Week 1 Task

Project 1- Exhaustive Analysis of Indian Agriculture using Power BI

1. Installing Power BI & Interface Overview

Step 1: Go to the [Power BI website](#) and download the desktop version. Follow the prompts to install it.

Step 2: Open Power BI once installed. You'll see the main interface with different sections, like:

- **Data pane (on the right) where all your data tables appear.**

- **Visualizations pane (on the right) where you can choose charts and graphs to add to your report.**

- **Main workspace (center) where you build your report.**
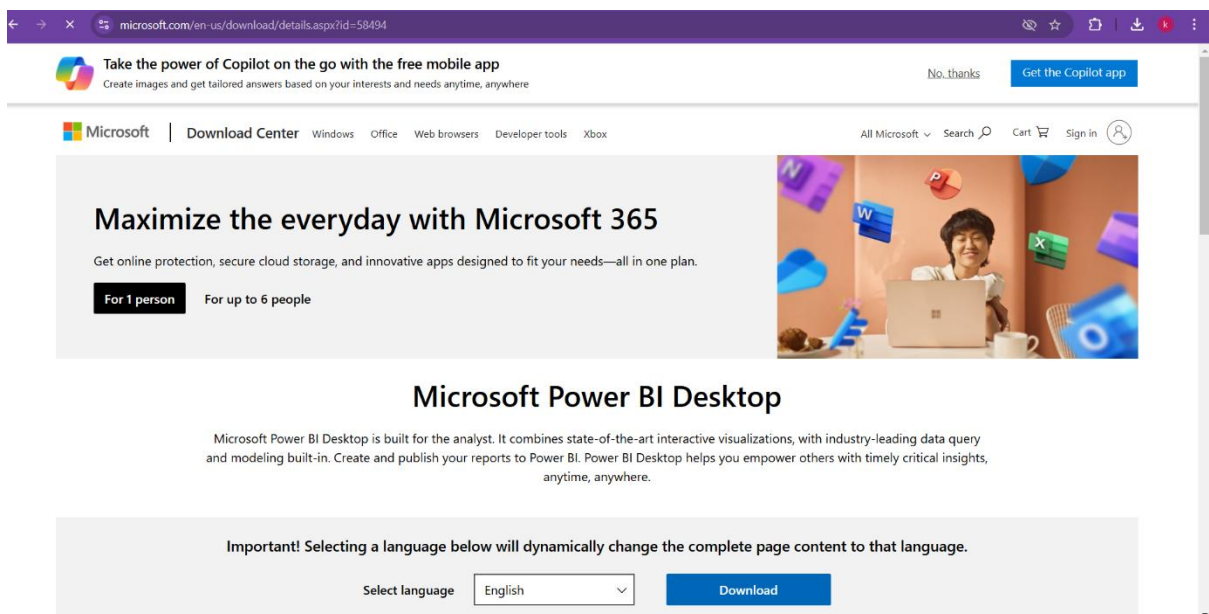
Uploading a File in Power BI

Step 1: Open Power BI

- **First, open Power BI Desktop on your computer.**

Step 2: Click "Get Data"

- **On the Home tab, click on the Get Data button. This will allow you to choose the file you want to upload.**

Step 3: Select Your File Type

- **A window will pop up asking you to choose the type of file you want to upload (Excel, CSV, etc.). Let's say we're uploading a CSV file for now.**

- **After selecting CSV, click Connect.**

Step 4: Select Your CSV File

- **Navigate to the location on your computer where the file is saved and select it. Click Open.**

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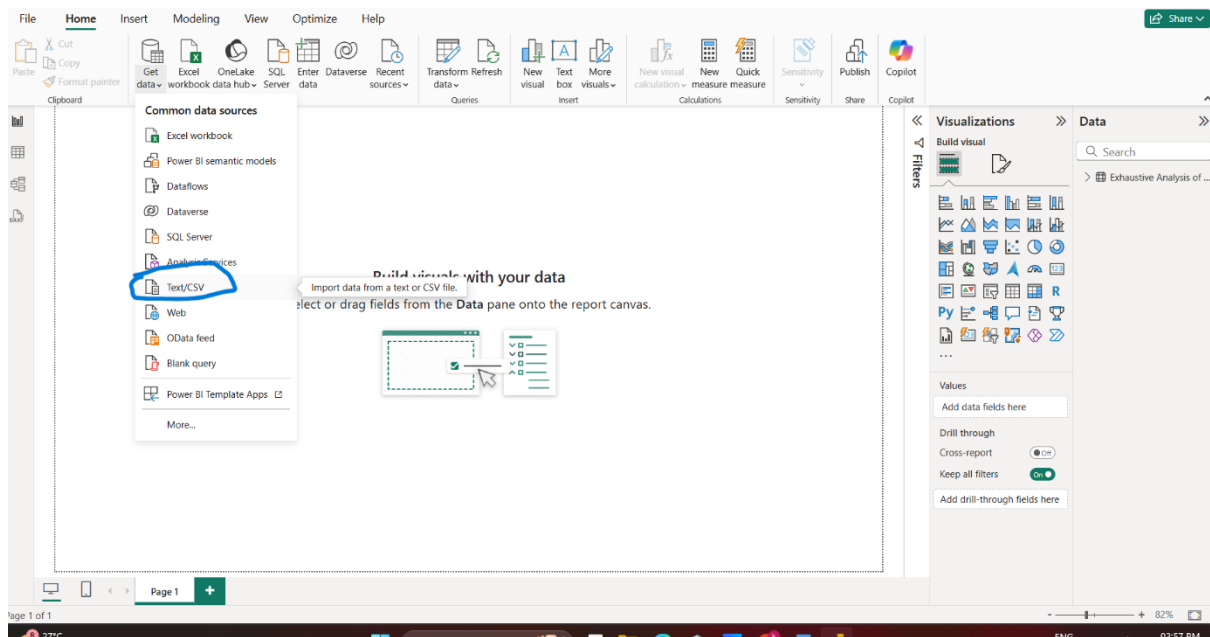
Step 5: File Dialog Box - Choose Your Action

- Once you select the file, a dialog box will pop up showing you a preview of the data inside. There are three options in the dialog box:

    o **Load: If you're happy with the data as is, click Load. This will load the data into Power BI, and you can start using it to build reports and visualizations.**

    o **Transform: If you need to clean or modify the data before using it (like removing empty rows or fixing column names), click Transform. This opens the Power Query Editor, where you can do more advanced data cleaning.**

    o **Cancel: If you decide not to load the data or change your mind, click Cancel. This will close the dialog box without uploading any data**


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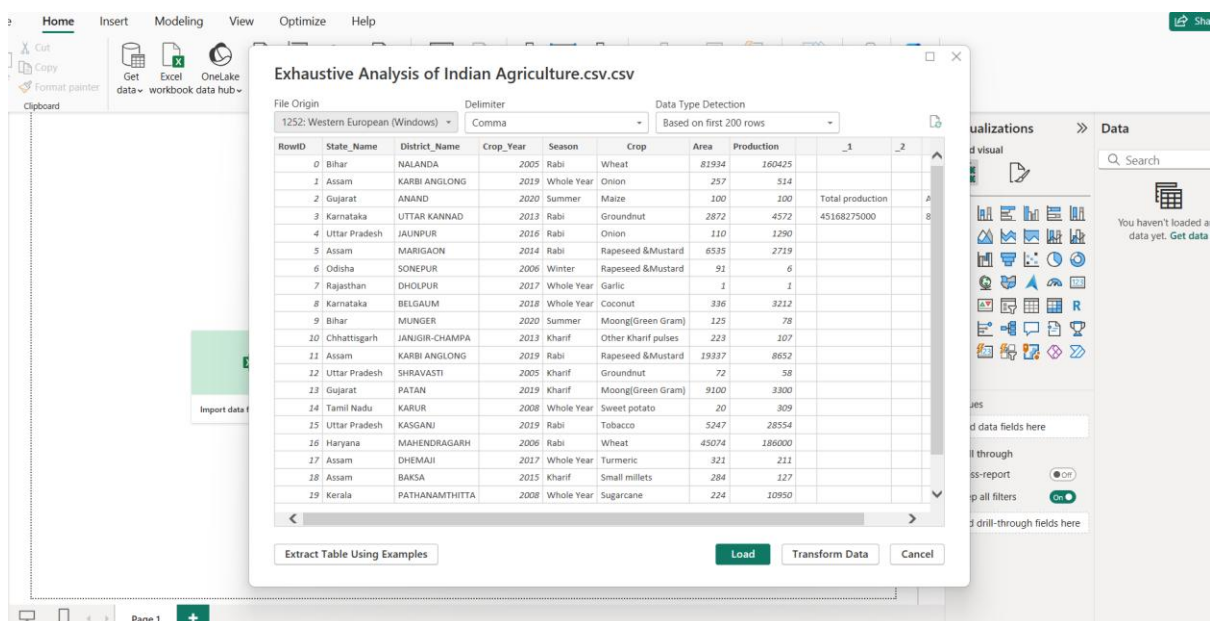
Explaining the Three Buttons on the Left Side

Once your data is loaded into Power BI, you'll notice three buttons on the left side of the screen. These buttons help you navigate through your workspace and interact with your data.

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1. Report View

- **What It Is: This is where you build your visual reports.**

- **What You Do: Drag and drop data fields (like numbers or categories) from your tables into the main workspace. You can then choose which type of chart or visual you want (bar chart, pie chart, etc.).**

- **Why It's Important: It's the most common view because you can see your data in a visual format, which helps with analysis and reporting.**

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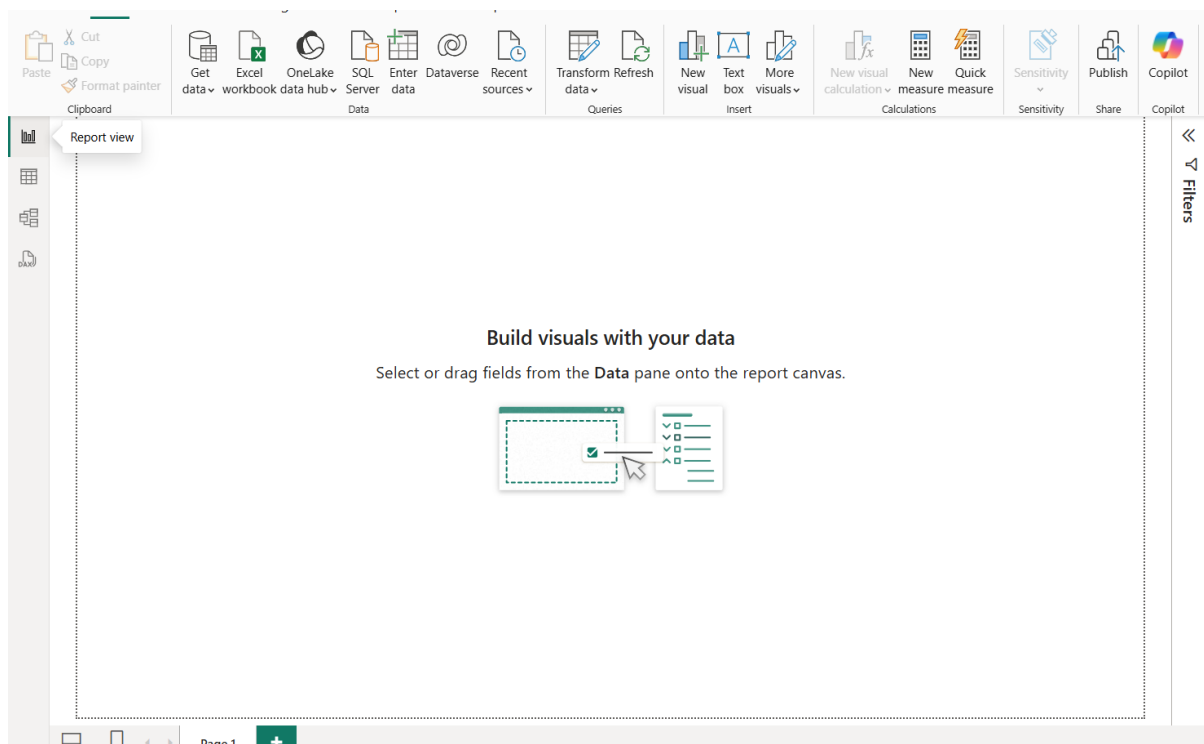
2. Table View

- **What It Is: This view shows your raw data in table form.**

- **What You Do: You can see the dataset as a table with rows and columns, just like a spreadsheet. This is where you inspect the raw data.**

- **Why It's Important: It's useful for verifying the data and making sure there are no mistakes before creating reports.**

RowID	State_Name	District_Name	Crop_Year	Season	Crop	Area	Production	Column1	_1	_2	_3
48	Uttar Pradesh	PILIBHIT	2009	Kharif	Moong(Green Gram)	1	0.1				
657	Uttar Pradesh	AMBEDKAR NAGAR	2012	Kharif	Small millets	1	0				
959	Uttar Pradesh	MUZAFFARNAGAR	2012	Kharif	Sannhamp	1	0				
1469	Uttar Pradesh	VARANASI	2018	Kharif	Groundnut	1	1				
1477	Uttar Pradesh	GORAKHPUR	2020	Kharif	Dry chillies	1	1				
1864	Uttar Pradesh	BALRAMPUR	2010	Kharif	Moong(Green Gram)	1	0				
2081	Uttar Pradesh	AGRA	2010	Kharif	Sunflower	1	1				
3989	Uttar Pradesh	AURAIYA	2018	Kharif	Sannhamp	1	0				
4944	Uttar Pradesh	ETAH	2012	Kharif	Soyabean	1	1				
4963	Uttar Pradesh	SIDDHARTH NAGAR	2006	Kharif	Moong(Green Gram)	1	0				
6377	Uttar Pradesh	HATHRAS	2012	Kharif	Groundnut	1	1				
6498	Uttar Pradesh	MUZAFFARNAGAR	2022	Kharif	Sannhamp	1	1				
7358	Uttar Pradesh	MATHURA	2010	Kharif	Small millets	1	1				
8253	Uttar Pradesh	KAUSHAMBI	2011	Kharif	Sunflower	1	2				
8499	Uttar Pradesh	HAMIRPUR	2014	Kharif	Cotton(lint)	1	0				
8508	Uttar Pradesh	KANNAUJ	2009	Kharif	Moth	1	0.1				
9248	Uttar Pradesh	MAHARAJGANJ	2016	Kharif	Small millets	1	1				
9773	Uttar Pradesh	BALRAMPUR	2008	Kharif	Moong(Green Gram)	1	1				
9775	Uttar Pradesh	CHANDAULI	2014	Kharif	Small millets	1	1				
11191	Uttar Pradesh	GONDA	2015	Kharif	Sannhamp	1	0				
11891	Uttar Pradesh	CHANDAULI	2012	Kharif	Small millets	1	0				
12339	Uttar Pradesh	BAREILLY	2022	Kharif	Moong(Green Gram)	1	0				
12883	Uttar Pradesh	PRATAPGARH	2008	Kharif	Groundnut	1	1				
13936	Uttar Pradesh	JALAUN	2010	Kharif	Sunflower	1	1				
15748	Uttar Pradesh	MEERUT	2008	Kharif	Groundnut	1	1				

Name : Kushal Kachhiya

3. Model View

- **What It Is: This view is for managing relationships between your tables.**

- **What You Do: In Model View, you can see all the tables you have loaded into Power BI and define relationships between them. For example, if you have a Sales table and a Products table, you can set up a relationship between the two so that Power BI knows how the data connects.**

- **Why It's Important: It helps Power BI understand how different pieces of data are related, allowing for more complex analysis.**

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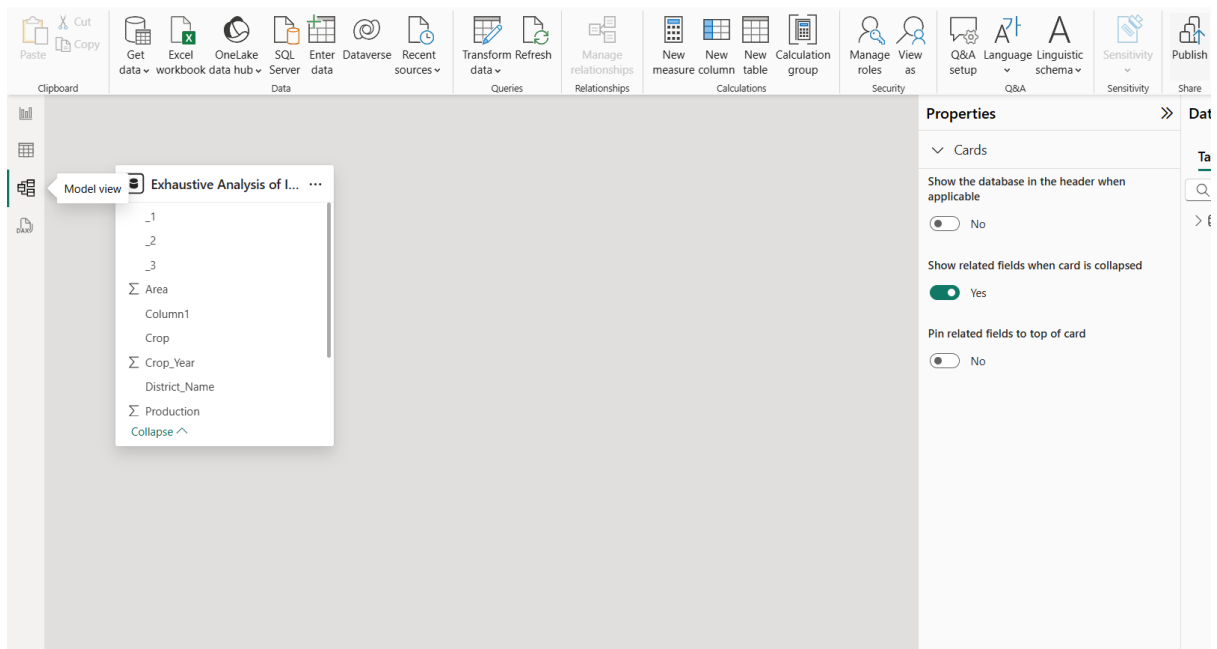
Removing and Restoring Empty Columns in Power BI

When working with data in Power BI, you might find columns that contain empty or missing values. Here's how you can manage them:

Step 1: Open the Power Query Editor

- After uploading your file (whether by **Load** or **Transform**), you should see your data in the **Power Query Editor**. If not, click **Transform Data** to open it.

Step 2: Inspect the Columns

- Look through the columns of your data. If you find any columns with missing values (empty cells), you can choose to **remove** or **restore** them.

Removing a Column

- **Right-click** on the column header that has missing values.

- Select **Remove** from the context menu. This will delete the column from your data.

Note: Removing a column doesn't delete the data permanently—it only removes it from your current dataset in Power BI.

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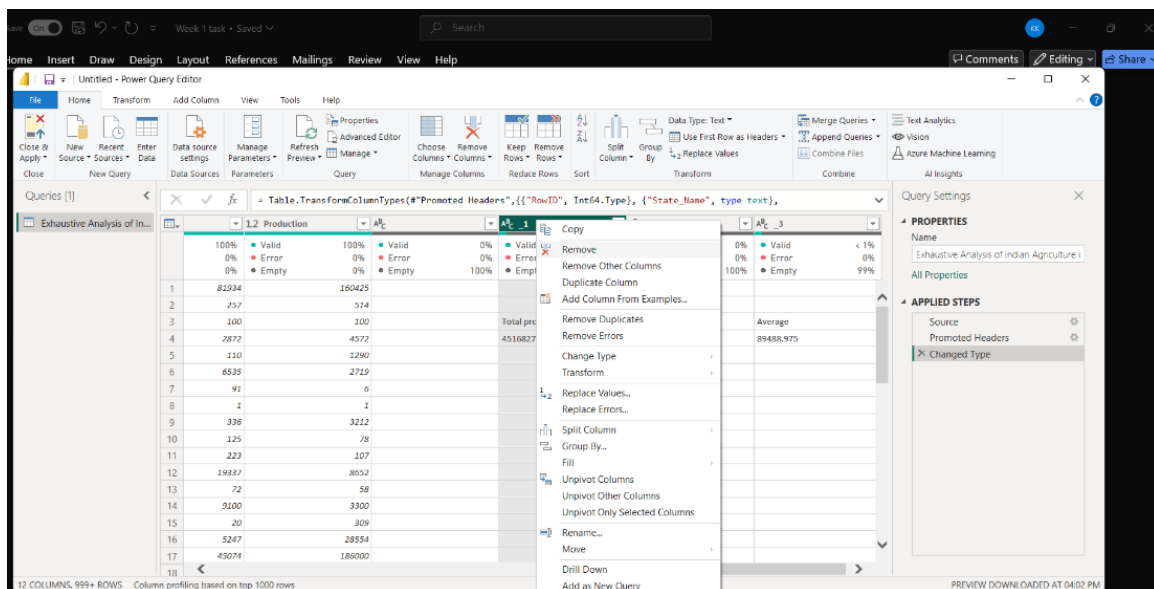
Restoring a Column

- If you accidentally removed a column or want to bring it back, you can **restore** it by using the **Undo** button in the top-left corner of the Power Query Editor or by going back into the **Applied Steps** pane (on the right) and removing the **Remove Column** step.

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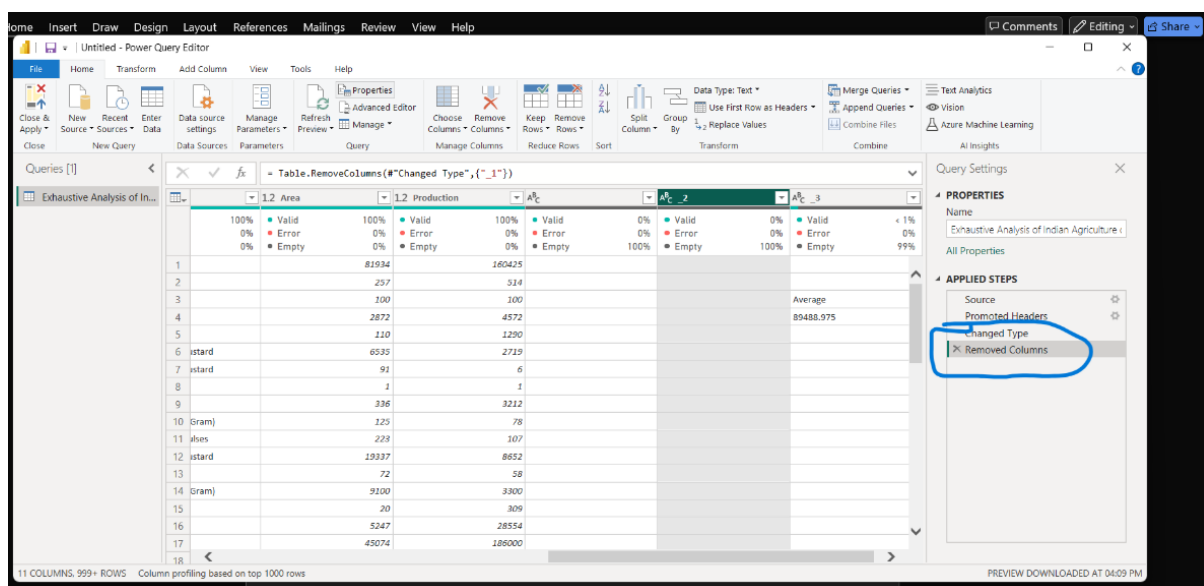
Remove Rows Dropdown

In Power BI, you might come across rows that are empty or irrelevant to your analysis. Here's how you can use the **Remove Rows** dropdown to clean up your data:

Step 1: Open the Remove Rows Menu

- In the Power Query Editor, go to the **Home** tab.

- Under the **Reduce Rows** group, you'll see the **Remove Rows** dropdown.

Step 2: Select an Option

Here are the main options you'll find in the **Remove Rows** dropdown:

- **Remove Top Rows**: If you want to remove the first few rows of your dataset (maybe they're headers or irrelevant data), click this option. A dialog box will pop up asking how many rows you want to remove.

- **Remove Bottom Rows**: Similar to **Remove Top Rows**, but this removes rows from the bottom of your dataset. Again, you can specify how many rows to remove.

- **Remove Blank Rows**: This option will remove any rows that are completely blank (i.e., have no data in any of the columns). This is useful when you have unwanted blank rows in your dataset.

- **Remove Duplicates**: If you have duplicate rows in your data, you can use this option to remove them. This is helpful if your dataset contains repeated records.

- **Remove Errors**: If some of your rows contain errors, like incorrect data types or calculations, you can remove those rows using this option.

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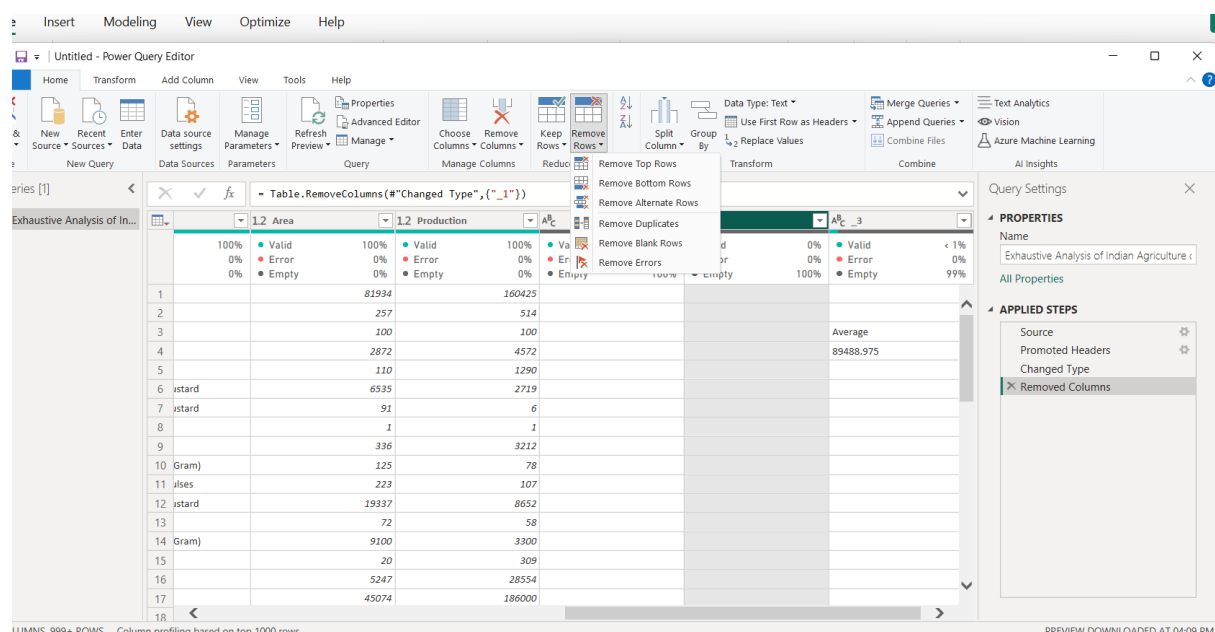
Column Quality in Power BI

Once you have your data loaded into Power BI and you're in the **Power Query Editor**, you can assess the **quality of each column** to ensure your data is clean and accurate. Here's how to use the **Column Quality** feature:

Step 1: Open Power Query Editor

- After uploading your data, click **Transform Data** to open the **Power Query Editor**.

Step 2: Access Column Quality

- In the Power Query Editor, go to the **View** tab at the top.

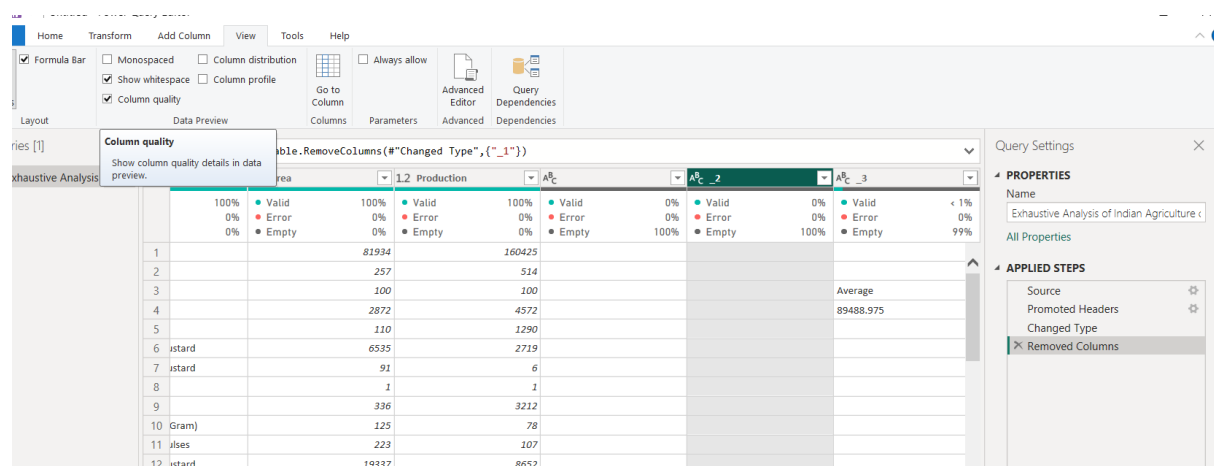- In the **Column Quality** group, you will see the option to turn on **Column Quality**. Click it.

Step 3: Understanding Column Quality Indicators

Once you enable **Column Quality**, Power BI will display a visual summary of the quality of each column in your dataset. Each column will show you the following indicators:

- **Valid**: This shows how many values in the column are correct and meet the expected data type (e.g., numbers, dates, text).

- **Empty**: This indicates how many rows in the column are missing or empty.

- **Error**: This shows how many rows contain errors (e.g., incorrect data types or failed calculations).

Power BI will color-code these indicators:

- **Green** means a high number of valid values.

- **Yellow** means there are some empty values.

- **Red** indicates that there are errors or invalid data in the column.

Name : Kushal Kachhiya

Saving Process:

- Click **Close & Apply** in the **Power Query Editor** to apply your changes.
- Go to **File** > **Save As** to save your Power BI file.
- Save regularly as you work, and use **File** > **Export** to share reports if needed.

Name : Kushal Kachhiya