



**Quick Guide**

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**Formulas**

# Introduction

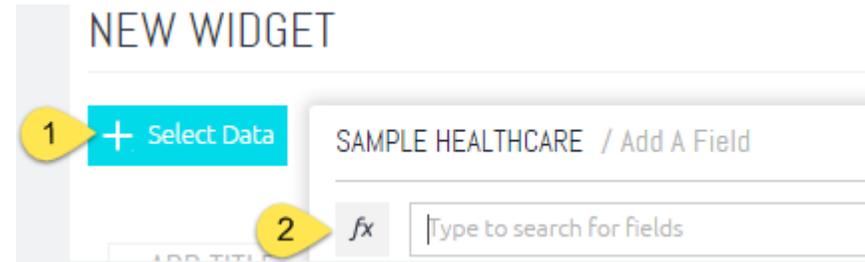
The Formula Editor provides you with all the tools you need to create complex business calculations based on multiple data sources, without the need to manipulate raw data. This quick reference guide provides a quick overview of what you can do with the Formula Editor. For first-time users, we recommend the detailed guide and examples, in our [online documentation](#).

## What can you do with formulas? What Can Formulas Do for You?

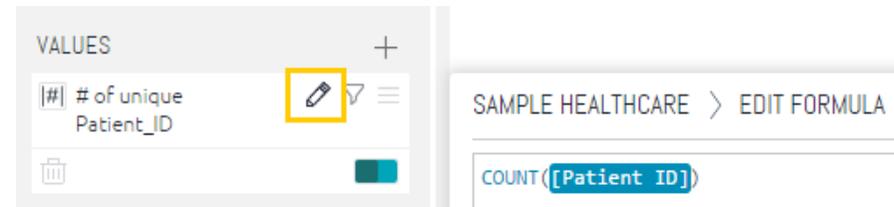
- ▶ Perform calculations based on criteria, by applying various filters on measures (what we call a measured value), including text, ranking, and time filters.
- ▶ Combine data by applying simple mathematics with functions that include sum, aggregation, count, and range.
- ▶ Summarize data using statistical functions that include standard deviation, variance, quartile and percentile functions.
- ▶ Accumulate data with rolling sum and average for time periods and ranges.
- ▶ Compare times and trends with time functions that include changes over time, growth trends and time differences.

## Let's Get Started. Open the Formula Editor

For a new widget, click Select Data, and then the formula button.



For an existing widget, click on the Edit Formula button.



The formula editor has two tabs:

### Data Browser

Click on a field to include it in the formula.

### Functions

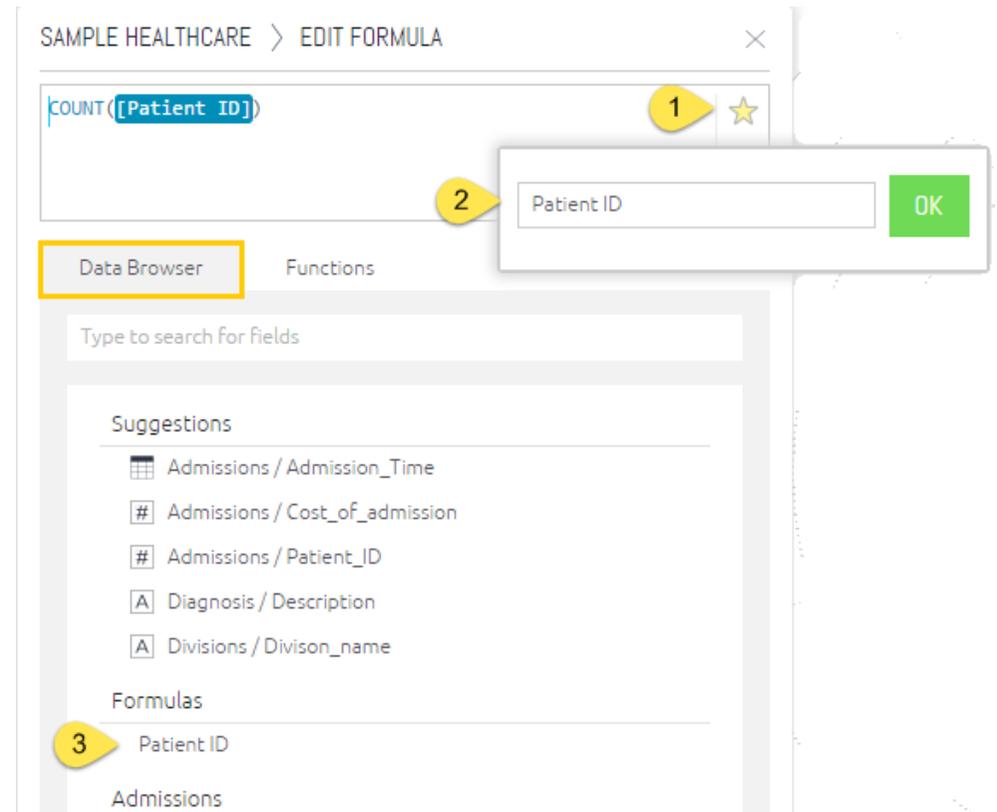
Select formula operations.

You can create a formula combining one or more functions, fields, and filters.

## Reuse Formulas

Call it favorites, bookmarks or starring. It's easy to reuse a formula. Click on the star and then enter a name.

To reuse a formula, select it from under the Formulas in the Data Browser tab.



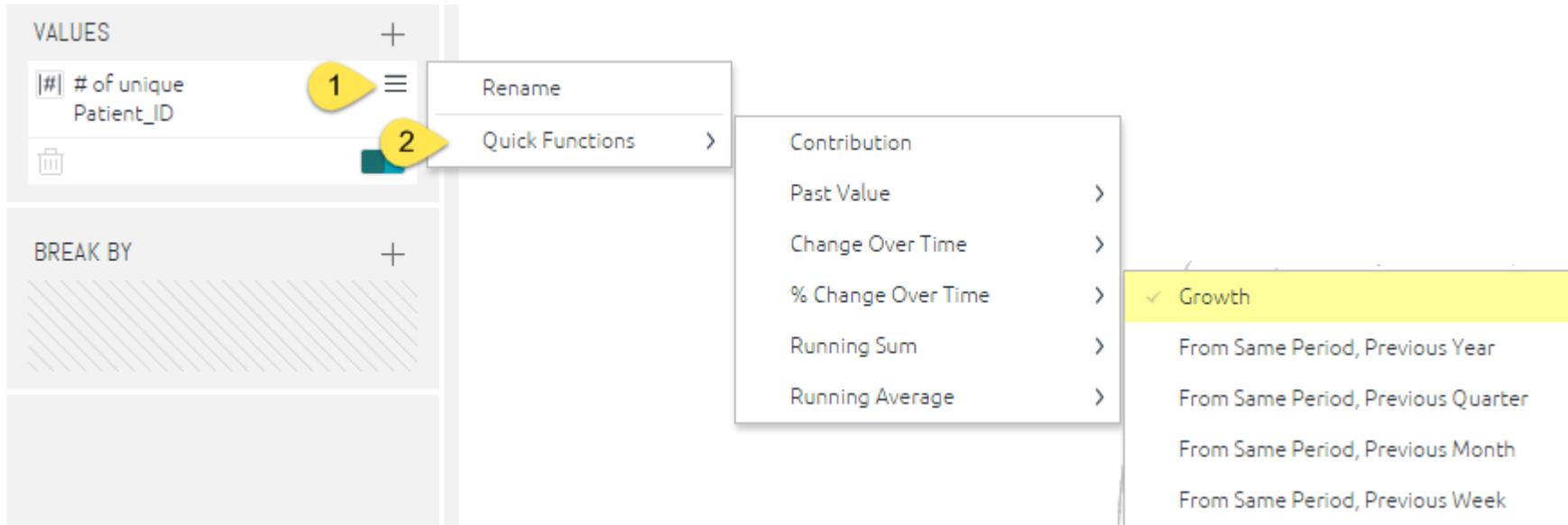
## Quickly Apply Functions

You can easily apply functions to your formulas without opening the formula editor, by using shortcuts. There are two methods, depending on the type of formula you need.

### Quick Functions

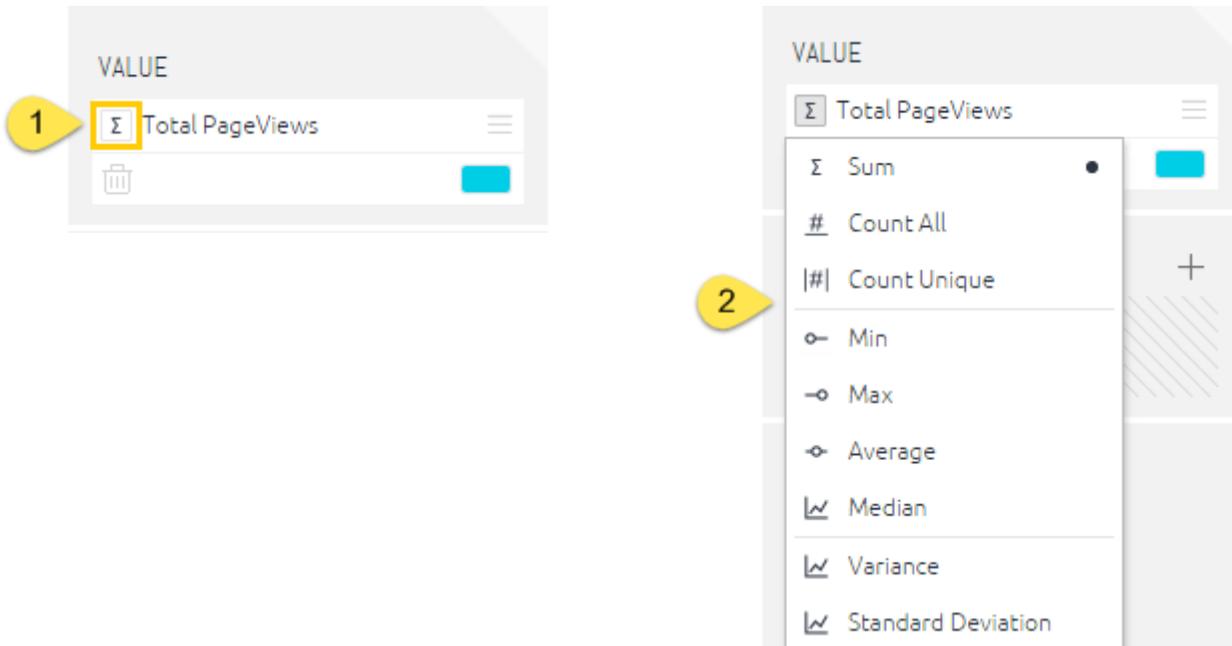
Use Quick Functions to add contribution or time-dimension functions to any existing value or formula. They include calculations for past values, changes over time, contribution and running totals. Quick Functions can only be accessed by clicking on a formula that is already present in a widget.

Click on the menu icon of a numeric field in the data pane, and select Quick Functions and the function that you want to apply.



### Aggregate Functions

To quickly update your formula with an aggregate function, click on the value icon, and select a different calculation method.



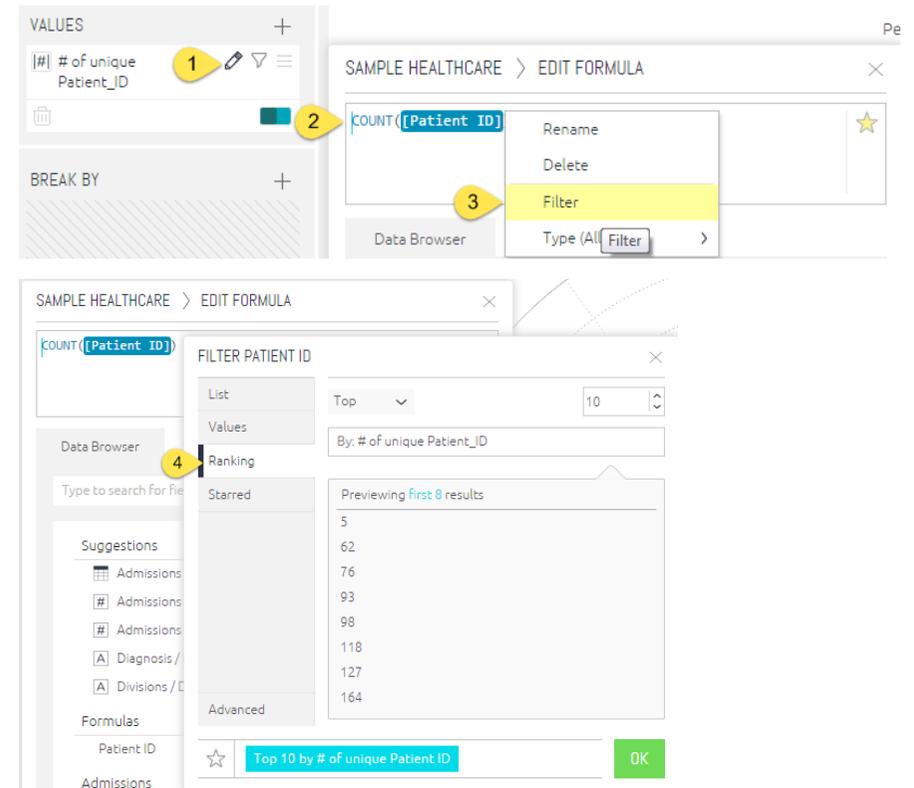
# Formulas for Every Occasion

See the different ways to use formulas.

## Filter Formulas Based on Criteria

Use Sisense's Measured Value to perform a calculation based on values that meet specific criteria.

1. Create your formula as explained above.
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.



## Combine Data

Use the following aggregate functions to combine data.

Sum	Sum(<Numeric Field>)	Calculates the total of the given values
Average	Avg(<Numeric Field>)	Calculates the mean average of the given values
Minimum	Min(<Numeric Field>)	Returns the minimum value among the given values
Maximum	Max(<Numeric Field>)	Returns the maximum value among the given values
Count Unique	Count(<Numeric Field>)	Counts the number of unique values within the given values
Count All	DupCount(<Numeric Field>)	Returns the actual item count of the given list of items, including duplicates



## Get Time-Related Data

Use the following functions to calculate time data and ranges.

Prev	Prev( <Time Field> [, <N>] )	Returns the Time period Member in <Time Field> which is N periods back from the current Member. This function only works as a scope function and not by itself. For example – This formula will return the numeric value of 2 months ago: (<Numeric Value>, Prev(<Month Field>, 2))
Next	Next( <Time Field> [, <N>] )	Returns the Time period Member in <Time Field> which is N periods after the current Member. This function only works as a scope function and not by itself. For example – This formula will return the numeric value for 2 months in the future: (<Numeric Value>, Next(<Month Field>, 2))
Past Year	PastYear( <Numeric Value> )	Calculates the value for the same period in the past (previous) year. For example: <ul style="list-style-type: none"> <li>• If you're looking at a specific day, you will see the value of the same day one year back.</li> <li>• If you're looking at a specific month, you will see the value of the same month one year back.</li> </ul>
Past Quarter	PastQuarter( <Numeric Value> )	Calculates the value for the same period in the past (previous) quarter. For example: <ul style="list-style-type: none"> <li>• If you're looking at a specific day, you will see the value of the same day one quarter back.</li> <li>• If you're looking at a specific month, you will see the value of the same month one quarter back.</li> </ul>

Past Month	PastMonth( <Numeric Value> )	Calculates the value for the same period in the past (previous) month. For example: If you're looking at a specific day, you will see the value of the same day one month back.
Growth	Growth( <Numeric Value> )	Calculates growth over time. The time dimension to be used is determined by the time resolution in the widget/dashboard. For example: <ul style="list-style-type: none"> <li>• If this month your value is 12, and last month it was 10, your Growth for this month is 20% (0.2).</li> <li>• Calculation: <math>(12 - 10) / 10 = 0.2</math></li> <li>• If this year your value is 80, and last year it was 100, your Growth for this year is -20% (-0.2).</li> <li>• Calculation: <math>(80 - 100) / 100 = -0.2</math></li> </ul>
Growth Rate	GrowthRate( <Numeric Value> )	Calculates growth rate over time. The time dimension to be used is determined by the time resolution in the widget/dashboard. For example: <ul style="list-style-type: none"> <li>• If this month your value is 12, and last month it was 10, your Growth Rate for this month is <math>12/10 = 120\%</math> (1.2).</li> <li>• Calculation: <math>12 / 10 = 1.2</math></li> <li>• If this year your value is 80, and last year it was 100, your Growth for this year is <math>80/100 = 80\%</math> (0.8).</li> <li>• Calculation: <math>80 / 100 = 0.8</math></li> </ul>
Year Difference	YDiff( <Start Time>, <End Time> )	Returns the difference between <Start Time> and <End Time> in years. Returns whole numbers.
Quarter	Difference QDiff( <Start Time>, <End Time> )	Returns the difference between <Start Time> and <End Time> in quarters. Returns whole numbers.
Month Difference	MDiff( <Start Time>, <End Time> )	Returns the difference between <Start Time> and <End Time> in months. Returns whole numbers.
Day Difference	DDiff( <Start Time>, <End Time> )	Returns the difference between <Start Time> and <End Time> in days.
Hour Difference	HDiff( <Start Time>, <End Time> )	Returns the difference between <Start Time> and <End Time> in hours.

Minute Difference	MnDiff( <Start Time>, <End Time> )	Returns the difference between <Start Time> and <End Time> in minutes.
Second Difference	SDiff( <Start Time>, <End Time> )	Returns the difference between <Start Time> and <End Time> in seconds.

## Work Out Running Totals and Averages

Use the following functions to calculate running totals and averages.

Year to Date Sum	YTDSum( <Numeric Value> )	Returns the running total starting from the beginning of the year up to the current time period member. The time dimension to be used is determined by the time resolution in the widget/dashboard.
Quarter to Date Sum	QTDSum( <Numeric Value> )	Returns the running total starting from the beginning of the quarter up to the current time period member. The time dimension to be used is determined by the time resolution in the widget/dashboard. Returns 0 if the active time resolution is years.
Month to Date Sum	MTDSum( <Numeric Value> )	Returns the running total starting from the beginning of the month up to the current time period member. The time dimension to be used is determined by the time resolution in the widget/dashboard. Returns 0 if the active time resolution is quarters or years.
Year to Date Average	YTDAvg( <Numeric Value> )	Returns the running average starting from the beginning of the year up to the current time period member. The time dimension to be used is determined by the time resolution in the widget/dashboard.

Quarter to Date Average	QTDAvg( <Numeric Value> )	Returns the running average starting from the beginning of the quarter up to the current time period member. The time dimension to be used is determined by the time resolution in the widget/dashboard. Returns 0 if the active time resolution is years.
Month to Date Average	MTDAvg( <Numeric Value> )	Returns the running average starting from the beginning of the month up to the current time period member. The time dimension to be used is determined by the time resolution in the widget/dashboard. Returns 0 if the active time resolution is quarters or years.

## Statistics Anyone?

Use these for more statistical data.

Standard Deviation (Sample)	STDEV( <Numeric Value> )	Returns the Standard Deviation of the given values (Sample).
Standard Deviation (Population)	STDEVP( <Numeric Value> )	Returns the Standard Deviation of the given values (Population).
Variance (Sample)	VAR( <Numeric Value> )	Returns the Variance of the given values (Sample).
Variance (Population)	VARP( <Numeric Value> )	Returns the Variance of the given values (Population).
Median	MEDIAN( <Numeric Field> )	Calculates the median of the given values.
Percentile	PERCENTILE( <Numeric Field>, <k> )	Returns the k-th percentile value from the given field. k is any number between 0..1 (inclusive).
Quartile	QUARTILE( <Numeric Field>, <k> )	Returns the k-th quartile for the given field. <ul style="list-style-type: none"> <li>• k = 0 returns the Minimum value</li> <li>• k = 1 returns the first quartile (25th percentile)</li> <li>• k = 2 returns the Median value (50th percentile)</li> <li>• k = 3 returns the third quartile (75th percentile)</li> <li>• k = 4 returns the Maximum value</li> </ul>

Mode	MODE(<Numeric Field>)	Returns the most frequently occurring value in a field.
Largest	LARGEST(<Numeric Field>, <k>)	Returns the k-th largest value in a field.