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ADMINISTRATORS

NOV 13, 2025



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Research. Education. Development.

# Dirty Data?

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**Power Query Cleans It Up – FAST!**

**Larisa Roberts**, Research Administration Training Manager  
Research and Sponsored Programs

**Catherine Shults, CRA**, Research Grants Administrator  
Mechanical Engineering

# Session Objectives

By the end of this session, learners will be able to:

- Identify the Power Query Editor and how to access it
- Identify use cases for Power Query
- Get and transform basic data

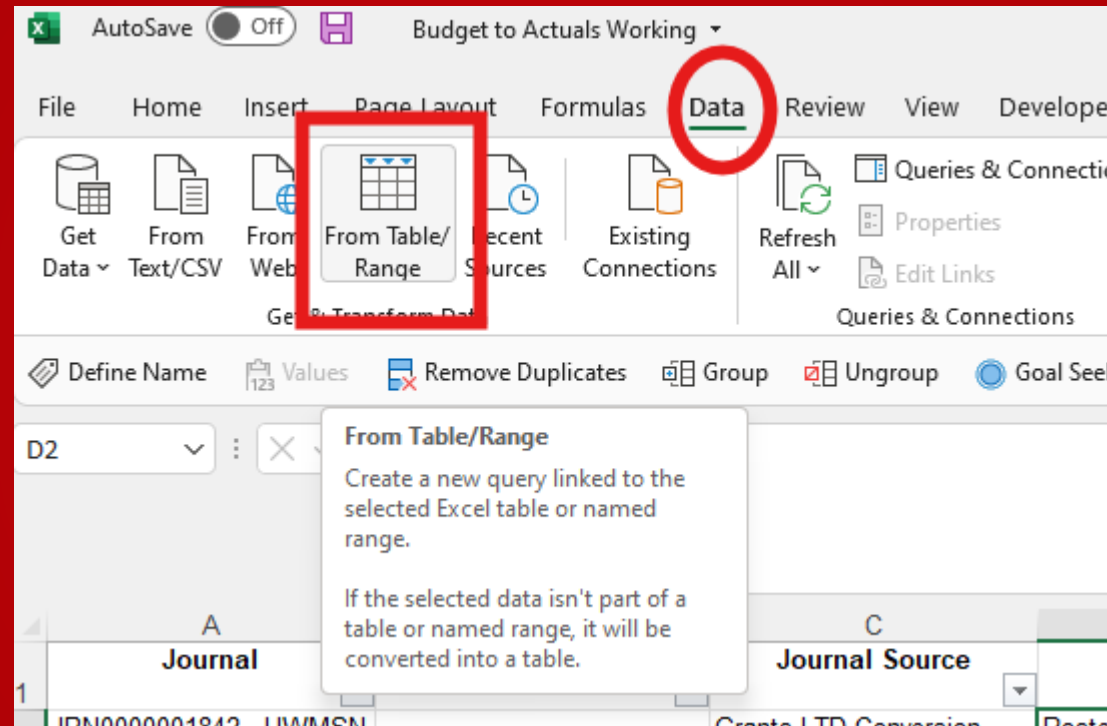
# Intro to Power Query

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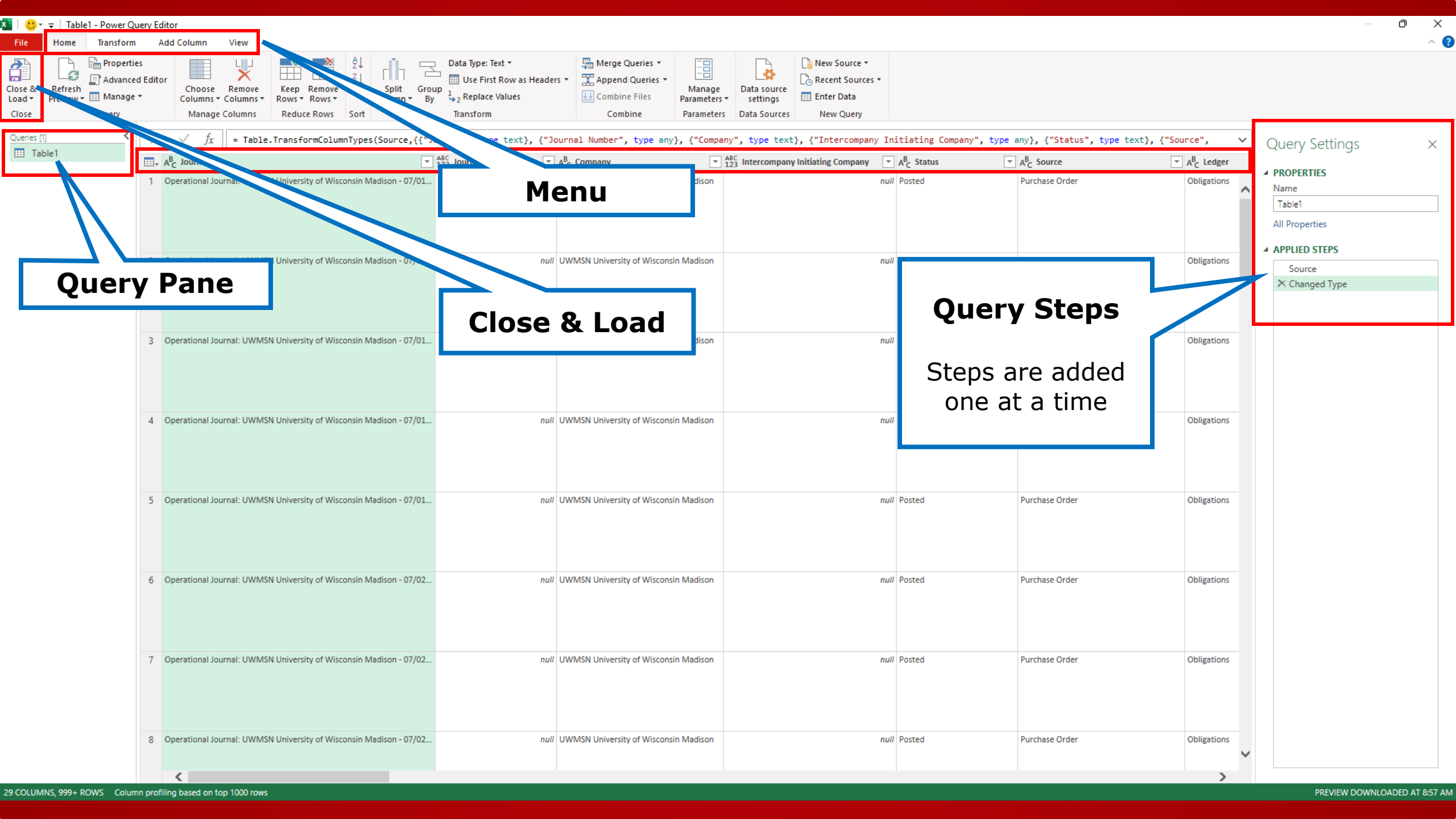
# Power Query

- Quickly 'transform' data
  - Clean, reshape, and combine data without formulas or code
- Two data sets:
  - Original
  - Transformed (loaded)

# How do I Find Power Query?



On the **Data** tab, click **From Table/Range**



Menu

Query Pane

Close & Load

Query Steps

Steps are added one at a time

Query Settings

PROPERTIES

Name  
Table1

All Properties

APPLIED STEPS

Source  
X Changed Type

# Launch Video

Play video [here](#)\*

Video 1 of 4

Power Query – Data Cleanup

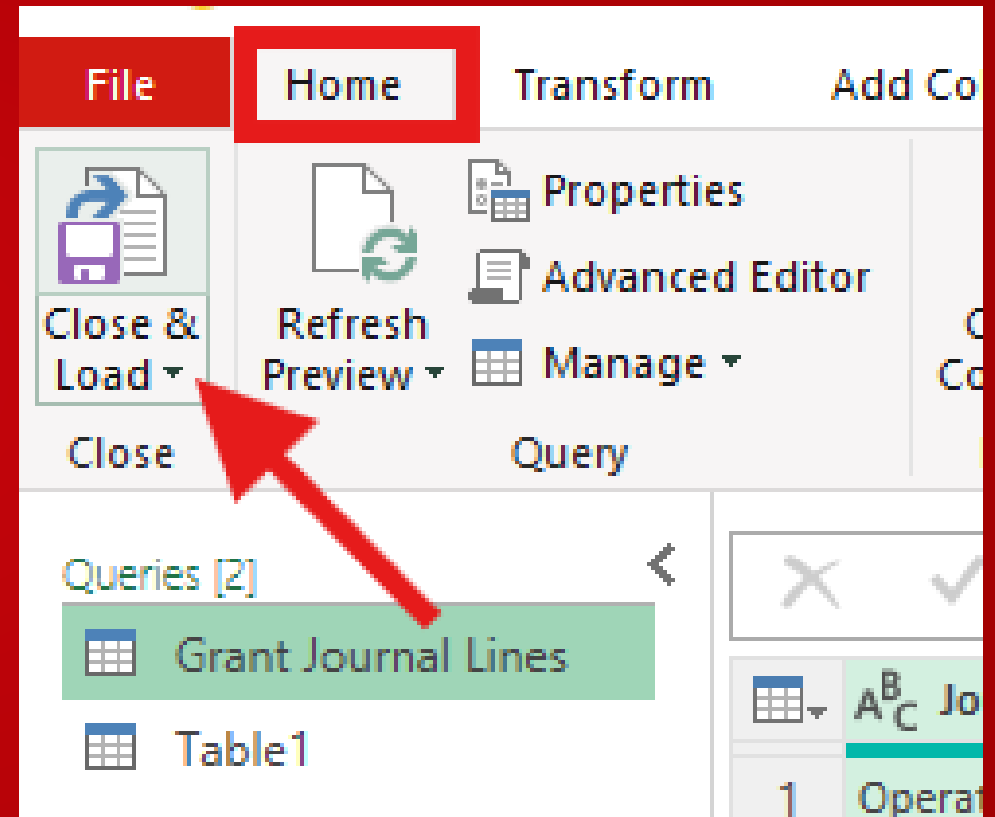
Length 4m 23s

\*Launches in browser; note that you may need to sign in with NetID

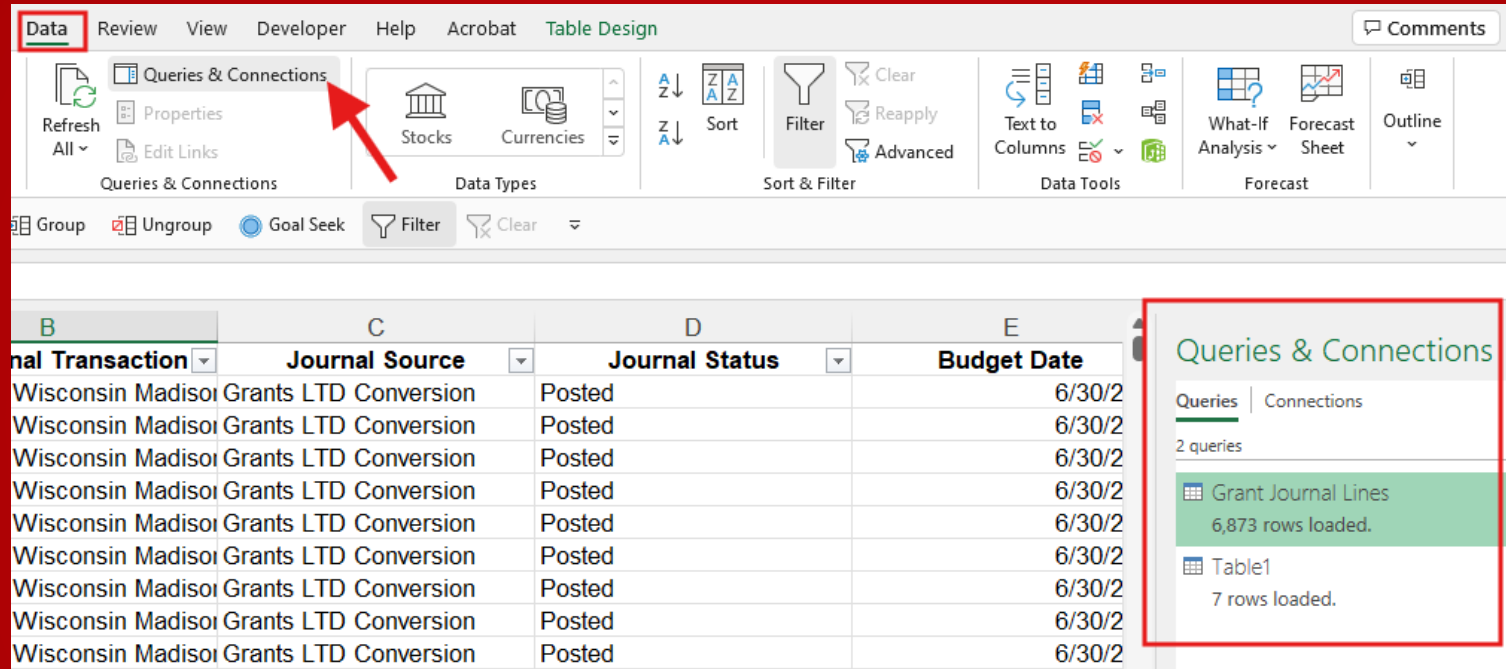
# Close & Load

After you have finished cleaning your data, how do you load it back into Excel?

- On the Home tab at the far left click Close & Load
- Your new data set will appear on a new tab
- Your original data set will still be accessible on another tab



# Getting Back into a Query



The screenshot shows the Microsoft Excel interface with the Data tab selected. The ribbon includes options like Refresh, Properties, Edit Links, Sort, Filter, and Advanced. A red arrow points to the 'Queries & Connections' button on the ribbon. On the right side, the 'Queries & Connections' task pane is open, showing a list of queries. The 'Grant Journal Lines' query is selected and highlighted in green, indicating it is the active query. Below it, 'Table1' is also listed.

Journal Transaction	Journal Source	Journal Status	Budget Date
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2
Wisconsin Madison Grants LTD Conversion		Posted	6/30/2

To get back into a query you've already created, go to the Data tab and click **Queries & Connections**.

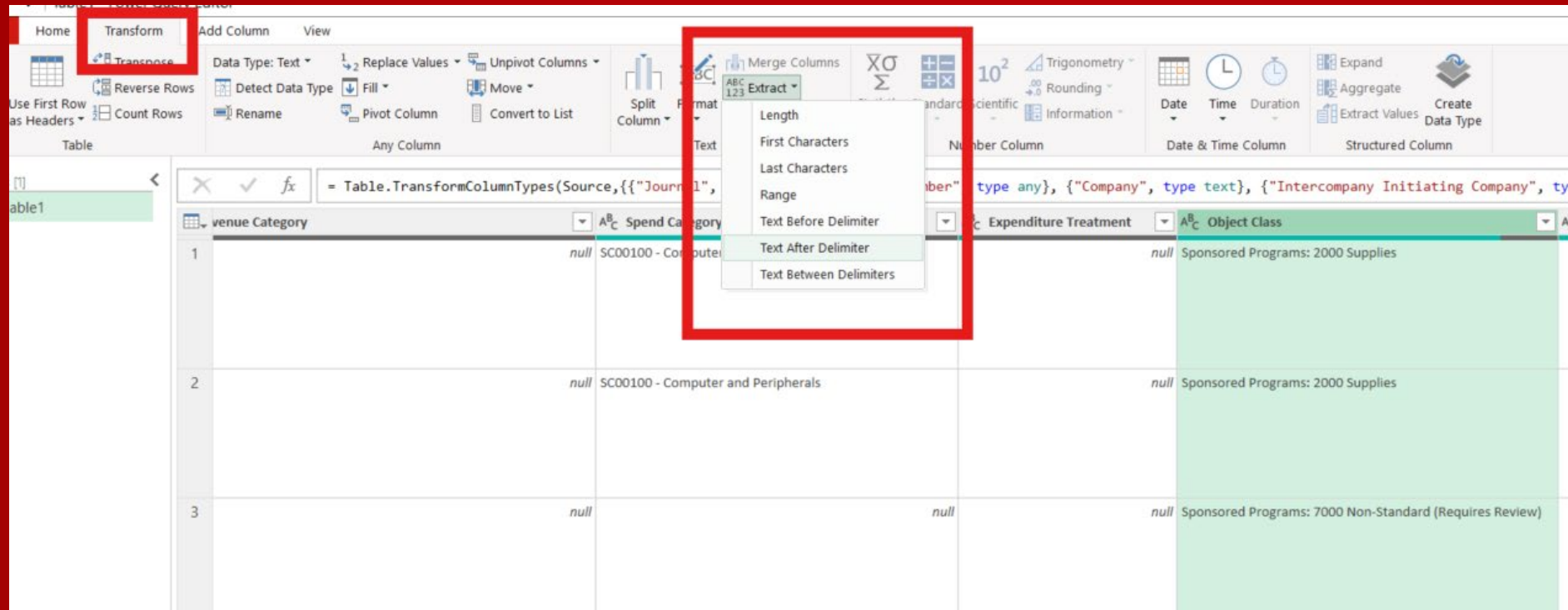
- A side panel will appear on the right with a list of available queries.
- Double click the query you would like to edit.
- You're changes will appear on the tab that was originally created from the query.

# Extract

The extract feature in Power Query extracts data based on predefined patterns or positions and more!

- First/Last character
- Range of characters
- Before/after delimiter

# Extract: Transform Tab



- On the **Transform** (or Add Column) tab, click extract.
- Select the desired delimiter. Our example uses Text After Delimiter.

# Extract by Delimiter

Text After Delimiter

Enter a delimiter that marks the beginning of what you would like to extract.

Delimiter  
:

Advanced options

Scan for the delimiter  
From the start of the input

Number of delimiters to skip ⓘ  
0

OK Cancel

In this example, we want to extract the text after "Sponsored Programs:" in the Object Class column.

- Highlight the Object Class column
- On the **Transform tab** click **Extract** and select **Text After Delimiter**.
- Enter a colon ":" in the **Delimiter** box and click **OK**.

# Extract



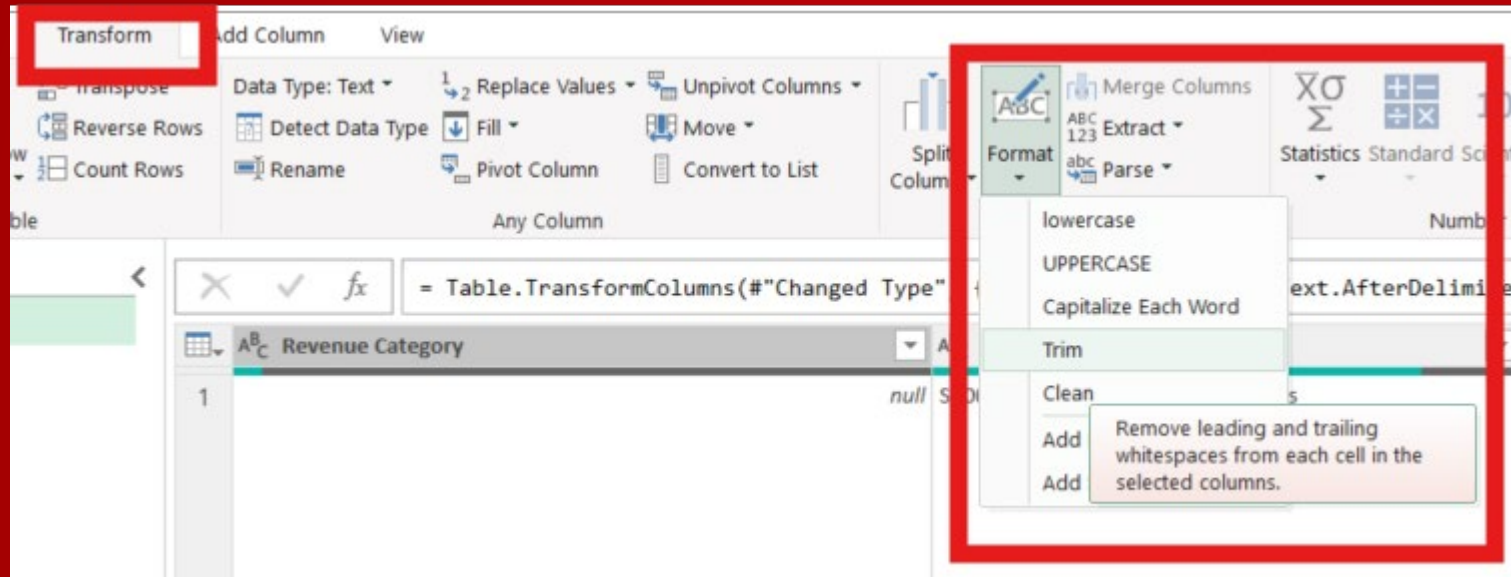
We are left with only the object class.

**But ...**

There is a space at the beginning

- We can use the **Trim** feature to easily remove the leading space.

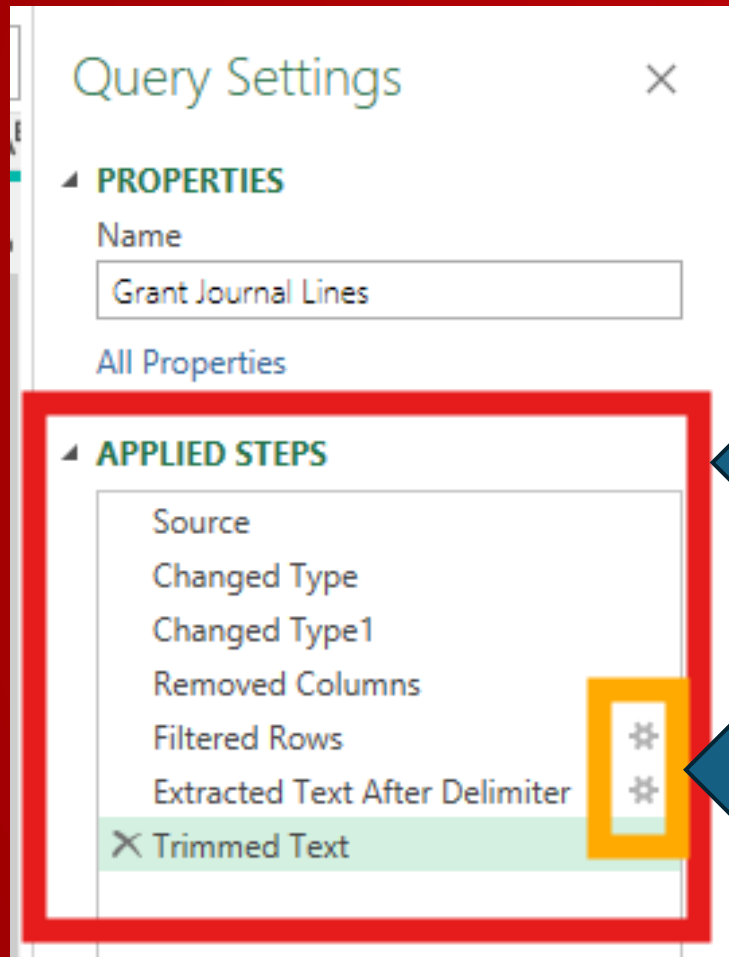
# Trim Leading or Trailing Spaces



With the Object Class column selected, click **Format** and select **Trim** on the Transform tab

Object Class
2000 Supplies
2000 Supplies
7000 Non-Standard (Requires Review)
2000 Supplies

# Side Panel: Viewing Steps



View the steps you have taken in your query in the right side panel.

Edit your steps using the gear icon next to the step.

# Launch Video

Play video [here](#)\*

Video 2 of 4

Power Query – Extract by Delimiter

Length 4m 38s

\*Launches in browser; note that you may need to sign in with NetID

# Column From Examples

The Column From Examples functionality uses specified examples to add logical arguments in order to create a new column.

This is useful in situations where extracting data needs a complex formula.

# Column From Examples

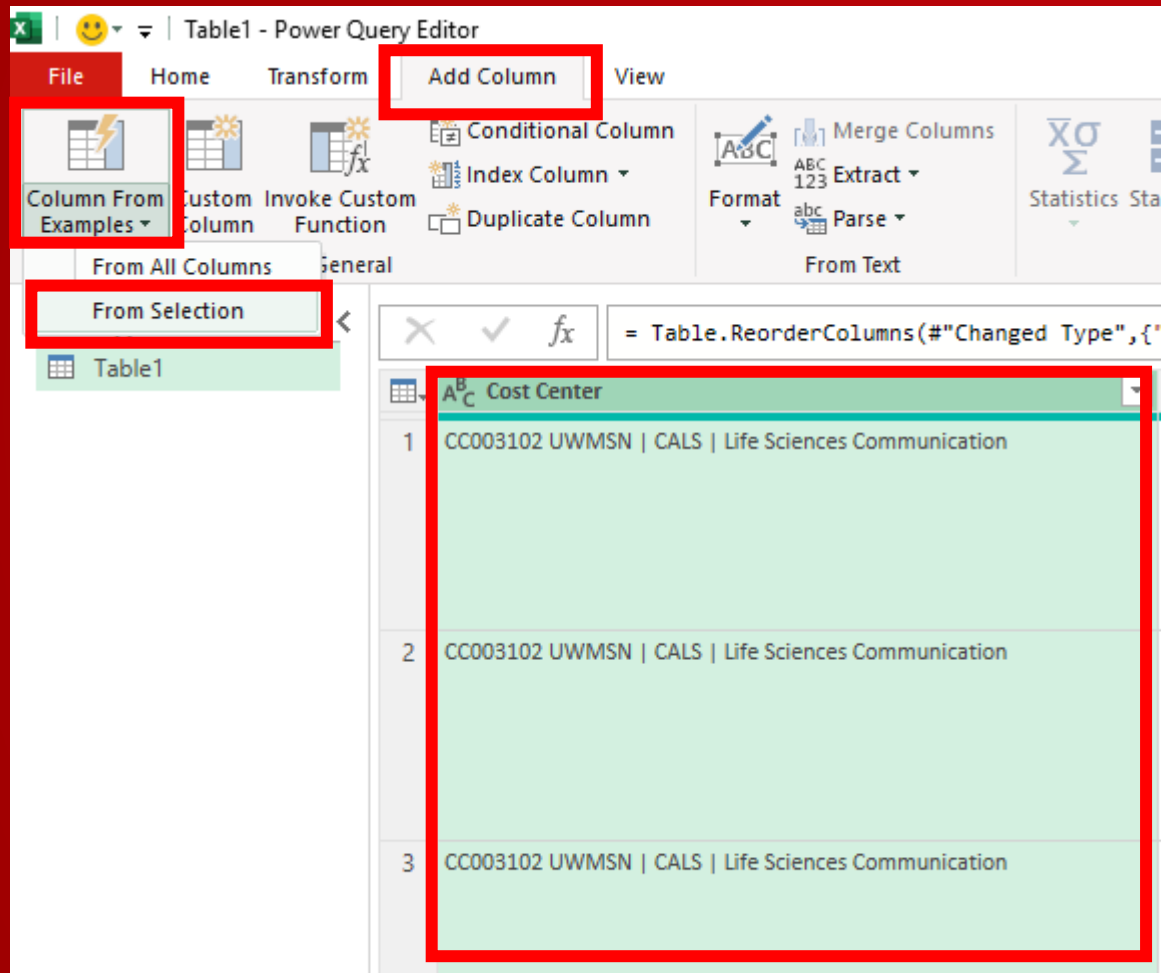
A <sup>B</sup> <sub>C</sub> Cost Center	
CC003102	JWMSN   CALS   Life Sciences Communication
CC003102	UWMSN   CALS   Life Sciences Communication
CC003102	UWMSN   CALS   Life Sciences Communication
CC004027	JWMSN   COE   Civil and Environmental Engineering (CEE)

In this example, we want to extract the Cost Center and the Department Name, separated by " – ".

CC003102 – Life Sciences Communication

CC004027 – Civil and Environment Engineering (CEE)

# Column From Examples



To use the Column From Examples functionality:

1. Select source column (Cost Center)
2. From the Add Column toolbar, select:
  - a) Column From Examples
  - b) From Selection

# Column From Examples

The screenshot shows the Power Query Editor interface. The 'Add Column' tab is active, and the 'Add Column From Examples' dialog box is open. The dialog box contains the text: 'Enter sample values to create a new column (Ctrl+Enter to apply)'. Below the dialog box, a data table is visible with columns: 'Cost Center', 'Worktags', 'Fund', and 'Function'. A new column, 'Column1', is being added to the right of the 'Function' column. The 'Column1' column is currently empty. The 'Add Column From Examples' dialog box is highlighted with a red border, and the 'Column1' column is also highlighted with a red border.

Table 1 - Power Query Editor

File Home Transform Add Column View

Column From Examples Custom Column Invoke Custom Function Duplicate Column

Conditional Column Index Column Merge Columns Extract Parse Statistics Standard Scientific Trigonometry Rounding Information Date Time Duration

Queries [1] Table1

Add Column From Examples  
Enter sample values to create a new column (Ctrl+Enter to apply).

OK Cancel

	Cost Center	Worktags	Fund	Function	Column1
1	CC003102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects	FN0400 Research	
2	CC003102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects	FN0400 Research	
3	CC003102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects		
4	CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	Cost Center: CC004027 UWMSN   COE   Civil and Environmental Engin...	FD0144 Federal Aid - Special Projects	FN0400 Research	
5	CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	Cost Center: CC004027 UWMSN   COE   Civil and Environmental Engin...	FD0144 Federal Aid - Special Projects		
6	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service	
7	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects		
8	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects		
9	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service	
10	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service	
11	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects		
12	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects		
13	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service	

# Column From Examples

The screenshot shows the Power Query Editor interface. The 'Add Column From Examples' dialog box is open, highlighted with a red border. It contains the text: 'Add Column From Examples', 'Enter sample values to create a new column (Ctrl+Enter to apply).', and 'Please enter more sample values.' Below the dialog, a data table is visible with columns: Cost Center, Worktags, Fund, and Function. The first row of the table is highlighted in green. A new column, 'Column1', is being added to the right of the table, and its first cell contains the text 'CC003102 - Life Sciences Communicati...'. This cell is also highlighted with a red border.

	Cost Center	Worktags	Fund	Function
1	CC003102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects	FN0400 Research
2	CC003102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects	FN0400 Research
3	CC003102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects	FN0400 Research
4	CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	Cost Center: CC004027 UWMSN   COE   Civil and Environmental Engin...	FD0144 Federal Aid - Special Projects	FN0400 Research
5	CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	Cost Center: CC004027 UWMSN   COE   Civil and Environmental Engin...	FD0144 Federal Aid - Special Projects	FN0400 Research
6	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
7	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
8	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
9	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
10	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
11	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
12	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
13	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service

Begin typing the extracted example:

- CC003102 – Life Sciences Communication

# Column From Examples

The screenshot shows the Power Query Editor interface. The 'Add Column From Examples' dialog box is open, displaying a transform formula: `let splitCostCenter = Splitter.SplitTextByDelimiter(" | ", QuoteStyle.None)((Cost Center)) in Text.Combine({Text.Start({Cost Center}, 9), "- ", splitCostCenter(2)?})`. Below the dialog, a table with 13 rows and 4 columns is visible. The columns are 'Cost Center', 'Worktags', 'Fund', and 'Function'. The 4th row is highlighted in green. To the right of the table, a 'Custom' list shows the selected example: 'CC004027 - Civil and Environmental Engineering (CEE)'. The dialog box has 'OK' and 'Cancel' buttons.

	Cost Center	Worktags	Fund	Function
1	CC003102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects	FN0400 Research
2	CC003102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects	FN0400 Research
3	CC003102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects	FN0400 Research
4	CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	Cost Center: CC004027 UWMSN   COE   Civil and Environmental Engin...	FD0144 Federal Aid - Special Projects	FN0400 Research
5	CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	Cost Center: CC004027 UWMSN   COE   Civil and Environmental Engin...	FD0144 Federal Aid - Special Projects	FN0400 Research
6	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
7	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
8	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
9	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
10	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
11	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
12	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service
13	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects	FN0500 Public Service

Move to next example (line 4) and enter in same format:

- CC004027 – Civil and Environmental Engineering (CEE)

# Column From Examples

**Add Column From Examples**  
Enter sample values to create a new column (Ctrl+Enter to apply).  
Transform: `let splitCostCenter = Splitter.SplitTextByDelimiter(" | ", QuoteStyle.None)((Cost Center)) in Text.Combine({Text.Start({Cost Center}, 9), "-", splitCostCenter(2)?})`

**Example formula**

**Black Text: Examples provided**

**Gray Text: Sample results**

Cost Center	Worktags	Fund
102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects
102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects
102 UWMSN   CALS   Life Sciences Communication	Cost Center: CC003102 UWMSN   CALS   Life Sciences Communication...	FD0144 Federal Aid - Special Projects
4 CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	Cost Center: CC004027 UWMSN   COE   Civil and Environmental Engin...	FD0144 Federal Aid - Special Projects
5 CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	Cost Center: CC004027 UWMSN   COE   Civil and Environmental Engin...	FD0144 Federal Aid - Special Projects
6 CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects
7 CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects
8 CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects
9 CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects
10 CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects
11 CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects
12 CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects
13 CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	Cost Center: CC005440 UWMSN   OVCR   Aquatic Sciences Center (AS...	FD0144 Federal Aid - Special Projects

It may take several examples before Power Query learns!  
Once satisfied with the results (samples in gray), click OK

# Launch Video

Play video [here](#)\*

Video 3 of 4

Power Query – Column From Examples

Length 4m 38s

\*Launches in browser; note that you may need to sign in with NetID

# Group By

Group By is used to summarize or aggregate data based on one or more columns.

- Group rows that share the same value(s) in selected columns
- Perform aggregates like:
  - Sum
  - Average
  - Count
  - Min/Max
- All rows to group nested data

# Group By

The screenshot shows the Power BI Desktop interface with the 'Home' tab selected in the ribbon. The 'Group By' button is highlighted with a red box. A 'Group By' dialog box is open, showing the following configuration:

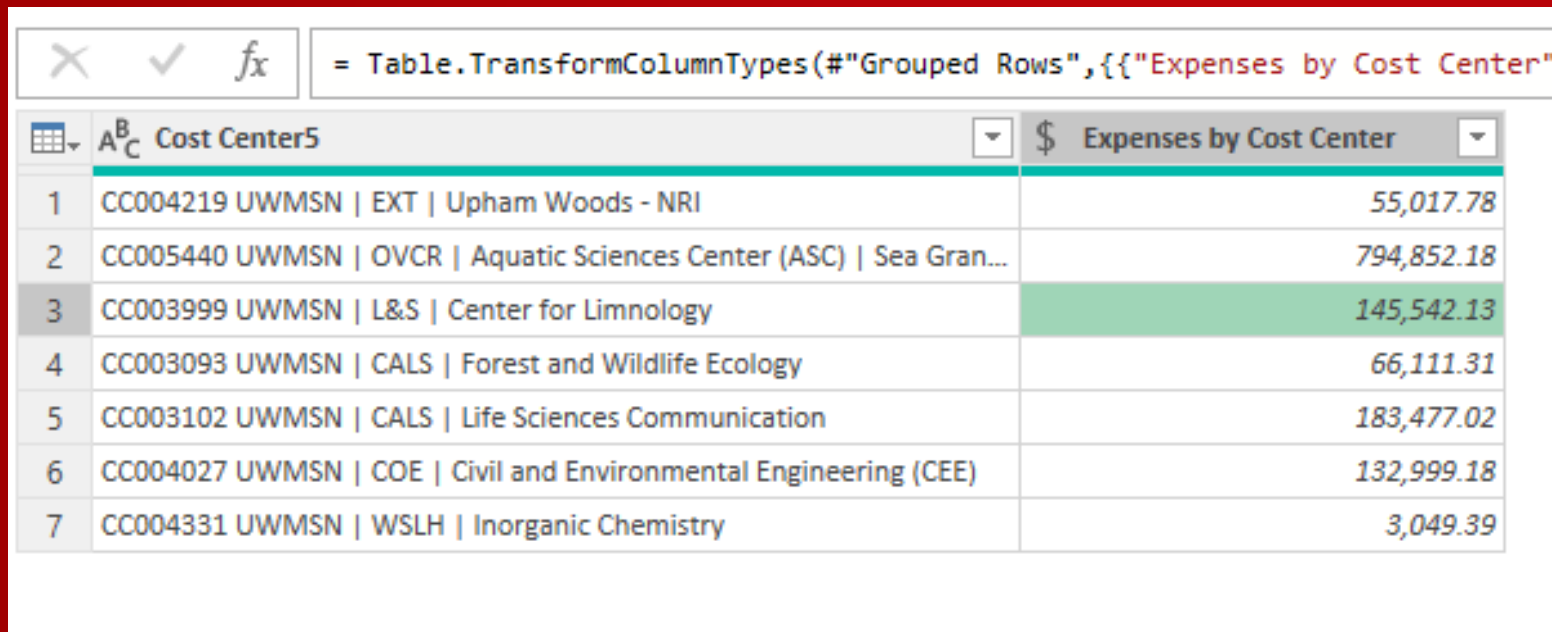
- Group By: Cost Center
- New column name: Expenses by Cost Center
- Operation: Sum
- Column: Amount

The background shows a table with columns: Salary Over the Cap Type, External Reference ID, Fund, Function, and Cost Center. The data is grouped by Cost Center.

To group expenses by cost center:

- Select the Cost Center column.
- On the **Home** tab (or the Transform tab), click **Group By**.
- In the **Operation** drop-down, select Sum. In the **Column** drop-down, select Amount.

# Group By



The screenshot shows an Excel spreadsheet with a table of cost center data. The formula bar at the top displays the DAX formula: `= Table.TransformColumnTypes("#Grouped Rows",{{"Expenses by Cost Center"}})`. The table has two columns: "Cost Center5" and "Expenses by Cost Center". The data is as follows:

	Cost Center5	Expenses by Cost Center
1	CC004219 UWMSN   EXT   Upham Woods - NRI	55,017.78
2	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	794,852.18
3	CC003999 UWMSN   L&S   Center for Limnology	145,542.13
4	CC003093 UWMSN   CALS   Forest and Wildlife Ecology	66,111.31
5	CC003102 UWMSN   CALS   Life Sciences Communication	183,477.02
6	CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	132,999.18
7	CC004331 UWMSN   WSLH   Inorganic Chemistry	3,049.39

This gives us a summary of costs by Cost Center.

## However ...

This will make our original query go away. We would need a separate query to do anything else with this data.

# Group By Cost Center

The screenshot displays an Excel PivotTable with the following data:

	Cost Center	Expenses by Cost Center
1	CC004219 UWMSN   EXT   Upham Woods - NRI	55,017.78
2	CC005440 UWMSN   OVCR   Aquatic Sciences Center (ASC)   Sea Gran...	794,852.18
3	CC003999 UWMSN   L&S   Center for Limnology	145,542.13
4	CC003093 UWMSN   CALS   Forest and Wildlife Ecology	66,111.31
5	CC003102 UWMSN   CALS   Life Sciences Communication	183,477.02
6	CC004027 UWMSN   COE   Civil and Environmental Engineering (CEE)	132,999.18
7	CC004331 UWMSN   WSLH   Inorganic Chemistry	3,049.39

The Query Settings pane on the right shows the following steps in the 'APPLIED STEPS' list:

- Source
- Changed Type
- Grouped Rows
- Changed Type1

Expenses by  
Cost Center

List of Steps

# Launch Video

Play video [here](#)\*

Video 4 of 4

Power Query – Group By

Length 3m 31s

\*Launches in browser; note that you may need to sign in with NetID

# Other Useful Features to Explore

- Remove Columns/Rows (Home tab)
- Replace Values (Home & Transform tabs)
- Split Column (Home & Transform tabs)
- Data Type (Home & Transform tabs)
- Pivot/Unpivot Columns (Transform tab)
- Move (Transform tab)
- Fill (Transform tab)
- Custom Column (Add Column tab)

# Thank you!

Larisa Roberts, Research Administration Training Manager  
Research and Sponsored Programs  
[Larisa.roberts@rsp.wisc.edu](mailto:Larisa.roberts@rsp.wisc.edu)

Catherine Shults, CRA, Research Grants Administrator  
Mechanical Engineering  
[Cmshults@wisc.edu](mailto:Cmshults@wisc.edu)