

[!\[\]\(a3ea015cc5581cad732d1eb81613fe7b_img.jpg\) Takaisin välilehdelle](#)

 Tehty: Käy oppitunti läpi loppuun asti

Filtering visualizations and data

Click [link](#) to watch a video about filters.

Filtering the data that users will see within a Power BI report is the most effective way to answer very specific questions about that data, and there are many ways to accomplish this. One of Power BI's most useful features is its ability to allow users to interact with a visual, which will then apply the selection as a filter to the rest of the visuals on that page. This is known as **cross-filtering**.

Along with this functionality, report developers can add more visible and explicit forms of filtering using the **slicer visual** that is available in the **Visualizations** pane. This provides the option to choose a very specific field from the data that you know end users will want to use to filter some or all of the visualizations on the page.

The default interaction between two visuals, when supported, is called **cross-highlighting**. If two visuals do not support cross-highlighting, the default interaction is **cross-filtering**. Consider a report with a bar chart showing sales by country and a pie chart showing profit by age. Under the **default behavior**, selecting **United States** in the bar chart would cause the pie chart to continue showing sales for all countries while highlighting the slicer that corresponds to **United States**. This is very useful for seeing how a subset of one visual is represented inside another.

Click

to watch video about visual interactions. This video uses older versions of Power BI Desktop and the Power BI service.

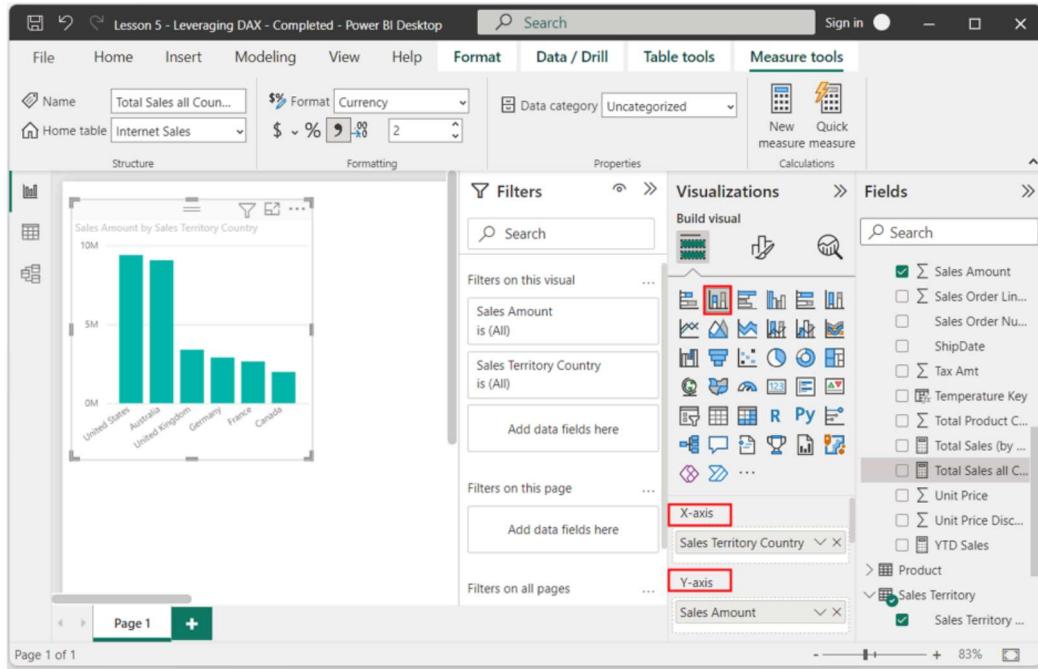
Cross-filtering and cross-highlighting

Almost every single visual that is readily available within Power BI has some sort of element that users can interact with. At the same time, every visual can be impacted by these very same elements. This provides a lot of flexibility when it comes to deciding which visuals to include on a report page. Cross-highlighting will be covered again later, but it is important to understand how this feature works so it can be leveraged throughout the examples to come.

Two very simple visualizations based on the current data model were created to show, how cross-highlighting works.

From the **Visualizations** pane, the **Stacked column chart** was selected. From the **Fields** pane, the check box next to **Total Sales** from the **Internet Sales** table was checked. Notice that the field shows up under the **Y-axis** bucket of the **Fields** section.

From the **Fields** pane, **Sales Territory Country** from the **Sales Territory** table was dragged to the **X-axis** bucket in the **Fields** section. The visual was resized by using the visual's anchor points to make it easier to read the labels.

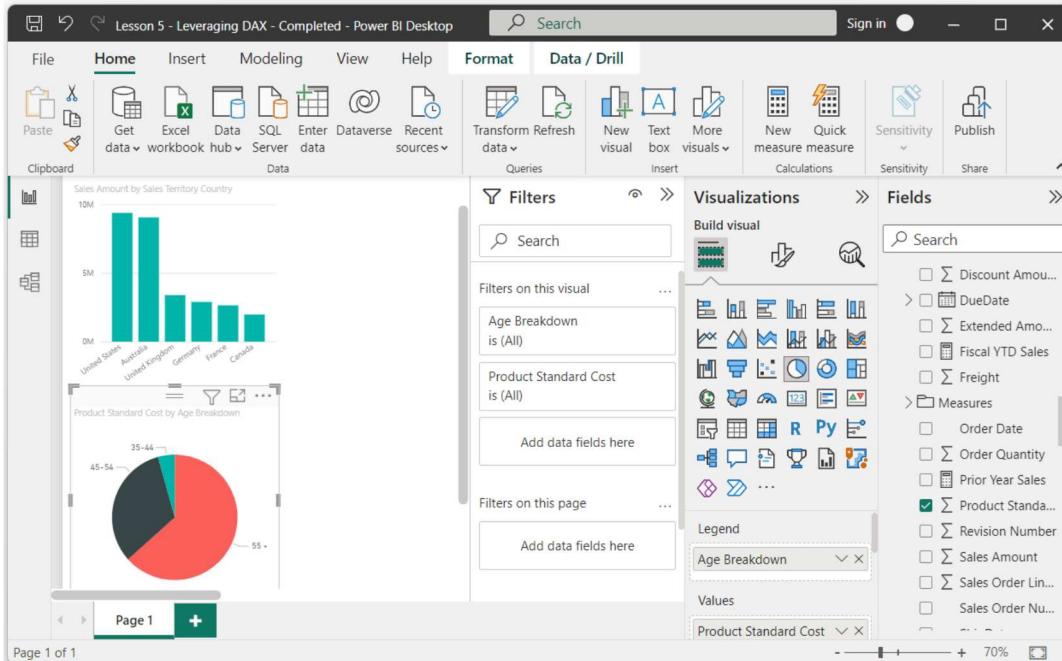


You may notice that some of the visual elements do not meet your standards. For example, the size of the text for various items in this visual is far too small to read. These are the types of changes that would be made in the **Format** area but we will not be doing so in this specific example.

Another visual was added to the **Report** canvas by selecting from the **Visualizations** pane, the **Pie chart**, which was added to the **Report** canvas.

In the **Fields** pane, the box next to **Age Breakdown** in the **Customer** table was checked.

Product Standard Cost to was added the **Values** bucket.



In this example there are two visuals in the **Report** canvas. Selecting the column labeled **United States** in the stacked column chart, the pie chart changes to having a much smaller highlighted area. By hovering over the **35-44** section of the pie chart, you can now see the United States total for that category. This same type of highlighting can be done by selecting a slice of the pie chart, which will then highlight a subset of the stacked column chart.

Click

to watch a video about Power BI cross-filtering.

Edit interactions

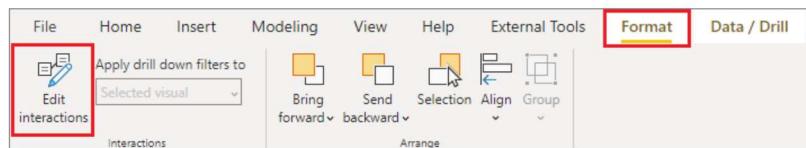
Throughout all the examples to come, you will have the capability of using cross-highlighting and cross-filtering. Almost everything seen inside a visual can be selected, and it will affect all the other visuals within that same report page. This behavior can be altered though, and there will be situations where you do not want a specific visual to be filtered by any others.

The way to control this is through an option called **Edit interactions**, which can be found on the **Format** ribbon when a visual is selected. When you select the **Edit interactions** button, you will see new icons next to all the other visuals on the current page.

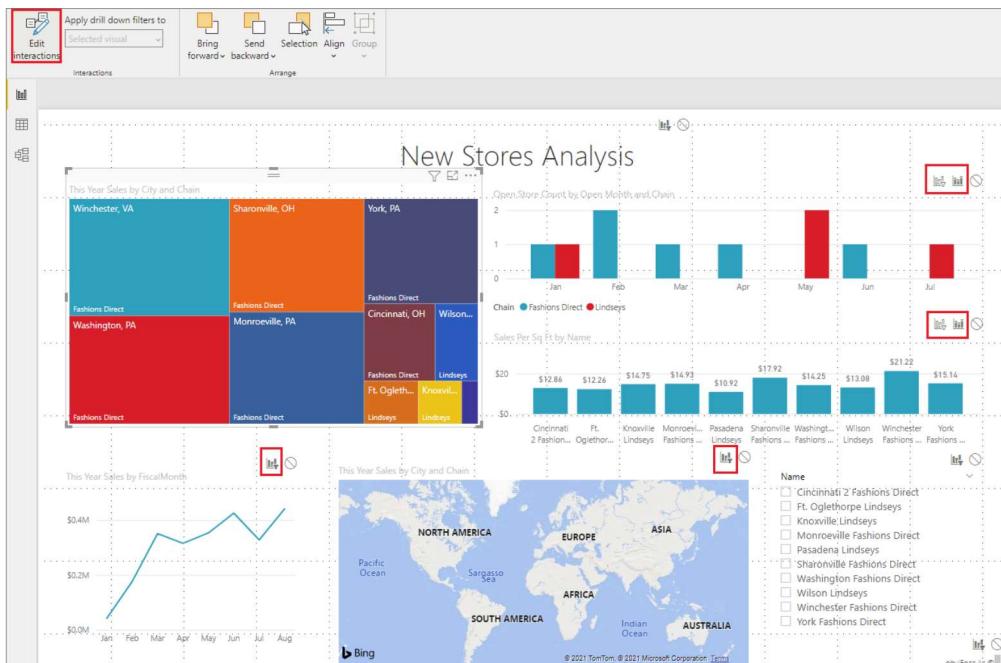
If you have edit permissions to a report, you can turn on the visual interaction controls and then customize how the visualizations on your report page filter and highlight each other.

1. Select a visualization to make it active.
2. Display the **Visual Interactions** options.

In Power BI Desktop, select **Format > Edit interactions**.



3. Power BI adds filter and highlight icons to all of the other visualizations on the report page.



The tree map is cross-filtering the line chart and the map. The tree map is also cross-highlighting the column chart. You can now change how the selected visualization interacts with the other visualizations on the report page.

Change the interaction behavior

Get familiar with how your visualizations interact by selecting each visualization on your report page, one at a time. Select a data point or a bar or a shape and watch the impact on the other visualizations. If the behavior you see isn't what you'd prefer, you can change the interactions. These changes are saved with the report, so you and your report consumers will have the same visual interaction experience.

Start by selecting a visualization to make it active. Notice that all the other visualizations on the page now display interaction icons. The bolded icon is the one that is being applied. Next, determine what impact you'd like the **selected visualization** to have on the others. You can repeat this for all other visualizations on the report page.

Options for selected visualizations:

- If you want the selected visualization to cross-filter one of the other visualizations on the page, select the **filter** icon in the upper right corner of that visualization
- If you want the selected visualization to cross-highlight one of the other visualizations on the page, select the **highlight** icon
- If you want the selected visualization to have no impact on one of the other visualizations on the page, select the **no impact** icon

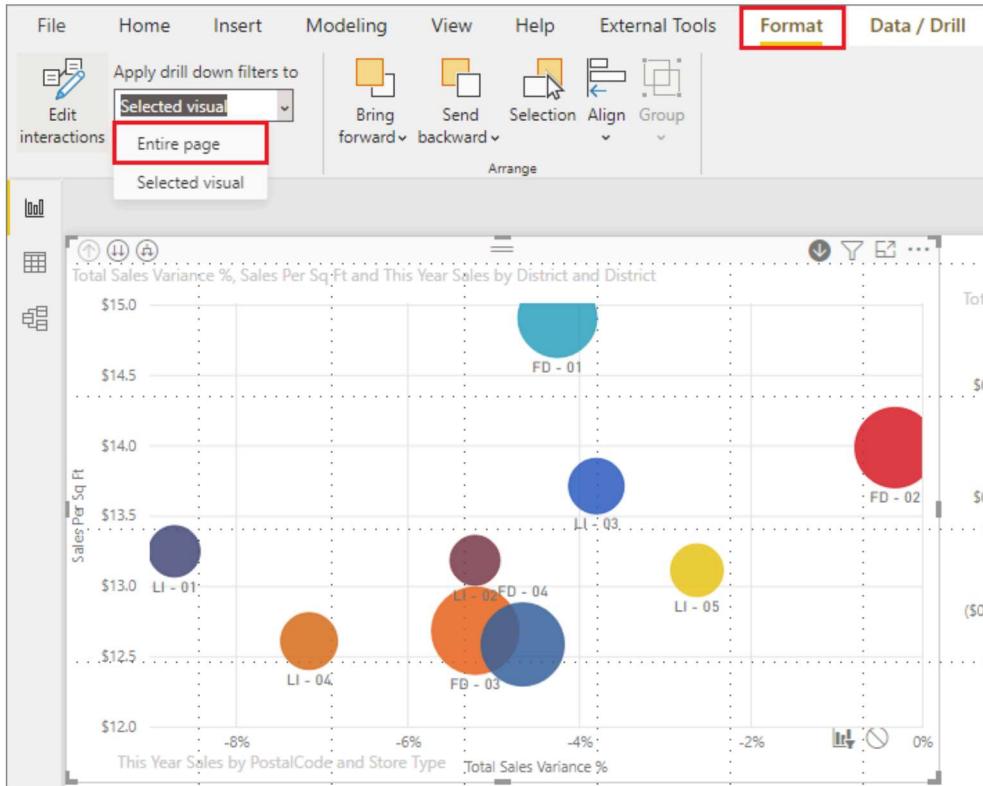
Change the interactions of drillable visualizations

For both Power BI Desktop and Power BI service, certain Power BI visualizations can be drilled. By default, when you drill a visualization, it has no impact on the other visualizations on the report page. However, that behavior can be changed.

- In Power BI Desktop, select a drillable visual to make it active.
- Turn on the drill-down feature by selecting the drill-down icon.



3. From the menu bar, select **Format**, select the drop-down caret under **Apply drill down filters to**, and select **Entire page**.



4. Now when you drill down (and up) in a visualization, the other visualizations on the report page change to reflect your current drilling selection.

5. If the behavior you see isn't what you want, you can change the interactions, as described previously.

Considerations and troubleshooting

If you build a matrix with fields from different tables, then try to cross-highlight by selecting multiple items at different levels of the hierarchy, you get errors on the other visualizations.

Slicer

Click [link](#) to watch a video about slicers.

Suppose you want your report readers to be able to look at overall sales metrics, but also highlight performance for individual district managers and different time frames. You could create separate reports or comparative charts. You could add filters in the Filters pane. Or you could use **slicers**. Slicers are another way of filtering. They're displayed on the report page, and narrow the portion of the dataset that's shown in the other report visualizations.



The slicer has a different set of options based on the following types of data being displayed:

- String/text
- Numeric
- Date

Slicers are a great choice when you want to:

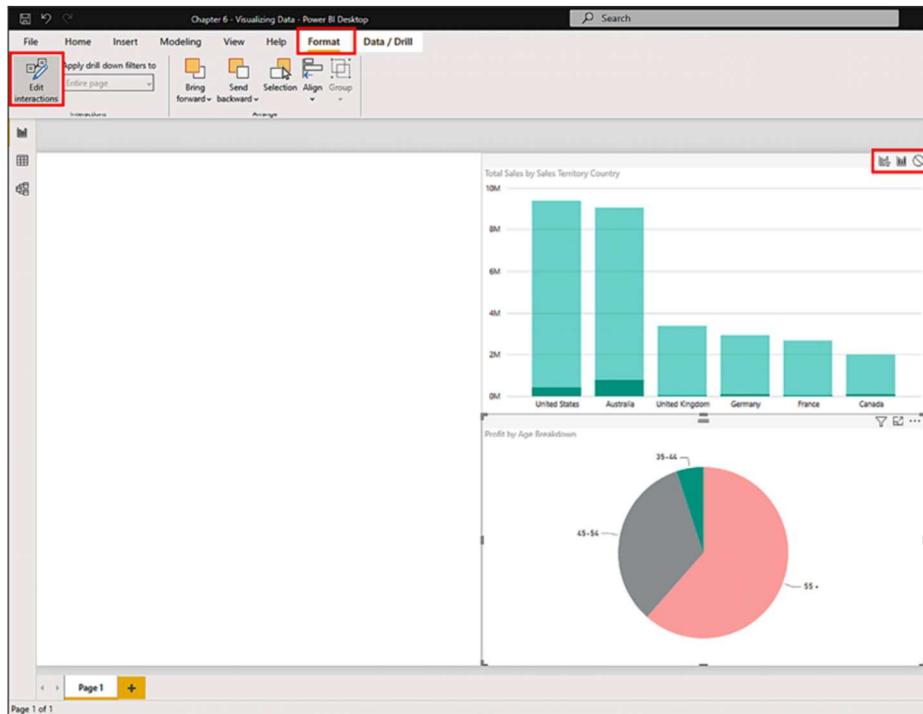
- Display commonly used or important filters on the report canvas for easier access.
- Make it easier to see the current filtered state without having to open a drop-down list.
- Filter by columns that are unneeded and hidden in the data tables.
- Create more focused reports by putting slicers next to important visuals.

Power BI slicers don't support:

- Input fields
- Drill-down options

String/text

In the figure below a blank area on the **Report** canvas was clicked, and **Slicer** from the **Visualizations** pane was selected .

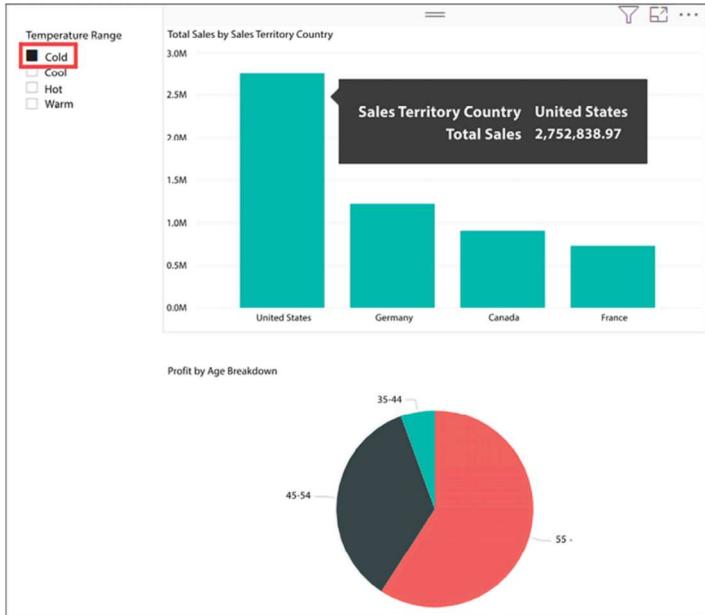


In the **Fields** pane, the box next to **Temperature Range** from the **Temperature** table was checked to add it to the selected slicer Field bucket.

The screenshot shows the Power BI Desktop interface with the 'Filters' pane open. A red arrow highlights the 'Temperature Range' slicer in the 'Filters' section. The 'Fields' pane on the right shows the 'Temperature' field expanded, with 'Temperature Range' selected.

The slicer will default to the **List** view. This allows users to see a distinct list of all the options they can now filter on from the specific field. You should see four temperature options in the list, each with a blank box to its left. Clicking in a box will single-select a member from the list resulting in other visuals being filtered. If you are looking to save space on the canvas but want all the functionality of the list view, then look at the drop - down view available from the down arrow in the top-right corner of the slicer.

If you were to select the **Cold** option, the stacked column chart would be showing the **Total Sales by Sales Territory Country** when the weather was cold.



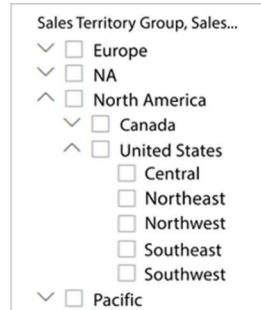
To multi-select, you have two options. The first is to hold down the ***Ctrl*** key on your keyboard while making your selections. The second option lies within the **Format** area under the **Visual section**, then **Slicer settings**, then **Selection** expandable menus. Here, you will find an option called **Multi-select with CTRL**, which is set to **On** by default, and by turning this off, you no longer need to hold the ***Ctrl*** key to multi-select.

If **hierarchical data** is used as a filter, multiple fields may be added to the slicer's **Field** bucket. When this happens, the slicer will display a stair-stepped list or drop-down set of values. The slicer behaves the same as described in this section but allows for a much more user-friendly display of data. By using hierarchies, it is possible to create much larger lists of values while keeping it easy for users to find the members by which to filter. The hierarchies used in a slicer can be explicitly defined in the data model, or they can instead be created by dragging multiple fields from the same table into the slicer, or even multiple fields from different tables if a relationship exists between the tables.

In the following a slicer with a hierarchy was set up.

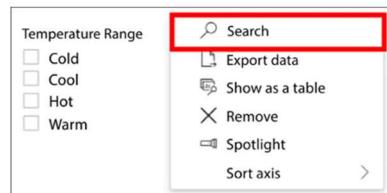
In the **Visualizations** pane, the **Slicer** was selected.

In the **Fields** pane, the box next to **Sales Territory Drilldown** from the **Sales Territory** table was checked to add it to the selected slicer **Field bucket**.



Unique to slicers using string/text values is the ability to add the search functionality. Clicking the ellipses (...) in the top-right corner of the slicer header will reveal a menu of options, the first of which is **Search**.

Adding a search option greatly improves the user experience when working with large lists.



Using hierarchies in slicers is an easy way to reduce the number of slicers on a report page, which in turn will free up valuable canvas real estate for storytelling through visuals.

Numeric

With the numeric range slicer and the date range slicer, you can create filters for any numeric or date column in your data model. There are three options for filtering your data:

- Between numbers or dates.
- Less than or equal to a number or date.
- Greater than or equal to a number or date.

This simple technique is a powerful, visual way to filter your data.

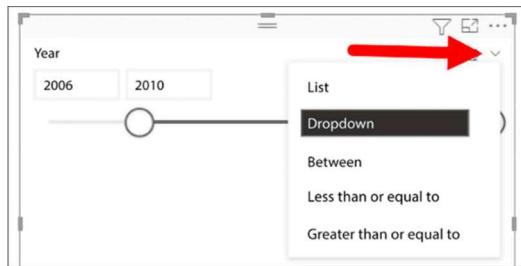
Another slicer to the current report page, which uses a numeric field, to explore the numeric range slicer was added as follows:

From the **Visualizations** pane, the **Slicer** was selected. From the **Fields** pane, the box next to **Year** from the **Date (Order)** table was checked.

A numeric field will result in a sliding bar that can be moved from either side to give a range of values, which will be used to filter the other visuals on the page. By moving the left end of the slider one value to the right, the year 2005 will be removed from the selected range and the data in the visuals will be changed.

The slicer can also be set to use the **List** format that was seen in the temperature slicer example above. To change the display format, click the down arrow located in the upper-right corner of the slicer.

If the down arrow and eraser are not visible, simply hover the mouse over the slicer.



The format options are as follows:

- **List:** A distinct list of values from the selected field. Best used when there are a small number of options to choose from.
- **Dropdown:** Drop-down menu containing a distinct list of values from the selected field. Like the **List** option in functionality but choices are hidden until a user expands the dropdown. Also best used for a smaller set of values so users don't have to scroll through hundreds of choices.
- **Between:** This choice will only present itself for fields that are of the numeric and date data types. It allows users to specify a boundary-inclusive range of values. This means a range between 100 and 500 will include data points 100 and 500 rather than being filtered out.
- **Less than or equal to:** Like the **Between** option, but the sliding scale can only be adjusted from the right side, the upper boundary, which is included in the filter values.
- **Greater than or equal to:** This is the same as the previous option, except you can only adjust the sliding scale from the left side, the lower boundary, which is included in the filter values.

When using the **List** option for a smaller set of filter choices, try changing the orientation from vertical to horizontal. If you add a background color to this setup, it gives the feeling of having buttons to filter with. To set this up, just go to the **Format** area of the slicer. From the **Visual** pane, navigate to **Slicer settings**, then **Options**, and change the value of the **Orientation** setting to **Horizontal**. Then, expand the **Items** area and select a font color and background color of your choice, and you will see the design feels like a set of buttons.

Be sure to consider the context in which a numeric filter will be used and decide the appropriate format. A dropdown or a list may be more suitable when filtering tire sizes as the user will likely be looking for a single or small range of values. However, when filtering based on price, one of the range options, such as **Between**, may be more applicable due to the vast variations in prices based on the manufacturer, size, mileage rating, and so on, and this would make searching through a list very time-consuming.

Date

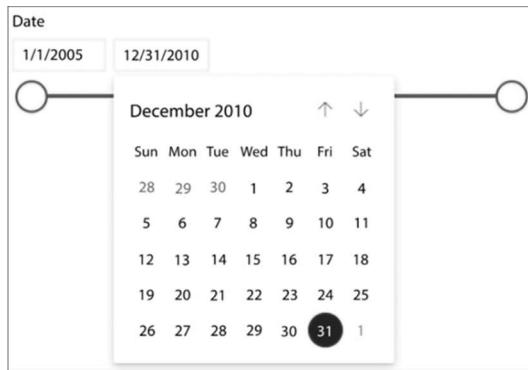
Click [link](#) to watch a video about date slicers.

With the **relative date slicer** or **relative date filter**, you can apply time-based filters to any date column in your data model. For example, you can use the **relative date slicer** to show only sales data that's happened within the last 30 days (or month, calendar months, and so on). When you refresh the data, the relative time period automatically applies the appropriate relative date constraint.

A slicer to the current **Report** page, which uses a **Date** field was added:

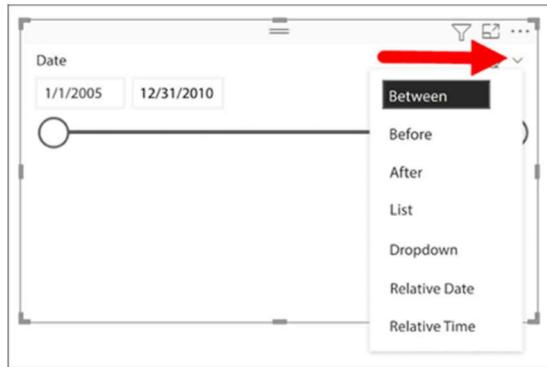
From the **Visualizations** pane, the **Slicer** was selected. From the **Fields** pane, the box next to **Date** from the **Date (Order)** table was selected.

At first glance, it appears Power BI has just generated another numeric range slicer. However, the lower and upper boundaries are dates. Clicking on either boundary will display a calendar to aid in selecting a date.



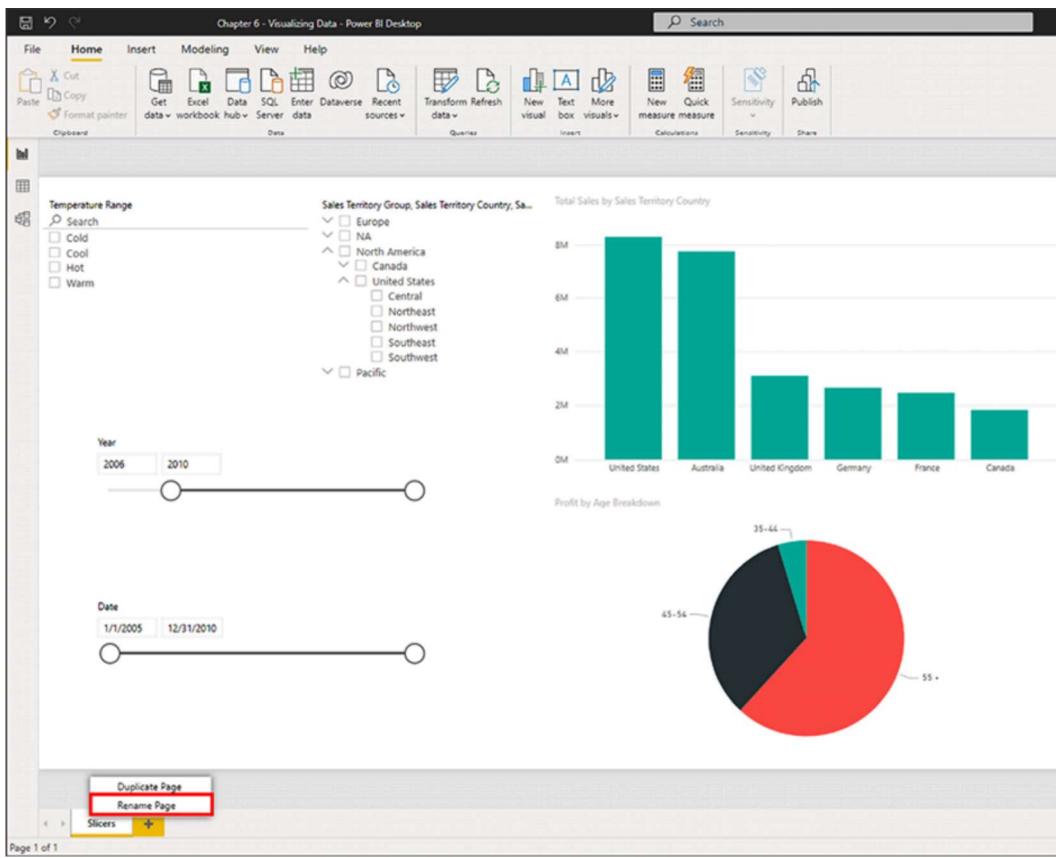
In addition to the options available to the text and numeric slicers, the date slicer adds relative date and time formats. The relative filter, shown below, allows ranges to be set relative to the current date or time. It can be configured to look at the last, current, or next N number of units. The relative units can be days, weeks, months, or years for a relative date.

The relative units can be minutes or hours for a relative time.



You have now seen a couple of different ways to allow users to filter the visuals that have been created for them. Cross-filtering will always be there for users, but you can take a more traditional route with the **Slicer** visual and present them with specific options they would find meaningful to filter the data.

The last step was to rename this report page from **Page 1** to **Slicers** by right-clicking the page name and selecting **Rename Page**.



Report filters

There is one other way to filter data and that is through the **Filters** pane. Here you can select specific fields to filter a single visual, all the visuals on a specific page, or all the visuals on all pages. While this is a very useful option, it does come with some hidden effects. The **Filters** pane is not as easily visible as a filter sitting on the canvas. As such, it is easier for users to miss seeing which filters have been applied and therefore possibly miss some key context for a report or a report page. One way to avoid confusion is to place a callout in a textbox on the report stating filters are being used on specific pages, or create an overview page where users can be given a tour of the report configuration before diving into the data.

There are three main contexts for report filters available in the **Filters** pane:

1. **Filters on this visual** are only available when a visual is selected on the canvas. This will be pre-populated with fields that are already present in the visualization's field wells but with the default setting of **All**. These filters apply to this visual only and are applied in addition to any other slicer or interaction filtering.
2. **Filters on this page** are applied to all visuals on the current page. These filters can vary from page to page and are not specific to any one visualization.
3. **Filters on all pages** are applied to all visuals on all pages in the report. Changing from one page to another will show that these filters do not change. One thing you will notice about the dataset being used in all the examples is there are only valid dates in the years between 2005 and 2008. If you'd like to skip a few steps along the way through this chapter and apply a global filter to only include dates where there is data, you can optionally add the **Year** field from the **Date (Order)** table to the **Filters on all pages** and filter to only include the years 2005–2008.

With interaction behavior, slicers, and filters, there is no shortage of methods for filtering the data context for a visual, page, or even the entire report. We will explore even more about filtering in the next chapter when examining Power BI's drillthrough and tooltip functionalities.

See also Exercise 16.

Visualizing tabular data

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◀ Lesson 5 Quiz

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Exercise 16 - Filtering visualizations and data ►

Olet kirjautunut nimellä Janne Bragge. (Kirjaudu ulos)

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