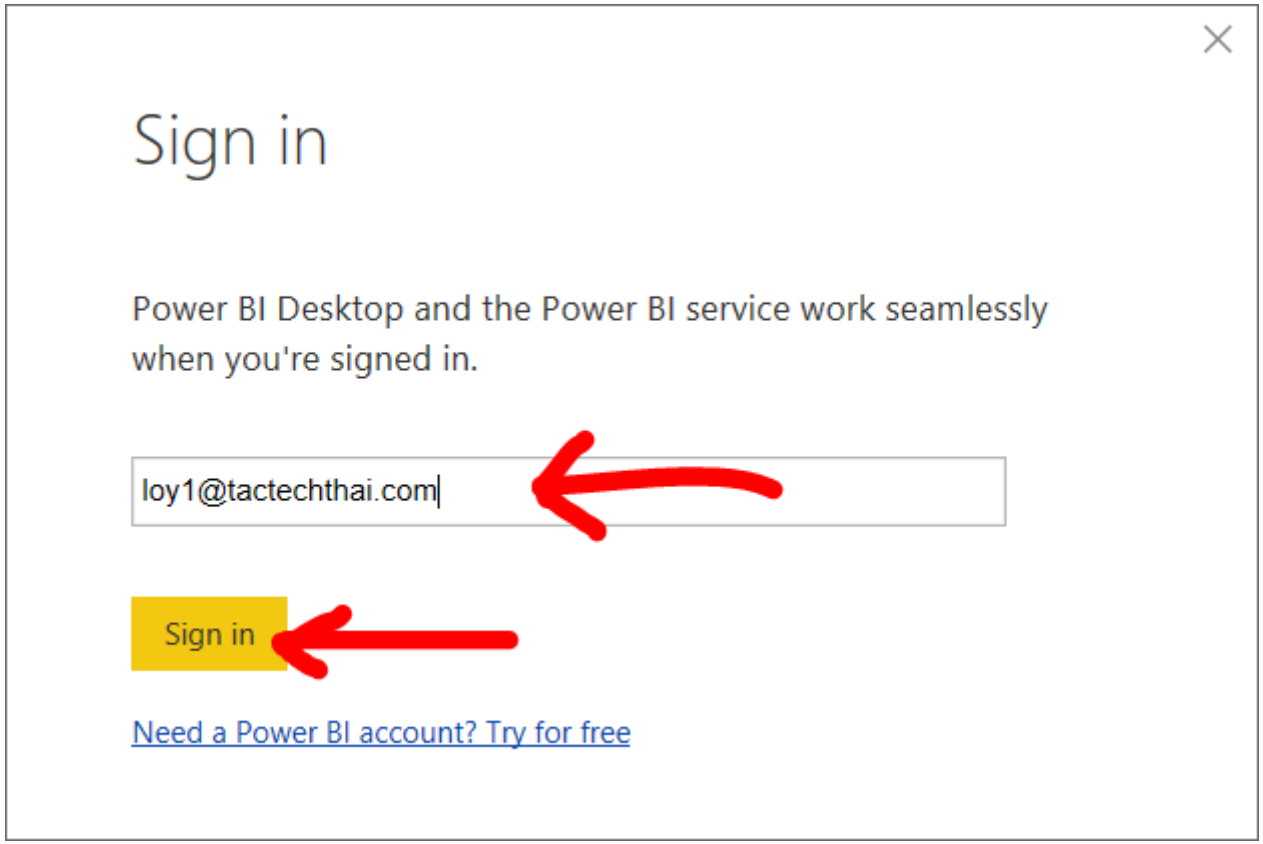


Microsoft Power BI

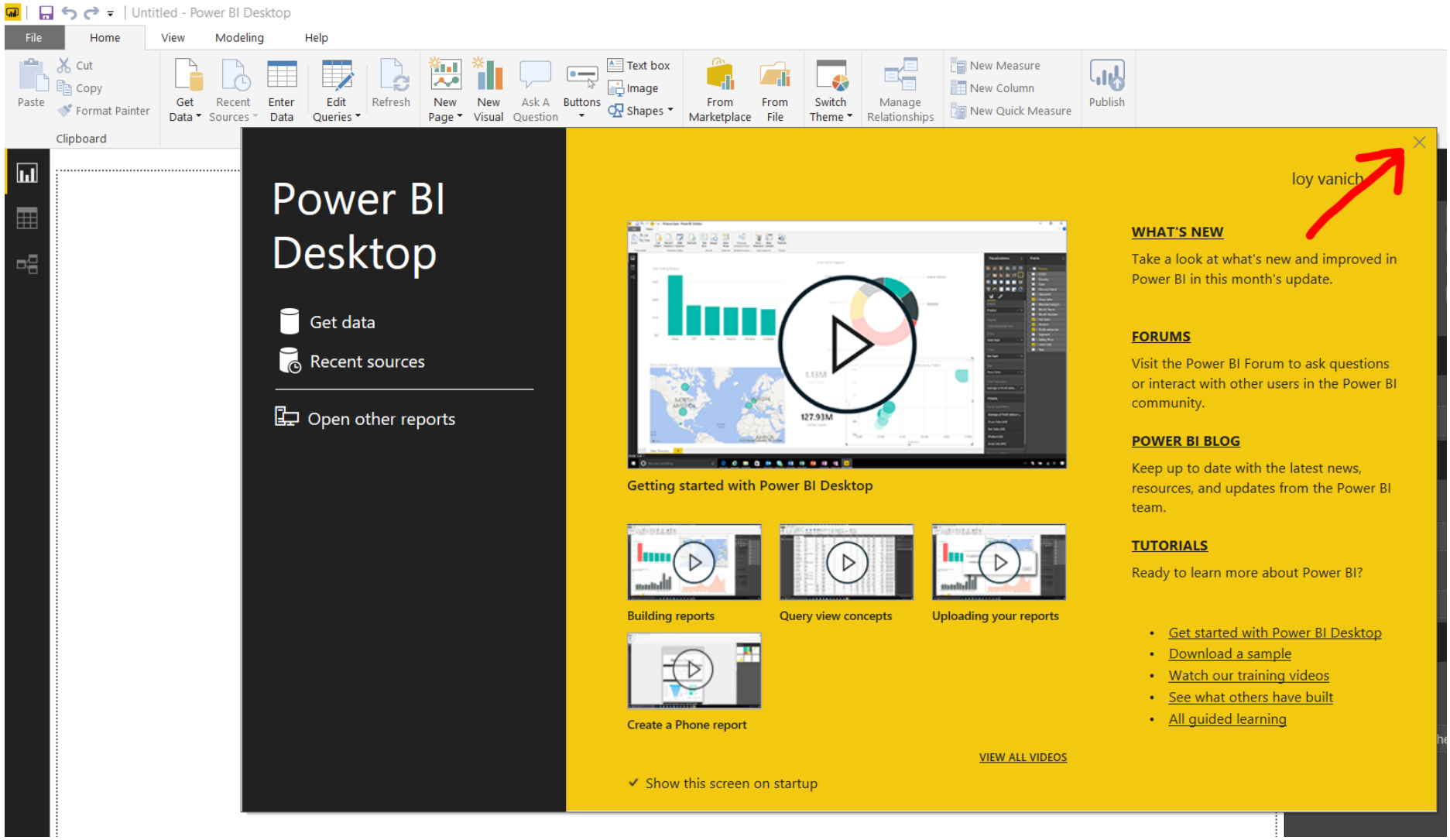
Already have a Power BI account? Sing in



Microsoft Power BI

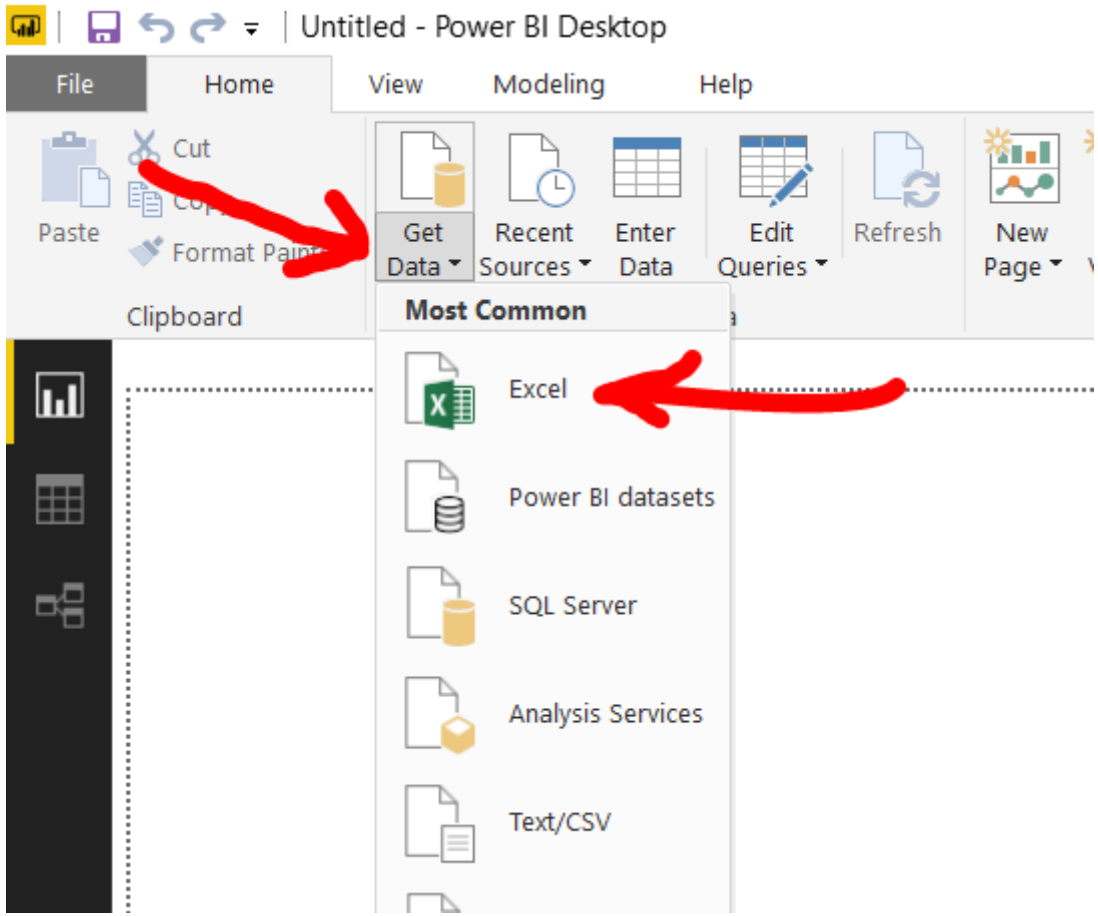


Microsoft Power BI

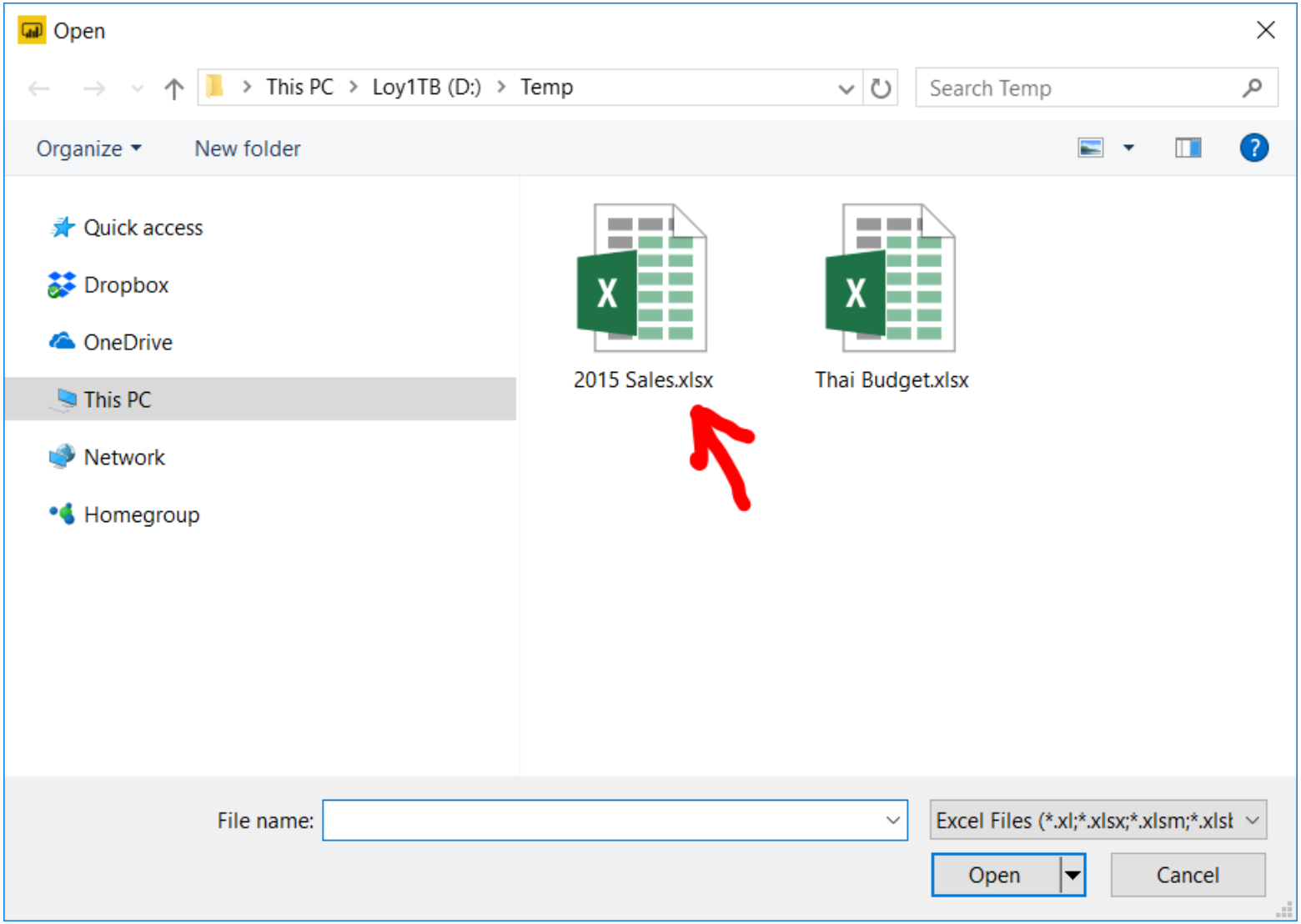


Microsoft Power BI

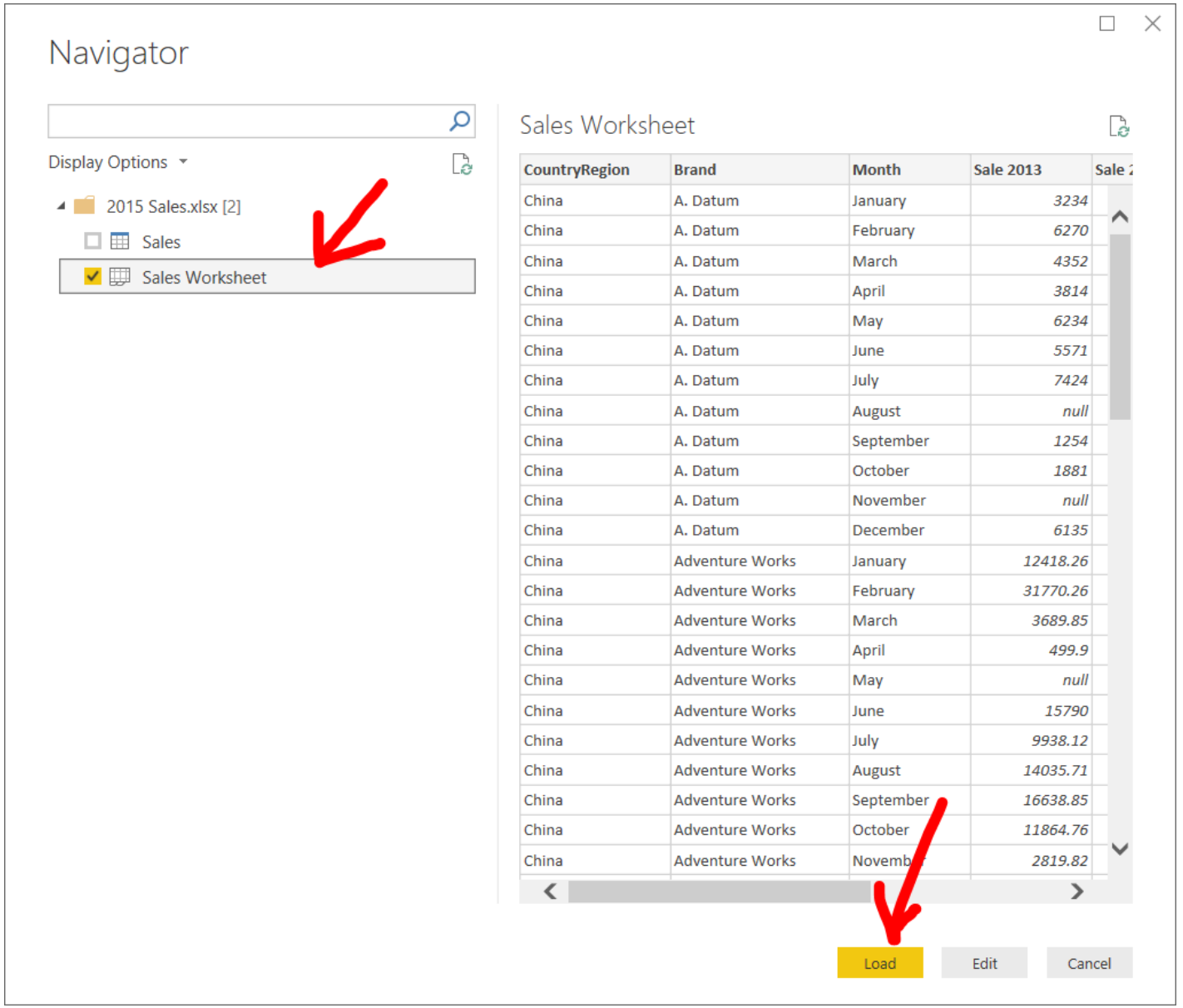
Get Data



Microsoft Power BI



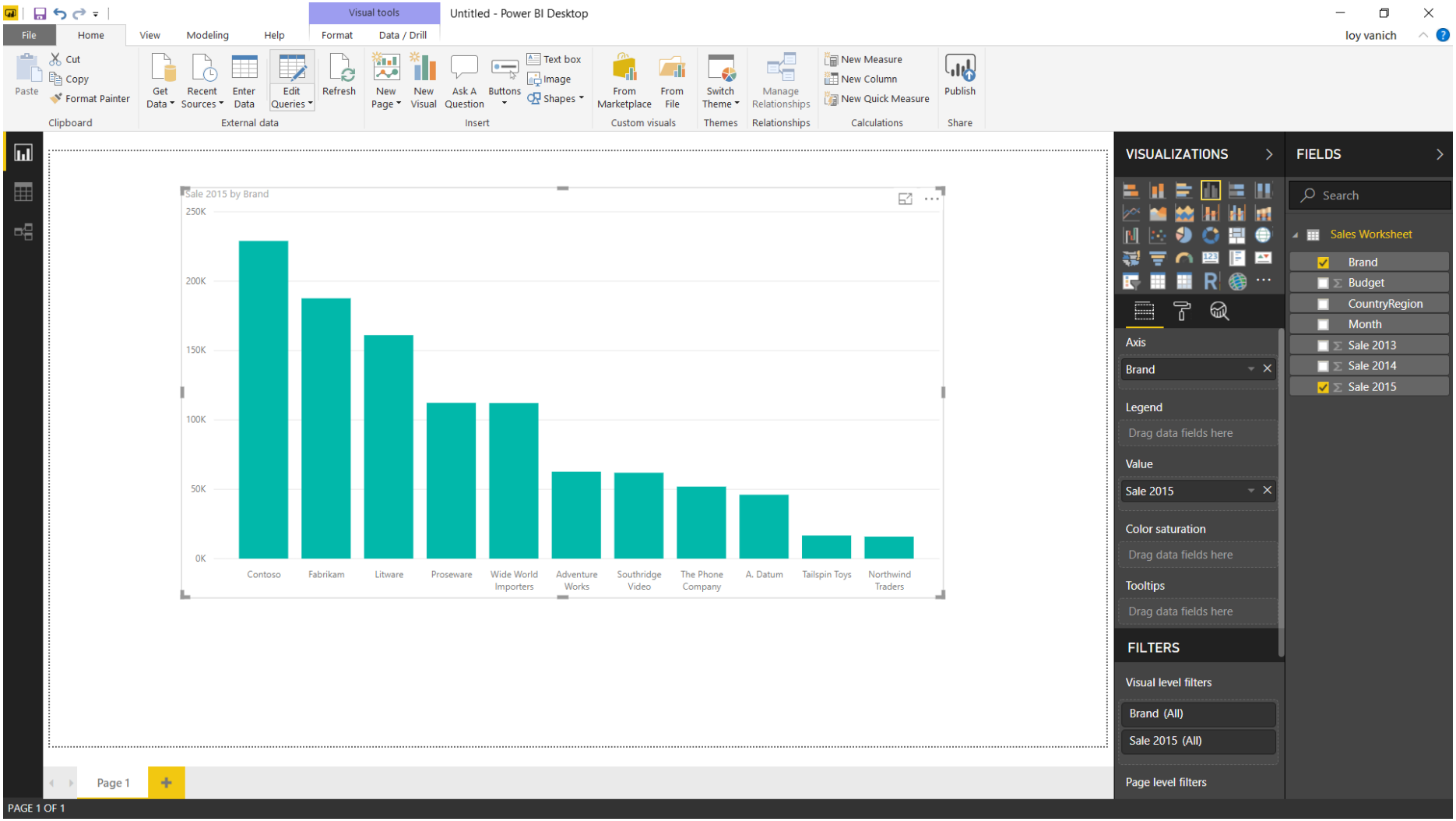
Microsoft Power BI



CountryRegion	Brand	Month	Sale 2013	Sale 2
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	Novemb	2819.82	

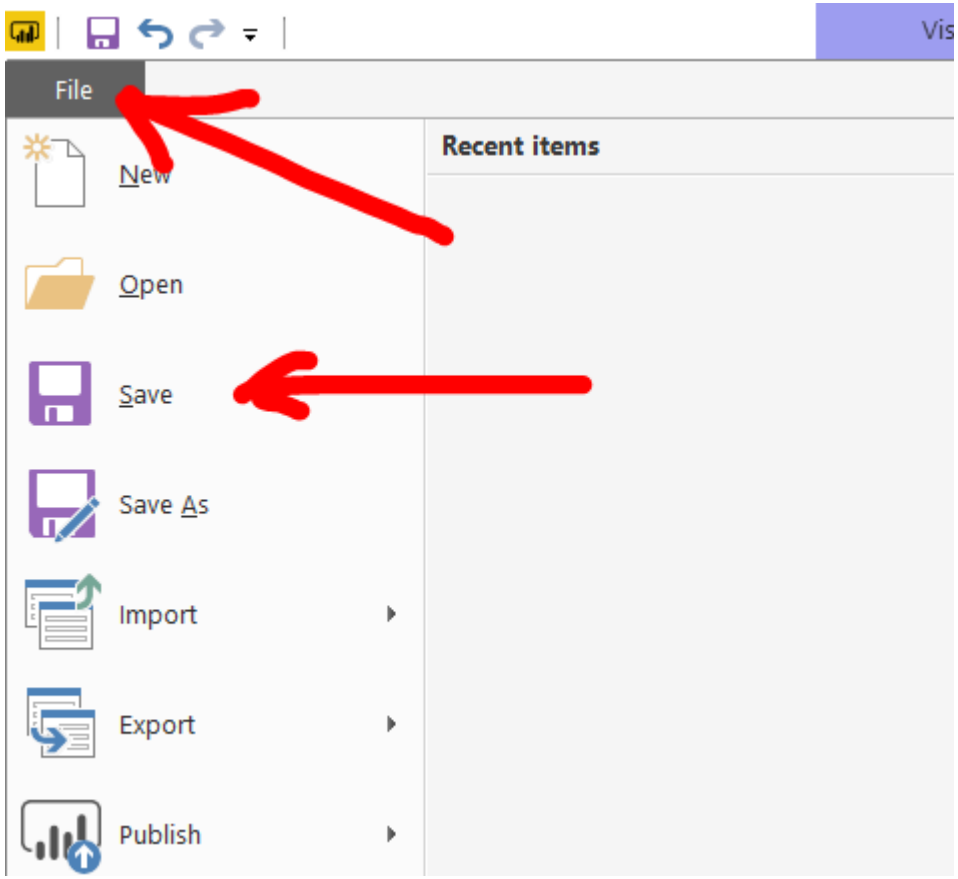
Microsoft Power BI

Sale 2015 by Brand



Microsoft Power BI

Save Report

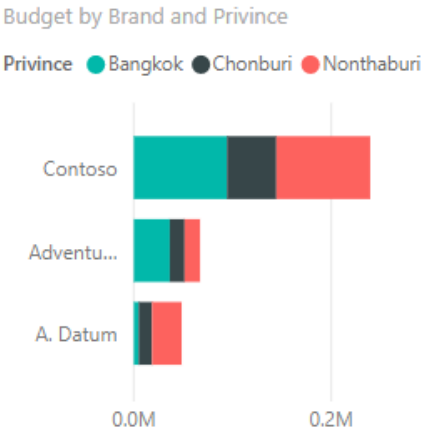


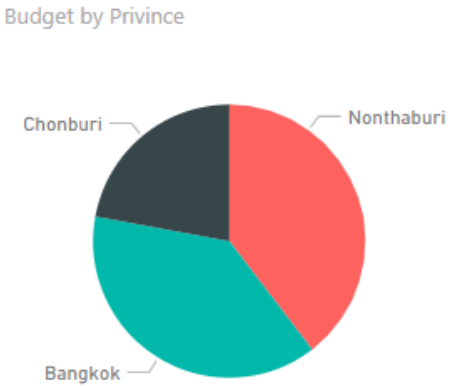
Microsoft Power BI

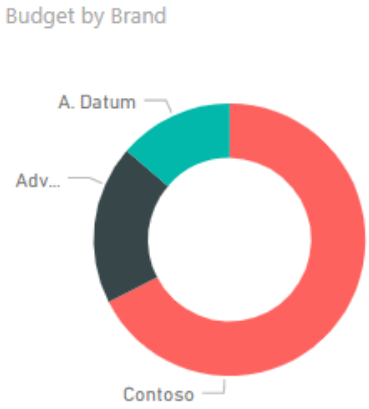
Exercise

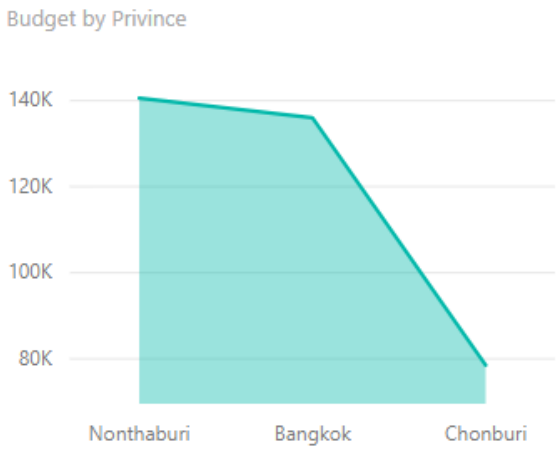
Create this report from Thai Budget.xlsx in Desktop Power BI and Save to C:\temp\ThaiReport2.pbix

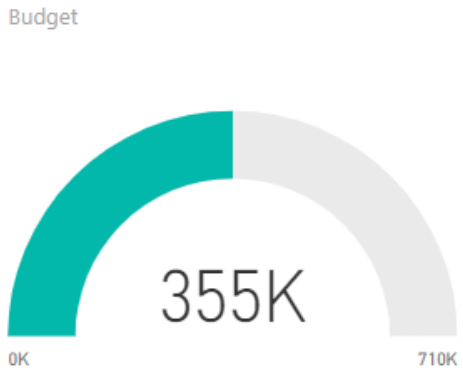
Brand	Budget	Privince
A. Datum	5000	Bangkok
A. Datum	13500	Chonburi
A. Datum	30000	Nonthaburi
Adventure Works	36500	Bangkok
Adventure Works	15000	Chonburi
Adventure Works	15600	Nonthaburi
Contoso	94500	Bangkok
Contoso	50000	Chonburi
Contoso	95000	Nonthaburi
Total	**355100**	







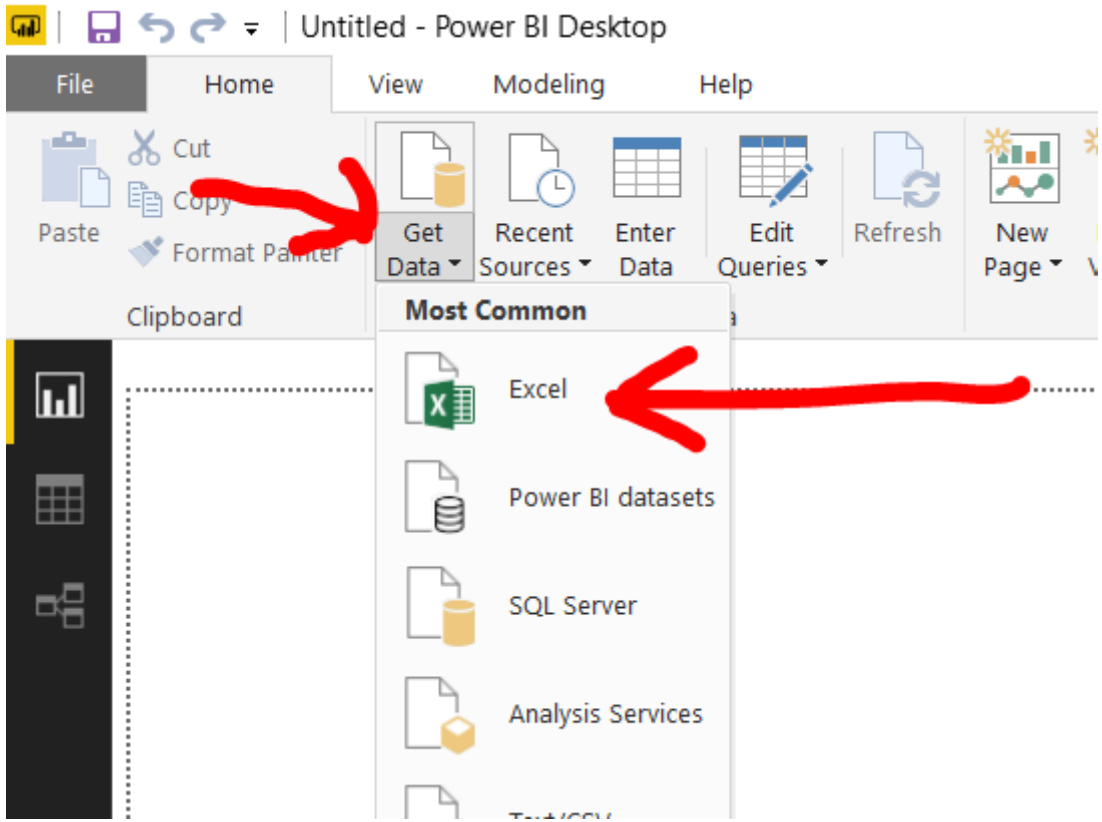




Map

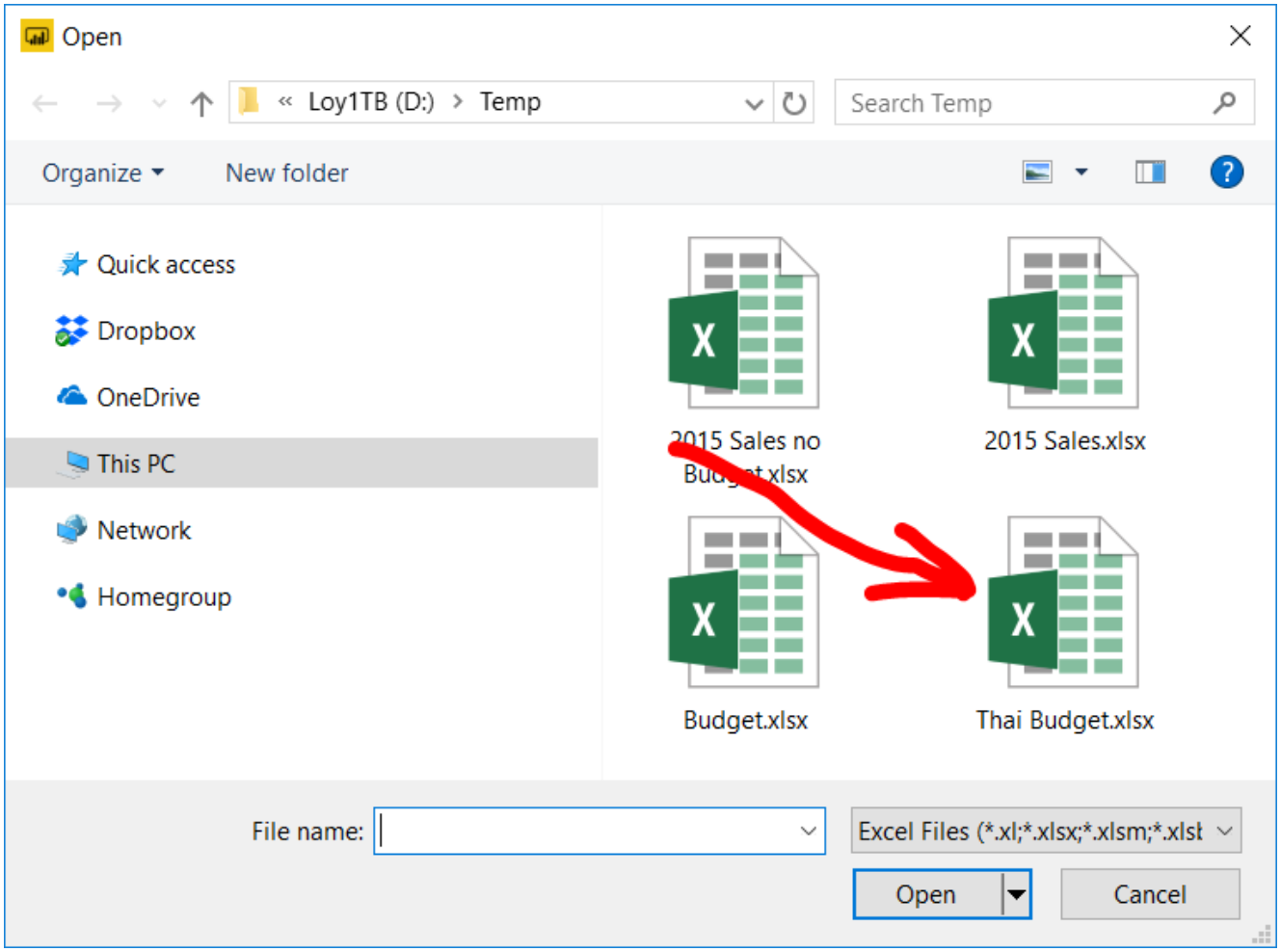
Microsoft Power BI

Get Data / Excel



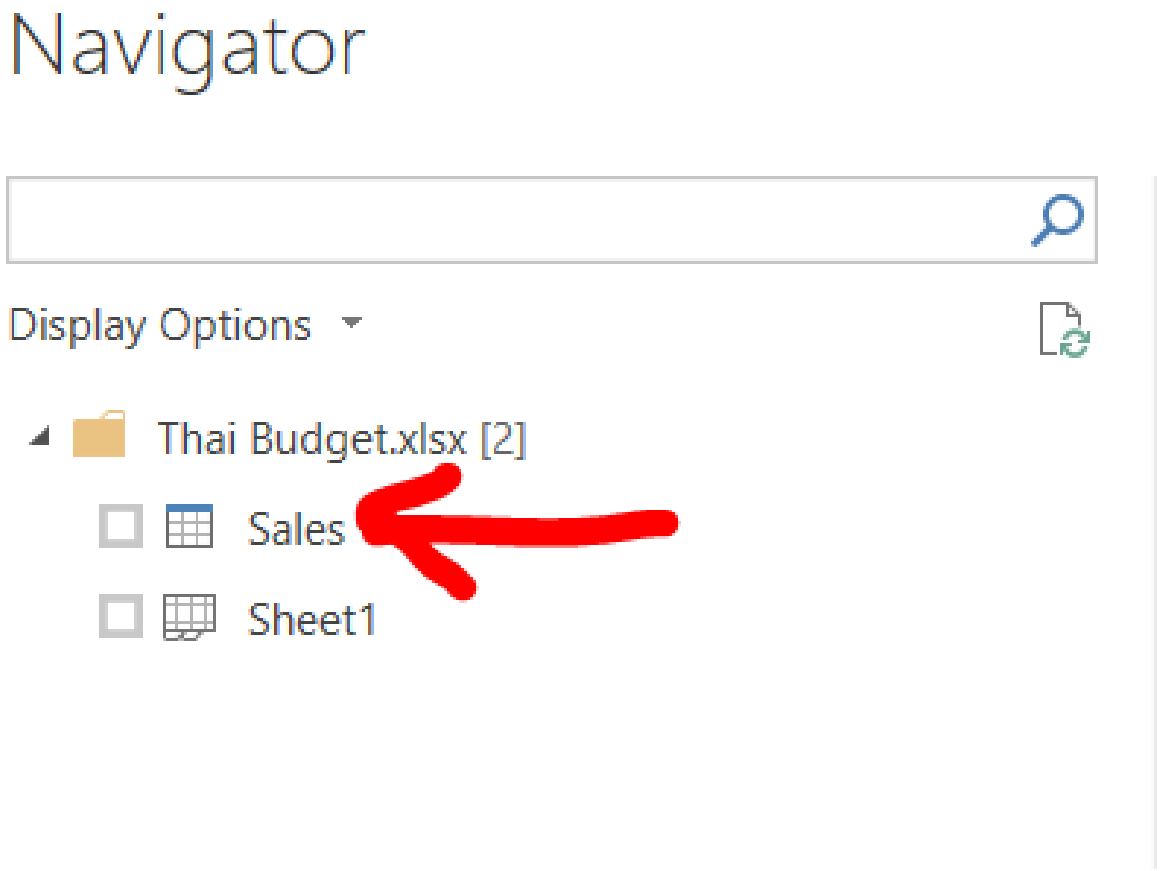
Microsoft Power BI

Thai Budget.xlsx



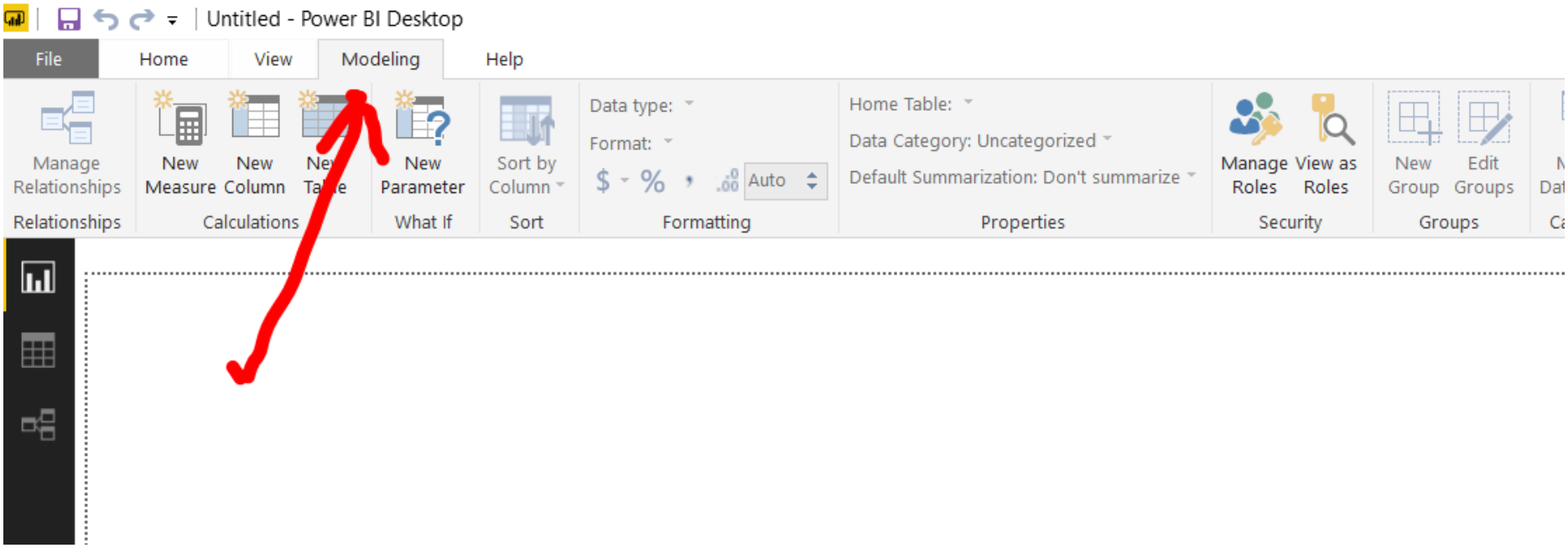
Microsoft Power BI

Sales / Load



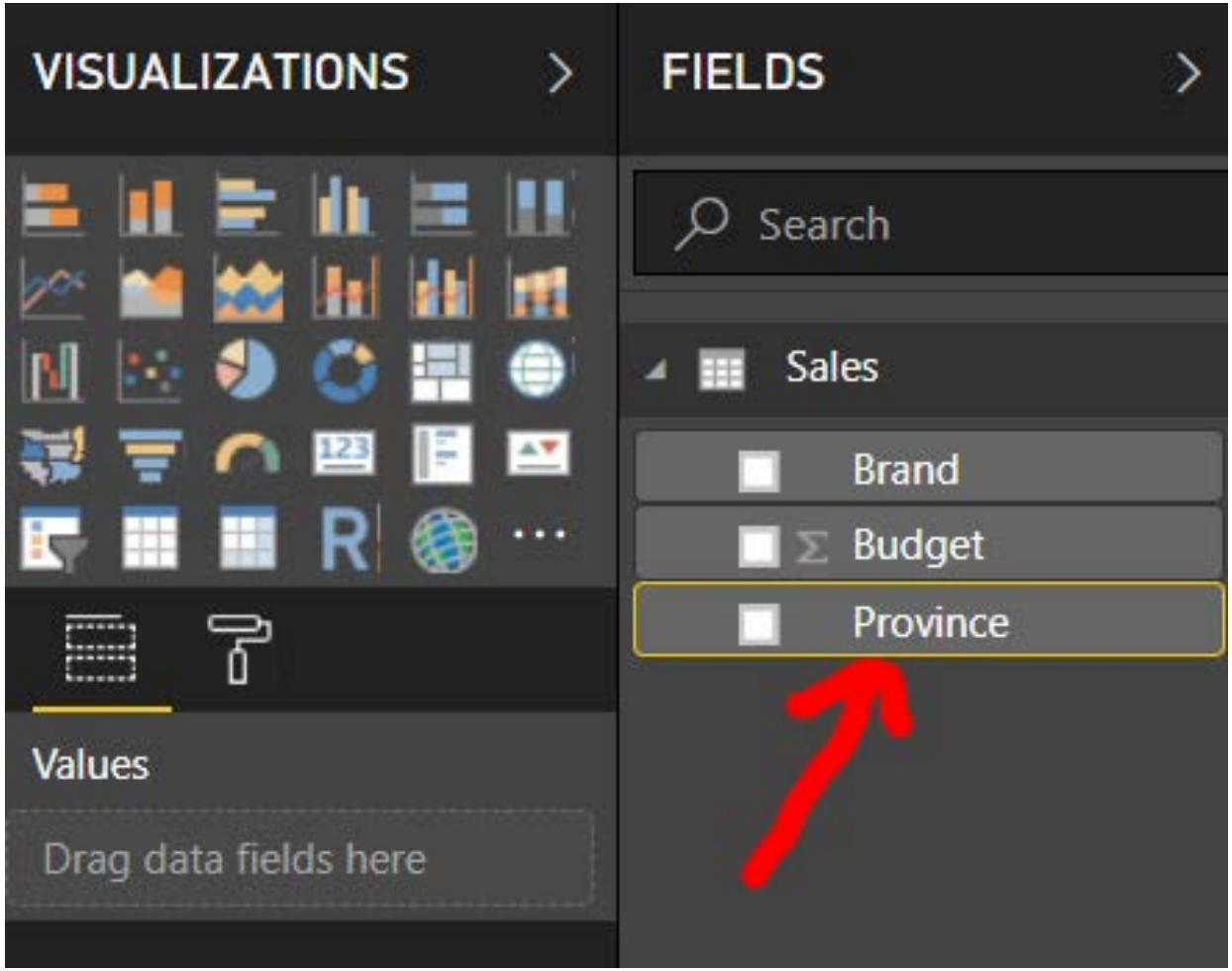
Microsoft Power BI

Click tab Modeling



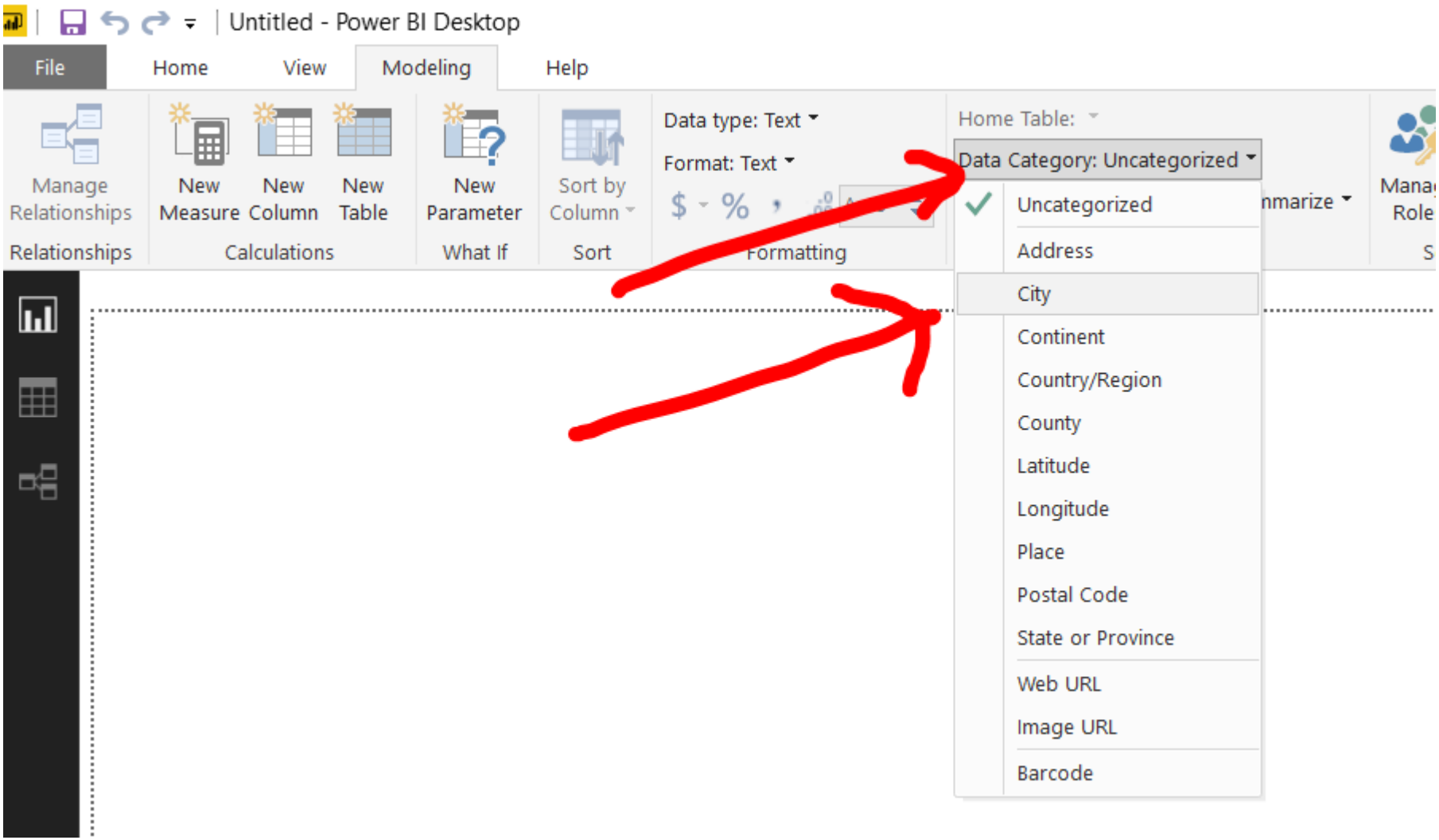
Microsoft Power BI

Click Province



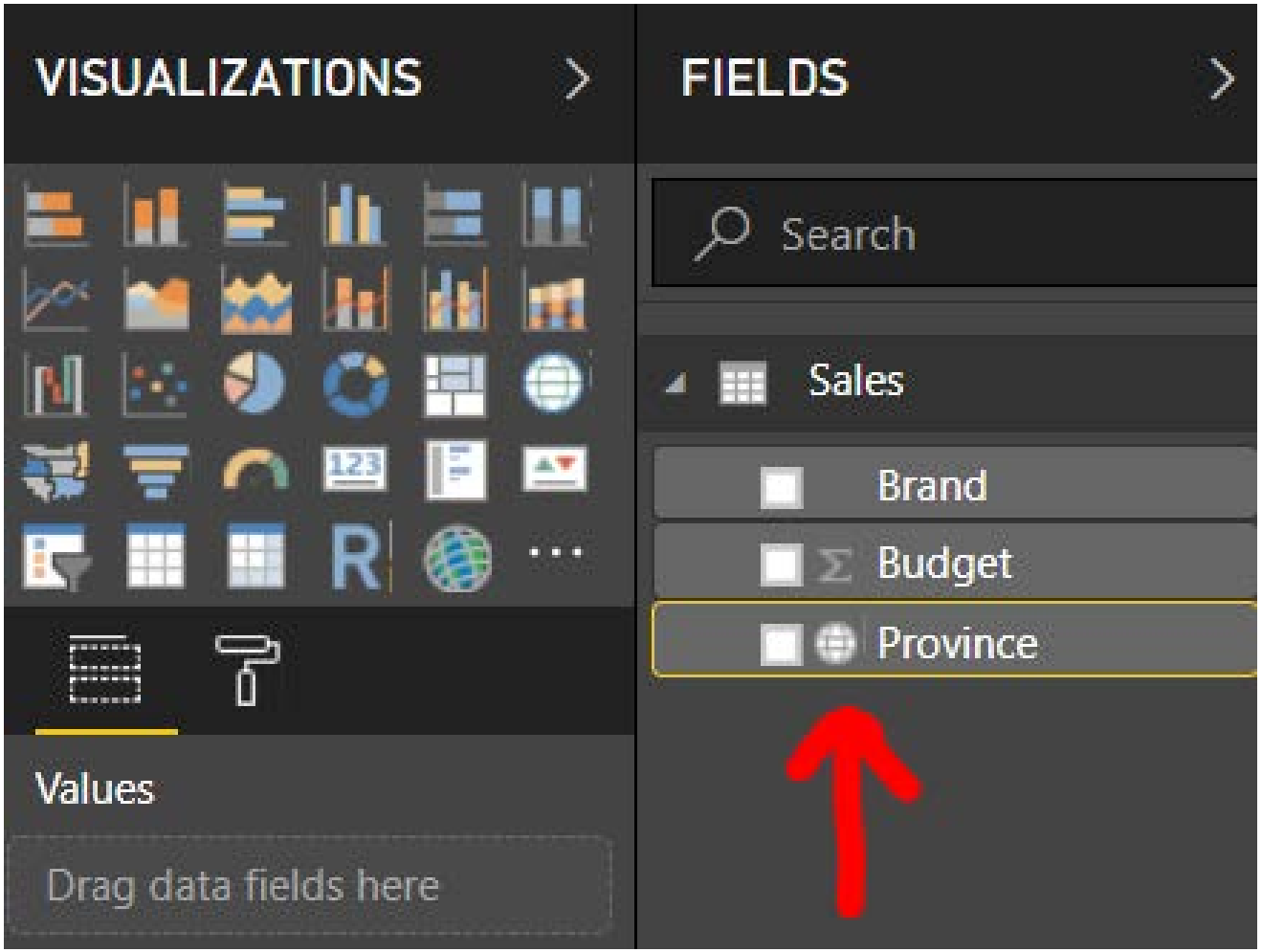
Microsoft Power BI

Data Category / City



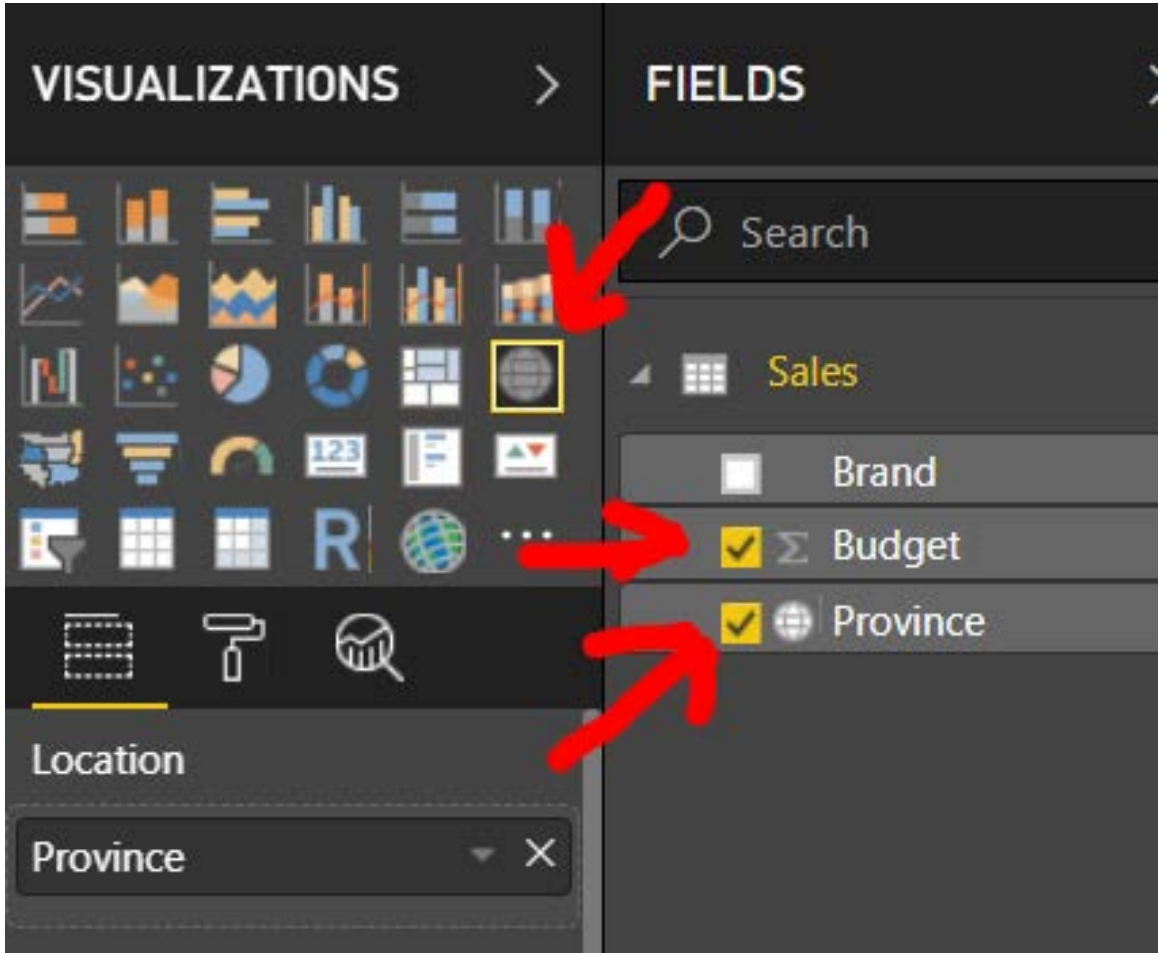
Microsoft Power BI

Notice Globe icon



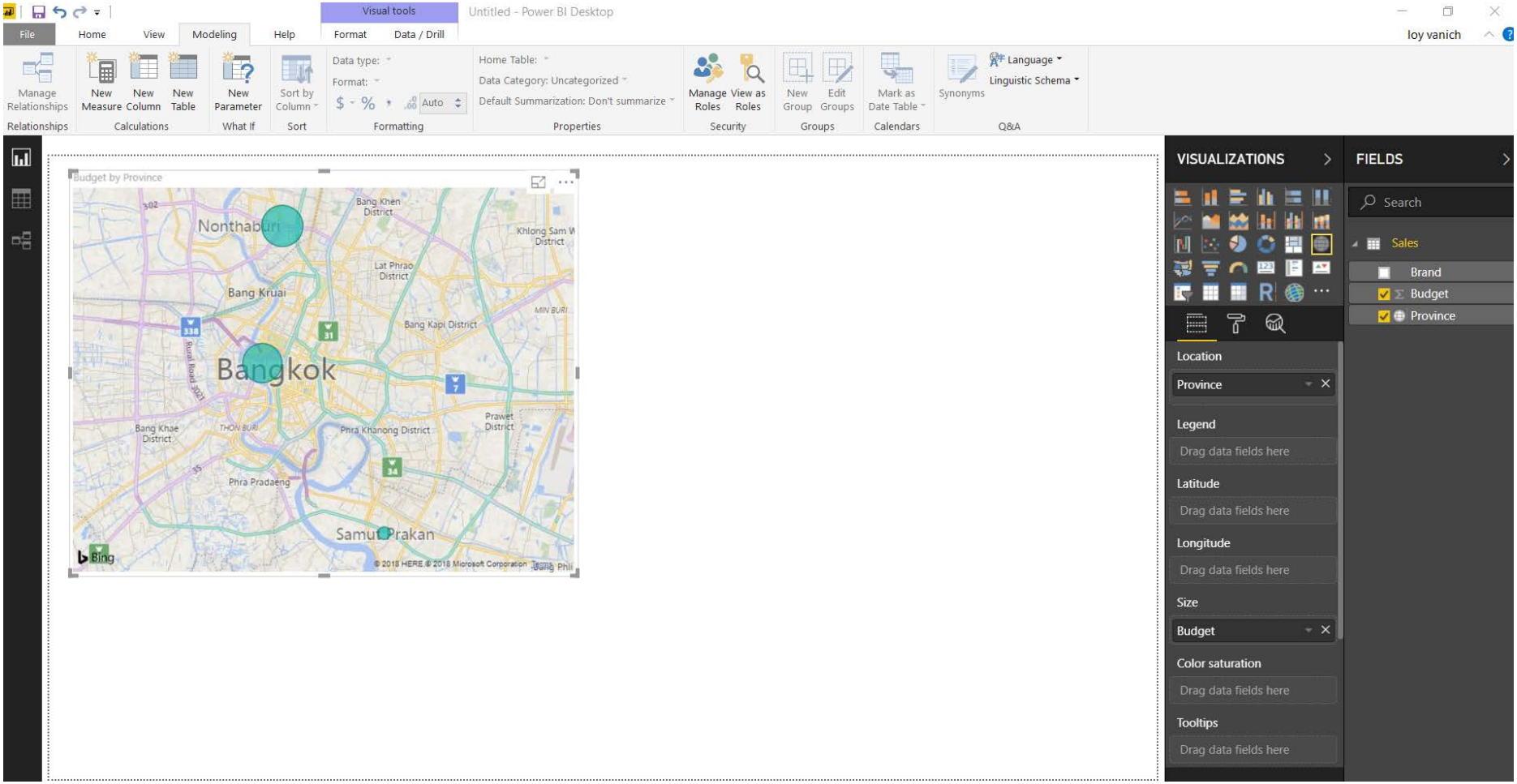
Microsoft Power BI

Province / Budget / Map



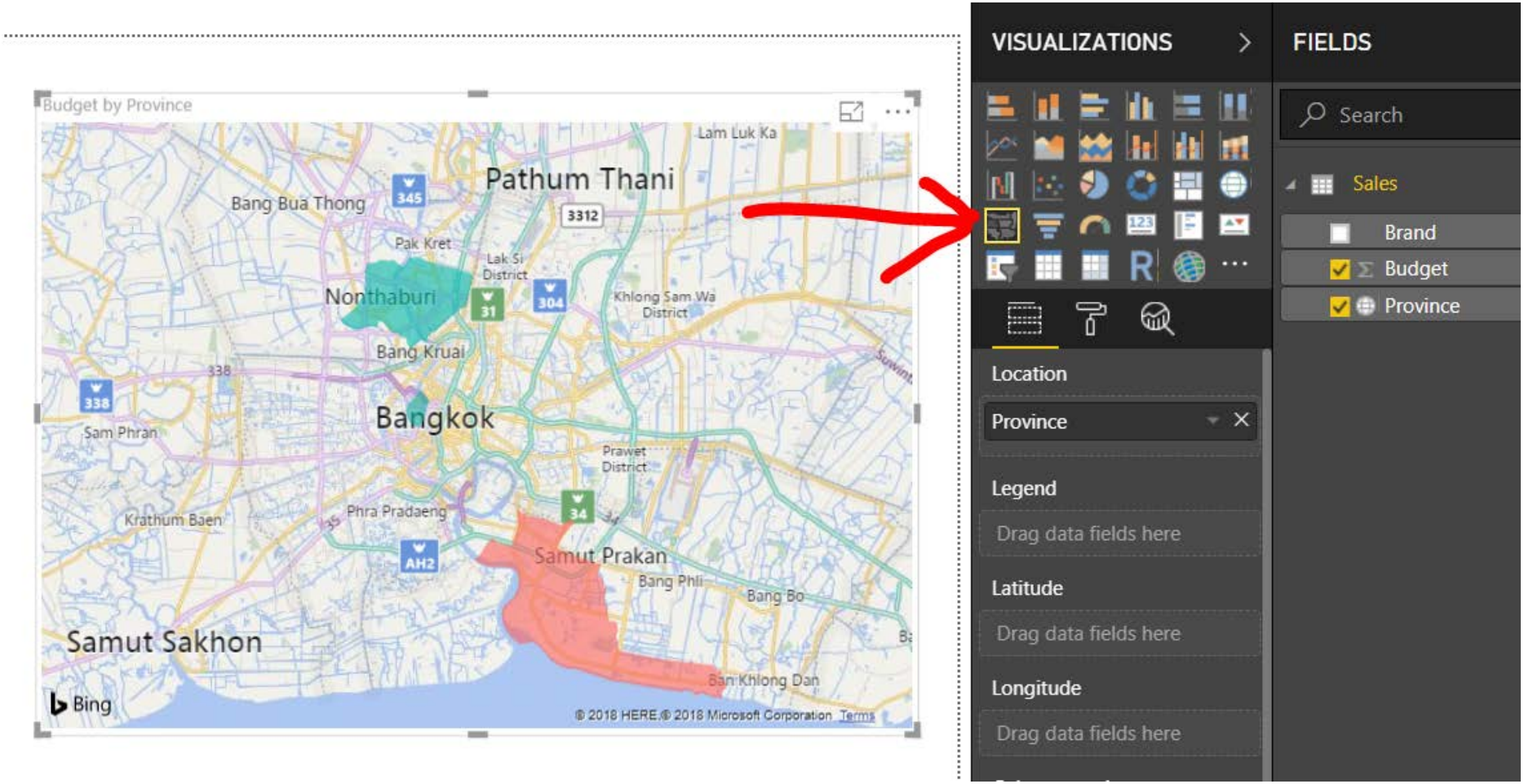
Microsoft Power BI

Adjust Map's size



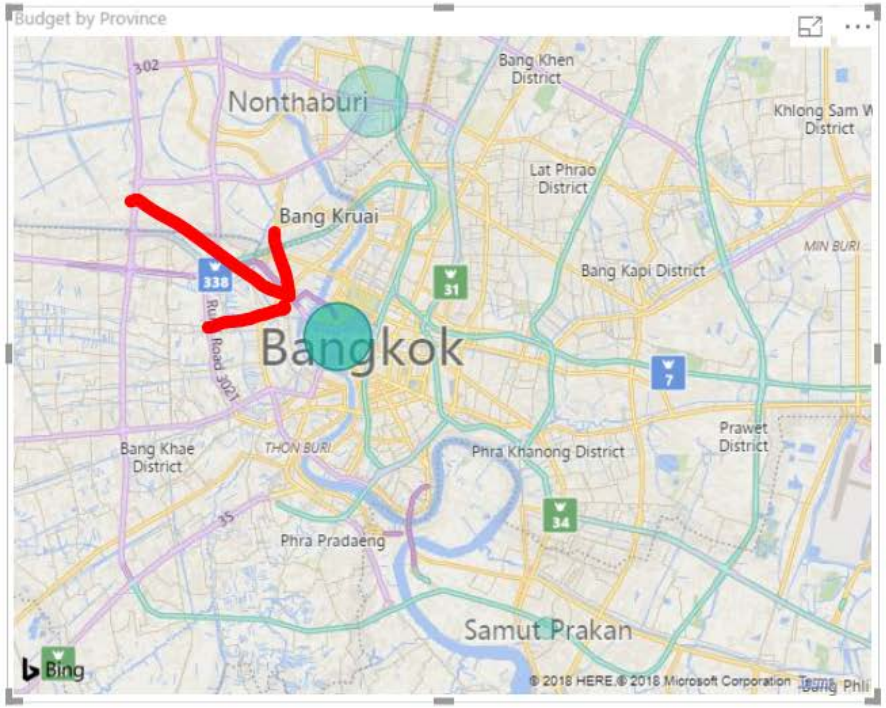
Microsoft Power BI

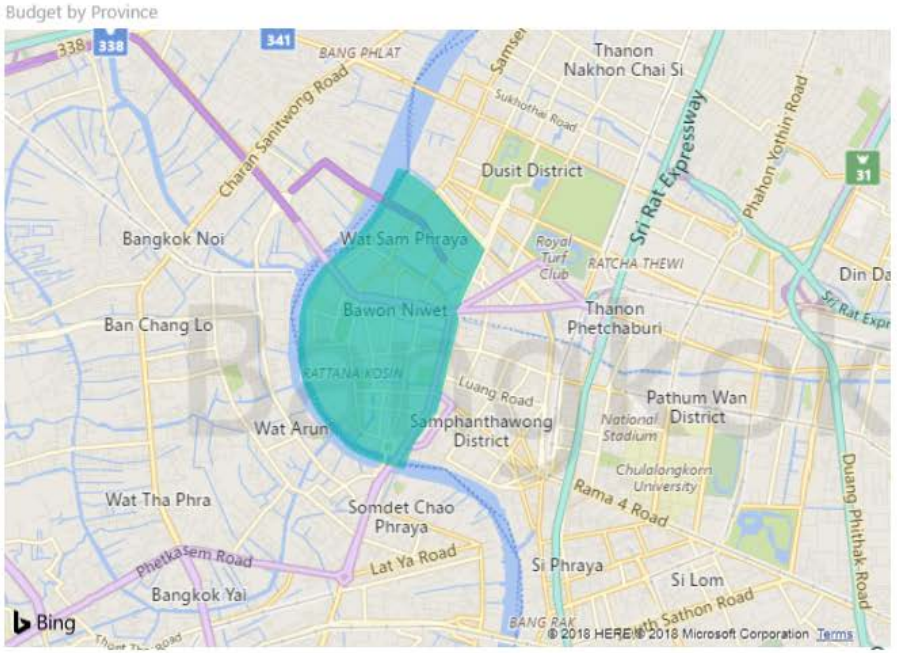
Add Filled Map



Microsoft Power BI

Click each province to see interaction

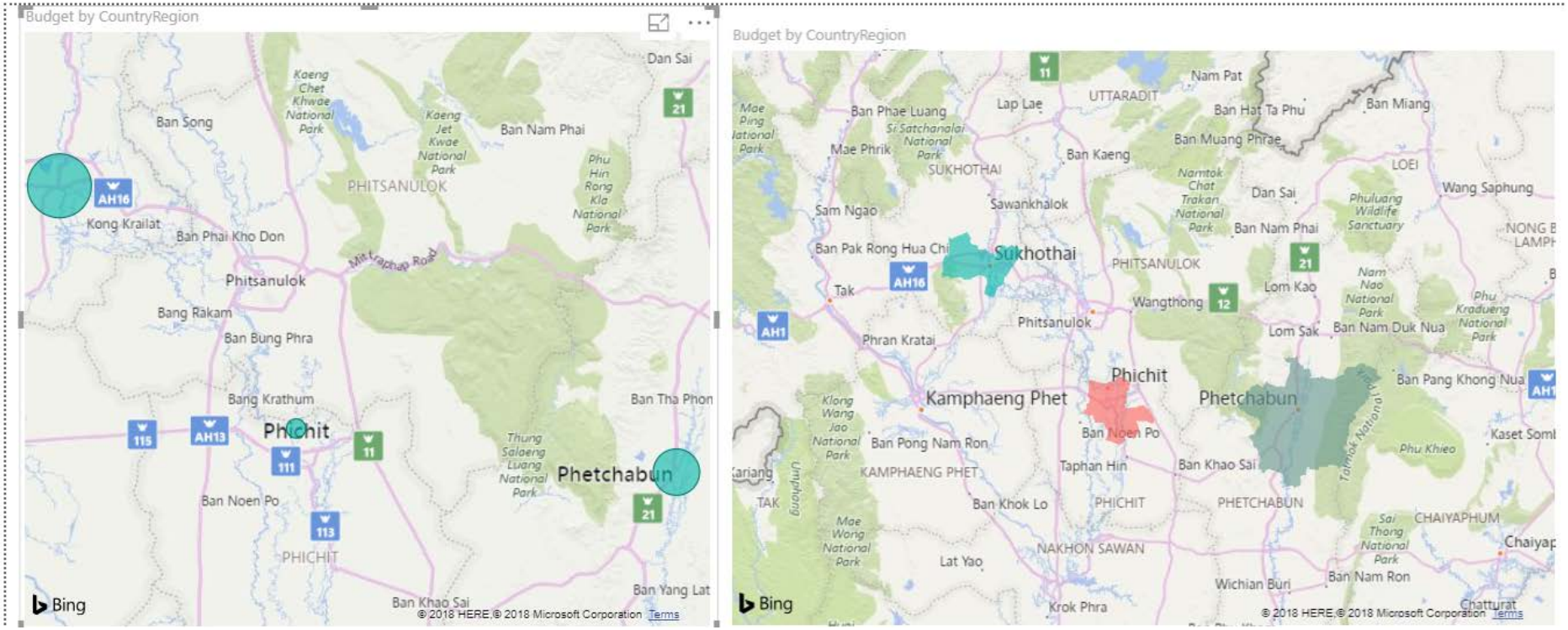




Microsoft Power BI

Exercise

Use North Budget.xlsx to create map as shown below



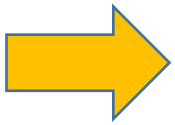
Query Editor Introduction

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

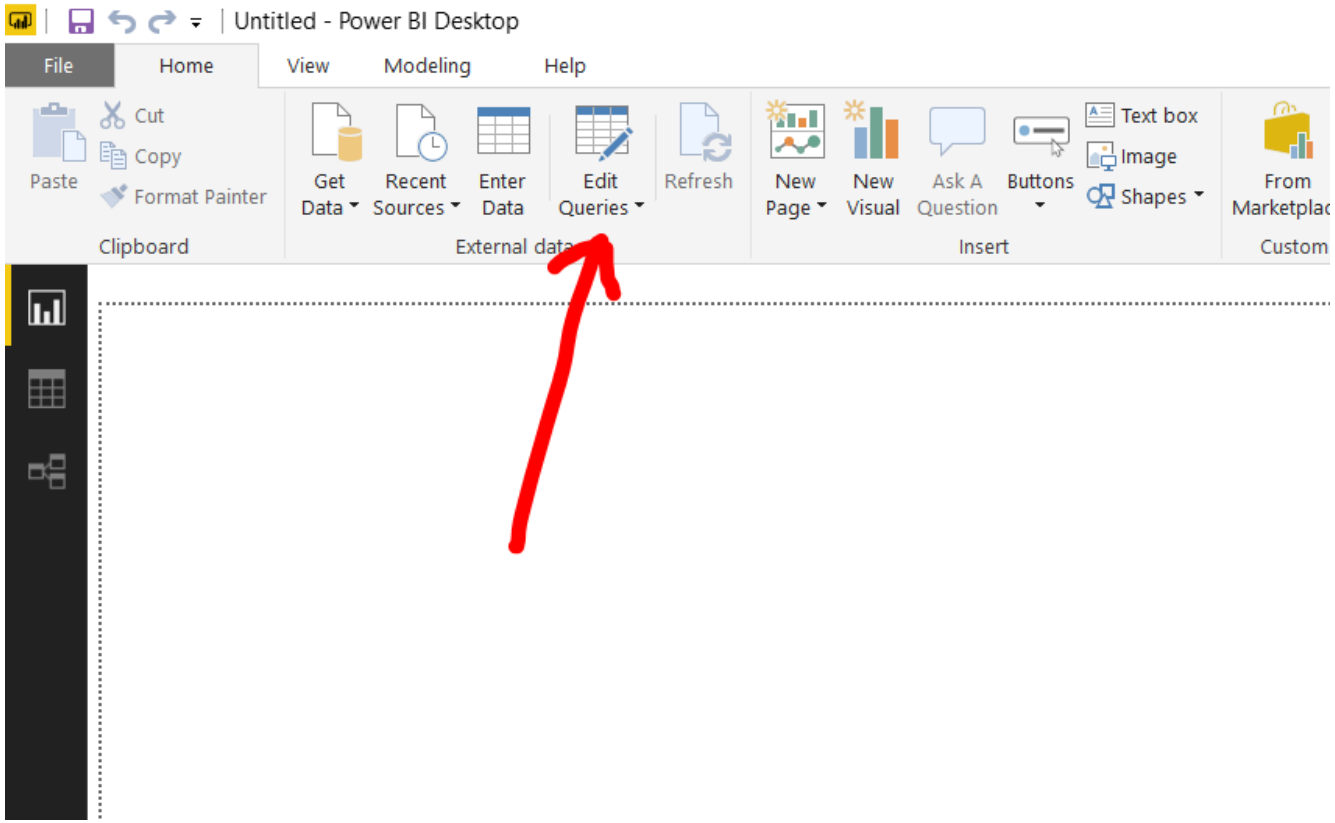


Sales 2015

	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

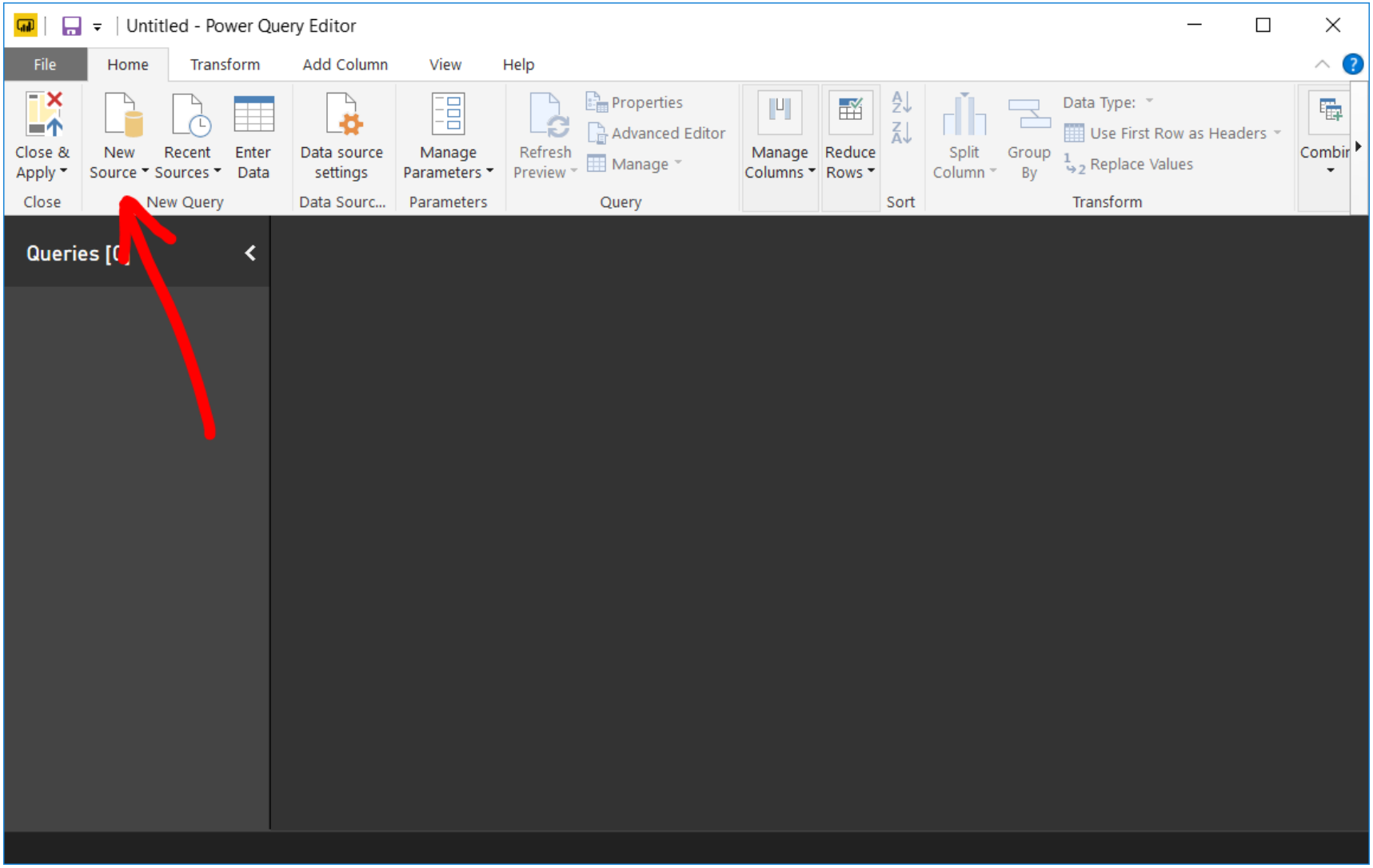
Microsoft Power BI

File / New / Edit Queries



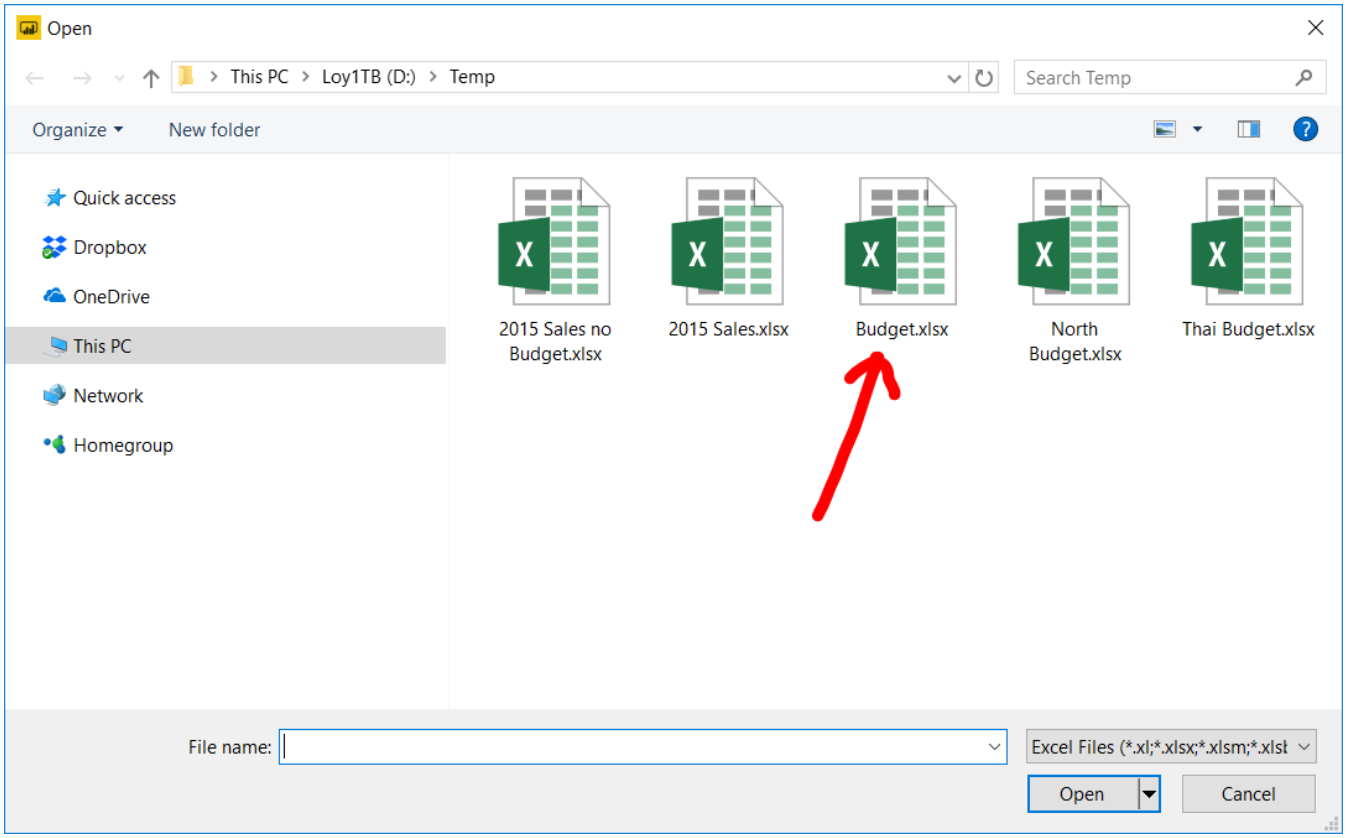
Microsoft Power BI

Query Editor / New Source



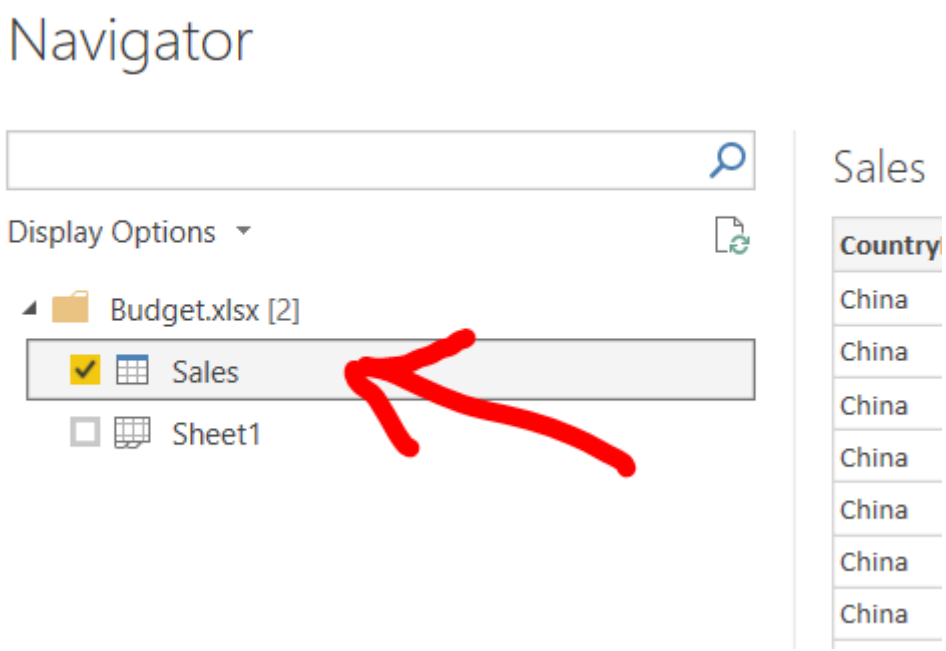
Microsoft Power BI

Budget.xlsx



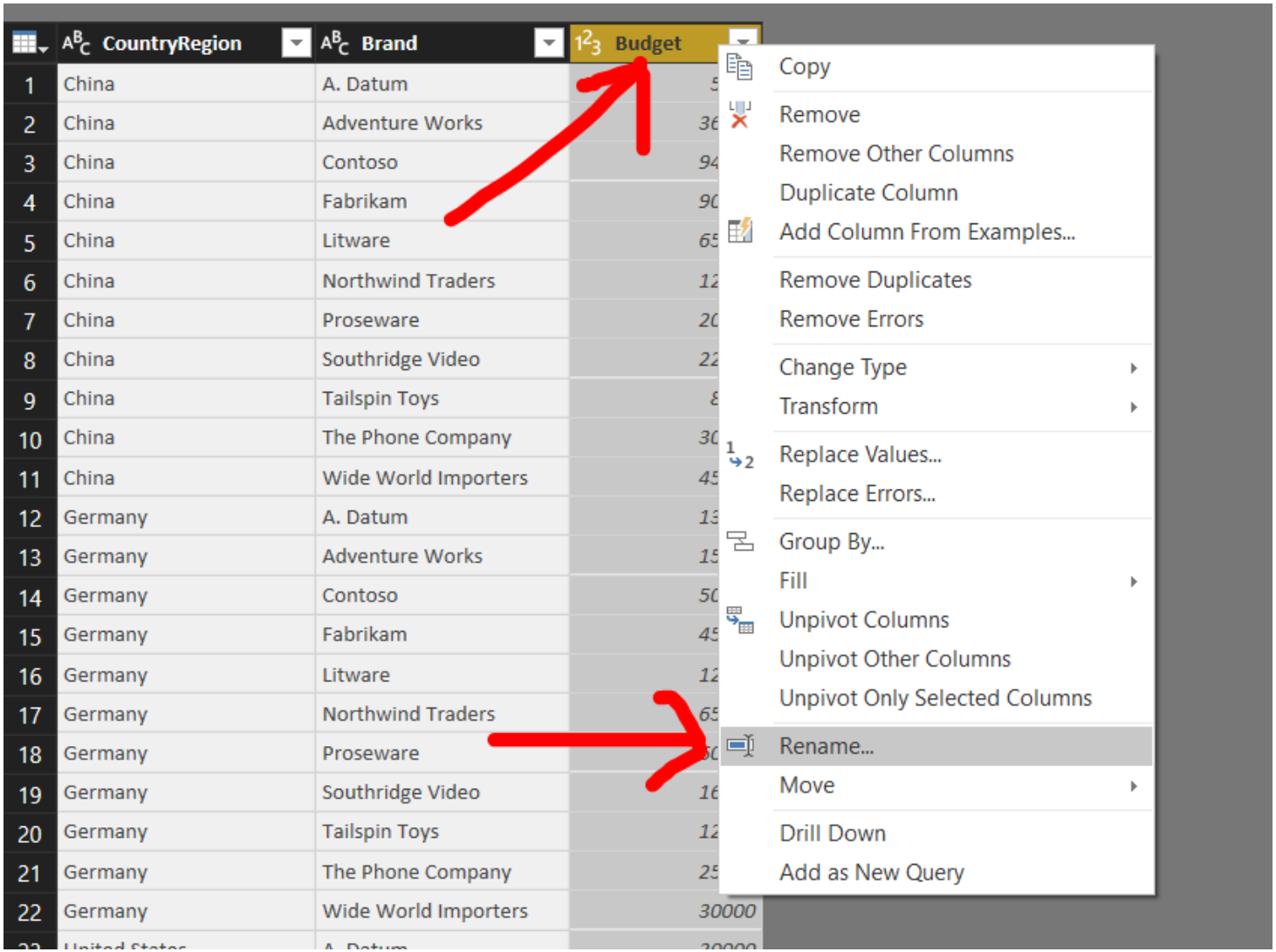
Microsoft Power BI

Sales



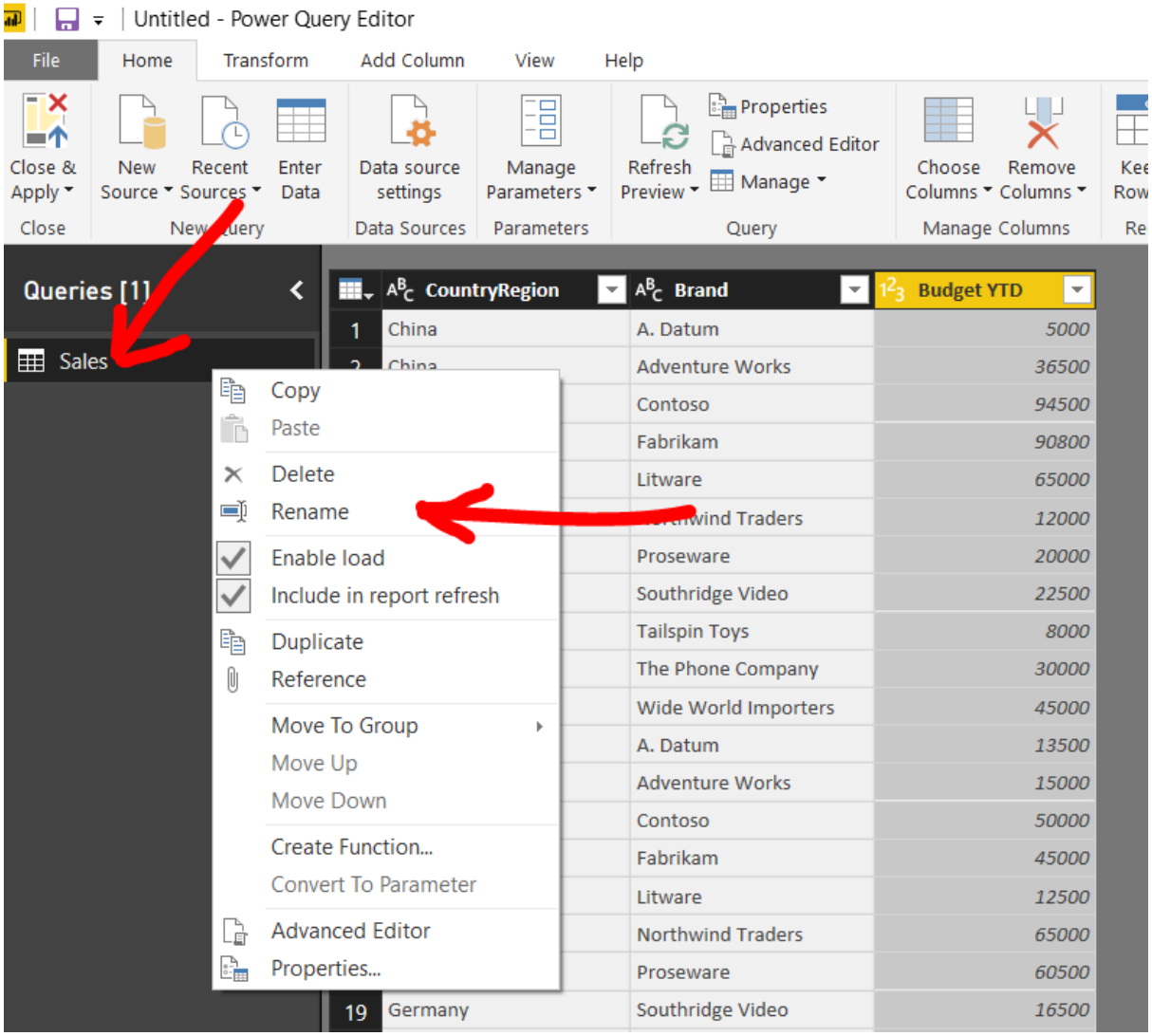
Microsoft Power BI

Rename Budget to Budget YTD



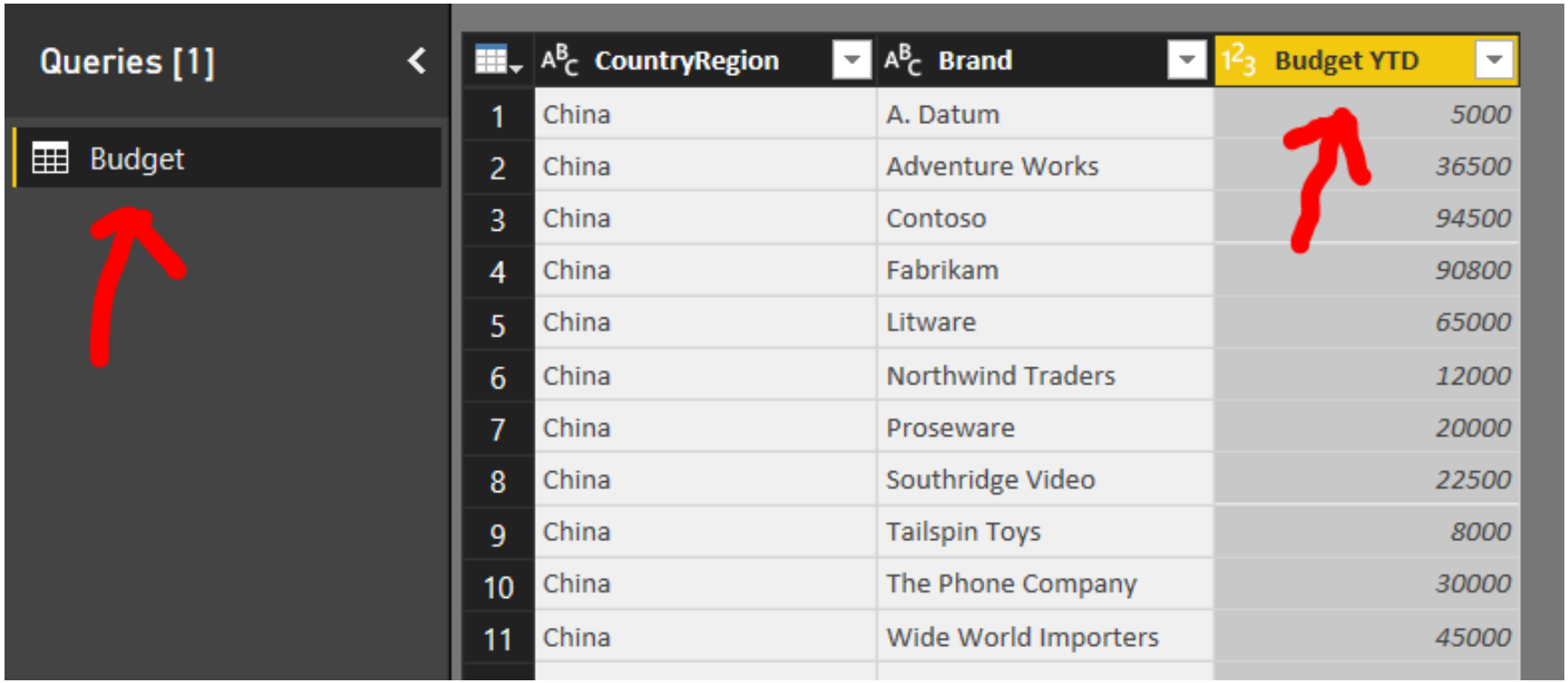
Microsoft Power BI

Rename Sales to Budget



Microsoft Power BI

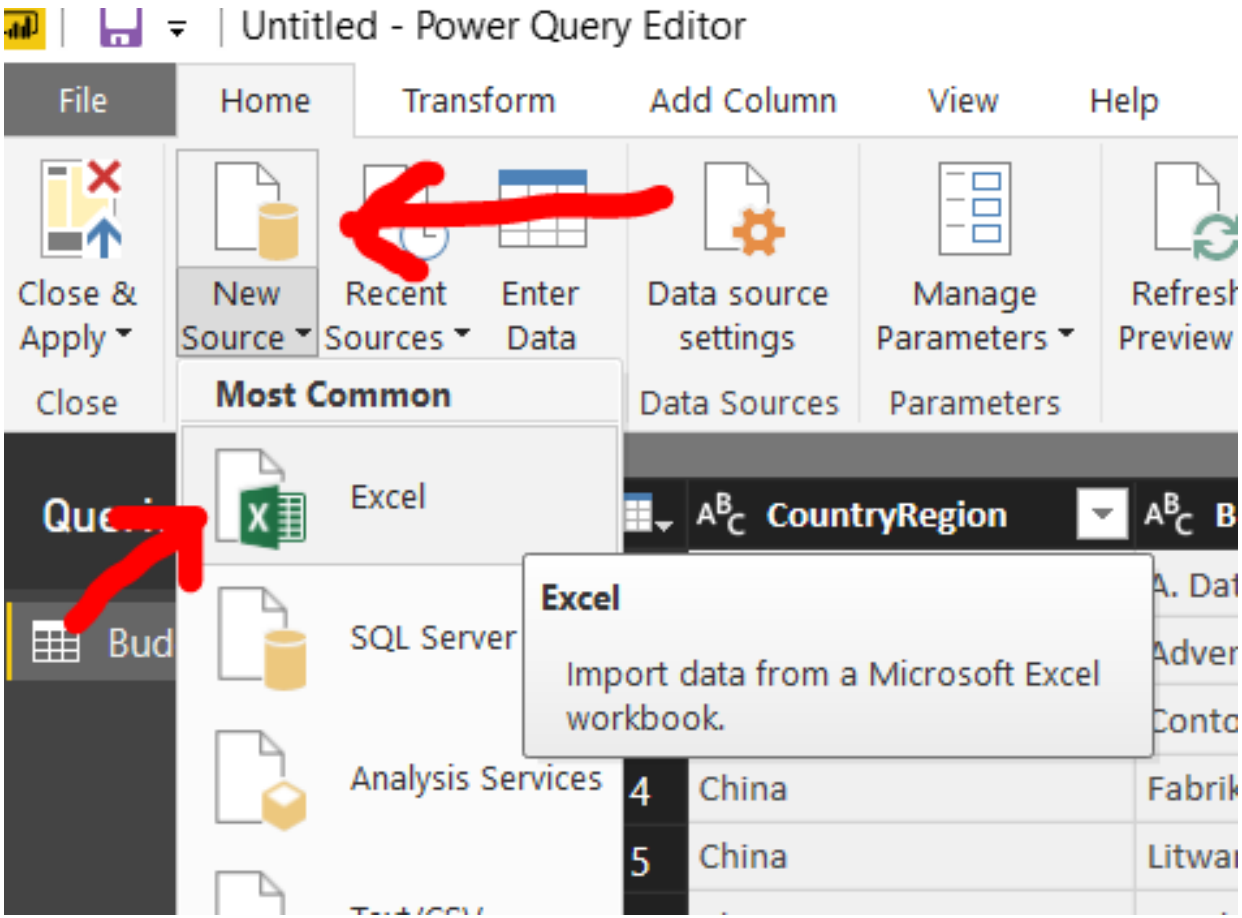
Result after renaming



	CountryRegion	Brand	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

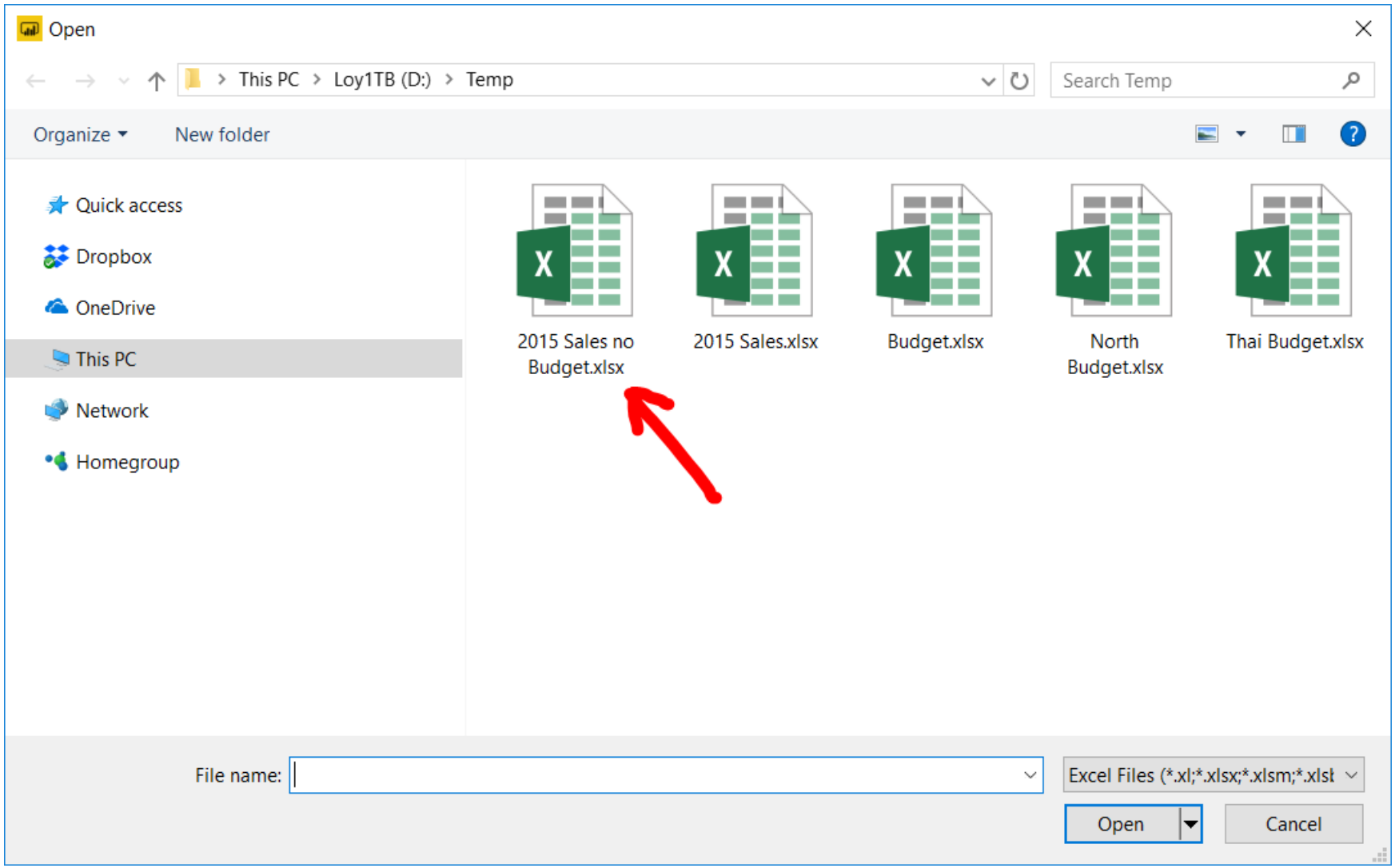
Microsoft Power BI

New Source / Excel



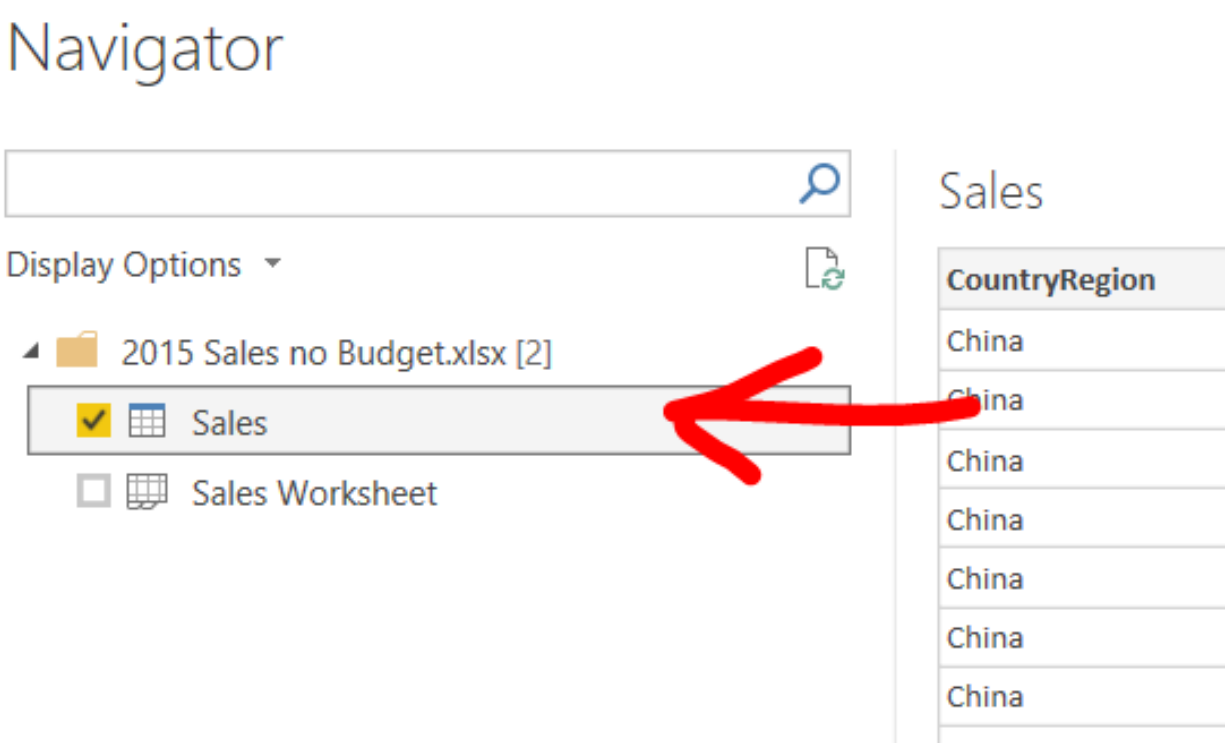
Microsoft Power BI

2015 Sales no Budget.xlsx



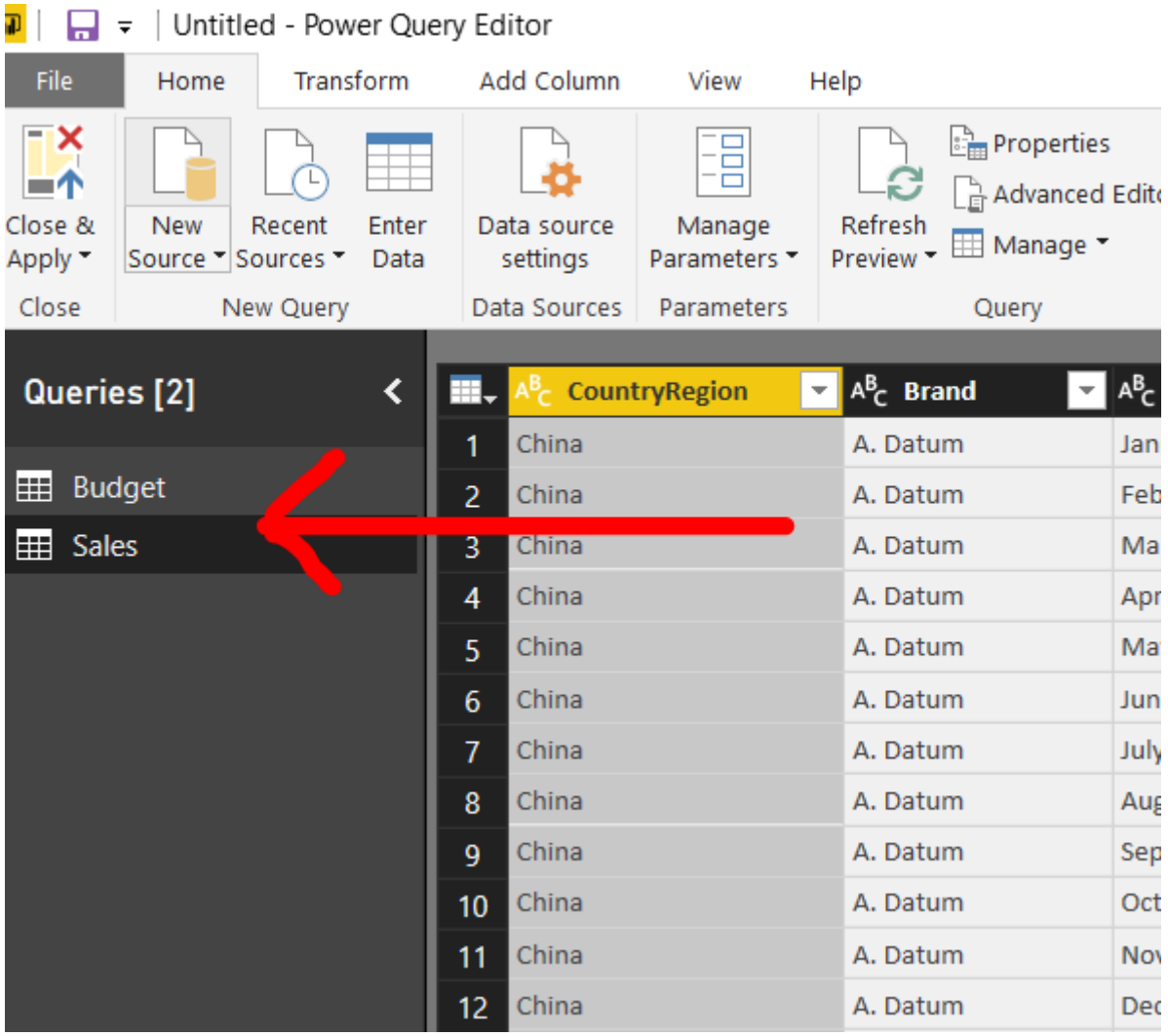
Microsoft Power BI

Sales / Load



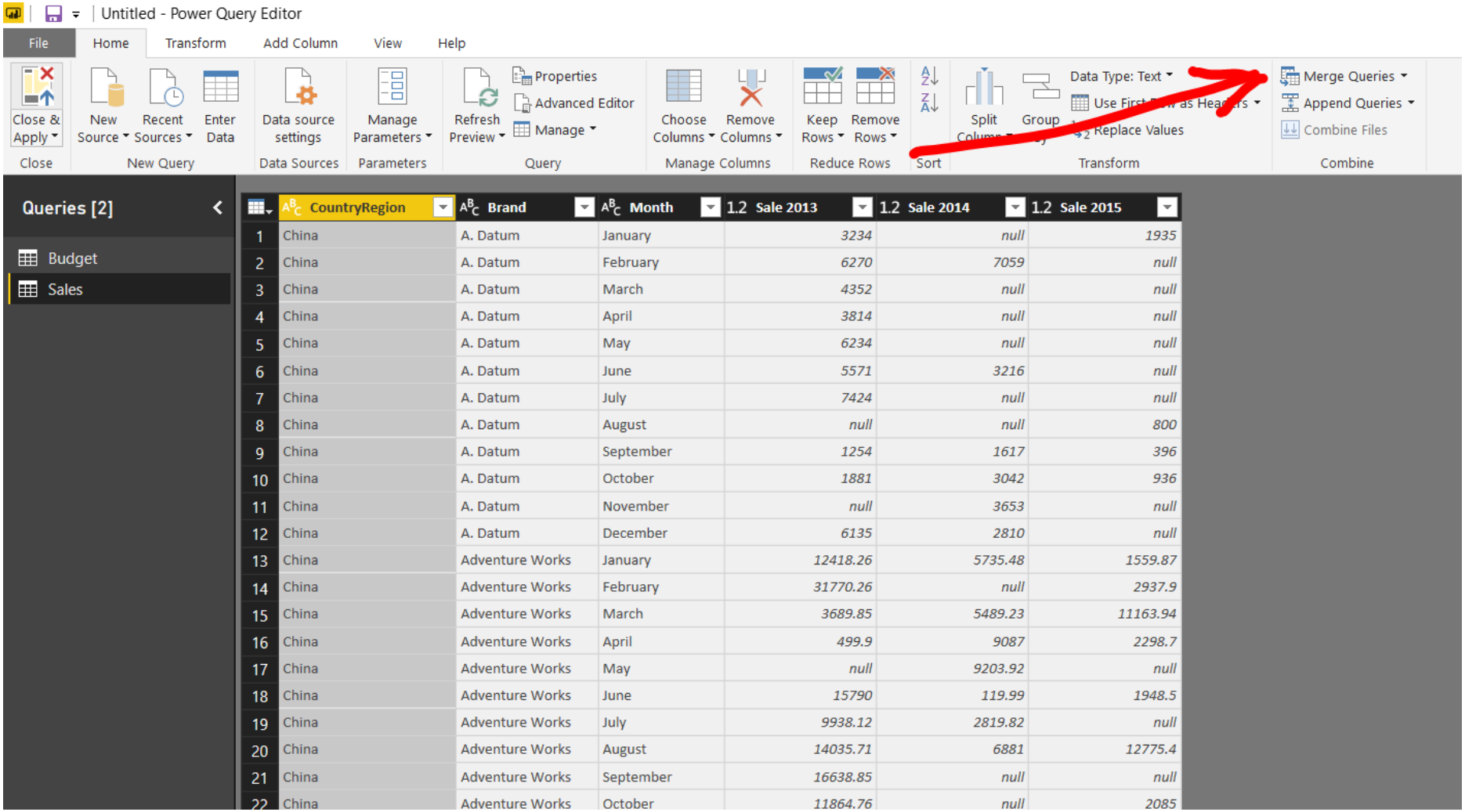
Microsoft Power BI

Make sure that you have two data source



Microsoft Power BI

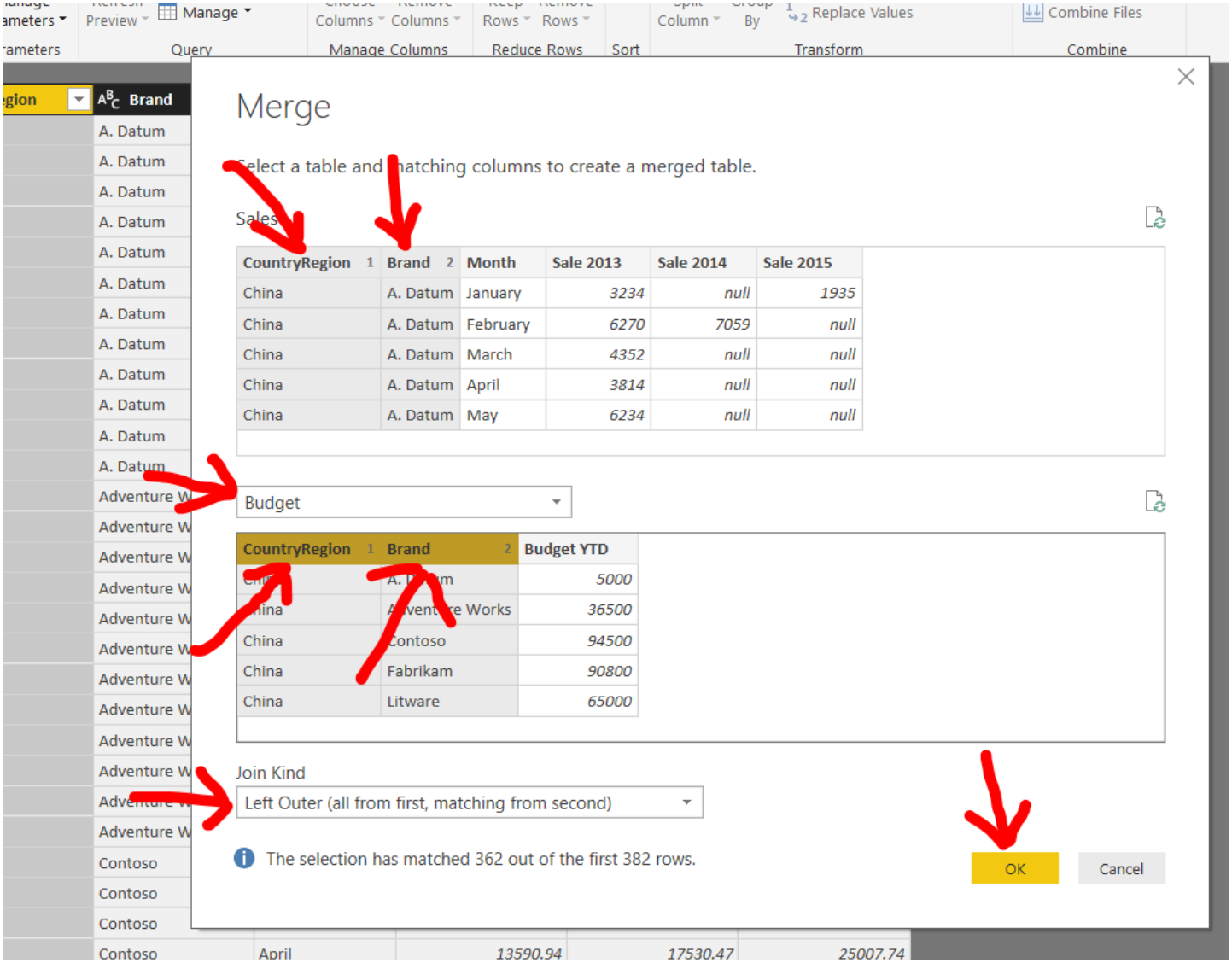
Click Merge Queries



	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
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

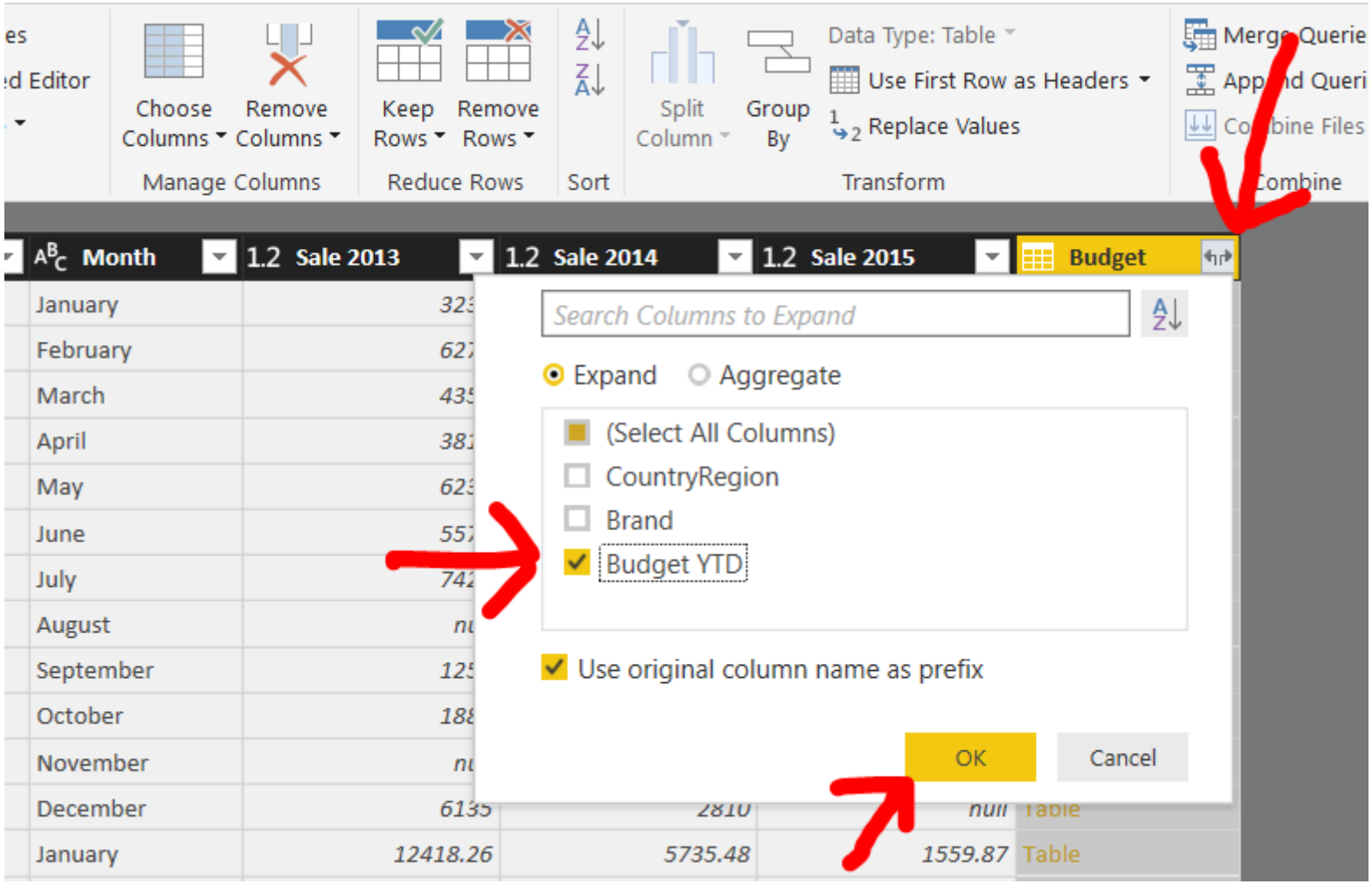
Microsoft Power BI

Join two data sources



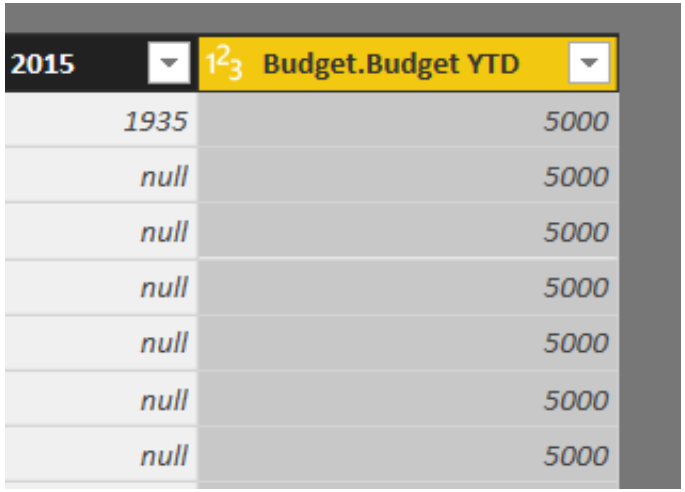
Microsoft Power BI

Select Budget YTD

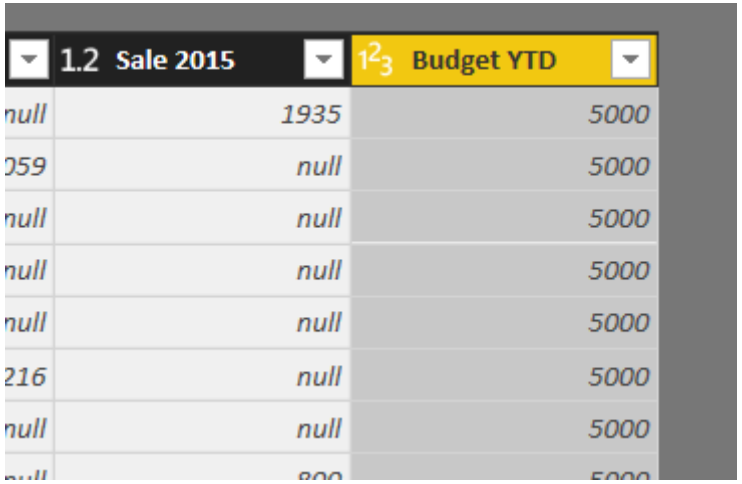


Microsoft Power BI

Rename Budget.Budget YTD to Budget YTD



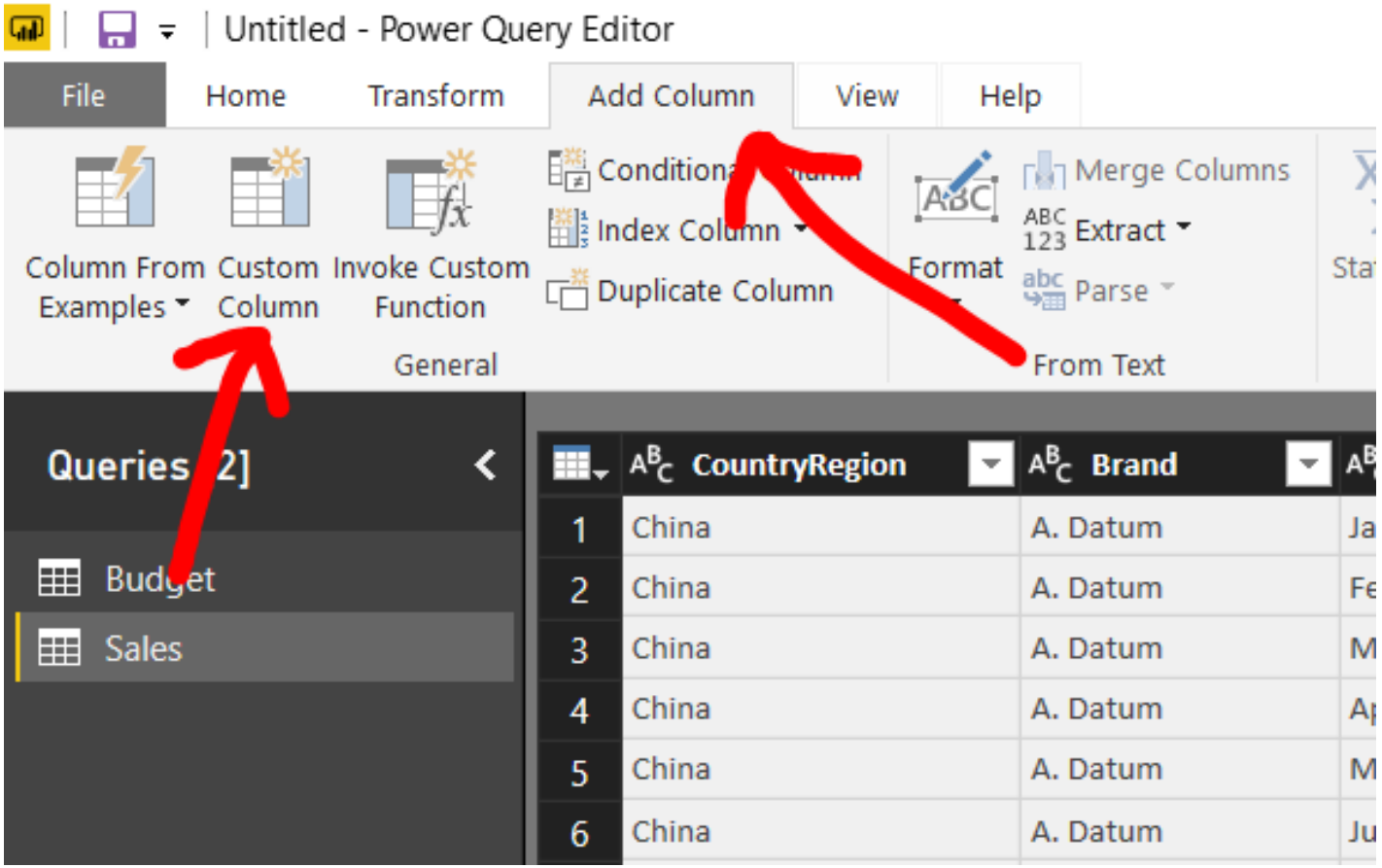
2015	Budget.Budget YTD
1935	5000
null	5000
null	5000
null	5000
null	5000
null	5000
null	5000



1.2 Sale 2015	Budget YTD
1935	5000
null	5000
null	5000
null	5000
null	5000
null	5000
null	5000

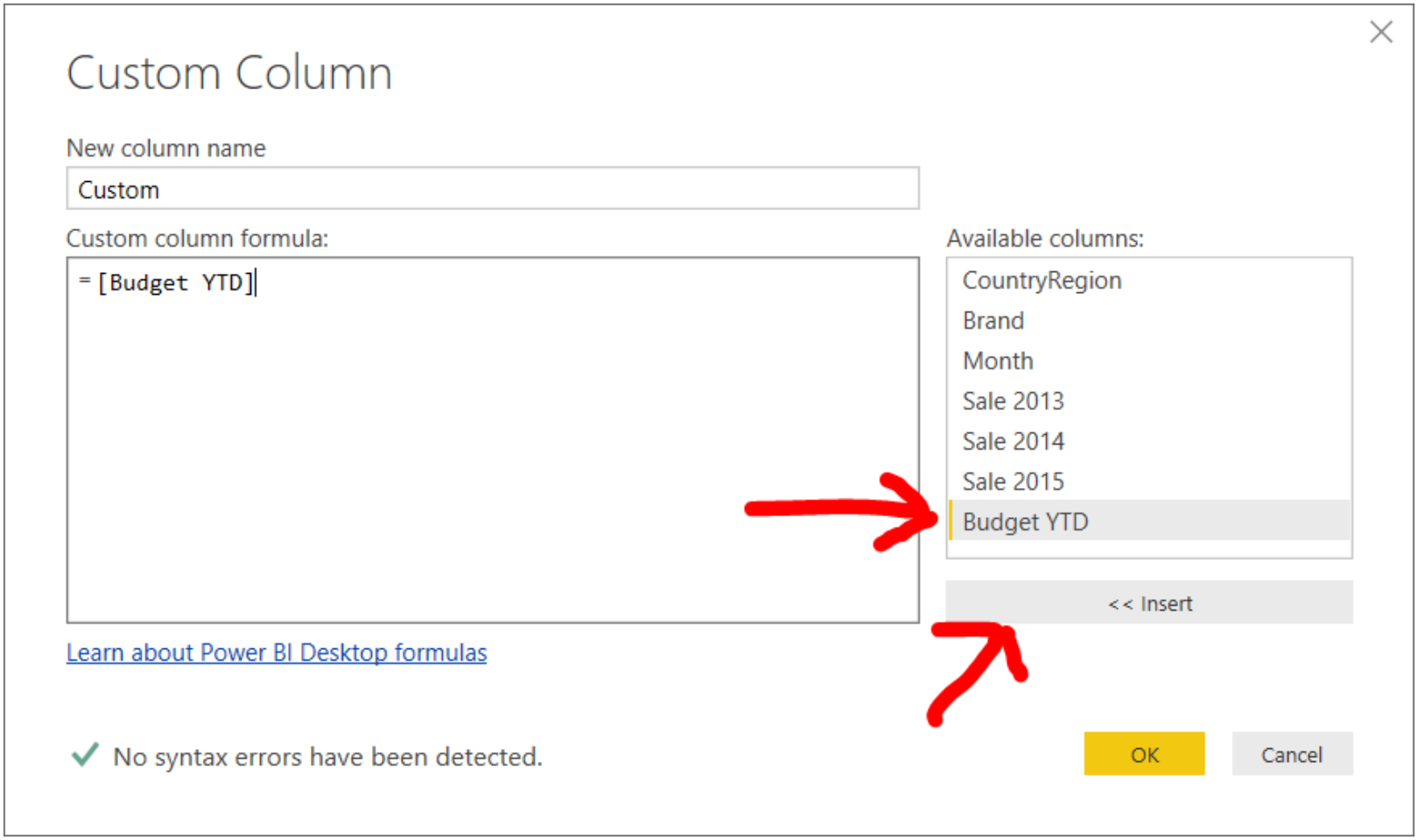
Microsoft Power BI

Add Column / Custom Column



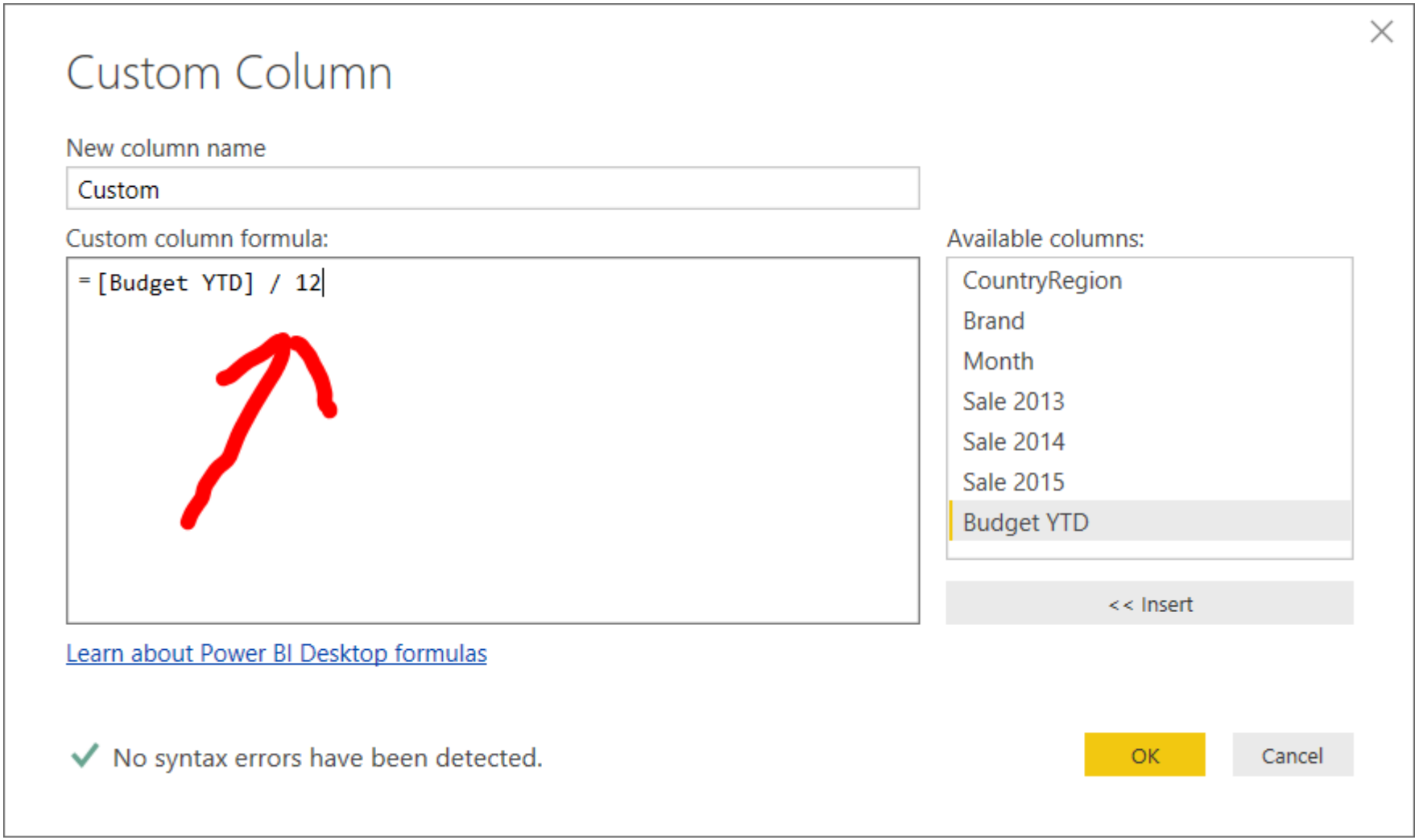
Microsoft Power BI

Budget YTD / << Insert



Microsoft Power BI

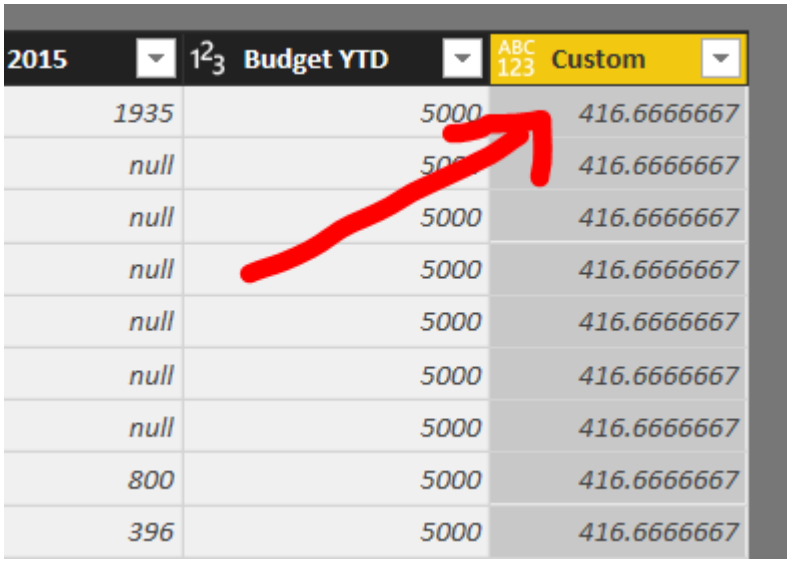
Type / 12 press OK



Microsoft Power BI

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

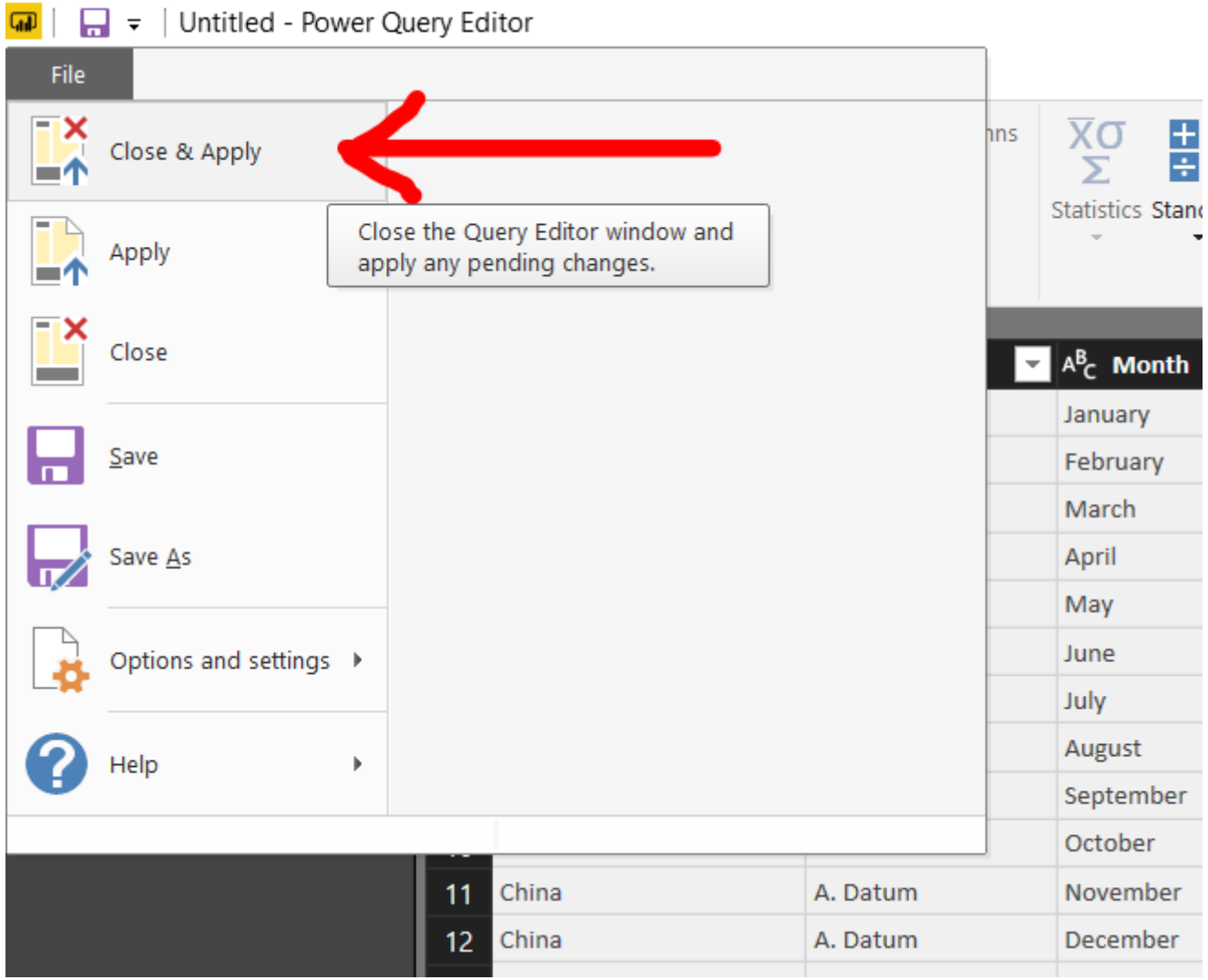
2015	Budget YTD	Custom
1935	5000	416.6666667
null	5000	416.6666667
null	5000	416.6666667
null	5000	416.6666667
null	5000	416.6666667
null	5000	416.6666667
null	5000	416.6666667
800	5000	416.6666667
396	5000	416.6666667



2015	Budget YTD	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

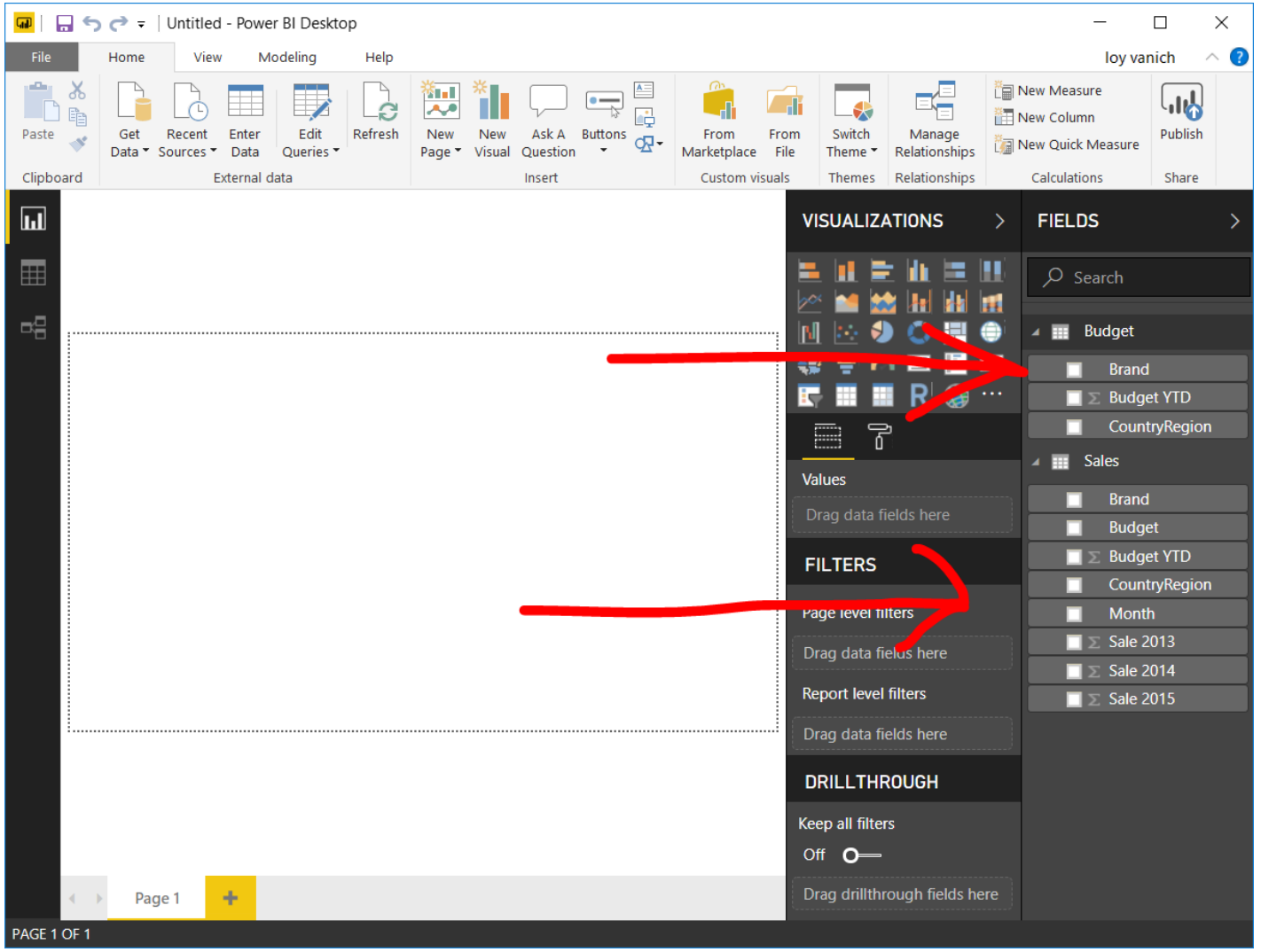
Microsoft Power BI

File / Close & Apply



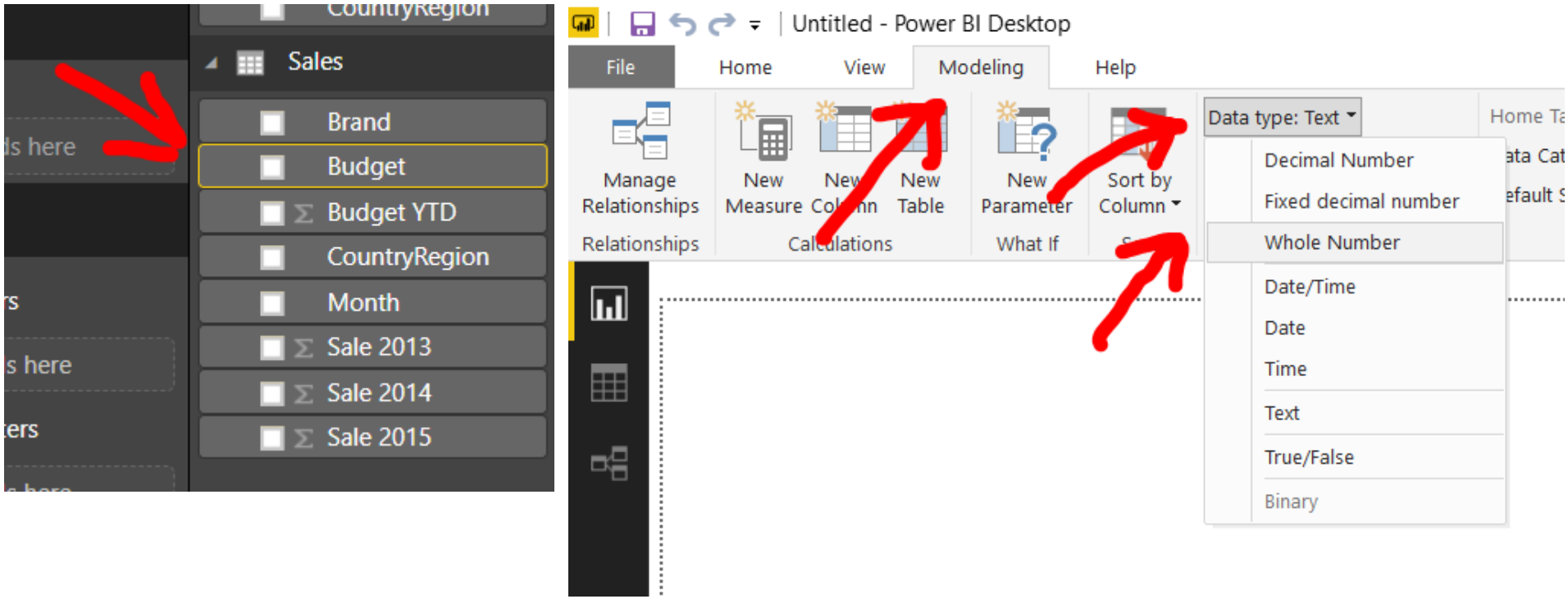
Microsoft Power BI

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



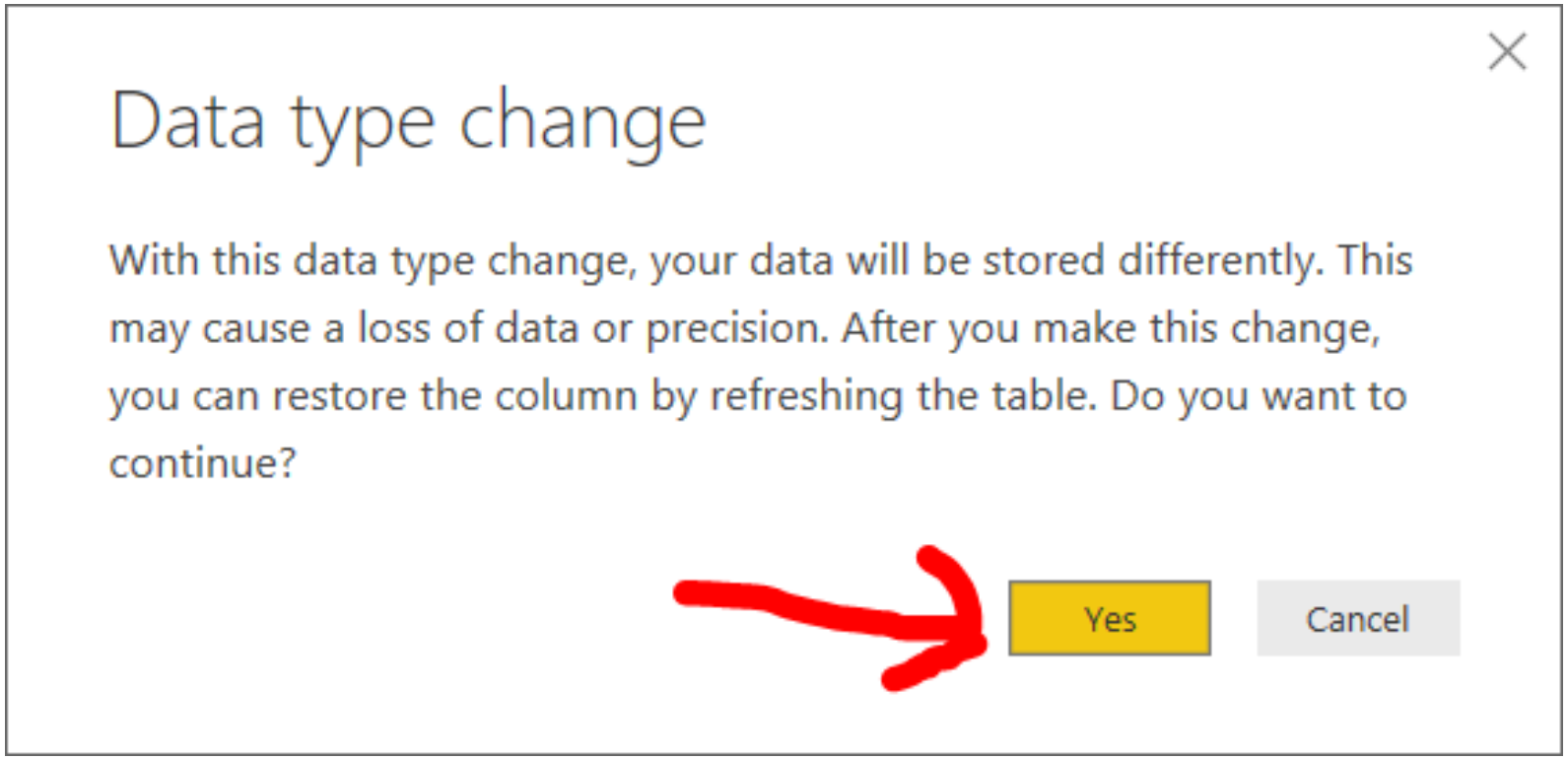
Microsoft Power BI

Click Budget / Modeling, Data type, Whole Number



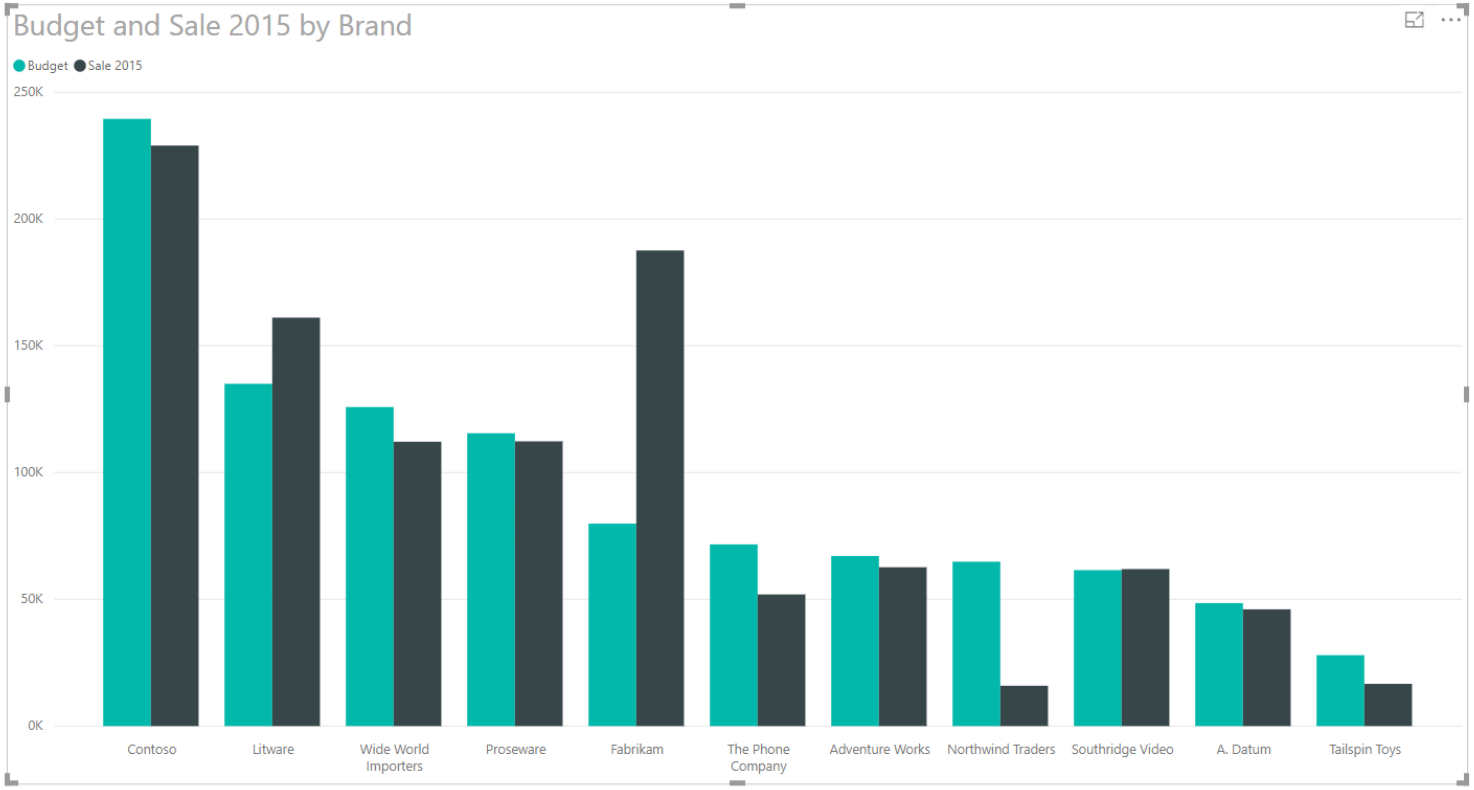
Microsoft Power BI

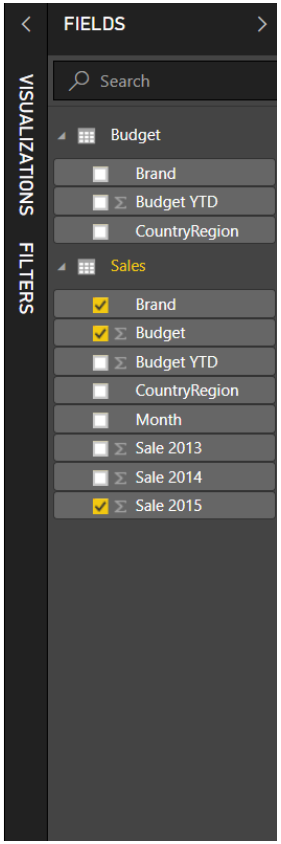
Confirm data type chang



Microsoft Power BI

Make Clustered column chart Budget and Sale 2015 by Brand

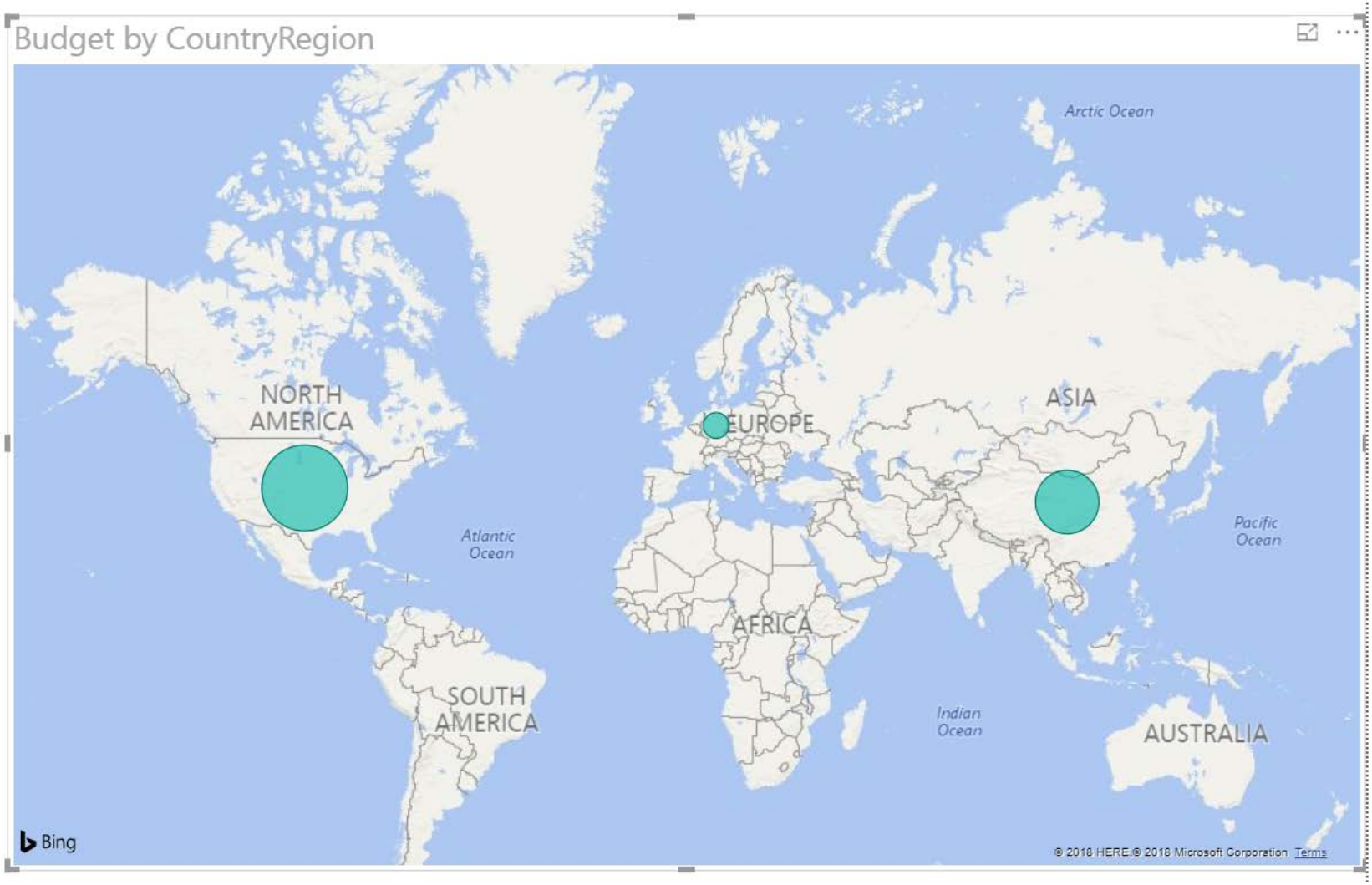




Microsoft Power BI

Exercise

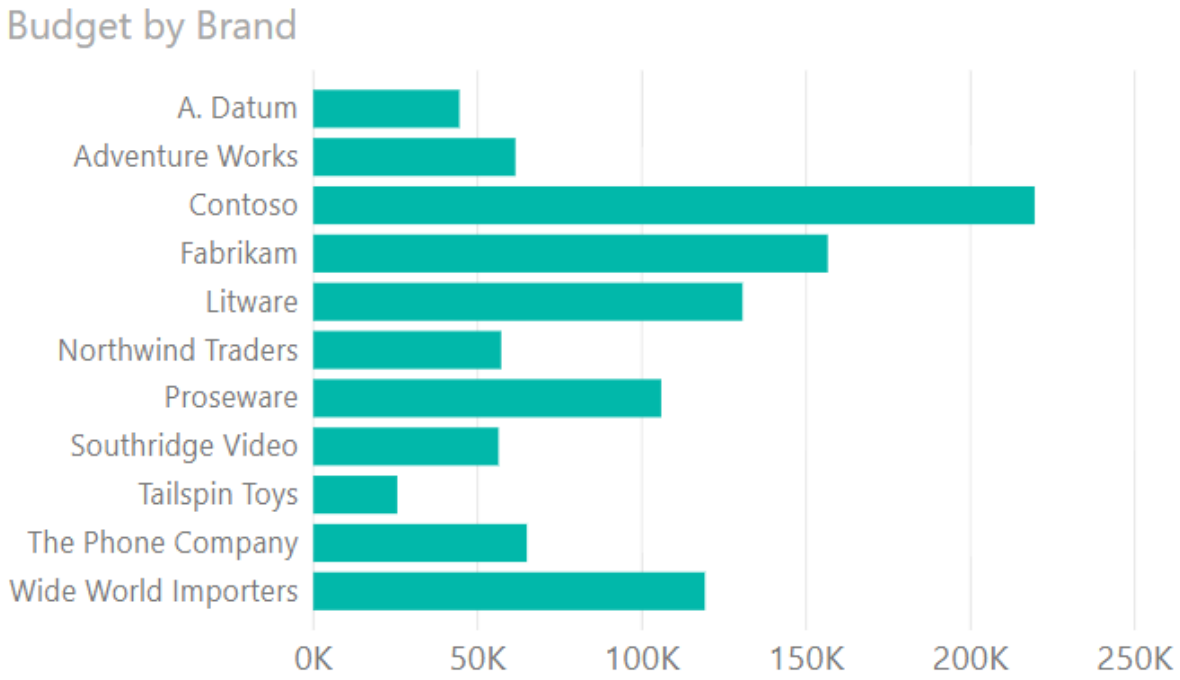
New / Create all steps / Make Budget by CountryRegion map



Sorting

Microsoft Power BI

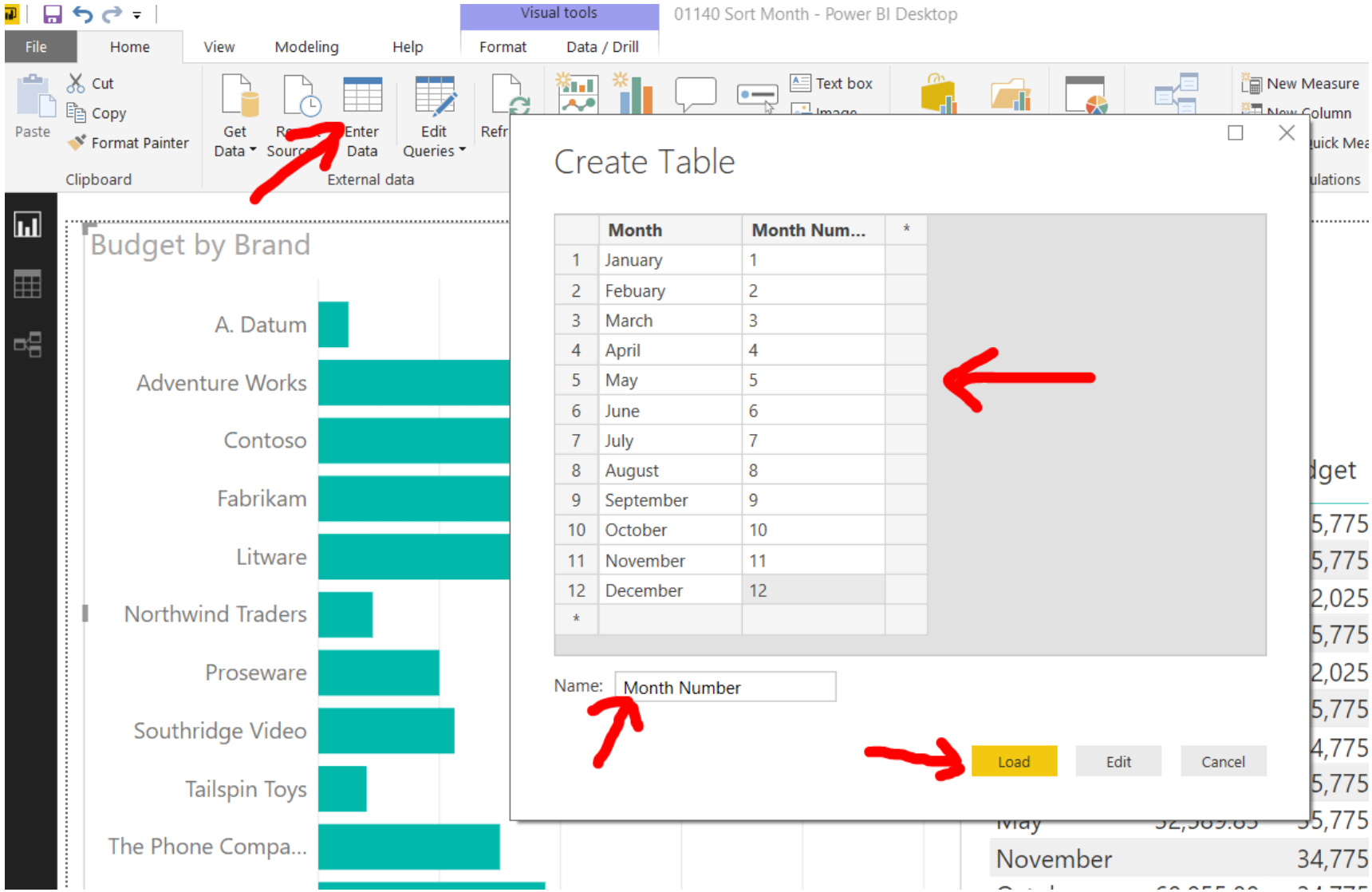
Create this visual from 2015 Sales for Sort.xlsx



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

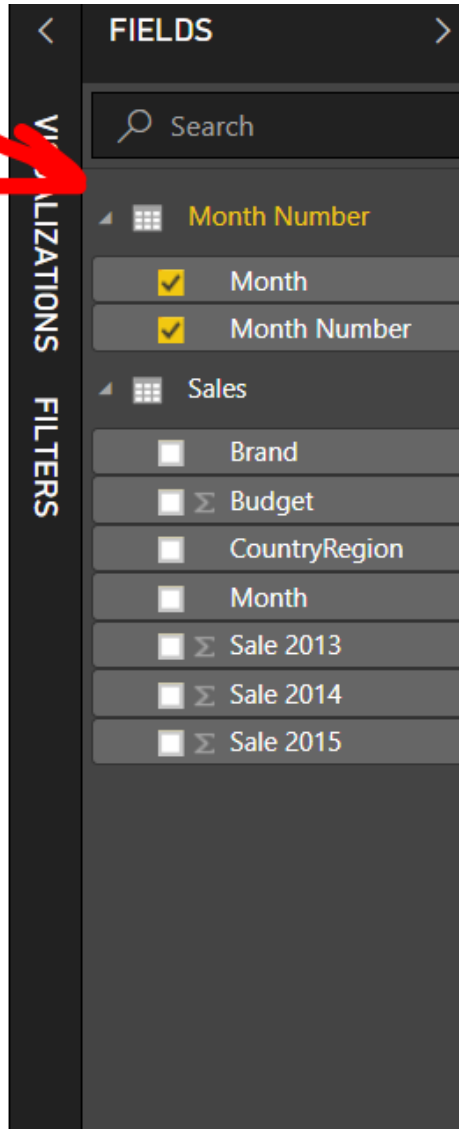
Enter Data / Month Number



Microsoft Power BI

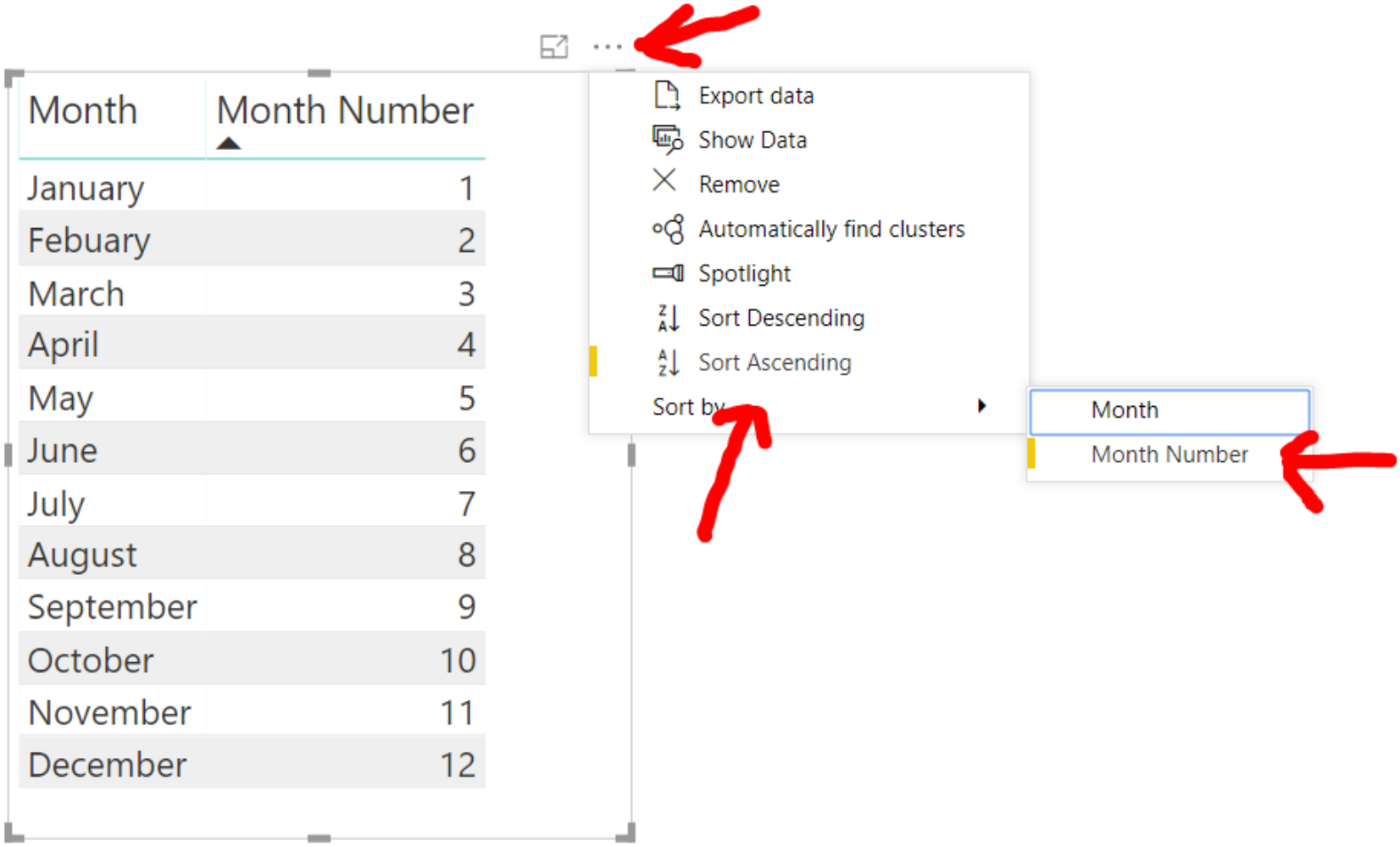
Make sure you have this new Data set

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



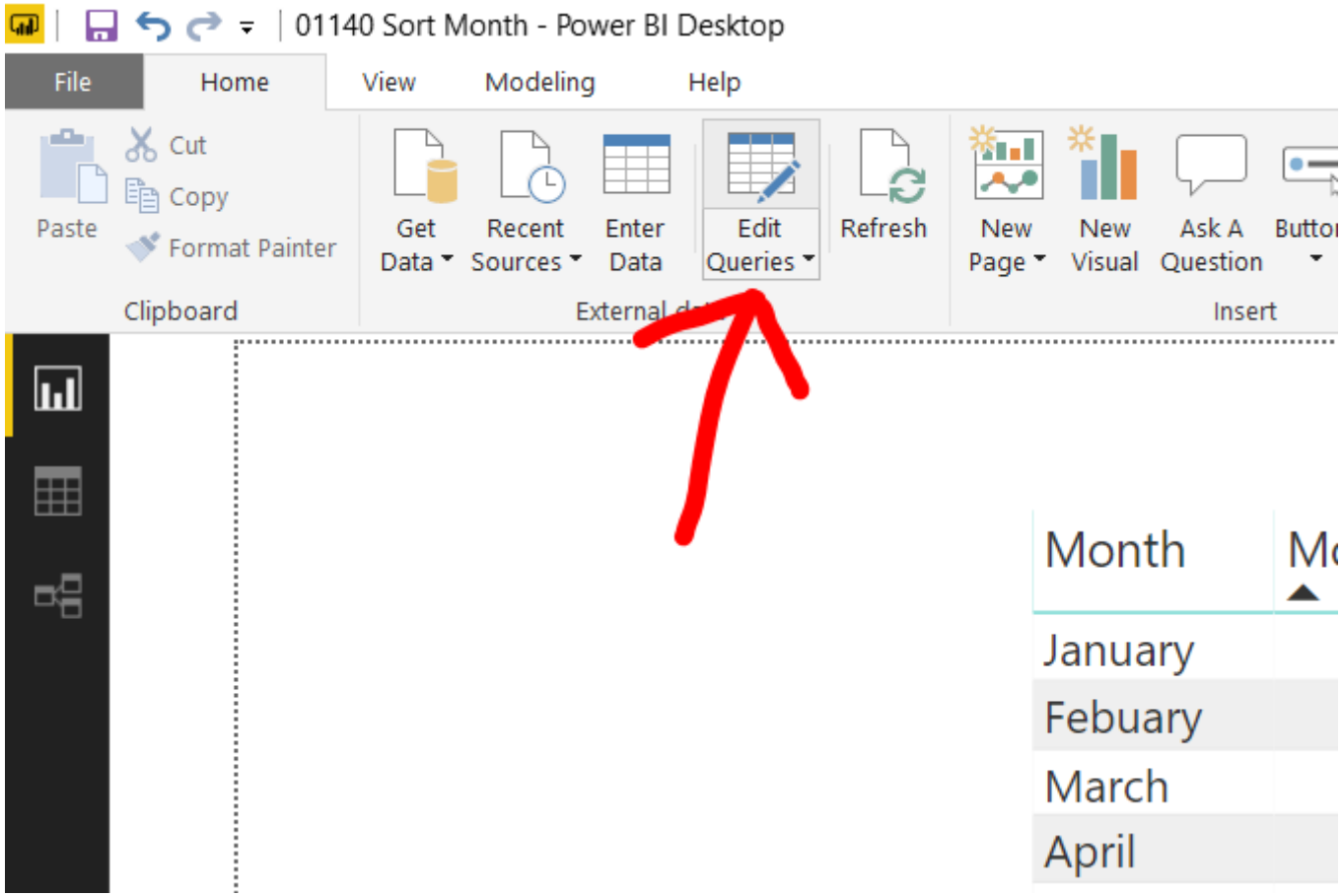
Microsoft Power BI

Sort by Month Number



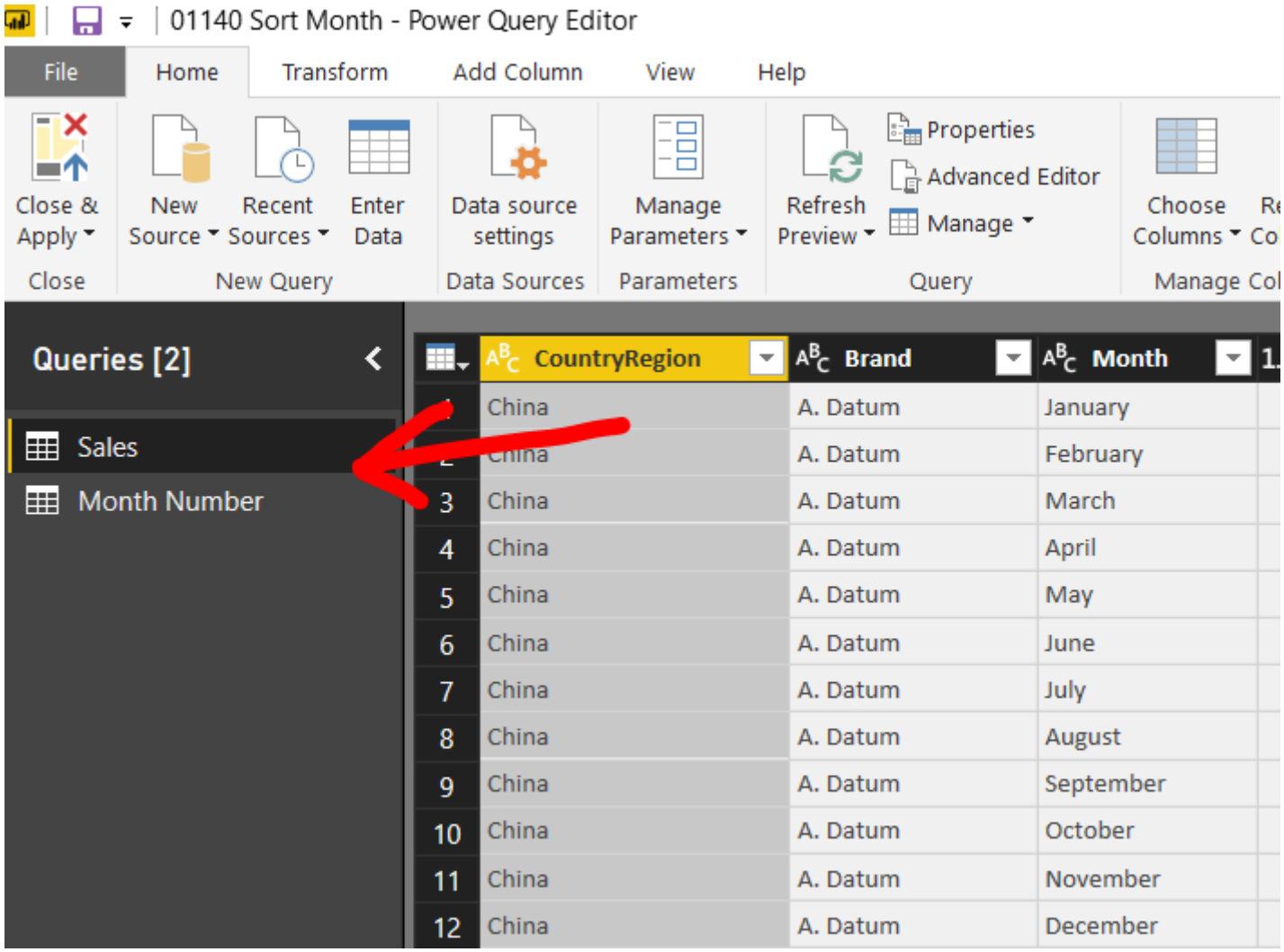
Microsoft Power BI

Edit Queries



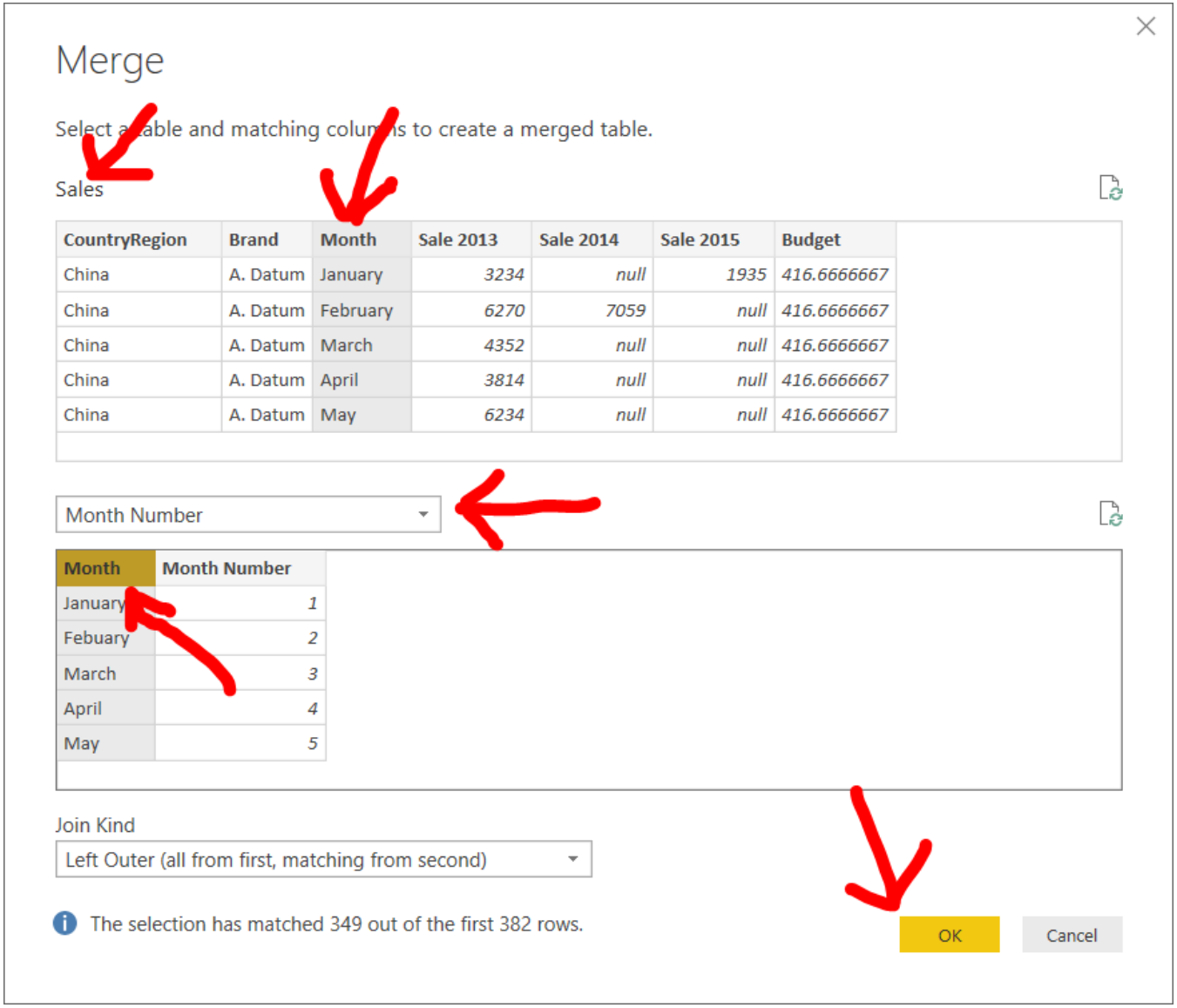
Microsoft Power BI

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



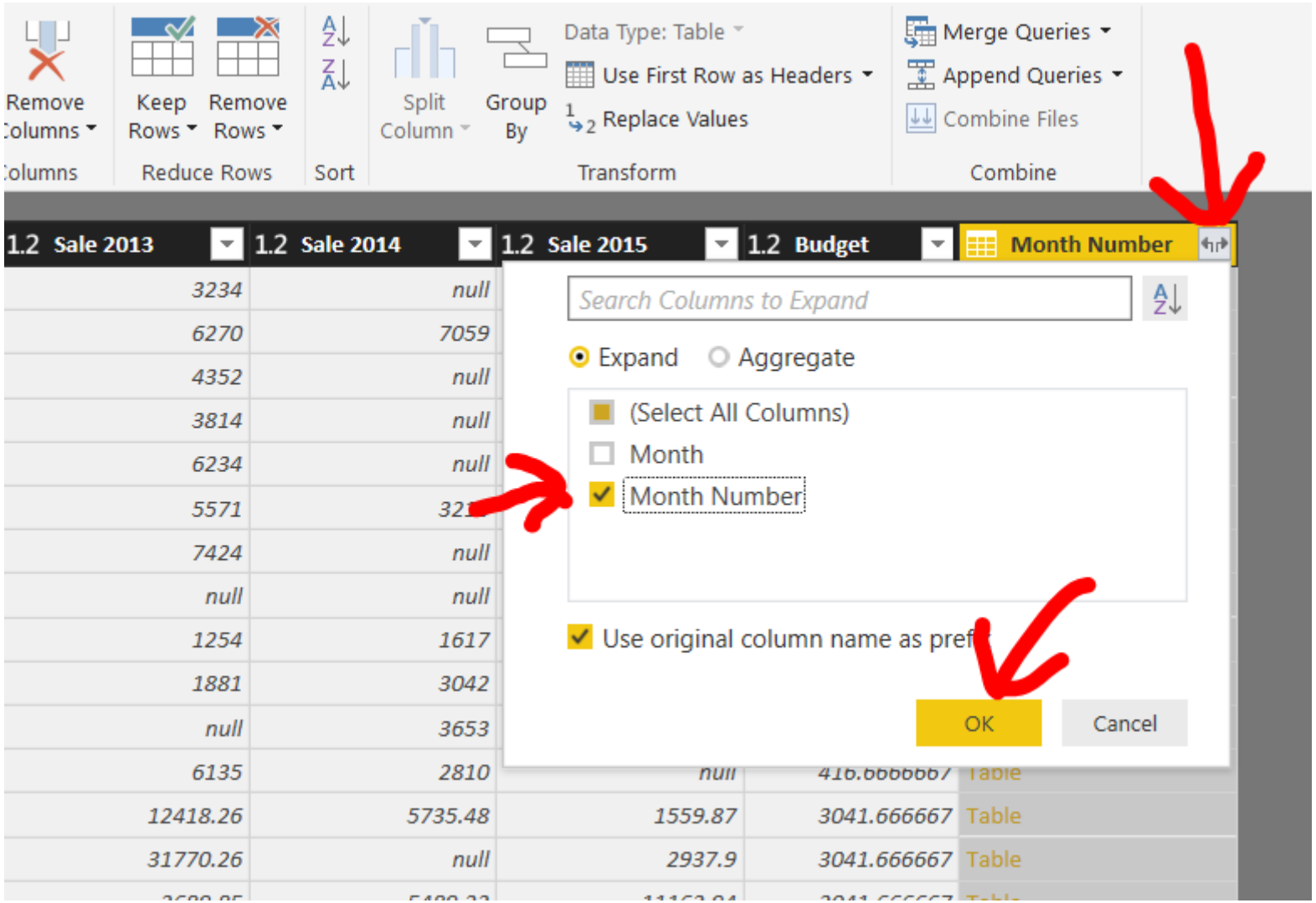
Microsoft Power BI

Merge Sale to Month Number on Month



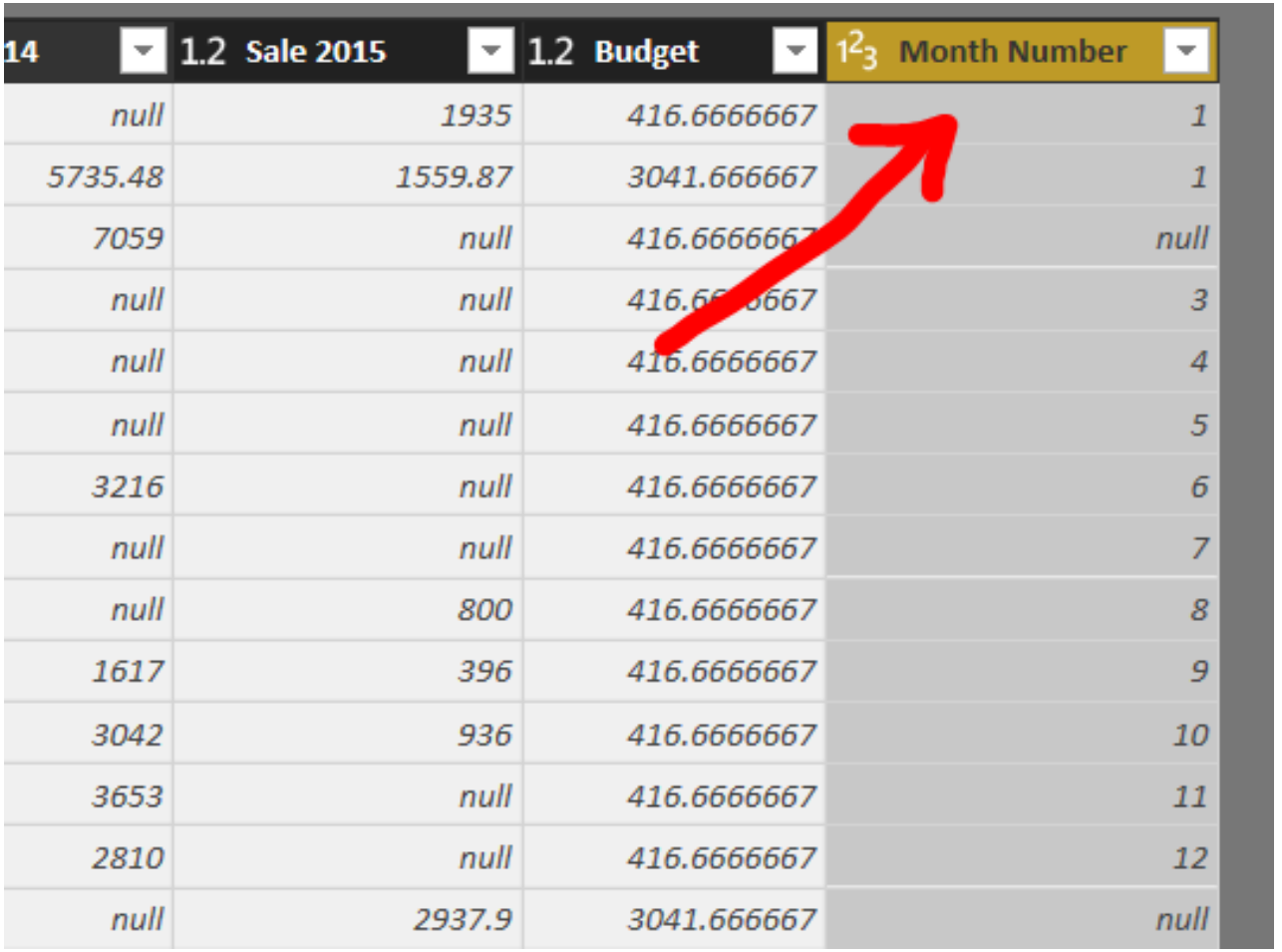
Microsoft Power BI

Select Month Number



Microsoft Power BI

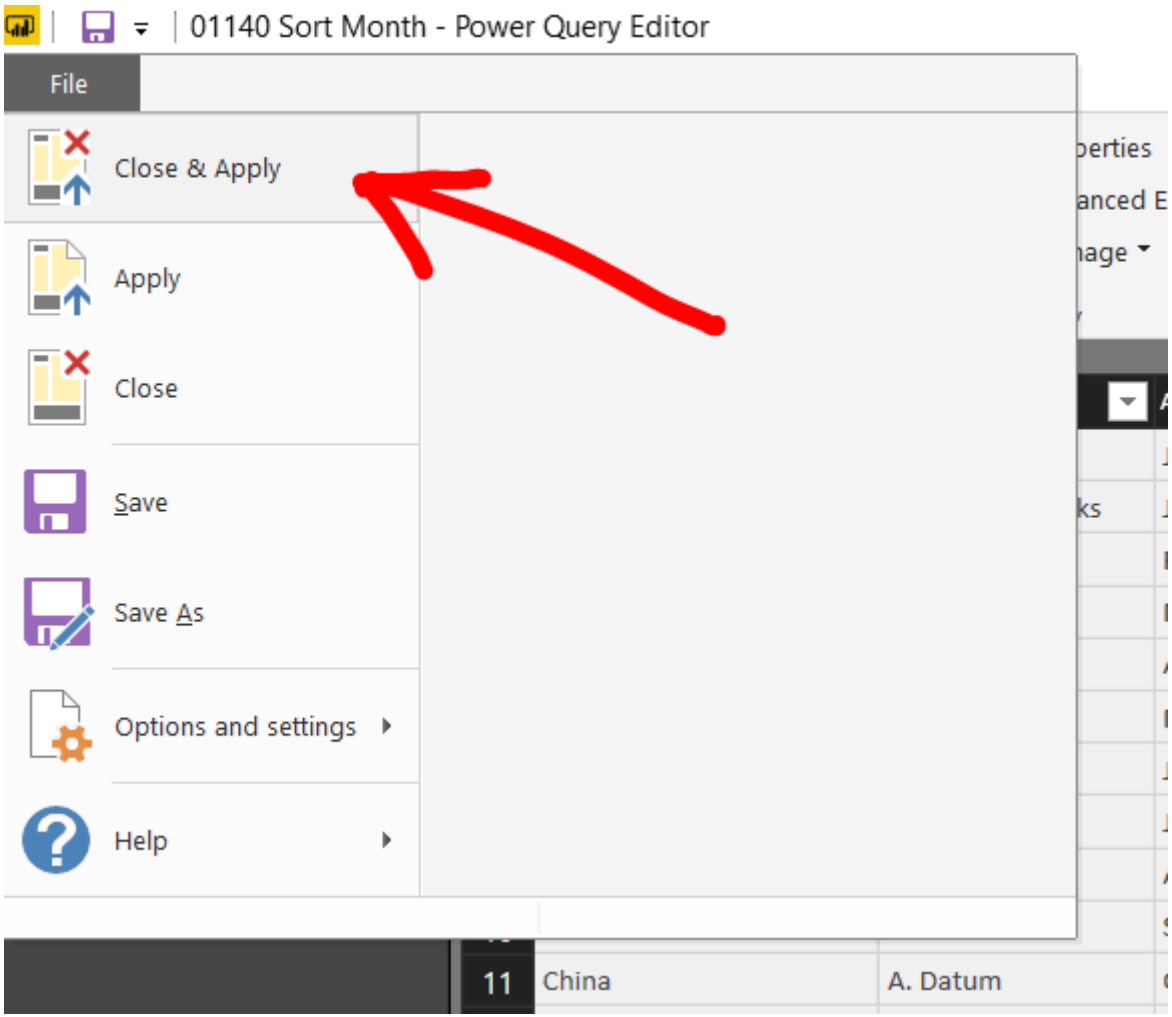
Rename the column



14	1.2 Sale 2015	1.2 Budget	123 Month Number
null	1935	416.6666667	1
5735.48	1559.87	3041.666667	1
7059	null	416.6666667	null
null	null	416.6666667	3
null	null	416.6666667	4
null	null	416.6666667	5
3216	null	416.6666667	6
null	null	416.6666667	7
null	800	416.6666667	8
1617	396	416.6666667	9
3042	936	416.6666667	10
3653	null	416.6666667	11
2810	null	416.6666667	12
null	2937.9	3041.666667	null

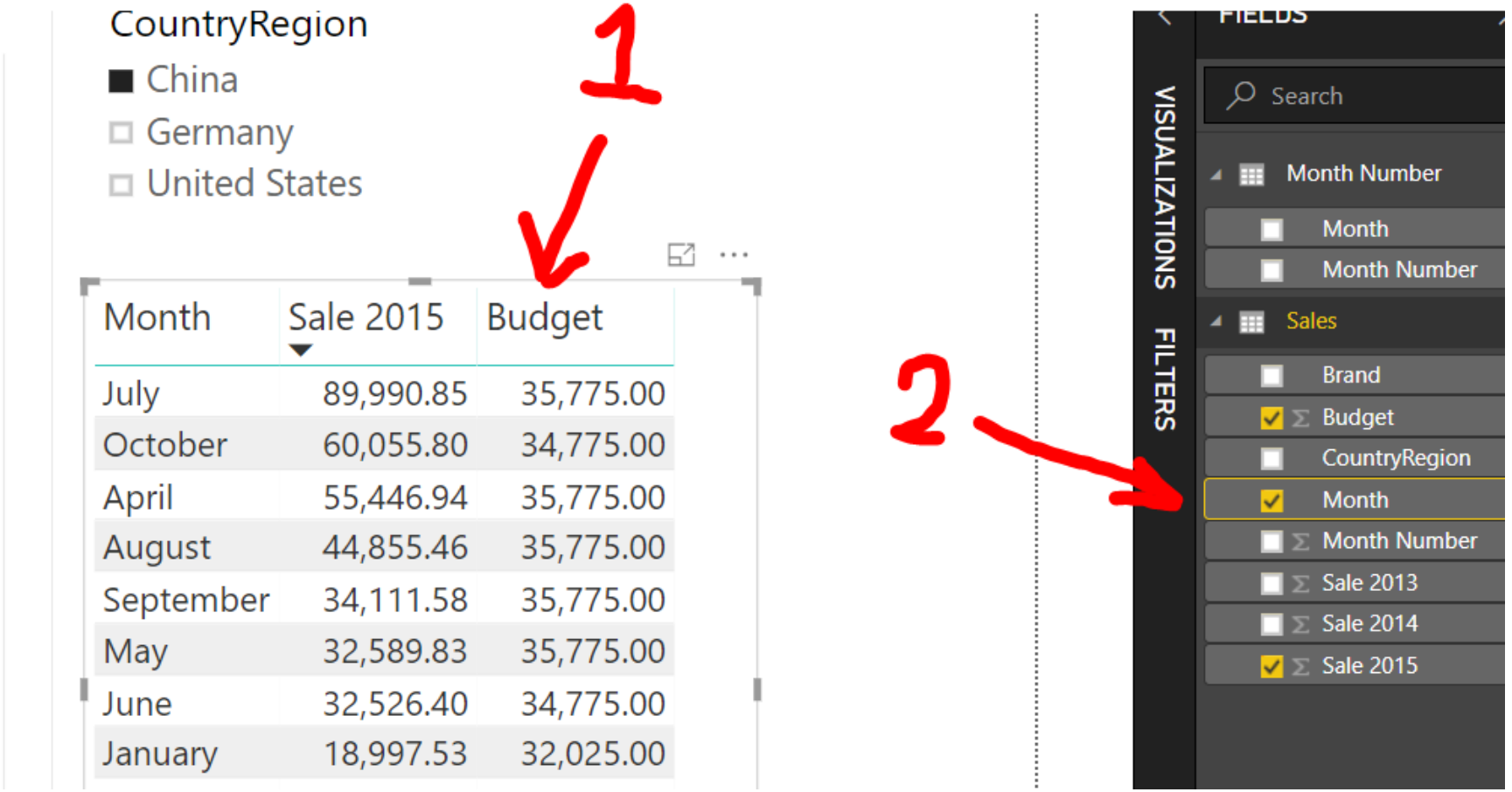
Microsoft Power BI

Close & Apply



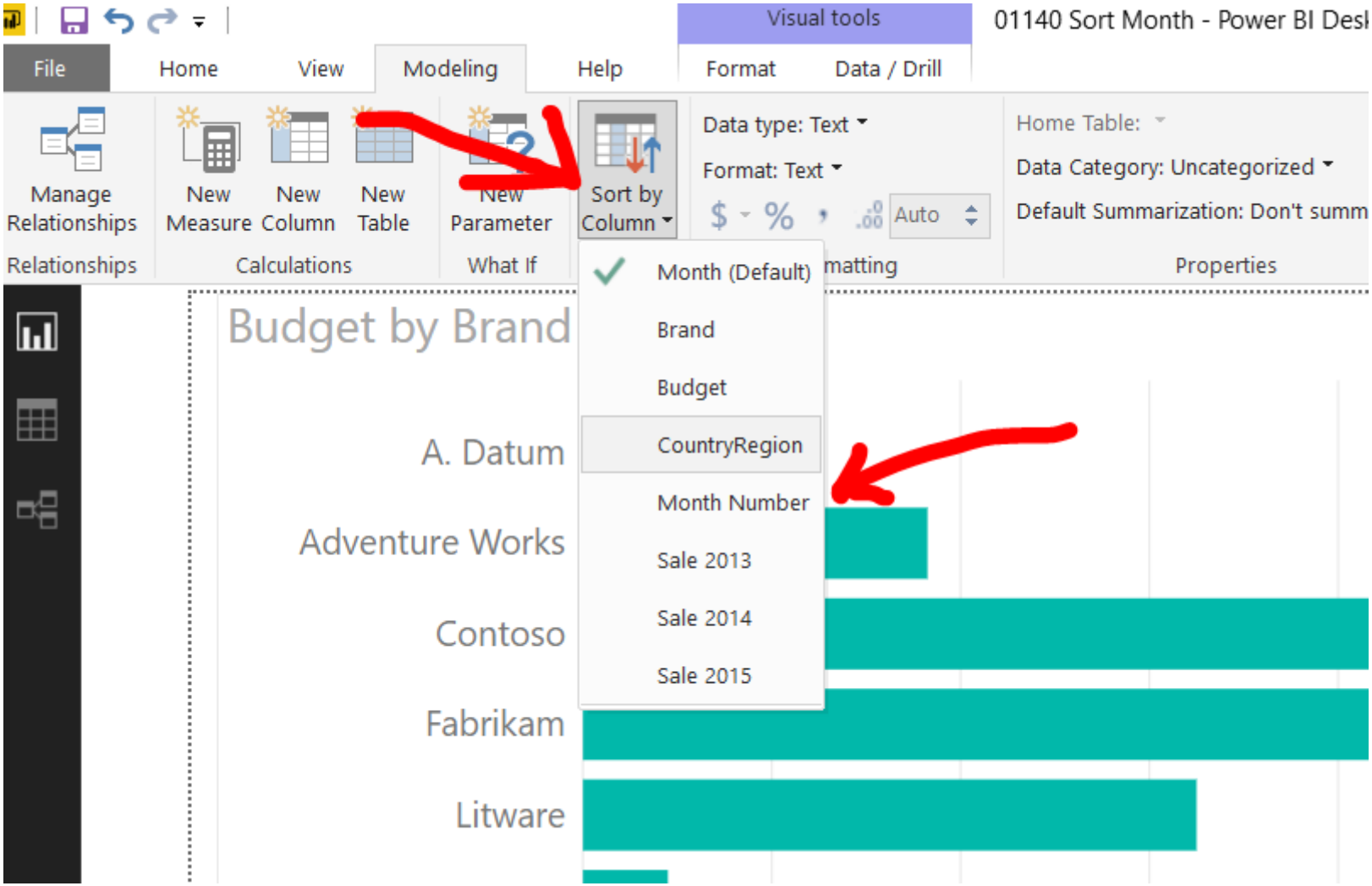
Microsoft Power BI

Click Visualize / Click Month



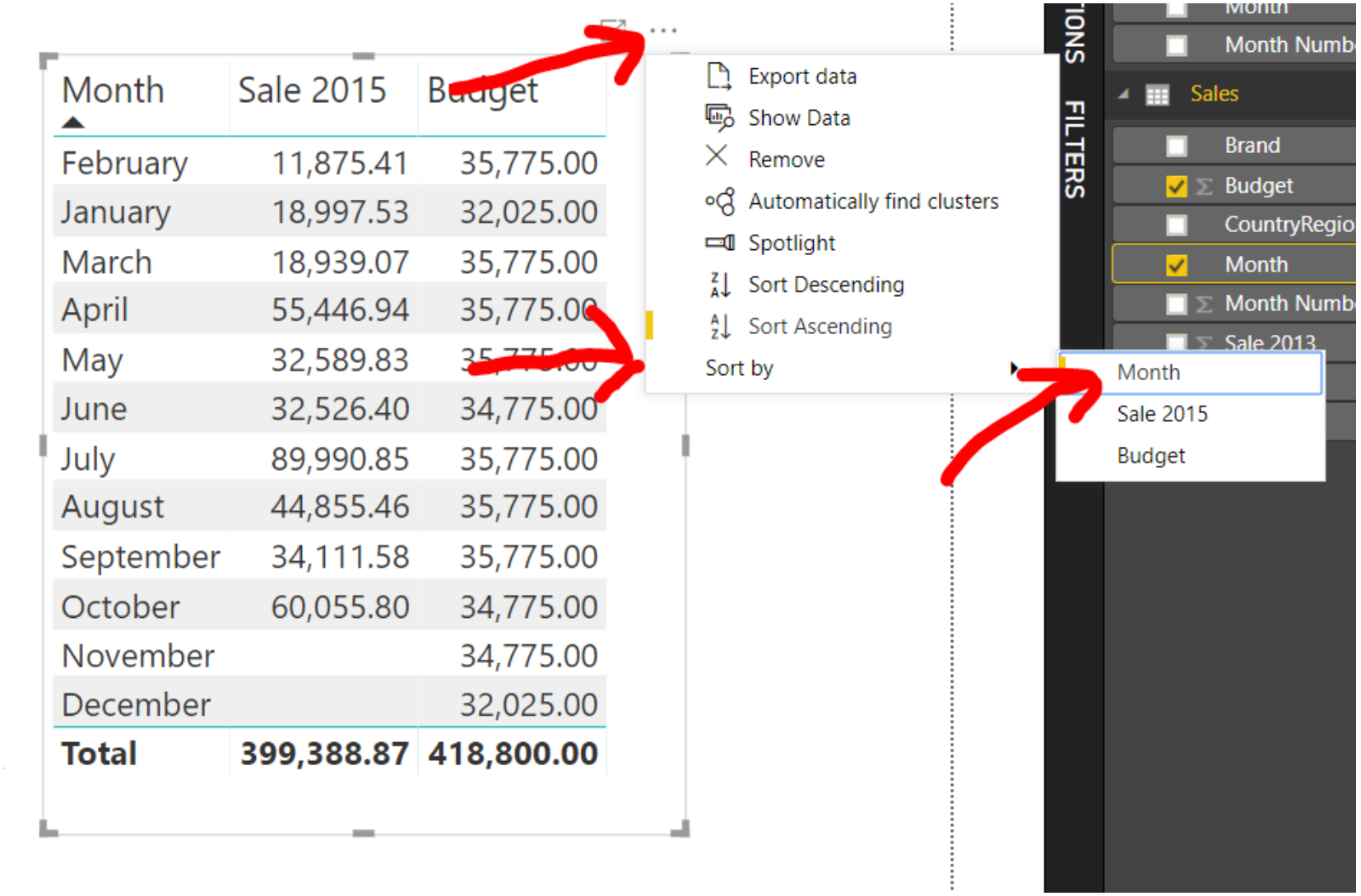
Microsoft Power BI

Click Sort by Column / Month Number



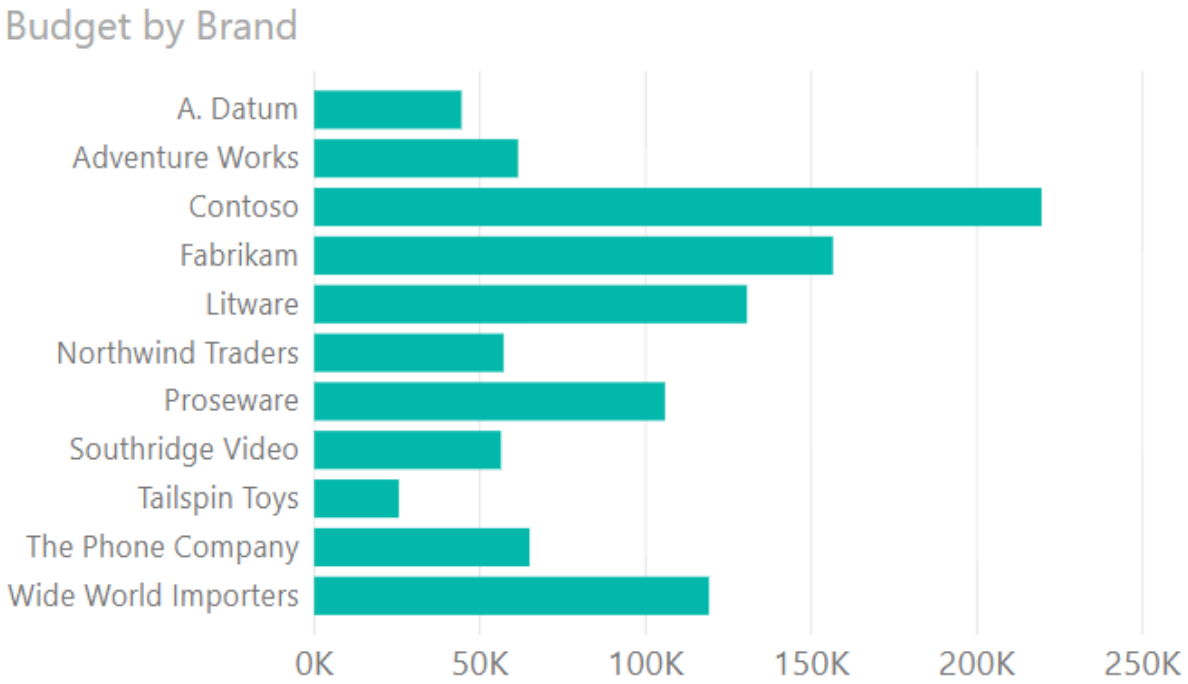
Microsoft Power BI

Sort by Month



Microsoft Power BI

Final Result



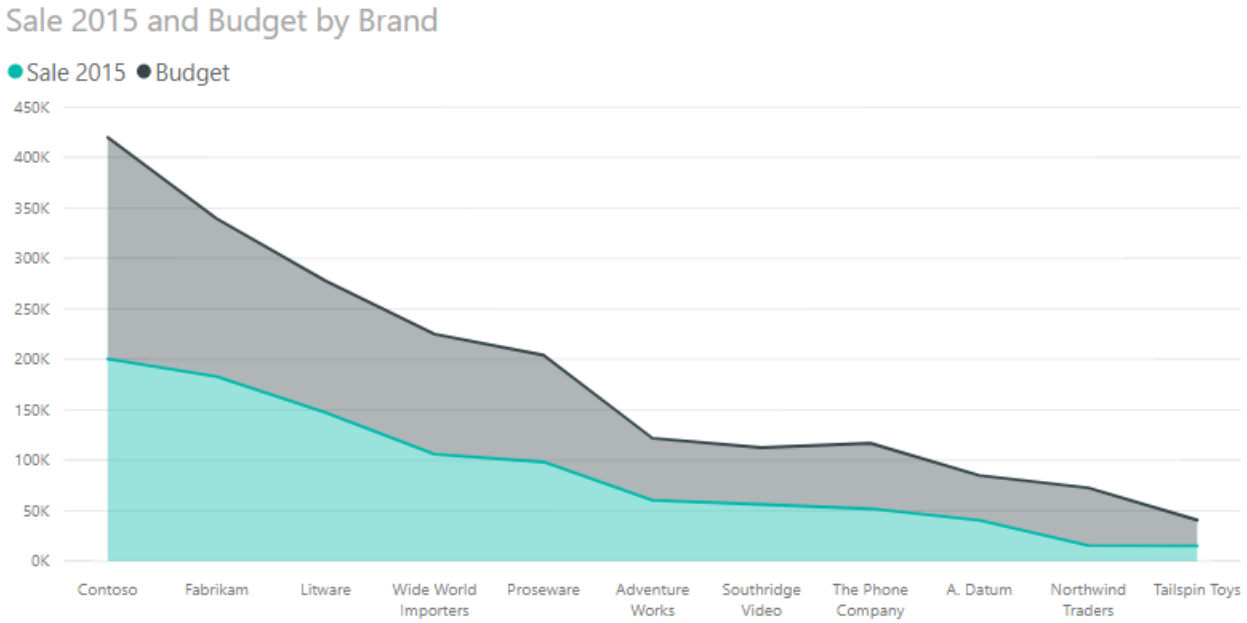
Month	Sale 2015	Budget
February	65,389.24	97,616.67
March	78,959.30	95,533.33
April	116,320.35	97,616.67
May	163,396.26	96,366.67
June	96,737.46	96,616.67
July	148,100.26	92,200.00
August	104,985.34	88,866.67
September	96,717.64	97,616.67
October	93,229.21	89,116.67
November	10,788.00	94,325.00
December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

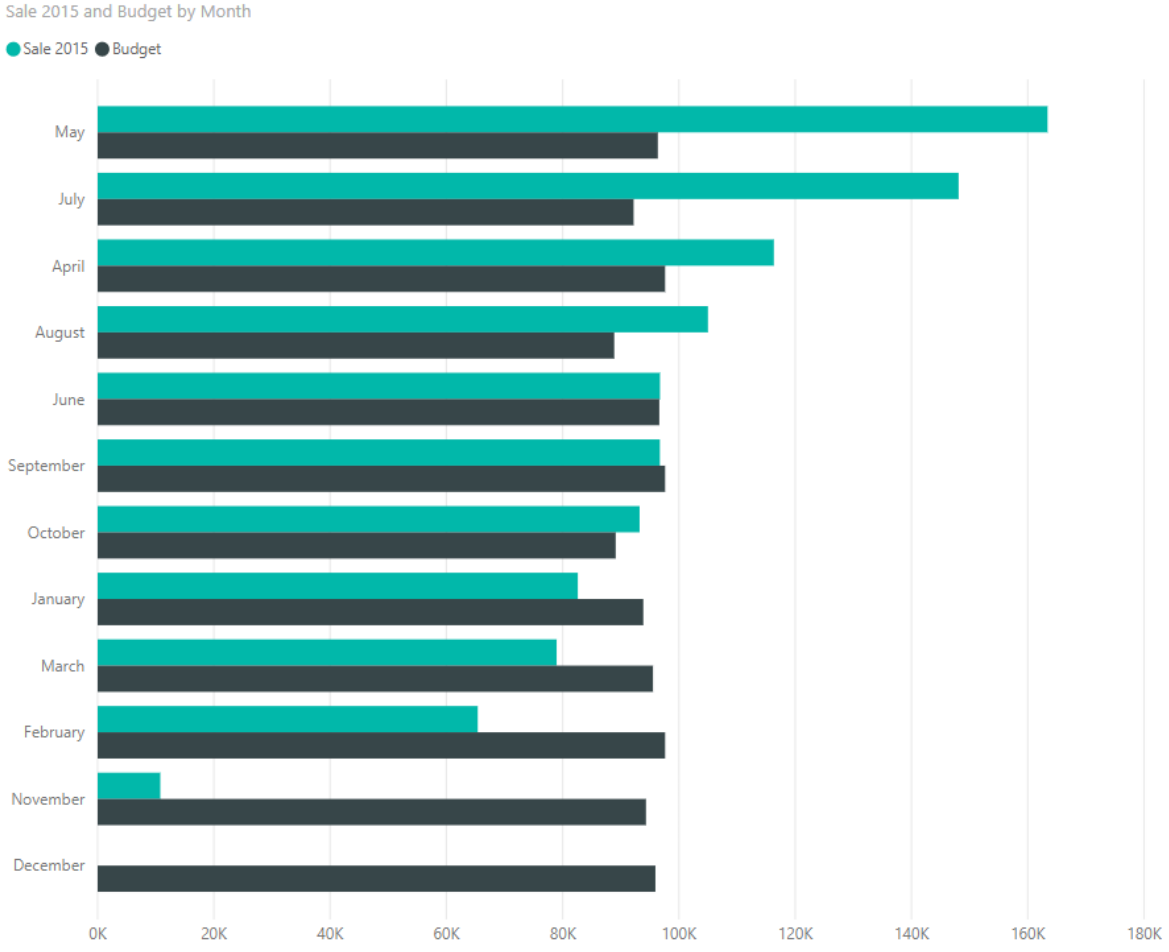


Custom Column

Microsoft Power BI

Create this visual from 2015 Sales.xlsx

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
China	October	60,055.80	34,775.00
China	September	34,111.58	35,775.00
Germany	April	23,997.86	28,791.67
Germany	August	32,482.13	21,291.67
Germany	December		28,791.67
Germany	February	17,922.67	28,791.67
Germany	January	31,639.25	28,791.67
Germany	July	33,148.97	23,375.00
Germany	June	35,202.54	28,791.67
Germany	March	42,127.18	28,791.67
Germany	May	85,384.05	28,791.67
Germany	November		22,333.33
Germany	October	7,820.27	23,375.00
Germany	September	13,138.67	28,791.67
Total		**1,057,227.05**	**1,135,691.67**



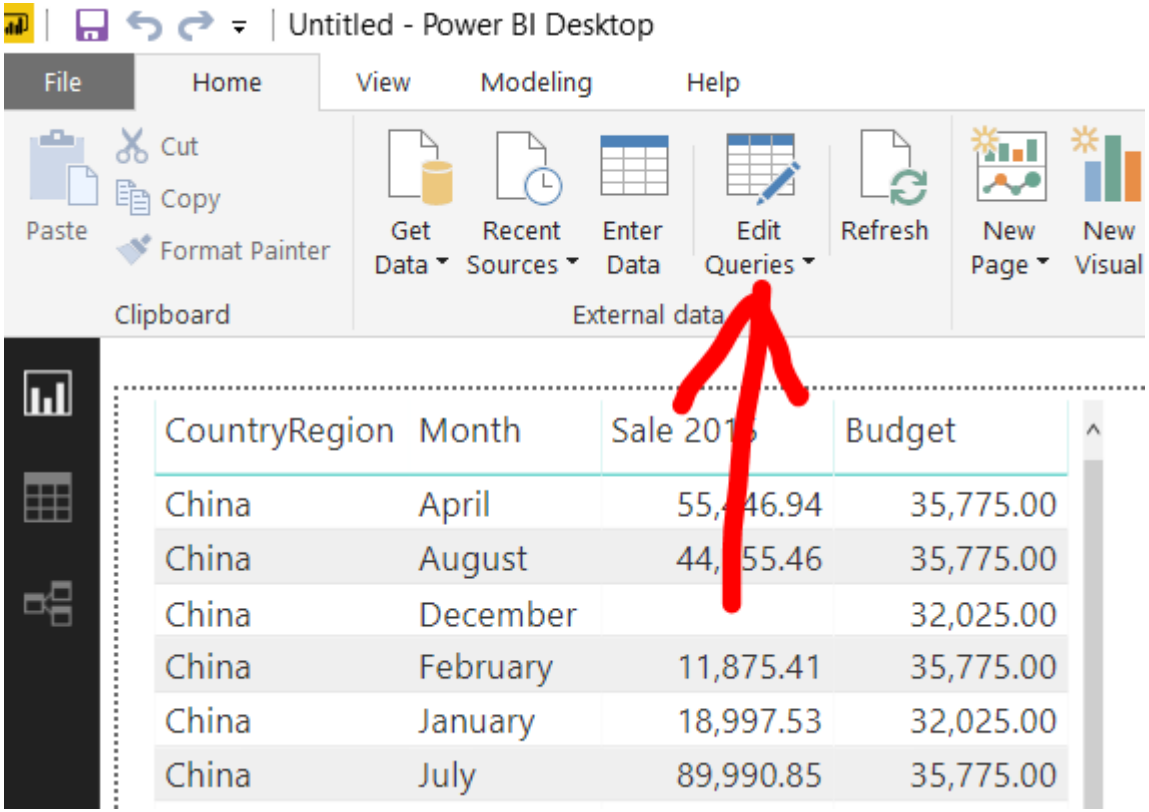
Microsoft Power BI

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

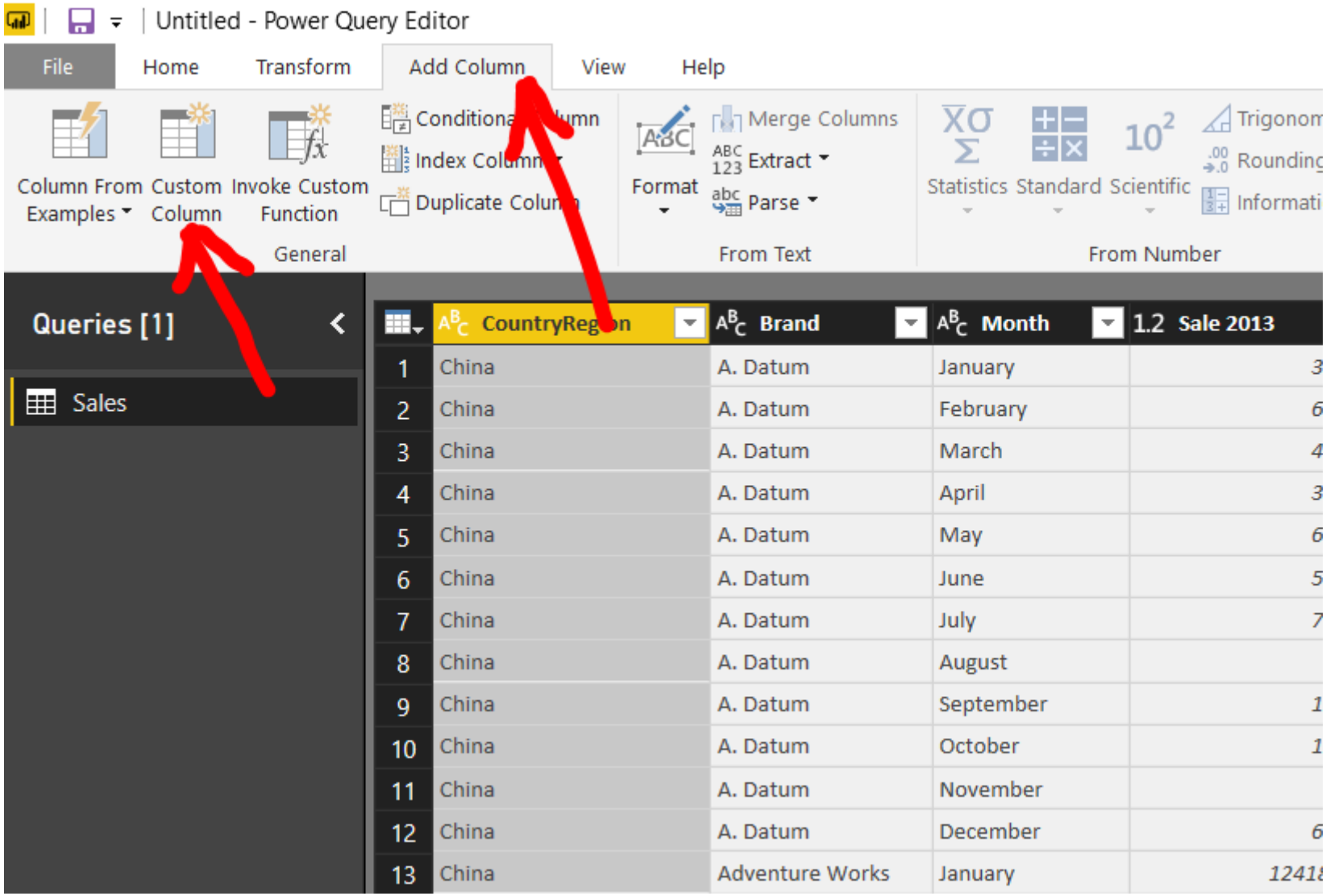
Microsoft Power BI

Edit queries



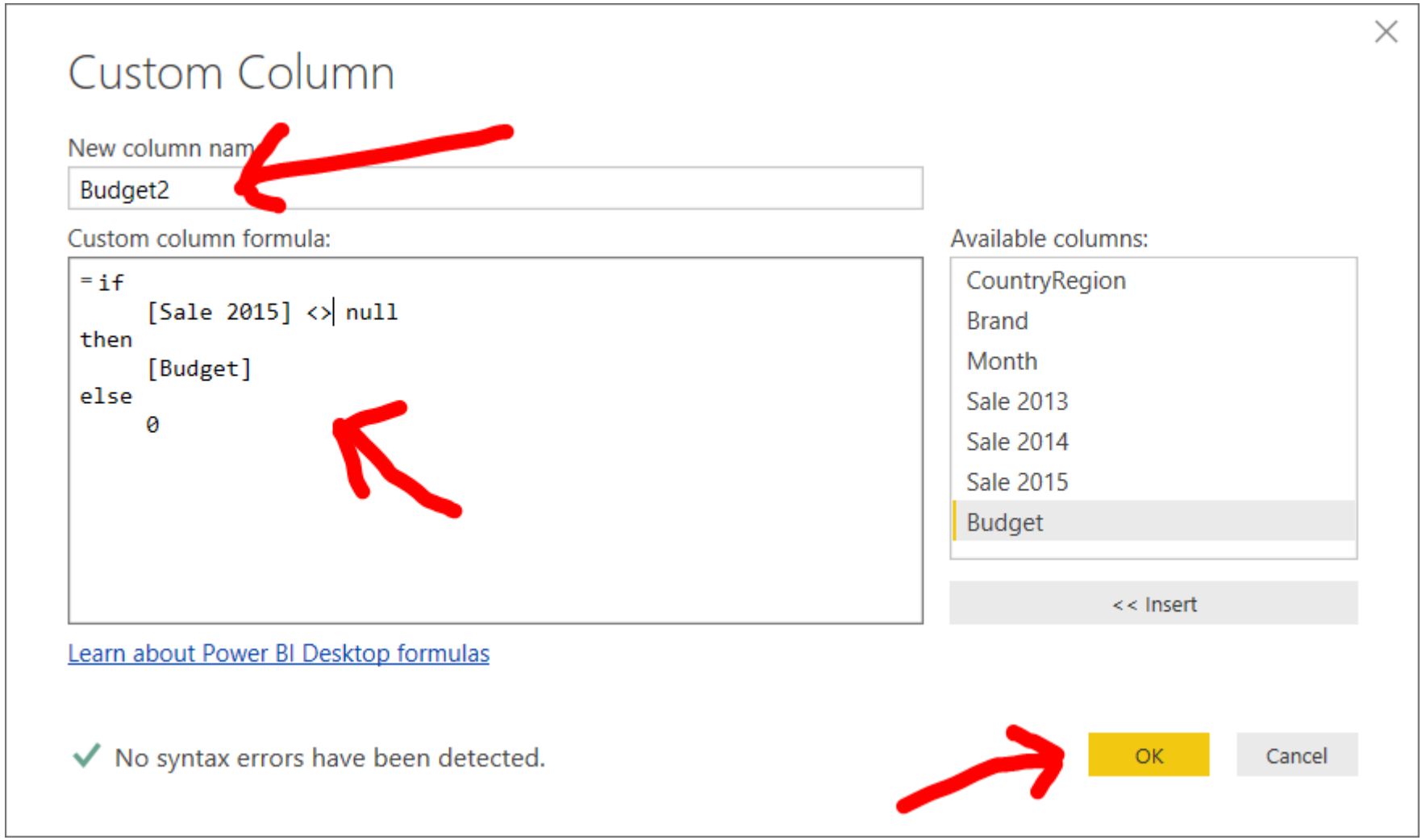
Microsoft Power BI

Add Column / Custom Column



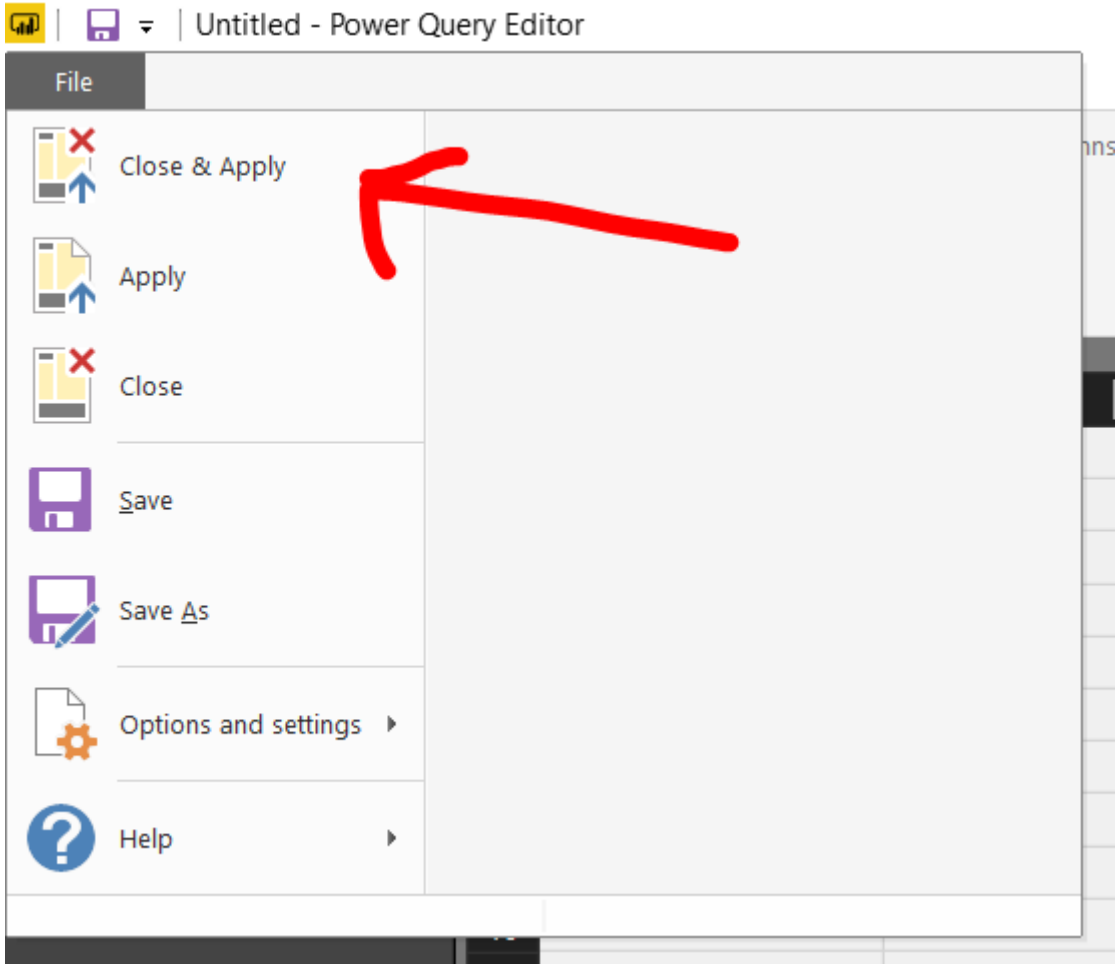
Microsoft Power BI

Enter name and formula



Microsoft Power BI

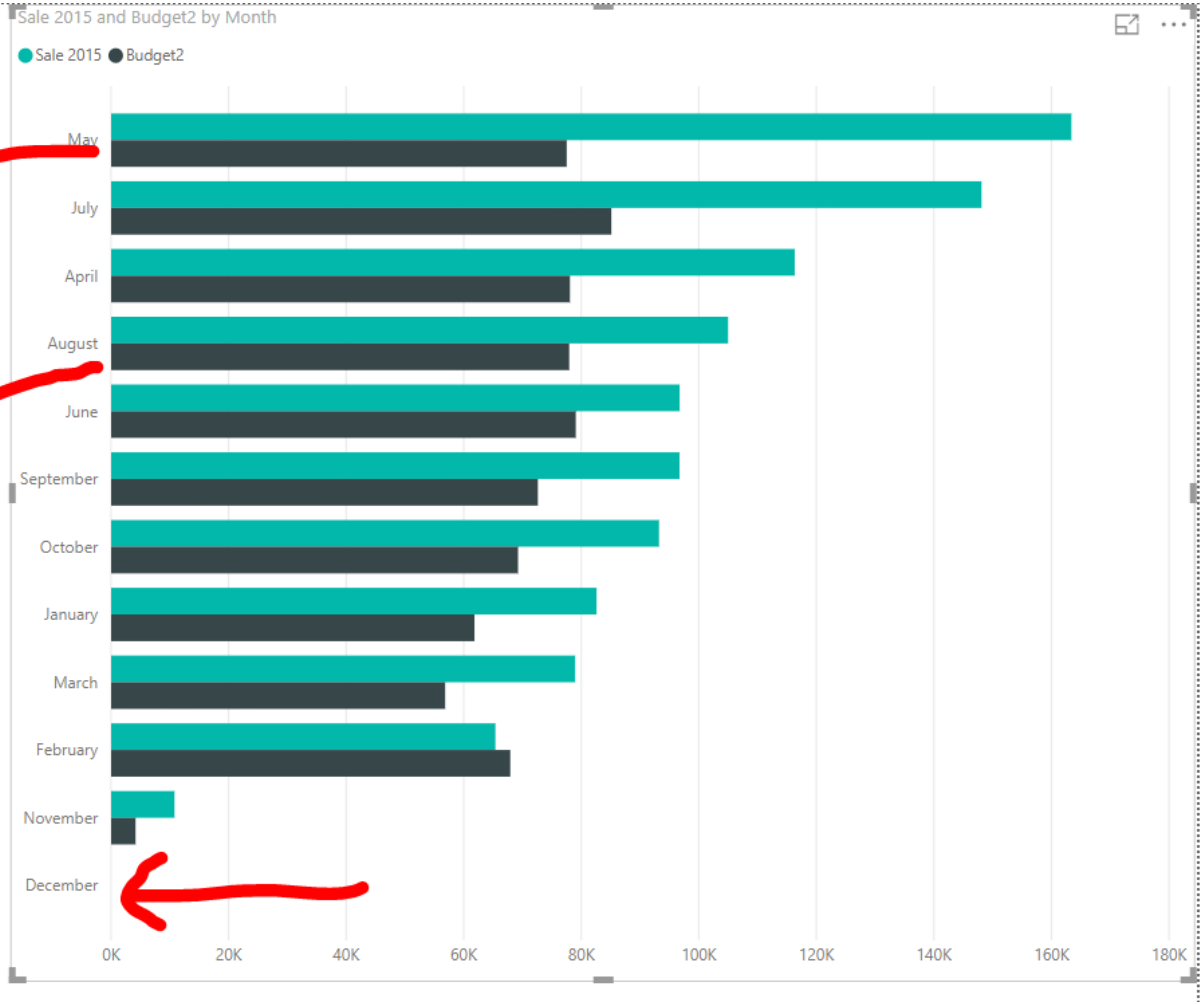
Close & Apply



Microsoft Power BI

Final result

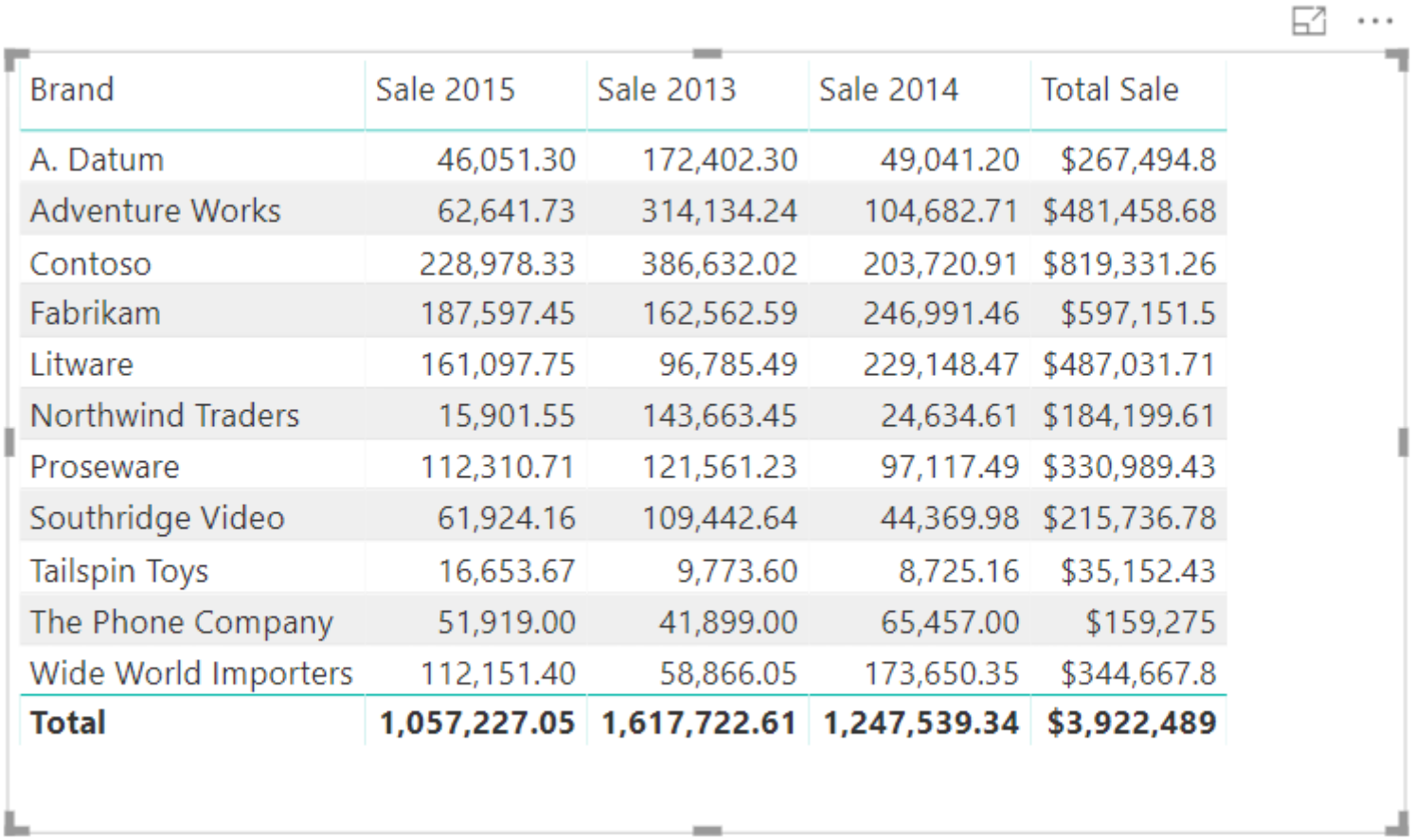
CountryRegion	Month	Sale 2015	Budget2
China	April	55,446.94	27,066.67
China	August	44,855.46	34,108.33
China	December		0.00
China	February	11,875.41	23,625.00
China	January	18,997.53	13,875.00
China	July	18,997.53 .85	29,816.67
China	June	32,526.40	32,483.33
China	March	18,939.07	16,333.33
China	May	32,589.83	29,650.00
China	November		0.00
China	October	60,055.80	32,275.00
China	September	34,111.58	28,983.33
Germany	April	23,997.86	20,750.00
Germany	August	32,482.13	19,000.00
Germany	December		0.00
Germany	February	17,922.67	18,333.33
Germany	January	31,639.25	20,166.67
Germany	July	33,148.97	22,250.00
Germany	June	35,202.54	22,958.33
Germany	March	42,127.18	22,958.33
Germany	May	85,384.05	22,250.00
Germany	November		0.00
Germany	October	7,820.27	15,875.00
Germany	September	13,138.67	13,791.67
Total		**1,057,227.05**	**730,358.33**



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**