

How can I filter data in Power BI between two specific dates?

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The Importance of Temporal Filtering in Data Analysis

Power BI is recognized globally as a leading business intelligence and data visualization platform. It empowers organizations to transform raw data into rich, interactive reports and dashboards. A fundamental capability required for effective analysis within Power BI is the ability to segment and filter data, especially based on time. Filtering data between two specific dates allows analysts to narrow their focus, isolating performance metrics, sales cycles, or operational events within a precise temporal window. This targeted approach is crucial for generating actionable insights and understanding period-over-period performance anomalies.

The challenge often lies in implementing this date range restriction efficiently and accurately, especially when dealing with large datasets or complex relationships. Whether you are examining quarterly sales figures, tracking inventory levels between peak seasons, or monitoring system errors within a defined timeframe, the precision afforded by specific date filtering ensures that your analysis is relevant and untainted by extraneous data points. Power BI offers multiple mechanisms to achieve this, ranging from straightforward visual filters to sophisticated calculation definitions using Data Analysis Expressions (DAX).

This guide focuses on the most robust method for achieving precise date range filtering: creating a calculated table using **DAX functions**. This technique offers unparalleled control, stability, and reproducibility, making it the preferred choice for advanced data manipulation tasks where a permanent, filtered subset of data is required for subsequent measures or complex calculations.

Two Primary Methods for Date Range Filtering

Power BI provides two fundamentally different ways to achieve date range filtering, each suited to distinct analytical needs. Understanding this distinction is key to building efficient and scalable reports. The first method involves interactive filters, typically utilizing visual components like **Slicers**, which allow end-users to dynamically change the filtered period on a report page. The second method, preferred for data modeling and structural analysis, involves creating a new, permanently filtered data structure using **DAX** formulas.

Interactive filtering through visual elements is intuitive and suitable for exploratory analysis. When a user adjusts the date range slider on a Slicer, the filter context is dynamically applied to all visuals linked to that data source on the current page. This is excellent for flexibility but does not alter the underlying data model.

Conversely, the DAX method, which we will detail extensively, involves the creation of a calculated table. This method forces the filter condition to be evaluated during the data refresh process, resulting in a static, smaller table that only contains the rows within the defined date range. This technique is optimal when the filtered data must serve as the foundation for specific measures or

when performance benefits are sought by reducing the size of the working dataset used in subsequent calculations.

Advanced Filtering with DAX using DATESBETWEEN

For critical data modeling scenarios requiring absolute structural certainty, the use of DAX is mandatory. We utilize a combination of functions, primarily **CALCULATETABLE** and **DATESBETWEEN**, to define the exact temporal boundaries of the new dataset. This approach generates a new table containing only the rows where the date column falls between the specified start and end points, inclusive.

You can use the following syntax in DAX to filter a table for rows where a date column is between two specific dates:

```
filtered_data =  
CALCULATETABLE (  
'my_data',  
DATESBETWEEN ('my_data', DATE(2022, 5, 1), DATE(2023, 8, 20))  
)
```

This particular example creates a new table named **filtered_data**. This table contains only the rows extracted from the source table named **my_data** where the date in the **Date** column is between May 1, 2022, and August 20, 2023. Note that the boundary dates themselves are included in the resulting dataset.

Dissecting the Core DAX Functions

The effectiveness of this filtering method stems from the careful interplay of the three primary DAX functions used. Understanding their roles is crucial for customizing the filter for different analytical needs:

CALCULATETABLE: This function evaluates a table expression in a context that is modified by the specified filter expressions. It is the outer function responsible for creating the new table structure based on the results of the filter.

DATESBETWEEN: This powerful time intelligence function generates a continuous single-column table of dates starting from the beginning date and ending with the end date. When used as a filter argument inside **CALCULATETABLE**, it restricts the rows of the source table to only those that match the dates produced by this function.

DATE: The **DATE** function ensures that the start and end parameters are treated as proper date data types. It accepts numerical inputs for Year, Month, and Day, guaranteeing format consistency regardless of locale or regional settings in Power BI Desktop.

This approach provides a reliable, model-level filter that remains stable and unaffected by user interactions on the report canvas.

Practical Example: Applying the DAX Filter

To illustrate the process, consider a scenario where we have a source table named **my_data** containing sales figures spanning several years. We specifically wish to analyze sales performance between May 1, 2022, and August 20, 2023.

Suppose we have the following table in Power BI named **my_data** that contains information about sales made on various dates at some company:

The screenshot shows the Power BI Desktop interface. The 'Table tools' ribbon is active, with the 'Name' field set to 'my_data'. The ribbon includes options for 'Mark as date table', 'Manage relationships', and 'Calculations' (New measure, Quick measure, New column, New table). Below the ribbon, a data table is displayed with the following columns and rows:

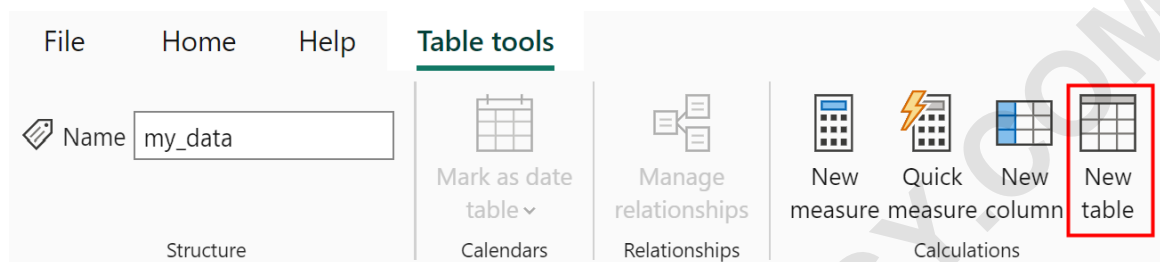
Date	Sales
Saturday, January 1, 2022	22
Saturday, May 14, 2022	14
Sunday, June 19, 2022	19
Wednesday, August 3, 2022	30
Wednesday, October 12, 2022	24
Tuesday, February 14, 2023	18
Wednesday, April 19, 2023	15
Monday, May 1, 2023	11
Saturday, June 17, 2023	22
Sunday, July 30, 2023	24
Saturday, November 25, 2023	10
Sunday, January 14, 2024	15
Tuesday, March 26, 2024	18
Wednesday, March 27, 2024	13

Our objective is to filter this table to only show the rows where the date in the **Date** column falls within our specified temporal window.

The following steps detail the process for creating this calculated table within Power BI Desktop:

To initiate the creation of a new table, navigate to the **Table tools** tab in the ribbon menu.

Click the **New table** icon. This action prepares the formula bar for the DAX definition.

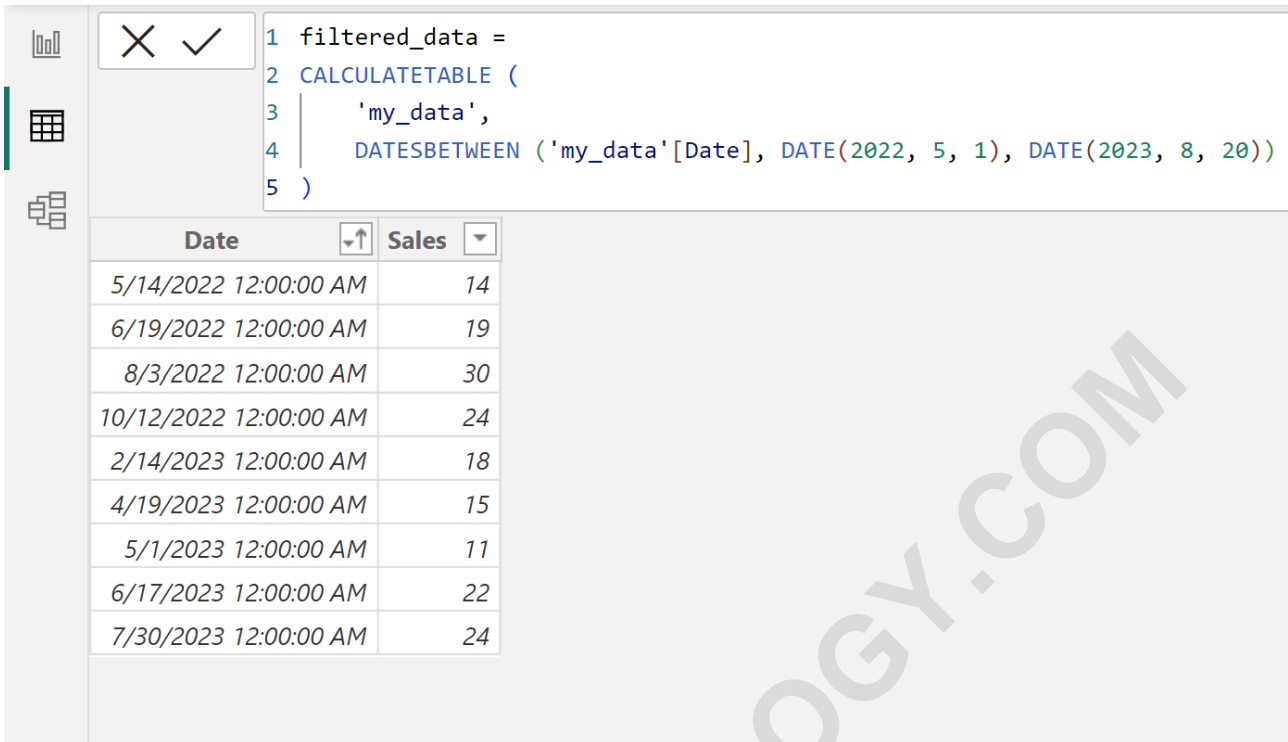


Type the complete filtering formula into the formula bar and press Enter:

```
filtered_data =  
CALCULATETABLE (  
'my_data',  
DATESBETWEEN ('my_data', DATE(2022, 5, 1), DATE(2023, 8, 20))  
)
```

Upon successful execution, this process yields a new table named **filtered_data**. This table is an exact replica of the original **my_data** structure but is filtered to include only the rows where the date meets the specified criteria, demonstrating the power of DAX for data transformation.

The resulting `filtered_data` table, demonstrating the successful temporal segmentation:



The screenshot shows the Power BI interface with a DAX formula editor and a data table. The formula is:

```
1 filtered_data =  
2 CALCULATETABLE (  
3     'my_data',  
4     DATESBETWEEN ('my_data'[Date], DATE(2022, 5, 1), DATE(2023, 8, 20))  
5 )
```

The data table below the formula shows the following data:

Date	Sales
5/14/2022 12:00:00 AM	14
6/19/2022 12:00:00 AM	19
8/3/2022 12:00:00 AM	30
10/12/2022 12:00:00 AM	24
2/14/2023 12:00:00 AM	18
4/19/2023 12:00:00 AM	15
5/1/2023 12:00:00 AM	11
6/17/2023 12:00:00 AM	22
7/30/2023 12:00:00 AM	24

To filter using different date ranges in the future, the analyst simply needs to modify the start and end dates defined within the **DATESBETWEEN** function of the formula.

Considerations for Dynamic vs. Static Filtering

While creating a calculated table provides a definitive, static result, it is important to remember that this approach is rigid. If the end-users of the report need the ability to frequently adjust the filtering window--for example, shifting from quarter-to-date to month-to-date analysis--a calculated table is inappropriate.

For dynamic, user-driven filtering, the recommended method involves using the **Slicer** visual, setting its filter type to **Between**. This allows users to input or slide the boundaries of the date range directly on the report canvas. Although visually interactive, this method only alters the visual context and does not create a dedicated table subset in the underlying data model.

Analysts must choose between the stability and performance optimization of the static **DAX calculated table** and the flexibility of the **Slicer visual** based on the specific consumption needs of the final report. In complex scenarios, calculated tables can be combined with measures that utilize slicer selections, offering the best of both worlds.

Best Practices for Date Data Management in Power BI

Accuracy in date filtering hinges on proper data management. Analysts must ensure that the date column being used in the **DATESBETWEEN** function is correctly formatted as a **Date** or **Date/Time** datatype in Power BI. Using text columns can lead to unpredictable chronological ordering and calculation errors.

It is also highly recommended to utilize a dedicated **Date Table**, often referred to as a Calendar Table, especially when leveraging time intelligence functions like **DATESBETWEEN**. A proper Date Table ensures that all dates within your model's scope are present and correctly marked as the primary date dimension, which vastly improves the reliability of temporal calculations.

Finally, when dealing with **Date/Time** columns, remember that **DATESBETWEEN** applies an inclusive filter, meaning it includes the entire day of the end date specified. If you require finer control, such as filtering up to a specific hour or minute, it is often more precise to use the **FILTER** function combined with standard comparison operators (\geq StartDate and $<$ EndDate + 1 day), bypassing the strict day-level granularity of **DATESBETWEEN**.

Conclusion: Achieving Precision in Temporal Analysis

Mastering the technique of filtering data between two specific dates is fundamental to extracting meaningful insights from time-series data in Power BI. By leveraging the robust capabilities of **DAX**, particularly the **CALCULATETABLE** and **DATESBETWEEN** functions, analysts can define precise, structural filters that underpin complex analytical models. This methodology is essential for maintaining data integrity, optimizing performance, and ensuring that all subsequent reports and visualizations are derived from the exact temporal scope required for accurate business intelligence.