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# POWER BI DESKTOP

# COURSE OUTLINE

<b>1</b>	<b>Introducing Power BI Desktop</b>	<i>Installing Power BI, exploring the Power BI workflow, comparing Power BI vs. Excel, etc.</i>
<b>2</b>	<b>Connecting &amp; Shaping Data</b>	<i>Connecting to source data, shaping and transforming tables, editing, merging and appending queries, etc.</i>
<b>3</b>	<b>Creating a Data Model</b>	<i>Building relational models, creating table relationships, understanding cardinality, exploring filter flow, etc.</i>
<b>4</b>	<b>Adding Calculated Fields with DAX</b>	<i>Understanding DAX syntax, adding calculated columns and measures, writing common formulas and functions, etc.</i>
<b>5</b>	<b>Visualizing Data with Reports</b>	<i>Inserting charts and visuals, customizing formats, editing interactions, applying filters and bookmarks, etc.</i>
<b>6</b>	<b>Final Course Project</b>	<i>Applying all of the skills developed throughout the course to build a pro-quality B.I. report.</i>

# INTRODUCING THE COURSE PROJECT

## THE SITUATION

You've just been hired by **Adventure Works Cycles\***, a global manufacturing company, to design and deliver an end-to-end business intelligence solution – *from scratch!*

## THE BRIEF

Your client needs a way to **track KPIs (sales, revenue, profit, returns)**, **compare regional performance**, **analyze product-level trends and forecasts**, and **identify high-value customers**

All you've been given is a folder of **raw csv files**, containing information about transactions, returns, products, customers and territories

## THE OBJECTIVE

**Use Power BI Desktop to:**

- *Connect and transform the raw data*
- *Build a relational data model*
- *Create new calculated columns and DAX measures*
- *Design an interactive report to analyze and visualize the data*

# SETTING EXPECTATIONS

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## 1 What you see on your screen **may not always match mine**

- *Power BI Desktop features are updated frequently (product updates released each month)*
- **NOTE:** *Power BI is currently only compatible with PC/Windows (not available for Mac)*

## 2 This course is designed to get you **up & running** with Power BI Desktop

- *The goal is to provide a **foundational understanding** of Power BI desktop; some concepts may be simplified, and we will not cover some of the more advanced tools (i.e. M code, custom R visuals, etc)*

## 3 Power BI and Power Pivot in Excel are built on the **exact same engine**

- *Feel free to skip ahead if you're already comfortable with Power Query and data modeling fundamentals*

## 4 We will not cover **Power BI Service** as part of this course

- *This course will focus on **Power BI Desktop** specifically; online sharing and collaboration features ([app.powerbi.com](http://app.powerbi.com)) will not be covered.*

# **INTRODUCING POWER BI**

# MEET POWER BI



**Power BI** is a standalone Microsoft business intelligence product, which includes both desktop and web-based applications for loading, modeling, and visualizing data

More information at [powerbi.microsoft.com](https://powerbi.microsoft.com)



Figure 1: Magic Quadrant for Analytics and Business Intelligence Platforms



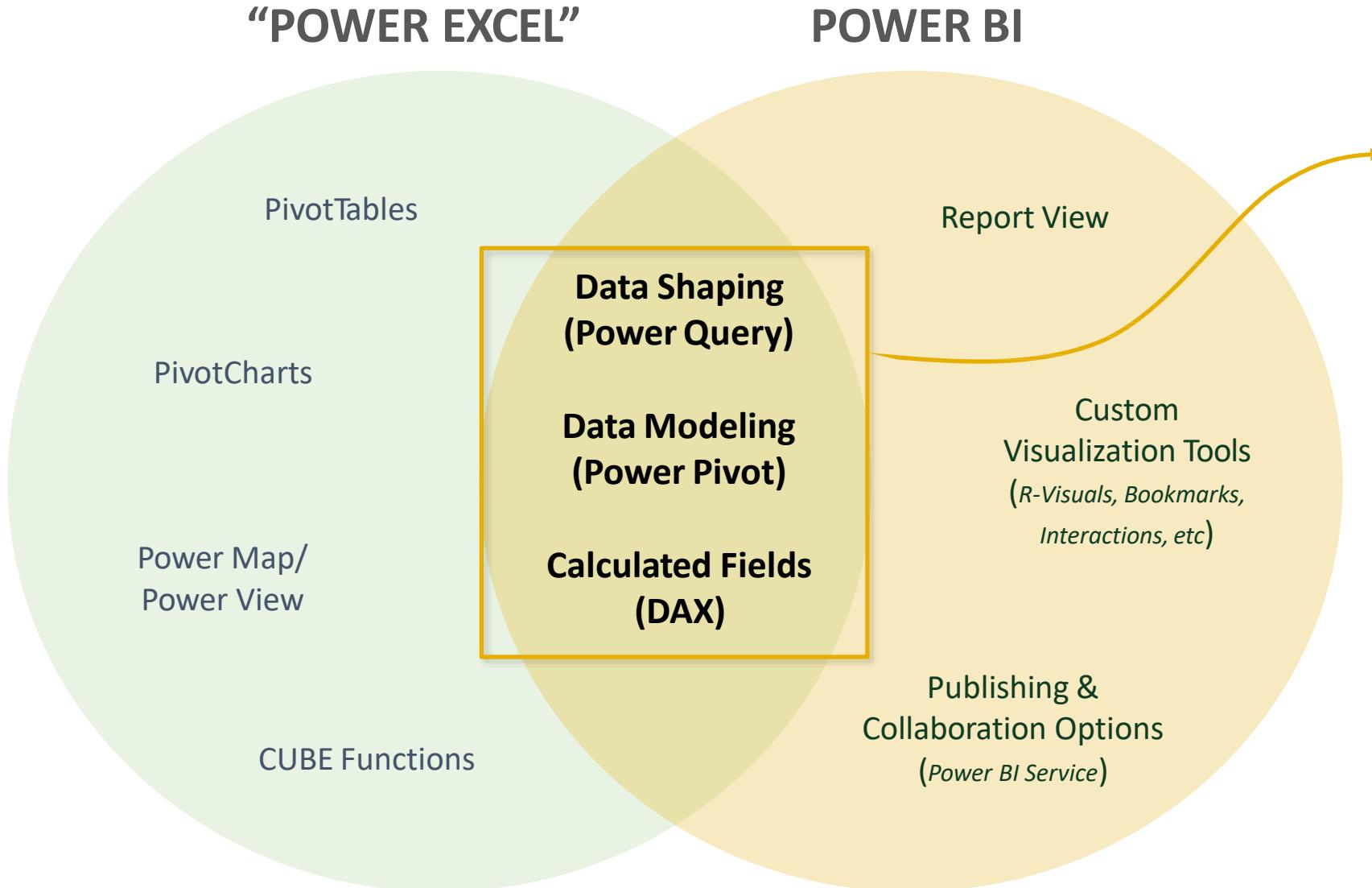
Source: Gartner

# WHY POWER BI?

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- **Connect, transform and analyze *millions* of rows of data**
  - *Access data from virtually anywhere (database tables, flat files, cloud services, folders, etc), and create fully automated data shaping and loading (ETL) procedures*
- **Build relational models to blend data from multiple sources**
  - *Create table relationships to analyze holistic performance across an entire data model*
- **Define complex calculations using Data Analysis Expressions (DAX)**
  - *Enhance datasets and enable advanced analytics with powerful and portable DAX expressions*
- **Visualize data with interactive reports & dashboards**
  - *Build custom business intelligence tools with best-in-class visualization and dashboard features*
- **Power BI is the industry leader among BI platforms**
  - *Microsoft Power BI is intuitive, powerful and absolutely FREE to get started*

# POWER BI VS. “POWER EXCEL”

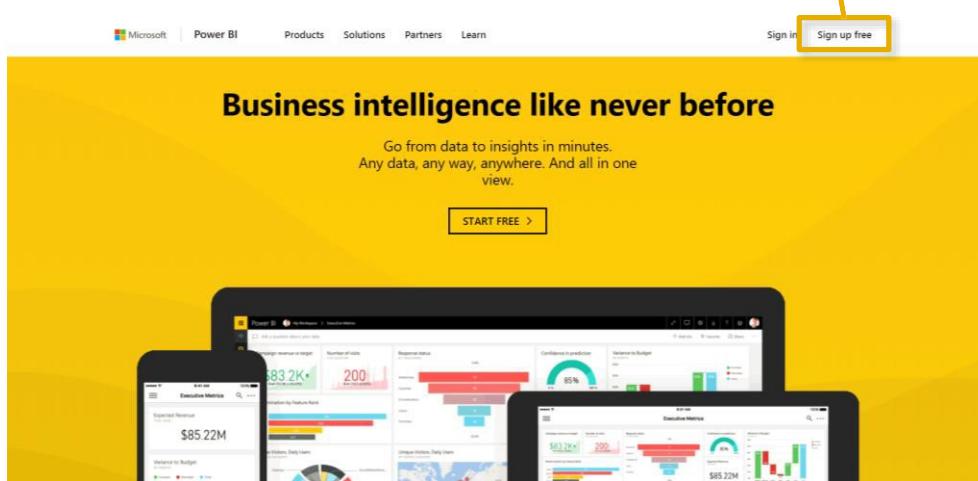


“Power Excel” and Power BI are built on top of the ***exact same engine!***

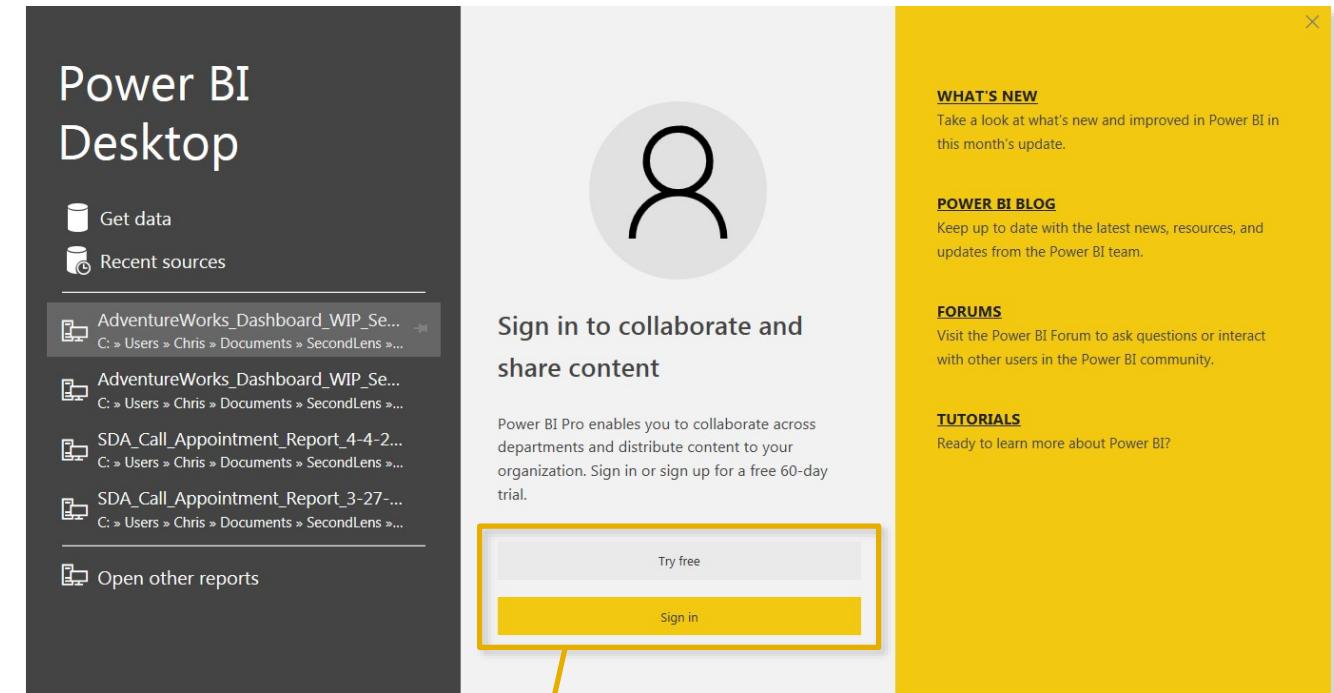
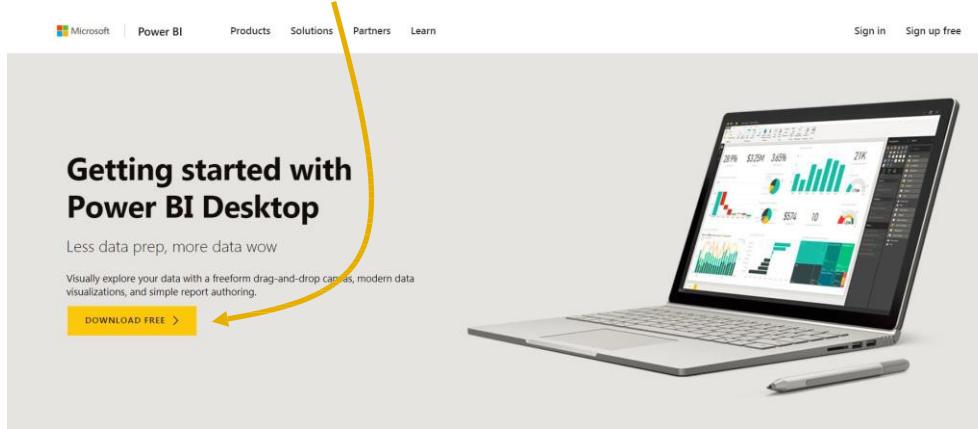
- Power BI takes the same data shaping, modeling and analytics capabilities and adds ***new reporting and publishing tools***
- Transitioning is easy; you can import an ***entire data model*** directly from Excel!

# INSTALLING POWER BI DESKTOP

1) Head to [powerbi.microsoft.com](https://powerbi.microsoft.com) and click “Sign Up Free”



2) Click “Download Free” to start the Power BI Desktop download

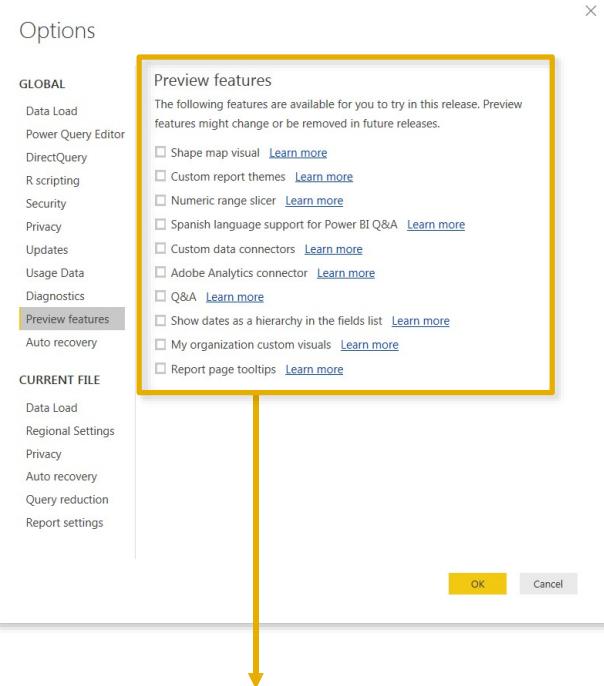


**IMPORTANT:** You do **not** need to sign in or register for a Power BI Pro account to access Power BI Desktop (*you can simply close this window*)

- Sign-in is only required to access the sharing and collaboration tools available through Power BI Service ([app.powerbi.com](https://app.powerbi.com))
- **Note:** Microsoft requires a **work or school e-mail address**

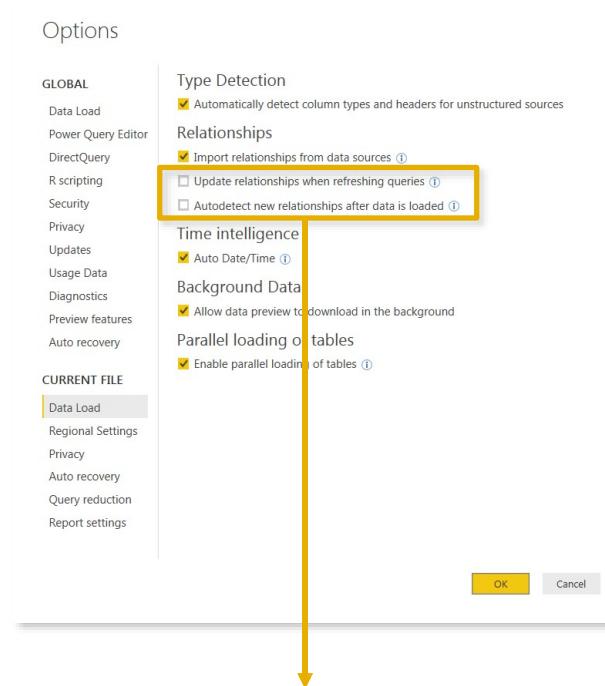
# COURSE OPTIONS & SETTINGS

## PREVIEW FEATURES



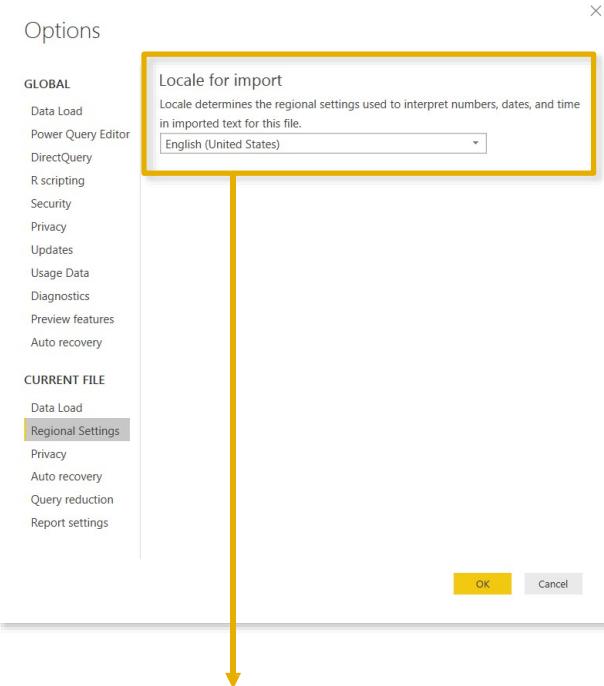
1) In the “Preview Features” tab, deselect any active features while you are taking the course

## DATA LOAD



2) In the “Data Load” tab, deselect the “Update relationships” and “Autodetect new relationships after data is loaded” options

## REGIONAL SETTINGS



3) In the “Regional Settings” tab, make sure to use the “English (United States)” locale for import

# THE POWER BI INTERFACE

## Three Core Views:

Report



Data



Relationships



The screenshot displays the Microsoft Power BI desktop application. The ribbon at the top includes Home, View, Modeling, and Help tabs. The Home tab is selected, showing various data entry and visualization tools like Paste, Get Data, Insert, and Publish.

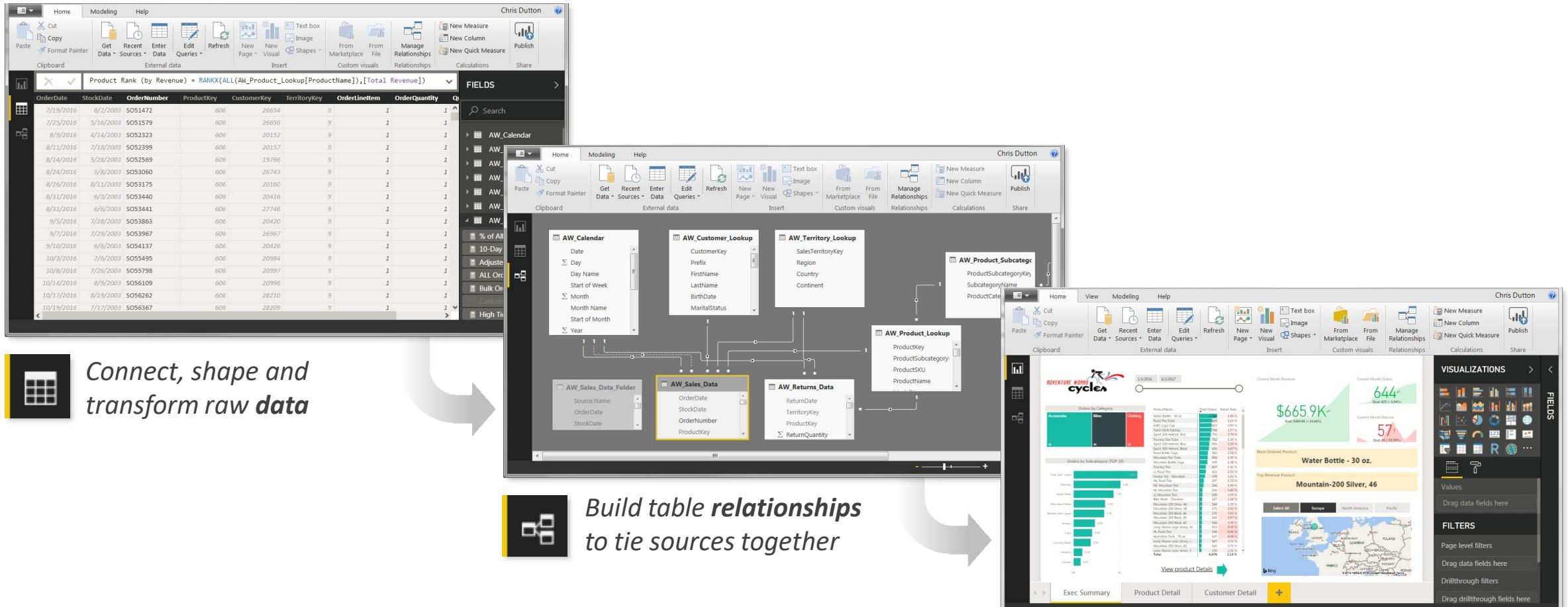
The main workspace shows a report for "ADVENTURE WORKS cycles". It features several visualizations: a bar chart for "Orders by Category" (Accessories: 5K, Bikes: 4K, Clothing: 2K), a table for "ProductName" with columns for Total Orders and Return Rate, a large green callout for "Current Month Revenue" (\$665.9K, Goal: \$580.8K +14.66%), a gauge for "Current Month Orders" (644, Goal: 625 +3.04%), and a red callout for "Current Month Returns" (57, Goal: 43 -32.56%).

On the left, there's a "View product Details" button with a green arrow pointing right. At the bottom, tabs for "Exec Summary", "Product Detail", and "Customer Detail" are visible, along with a "+" button.

The right side of the interface contains a "VISUALIZATIONS" pane with a grid of icons for different chart types, a "Values" section with a placeholder "Drag data fields here", and a "FILTERS" section with a "Year" filter set to "is not 2015".

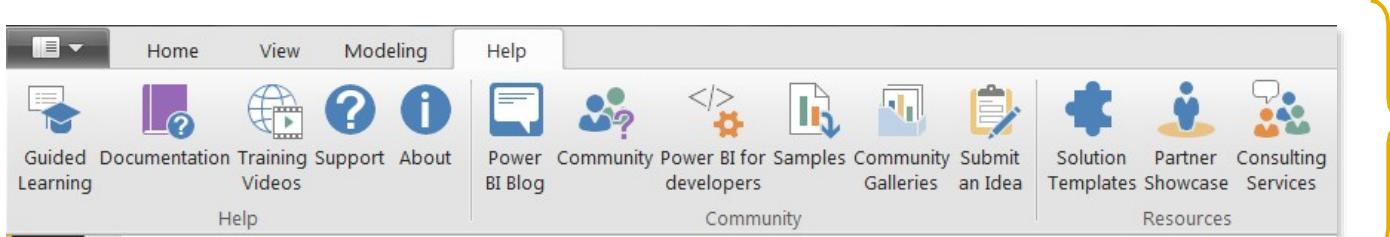
At the bottom, a map of Europe and North America is shown with a green dot on Ireland labeled "Dublin Baile Átha Cliath". A copyright notice at the bottom right reads "© 2018 HERE. © 2018 Microsoft Corporation. All rights reserved."

# THE POWER BI WORKFLOW



Design interactive **reports** to explore and visualize data

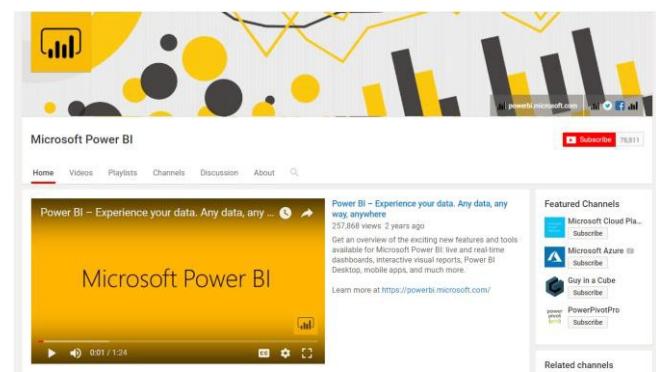
# HELPFUL RESOURCES



The “**Help**” tab includes documentation, training videos, sample files, templates, and links to support blogs and communities – all within Power BI Desktop



The **Microsoft Power BI blog** ([powerbi.microsoft.com/blog](http://powerbi.microsoft.com/blog)) publishes monthly summaries to showcase new features



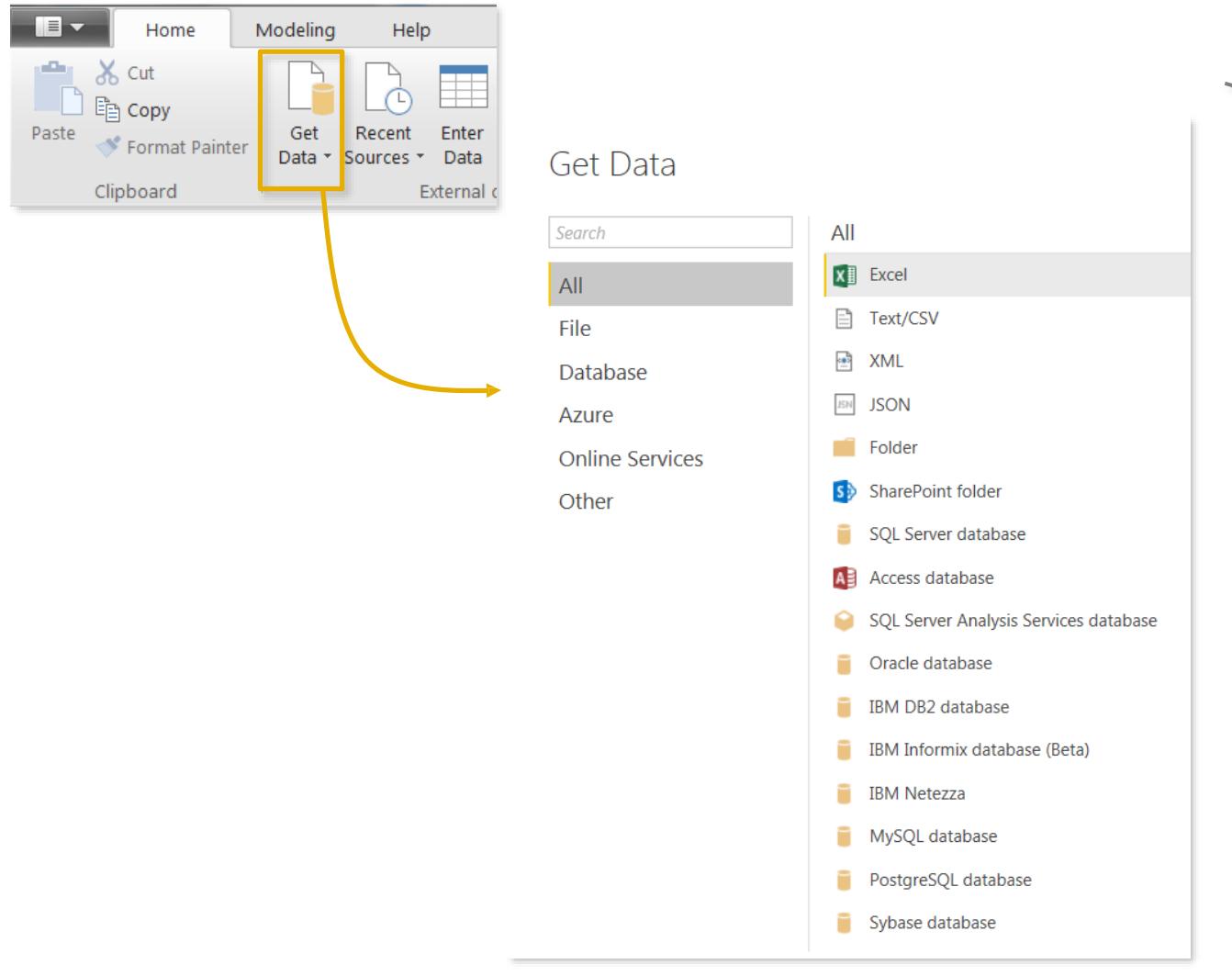
The **Microsoft Power BI YouTube Channel** publishes demos, feature summaries, and advanced tutorials .



**Power BI User Groups (PUG)** are communities of users, which include both local meet-ups and helpful online forums ([pbiusergroup.com](http://pbiusergroup.com))

# **CONNECTING & SHAPING DATA**

# TYPES OF DATA CONNECTORS



Power BI can connect to virtually **any** type of source data, including (*but not limited to*):

- **Flat files & Folders** (*csv, text, xls, etc*)
- **Databases** (*SQL, Access, Oracle, IBM, Azure, etc*)
- **Online Services** (*Sharepoint, GitHub, Dynamics 365, Google Analytics, Salesforce, Power BI Service, etc*)
- **Others** (*Web feeds, R scripts, Spark, Hadoop, etc*)

# THE QUERY EDITOR

**Query Editing Tools (Table transformations, calculated columns, etc)**

The screenshot shows the Microsoft Power Query Editor window. At the top, there's a ribbon with tabs like Home, Modeling, and Help. Below the ribbon is a toolbar with icons for Cut, Copy, Paste, Format Painter, Get Data, Recent Sources, Enter Data, Edit Queries (which is highlighted with a yellow box and arrow), and Refresh. To the right of the toolbar is a formula bar with the text '= Table.RemoveColumns("#Changed Type2", {"OrderID"})'. The main area is a grid view showing data with columns: OrderDate, StockDate, OrderNumber, ProductKey, CustomerKey. The 'CustomerKey' column has a dropdown menu open. To the left is a 'Queries [13]' pane listing various queries, with 'AW\_Sales\_Data' selected. On the right are two side panes: 'QUERY SETTINGS' containing 'PROPERTIES' (Name: AW\_Sales\_Data) and 'APPLIED STEPS' (listing steps like Source, Promoted Headers, Changed Type, etc.), and a preview pane at the bottom right.

**Formula Bar**  
(this is "M" code)

**Query List**

**Table Name & Properties**

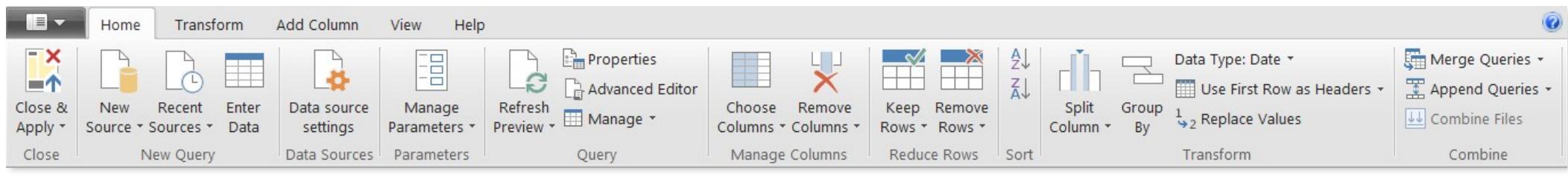
**Applied Steps (like a macro)**

**9 COLUMNS, 999+ ROWS**

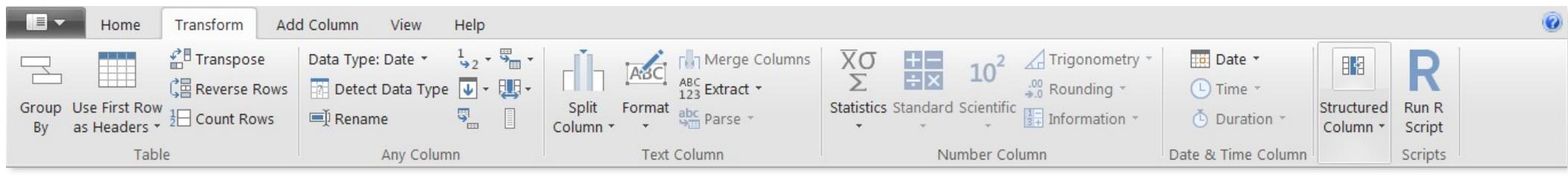
PREVIEW DOWNLOADED AT 1:27 PM

# QUERY EDITING TOOLS

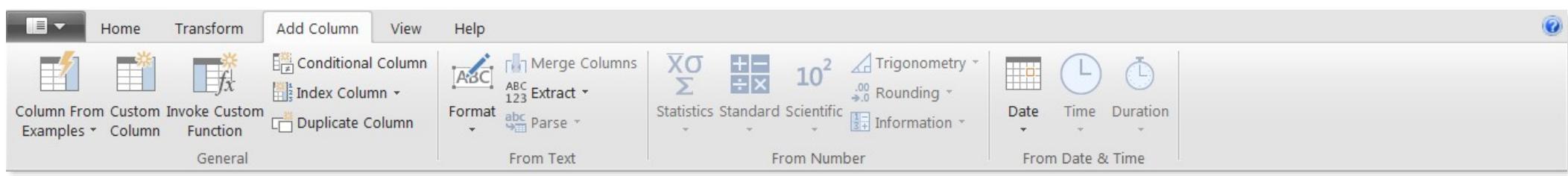
The **HOME** tab includes **general settings** and **common table transformation tools**



The **TRANSFORM** tab includes tools to **modify existing columns** (splitting/grouping, transposing, extracting text, etc)



The **ADD COLUMN** tools **create new columns** (based on conditional rules, text operations, calculations, dates, etc)



# BASIC TABLE TRANSFORMATIONS

The screenshot shows the Power BI desktop ribbon with several transformation tools highlighted:

- Sort values (A-Z, Low-High, etc.)**: Located under the **Transform** tab, the **Sort** icon (A↓ Z↓) is highlighted.
- Change data type (date, \$, %, text, etc.)**: Located under the **Transform** tab, the **Data Type** dropdown (set to Date) and the **Use First Row as Headers** button are highlighted.
- Promote header row**: A callout arrow points from the **Use First Row as Headers** button to a context menu on a table header.
- Choose or remove columns**: A callout arrow points from the **Remove Columns** and **Remove Other Columns** buttons to a context menu on a column header.
- Keep or remove rows**: A callout arrow points from the **Remove Top Rows**, **Remove Bottom Rows**, **Remove Alternate Rows**, **Remove Duplicates**, **Remove Blank Rows**, and **Remove Errors** buttons to a context menu on a row header.
- Duplicate, move & rename columns**: A callout arrow points from the context menu on a column header.
- Tip: Right-click the column header to access common tools**: A tip for using the context menu on a column header.

**Table Data Preview:**

OrderDate	CustomerNumber
1/5/2015	9/19/2001 SO45101
1/5/2015	11/21/2001 SO45100

# TEXT-SPECIFIC TOOLS

The screenshot shows the Power BI ribbon with the 'Transform' tab selected. A context menu is open over a 'Text Column'. The menu items are:

- Split Column (highlighted with a yellow box)
- Format (dropdown menu)
  - By Delimiter
  - By Number of Characters
- Merge Columns
- Extract (dropdown menu)
  - Length
  - First Characters
  - Last Characters
  - Range
  - Text Before Delimiter
  - Text After Delimiter
  - Text Between Delimiters
- Parse

Below the 'Format' dropdown, there is another context menu for 'Text Column':

- lowercase
- UPPERCASE
- Capitalize Each Word
- Trim
- Clean
- Add Prefix
- Add Suffix

**HEY THIS IS IMPORTANT!**

You can access many of these tools in both the “Transform” and “Add Column” menus -- the difference is whether you want to **add a new column** or **modify an existing one**

**Split a text column** based on either a specific delimiter or a number of characters

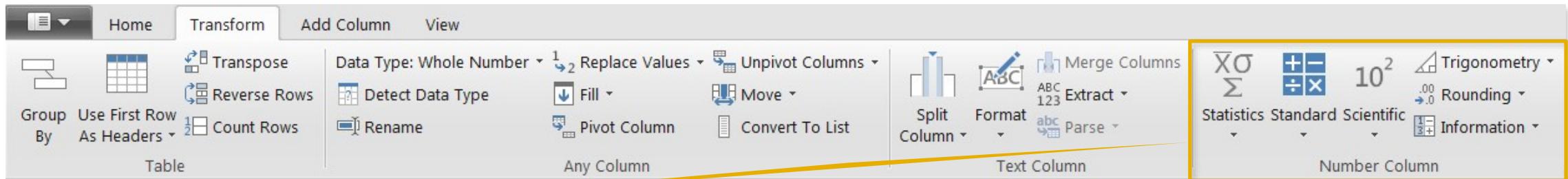
**Extract characters from a text column** based on fixed lengths, first/last, ranges or delimiters

**Tip:** Select two or more columns to merge (or concatenate) fields

**Format a text column** to upper, lower or proper case, or add a prefix or suffix

**Tip:** Use “Trim” to eliminate leading & trailing spaces, or “Clean” to remove non-printable characters

# NUMBER-SPECIFIC TOOLS



Sum
Minimum
Maximum
Median
Average
Standard Deviation
Count Values
Count Distinct Values

**Statistics functions** allow you to evaluate basic stats for the selected column (sum, min/max, average, count, countdistinct, etc)

**Note:** These tools return a *SINGLE* value, and are commonly used to explore a table rather than prepare it for loading

Add
Multiply
Subtract
Divide
Integer-Divide
Modulo
Percentage
Percent Of

Standard

Absolute Value
Power
Square Root
Exponent
Logarithm
Factorial

Scientific

Sine
Cosine
Tangent
Arcsine
Arccosine
Arctangent

Trigonometry

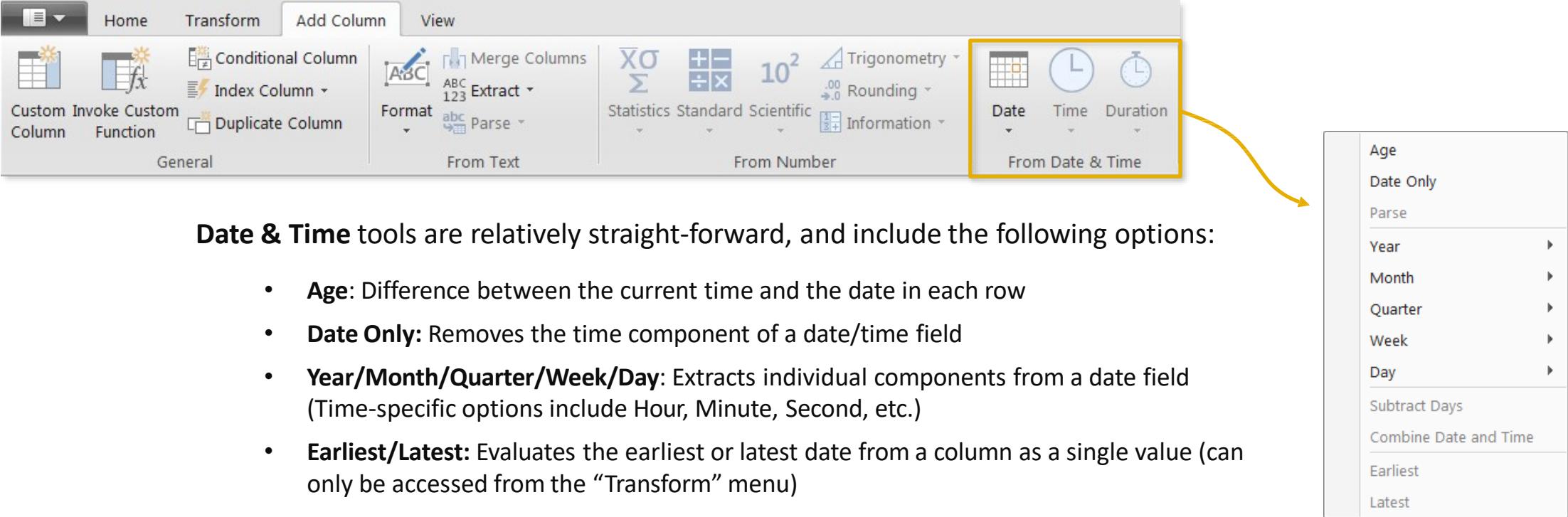
Is Even
Is Odd
Sign

**Information tools** allow you to define binary flags (*TRUE/FALSE* or *1/0*) to mark each row in a column as even, odd, positive or negative

**Standard, Scientific and Trigonometry** tools allow you to apply standard operations (addition, multiplication, division, etc.) or more advanced calculations (power, logarithm, sine, tangent, etc) to each value in a column

**Note:** Unlike the Statistics options, these tools are applied to each individual row in the table

# DATE-SPECIFIC TOOLS



The screenshot shows the Power BI ribbon with the 'Transform' tab selected. In the 'From Date & Time' section of the ribbon, there are three icons: 'Date', 'Time', and 'Duration'. A yellow box highlights this section, and a yellow arrow points from it to a detailed menu on the right.

**Date & Time tools are relatively straight-forward, and include the following options:**

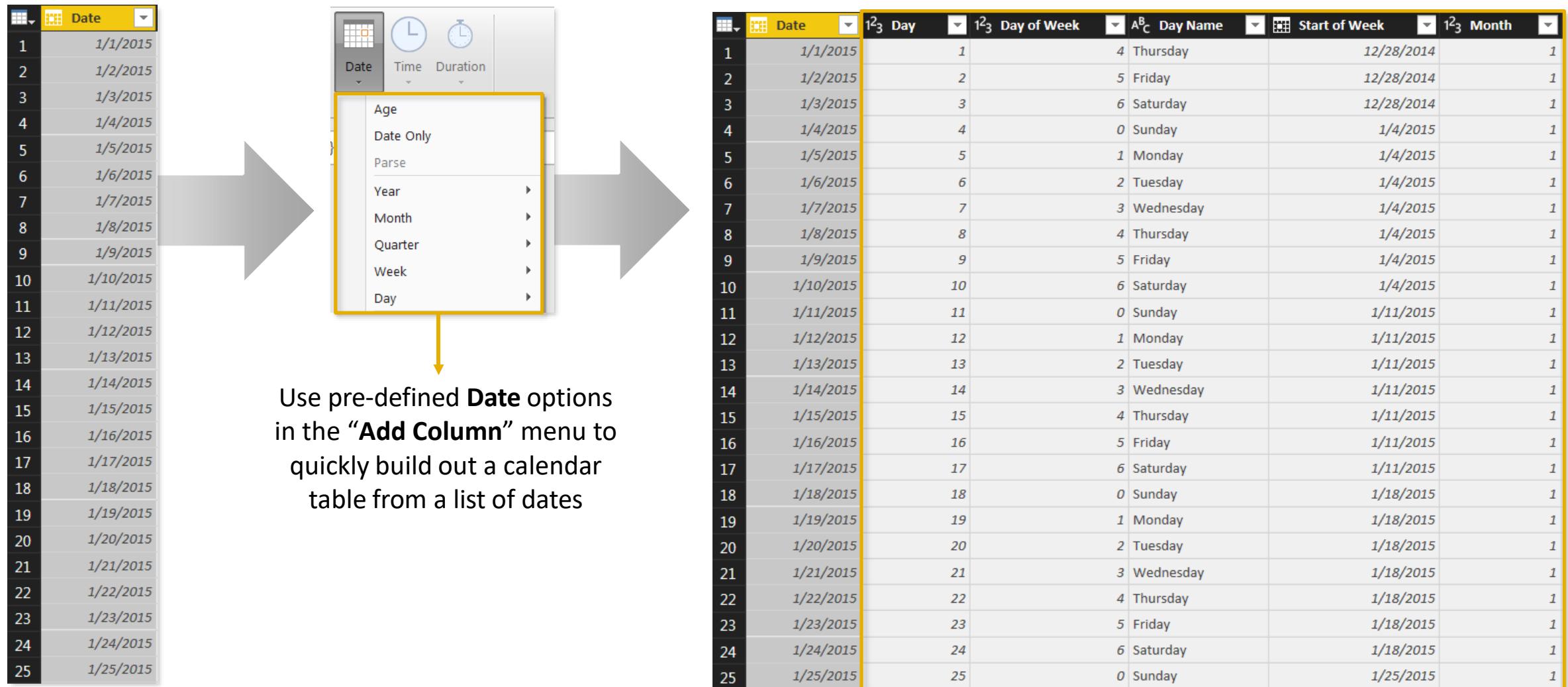
- **Age:** Difference between the current time and the date in each row
- **Date Only:** Removes the time component of a date/time field
- **Year/Month/Quarter/Week/Day:** Extracts individual components from a date field  
(Time-specific options include Hour, Minute, Second, etc.)
- **Earliest/Latest:** Evaluates the earliest or latest date from a column as a single value (can only be accessed from the "Transform" menu)

**Note:** You will almost always want to perform these operations from the "Add Column" menu to build out new fields, rather than transforming an individual date/time column

## PRO TIP:

Load up a table containing a **single date column** and use Date tools to build out an **entire calendar table**

# CREATING A BASIC CALENDAR TABLE

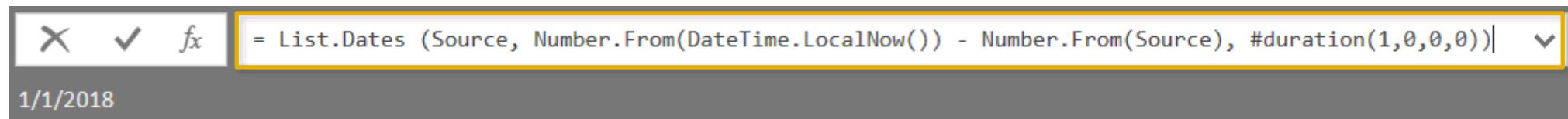


# PRO TIP: CREATING A ROLLING CALENDAR

- 1) Create a new, blank query (**Get Data > Blank Query or New Source > Blank Query**)
- 2) In the formula bar, generate a starting date by entering a “literal” (in YYYY, MM, DD format):

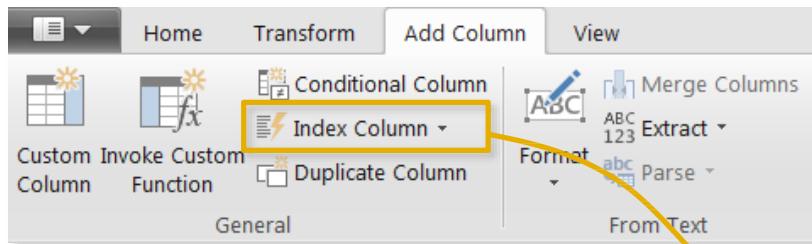


- 3) Click the **fx** icon to add a new custom step, and enter the following formula exactly as shown:



- 4) Convert the resulting list into a Table (**List Tools > To Table**) and format the column as a **Date**
- 5) Add calculated Date columns (Year, Month, Week, etc.) as necessary using the **Add Column** tools

# ADDING INDEX COLUMNS

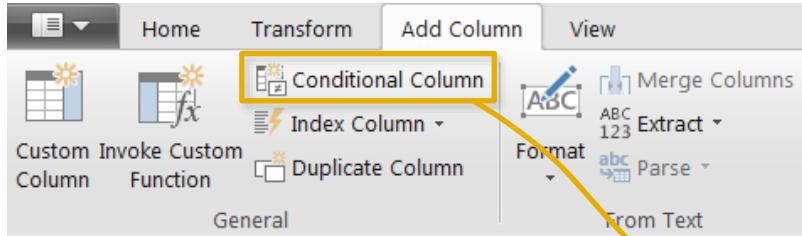


**Index Columns** contain a list of sequential values that can be used to identify each unique row in a table  
(typically starting from 0 or 1)

These columns are often used to create **unique IDs** that can be used to form relationships between tables  
(more on that later!)

Index	OrderDate	StockDate	OrderNumber	ProductKey	CustomerKey
1	1/1/2015	9/21/2001	SO45080	332	14657
2	1/1/2015	12/5/2001	SO45079	312	29255
3	1/1/2015	10/29/2001	SO45082	350	11455
4	1/1/2015	11/16/2001	SO45081	338	26782
5	1/2/2015	12/15/2001	SO45083	312	14947
6	1/2/2015	10/12/2001	SO45084	310	29143
7	1/2/2015	12/18/2001	SO45086	314	18747
8	1/2/2015	10/9/2001	SO45085	312	18746
9	1/3/2015	10/3/2001	SO45093	312	18906
10	1/3/2015	9/29/2001	SO45090	310	29170
11	1/3/2015	12/11/2001	SO45088	345	11398
12	1/3/2015	10/24/2001	SO45092	313	18899
13	1/3/2015	12/16/2001	SO45089	351	25977
14	1/3/2015	10/26/2001	SO45091	314	18909
15	1/3/2015	9/11/2001	SO45087	350	11388
16	1/3/2015	9/11/2001	SO45094	310	22785
17	1/4/2015	10/30/2001	SO45096	312	12483
18	1/4/2015	10/30/2001	SO45097	313	29151

# ADDING CONDITIONAL COLUMNS



In this case we're creating a new conditional column called "**QuantityType**", which depends on the values in the "**OrderQuantity**" column, as follows:

- If *OrderQuantity = 1*, *QuantityType = "Single Item"*
- If *OrderQuantity > 1*, *QuantityType = "Multiple Items"*
- Otherwise *QuantityType = "Other"*

**Conditional Columns** allow you to define new fields based on logical rules and conditions (*IF/THEN statements*)

## Add Conditional Column

Add a conditional column that is computed from the other columns or values.

New column name

QuantityType

	Column Name	Operator	Value	Output
If	OrderQuantity	equals	ABC 123	1
Else If	OrderQuantity	is greater than	ABC 123	1

Add rule

Otherwise

ABC 123

Other

OK Cancel

# MERGING QUERIES

The screenshot shows the 'Merge' dialog box in Power BI. On the left, a sidebar lists 'Merge Queries', 'Append Queries', and 'Combine Files'. The main area shows two tables: 'AW\_Sales\_Data' and 'AW\_Product\_Lookup'. The 'ProductKey' column in 'AW\_Sales\_Data' and the 'ProductKey' column in 'AW\_Product\_Lookup' are highlighted with yellow boxes. Below the tables, the 'Join Kind' dropdown is set to 'Left Outer (all from first, matching from second)'. A note at the bottom says 'The selection has matched 56046 out of the first 56046 rows.' At the bottom right are 'OK' and 'Cancel' buttons.

Merging queries allows you to **join tables** based on a common column (like VLOOKUP)

In this case we're merging the **AW\_Sales\_Data** table with the **AW\_Product\_Lookup** table, which share a common "*ProductKey*" column

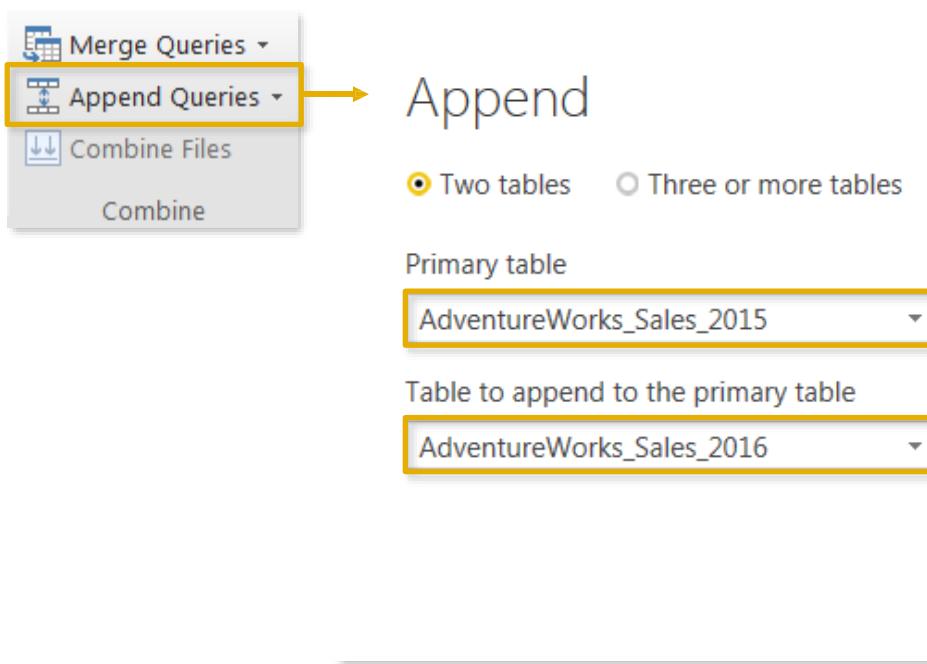
**NOTE:** Merging *adds columns* to an existing table

## HEY THIS IS IMPORTANT!

Just because you *can* merge tables, doesn't mean you *should*.

In general, it's better to keep tables separate and define **relationships** between them (*more on that later!*)

# APPENDING QUERIES



Appending queries allows you to **combine** (or **stack**) tables that share the exact same column structure and data types

In this case we're appending the **AdventureWorks\_Sales\_2015** table to the **AdventureWorks\_Sales\_2016** table, which is valid since they share identical table structures

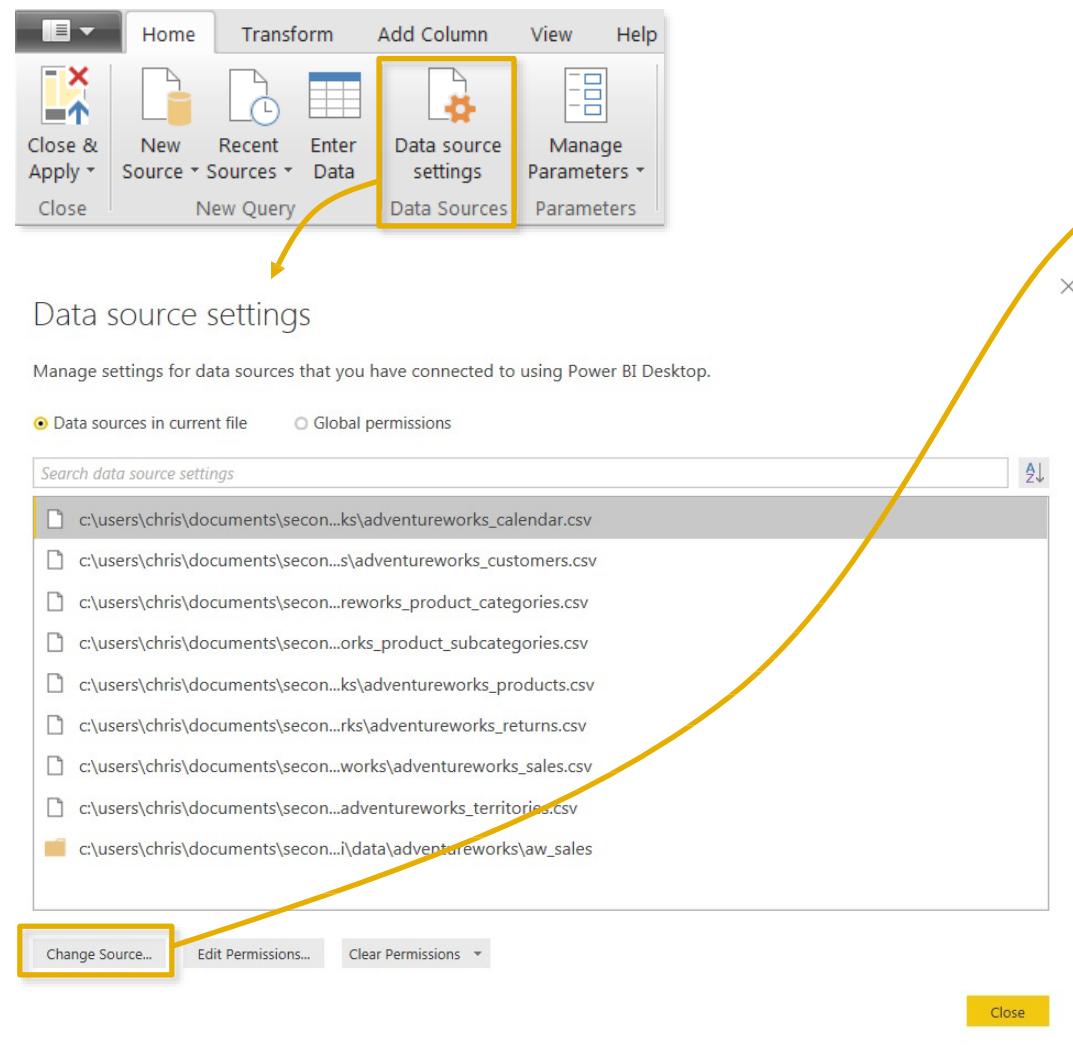
**NOTE:** Appending **adds rows** to an existing table



## PRO TIP:

Use the “**Folder**” option (*Get Data > More > Folder*) to append all files within a folder (assuming they share the same structure); as you add new files, simply refresh the query and they will automatically append!

# DATA SOURCE SETTINGS



## Comma-Separated Values

Basic  Advanced

File path: C:\Users\Chris\Desktop\Power BI Course Files\Adventure Works\Adventure

Open file as: Csv Document

File origin: 1252: Western European (Windows)

Line breaks: Apply all line breaks

Delimiter: Comma

The **Data Source Settings** in the Query Editor allow you to manage data connections and permissions

### HEY THIS IS IMPORTANT!

Connections to local files reference the *exact* path  
If the file name or location changes, **you will need to change the source and browse to the current version**

# MODIFYING QUERIES

Select “Edit Queries” from the **Home** tab to launch the Query Editor

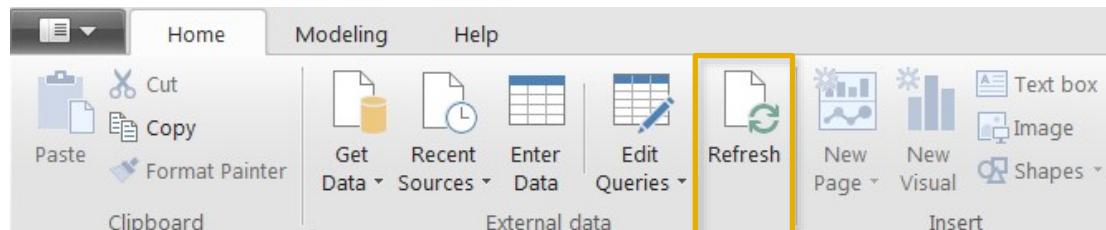
Within the editor, view or modify existing queries in the “**Queries**” pane

Within each query, you can click each item within the “**Applied Steps**” pane to view each stage of the transformation, add new steps or delete existing ones, or modify individual steps by clicking the gear icons

The screenshot shows the Microsoft Power BI Query Editor interface. The Home tab is selected, with the 'Edit Queries' button highlighted. The 'Queries [13]' pane on the left lists various queries, with 'AW\_Customer\_Lookup' selected and highlighted. The main area displays a preview of the data with columns: CustomerKey, Prefix, FirstName, LastName, and Full Name. The 'QUERY SETTINGS' pane on the right shows properties for the selected query, including its name ('AW\_Customer\_Lookup') and an 'APPLIED STEPS' list. The 'APPLIED STEPS' list includes actions like 'Capitalized Each Word', 'Inserted Merged Column', 'Reordered Columns', etc., each with a gear icon for modification.

CustomerKey	Prefix	FirstName	LastName	Full Name
11000	Mr.	Jon	Yang	Mr. Jon Yang
11001	Mr.	Eugene	Huang	Mr. Eugene Huang
11002	Mr.	Ruben	Torres	Mr. Ruben Torres
11003	Ms.	Christy	Zhu	Ms. Christy Zhu
11004	Mrs.	Elizabeth	Johnson	Mrs. Elizabeth Johnson
11005	Mr.	Julio	Ruiz	Mr. Julio Ruiz
11007	Mr.	Marco	Mehta	Mr. Marco Mehta
11008	Mrs.	Robin	Verhoff	Mrs. Robin Verhoff
11009	Mr.	Shannon	Carlson	Mr. Shannon Carlson
11010	Ms.	Jacquelyn	Suarez	Ms. Jacquelyn Suarez
11011	Mr.	Curtis	Lu	Mr. Curtis Lu
11012	Mrs.	Lauren	Walker	Mrs. Lauren Walker
11013	Mr.	Ian	Jenkins	Mr. Ian Jenkins
11014	Mrs.	Sydney	Bennett	Mrs. Sydney Bennett
11015	Ms.	Chloe	Young	Ms. Chloe Young
11016	Mr.	Wyatt	Hill	Mr. Wyatt Hill
11017	Mrs.	Shannon	Wang	Mrs. Shannon Wang
11018	Mr.	Clarence	Rai	Mr. Clarence Rai

# REFRESHING QUERIES



By default, **ALL** queries in the model will refresh when you use the “**Refresh**” command from the **Home** tab

A screenshot of the Power BI Query Editor. On the left, the 'Queries [13]' pane shows a list of queries. In the center, a preview of a table with columns 'SalesTerritoryKey', 'Region', and 'Country' is displayed. A context menu is open over the 'AW\_Territory\_Lookup' query, with the 'Include in report refresh' option highlighted and its checkbox unchecked.

SalesTerritoryKey	Region	Country
1	Northwest	United States
2	Northeast	United States
3	Central	United States
4	Southwest	United States
5	Southeast	United States
6	Canada	Canada
7	France	France
8	Germany	Germany
9	Australia	Australia
10	United Kingdom	United Kingdom

From the Query Editor, uncheck “***Include in report refresh*** to exclude individual queries from the refresh

## PRO TIP:

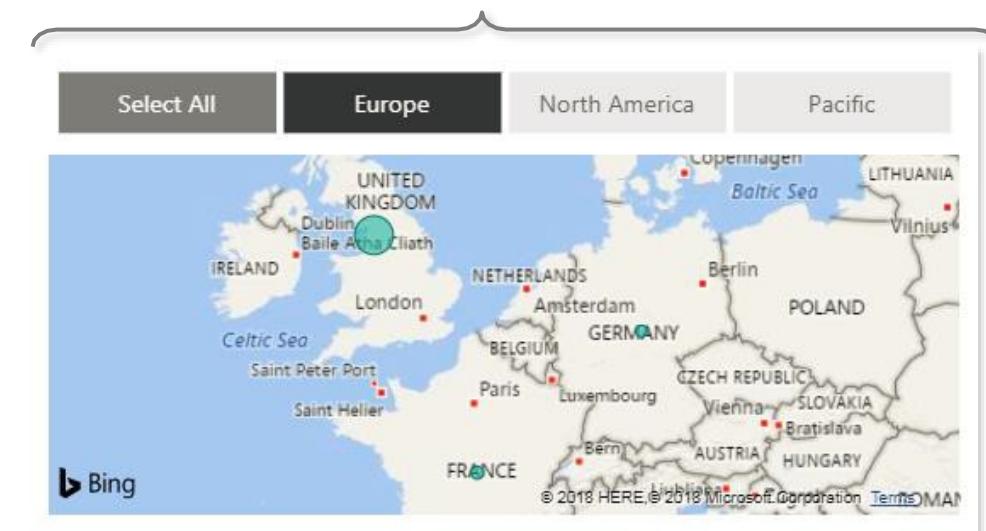
*Exclude queries that don't change often,  
like lookups or static data tables*

# DEFINING DATA CATEGORIES

The screenshot shows the Power BI Data view interface. The top navigation bar includes Home, Modeling, and Help tabs. Below the navigation is a toolbar with icons for Manage Relationships, New Measure, New Column, New Table, New Parameter, What If, Sort by Column, and Formatting. The main area displays a table with four columns: SalesTerritoryKey, Region, Country, and Continent. The 'Country' column is currently selected, indicated by a yellow background. A context menu is open on the right side of the table, listing categories like Uncategorized, Address, City, Continent, and Country/Region. The 'Country/Region' option is highlighted with a checkmark and has a yellow border around it.

From the “**Modeling**” tab in the **Data** view, you can edit field properties to define specific categories

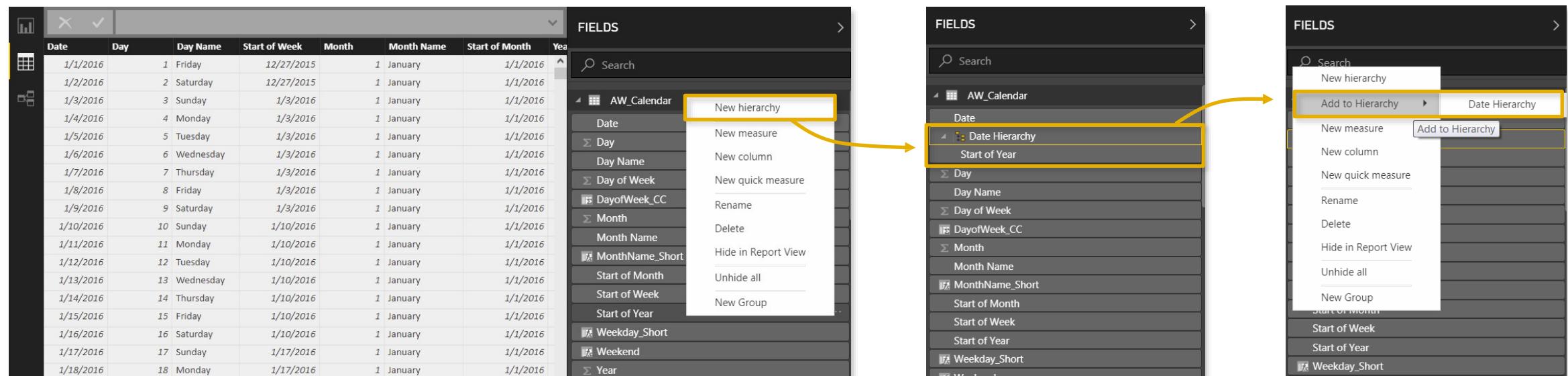
*This is commonly used to help Power BI accurately map location-based fields like **addresses**, **countries**, **cities**, **latitude/longitude coordinates**, **zip codes**, etc*



# DEFINING HIERARCHIES

Hierarchies are groups of nested columns that reflect multiple levels of granularity

- For example, a “**Geography**” hierarchy might include **Country**, **State**, and **City** columns
- Each hierarchy can be treated as a **single item** in tables and reports, allowing users to “drill up” and “drill down” through different levels of the hierarchy in a meaningful way

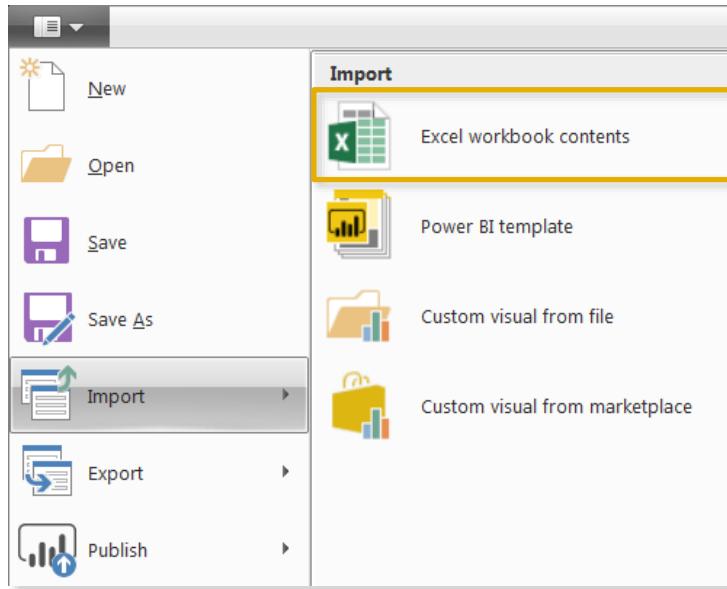


1) From within the **Data** view, right-click a field (or click the ellipsis) and select “**New hierarchy**” (here we’ve selected “*Start of Year*”)

2) This creates a hierarchy field containing “*Start of Year*”, which we’ve renamed “**Date Hierarchy**”

3) Right-click other fields (like “*Start of Month*”) and select “**Add to Hierarchy**”

# PRO TIP: IMPORTING MODELS FROM EXCEL



***Already have a fully-built model in Excel?***

Import files built with Power Query/Power Pivot directly into Power BI Desktop using ***Import > Excel Workbook Contents***

Imported models retain the following:

- Data source connections and queries
- Query editing procedures and applied steps
- Table relationships, hierarchies, field settings, etc.
- All calculated columns and DAX measures

## PRO TIP:

*Power Pivot includes some features that Power BI does not (filtering options, DAX function help, etc); if you are more comfortable in the Excel environment, build your models there and then import to Power BI!*

# BEST PRACTICES: CONNECTING & SHAPING DATA

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## Get yourself organized, *before* loading the data into Power BI

- *Define clear and intuitive table names (no spaces!) from the start; updating them later can be a headache, especially if you've referenced them in multiple places*
- *Establish a file/folder structure that makes sense from the start, to avoid having to modify data source settings if file names or locations change*



## Disabling report refresh for any static sources

- *There's no need to constantly refresh sources that don't update frequently (or at all), like lookups or static data tables; only enable refresh for tables that will be changing*



## When working with large tables, only load the data you need

- *Don't include hourly data when you only need daily, or product-level transactions when you only care about store-level performance; extra data will only slow you down*