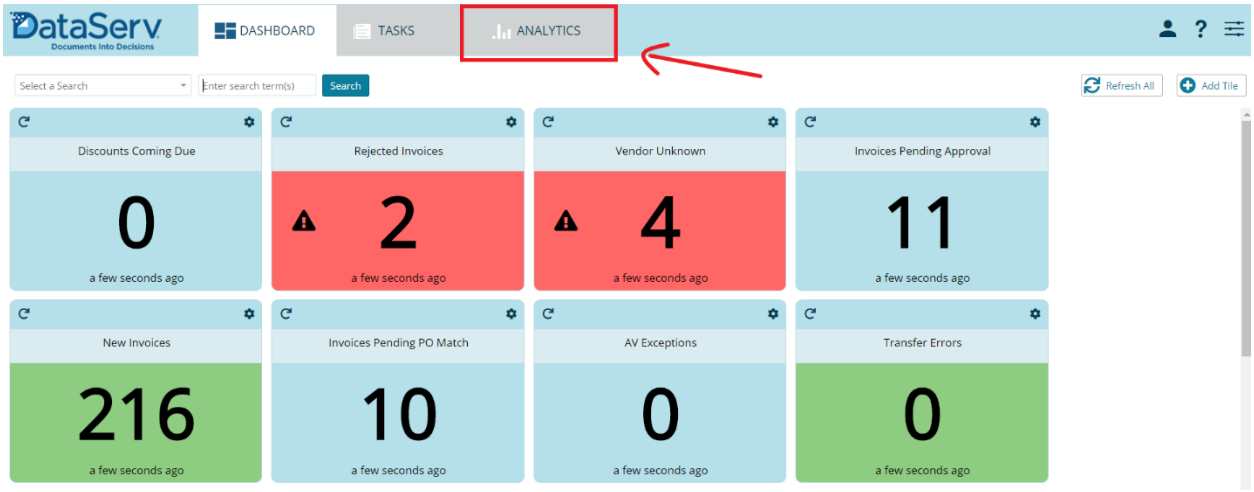
Contents

Tutorials

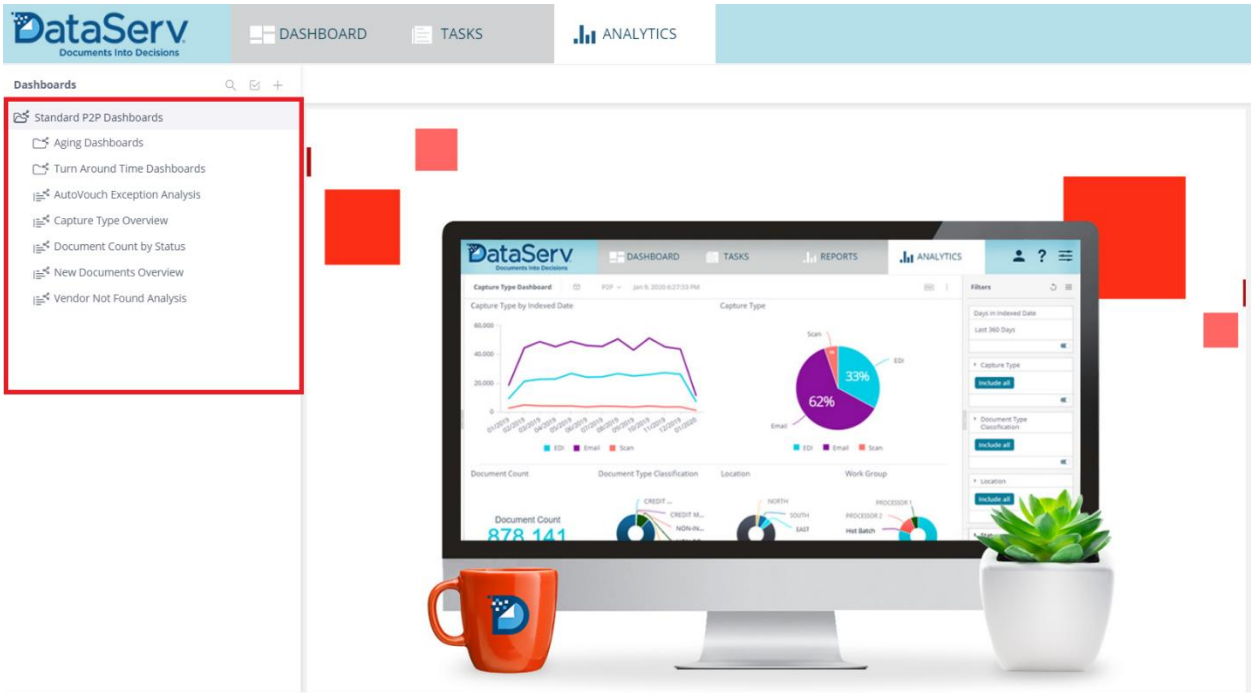
Accessing Analytics

How to Access Analytics Dashboards?

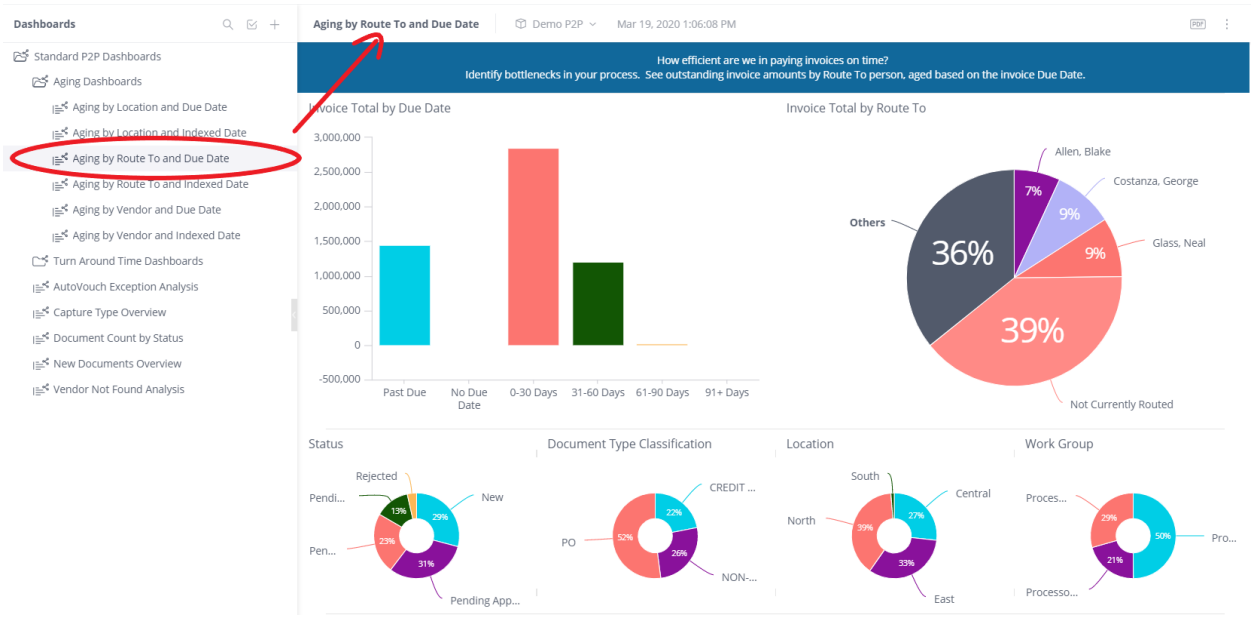
After logging in, click the **Analytics** tab.



In the **Analytics** tab, you can see dashboards that you created or were shared with you on the left navigation pane.

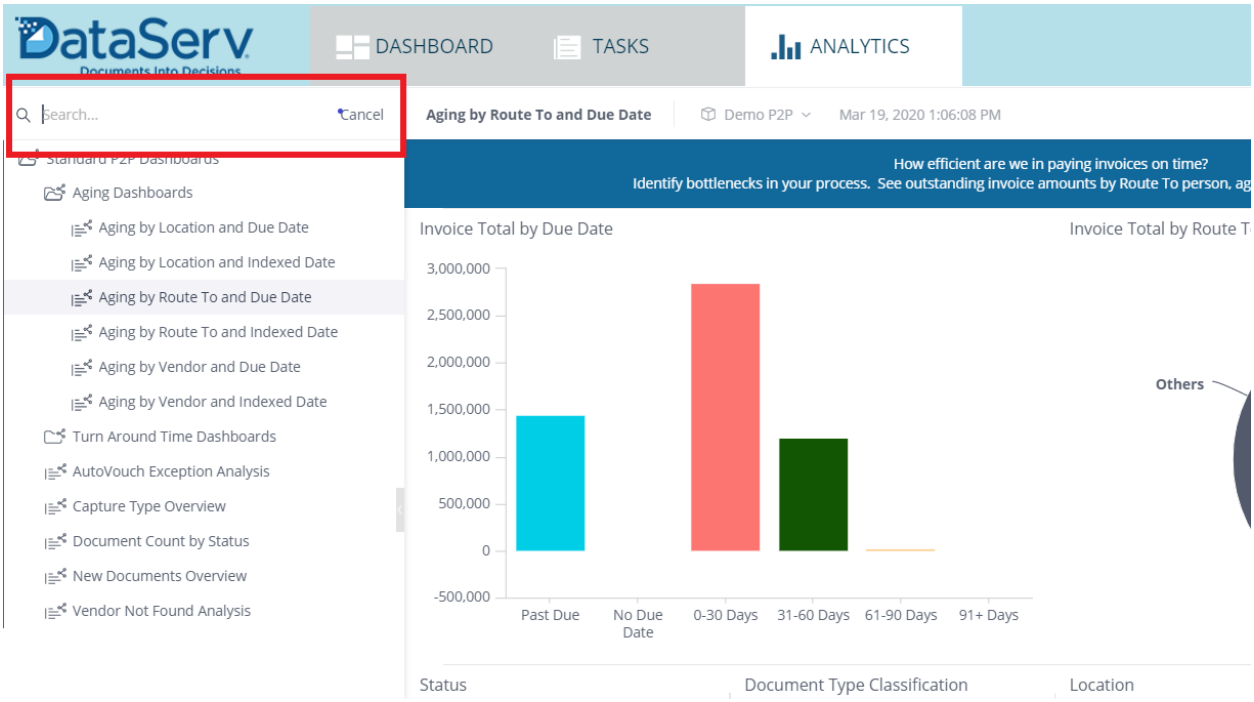


To open an Analytics dashboard, click the title of the dashboard on the left side or click the dashboard tile below. This opens the dashboard inside the **Analytics** tab.



Search for Analytics Dashboard

If you have a lot of dashboards, you can search for dashboards by typing the title in the **Search** field. As you begin typing, any relevant results are displayed.



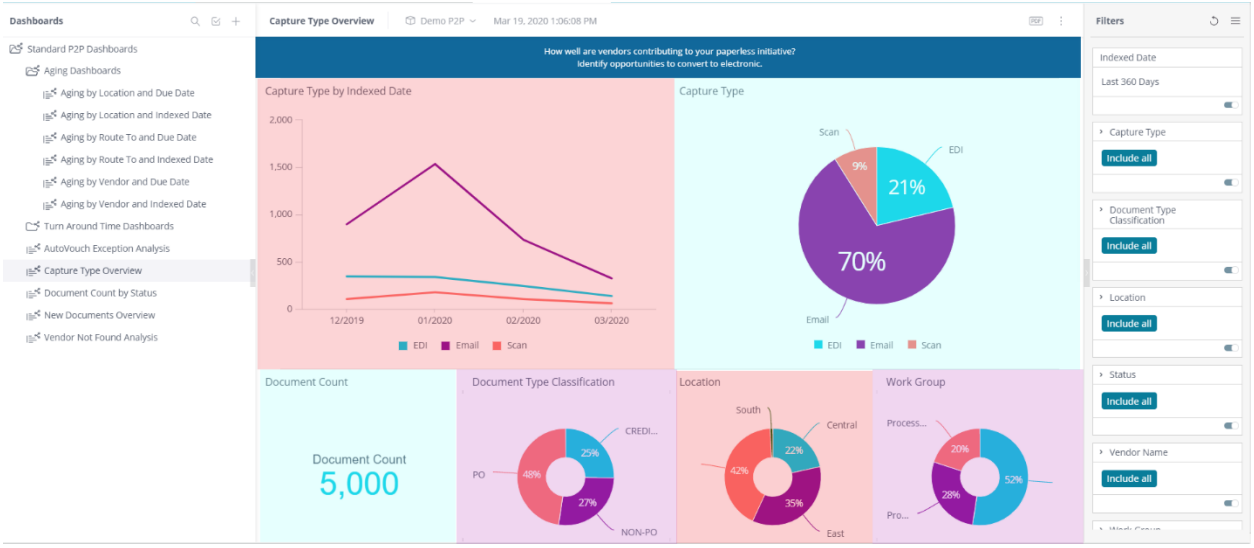
To locate a dashboard by name, source, or owner, you can use search operators within the **Search** field. Sisense supports the following operators:

What You Can Search By	Keyword Operator	Example
Dashboard name	Name:	Name:Turn Around
Data source	Source:	Source:Sample P2P
Dashboard Owner	Owner:	Owner:John

Analytics Basic Concepts and Terminology

Dashboards

An Analytics Dashboard is a collection of one or more widgets that visualize the selected data.



The Analytics Designer defines which widgets appear in the dashboard, their design, how they are organized and the filtering of the data that appears.

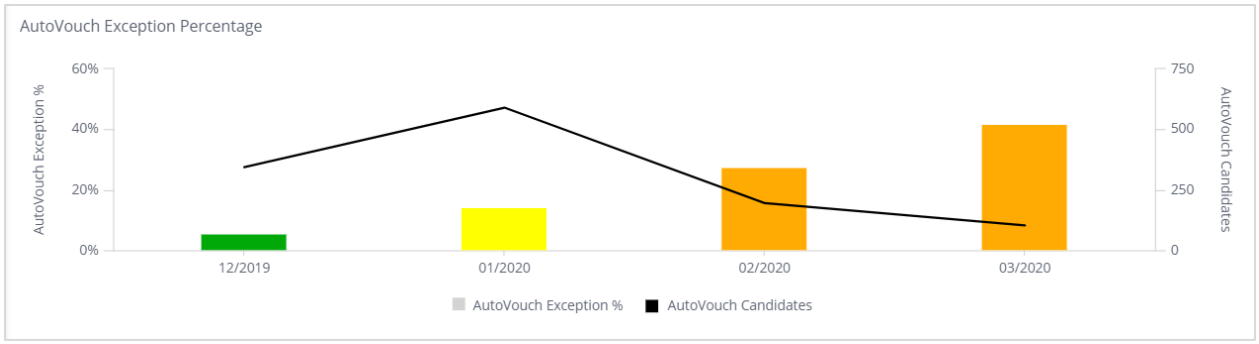
Within Analytics you can access your own dashboards and dashboards others shared with you.

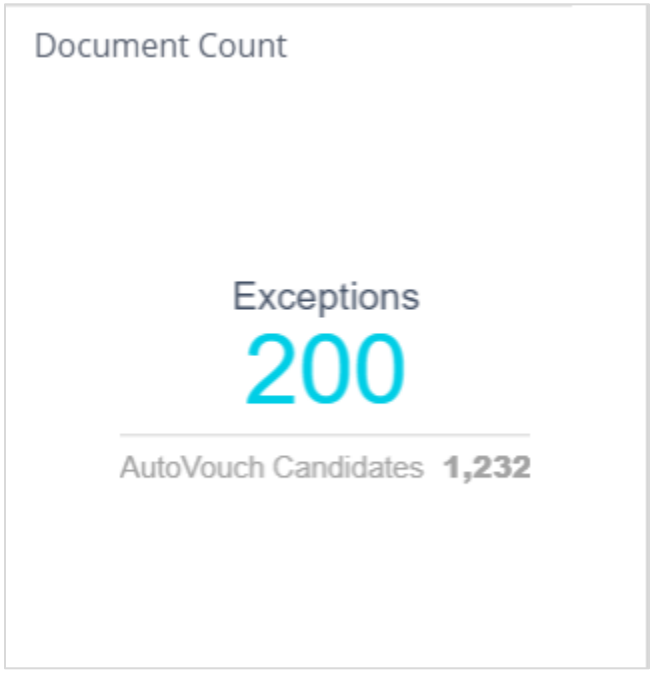
DataServ allows you to create as many Analytics dashboards as you need. When you create a dashboard, you are the dashboard's owner. Owners can share dashboards that they have created with other DataServ users.

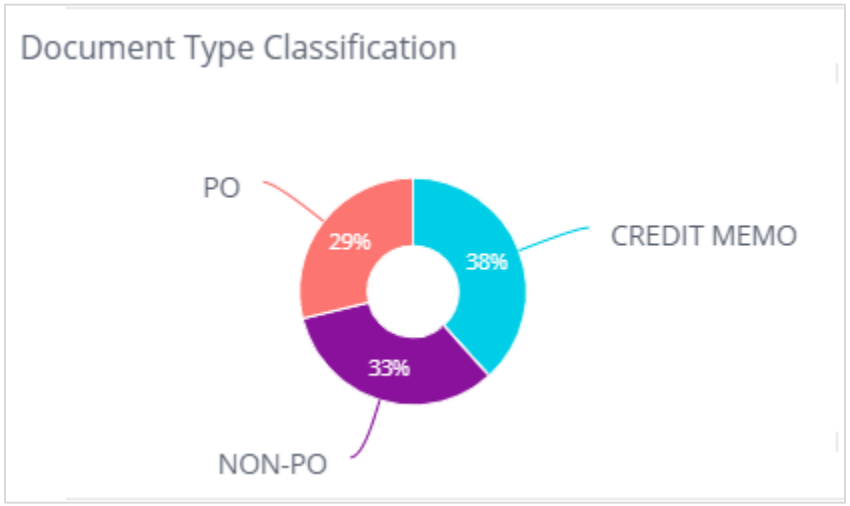
DataServ provides a variety of built-in automatic dashboard sharing features. You can easily share a dashboard with others in the DataServ environment or have a dashboard automatically delivered to your chosen recipients by email (on a scheduled basis or upon each data update).

Widgets

Each widget is a dynamic visualization of data. The Analytics Designer picks the type of data to appear in a widget and the type of visualization (chart type). A few examples of widgets are displayed below:

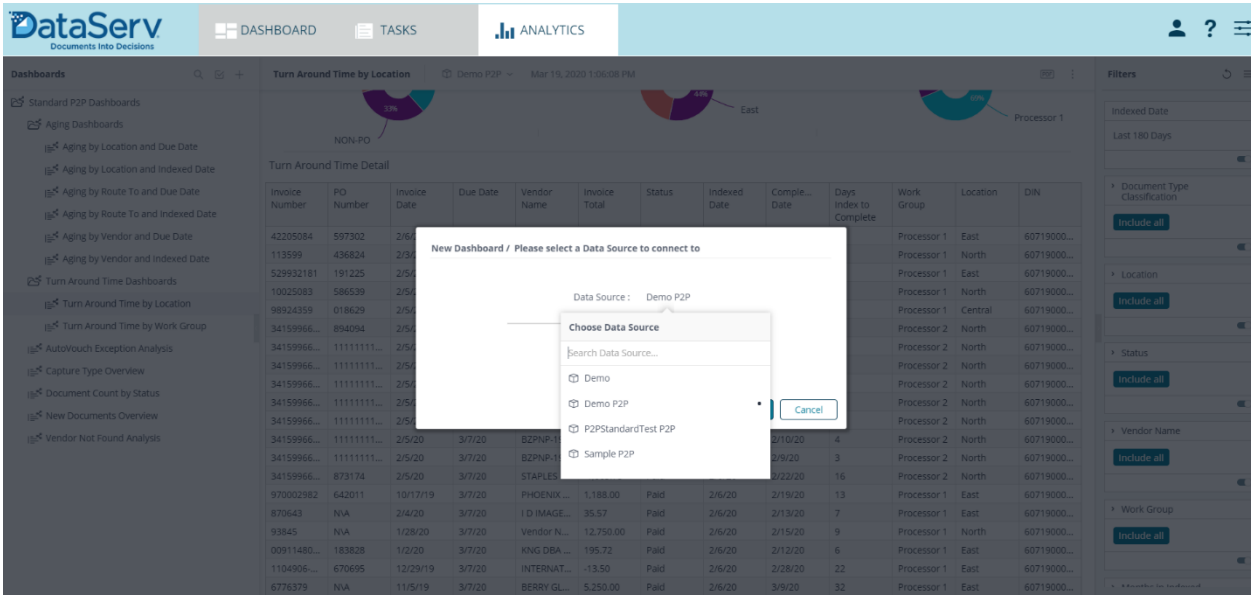






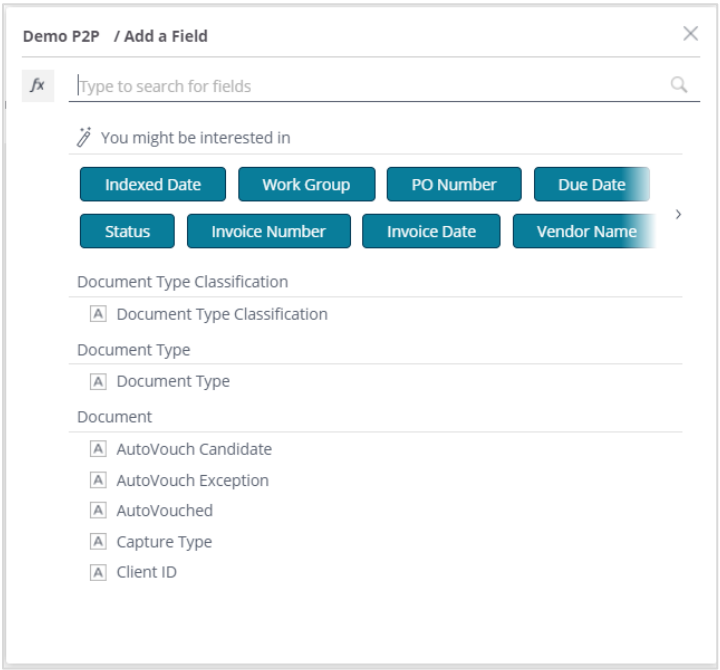
A widget selects data from a single Data Source.

Data Source



Fields

Widgets are composed of fields that represent the data from the selected Data Source. Widgets are created by simply selecting from the fields displayed in a Data Browser, which appears in various places within Analytics. Each field represents a column of data in the Data Source.



When designing widgets, fields can be categorized into three groups:

- **Numeric Fields**: Numbers (quantified data), such as invoice amount, number of days between indexed and complete. This is data that you may want to aggregate or calculate. For example, the sum of invoice amount or the average of number of days between indexed and complete.
- **Date Fields**: Dates can describe both date and time values. Dates can be used to organize your data into hierarchies according to year, quarter, and month or into buckets of time such as by hour or by 15-minute intervals.
- **Descriptive Fields**: Items used to label and categorize, such as vendor name, PO number, location, document type category.

Generally, widgets combine both these types of fields. For example, to show past due invoice total by vendor. Invoice total is the numeric data and both vendor and status are descriptive data.

Filters

Analytics dashboards usually have one or more filters that affect the dashboard widgets. The filter identifies what data to include or exclude, such as due date in next 30 days or status is not “Paid”.

You can interact with filters for analyzing data, either through the Filters pane or by simply selecting values by left-clicking the widget visualization. Each time you interact with a filter, for example by selecting or entering a value, the filter is immediately applied to your dashboard. You will not affect anyone else by changing the filters.

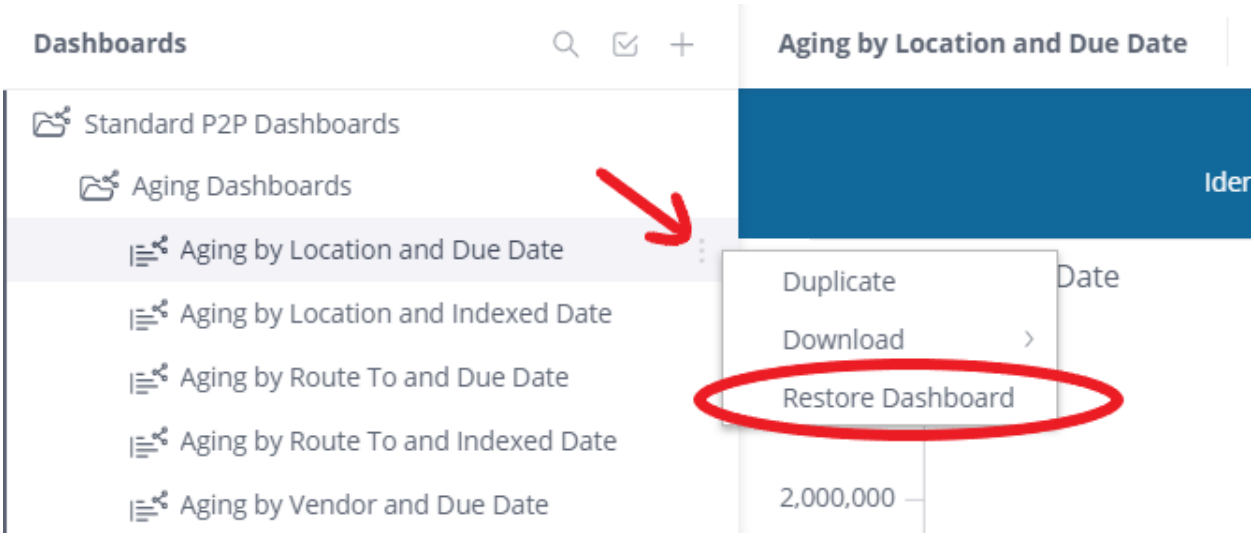
Interacting with Filters as a Viewer

Analytics dashboards usually have one or more filters that affect the dashboard widgets. The filter identifies what data to include or exclude.

This topic describes how Analytics dashboard Viewers can interact with filters for analyzing data.

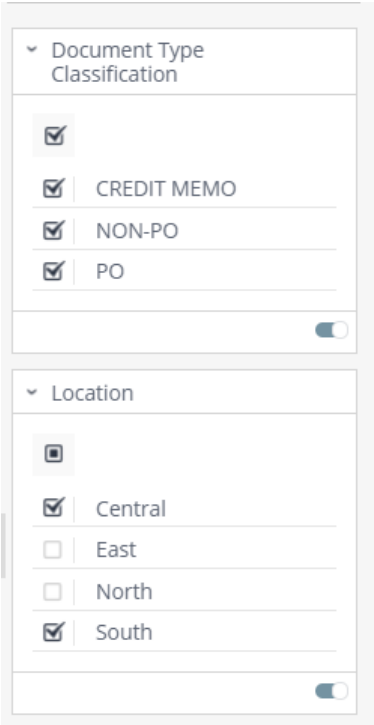
You can interact with filters for analyzing data, either through the Filters pane or by simply selecting values by left-clicking the widget visualization. Each time you interact with a filter, for example by selecting or entering a value, the filter is immediately applied to your dashboard. You will not affect anyone else by changing the filters.

You can restore the original state of the dashboard at any given point by selecting the dashboard menu item and clicking **Restore Dashboard**.



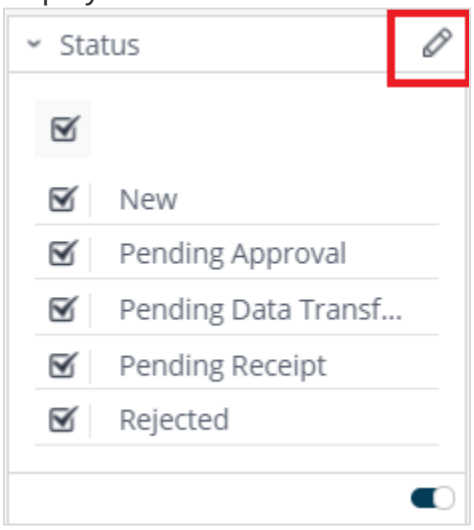
As a Viewer, you can interact with filters as follows:

- Make a different selection in the filter controls displayed in the Filters pane on the right side of the dashboard, as shown below:



OR

Click on the pencil icon next to the filter name (shown below) in the dashboard to display the Filter Definition window.



In addition, you can perform the following actions:

- Switch Filters On and Off
- Save Your Default Filters

To create a filter, you must be a Designer. To learn more about filters see Interacting with Filters as a Designer.

Widget Options

Click ⤢ to expand the Widget to full screen. In full screen the widget can be customized.

Making Selections in a Widget

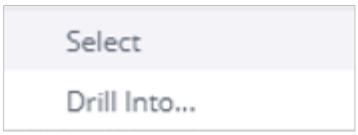
Click on a specific portion of a widget to select it. This filters the dashboard according to the selected data.

You can also use the selection to drill down in the widget (see Drilling Down in a Widget).

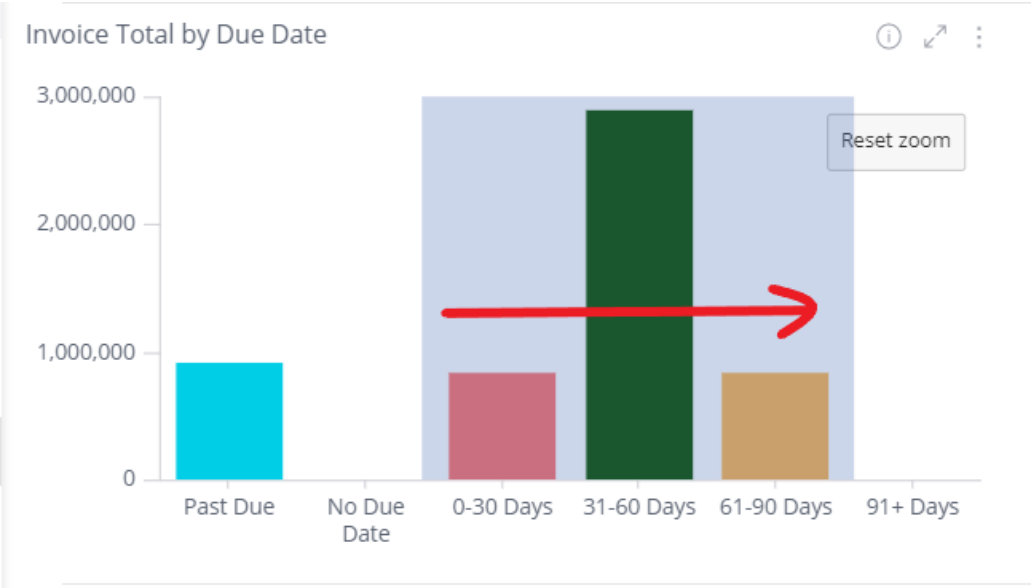
To select an item in a widget for filtering:

Left-click an item in a widget to automatically select it and add a dashboard filter according to the selection.

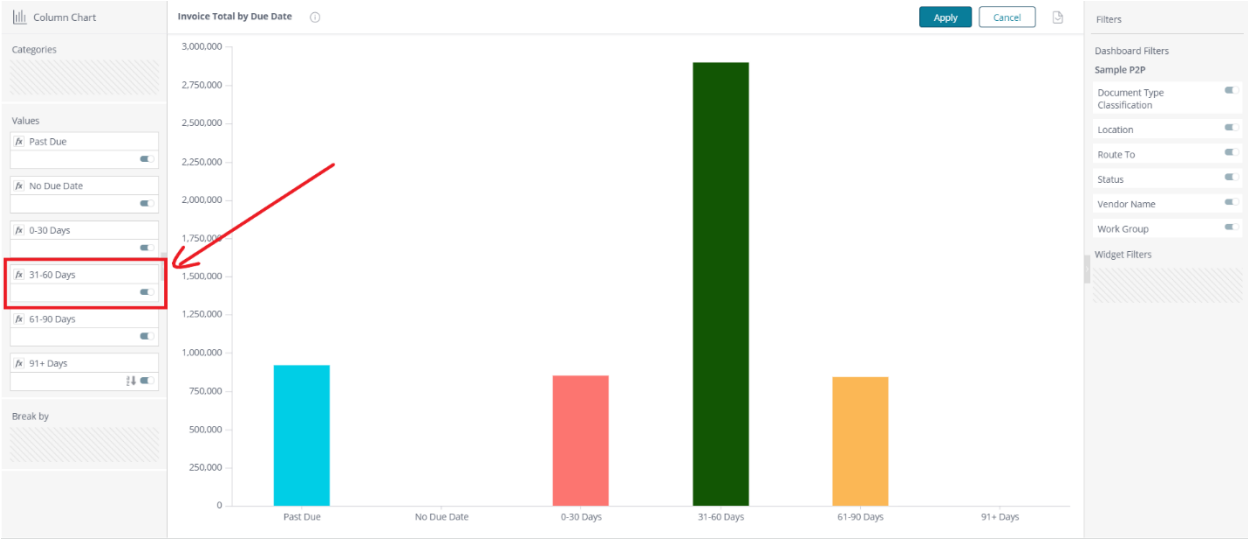
For multiple selection, use the **Ctrl** key. When released, a menu will appear. Click **Select**.



In chart widgets, you can drag and draw the area to be selected, as shown below:

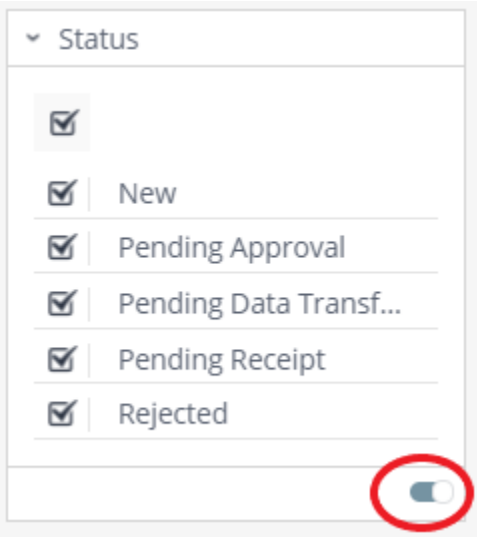


You can refine your data further by toggling the switches on the left side as shown in the example below.



Switch Filters On and Off

You can easily toggle filters on and off using the toggle switch. Use this option to compare states (with and without the filter), or to temporarily disable a filter, rather than deleting it.



Note: Clearing all the values of a filter is equivalent to turning the filter off, as in both cases no filtering is performed and all values are returned

Save Your Default Filters

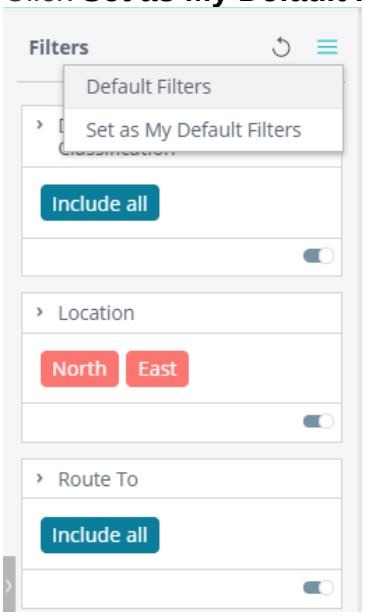
You can save the current state of your filters and their settings at any time as your default. The current state includes the existing filters, their configuration, and the order in which they appear in the filters panel. The default is specific to the dashboard.

After making changes to any of the above settings, you will be able to restore your filters to their previously saved state.

Remember filter settings are retained across logins. When you return to an Analytics dashboard it remembers the filter settings you were last using.

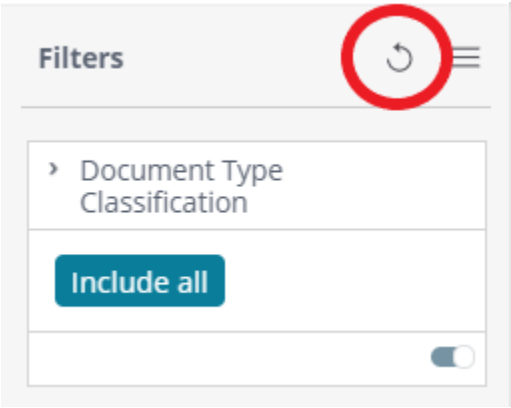
To save your current set of filters as your Default Filters:

- Click the Filter menu.
- Click **Set as My Default Filters**.



To restore the dashboard filters to your default filters:

- Click the restore icon next to the Filters menu.



Adding Widgets to a Dashboard

This topic describes how to add widgets to your dashboard through the Widget Wizard.

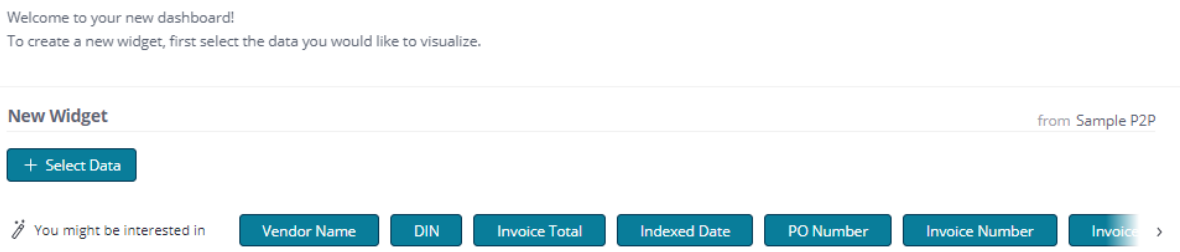
The Widget Wizard automatically guides you through a very simple process of creating a widget, while offering the best recommendations for displaying the data that you select.

Simply accepting the wizard's recommendations will help you create a great widget. However, if you want more control over your widget's appearance and behavior, click the **Advanced Configuration** option in the bottom left of the wizard to access a rich variety of additional design options, as described in Widget Designer.

Using the Widget Wizard

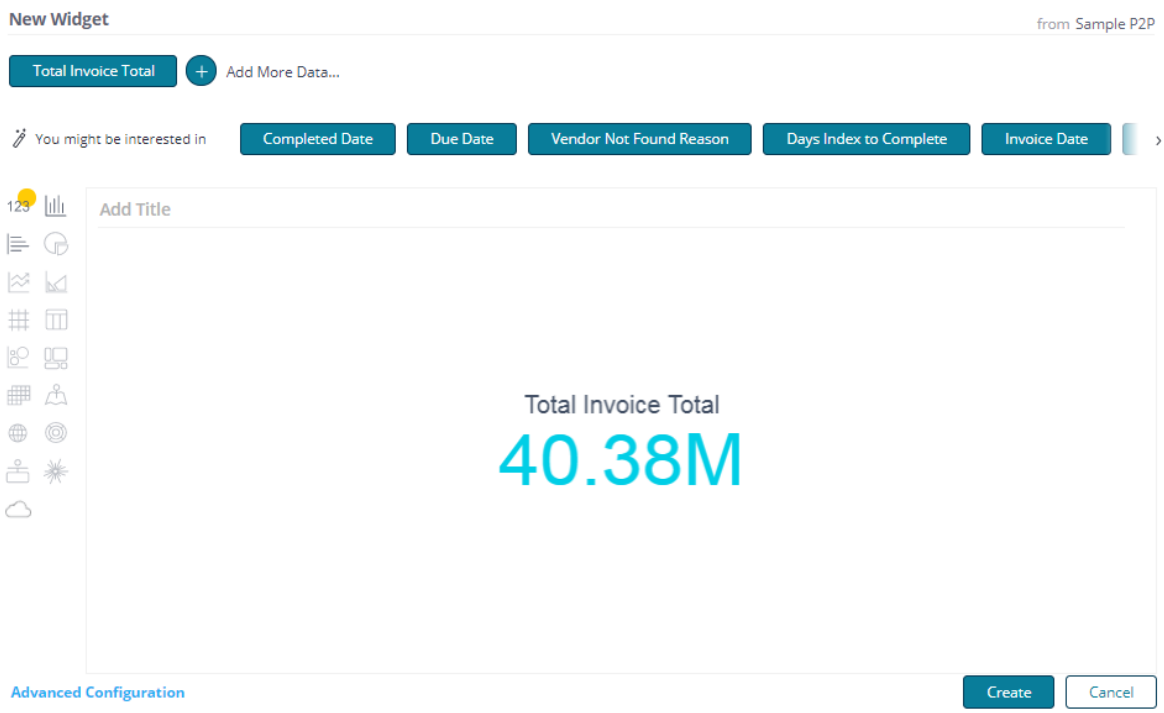
To add a widget to the dashboard:

1. If this is your first widget, click + Select Data. The Data Browser opens, and from there you can select one of the fields (columns) from this dashboard's data source. If you already have widgets in your dashboard, then click the + Widget button.
   Note: To select data from a different a different data source, click **from** on the right side of the **New Widget** window, and select a different data source. This enables you to have a dashboard contain widgets from multiple data sources.

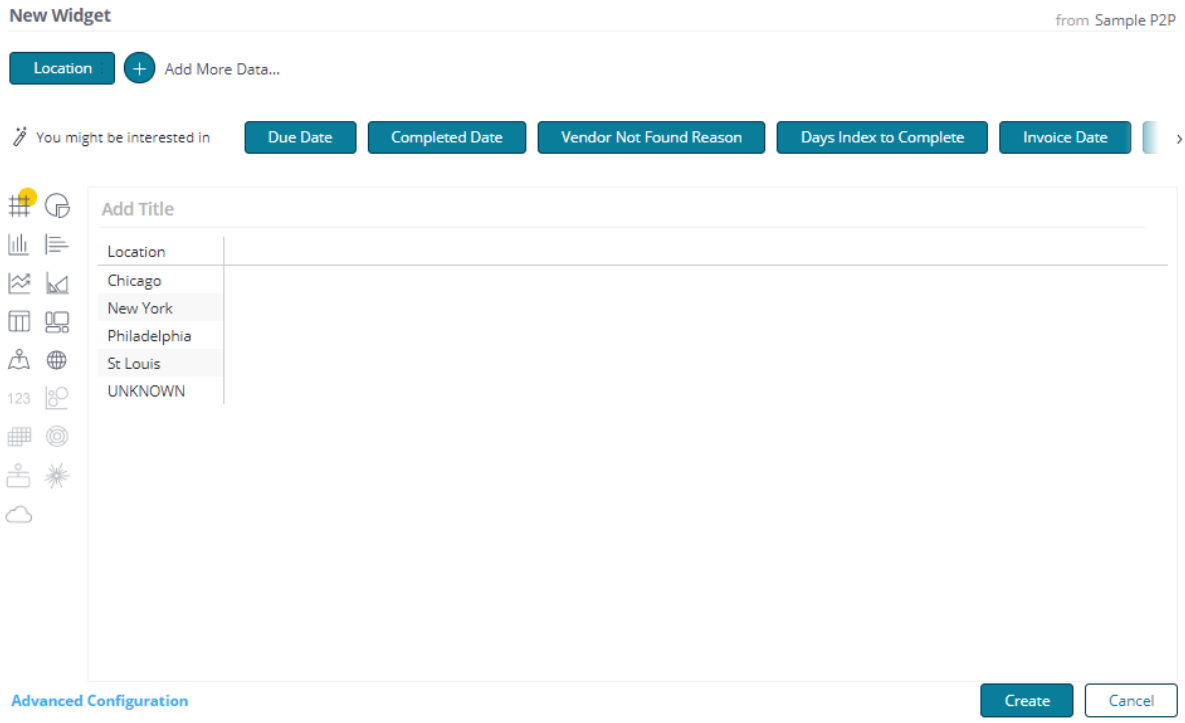


2. In the Data Browser, select a field to add to your widget. The field that you select is automatically displayed in a suggested widget. When only a single numeric field is selected, it is displayed as an Indicator widget. A single descriptive field is displayed as a Pivot widget.

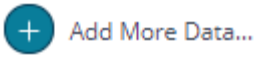
   Single Numeric Field:



Single Descriptive Field:



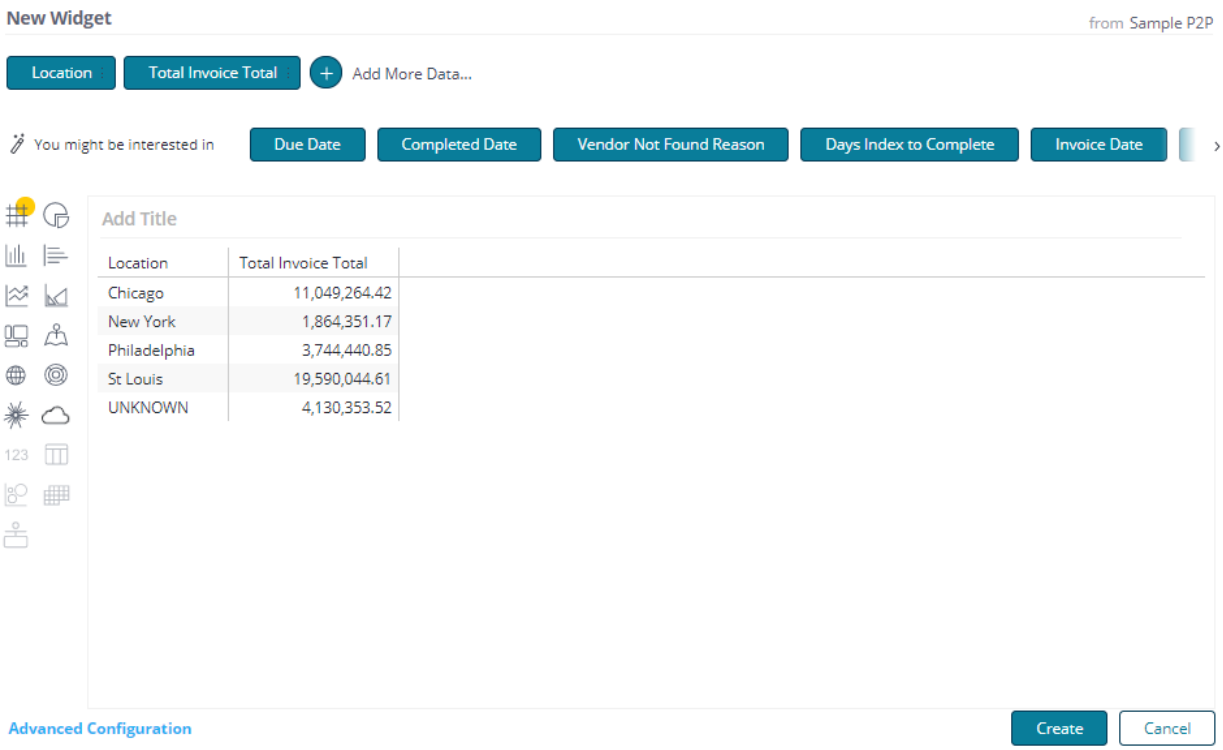
But your widget is not really interesting yet, because it has only one field!

Repeat the step above. Use the 

button or select fields from the suggested lists to add more fields to the widget.

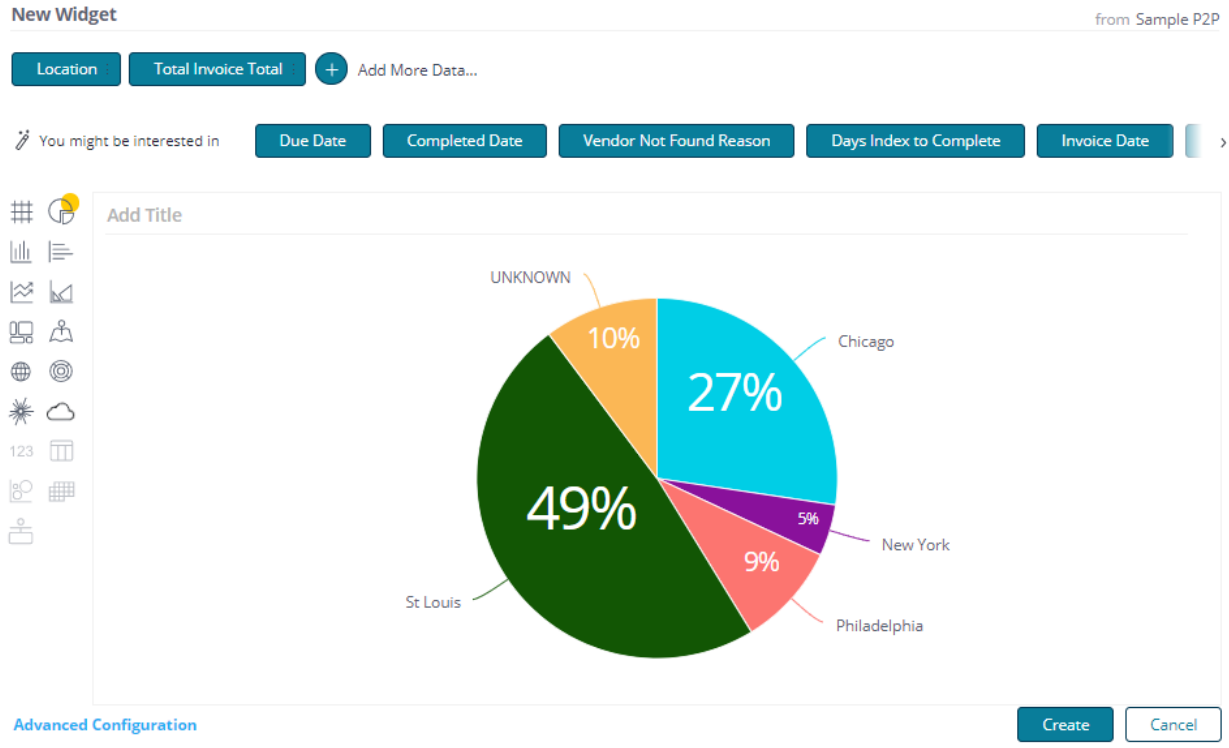
The fields that you select are listed across the top left of the wizard. A number of changes can be made to the widget by interacting with the selected fields.

- Left click and hold down the mouse to drag a field to reorder the columns.
- Right click on a field to open a menu of options for that field including:
  - Rename – to change the label for the field in this widget.
  - Delete – to remove the field from this widget
  - Filter – to open the Filter menu for this field (See Interacting with Filters as a Designer).
  - Sort
  - Type – to change the aggregation (e.g. show all items, Sum, Count All, Count Unique, Min, Max, Average
  - Numbers – to format numeric fields
  - Group By – for date / time fields to select the level of grouping (e.g. Years, Quarters, Months, Weeks, Days, Hours)
  - Color – to define conditional coloring for the field.



You can edit the Title of your widget by clicking on Add Title.

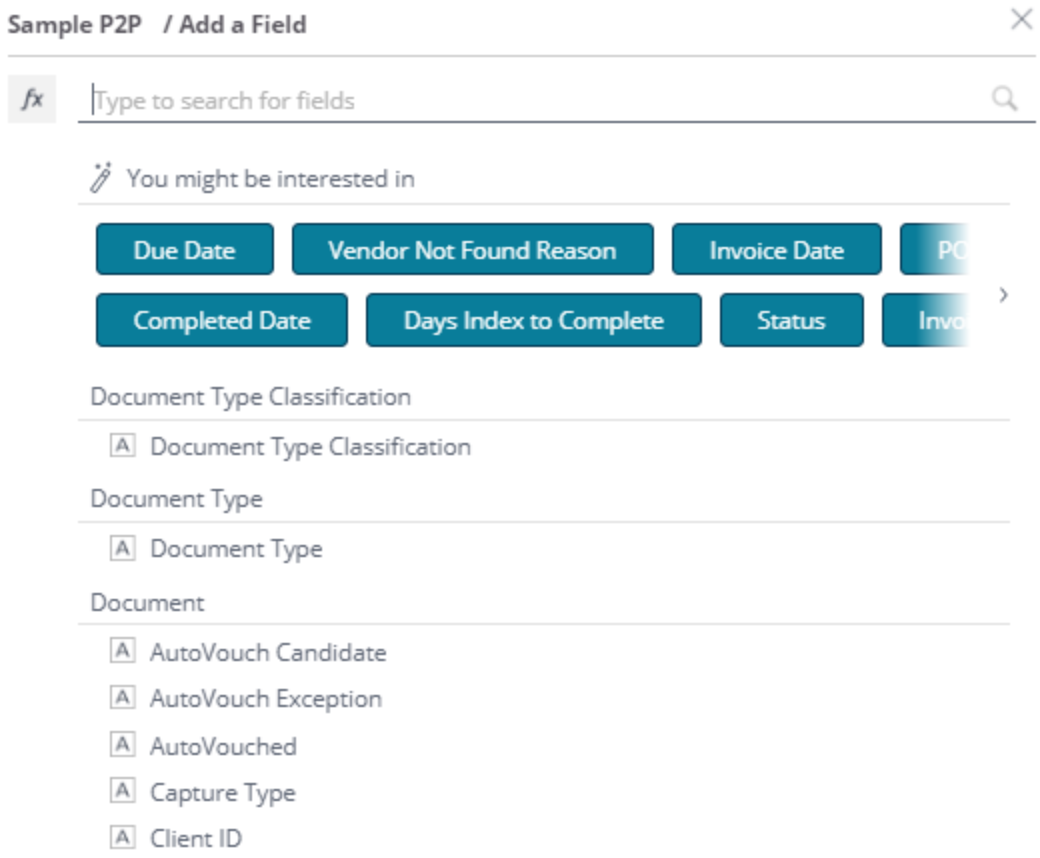
You can click on each visualization button to display the selected fields in that visualization/chart. For example, the same widget as above could be displayed as a Pie chart:



Tip: DataServ provides a recommendation for your widget design. However, if you want more control, you can click the **Advanced Configuration** option on the bottom left of the window to provide a rich variety of additional design options, as described in Widget Designer.

Data Browser

In the Data Browser, you can select and add columns (sometimes called fields) from a data source to your widget.



An icon appears to the left of each field to indicate its data type:

Date

Alphanumeric string

Numeric

As you type into the Data Browser, the list is dynamically filtered to only show the fields that contain the text you typed.

Simply clicking a field to add it to the widget generally provides great results, however there are more options in the Data Browser.

- Hover over a field in the Data Browser and click **More …** to display additional aggregation (quick functions) and filtering options.
- Click the fx button to define formulas (free-form expressions) that define the field values and filters of a widget. A rich variety of functions are provided for you

to use in the formula that you define. To learn more about these options, see Formula Editor.

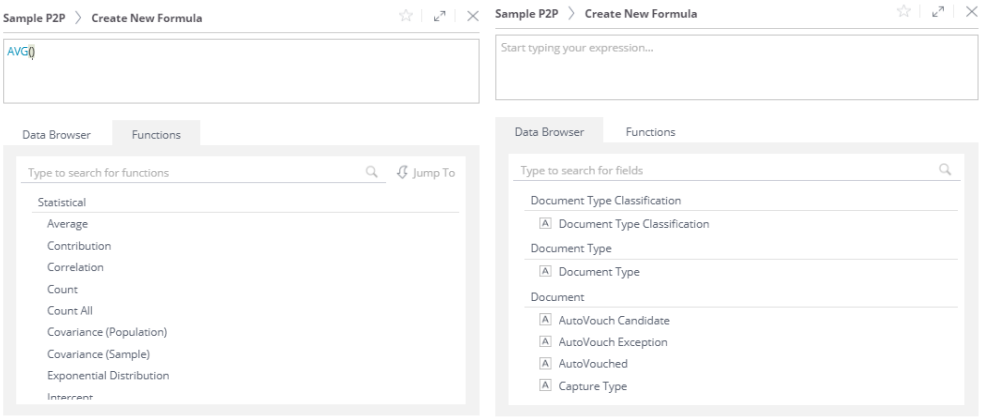
Formula Editor

The Formula Editor is where Designers define formulas for a dashboard's widgets.

To open the Formula Editor:

- Do one of the following:
  - For a new widget, click **Select Data**, and then  .
  - For an existing widget, click on the edit formula button  .

    The Formula Editor has two tabs, the Data Browser to select fields and the Functions tab to select formula operations. You can create a formula combining one or more function, field and filters. The diagram below highlights the main components of the formula panel.

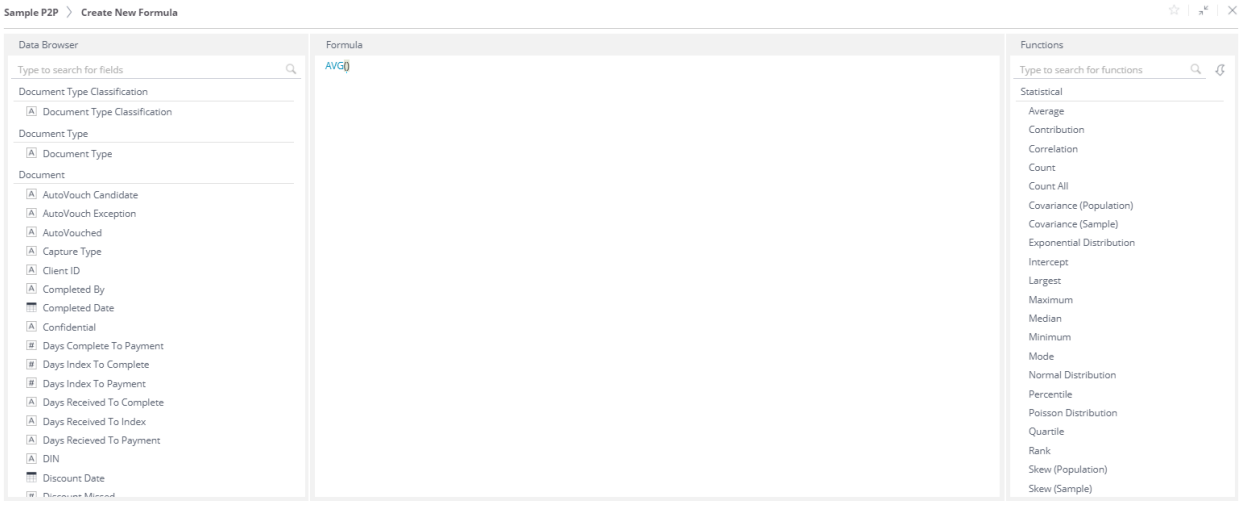


Functions are operations which perform different calculations, for example a sum. Use the ‘Jump To’ menu or the search box to quickly find the formula you need.

Fields in the **Data Browser** are variables contained in the data source. Clicking on a field in the data browser will include it as part of the formula.

Filters can be applied to restrict formulas based on criteria.

The Formula Editor window can be expanded by clicking the expand button at the top right.



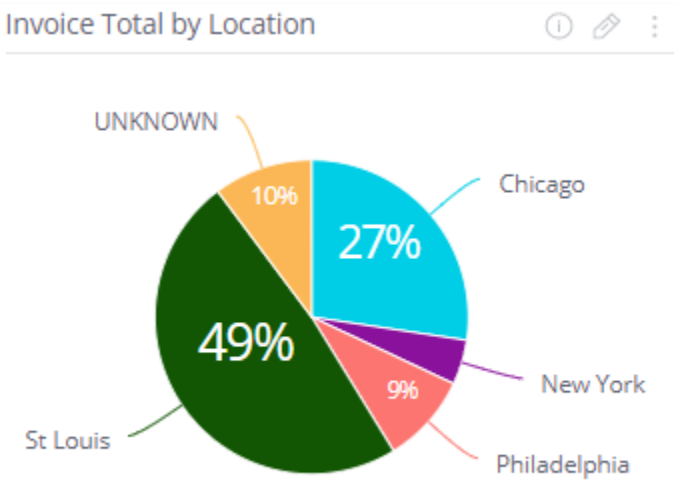
Widget Designer

The Widget Designer lets you fine-tune a widget's appearance and behavior.

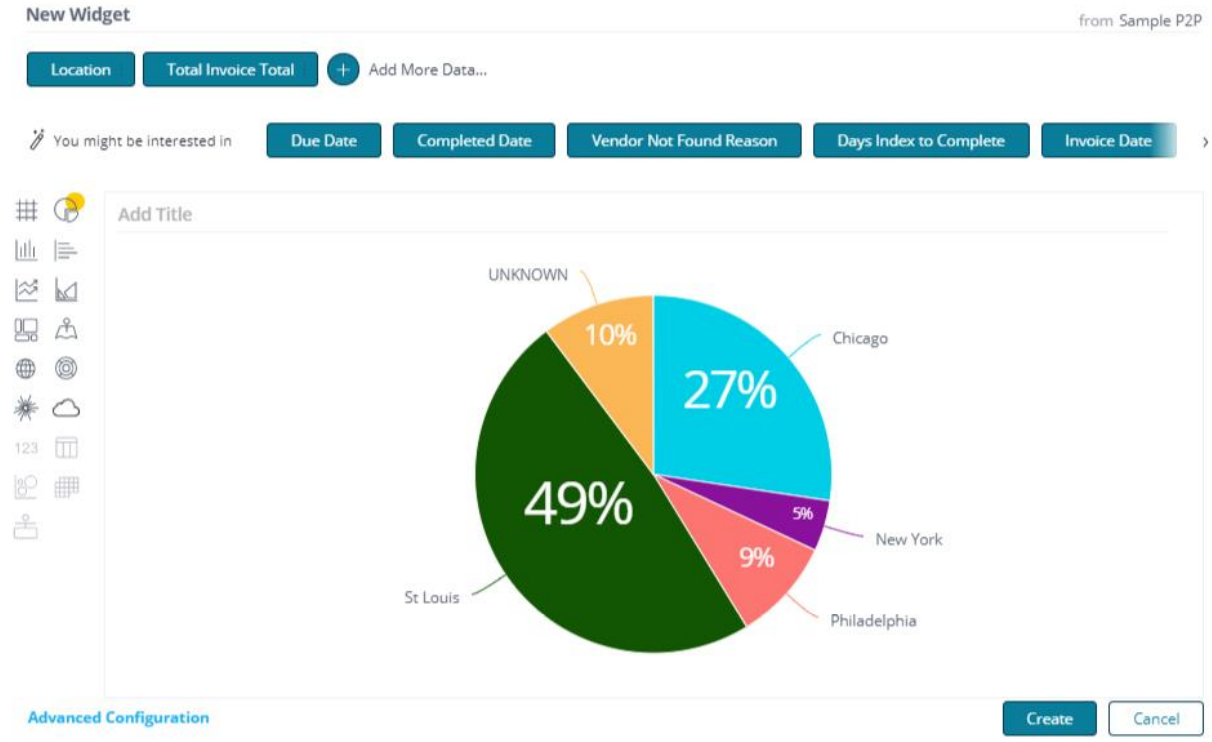
Opening the Widget Designer

To display the Widget Designer:

- On the dashboard, click the **Pencil (Edit)** button that appears in the top-right corner of a Widget.

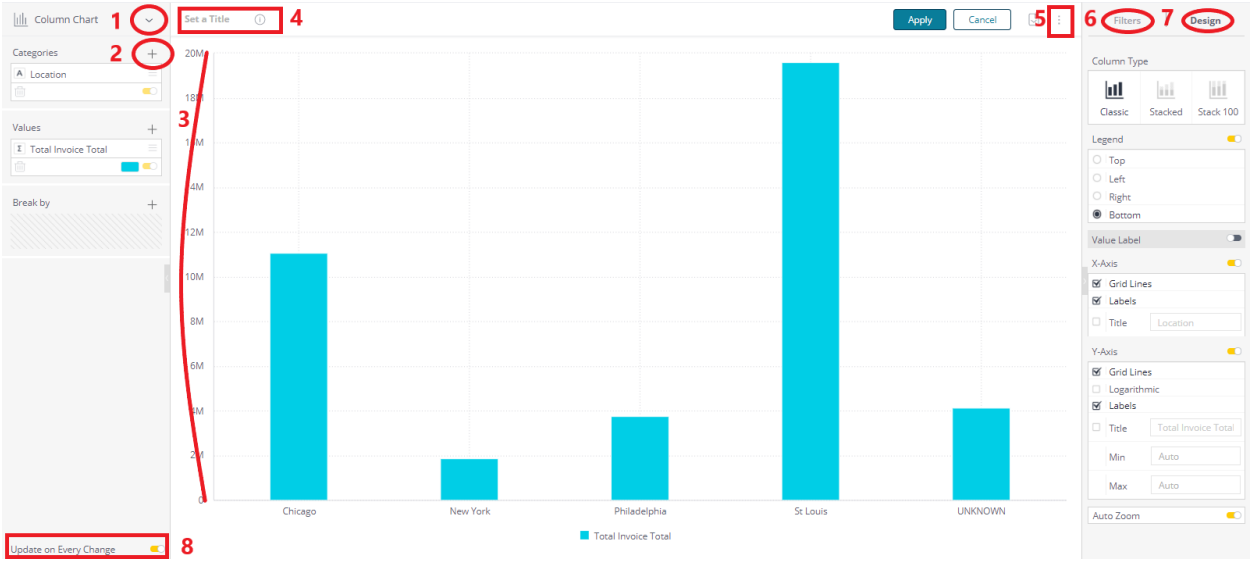


Alternatively, while creating a new widget, in the Widget Wizard, click the **Advanced Configuration** option that appears at the bottom-left of each window. The Widget Designer is then displayed showing the widget in the same state as in the Widget Wizard preview.



Navigating the Widget Designer

The Widget Designer enables you to select the data to be included in a widget in addition to providing a variety of options for customizing the visualization used to show the data.



1. **Selecting the Widget Visualization**: Enables you to change the visualization of the widget.
2. **Adding Data to the Widget (Data Panel)**: Used for selecting the values that you want to appear in the widget and those needed for grouping the data. The options differ depending on the visualization (chart type).
3. **Previewing the Widget**: The center of the window displays the current design and content of the widget, which automatically changes each time you select a different option in this window.
4. **Adding a title to the dashboard**: Click Set a Title and type in a new title for the widget. You can also add a widget title directly from the dashboard without entering the Widget Designer. Click here to learn more.
5. **Accessing More Options**: Displays a menu of additional options for the widget.
6. **Filtering the Widget (Filter Panel)**: Lets you manage the filters that affect this widget. Learn more in the filtering page.
7. **Designing the Widget (Design Panel)**: Provides a variety of options for fine-tuning the appearance of the Widget, including labels, legends, line types and more. Some of these options need to be turned on for you to configure them. The options differ depending on the visualization (chart type).
8. **Update on every change**: Selected – Data changes are automatically and dynamically updated in the display. Not selected – you have to click **UPDATE** to display your latest changes in the widget. Clearing this checkbox may be useful when you are working with very large datasets where query times might be slower.

Fine-tuning a Widget

To learn more about adding data and fine-tuning the design of a specific widget, click on a widget from the list below.

Indicator

Column Chart

Line Chart

Area Chart

Area Map

Bar Chart

Pie Chart

Polar Chart

Scatter Chart

Scatter Map

Pivot

Sunburst

Treemap

Calendar Heatmap

Table

Box & Whisker Plot

See also Additional Widget Design Options and Extending Dashboard Functionality with JavaScript.

Creating Formulas Based on Criteria and Conditions (Filters)

Often formulas must take into account specific criteria. To do this DataServ Analytics provides a feature called **Measured Value**, which like the SUMIF function in Excel, only performs a calculation when the values meet a set of criteria.

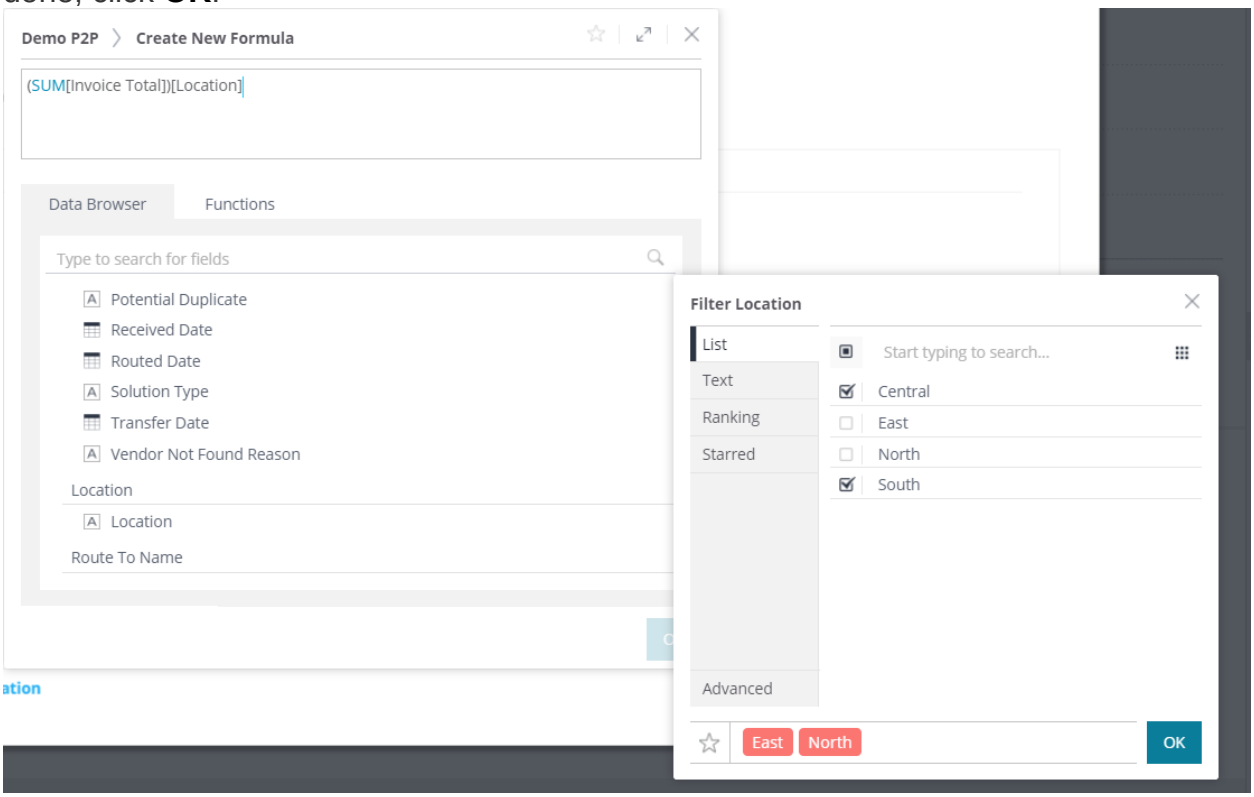
Criteria for Measured Values may be based on any logical operators in a filter.

Measure Value Syntax:
(Measure, Scope1 , Scope2...ScopeN)

Parameters
Measure: A field measure or formula.
Scope: A filter including *Value, Text, List, Ranking and Time filters.*

To filter the formula:

1. In the Data Browser, create your formula from the Data Browser and Functions, as explained in Formula Editor.
2. Add the field (criteria) by which you want to filter the formula. Right-click the field and select **Filter**.
3. You can then filter the formula by listed items, text options, ranking, etc. When done, click **OK**.



A simple example of Measured Value is the use of a list filter. For example: you want to calculate the Total Invoice Amount for a combination of locations (Chicago and New York).

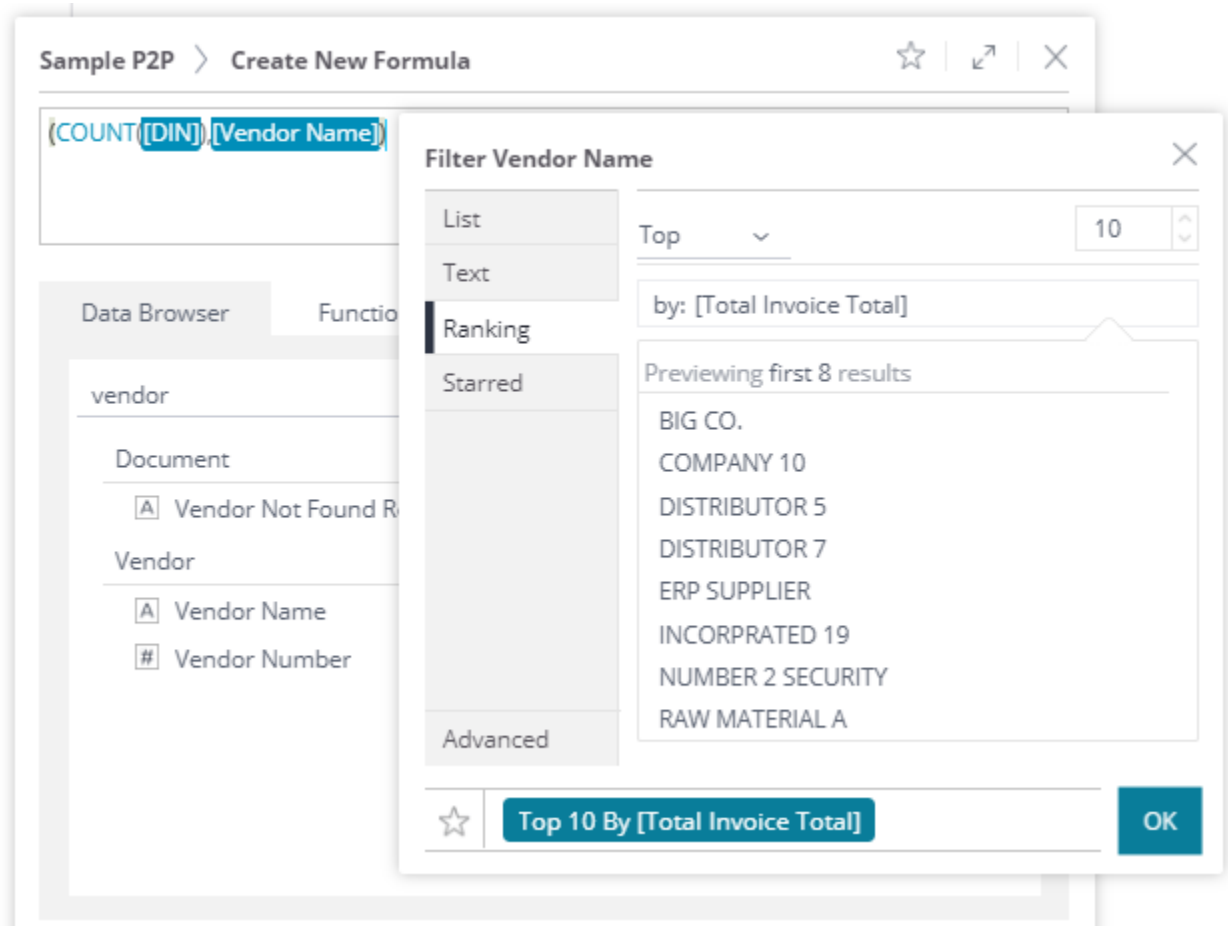
(Sum([Invoice Total]), (List Filter: Location = Chicago, New York))

The above example as defined in the Formula Editor is shown in the image above.

A more sophisticated case is the **use of a ranking filter**, for example you want to track the number of invoices associated with the top vendors based on monthly spend. The top vendors may change over time. A measured value can be created which includes a condition that only shows the invoice count for the top vendors for any month. This simultaneously filters the data but also takes into account changes in what classifies as a top vendor over time.

(Count([DIN]), (Top Ranked Filter: Top 10 Vendors by Invoice Total))

The above example as defined in the Formula Editor.



Measured Values are a powerful feature to take into account business logic and quickly perform calculations only when a specific set of criteria is met.

Note: If your widget is filtered using measured values, then the measured value will override any other widget or dashboard filters you have for the same fields.

Calculating Contributions Using the ALL Function

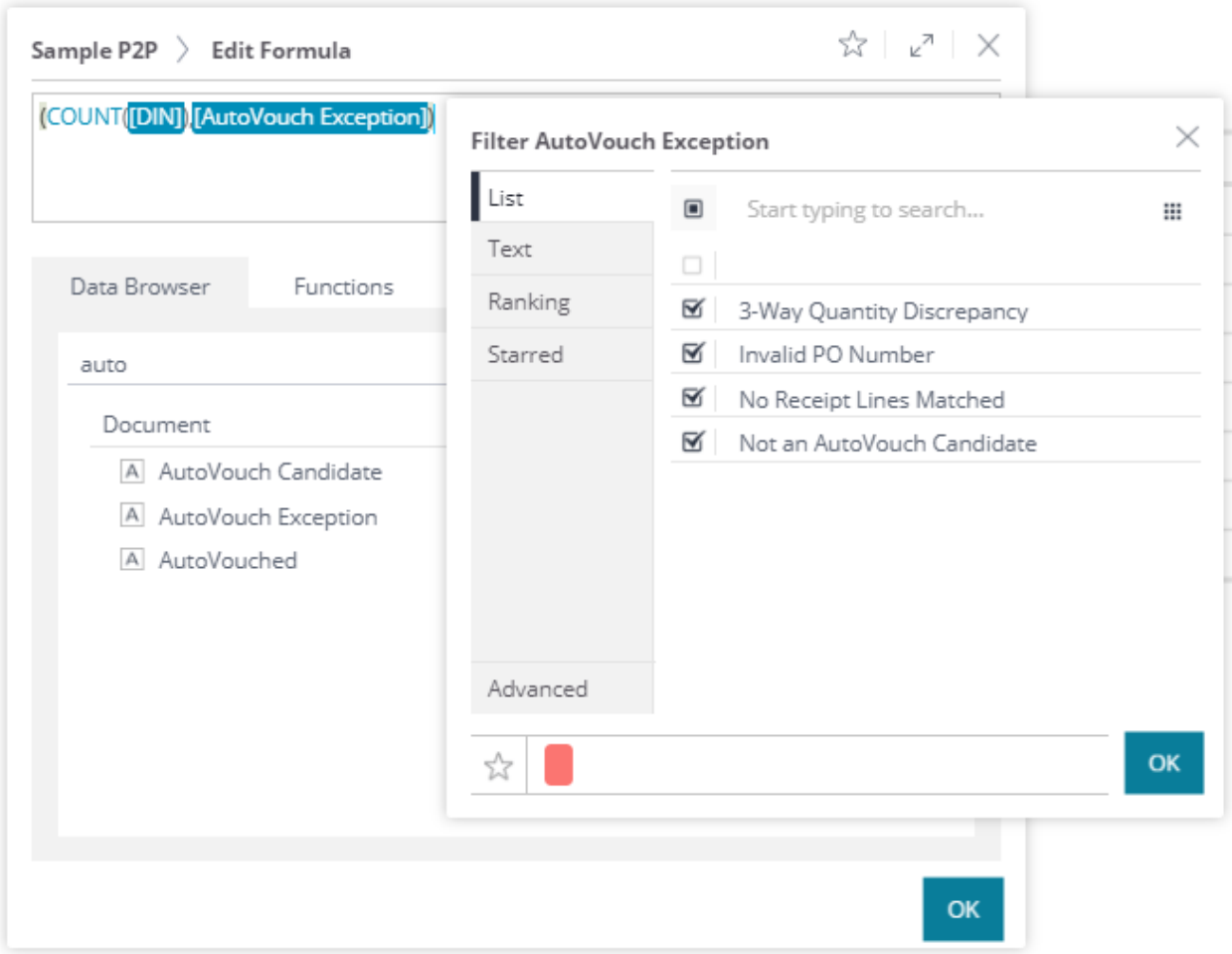
The All() function returns the total amount for a dimension, and can be used for various use cases. In the following example, we will use the All function to calculate the percentage of AutoVouch candidates with exceptions .

Our final widget includes the following information:

Vendor Name	Count Document with Exceptions	Count of AutoVouch Candidates	% of AutoVouch Candidates with Exception
BIG CO	1,777	7,777	23%
COMPANY 10	1,448	9,300	16%
BEAR MOUNTAIN INC.	495	7,666	6%
BANANA DISTRIBUTOR	401	8,000	5%
BIG CAT	754	17,550	4%
ACME INC	143	5,301	3%

Step 1: The second column above represents a formula that counts all of the documents that had an AutoVouch Exception.

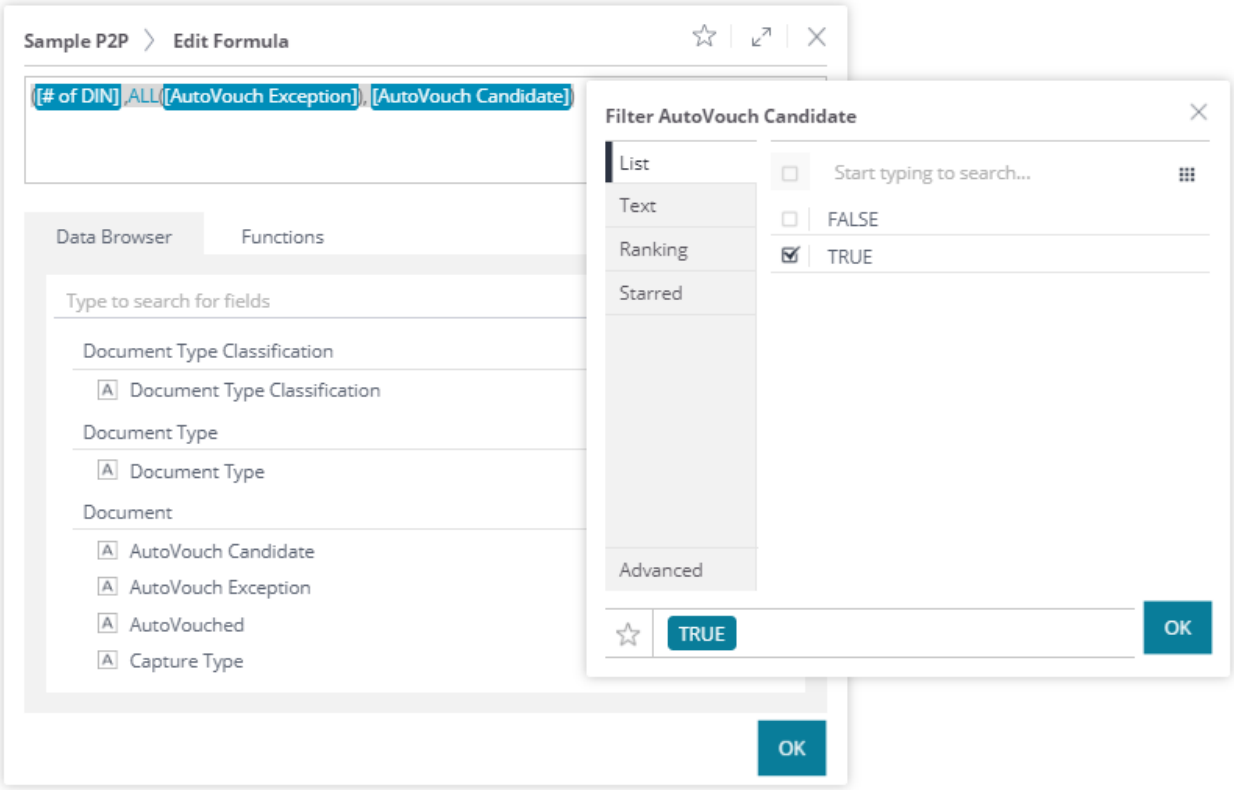
Below is one option for doing this, but we recommend applying this filter on the Dashboard and not all the way down to this field. This allows the column to recalculate if you filter to specific AutoVouch Exceptions. To do this simply count the number of documents and apply the AutoVouch Exception filter to the dashboard.



We will use the recommended formula count([DIN]) in step 3.

Step 2: The third column above represents the count of AutoVouch Candidates whether it had an AutoVouch exception or not. This is accomplished with the All function on the AutoVouch Exception field. The AutoVouch Candidate field is filtered to True.

([# of DIN] ,ALL([AutoVouch Exception]), [AutoVouch Candidate])



Step 3: The final column is a simple calculation of the prior two columns.

count([DIN]) / ([# of DIN] ,ALL([AutoVouch Exception]), [AutoVouch Candidate])

Format the column as a percentage

Indicator

The Indicator widget provides various options for displaying one or two numeric values as a number, gauge or ticker. It also provides the option to add additional titles and a color-coded indicator icon representing the value, such as a green up arrow or a red down arrow.

Adding Data

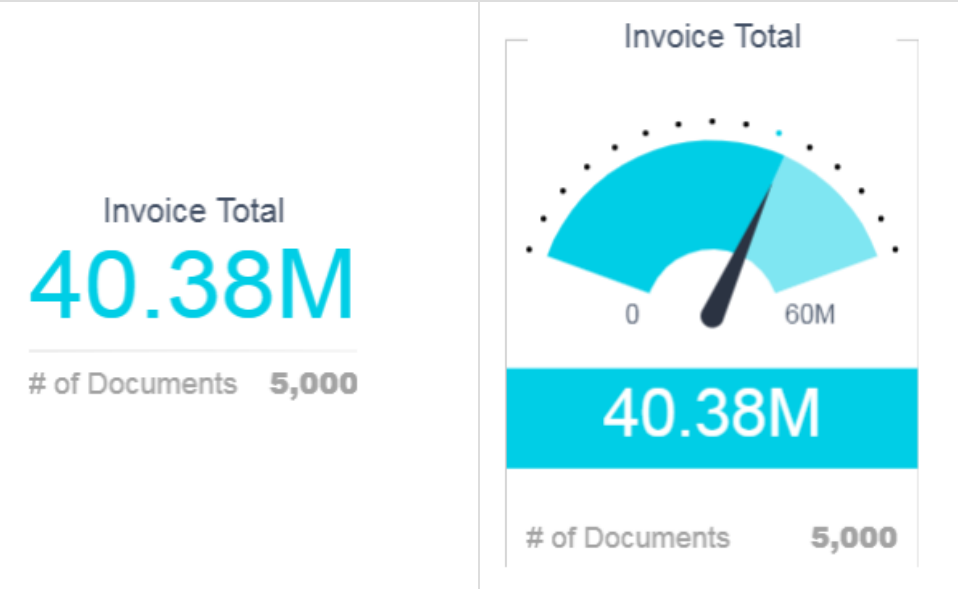
Click **Add +** in the **Value** panel to select one field whose name and value will be shown as the **Main Title** and **Main Value**, as shown below.

Click **Add +** in the Secondary panel to select one field whose name and value will be shown as the Secondary Title and Secondary Value, as shown below.

Designing the Indicator

Fine-tune the appearance of the Indicator widget, using the following tools:

- **Indicator Type**: Select whether the Indicator appears in **Numeric** form or as a **Gauge**.



Numeric	**Gauge**

Ticker

If you resize the height of an Indicator widget, it automatically turns into a Ticker-type widget. An Indicator widget that was a numeric Indicator appears differently to an Indicator widget that was a gauge.

Numeric	**Gauge**

- **Skin**: Select the skin of the gauge.
- **Components**: Select which labels to include in the widget.

For a gauge, select the minimum and maximum values that can be represented by the gauge. These values can either be set as a fixed numeric value that you specify or as another numeric field that you select using the Data Browser (thus making the value dynamic).

In an Indicator widget, you can also define conditional coloring.

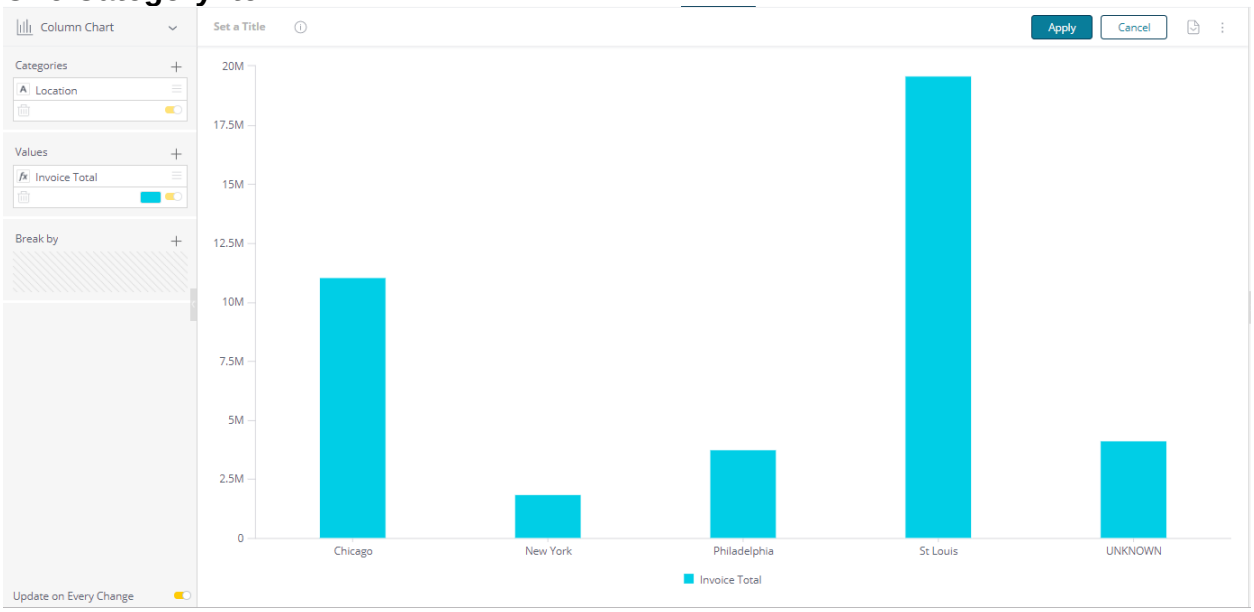
Column Chart

The column chart can be used in different business scenarios, especially for comparing items, and comparing data over time. The chart can include multiple values on both the X and Y-axis, as well as a break down by categories displayed on the Y-axis.

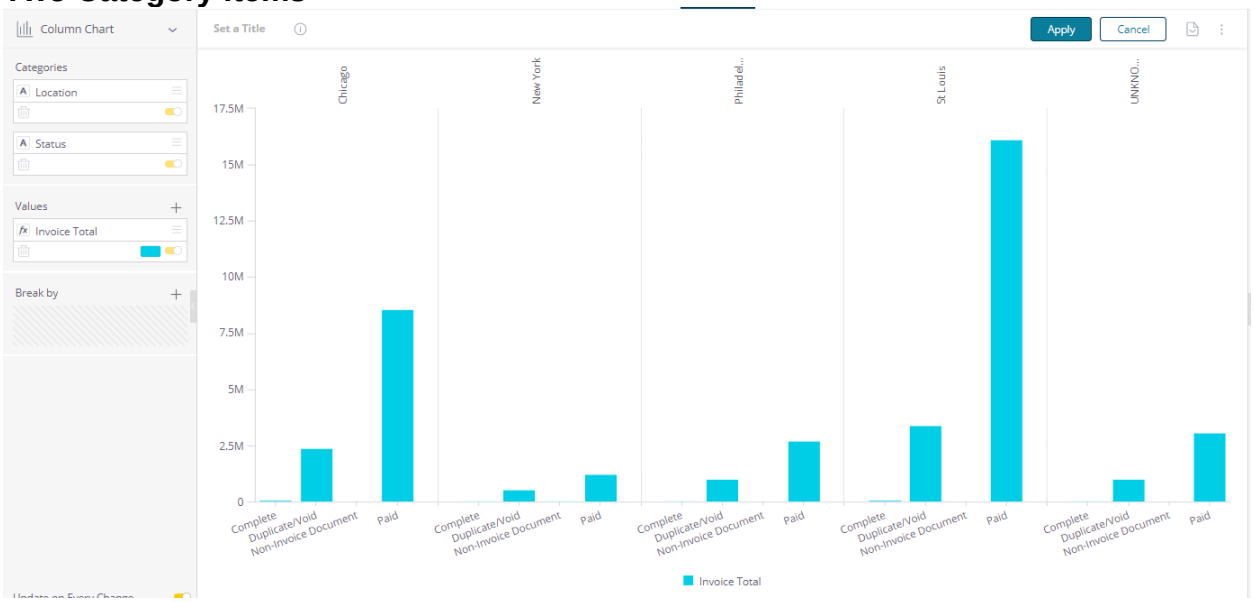
Adding Data

1. In the **Categories** panel, click **Add +** to select the field(s) whose values will be placed on the X-Axis.
   Typically, the X-Axis of a Column Chart is descriptive data. You must add at least one item to **Categories**, and at most, two items.
   When two **Category** items are added, then the chart's X-Axes are automatically grouped. To change the order of the categories, drag a category up or down in the Categories list.

   One Category Item



Two Category Items



2. In the **Values** area, select the field whose value determines the height of the columns by clicking **Add +**. Typically, the Y-Axis of a Column Chart is used to represent numeric data.
   You must add at least one field to **Values**. When more than one Value is added, then each item is represented in the chart by its own color and area.

3. **Break by**: Select a field by which to break (group) the data represented in this chart by clicking **Add +**.
   Each group is represented by a different column and is automatically added to the chart's legend.
   This is an optional field, and operates under the following conditions:
   - At most one **Break by** field can be added.
   - The **Break by** option is available only when a single field was added to **Values** (Y-Axis).
   - Only a single field can be added to **Values**, if the **Break by** option, described below, was used.

4. Define filters for the widget, as described in Filtering Dashboards.

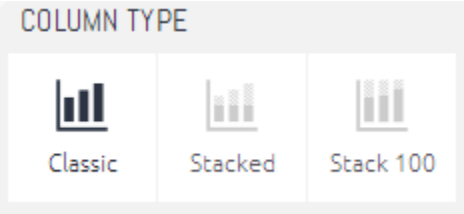
Designing the Column Chart

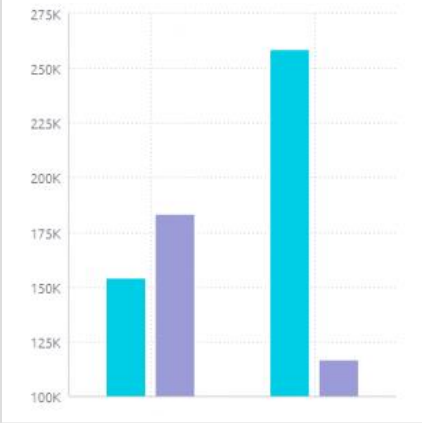
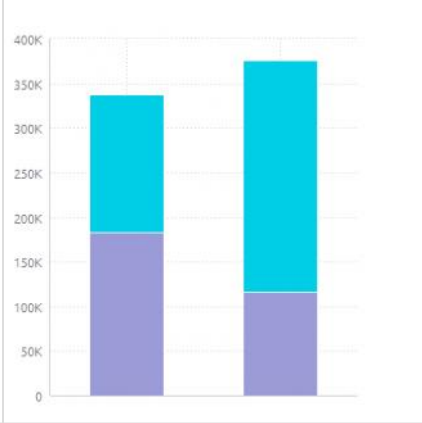
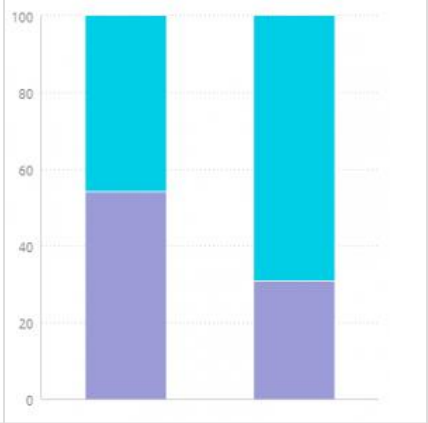
Fine-tune the appearance of the COLUMN CHART Widget, using the following tools:

- **Column Type**: Select how columns are represented in the Widget:
  - **Classic**: Columns are displayed side by side.
  - **Stacked**: Columns are stacked on top of each other and do not overlap. The tooltips over the columns show the percentage distribution among the Values.

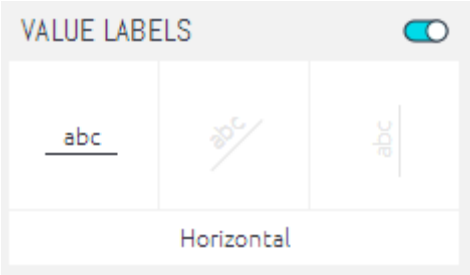
- **Stacked 100**: Columns are stacked on top of each other (but do not overlap) and the combined column is stretched to represent 100%. This option is most commonly used when the relative distribution of the values is more important than their aggregation.

Selecting the Column Type



Classic	Stacked	Stacked 1000
		

- **Legend**: Specify whether to show or hide the Legend and its position.
- **Value Labels**: Specify whether to show or hide labels showing values in the Column Chart. You can also select the angle of the labels.



- **X-Axis**: Enable or disable the following options:
  - **Grid Lines**: Shows (Default) / hides.
  - **Labels**: Shows (Default) / hides.
  - **Title**: Select the checkbox to display the X-Axis title. To edit the title, type in a new title. Click outside the text box to apply the new value.
- **Y-Axis**: Enable or disable the following options:
  - **Grid Lines**: Shows (Default) / hides.
  - **Logarithmic**: Displays using orders of magnitude.

    - **Labels**: Shows (Default) / hides.
    - **Title**: Select the checkbox to display the y-axis title. To edit the title, type in a new title. Click outside the text box to apply the new value.
    - **Values on Axis**: To change the default minimum, maximum or interval values on the axis, type in the new values, and click outside the text boxes to apply the new values. To restore any of the values to their default states, click on the reset button.
- **Auto Zoom**: When a widget contains more data than can comfortably be displayed in one view, Auto Zoom will resize the chart to include more data, and in some cases adds a zoom bar under the widget. The zoom bar enables you to scroll right and left and to zoom in/out of different parts of the width of the widget.

Tutorial 1 – Indicator Widgets & Understanding Filters

This tutorial will guide you through the creation of a new dashboard with three simple indicator widgets. These widgets will be used to demonstrate the differences between Dashboard Filters and Widget Filters.

Step 1. Create a new dashboard using the Sample P2P data source.

1. Click on the Analytics Tab within DataServ

   For help on accessing Analytics <Insert Link>

2. Create a new dashboard named “Tutorial” and select the Sample P2P data Source

   For help on creating a new dashboard <insert link>

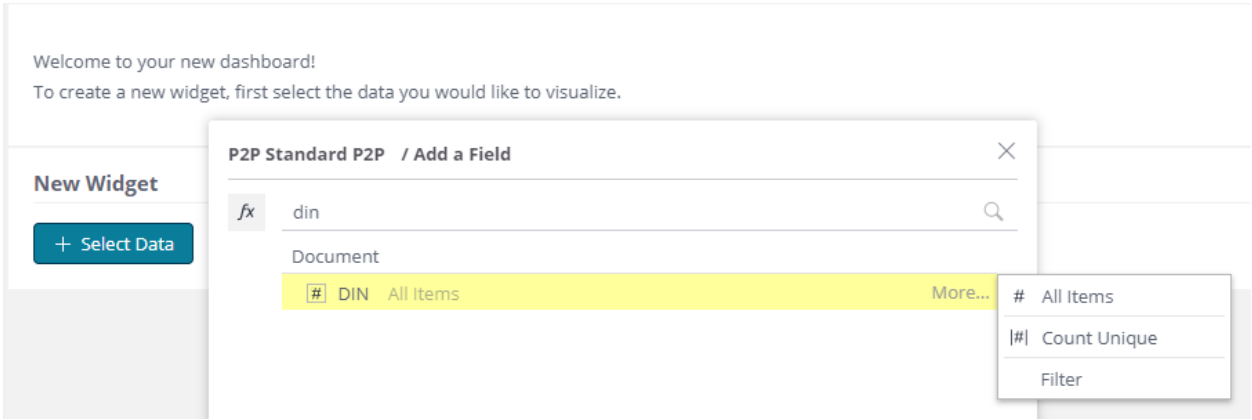
Outcome

You have created a dashboard with no widgets.

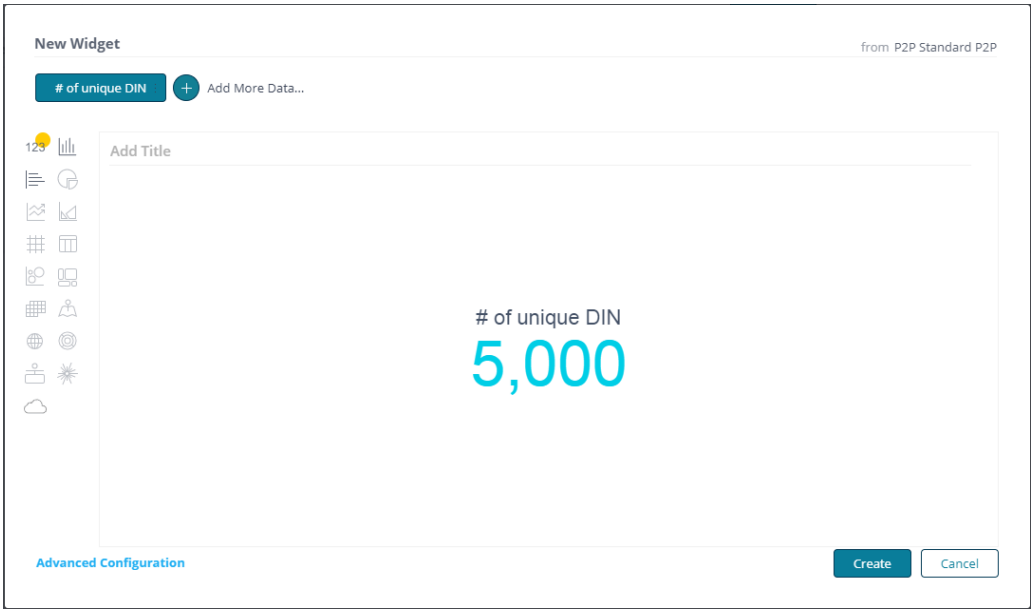
Step 2. Add your first Indicator widget

This indicator will be a simple count of documents using DIN

1. Click the Select Data button
2. Type DIN or scroll through the list to find DIN. Do not click it.
3. Hover over DIN and it will be selected. Click the “More…” menu on the far right of the field.



4. Select Count Unique from the menu.
5. Select Add Title at the top left corner and change the title of the widget to “No Widget Filter”



6. Click the Create button in the bottom right corner.

Outcome

You have added your first indicator widget to the dashboard.

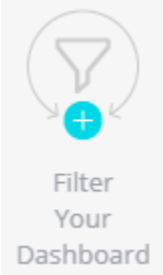
This widget is now showing you a count of all documents in the sample.

Suppose we want to filter this to see a count of documents in Pending Approval status.

Step 3. Add a Dashboard Filter

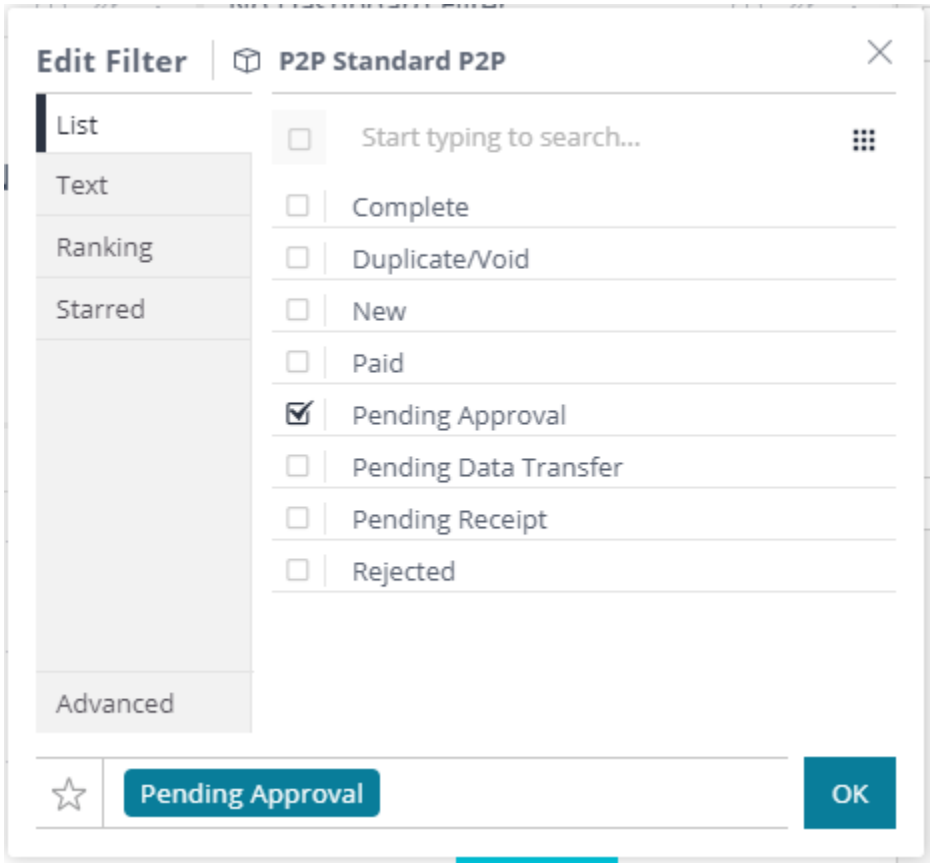
Let's add a filter on status. And filter to only documents in Status = Pending Approval

1. On the Filter pane to the right of the dashboard click the Plus sign to add a filter.



2. Type Status or scroll through the list to find it.
3. Click Status to select it.
4. Set the filter to Pending Approval
    a. Uncheck the box at the top to uncheck all options.

b. Check the box for Pending Approval.

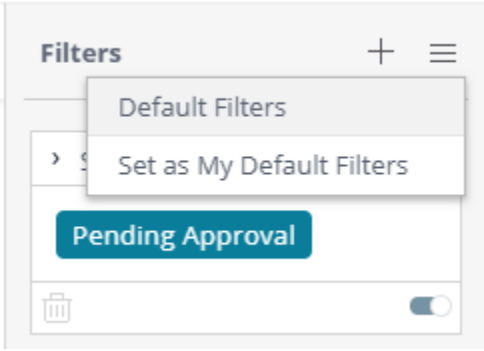


Observe that Pending Approval appears in blue at the bottom to indicate that you are selecting that status.

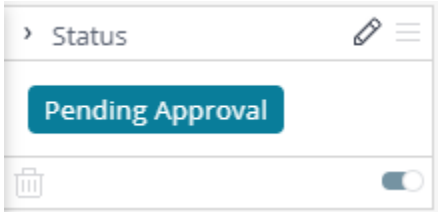
5. Click the OK button to save and apply the filter.

You have now created an indicator widget that has been filtered by the Dashboard filter to limit the results to Status of Pending Approval.

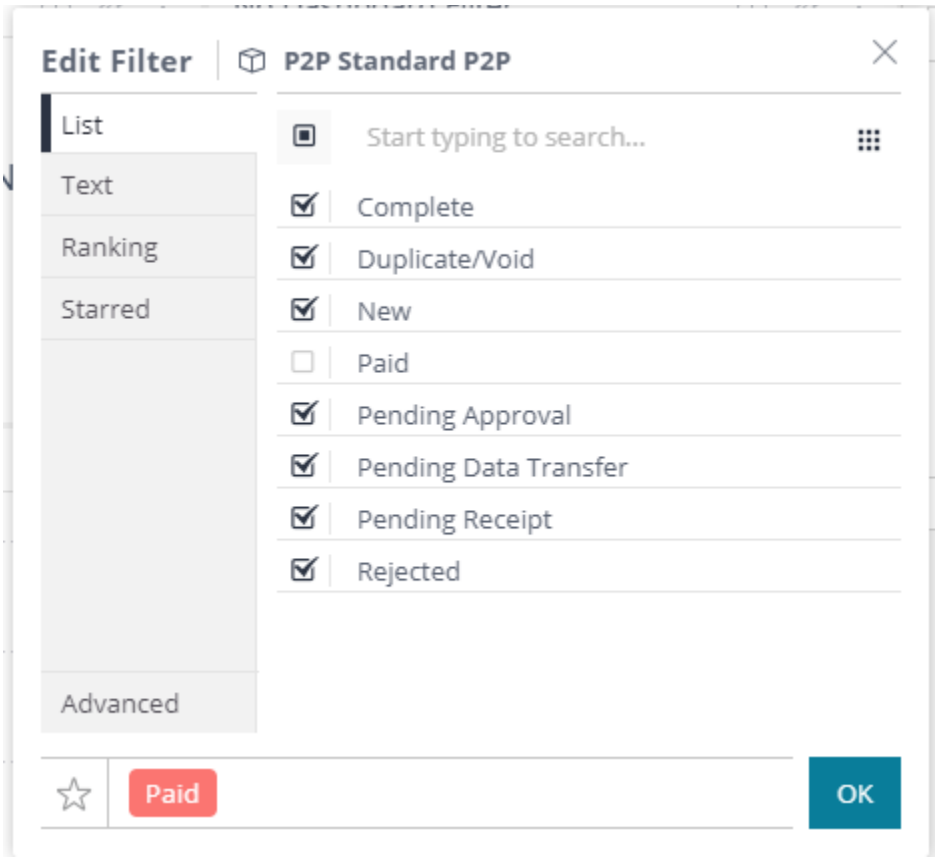
6. Set this filter to be your default filter setting for this dashboard.
    a. Click the menu button in the top right corner of the filter pane.
    b. Choose Set as My Default Filters from the menu



7. Change the filter to show all statuses except for Paid.
    a. Click the Pencil icon in the Status filter to open the Edit Filter window



    b. Check the box at the top to check all options.
    c. Uncheck the box for Paid.

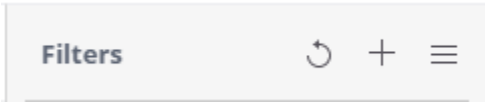


Observe that Paid appears in red at the bottom to indicate that you are excluding that status.

8. Click OK to apply the filter.

   Observe that the count in the indicator has changed.

9. Make other changes to the filter to see the count on the indicator change and observe how your selection is displayed in the filter.
10. Click the counterclockwise arrow icon in the top of the filter pane to restore your default filters



Outcome & Learnings

You have added a Dashboard Filter to the dashboard.

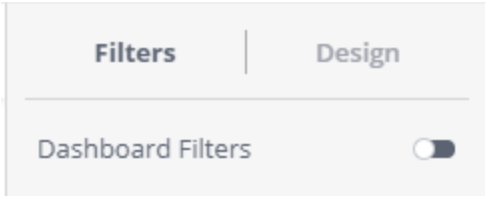
You have set the default dashboard filter and restored the dashboard to the default filters.

You observed how color indicates whether a filter item is inclusive or exclusive.

Step 4. Add an Indicator Widget with Dashboard Filter disabled

In this step you will create a second Indicator Widget by duplicating the one you have already created and disable dashboard filters from affecting this widget.

1. In the top right corner of the Indicator widget titled “No Widget Filter” select the menu and choose Duplicate. This will create a second widget that is identical to the first.
2. Change the Dashboard filter and observe that it effects both widgets.
3. On the second Indicator widget click the Pencil icon to edit the widget.
4. Change the name of the Widget to “No Dashboard Filter”
5. On the right panel select Filters.
6. Disable all dashboard filters by clicking the Dashboard Filters slider.



Observe the count on the widget has changed because the dashboard filter is no longer applied.

You can disable individual Dashboard filters like the Status filter, but the widget would be impacted by dashboard filters that were added later.

11. To save the changes to the Widget click the Apply button at the Top of the screen.
12. Make changes to the Dashboard filter. You will see the count change on the widget named “No Widget Filter”, but the count does not change on the widget named “No Dashboard Filter”.

Outcome

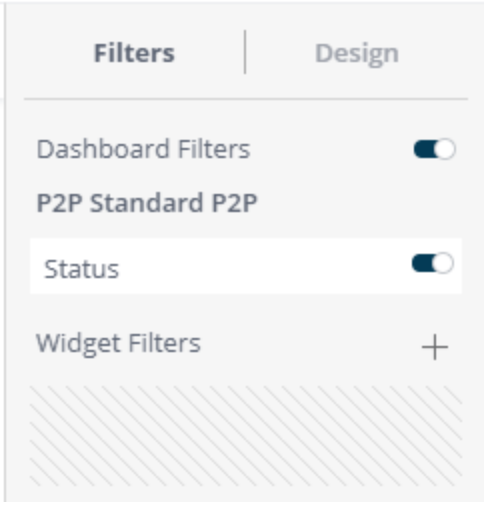
You have added a second indicator widget to the dashboard.

This widget is not affected by the Dashboard filter.

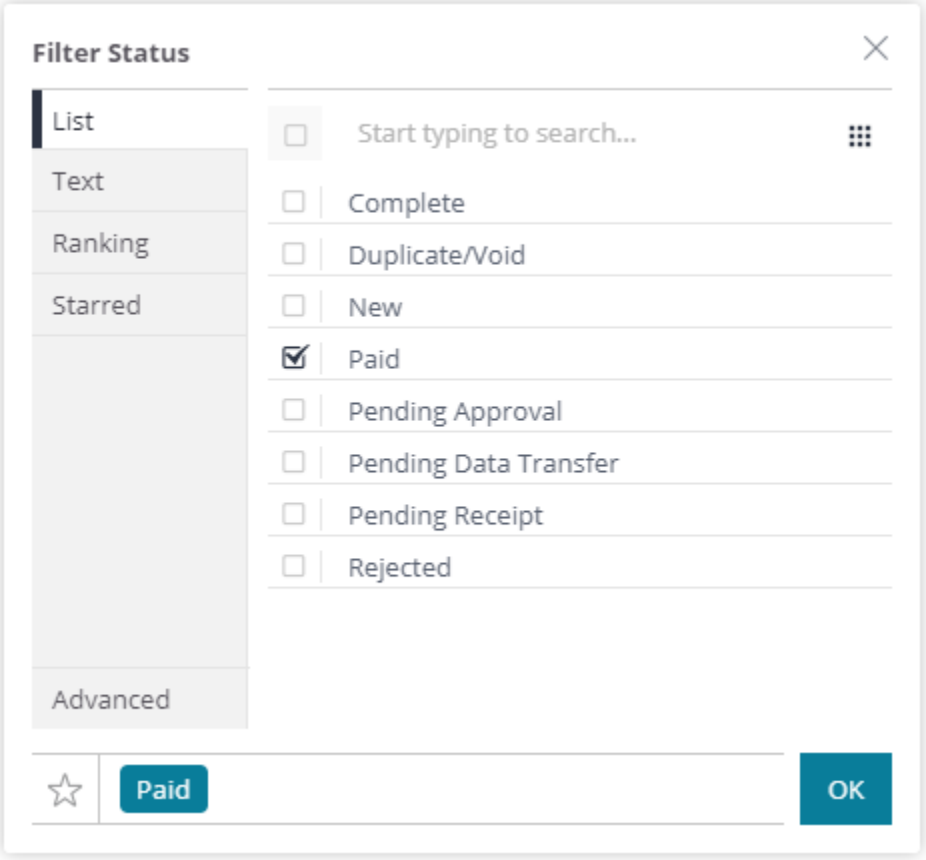
Step 5. Add an Indicator Widget with Widget filter

In this step you will create a third Indicator Widget by duplicating one you have already created and apply a widget filter to this widget.

1. In the top right corner of the Indicator widget titled “No Widget Filter” select the menu and choose Duplicate. This will create a second widget that is identical to the first.
2. Change the Dashboard filter and observe that it effects both widgets.
3. On the second Indicator widget click the Pencil icon to edit the widget.
4. Change the name of the Widget to “Widget Filter = Paid”
5. On the right side bar select Filters.
6. Click the Plus button next to Widget Filters to add a widget filter.



13. Type Status or scroll through the list to find it.
14. Click Status to select it.
15. Uncheck the box at the top to uncheck all options.
16. Check the box for Paid.



17. Click the OK button to save and apply the filter.

You have now created a Widget filter that effects only this widget.

18. To save the changes to the Widget click the Apply button at the Top of the screen.
19. Make changes to the Dashboard filter. You will see the count change on the widget named “No Widget Filter”, but the count does not change on either of the other Indicator widgets.

Outcome & Learnings

You have added a third indicator widget to the dashboard. This widget has a widget level filter

When the same field is filtered on both the Widget and the Dashboard, the filter settings on the Widget take precedence over the filter on the Dashboard.

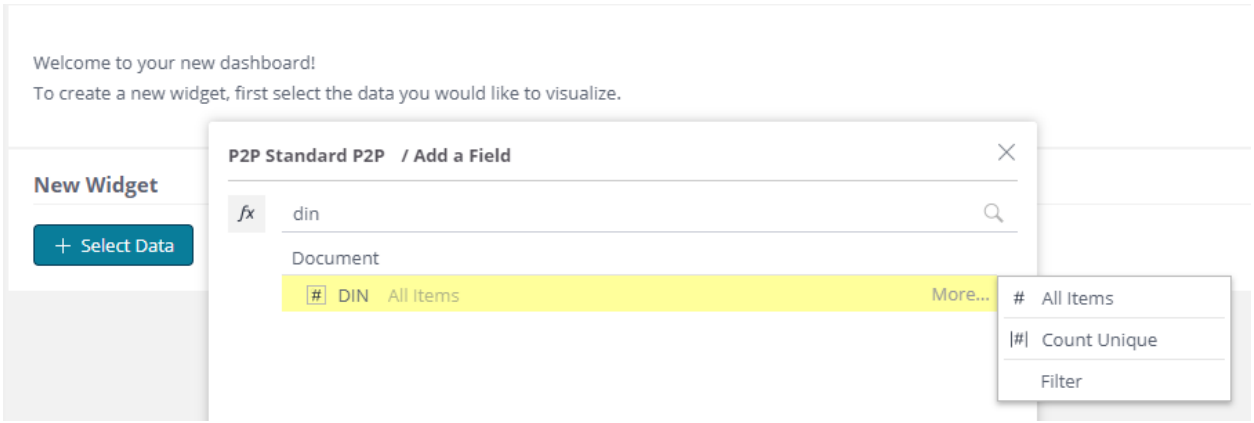
Tutorial 2 – Bar Charts & Highlight Filter and Slicing Filter

This tutorial will guide you through the creation of some bar charts and demonstrate slicing filters and highlight filters.

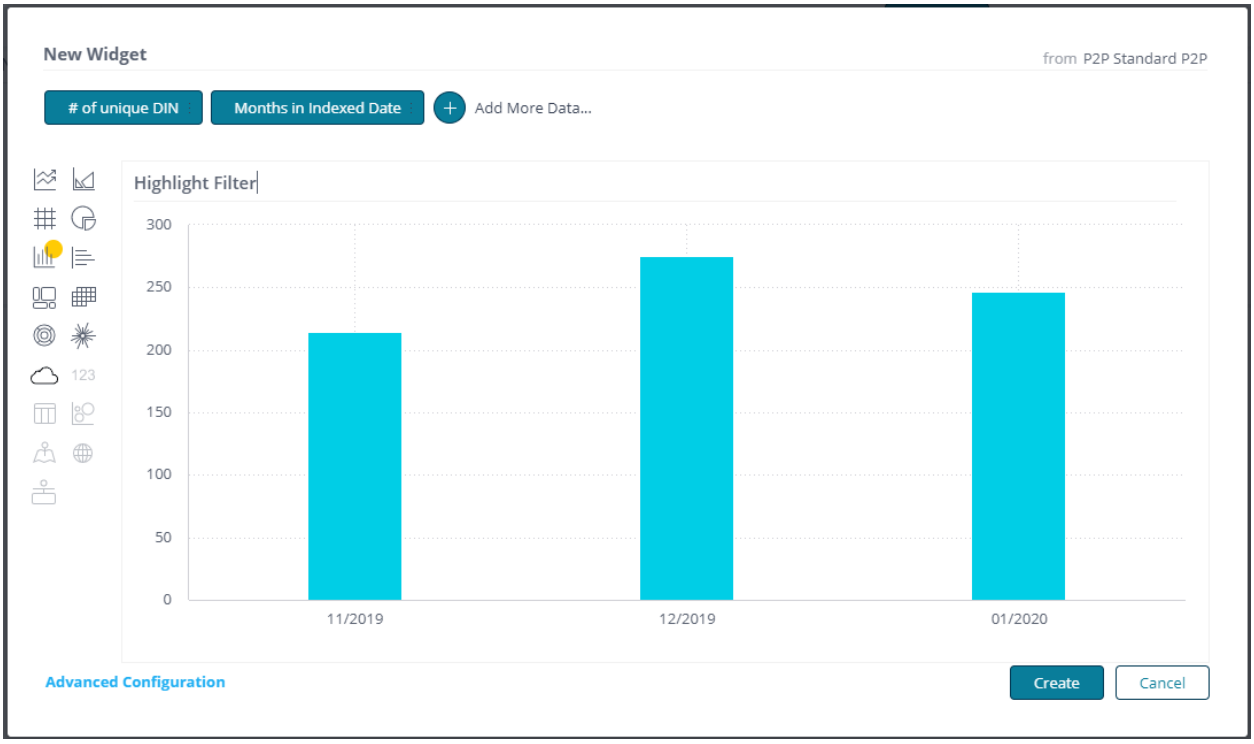
Step 1. Open the dashboard you created in the earlier tutorial.

Step 2. Add a column chart.

1. Click the + Widget button to add a widget to the dashboard
2. Click the Select Data button
3. Type DIN or scroll through the list to find DIN. Do not click it.
4. Hover over DIN and it will be selected. Click the “More…” menu on the far right of the field.



5. Select Count Unique from the menu.
6. Click + to add more data
7. Type Indexed Date or scroll through the list to find Indexed Date. Do not click it.
8. Hover over Indexed Date and it will be selected. Click the “More…” menu on the far right of the field.
9. Select Months from the menu.
   Observe the system automatically changed the visualization from an indicator widget to a Line Chart
10. On the left change the visualization type from Line Chart to Column Chart



11. Select Add Title at the top left corner and change the title of the widget to “Highlight Filter”
12. Click the Create button in the bottom right corner.

13. Adjust the Dashboard filter on Status to see how the new column chart is affected.
14. When you are done change the filter back to Pending Approval.

Outcome

You have added a column chart to your dashboard.

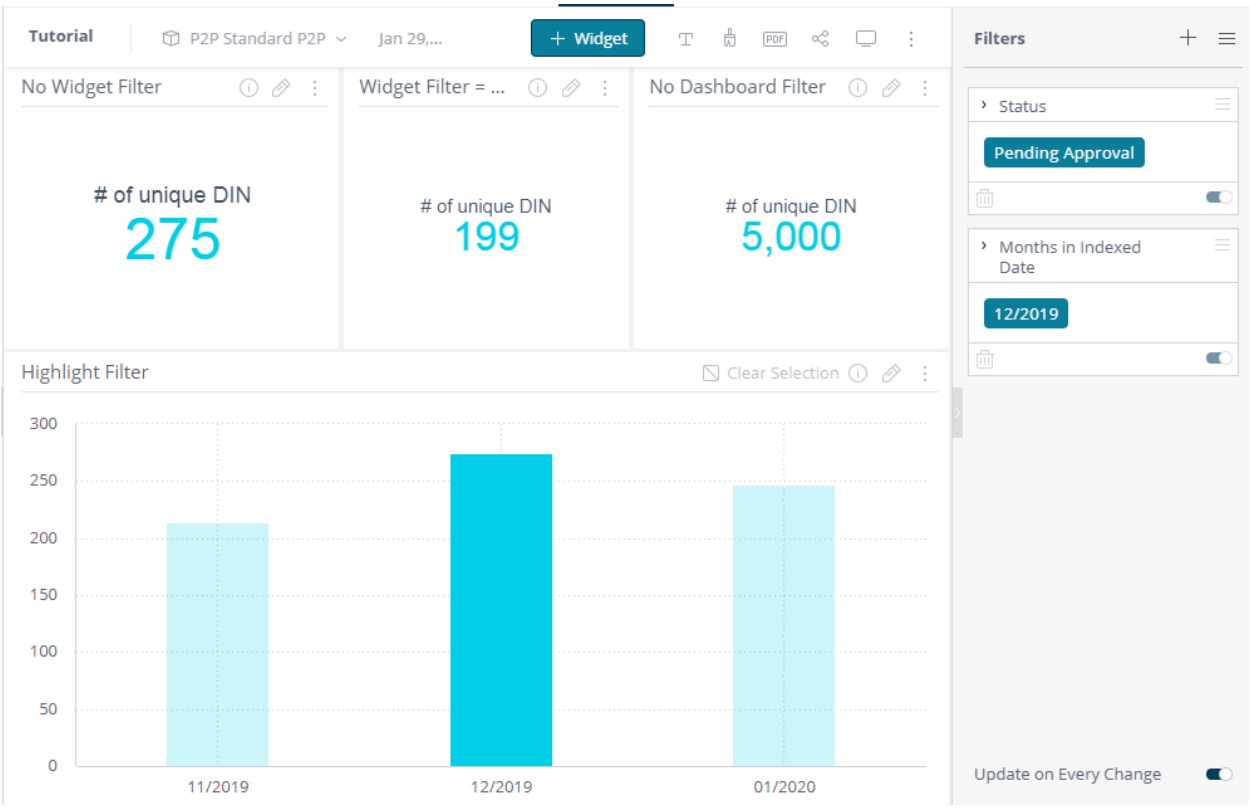
Step 3. Using the Highlight Filter

In this step we will examine how highlight filters work and how they affect the other widgets on the dashboard.

1. Click one of the columns in the Column Chart titled “Highlight Filter”.

   Observe:

   - That the other columns in the chart have faded. This highlights the selected column.
   - That the counts in the “No Dashboard Filter” Indicator widget has not changed as it is not impacted by dashboard filters.
   - That the counts in the other indicator widgets have been reduced. They are showing the number of documents for the selected month.
   - That selecting the column has added a dashboard filter on Indexed date for the selected month.
   - That in the tile bar for the column chart there is an option to Clear selection



2. Click Clear Selection from the Widget Title bar
   Observe:
   - That the filter for Indexed Date remains on the list of Dashboard filters. And changed to “Include All”
   - That all of the widgets have updated to show all data.

   You can select multiple columns by clicking and dragging or by using Ctrl + Click.

3. When you are done change the filter back to include all data or delete the Indexed Date filter.

Outcome & Learnings

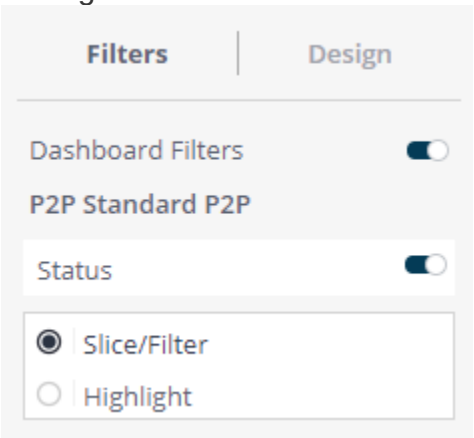
You have configured the Column widget as a highlight filter.

With highlight filters the other data remains visible within the widget while the selected data is highlighted.

Step 4. Add a Column chart with a Slice Filter

In this step we will duplicate the column chart and modify its behavior to be a slice filter.

1. In the top right corner of the Column widget titled “Highlight Filter” select the menu and choose Duplicate. This will create a second widget that is identical to the first.
2. Change the Dashboard filter and observe that it effects both widgets.
3. On the second Indicator widget click the Pencil icon to edit the widget.
4. Change the name of the Widget to “Slice Filter”
5. On the right side bar select Filters.
6. Change the radio button to Slice/Filter



7. To save the changes to the Widget click the Apply button at the Top of the screen.

Outcome

You have added a second Column widget to your dashboard and configured it to behave as a Slice/Filter.

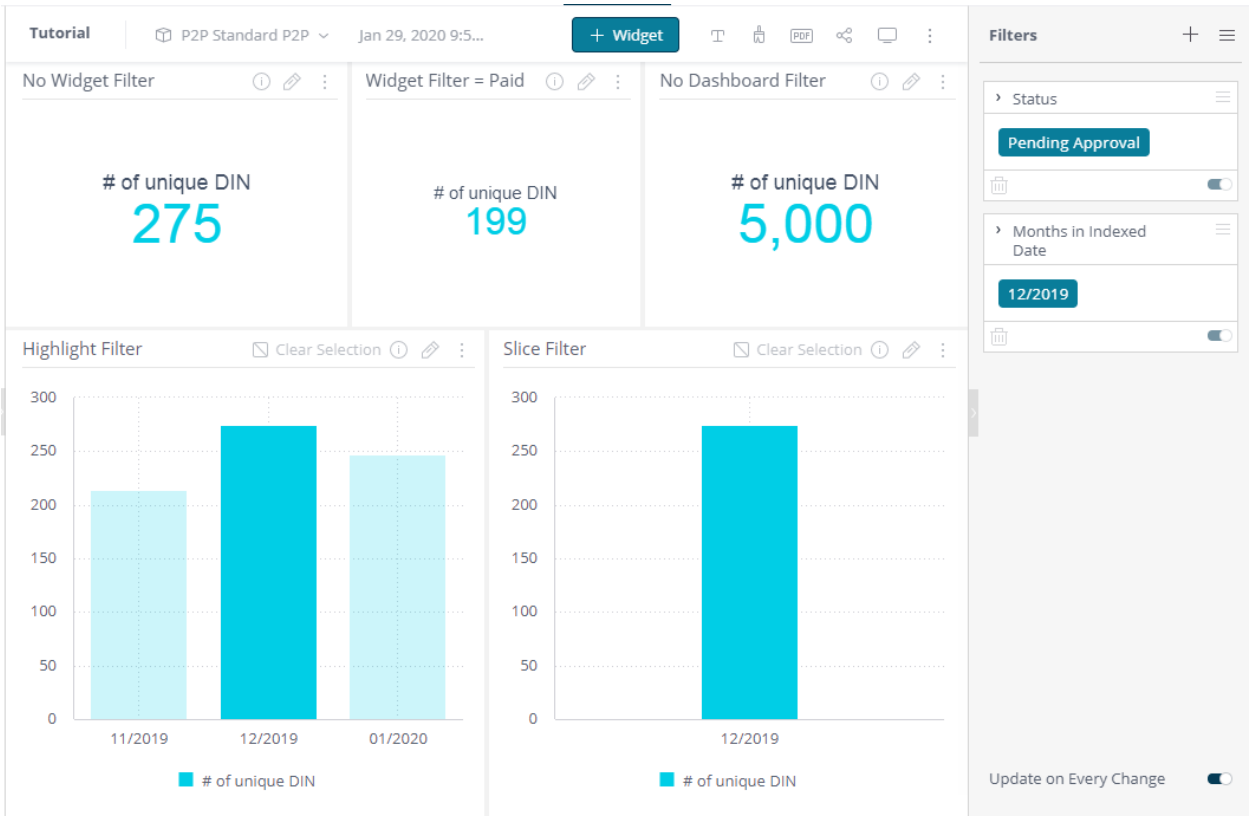
Step 5. Using the Slice Filter

In this step we will examine how slice filters work and how they affect the other widgets on the dashboard.

1. Click one of the columns in the Column Chart titled “Slice Filter”.

   Observe:

- That the other columns in the chart have disappeared focusing attention on only the selected column.
- That changes to this widget are also affecting the “Highlight Filter” Column Chart and vice versa. They are filtering on the same data.
- That the counts in the “No Dashboard Filter” Indicator widget has not changed as it is not impacted by dashboard filters.
- That the counts in the other indicator widgets have been reduced. They are showing the number of documents for the selected month.
- That selecting the column has added a dashboard filter on Indexed date for the selected month.
- That in the tile bar for the column chart there is an option to Clear selection



2. Click Clear Selection from the Widget Title bar.
   Observe:
   - That the filter for Indexed Date remains on the list of Dashboard filters and has changed to “Include All”
   - That all of the widgets have updated to show all data.

   You can select multiple columns by clicking and dragging or by using Ctrl + Click.

3. When you are done change the filter back to include all data or delete the Indexed Date filter.

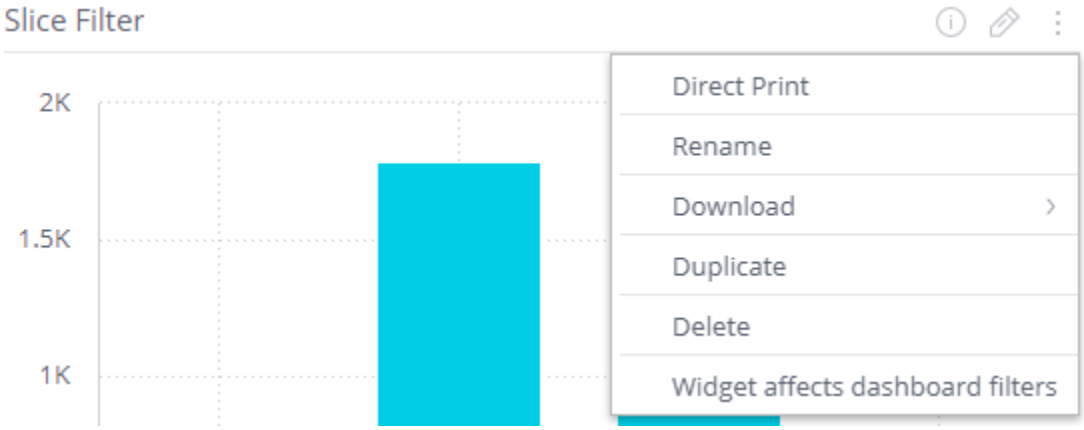
Outcome & Learnings

Slice/Filters behave like dashboard filters and affect other widgets the same as dashboard filters.

Step 6. Disable Widget Driven Dashboard Filter

In the prior steps we saw how selecting a column in the chart applied a filter to the dashboard that affected other widgets. In this step we will disable that connection.

1. Select the menu for the Slice Filter Column chart widget.
2. Uncheck **Widget affects dashboard filters.**



3. Click one of the columns in the Column Chart titled “Slice Filter”.

   Observe that clicking on a column no longer has the option to select the column and filter the data.

4. Return to the Widget menu and select **Widget affects dashboard filters.**

Outcome & Learnings

You can define whether a Slice/Filter affects dashboard filters and affects other widgets.

Tutorial 3 – Stacked Column Chart and Design Customization

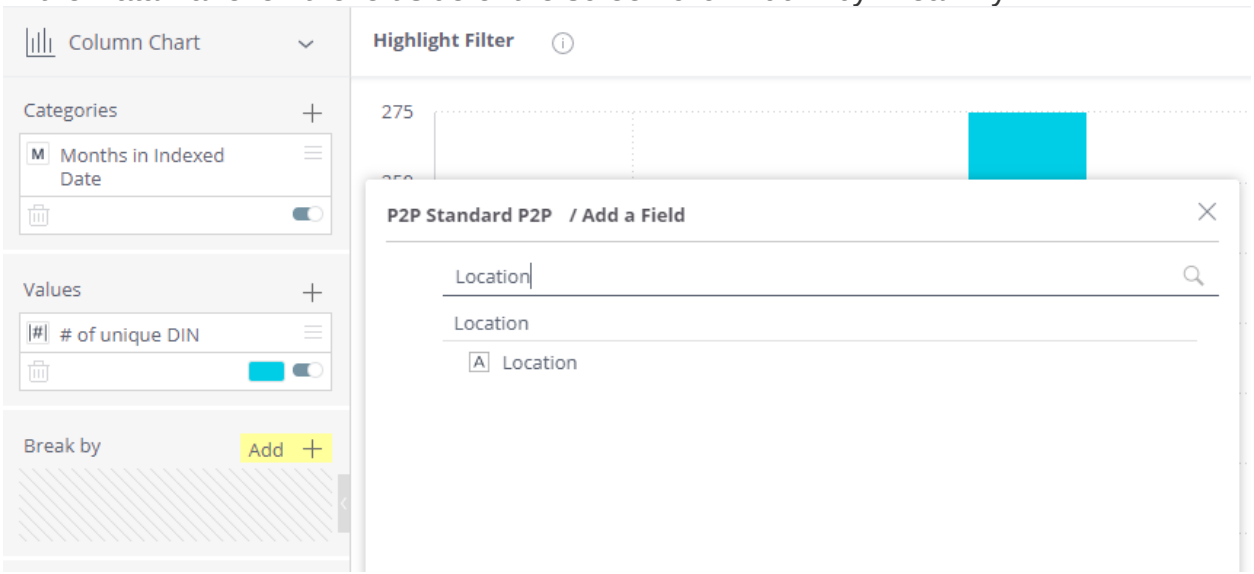
This tutorial will guide you through the creation of a stacked column chart and some common design customizations.

Step 1. Open the dashboard you created in earlier tutorials

Step 2. Edit the Column chart to become a Stacked column chart

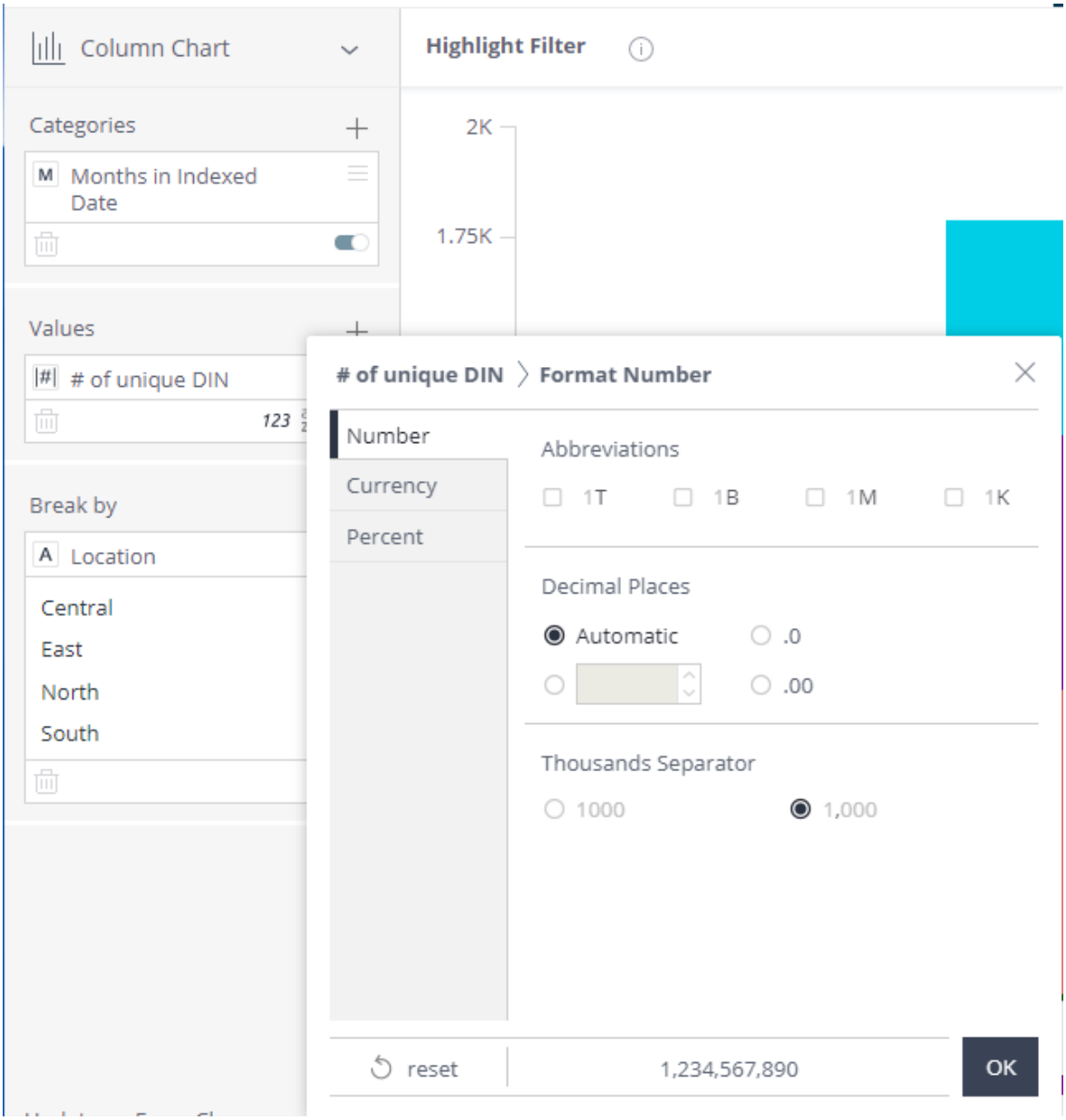
In this step we will edit the column chart to create a stacked column chart

1. Modify all of the dashboard filters to Include All data.
2. Edit the Column Chart titled “Highlight Filter” by clicking click the **Pencil (Edit)** button that appears in the top-right corner of the widget.
3. In the Data Panel on the left side of the screen click Add + by Break By



4. Enter or select Location from the list.
   You will now see separate columns for each location for each month displayed.
5. In the right panel select Design to show the Design panel.
6. Select Stacked for the Column Type.
7. Uncheck Grid Lines for the X-Axis
8. Uncheck Grid Lines for the Y-Axis
   You now have a stacked column chart that looks something like this

9. Change how numbers are displayed.
    a. In the Data Panel on the left hover over the Value “# of unique DIN”.
    b. Click **123** to open the Format Number dialog
    c. Uncheck the Abbreviations
    d. Click OK



10. To save the changes to the Widget click the Apply button at the Top of the screen.

Outcome

You have now modified one of your column charts to a stacked column chart and customized the design of the widget.

Step 3. Using the Stacked Column Chart

In this step we will examine how the stacked column chart works and how it affects the other widgets on the dashboard.

1. Click one of the columns in the Column Chart titled “Highlight Filter”.

   Observe that it behaves and interacts with the other widgets the same as it did before.

2. Click on one of the locations in the legend. This hides that portion of the data from the graph and the scale on the Y-Axis automatically adjusts. This makes it easier to view the contribution of smaller groups.

   Observe that hiding one or more data series from the legend does not act as filter to other widgets. Selecting one or more columns on the X-Axis does filter other widgets, but selecting a data series from the legend does not.

Outcome & Learnings

The columns on the X-Axis can be used to Highlight or Slice the data.

Hiding a data series only affects the individual widget and not the rest of the dashboard.

Tutorial 4 – Pivot Tables

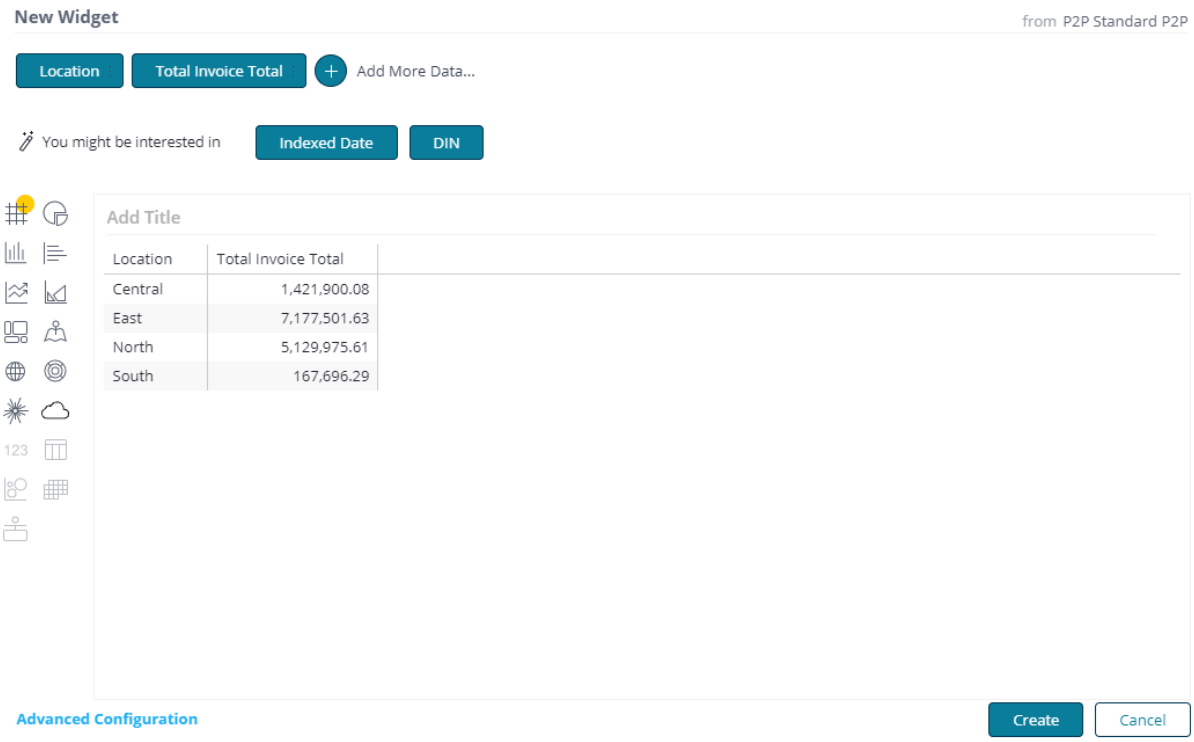
This tutorial will guide you through the creation of a pivot table.

Step 1. Open the dashboard you created in earlier tutorials

Step 2. Add a Pivot Table.

1. Click the + Widget button to add a widget to the dashboard
2. Click the Select Data button

3. Type Location or scroll through the list to find Location and select it
4. Click + to add more data
5. Type Invoice Total or scroll through the list to find it. Note that as you hover over it the default action is Sum. Select it to add the Sum of Invoice Total.
6. Confirm that Pivot Table is automatically proposed for your visualization. If not select Pivot.



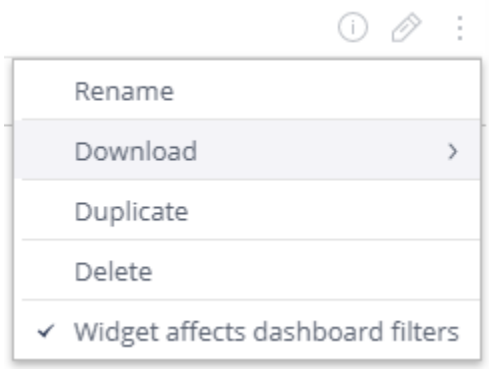
7. Select Add Title at the top left corner and change the title of the widget to “Pivot”
8. Click Create to create your widget

Outcome & Learnings

You have added a Pivot Widget to your dashboard.

Step 3. Pivot Table and Filters

1. Adjust the Dashboard filter on Status to see how the new Pivot table is affected.
2. Select columns in your Column charts to see how the new Pivot table is affected.
3. Select the menu for the Pivot widget.
4. Check **Widget affects dashboard filters.**



5. In the Pivot table right click on the Location = Central.
6. Choose Select from the popup menu.

   Observe:

   - That the other rows in the pivot table have disappeared leaving just the data for the selected location, Central.
   - That selecting data in the Pivot has added a dashboard filter on the field Location = Central
   - That stacked column chart “Highlight Filter” is only showing the data series for Central.
   - That the counts in the “No Dashboard Filter” Indicator widget has not changed as it is not impacted by dashboard filters.
   - That the counts in the other indicator widgets have been reduced. They are showing the number of documents for the selected Location.
   - That in the tile bar for the Pivot there is an option to Clear selection

7. When you are done change all filters back to Include All.

Outcome & Learnings

Dashboard filters affect all widgets unless they are disabled or widget level filters take precedence.

You can define whether the Pivot widget affects dashboard filters and affects other widgets.

Tutorial 5 – Exploring Drill

In earlier tutorials we explored how filters work. In this tutorial we will use the dashboard created in those tutorials to explore Drilling.

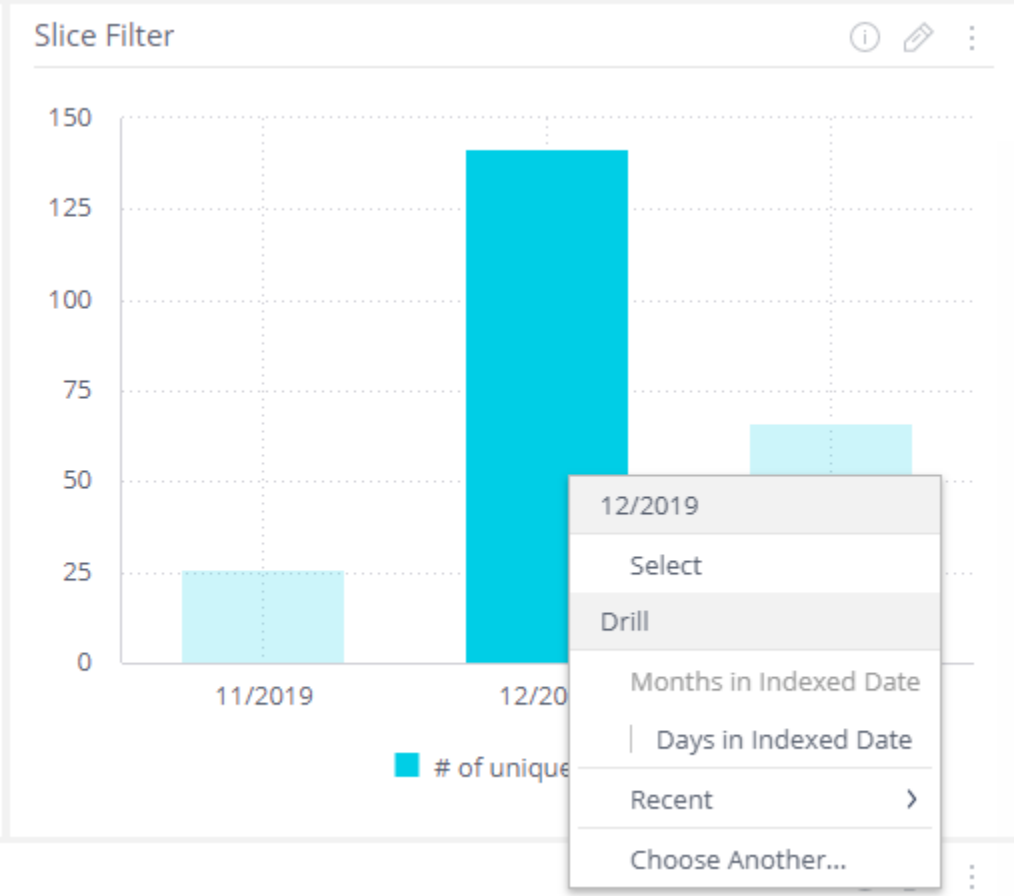
In DataServ Analytics the user can drill down from any field to any field, unless you disable the feature when creating the dashboard. Drilling is available from most widget types. You cannot drill from an indicator widget.

Step 1. Open the dashboard you created in earlier tutorials

Step 2. Make sure all Dashboard filters are set to Include All or are disabled.

Step 2. Drilling within a Column Chart.

1. Right-click on one of the columns in the column chart titled “Slice Filter”.



Reminder the Select option will filter the widget based upon the selection.

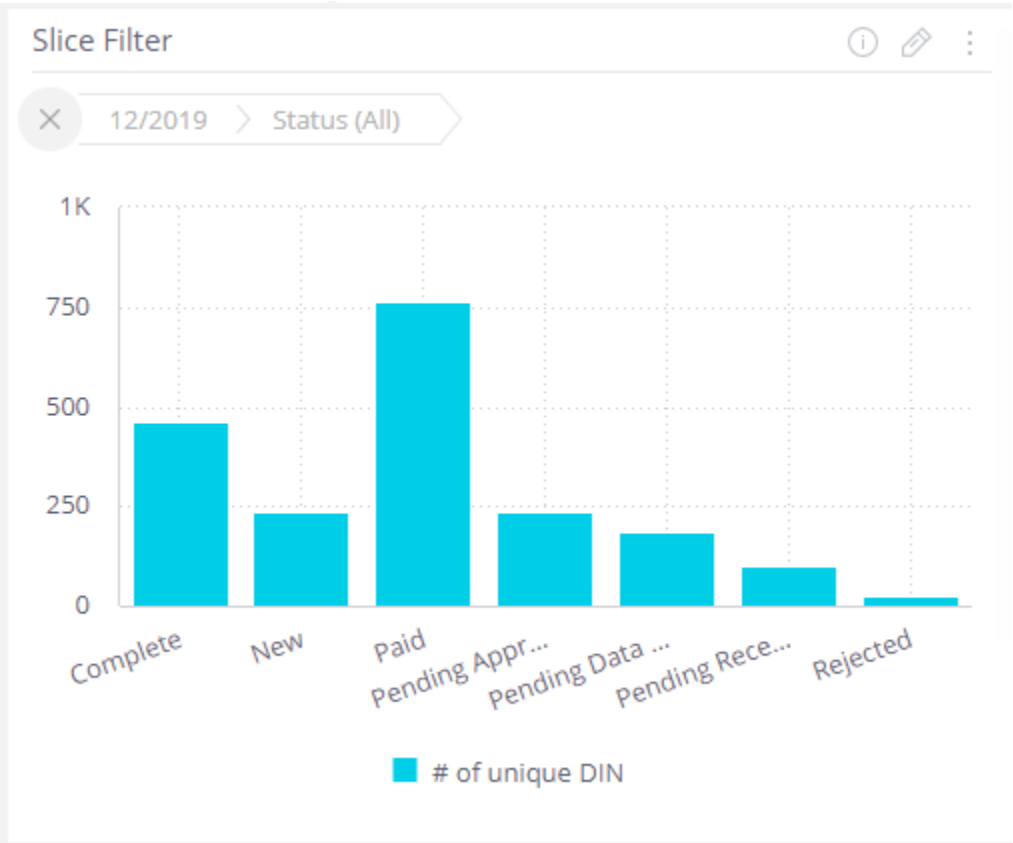
Since the column represents a month of data you are automatically presented with the option to drill down into the days. There are two parallel calendar hierarchies

(1) Year > Quarters > Months > Days
(2) Year > Weeks > Days

The Recent option shows fields that you have recently drilled into.

Choose Another… opens the Data Browser for you to select the field into which to drill down.

2. Select Choose Another…
3. Select Status from the Data Browser.
   The selected month is now displayed in the same column chart, but the columns have changed to show the various status values.



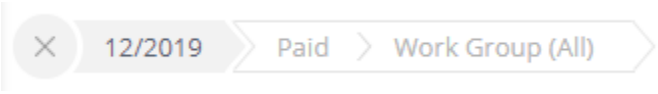
Drilling into a field like Invoice Total or Invoice Number is unlikely to provide a valuable analysis unless you are filtered to a very small set of data.

You can continue drilling further into the data.

4. From the “Paid” column drill into Work Group.
   a. Right-click on the “Paid” column.
   b. Select Drill into…
   c. Use the Data Browser to select Work Group
5. Select “Processor 2” in the chart.
   Observe:
   - This will filter the dashboard based on the selected value of the lowest drill level. In this case it is filtering the dashboard by the selected Work Group, “Processor 2”. This can be seen in the Filter Panel.

- It is not filtering the dashboard based on the drill path that has been taken. The dashboard is not filtered to a specific month. The dashboard is not filtered to the “Paid” status

6. To drill up to a higher level, click on a breadcrumb. To drill all the way up, click on the X icon.



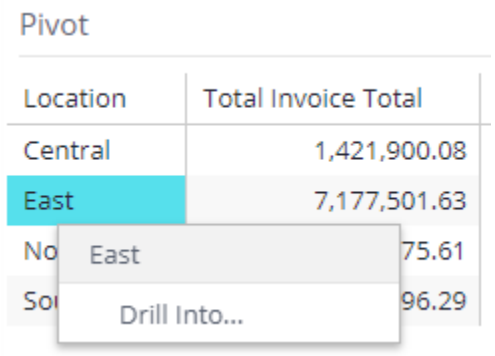
Observe: That drilling back up does not remove the filter that was applied to the dashboard.

7. Reset all Dashboard filters to Include All.

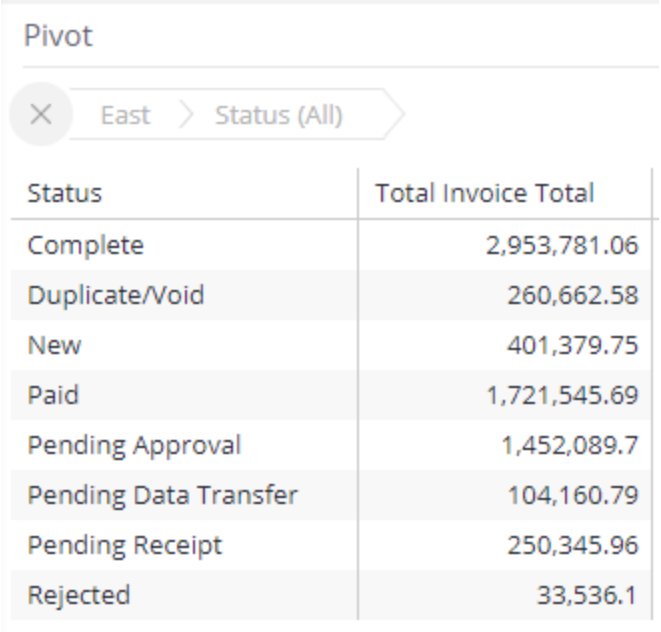
Step 3. Drilling within a Pivot table

Pivot tables have Rows and Values. The Row information is categorizing how the Value are aggregated. You can drill into any row value in a Pivot table. You cannot drill into the Values

1. Right-click on one of the Rows in the Pivot table titled “Pivot”.

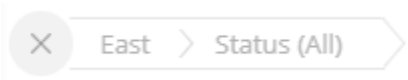


2. Select Drill Into…
3. Select Status from the Data Browser.
   The selected Location is now displayed in the same Pivot tablet, but the rows have changed to show the various status values.



You can continue drilling further into the data.

4. To drill up to a higher level, click on a breadcrumb. To drill all the way up, click on the X icon.



Step 4. Drilling into Pivot tables with Multiple Rows

If the pivot table has multiple Rows it is possible to drill into any of the Rows. For example the following Pivot table has two Rows: Location and Status and two Values: Total Invoice Total and # of Unique DIN.

Pivot

Location	Status	Total Invoice Total	# of unique DIN
Central	Complete	365,113.62	93
	Duplicate/Void	59,052.5	9
	New	160,369.22	209
	Paid	405,129.07	351
	Pending Approval	326,229.45	131
	Pending Data Transfer	10,869.68	240
	Pending Receipt	85,106.17	38
	Rejected	10,030.37	9
East	Complete	2,953,781.06	425
	Duplicate/Void	260,662.58	83

1. Duplicate your existing Pivot and add the Row and Value needed to and reproduce the example above.
2. Right-click on a cell where Status = New and drill into Capture Type.

Pivot

New > Capture Type (All)

Location	Capture Type	Total Invoice Total	# of unique DIN
Central	EDI	4,116.12	151
	Email	132,697.73	50
	Scan	23,555.37	8
East	EDI	291,501.53	31
	Email	103,751.1	178
	Scan	6,127.12	15

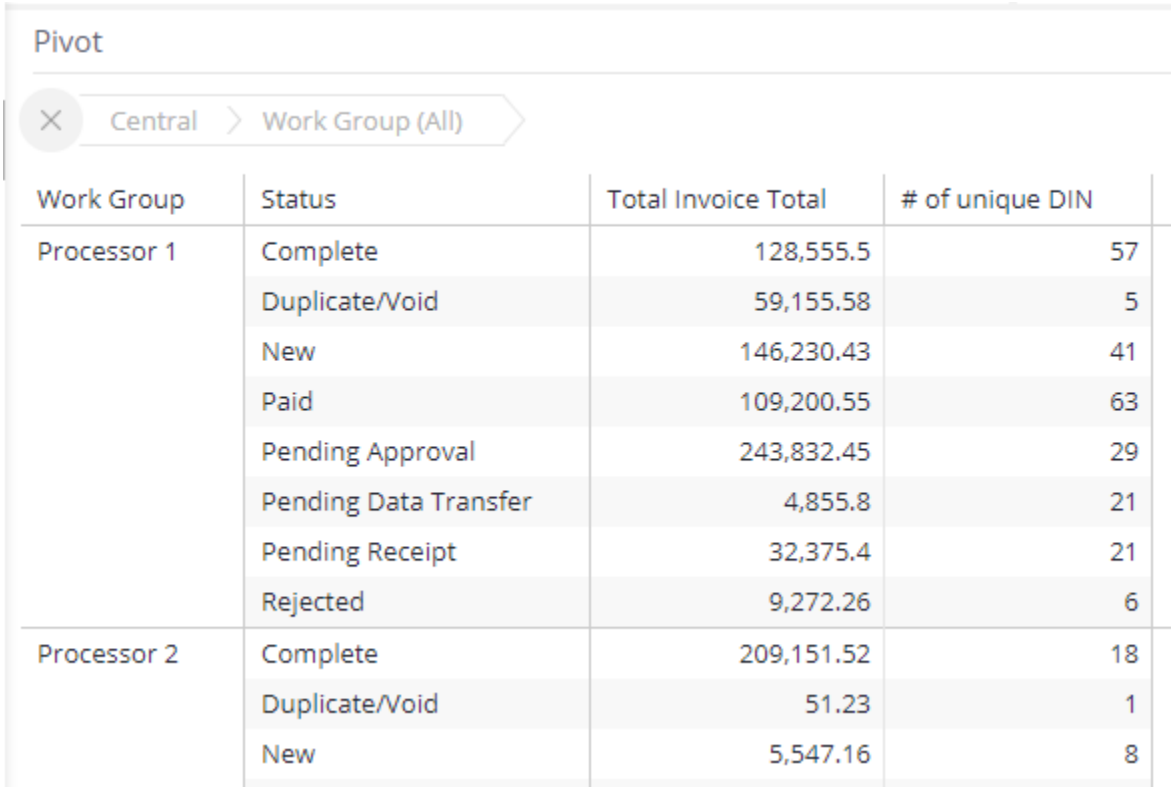
Observe:

- Within this Pivot widget the data is filtered to only show the data where Status = New.

- The dashboard is not filtered to Status = New so other widgets are not affected by this drill.
- The Status column has been replaced with the Capture Type information.

You can continue to drill within that same path. You can drill into the Capture Type. You cannot drill into Location or other Values.

3. Drill all the way up by clicking the X icon.
4. Right-click on a cell where Location = Central and drill into Work Group.



Work Group	Status	Total Invoice Total	# of unique DIN
Processor 1	Complete	128,555.5	57
	Duplicate/Void	59,155.58	5
	New	146,230.43	41
	Paid	109,200.55	63
	Pending Approval	243,832.45	29
	Pending Data Transfer	4,855.8	21
	Pending Receipt	32,375.4	21
	Rejected	9,272.26	6
Processor 2	Complete	209,151.52	18
	Duplicate/Void	51.23	1
	New	5,547.16	8

Observe:

- Within this Pivot widget the data is filtered to only show the data where Location = Central.
- The dashboard is not filtered to Location = Central so other widgets are not affected by this drill.
- The Location column has been replaced with the Work Group information.

You can continue to drill within that same path. You can drill into the Work Group.

You cannot drill into Status or other Values.

Outcome & Learnings

You should now be comfortable using the Drill capability and understand how it interacts with Filters and other widgets.

Tutorial 6 – Calculations, Pivots and Advanced Widget Design

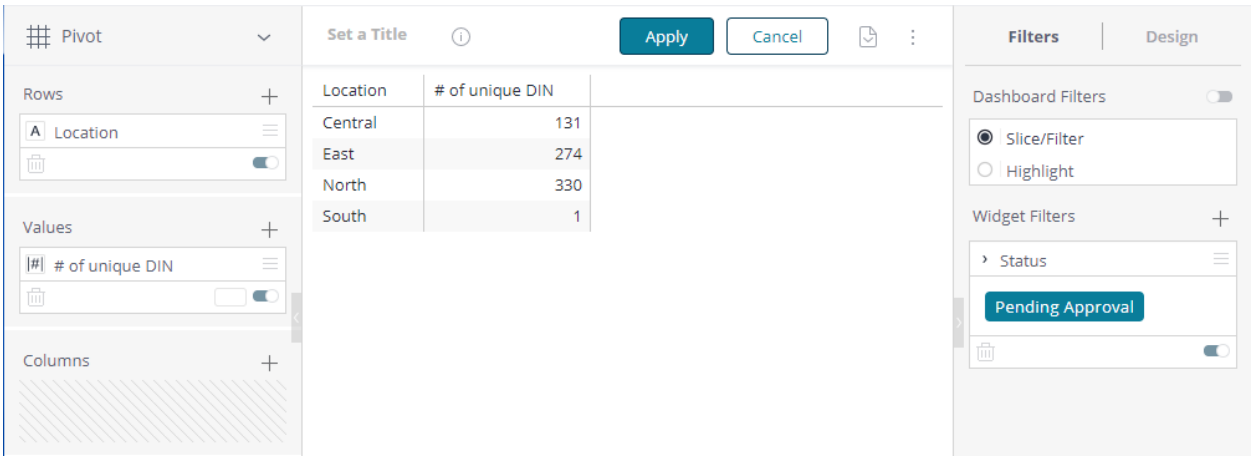
This tutorial assumes you are familiar with the material covered in the earlier tutorials. This tutorial will guide you through the use of some common calculations in pivot tables to demonstrate the creation and validation of an advanced visualization.

We will calculate the percent of documents that are Pending Approval by Location.

Step 1. Create a new dashboard select the Sample P2P data source.

Step 2. Add a Pivot Table.

1. Select Location
2. Click the Advanced Configuration link in the bottom left corner
3. Select Pivot
4. In Values add Count of unique DIN
5. Take note of the counts returned
6. Add a Filter to the Widget on Status.
7. Change the Status Filter to include only Status = “Pending Approval”. Observe that the counts returned have changed.
   Your widget design should look like this:



Without the filter you had the total document count by Location and with the filter you have the document count where the status = Pending Approval. Now we will build out the calculation within the pivot.

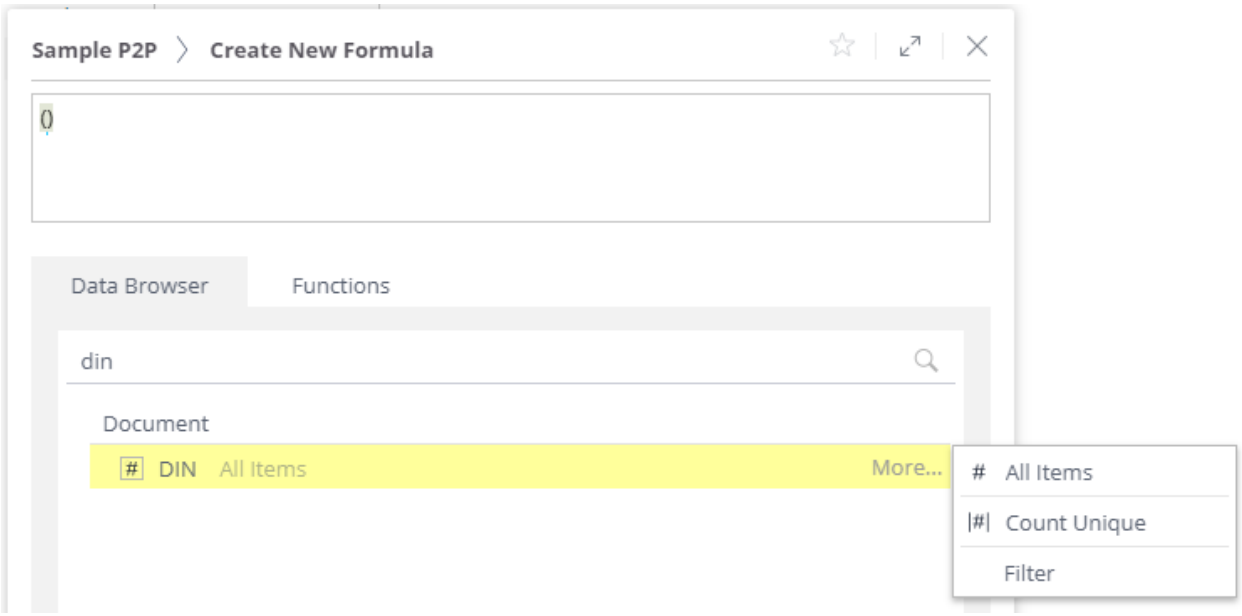
8. Set the widget title to “Pivot Widget”
9. Click the Apply button to save this Widget

Outcome

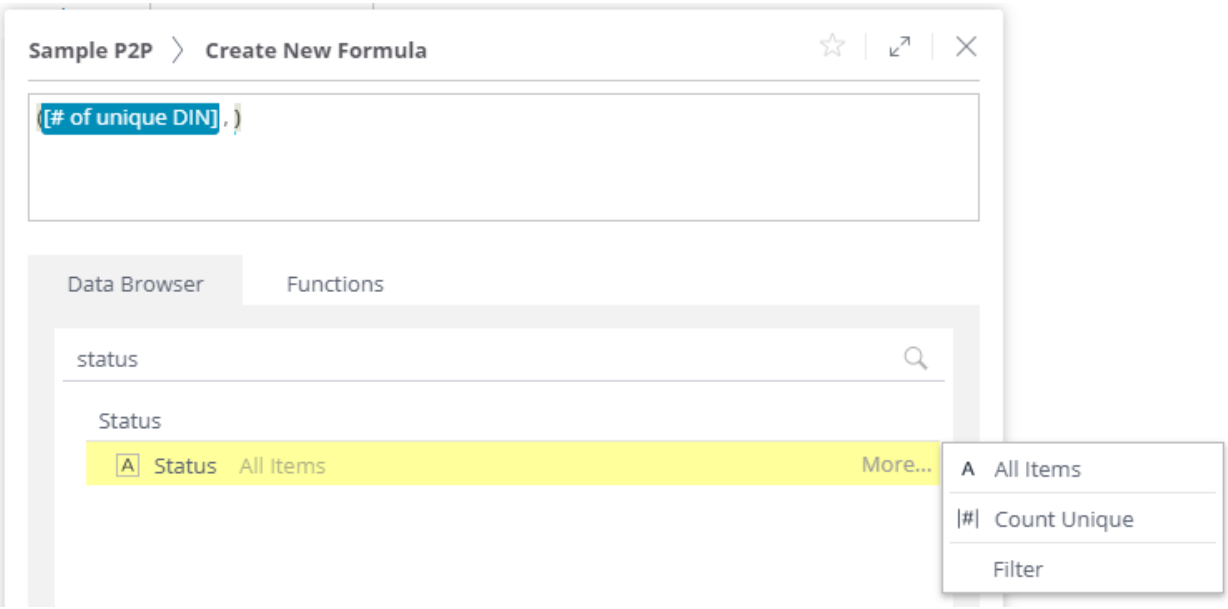
Simple Pivot has been added to your dashboard.

Step 3. Add column to the pivot that will always have the count of documents in a specific status.

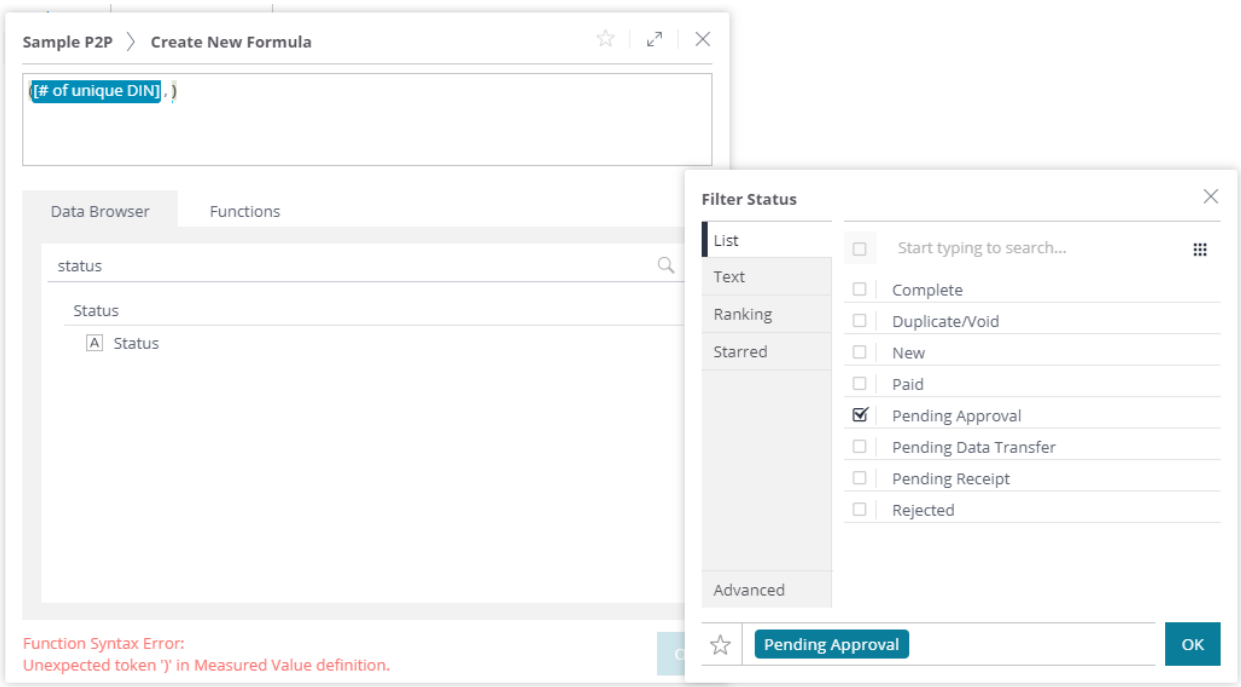
1. Edit the Pivot Widget created in the prior step.
2. Click the + to add a Value
3. Click the Function button fx
4. In the formula bar enter an opening parenthesis (
5. In the Data Browser tab below search for DIN. Hover over it to get the more menu. Choose Count Unique



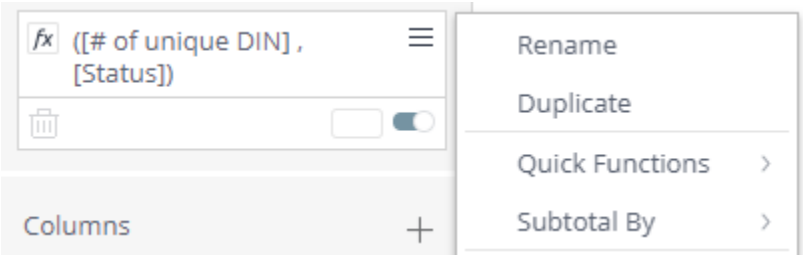
6. In the formula bar enter a single comma ,
   Note: we recommend adding spaces before and after punctuation values and punctuation to make it easier to read.
7. In the Data Browser tab below search for Status. Hover over it to get the more menu. Choose Filter.



8. Set the filter to include “Pending Approval”



9. Click the OK button to add the filter.
10. The formula you entered should automatically have a right parenthesis at the end). If it does not then add it.
11. Click the OK button to finish adding the Value
12. Rename this Value to “Count Pending Approval” by selecting the menu for this field and choosing Rename.



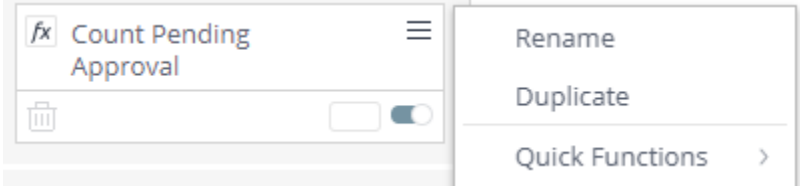
13. Observe that the counts in the two columns are currently the same.
14. Modify the Status Filter on the widget to include all statuses and observe that the counts in the first column change, but the counts in the column named “Count Pending Approval” remain unchanged.
15. Click the Apply button to save these changes.

Outcome & Learnings

You have added a filter to a column in the Pivot so you count a specific filtered set of data.

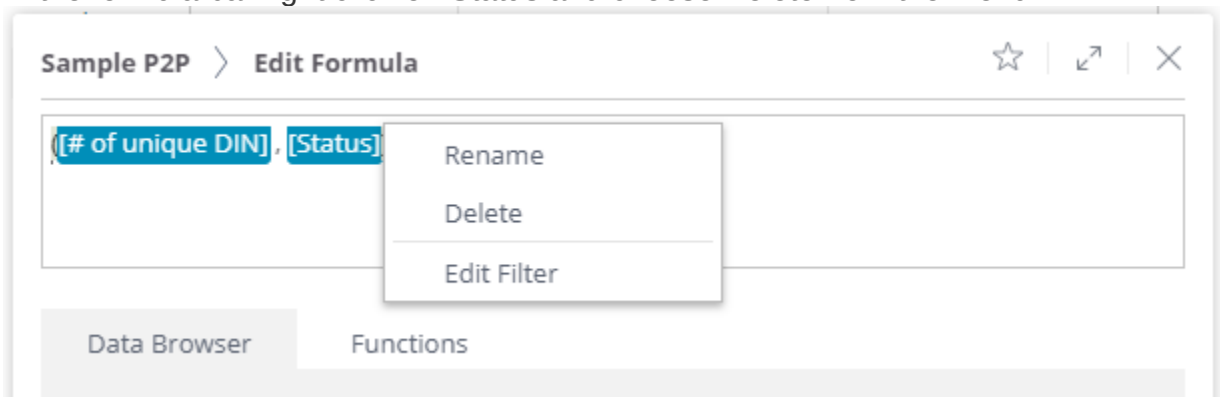
Step 4. Add column to the pivot that will always have the count of all documents.

1. Edit the Pivot Widget created in the prior step.
2. Duplicate the Value for the “Count Pending Approval” by selecting the menu for that Value and choosing Duplicate.

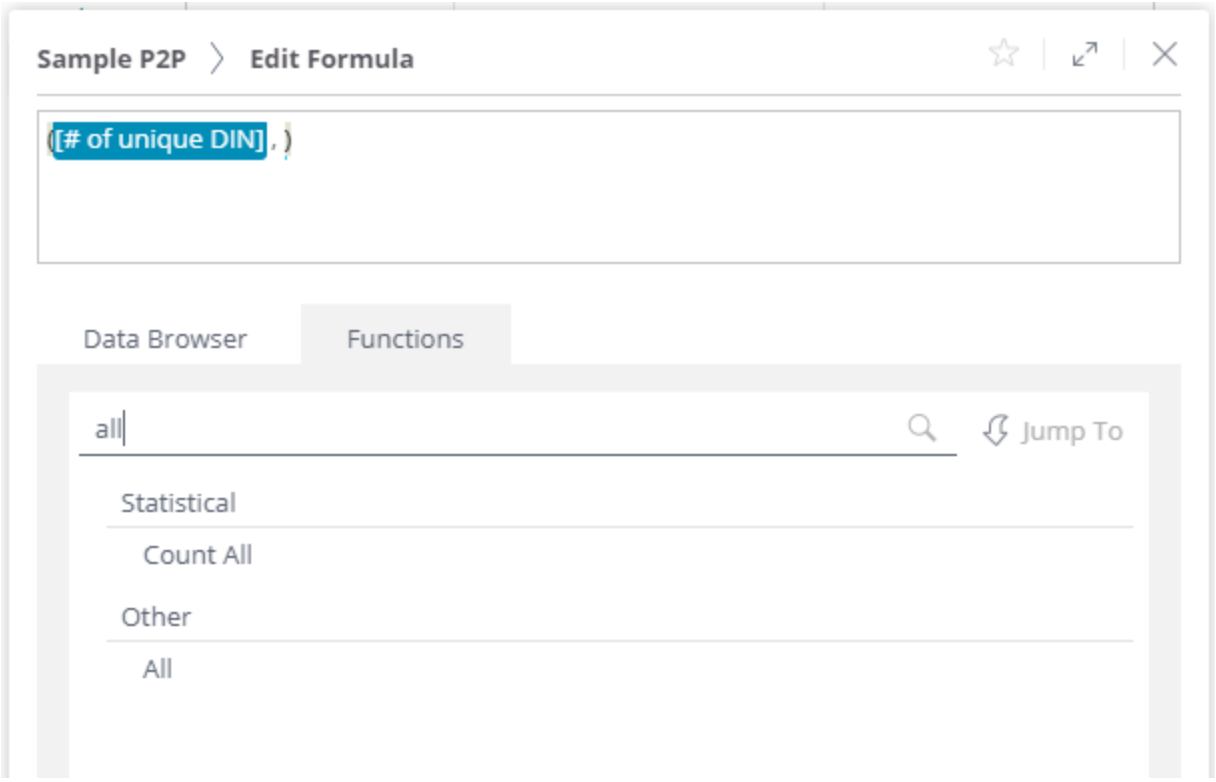


3. Rename this Value to “Count All Documents” by selecting the menu for this field and choosing Rename.

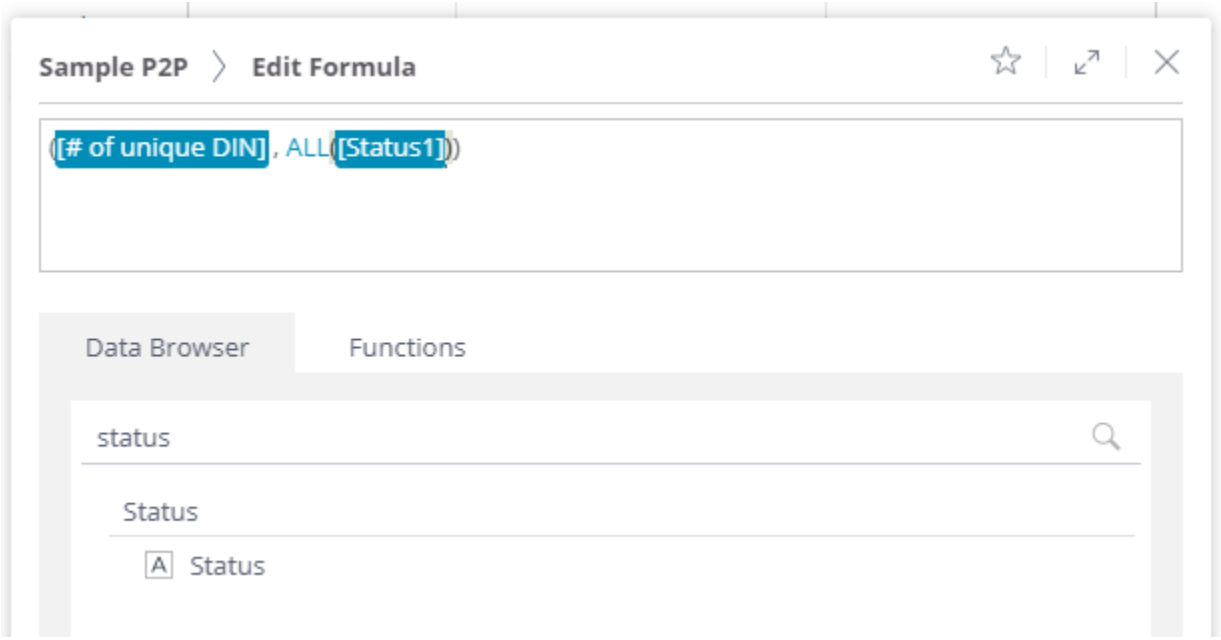
4. Edit the formula for this Value by selecting the Pencil icon for this Value
5. In the formula bar right click on Status and choose Delete from the menu.



6. Click the Functions tab.
7. Search for the function “All” and select it. This is a special function that ignores other filters on the selected field. In this case we will select the Status field.



8. Return to the Data Browser tab.
9. In the Data Browser tab search for Status and select it.



10. Click the OK button to finish editing the Value
11. Observe that the counts in your first column and this new column are currently the same.
12. Modify the Status Filter on the widget to exclude Status = Complete and observe that the counts in the first column change, but the counts in the column named

"Count All Documents" remain unchanged, and the counts in the column named "Count Pending Approval" remain unchanged.

Location	# of unique DIN	Count Pending Approval	Count All Documents
Central	987	131	1,080
East	1,337	274	1,762
North	1,630	330	2,112
South	40	1	46

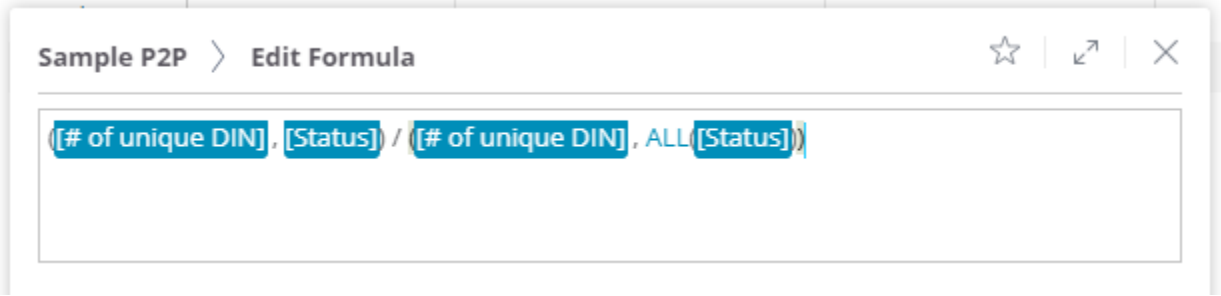
13. Click the Apply button to save these changes.

Outcome & Learnings

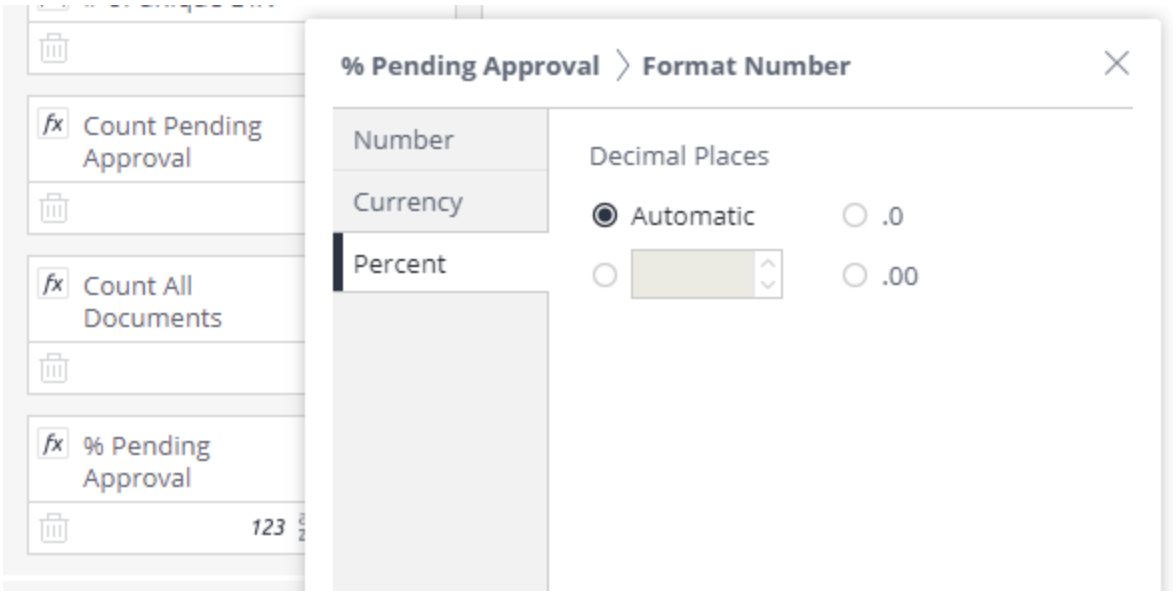
You have overridden the filters using the All function so you can count all documents.

Step 5. Add column to calculate the percentage of documents Pending Approval.

1. Edit the Pivot Widget created in the prior step.
2. Duplicate the Value for the "Count All Documents".
3. Rename this Value to "% Pending Approval"
4. Edit the formula for the value "Count Pending Approval".
5. Highlight all of the contents of the formula to select it.
6. Press Ctrl+C to copy this formula
7. Exit the formula editor.
8. Edit the formula for the Value"% Pending Approval"
9. Make sure your cursor is at the beginning of the formula
10. Press Ctrl+V to paste the formula copied above
11. Enter a forward slash / for division



12. Click the OK button to save the changes to the formula
13. Format the "% Pending Approval" as a percentage by clicking the Format Number link on that Value.
    a. Choose Percent from the left navigation.
    b. Click OK to save the format change.



14. Delete the Widget Filter for Status. This will help you in the next step.
15. Click the Apply button to save the changes.

Outcome

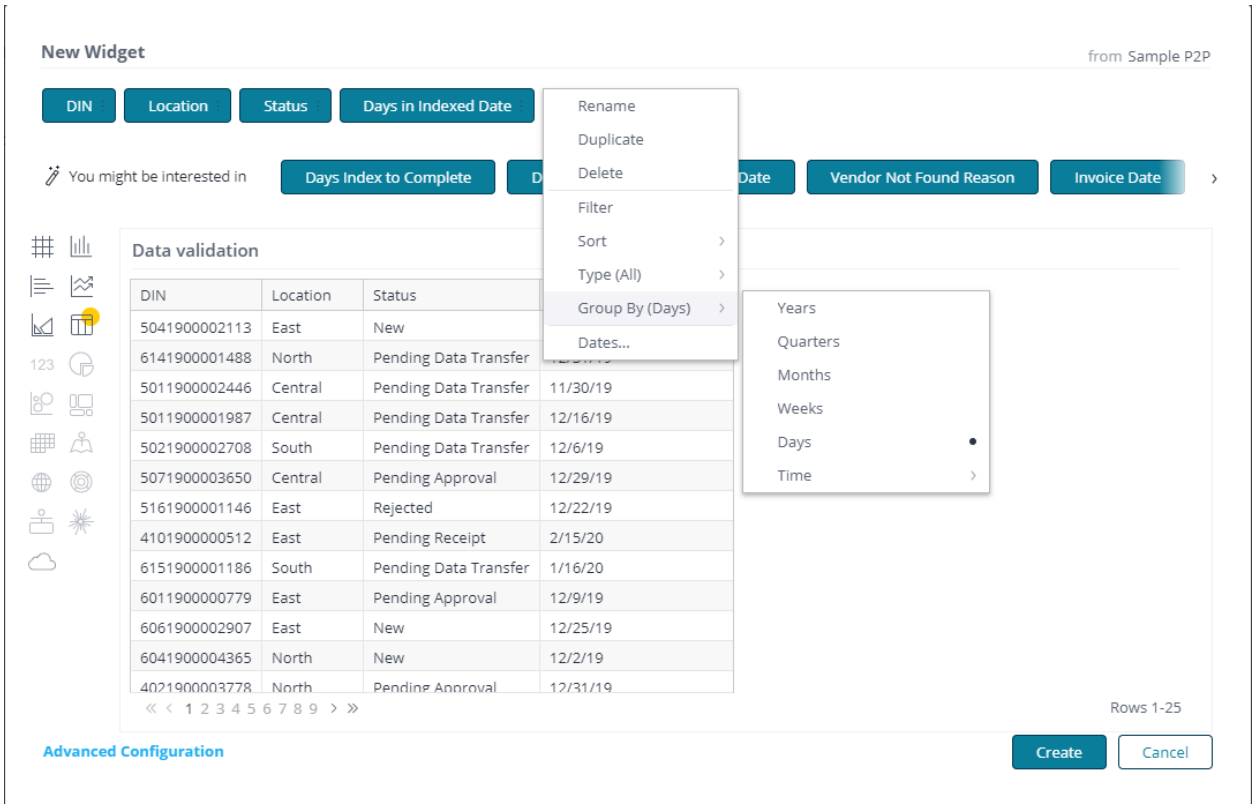
You have now calculated the percentage of documents in Pending Approval status by Location.

While it is possible to create the formula for the percentage in a single step it is easier to build and verify complex functions in steps as shown above. When complete you can hide or delete the unnecessary columns.

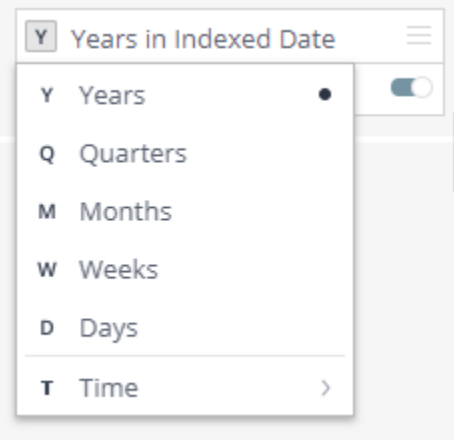
Step 6. Add a Table to validate the data

When performing complex filters you will want to verify that the data selected is complete and accurate. This is best done by using a data table to look at the rows that are selected and applying date or other filters to generate a small sample set. The Sample P2P data source is designed to provide a representative sample of data to help you build your own queries.

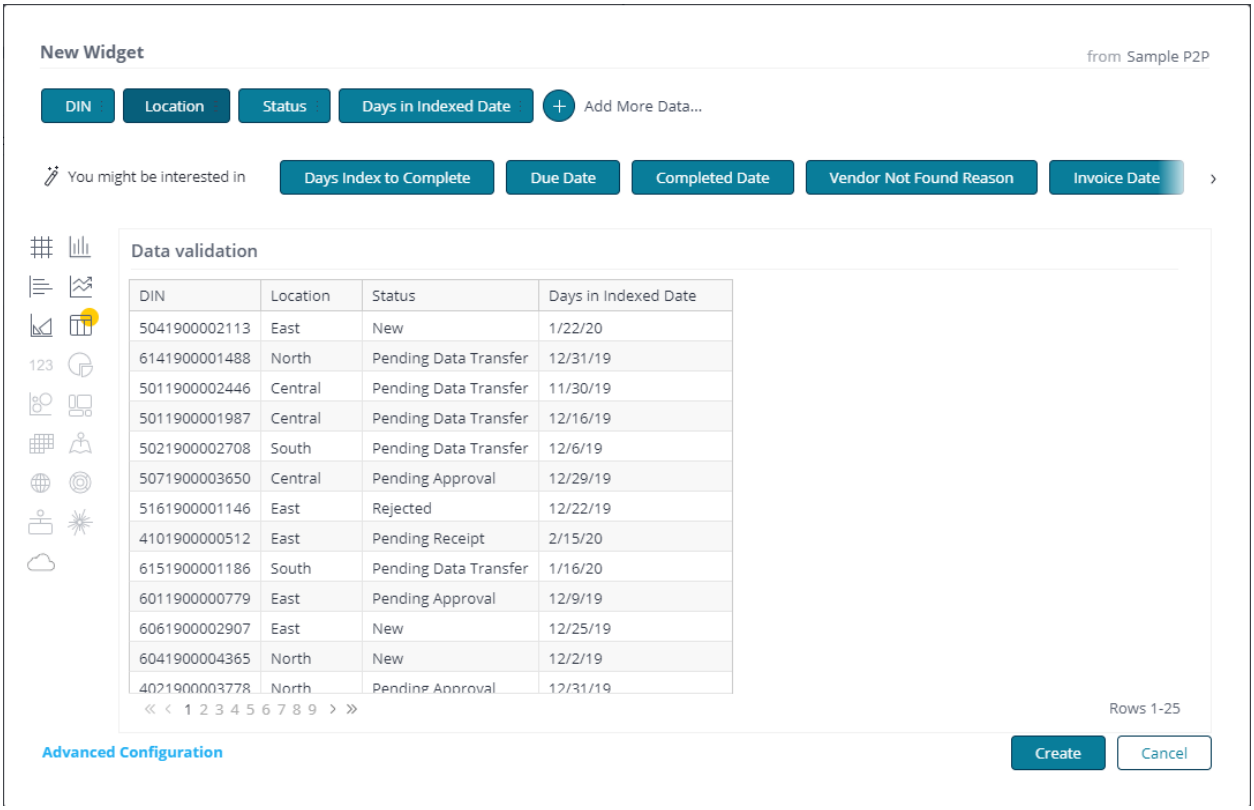
1. Add a new widget to the dashboard created in earlier steps of this tutorial.
2. Select the following fields to add to the Widget: DIN, Location, Status, and Days in Indexed Date.
    a. When you select a date field the system will default to grouping the data by year.
    b. Right Click on the Indexed Date and select Group By Days.



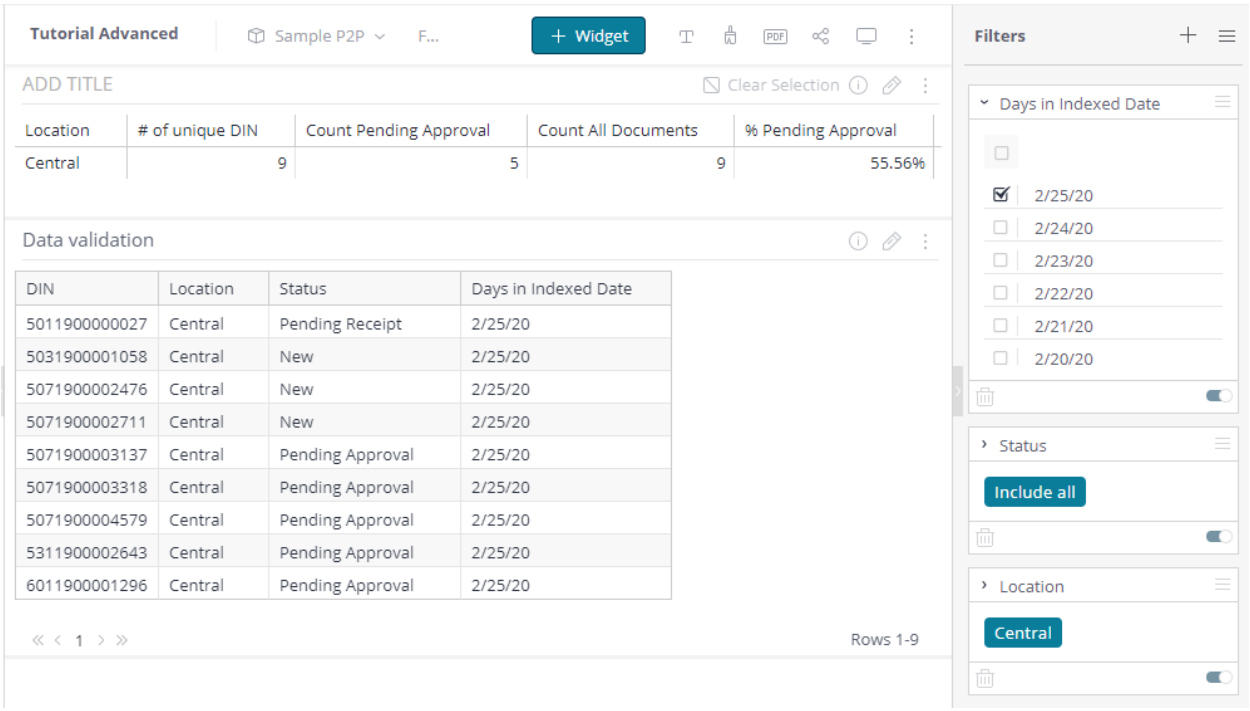
c. Alternatively, in Advanced configuration click on the Y to the left of the value name, “Years in Indexed Date” and select Days from the menu.



3. Choose Table from the visualization options on the left
4. Name the new Widget “Data Validation”



5. Click the Create button (or Apply if you are in Advanced Configuration) to save the widget.
6. Add filters to the dashboard for Status, Location, and Indexed Date
7. Use those filters to get to an easy to count and verify set of data.
   For example, below the table clearly shows the data that confirms the counts in the pivot table.



8. Set all of the dashboard filters to Include All.

Outcome & Learnings

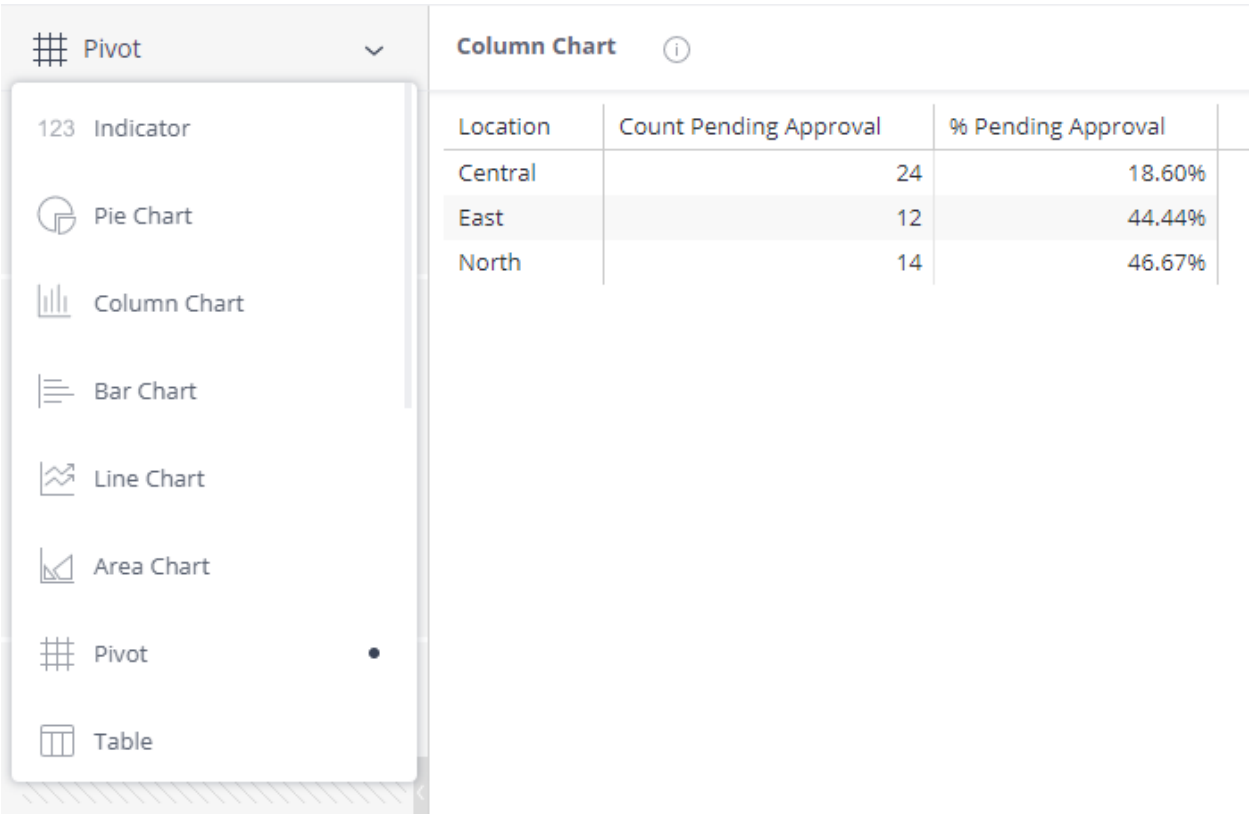
In this step you learned how to use the Table Widget to validate the calculations and filters that you are using in your aggregate widgets.

Step 7. Visualize the data

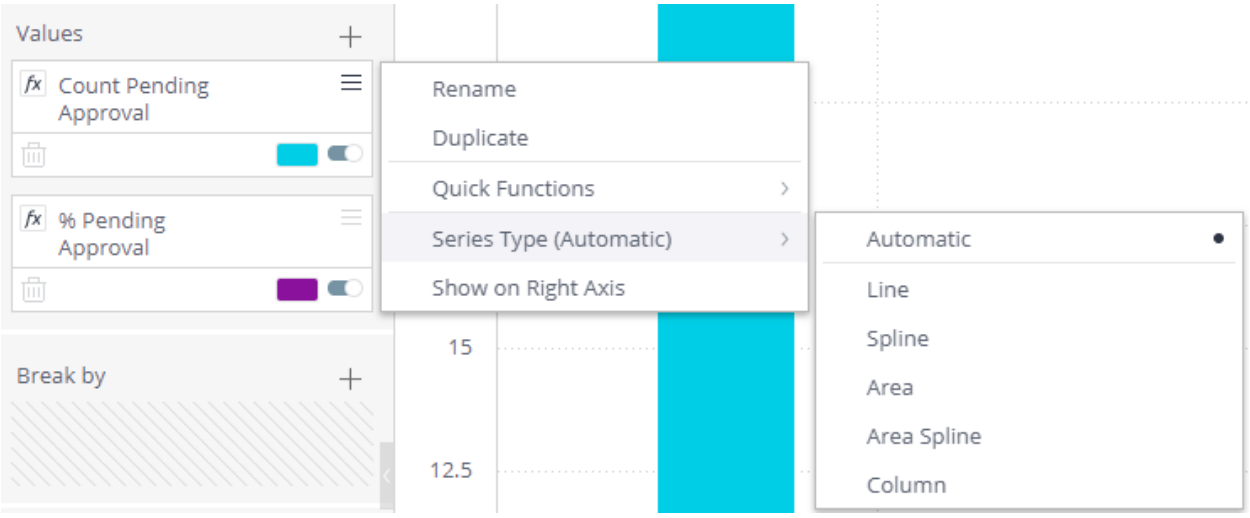
In this step we will duplicate the pivot table and convert it into a column and line chart.

<Insert hand drawn goal>

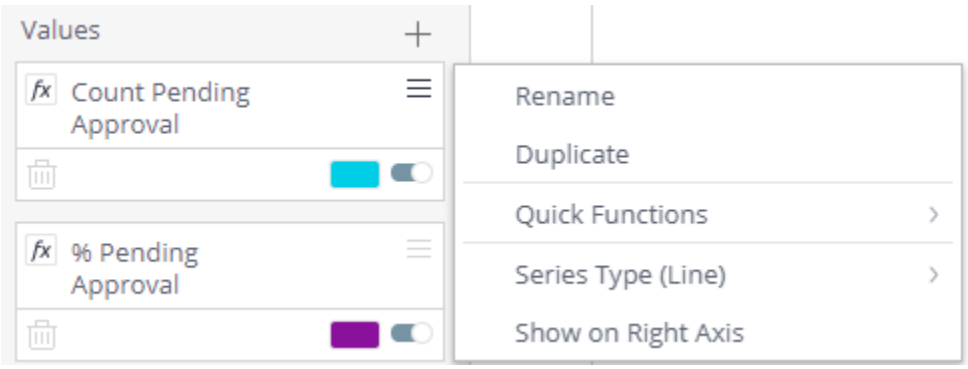
1. Duplicate the Pivot Widget.
    a. Click on the widget menu and select Duplicate
2. Edit the new widget.
    a. Click the Pencil icon to edit the widget.
3. Change the name of the Widget to “Column Chart”
4. Delete the Values “# of unique DIN” and “Count All documents” by clicking the trash can .
5. Change the widget type from pivot to column chart



6. Change the “Count of Pending Approval” to a line chart.
    a. Select the Menu for the Value
    b. Select Series Type from the menu
    c. Select Line

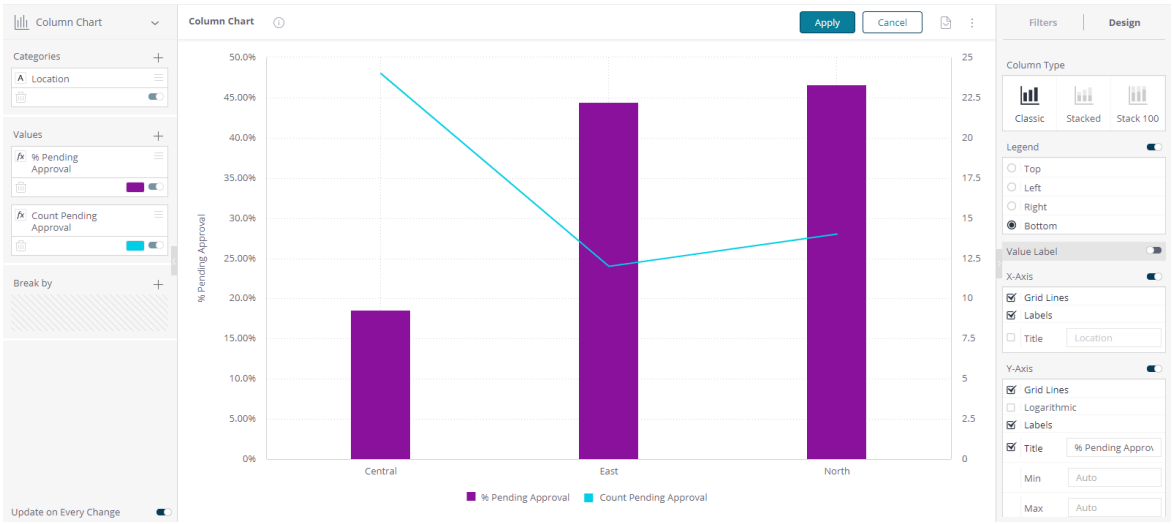


7. Move the “Count of Pending Approval” to show on the right Axis



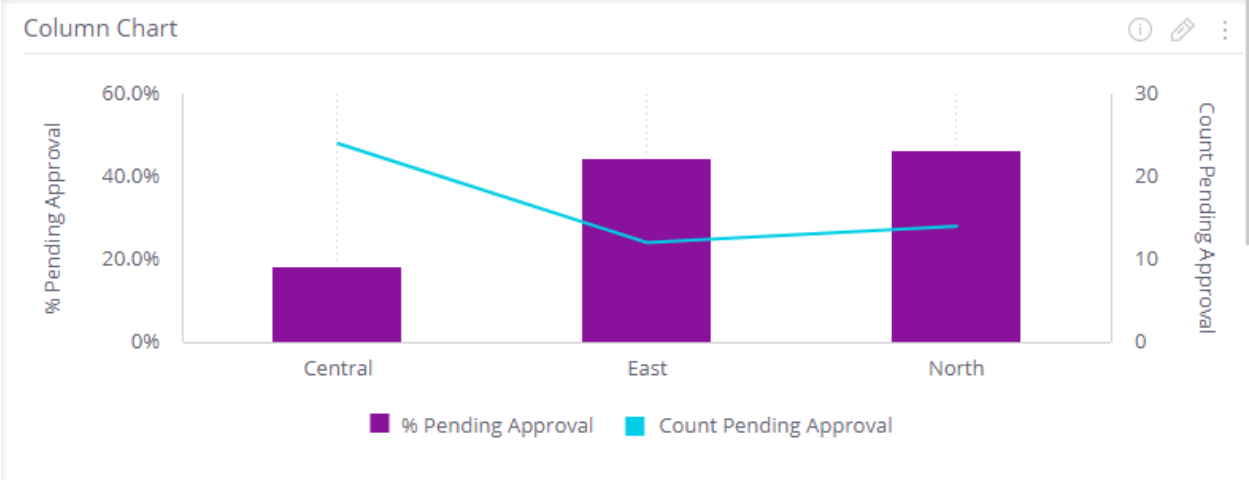
The columns are now in front of the line.

8. Move the columns for “% Pending Approval” behind the line by reordering the values.
    a. Click on the box for the “% Pending Approval” Value and hold the mouse button down. Drag it to the space between the word “Values” and the “Count Pending Approval” Value. You will see a shaded rectangle.
    b. Release the mouse button. The values have been reordered and the line is now on top of the columns.
9. Add Titles to the Y axis.
    a. Select the Design Panel on the right side.
    b. Scroll down and check the Title box for the Y-Axis. By default the label for the Value is shown as the Title.



    c. Scroll down further and check the Title box for the Y2-Axis

10. Click the Apply button to save your new Widget.



Outcome & Learnings

You have now created a chart that will accurately display the percent of documents pending approval as well as the total count of documents by location.

Even if users filter the status that will not cause this widget to show incorrect results.

You learned how to build the data needed for a complex visualization piece by piece in a Pivot, validate it in a Table, and then convert the Pivot to the desired visualization.

Tutorial 7 – Top 10

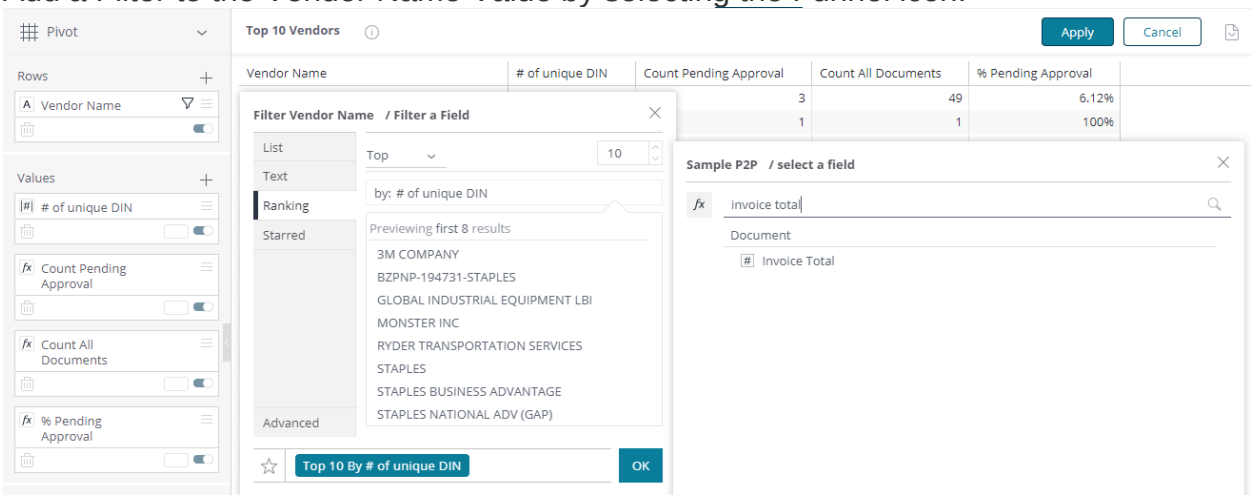
This tutorial assumes you are familiar with the material covered in the earlier tutorials. In many cases you will want to look at the outliers in the data (e.g. the top or bottom in a group). This tutorial will guide you through the creation of widgets showing the Top 10 Vendors by Invoice Total.

Step 1. Open the Dashboard you created in Tutorial 6.

Step 2. Create a Top 10 Vendor widget.

1. Duplicate the existing Pivot Widget
2. Edit the Pivot Widget
3. Rename the Widget “Top 10 Vendors”

4. Delete Location from the Rows
5. Add Vendor Name to the Rows
6. Add a Filter to the Vendor Name Value by selecting the Funnel icon.



7. Select Ranking within the Filter dialog.
   Observe:
   - That it is defaulting to the Top 10, but could be changed to Bottom or a different number of records to be displayed.
   - It is defaulting to ranking by "# of unique DIN" because this is the first Value in the pivot table. We will change this below.
8. Click within the **by:** field to change the formula that is use for ranking the top 10 vendors.
9. Select "Invoice Total" from the Data Browser.
10. Click the OK button to create the filter.
11. Click Apply to save the changes to the "Top 10 Vendors" widget.
12. What do you think will happen to your list of top 10 Vendors when you make changes to Dashboard level filters?

    We did not disable the Dashboard filters so they effect the data in the widget.

    We did not apply the ALL function to override any filters.

    For example filtering by status of different date ranges will change which vendors are the Top 10 by Invoice Total.