



User Guide

Version 3.5
November 2016

Contents

Chapter 1: Introduction.....	6
Finding your way around.....	7
Log in to ThoughtSpot from a browser.....	9
Log out of ThoughtSpot.....	10
About the user profile.....	11
Understanding privileges.....	13
About stickers.....	14
Apply a sticker.....	14
Filter by a sticker.....	15
 Chapter 2: About search.....	 17
About starting a new search.....	18
Start a new search.....	19
About choosing sources.....	21
About the search bar.....	22
Search suggestions.....	24
About attributes and measures.....	27
What am I looking at?.....	27
Last data refresh time.....	28
About tables.....	30
Change the table.....	30
About headlines.....	31
About charts.....	32
About chart types.....	33
Change the chart.....	55
About filters.....	65
About simple filters.....	66

About bulk filters.....	70
Delete a filter.....	72
About filtering on null, blank, or empty values.....	73
Other search actions.....	75
Change the view.....	75
Sort your search.....	75
Change the date bucketing.....	76
Show underlying data.....	76
Drill down.....	78
Exclude and include row values.....	79
About conditional formatting.....	79
Copy an answer.....	84
Download your search.....	85
Replay search.....	87
 Chapter 3: Advanced searches.....	89
About keyword searches.....	91
Search using growth over time.....	92
About worksheets from searches.....	95
Worksheet from a search example scenarios.....	97
Save a search as a worksheet.....	98
Create a search from a search saved as a worksheet.....	99
About formulas in searches.....	101
Add a formula to a search.....	102
View or edit a formula in a search.....	105
About formulas and aggregation.....	107
About cumulative formulas.....	111
About grouping formulas.....	114
About moving formulas.....	116
About conversion formulas.....	121

About pivot tables.....	122
Chapter 4: About pinboards.....	125
Create a pinboard.....	126
Add an answer to a pinboard.....	127
Edit the layout of a pinboard.....	128
About pinboard filters.....	130
Create a pinboard filter.....	130
About scheduled pinboards.....	133
Schedule a pinboard job.....	135
Other pinboard actions.....	138
Search actions within a pinboard.....	139
Copy a pinboard.....	140
Copy the link for a pinboard or visualization.....	141
Reset a visualization.....	144
Reset the layout of a pinboard.....	145
Download a pinboard.....	146
Start a slideshow.....	147
Delete a visualization.....	149
Chapter 5: Working with data.....	151
Generate CSV files with the data to be loaded.....	153
Load data from a web browser.....	154
Append data from a web browser.....	156
About sharing.....	158
Share a pinboard.....	159
Share answers.....	161
Share uploaded data.....	163
Revoke access (unshare).....	165

Chapter 6: About the Help Center.....	167
What you can find in the Help Center.....	168
Chapter 7: Reference guide.....	171
Keyword reference.....	172
Formula reference.....	178
Date and time formats reference.....	192
Chapter 8: Contact ThoughtSpot.....	195
Chapter 9: Copyright.....	197

Chapter 1: Introduction

Topics:

- [Finding your way around](#)
- [About the user profile](#)
- [Understanding privileges](#)
- [About stickers](#)

This ThoughtSpot User Guide contains information on navigating and searching data with ThoughtSpot. It will assist you with starting new searches, managing your pinboards, and troubleshooting.

ThoughtSpot enables you to view and analyze your data through a search-based user interface.

You can create your searches on the fly by typing them into a search bar, like you do when using an internet search engine. ThoughtSpot makes it easy to see your data, get your questions answered, create interactive graphs, and customize pinboards. You do not need to understand how the data is stored, attend days of training, or know SQL to do these things. Collaboration and security features make it easy for to protect sensitive data and share information safely with others.

ThoughtSpot gives administrators the ability to modify data properties to meet business needs, for example by providing search synonyms for common terms, boosting the importance of a column in search results, or formatting how the data appears. So if you are not getting the answers you expect when using ThoughtSpot, check with your ThoughtSpot administrator to see if some settings may need to be changed.

Finding your way around

ThoughtSpot is organized into several sections to make navigation easy. You can reach them by using the menu bar.



Figure 1: Menu bar

These are the different sections in ThoughtSpot:

Home

Click the logo to go to the home page. The home page contains:

- Search bar - Click in the search bar to start a new search. This is the same thing as clicking **Search** in the top navigation bar.
- Last viewed pinboard - The home page shows the last pinboard you looked at. The dropdown box on the top left of the pinboard lets you choose a different pinboard without having to leave the home page.
- Activity - The activity button shows recent actions performed by other people.

To view the activity panel, click on the **activity icon** on the right side of the home page.

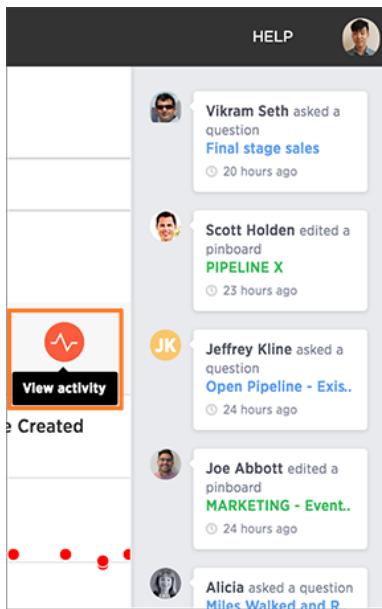


Figure 2: Activity bar

You can even click on one of the object names to jump to its location.

Search

Search is where you will spend most of your time. It allows you to search and explore your data. Choose your data sources and type in the search bar at the top. As you type your search, results will appear in the main part of the screen as either a table or a chart.

To learn more about this section, visit [About search](#).

Answers

Answers are the result of a single search. You can save an answer you want to work more on later, or just keep it for your personal use. Answers are for you alone, until you share them with others.

Pinboards

Pinboards are collections of related search results. You can create your own pinboard or add to an existing one. Once a pinboard has been saved, it can be

shared with others or viewed as a slideshow. The **Pinboards** page shows a list of saved pinboards. Click on one to view, edit, or share it.

To learn more about pinboards, visit [About pinboards](#).

Data

Data contains a list of data sources (tables and worksheets). These are usually loaded and managed by your administrator. However, you may be able to import a spreadsheet (Excel or CSV) here, if you have the correct privileges.

To learn more about this section, visit [Working with data](#).

Admin

Admin only appears if you have administrator privileges. This section is covered in the ThoughtSpot Administrator Guide.

Help

Help is a support resource for ThoughtSpot. It contains short videos, a keyword reference, links to documentation, and other useful materials. You can also find the support contact information and software version number here.

User

The **user icon** allows you to either view your preferences or log out. You can also change your icon here.

To learn more about this section, visit [About the user profile](#).

Log in to ThoughtSpot from a browser

To set up and explore your data, access ThoughtSpot from a standard Web browser using a username and password.

Before accessing ThoughtSpot, you need:

- The Web address (IP address or server name) for ThoughtSpot.
- A network connection.

- A Web browser.
- A username and password for ThoughtSpot.

Supported Web browsers include:

Table 1: Supported browsers

Browser	Version	Operating System
Google Chrome	20 and above	<ul style="list-style-type: none"> • Windows 7 or greater • Linux • MacOS
Mozilla Firefox	14 and above	<ul style="list-style-type: none"> • Windows 7 or greater • Linux • MacOS
Internet Explorer	11	<ul style="list-style-type: none"> • Windows 7 or greater

To log in to ThoughtSpot from a browser:

1. Open the browser and type in the Web address for ThoughtSpot:

`http://<hostname_or_IP>`

2. Enter your username and password and click **Enter Now**.

Log out of ThoughtSpot

Once you're done with your search session, you can optionally log out of ThoughtSpot.

To log out of ThoughtSpot from a browser:

1. Click your user icon at the top right hand corner of the screen.
2. Click **Sign out**.

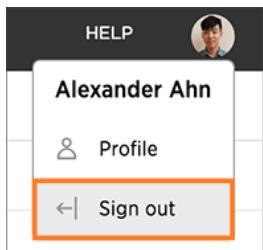


Figure 3: Sign out of ThoughtSpot

About the user profile

The user icon lets you view your profile or sign out of ThoughtSpot.

To view the user actions, click on your user icon on the top right corner of the page.

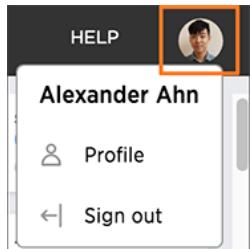


Figure 4: User icon

Click **Profile** to go to your profile preference page, where you can change your icon, email preferences, or password.

You can change your picture by clicking **Upload Picture**. The system accepts PNG or JPEG files that are under 4MB.

Update my picture

Upload Picture

Upload a .png or .jpg file (less than 4MB). It should be in a square format (e.g. 100x100).

Figure 5: Update my picture

You can change your password by entering your new password and clicking **Update Password**.

Update my password

Password

Confirm Password

Update Password

Figure 6: Update my password

You can change your email notifications preferences by checking or unchecking **Email me sharing notifications** and clicking **Update Preferences**.

Update my preferences

Email me sharing notifications

Update Preferences

Figure 7: Update my preferences

Clicking **Sign out** logs you out of ThoughtSpot, and takes you back to the sign in page.

Understanding privileges

The things you can do in ThoughtSpot are determined by the privileges you have. These are set at the group level.

If you are trying to do something in ThoughtSpot, and cannot access the screens to accomplish it, you may not have the correct privileges. In this case, you should contact your administrator and explain what you want to accomplish. Your administrator may be able to grant you additional privileges.

-  **Note:** Permissions to see and edit tables, worksheets, and pinboards are not affected by privileges. They are given when these items are shared with you.

Here are the privileges that the administrator sets, and the capabilities they enable:

Table 2: Group Permissions

Privilege	Description
Has administration privileges	Can manage Users and Groups and has view and edit access to all data.
Can upload user data	Can upload their own data from the browser using Import Data .
Can download data	Can download data from search results and pinboards.
Can share with all users	Can see the names of and share with users outside of the groups the user belongs to.
Can manage data	Can create a worksheet. Can also create an aggregated worksheet from the results of a search by selecting Save as worksheet . Can also use ThoughtSpot Data Connect, if it is enabled on your cluster.

Privilege	Description
Can schedule pinboards	Can create pinboard schedules and edit their own scheduled jobs.

About stickers

You can create stickers to make it easier for people to find data sources and pinboards.

About stickers

Stickers enable you to create categories for classification of objects, including pinboards, answers, data sources, and worksheets. Only administrators can create stickers, and they are global in scope. This means that everyone can see the stickers and use them to tag objects. They can also filter lists of objects by sticker. Stickers are often used to designate subject areas, such as sales, HR, and finance, but you can use them any way you like.

This is the workflow for using stickers:

1. Only administrators can create stickers.
2. Anyone can [Apply a sticker](#).
3. Anyone can [Filter by a sticker](#).

Apply a sticker

Apply a sticker whenever you want to tag a data source, worksheet, or pinboard to make it easier to find.

Only administrators create stickers, but anyone with edit privileges can tag an object with a sticker.

To tag an object with a sticker:

1. From the top menu, choose Answers, Pinboards, or Data.



Figure 8: Choose Answers, Pinboards, or Data

2. Find the item(s) you want to tag in the list, and check the box next to its name.
3. Click the apply sticker icon and choose one from the list.

You can apply as many stickers as you like to an object.

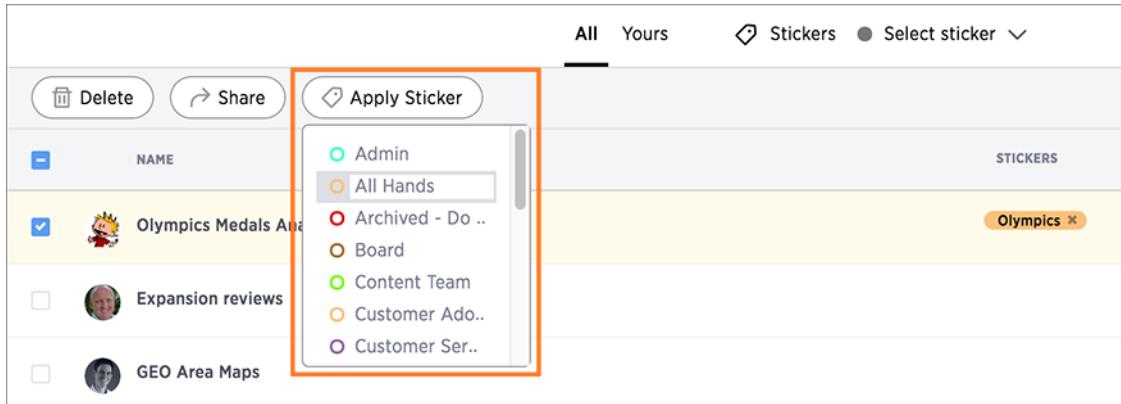


Figure 9: Choose a sticker to apply

Filter by a sticker

Whenever you are selecting objects from a list, you can filter by sticker to find what you're looking for.

Anyone can use stickers to filter lists of pinboards or data sources. You can also filter by sticker when selecting data sources.

To filter by sticker:

1. From the top menu, choose **Answers, Pinboards, or Data**.



Figure 10: Choose Answers, Pinboards, or Data

2. Click on **Select sticker**, and select a sticker to filter by. Click on its name.

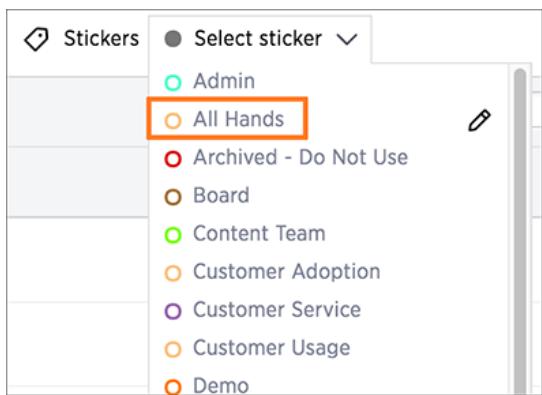


Figure 11: Filter by a sticker

Chapter 2: About search

Topics:

- [About starting a new search](#)
- [About tables](#)
- [About charts](#)
- [About filters](#)
- [Other search actions](#)

Use search to get instant answers about your data without having to consult a data analyst.

Using ThoughtSpot's relational search is simple, so anyone can use it. In the search bar, type what you are interested in exploring, for example `revenue midwest sales rep`. ThoughtSpot will return an answer based on your searched terms.

As you get better with ThoughtSpot's search tools, you will be able to get more out of your data by performing more complex searches. For more information on complex searches, refer to the [advanced searches](#) section.

About starting a new search

There are a few basic things you should understand before starting a new ThoughtSpot search.

How do I search data?

You've probably seen one of these before:



Figure 12: Search bar

Click in the box and start typing some letters. As soon as you begin typing, search suggestions appear. Type slowly and use the suggestions to find what you're looking for.

Whenever you finish typing a word, you'll see an answer in the form of a chart or a table.

You should know that search in ThoughtSpot is more like an Amazon search than a conversation. For example. Instead of:

Find me all books by Lewis Carroll with the title Alice in Wonderland

You'd type:

carroll alice

Or consider Google. You wouldn't type in:

Find me the largest city by population

You'd type:

largest city by population

or simply:

largest city population

That's how search works in ThoughtSpot. You can use some helping words like "by" and "for" but they can also be left out, and the search will return the same answer.

What kinds of things can I type?

Search is based on the tables that exist in your data. Tables are made of rows and columns, like spreadsheets.

So you can search by typing in any of these words:

- The column name: like revenue, product name, or store
- Any of the values in the columns: like 20000, kitten chow, or richmond
- One of the special **keywords** ThoughtSpot understands: like yesterday, >, or contains

Start a new search

Starting a new ThoughtSpot search is simple, like starting a new Google search.

To start a new search:

1. Click **Search** on the top navigation bar. You can also click **Search your data** at the top of the home page.

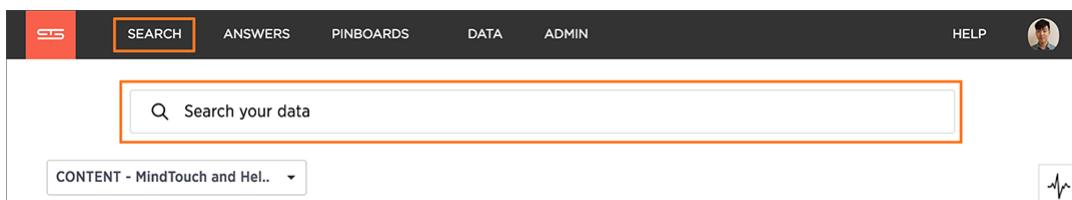


Figure 13: Start a new search

2. Choose your sources by clicking **Choose Sources**.

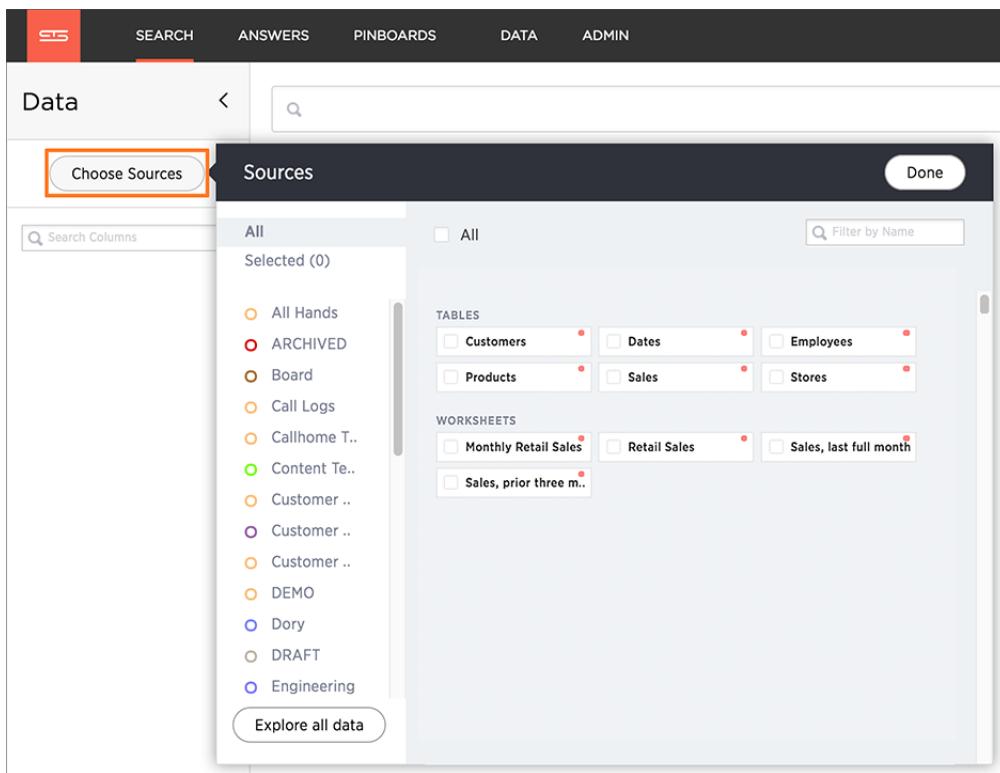


Figure 14: Choose sources menu

 **Tip:** To see details of all of the data, click **Explore all data**.

- a) Filter through all available sources by using the search bar or stickers.
 - b) Select your sources.
 - c) Click **Done**.
3. Add columns to the search bar, or double click columns in the Data column in the left panel. The columns listed in the left panel are grouped together by data sources for discoverability and ease of access.

 **Tip:** You can also add multiple columns at once by clicking each column to select it, and then click **+ Add Columns**.

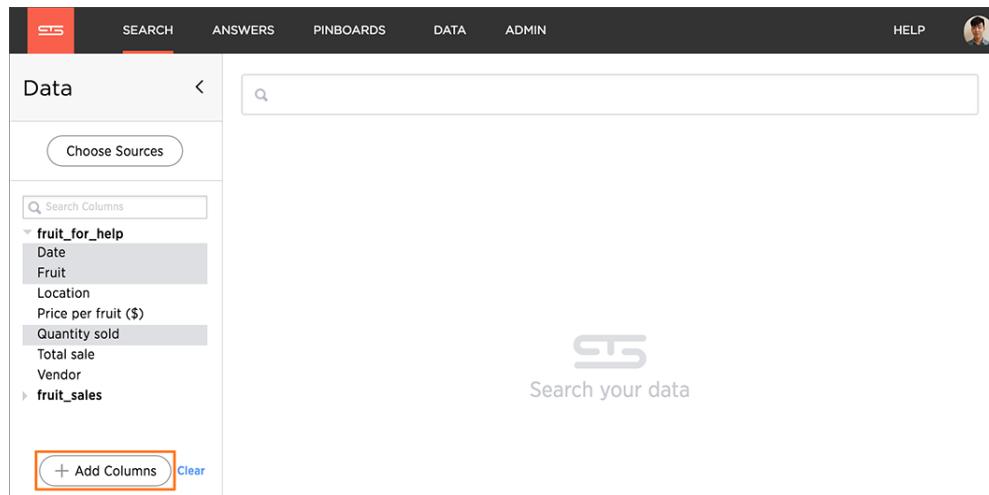


Figure 15: Add multiple columns at once

Your search is given an automatic title based on your search columns, and is displayed as either a table or chart, depending on how it is best represented. You can [change the view](#) to fit your needs.

About choosing sources

Before you start a new search, make sure you have chosen the right data sources.

To begin a new search, you must first select your data sources by clicking on the **Choose Sources** button. You will see a list of data sources that have been shared with you. The data sources are usually created by your administrator, though you can also [upload your own data](#).

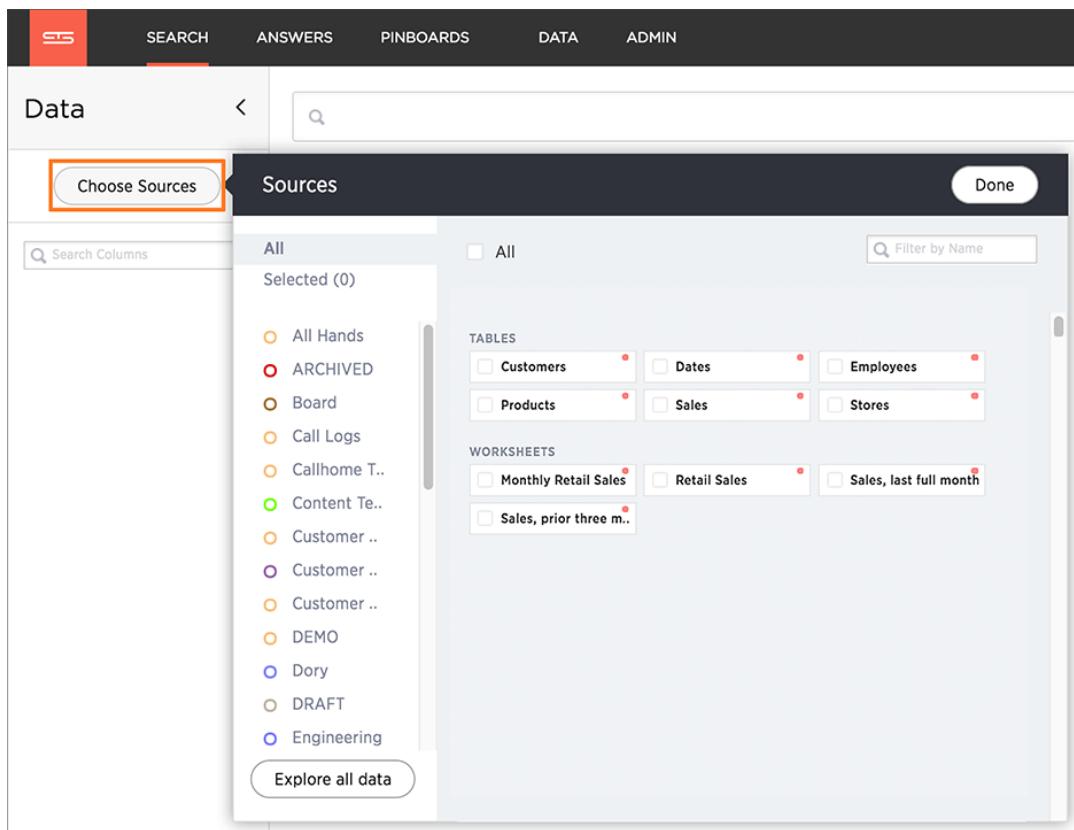


Figure 16: Choose sources

Searches happen in the context of the selected data sources. ThoughtSpot will also make suggestions from other data sources for you, if what you're typing can't be found in the selected data source.

About the search bar

The search bar is designed to make it easy for you to identify your search terms.

A lot of work has gone into making ThoughtSpot's search bar intuitive and easy to use. However, it still helps to know some details of how the search bar works.

Boxed search phrases

The search bar shows boxes around each search phrase, so you can easily see where it begins and ends. Your search phrases still appear as text when you are

typing, but whenever you click out of the search bar, they are boxed. Search phrases have blue boxes, and [filters](#) have white boxes.

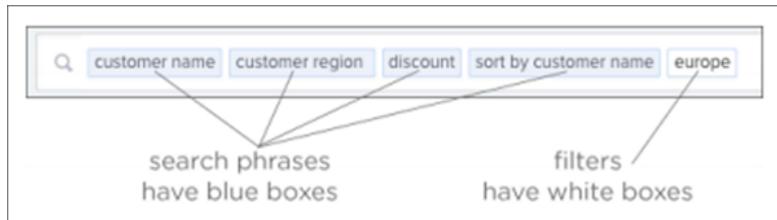


Figure 17: Search bar with boxed phrases

Removing search phrases

When you click on a search phrase, it is highlighted, so you can easily replace it with one of the suggestions. When you hover over on a boxed phrase, you'll see an **x**, which you can click to remove it. When you delete a phrase, your search will automatically update.

If you find yourself looking at a table or chart, but it doesn't seem to contain all the data you expect, try looking in the search bar for white boxes (filters). If you remove all the filters, you will again see all the available data for that search.

Spell check

The search bar includes spell check. If you spell or type a term incorrectly, your suggestions will include the correct spelling of the term or keyword.

The spell check in the search bar also performs a metaphone check for similar sounding words on text data values.

Dictionary synonyms

A dictionary of common word synonyms is bundled with ThoughtSpot. The dictionary contains synonyms for common terms that occur in data. For example, if you type in "gross", and that word is not found, ThoughtSpot will consider it a synonym for "revenue". We use the WordNet library of terms, which

takes word proximity into account, and weights words by similarity to the target term.

This frees you from having to know the exact term or column name used in a data source. You can still find the answer in many cases, if you type a word with the same meaning as a different word that occurs in the data.

Search help

If you type an unrecognized search term, you will be offered tips on searching. The search help appears when you type a term that isn't understood by ThoughtSpot and then press the `Enter` key.

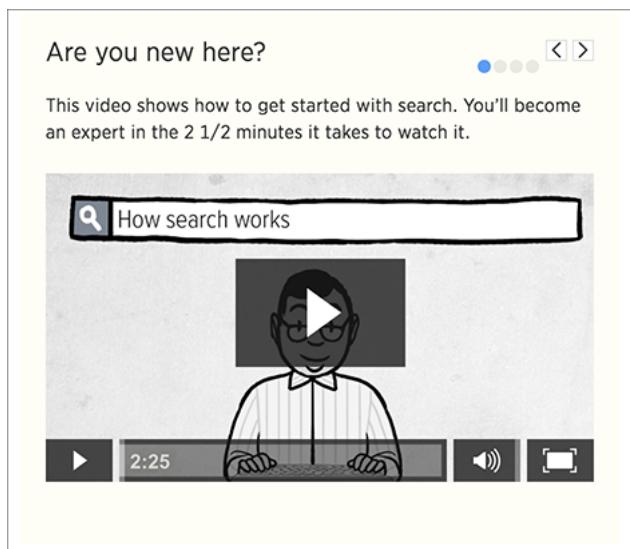


Figure 18: Search help box

Search suggestions

Search suggestions include complete recent searches that are similar to the search you are constructing. You can also search for saved objects, such as pinboards.

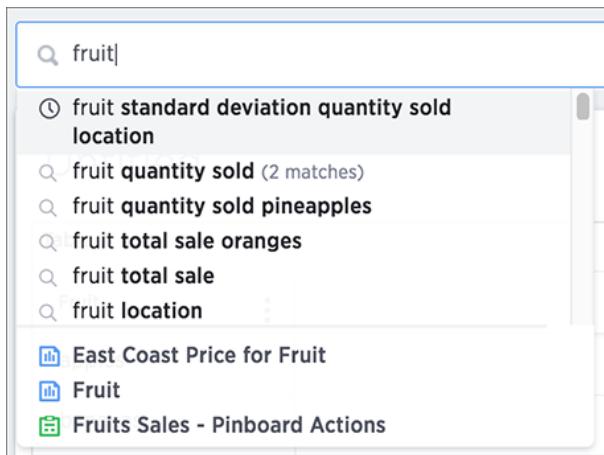


Figure 19: Search suggestions example

Usage-based ranking

Search suggestions are relevant to the data and personalized to your search behavior. ThoughtSpot learns over time what columns are most important to you and to your company as a whole, and uses this knowledge to rank the search terms it offers. This is accomplished through usage-based ranking. So if you frequently type terms related to finance or to a particular product, you will see related suggestions more frequently. ThoughtSpot does this by keeping usage statistics on frequency of search terms in its local cache. Using this information, frequently used terms and phrases are offered in search suggestions more often than those that are not commonly used. This personalization based on search patterns makes ThoughtSpot more valuable over time. Search suggestions become more helpful the more searches you complete.

Recent searches

As you type in the search bar, you are given search suggestions that include recent searches. This makes it easier to learn what you can do with ThoughtSpot. In addition to displaying your own recent searches, the search bar also learns from searches made by other people. This should provide you with interesting searches that you may not have been aware of. You'll see recent searches in

a separate section of search suggestions, as recent searches appear higher in suggestions than other terms.

Auto-disambiguation in search

When there are more than one possible meaning for a search term, you can provide disambiguation by selecting from a list of choices. Now your choice is sticky. That means you won't have to select it again, in the scope of the current search.

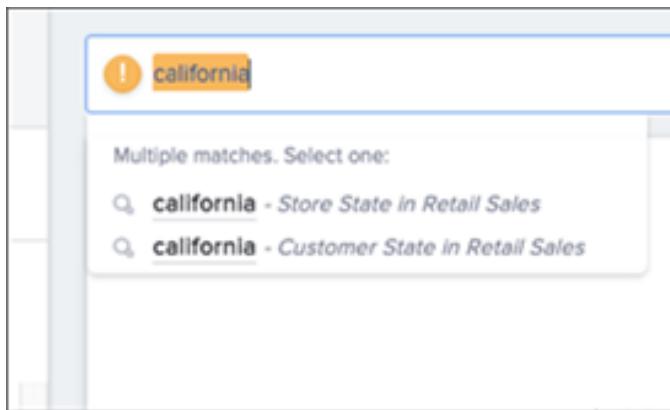


Figure 20: Auto-disambiguation example

Out of scope columns

Search suggestions are not limited in scope to the columns that you select as the data sources. Suggestions can include columns that are out of scope, too. If you choose one of these suggestions, the columns will be added to the data sources scope for you.

Object searches

Search suggestions also include relevant pinboards that have already been created. This means that if a pinboard that is similar to the search you're trying to do already exists, it will appear in search suggestions.

About attributes and measures

Searches in ThoughtSpot use columns that are defined as either attributes or measures.

ThoughtSpot identifies search columns as either attributes or measures. For several chart types, your search needs to contain a certain number of attributes and a certain number of measures.

Attributes

Attribute are primarily text or date values. Attributes make up the x-axis of your chart most of time. Some examples of attributes in terms of a person include name, eye color, occupation, social security number, address, employee ID, and phone number.

Measures

Measures are numeric values you can do math on, with meaningful results. You will most likely find your measures on the y-axis of your chart. Some examples of measures in terms of a person are age, height, and weight.

What am I looking at?

After, or while completing a search, you can see how ThoughtSpot came up with the answer.

Click the **question mark** on the right hand side of the search bar to open the “What am i looking at?” dialogue box.

You'll be shown what measures ThoughtSpot computed, for each combination of attributes. You'll also see filters of the search, and how the tables were linked and used.

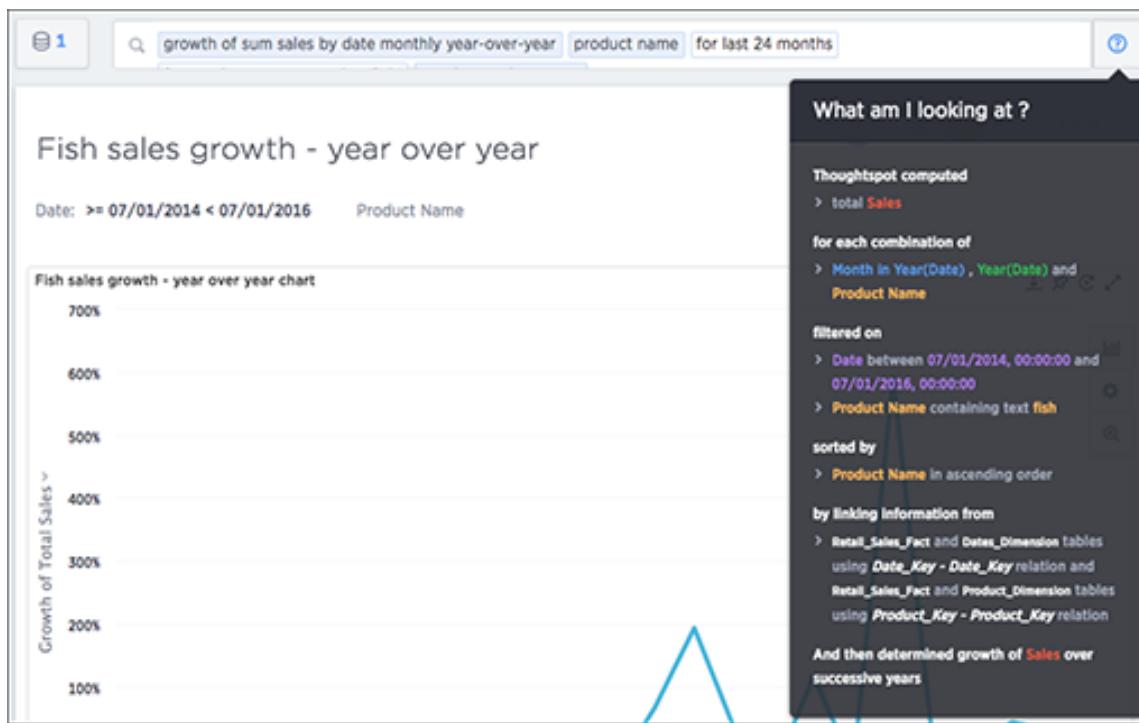


Figure 21: What am I looking at? example

Last data refresh time

You can see the last time at which data was refreshed without having to visit the **Data** page.

Hover over the data when choosing a data source to see the last time it was updated. You will also see when it was created and by whom.

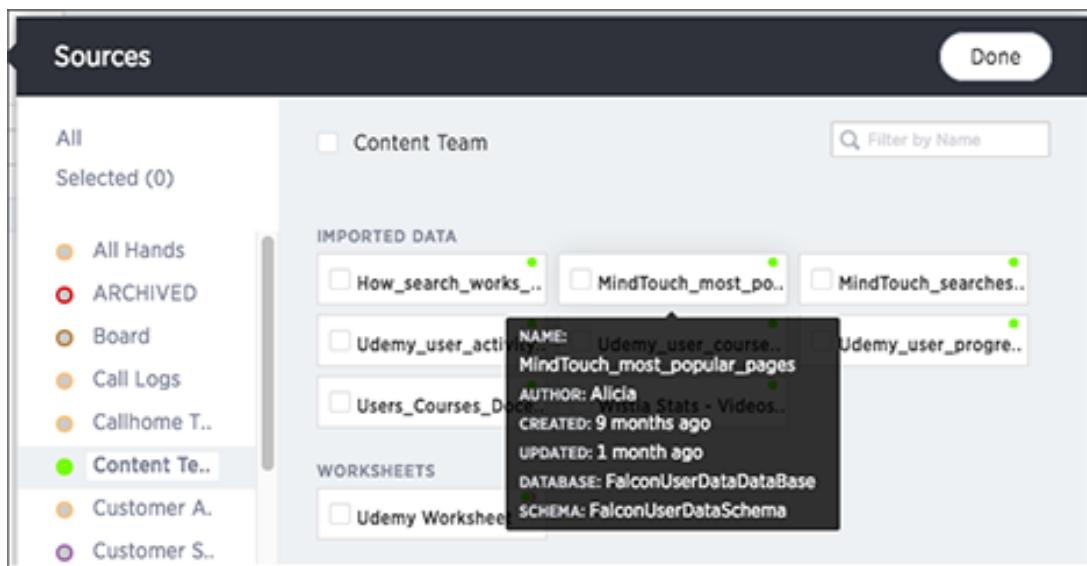


Figure 22: Last updated in source selection

You can also hover over a column in the **Data** column to see when it was last refreshed. This popup will also show sample values from that column.

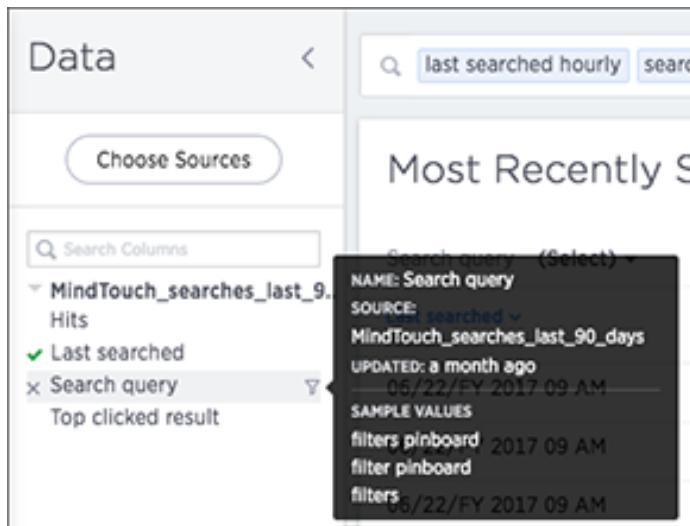


Figure 23: Last updated in Data column

And lastly, you can hover over a column or column name in an answer to see last updated information.

The screenshot shows a 'Most Recently Searched' table with two rows. The first row is '06/22/FY 2017 07 AM'. The second row is also '06/22/FY 2017 07 AM'. A tooltip is displayed over the second row, containing the text: 'SOURCE: Search query (MindTouch_searches_last_90_days)' and 'UPDATED: a month ago'.

Figure 24: Last updated in answer column

About tables

Tables display your answer in a format similar to an Excel spreadsheet.

Your search is not limited by the number of attributes or columns in order to be presented as a table. You can have a table with just one attribute or measure.

When you choose to display your answer as a table, ThoughtSpot will create the columns for you and any relevant [headlines](#).

Sometimes when you view a table, the results will be aggregated (combined).

For example, if you only type "revenue", you'll see the total sum of all the revenue the table contains as one combined number. If you include the keyword "monthly", the results will be aggregated by month.

Change the table

You can rearrange the column order of your table among other search actions.

Every table gives you the option to rearrange the column order and change the column widths.

Rearrange column order

You can rearrange the column order of your table after adding all of your search terms.

To rearrange the column order:

1. While viewing your answer as a table, click the column header you would like to move.
2. Drag it across to its new position.

Resize column widths

You can resize the column widths of your table after adding all of your search terms.

Any adjustments you make to the column widths of your table are saved when you pin the table to a pinboard.

To resize the column widths:

1. While viewing your answer as a table, hover over a column border in the column header row.
2. Click and drag the border to create your preferred column width.

About headlines

Headlines display summary information of a table result.

Headlines contain summary information for each column of a table. They appear at the bottom of the table in individual boxes.

Top Clicked Search Result for Frequent Searches			
Search query	Last searched	Top clicked result	Hits
filters pinboard	06/22/FY 2017	about pinboard filtersin 02_administration,	14
filter pinboard	06/22/FY 2017	pinboard filtersin 01_the_basics/3.3	11
filters	06/22/FY 2017	--	11
stickers	06/07/FY 2017	create stickersin 02_administration/admini	10
formula	06/13/FY 2017	formula referencein 02_administration/adr	9
additive	06/07/FY 2017	change the additive setting for a columnn	8
pivot	06/20/FY 2017	--	6
filter	06/10/FY 2017	filter by a stickerin 02_administration/adm	5
macos	05/04/FY 2017	--	5
aggregation	06/07/FY 2017	change the aggregation setting for a colun	4
load	06/20/FY 2017	--	4
change data type	06/05/FY 2017	change the data type of a columnin 02_ad	4

Showing rows 1 - 15 of 153.

23 Search query UNIQUE COUNT	04/19/FY 2017 - 06/22/FY 2017 Daily (Last searched)	12 Top clicked result UNIQUE COUNT	130 Hits TOTAL
------------------------------------	--	--	----------------------

Figure 25: Headlines at the bottom of a table

You can modify how you'd like the value to be displayed by clicking the dropdown on a headline and selecting a different type of aggregation. The usual available aggregations are total, average, standard deviation, variance, minimum, and maximum. There are also unique count and total count values available for the appropriate columns.

To add a headline to a pinboard, hover over it and click the **Add to pinboard** icon.

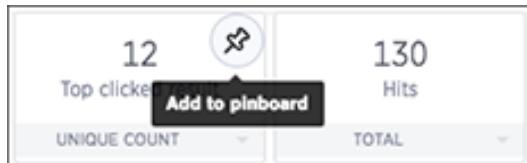


Figure 26: Add a headline to a pinboard

About charts

Charts display your answer in a visual way.

Your search needs at least [one attribute and one measure](#) to be presented as a chart. When you choose to display your answer as a chart, ThoughtSpot will assign it the best fit chart type.

About chart types

You can choose from a large number of chart types in ThoughtSpot. Each chart type provides you with a different visualization for your answer.

You can change the chart type of your answer by clicking **Select Chart Type**.

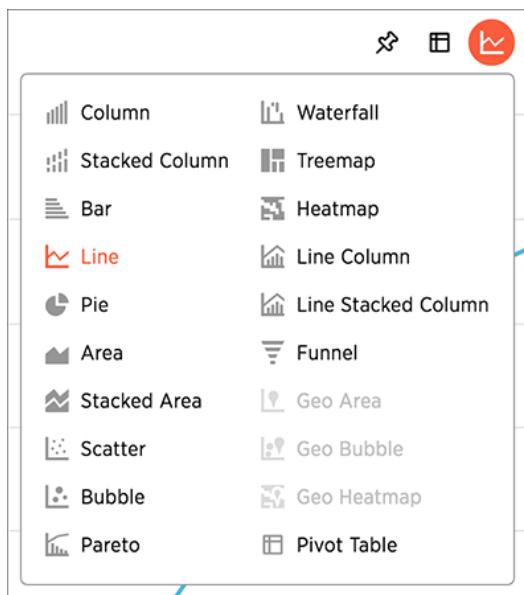


Figure 27: ThoughtSpot chart types

-  **Note:** Some chart types may be unavailable for you to select depending on the columns of your search. For example, if your search does not contain at least one geographical column then you will not be able to select any of the geo chart types. Unavailable chart types are grayed out. Hovering over one will tell you what columns are needed before you can choose it.

Column charts

The column chart is one of ThoughtSpot's simplest, yet most versatile chart type. More often than not, the column chart will be chosen as your default chart type.

Column charts are vertical bar charts that display your data using rectangular bars. The length of the bar is proportional to the data value.

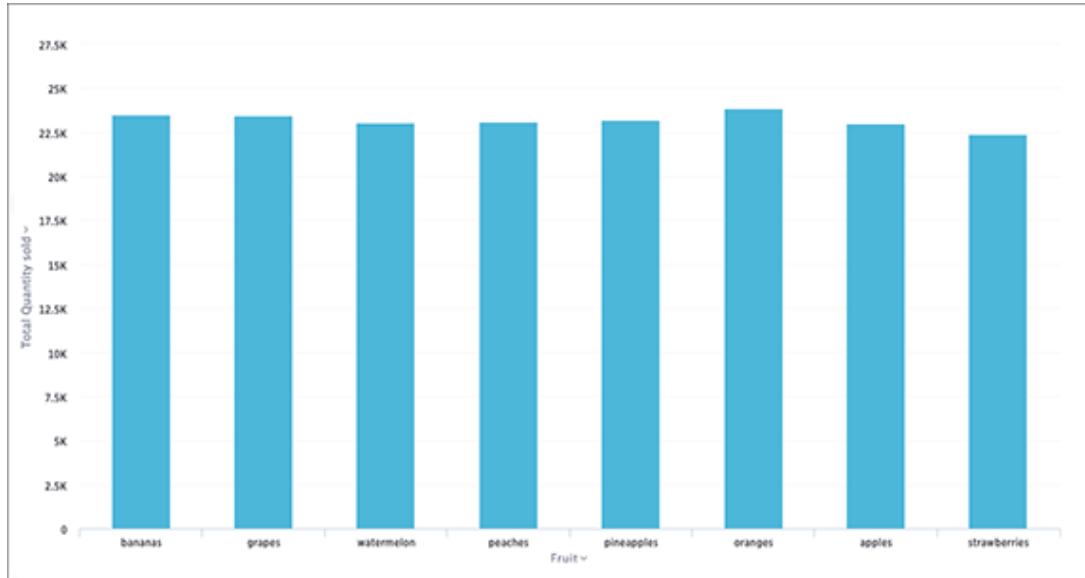


Figure 28: Column chart example

Your search needs at least one attribute and one measure to be represented as a column chart.

Stacked column charts

The stacked column chart is similar to the column chart, but with one major difference. It includes a legend, which divides each column into additional sections by color.

Stacked column charts are typically used when you want to compare aggregated data and the data that it includes together. This chart type benefits when you add the **Show Data Labels** option. Turning it on will show the sum of the stacks at the top of each stack.

It is important to note that stacked column charts plot the y-axis as a percentage by default. You can choose to toggle **Show Y-Axis as %** on or off in the Configuration Options. This feature is also available for stacked area charts.

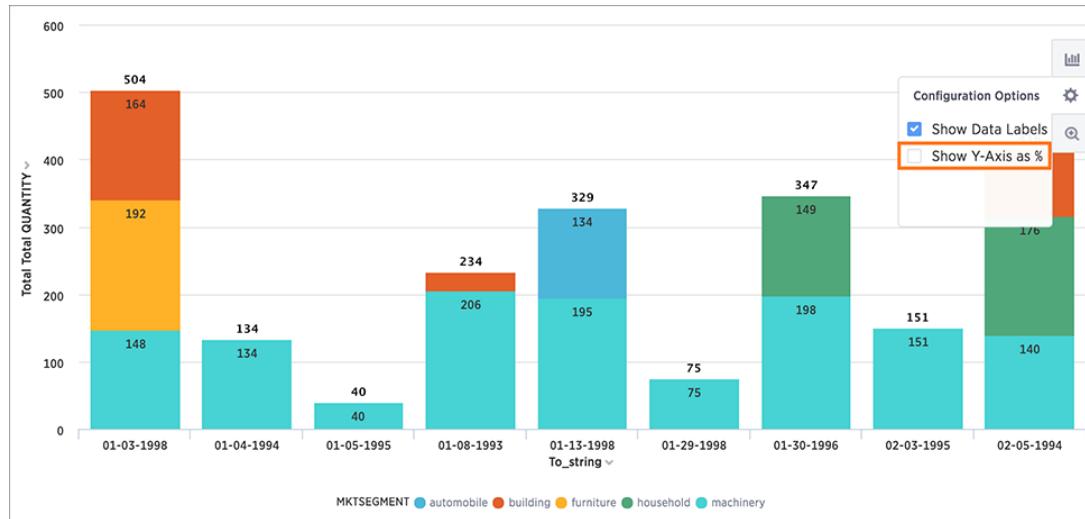


Figure 29: Stacked column chart example: "Show Y-Axis as a %" toggled off

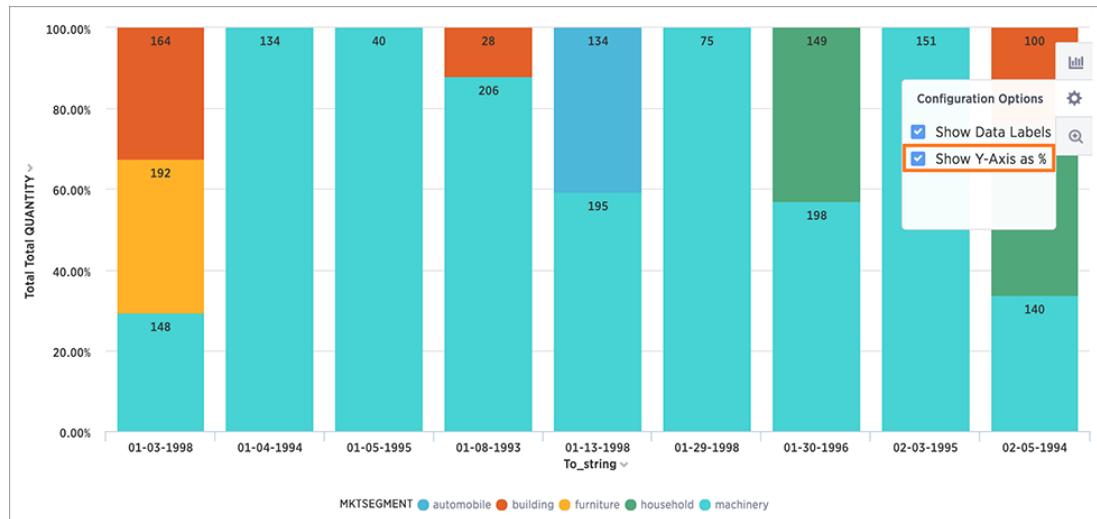


Figure 30: Stacked column chart example: "Show Y-Axis as a %" toggled on

Your search needs at least two attributes and one measure to be represented as a stacked column chart.

Bar charts

The bar chart is very similar to the column chart. The only difference is that it is oriented the other way.

Bar charts display your data using horizontal rectangular bars. The length of the bar is proportional to the data value.

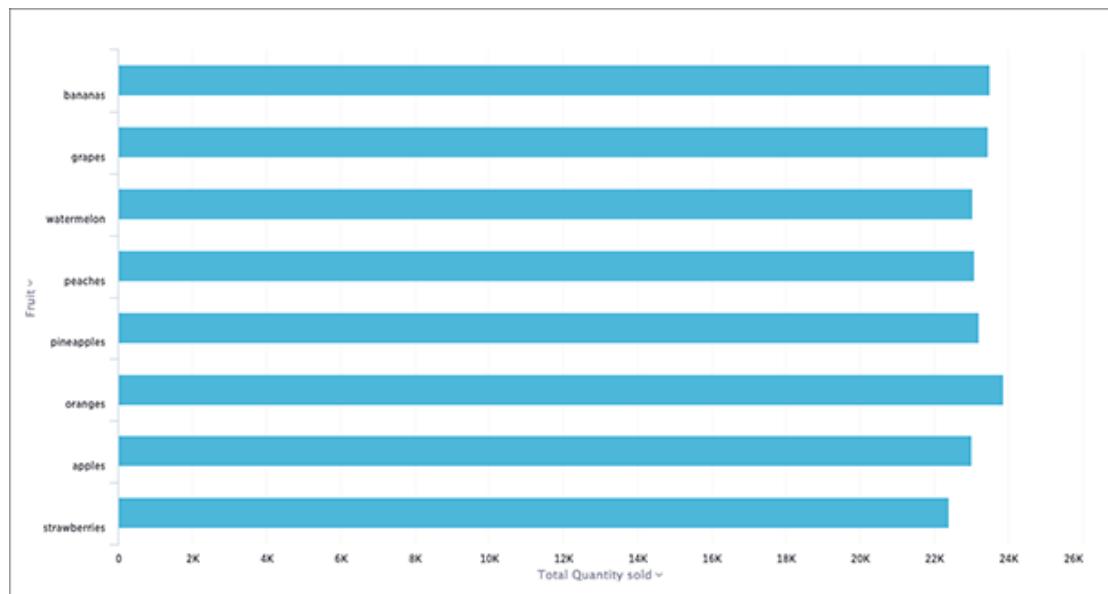


Figure 31: Bar chart example

Your search needs at least one attribute and one measure to be represented as a bar chart.

Line charts

Like the column chart, the line chart is one of ThoughtSpot's simplest, yet most versatile chart type. More often than not the line chart will be chosen as your default chart type.

Line charts displays your data as a series of data points connected by straight line segments. The measurement points are ordered by the x-axis value. Line charts are good at showing trends over intervals of time.

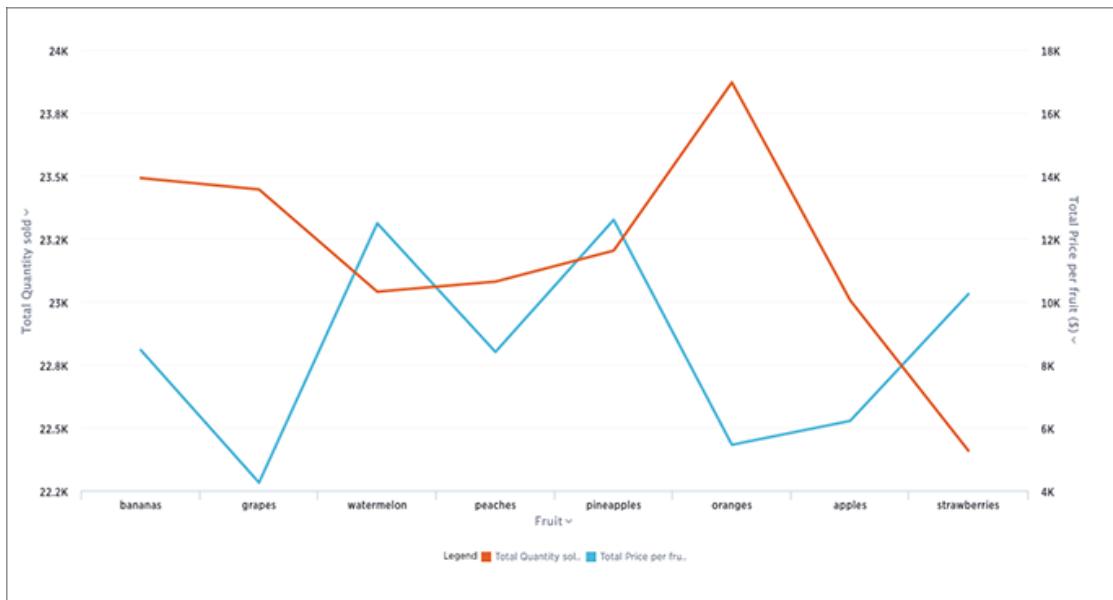


Figure 32: Line chart example

Your search needs at least one attribute and one measure to be represented as a line chart.

Pie charts

The pie chart is a classic chart type that displays your search in a circle. The pie chart ThoughtSpot shows is in the shape of a doughnut.

Pie charts divide your data into sectors that each represent a proportion of a whole circle. You can display the exact values of each slice, in addition to the percentage values by toggling on **Show Data Labels** found under Change chart configuration.

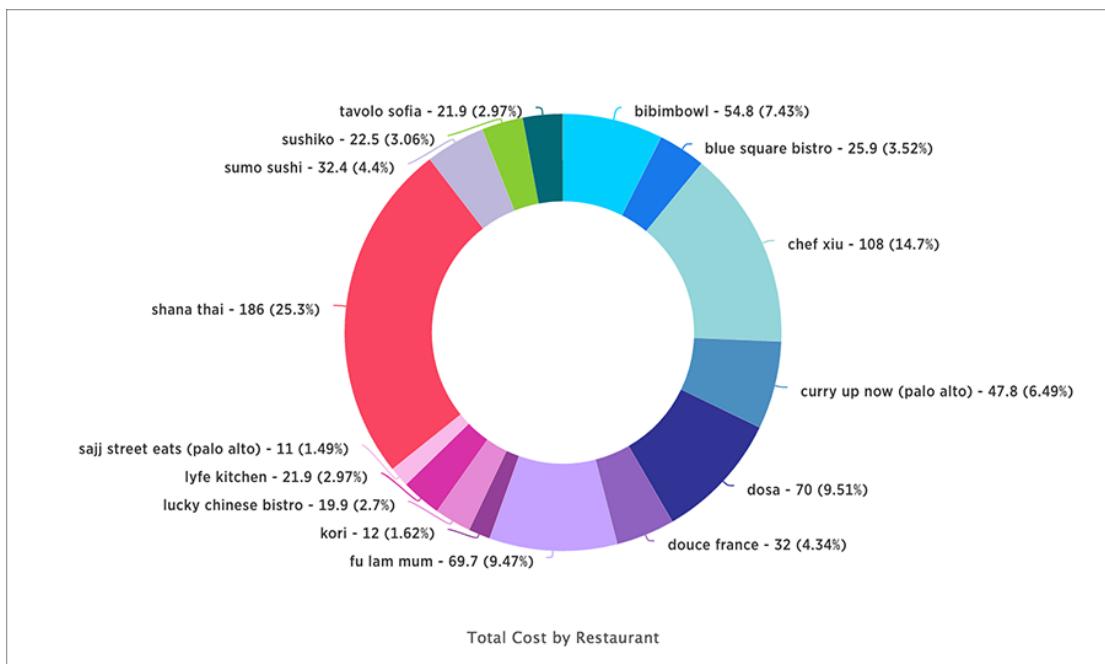


Figure 33: Pie chart example

Your search needs at least one attribute and one measure to be represented as a pie chart. Also, there must be fewer than 50 values in the attribute column.

Pie in pie charts

The pie in pie chart can be created from a regular pie chart in order to compare more than one component of an attribute.

Pie in pie charts show two concentric pie charts comparing different measures.

To see a pie in pie chart, assign two different measures to the y-axis under

Configure Chart.

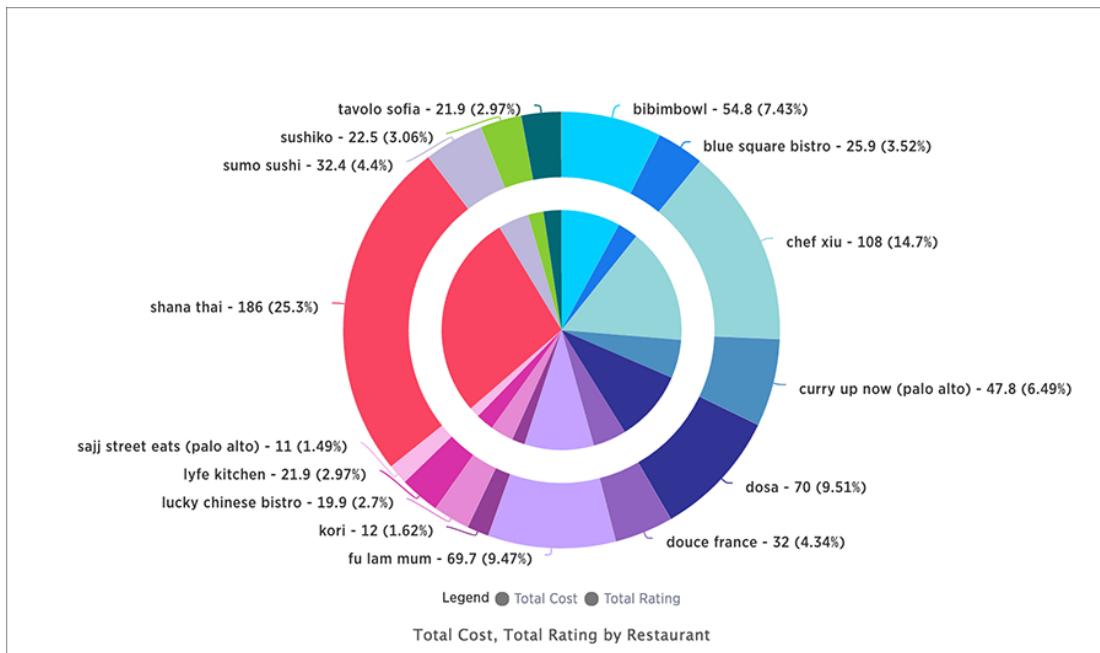


Figure 34: Pie in pie chart example

Your search needs at least one attribute and two measures to be represented as a pie in pie chart. Also, there must be fewer than 50 values in the attribute column.

Area charts

The area chart is based on the line chart, but has filled in regions.

Area charts display quantitative data graphically. The area between the x-axis and the line are colored in to help you compare different portions of the chart.

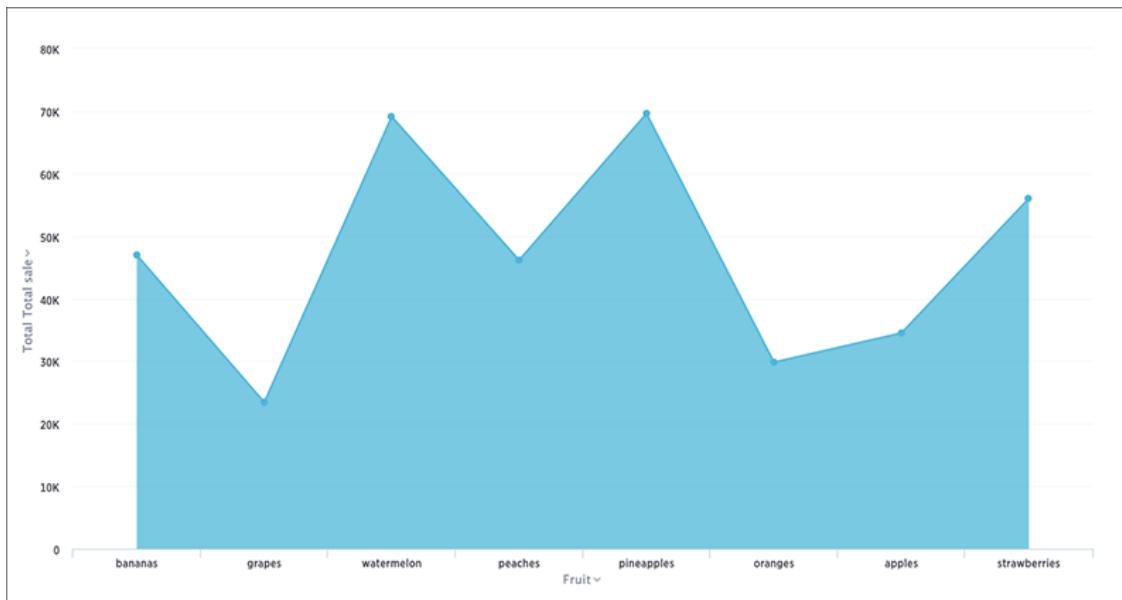


Figure 35: Area chart example

Your search needs at least one attribute and one measure to be represented as an area chart.

Stacked area charts

The stacked area chart is an area chart with an attribute in the legend, which divides the area into layers.

Stacked area charts show the relative contribution to the accumulated total of a measure over time.

Stacked area charts plot the y-axis as a percentage by default. You can choose to toggle **Show Y-Axis as %** on or off in the **Configuration Options** to create your own mountain-style charts.

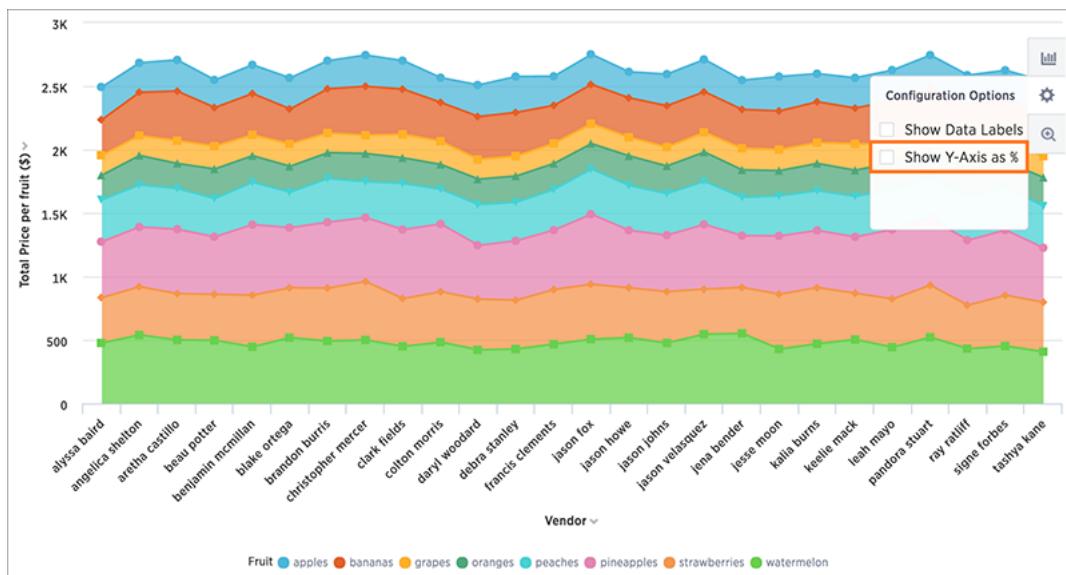


Figure 36: Stacked area chart example: "Show Y-Axis as %" toggled off

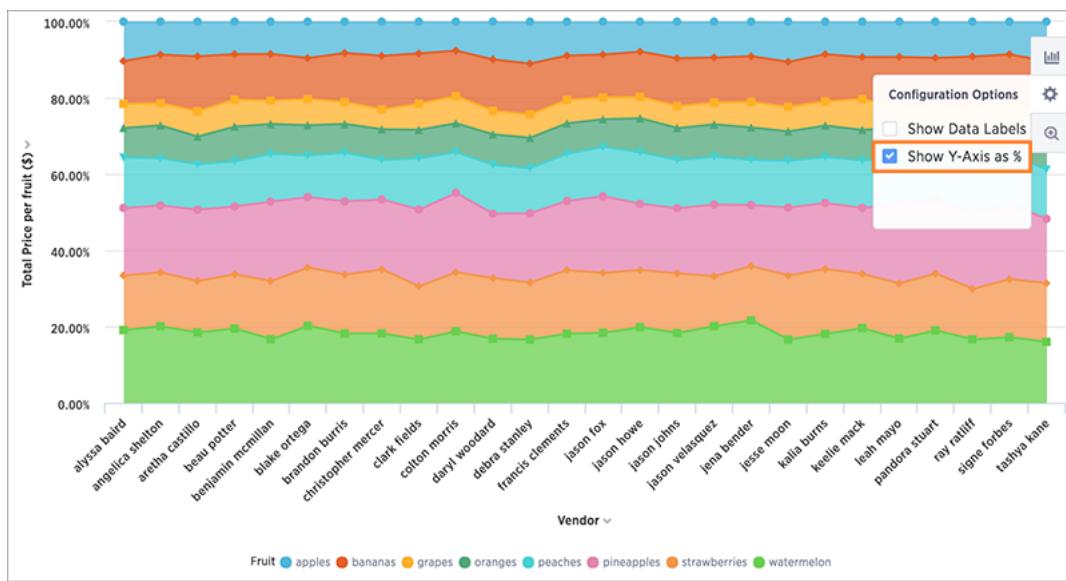


Figure 37: Stacked area chart example: "Show Y-Axis as %" toggled on

Your search needs at least two attributes and one measure to be represented as a stacked area chart.

Scatter charts

The scatter chart is useful for finding correlations or outliers in your data.

Scatter charts display your data as a collection of points, which can either be evenly or unevenly distributed. Each point is plotted based on its own axes values. This helps you determine if there is a relationship between your searched columns.

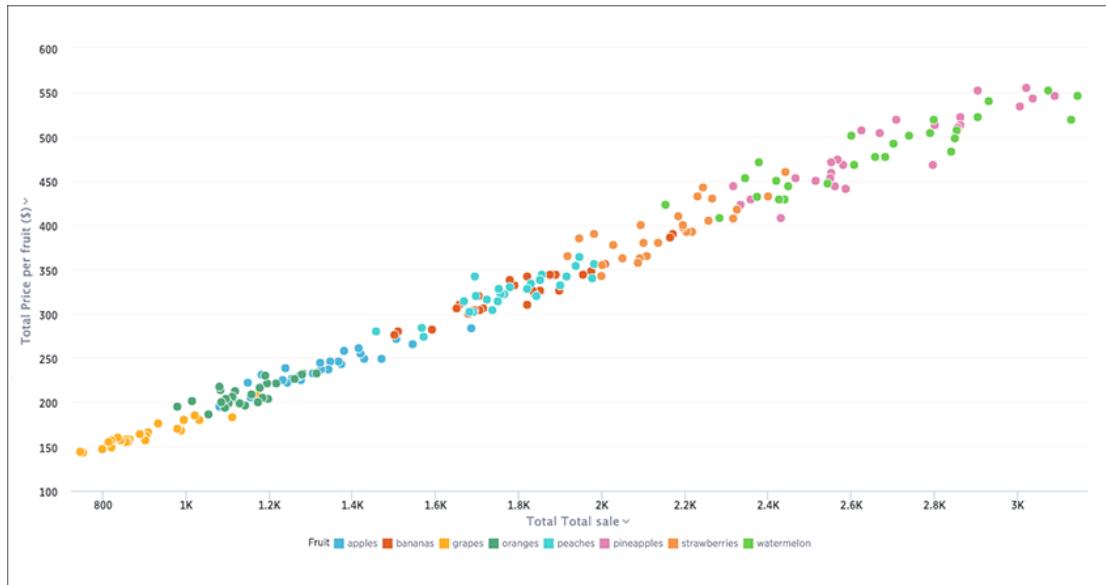


Figure 38: Scatter chart example

Your search needs at least one attribute and one measure to be represented as a scatter chart.

Bubble charts

The bubble chart displays three dimensions of data with each containing a set of values.

The bubble chart is a variation of the scatter chart, with the data points replaced with bubbles. These bubbles add a third data dimension to your answer.

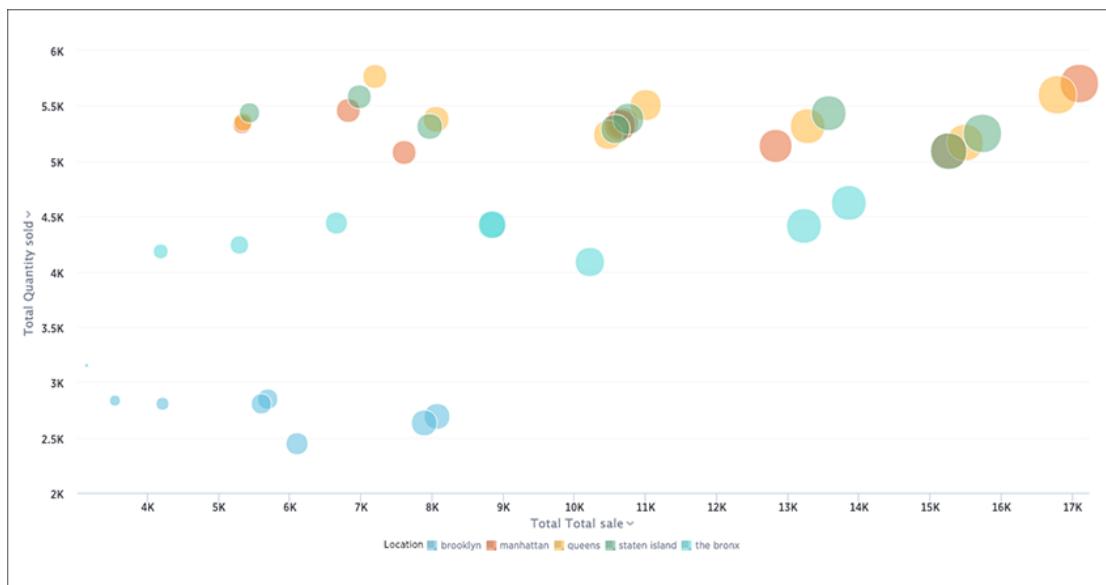


Figure 39: Bubble chart example

The size of each bubble depends on the measure you choose under **Configure Chart**.

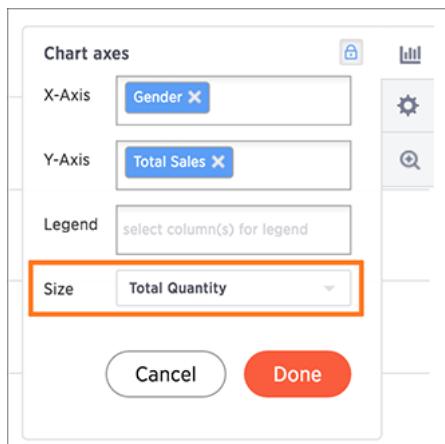


Figure 40: Bubble size dropdown

Your search needs at least one attribute and two measures to be represented as a bubble chart.

Pareto charts

The pareto chart is a type of chart that contains both columns and a special type of line chart.

The individual values of a pareto chart are represented in descending order by columns, and the cumulative percent total is represented by the line. The y-axis on the left is paired with the columns, while the y-axis on the right is paired with the line. By the end of the line, the cumulative percent total reaches 100 percent.

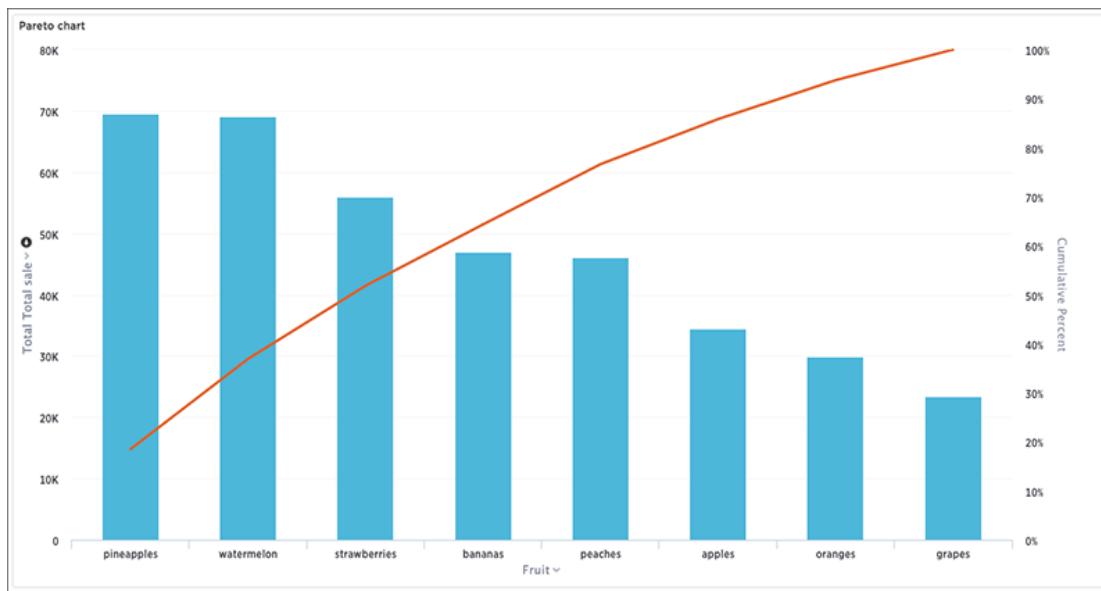


Figure 41: Pareto chart example

Your search needs at least one attribute and one measure to be represented as a pareto chart.

Waterfall charts

The waterfall chart is used to show how an initial value is affected by a series of intermediate positive or negative values.

Waterfall charts are good for visualizing positive and negative growth, and therefore work well with the growth over time keyword. The columns are color-coded to distinguish between positive and negative values.

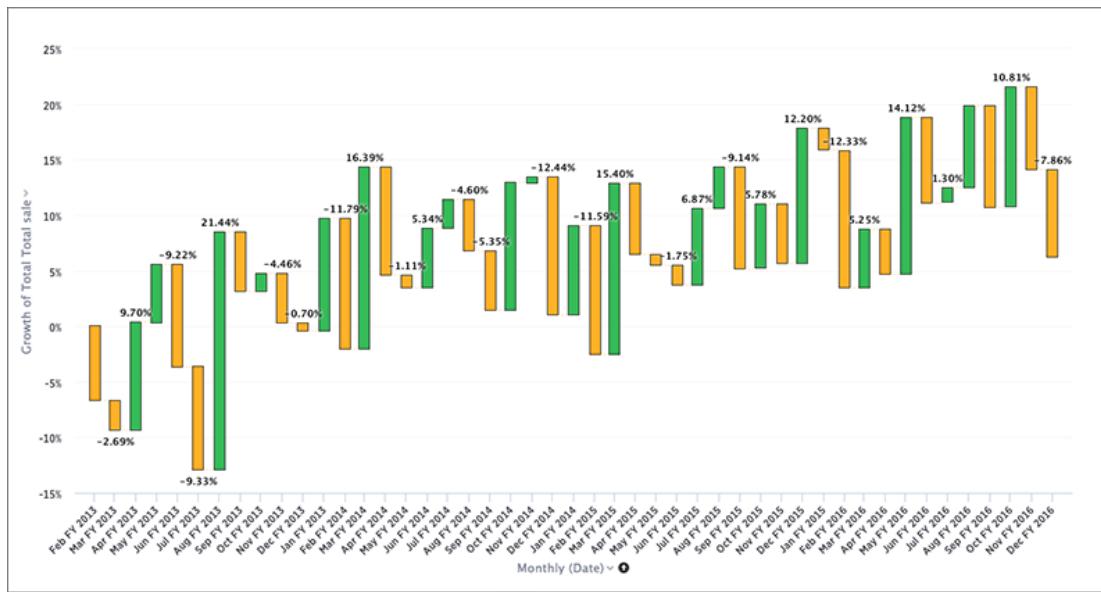


Figure 42: Waterfall chart example

Your search needs at least one attribute and one measure to be represented as a waterfall chart.

Treemap charts

The treemap chart displays hierarchical data as a set of nested rectangles.

Treemap charts use color and rectangle size to represent two measure values. Each rectangle, or branch, is a value of the attribute. Some branches can contain smaller rectangles, or sub-branches. This setup makes it possible to display a large number of items in an efficient way.

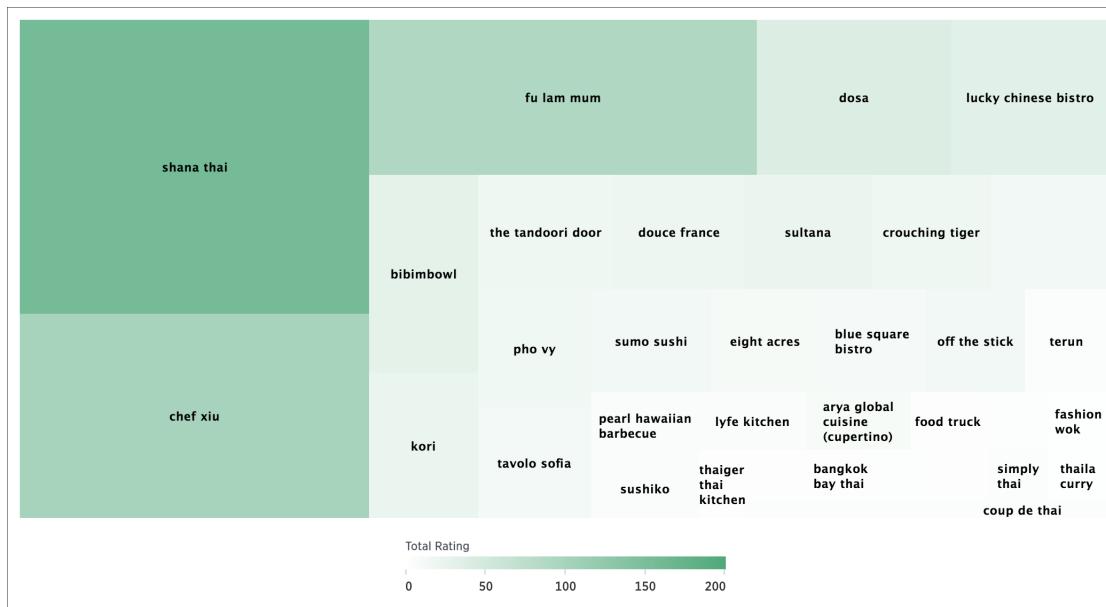


Figure 43: Treemap chart example

You can rearrange the columns of your search into category, color, and size under **Configure Chart**.

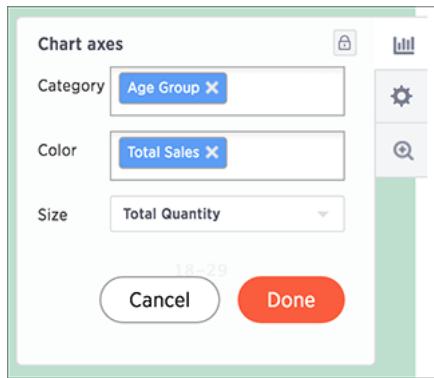


Figure 44: Branch category, color, and size

Your search needs at least one attribute and two measures to be represented as a treemap chart.

Heatmap charts

The heatmap chart displays individual data values in a matrix following a color scale.

Heatmap charts are similar to treemap charts in that they both use a similar system of color-coding to represent data values. However, the heatmap does not use size to measure data, and instead requires an additional attribute.



Figure 45: Heatmap chart example

The value of each cell depends on the measure you choose under **Configure Chart**.

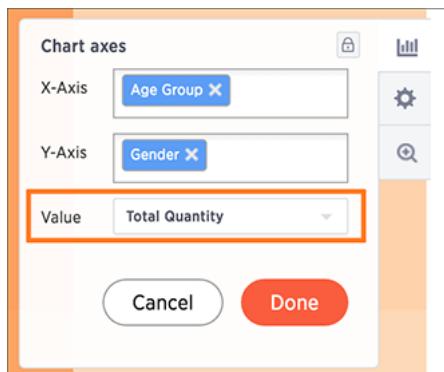


Figure 46: Heatmap value dropdown

Your search needs at least two attributes and one measure to be represented as a heatmap chart.

Line column charts

The line column chart combines the column and line charts.

Line column charts display one measure as a column chart and the other as a line chart. Each of these measures has its own y-axis.

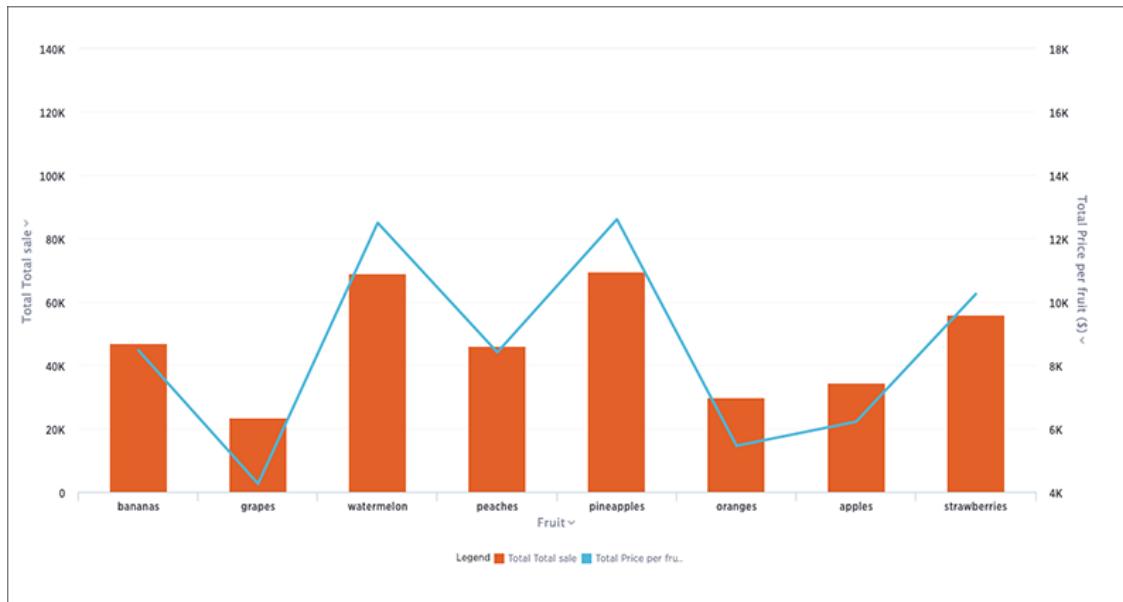


Figure 47: Line column chart example

You can choose to enable shared y-axis by clicking the link icon found under **Configure Chart**.

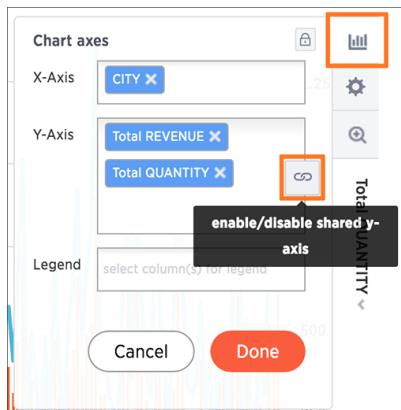


Figure 48: Enable shared y-axis

Your search needs at least one attribute and two measures to be represented as a line column chart.

Line stacked column charts

The line stacked column chart combines stacked column and line charts.

This chart is similar to the line column chart, except that it divides its columns with an attribute in the legend. There are two y-axes, one for each measure.

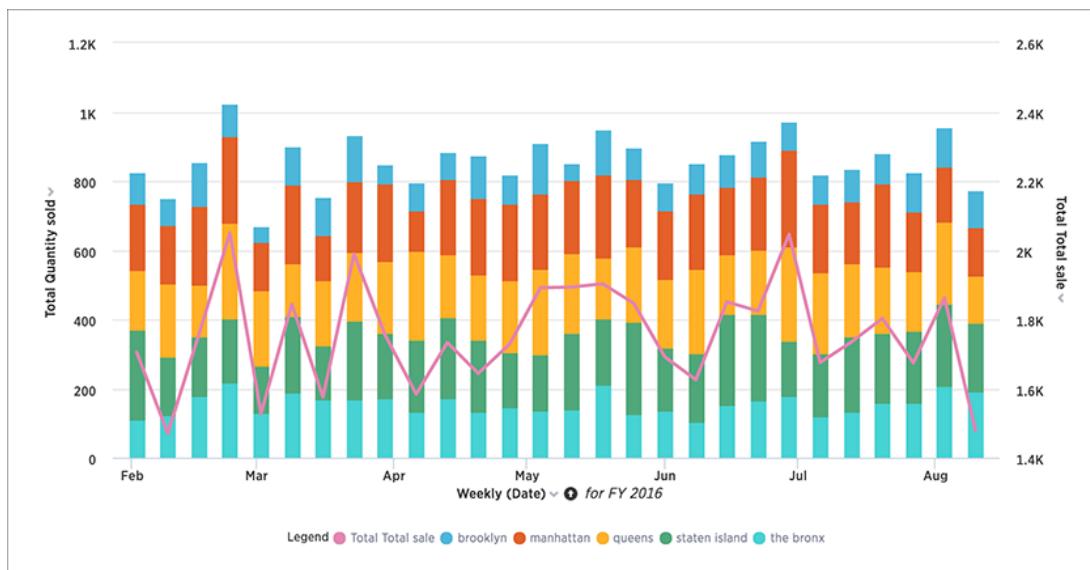


Figure 49: Line stacked column chart example

You can choose to enable shared y-axis by clicking the link icon found under **Configure Chart**.

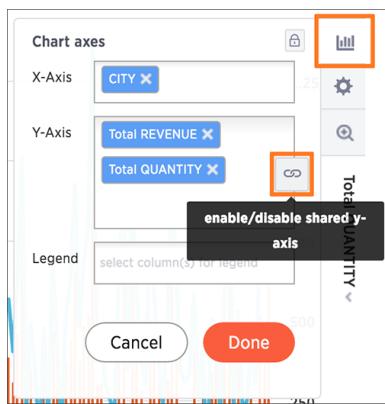


Figure 50: Enable shared y-axis

Your search needs at least two attributes and two measures to be represented as a line stacked column chart.

Funnel charts

The funnel chart shows a process with progressively decreasing proportions amounting to 100 percent in total.

This chart is similar to a stacked percent column chart, and is often used to represent stages in a sales process. You can visualize the progression of data as it passes from one phase to another. Data in each of these phases is represented as different proportions.

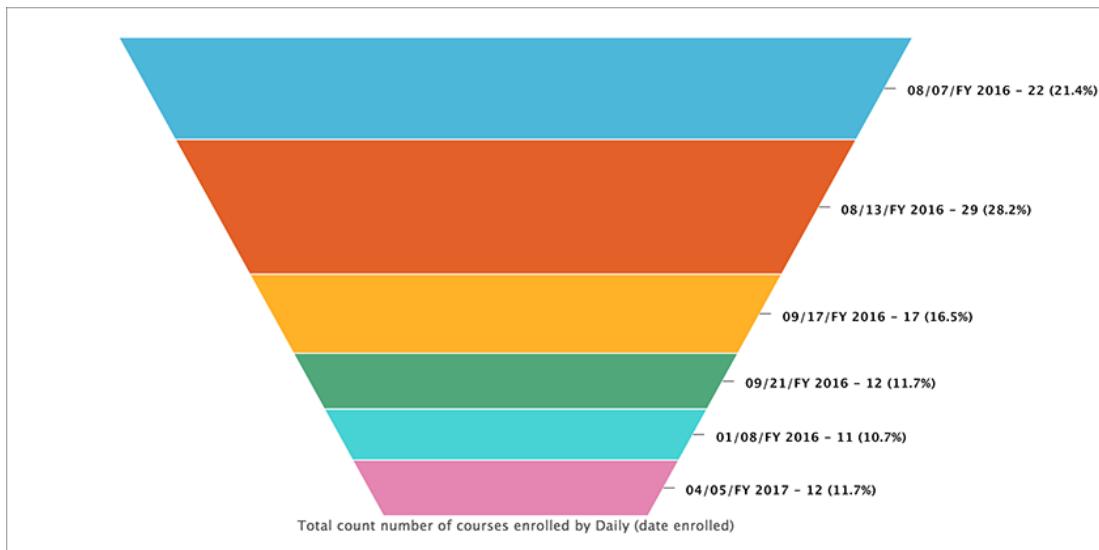


Figure 51: Funnel chart example

Your search needs at least one attribute and one measure to be represented as a column chart. The attribute must contain 50 or fewer values.

About geo charts

There are three geo charts that let you visualize geographical data in ThoughtSpot.

These geo charts show data on a map by location. There are three different types of geo charts. They are geo area, geo bubble, and geo heatmap charts. And these geo charts can display five types of geographical data, which are:

- Country
- State
- County
- Zipcode
- Point (latitude/longitude)

Here is a table that shows which GeoType data can be displayed using which geo chart type.

Table 3: GeoTypes and their geo chart types

GeoType	Geo chart type	Notes
Country	Geo area (default), geo bubble, geo heatmap	<ul style="list-style-type: none"> Can also be regions.
County	Geo area (default), geo bubble, geo heatmap	<ul style="list-style-type: none"> Only for counties in the United States.
Point	Geo bubble (default), geo heatmap	<ul style="list-style-type: none"> Must use both latitude and longitude columns.
State	Geo area (default), geo bubble, geo heatmap	<ul style="list-style-type: none"> Only for states in the United States.
Zipcode	Geo area, geo bubble (default), geo heatmap	<ul style="list-style-type: none"> Zip codes and zip codes +4 in the United States.

In order for data to be displayed using geo charts, your administrator must configure it as geographical data. If you are expecting to be able to get a map visualization, but it isn't available, contact your administrator so they can make the configuration.

Geo area charts

The geo area chart displays country, county, state and zipcode data on a geographical chart.

Geo area charts highlight the regions of interest. Point data (longitude/latitude) doesn't work on geo area charts. Also, only geo area charts display boundaries for counties.

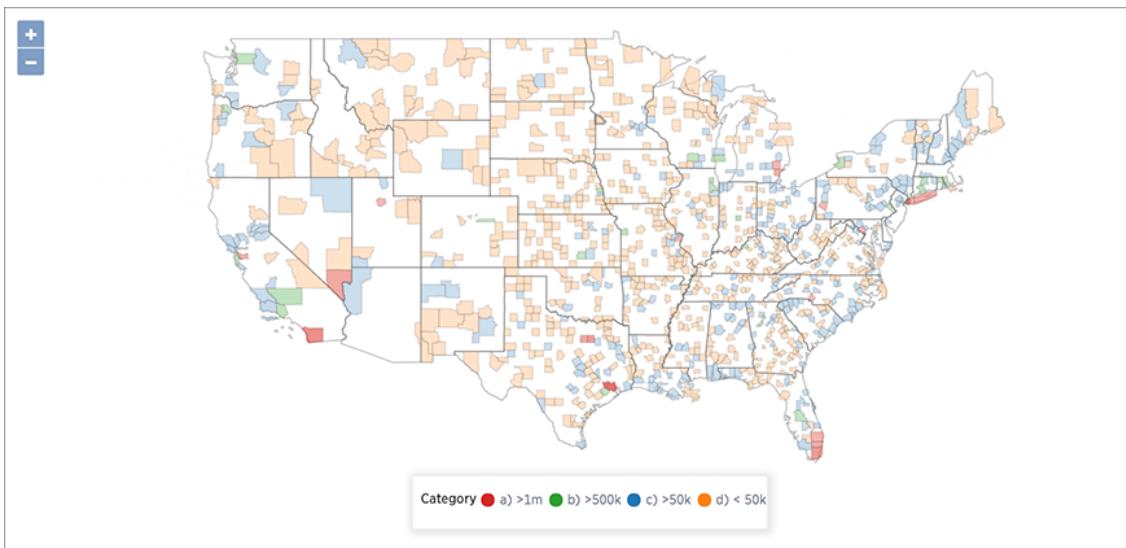


Figure 52: Geo area chart example

Your search needs one geographical column of granularity to be represented as a geo area chart.

Geo bubble charts

The geo bubble chart displays country, county, point, state, and zipcode data on a geographical chart.

Geo bubble charts, like bubble charts, display the value of the measure by the size of the bubble. Zip code data makes the most sense for geo bubble charts.

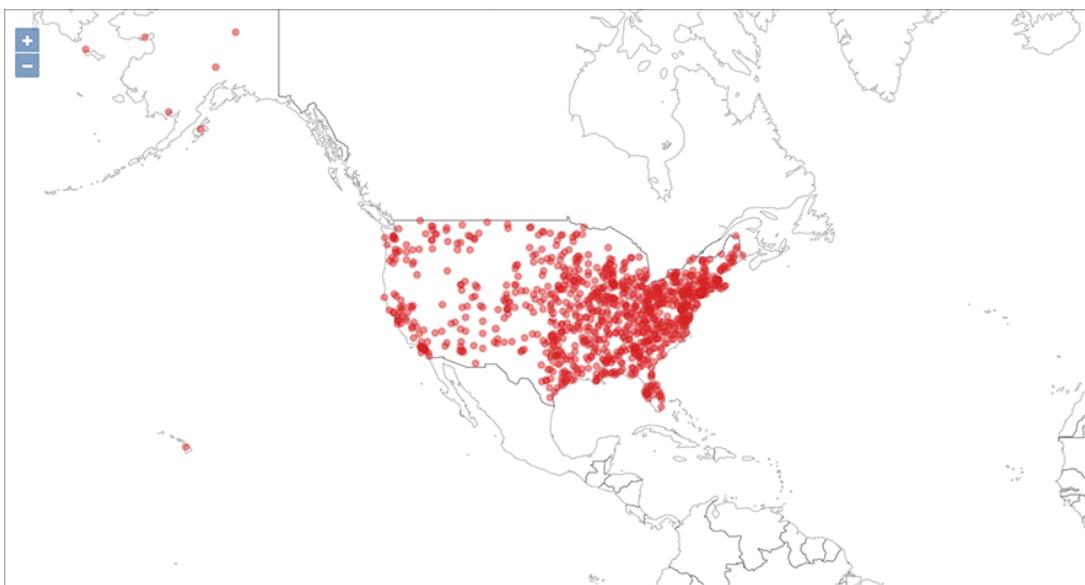


Figure 53: Geo bubble chart example

Your search needs one geographical column or a pair of latitude and longitude columns to be represented as a geo bubble chart.

Geo heatmap charts

The geo heatmap chart displays country, county, point, state, and zipcode data on a geographical chart.

Geo heatmap charts, like heatmap charts, display the value of the measure with color intensity.

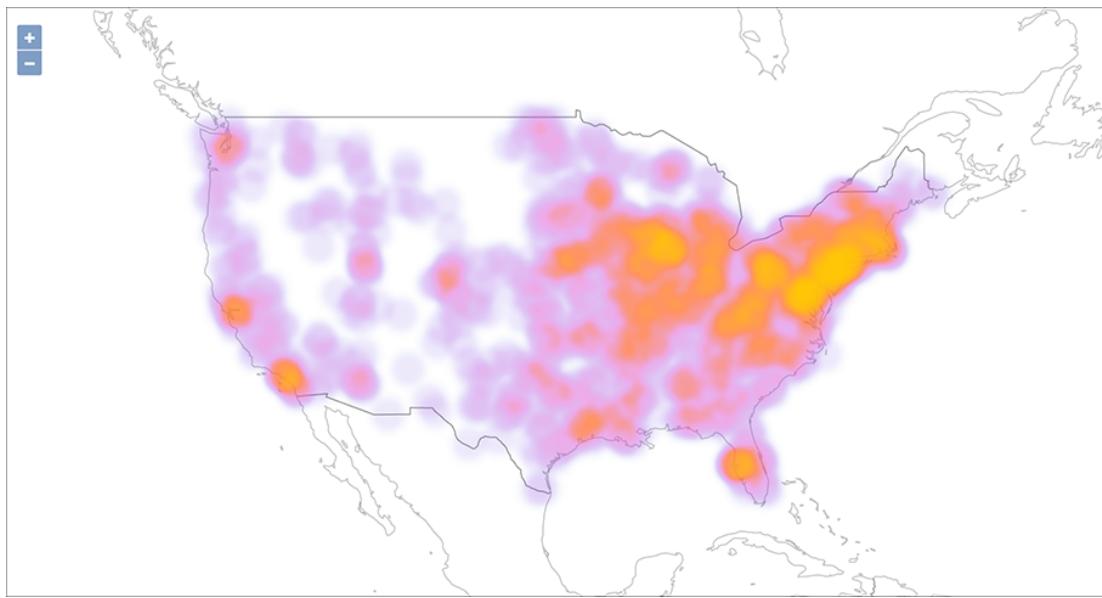


Figure 54: Geo heatmap chart example

Your search needs one geographical column or a pair of latitude and longitude columns to be represented as a geo heatmap chart.

Change the chart

You can adjust the axes, labels, and view of the chart.

Every chart gives you the option to move columns between the x- and y-axes, hide or show data labels, and zoom.

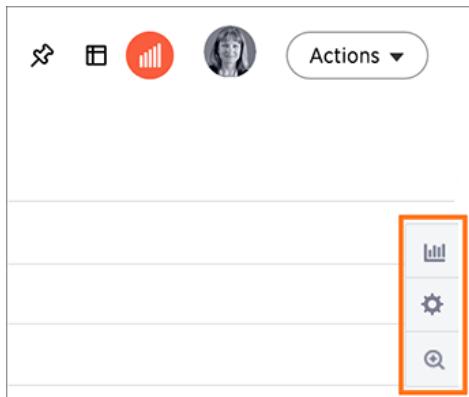


Figure 55: Configure chart icons

The configure chart option (the top icon which looks like a small bar chart) gives you the ability to edit the chart axes and legends. Click on the icon to view the chart axes, add a legend, lock axes, and more.

Reorder labels on the axis or legend

When there are multiple columns on the x- or y-axis or legend of a chart, you can reorder them by using the **Configure Chart** icon.

The order in which columns appear on the axis or legend is based on the sequence they are added. The first field is used as the primary sorting field for the chart. Adding another field adds it after the first one on the axis label or legend. If you want to change the order, you can remove the fields and re-add them in the reverse order.

This example shows you how to reorder the x-axis columns.

1. While viewing your answer as a chart, hover over it and click **Configure Chart** near the top right.

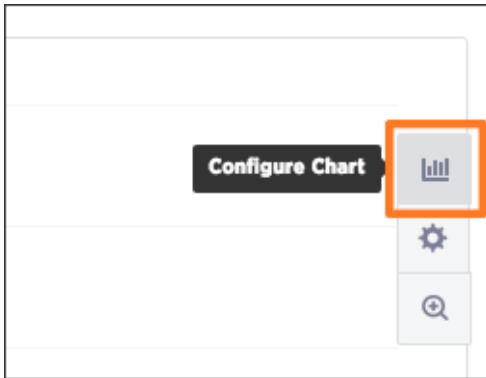


Figure 56: Configure Chart icon

2. In the X-Axis box, delete the values. Then re-add them in the new preferred order.

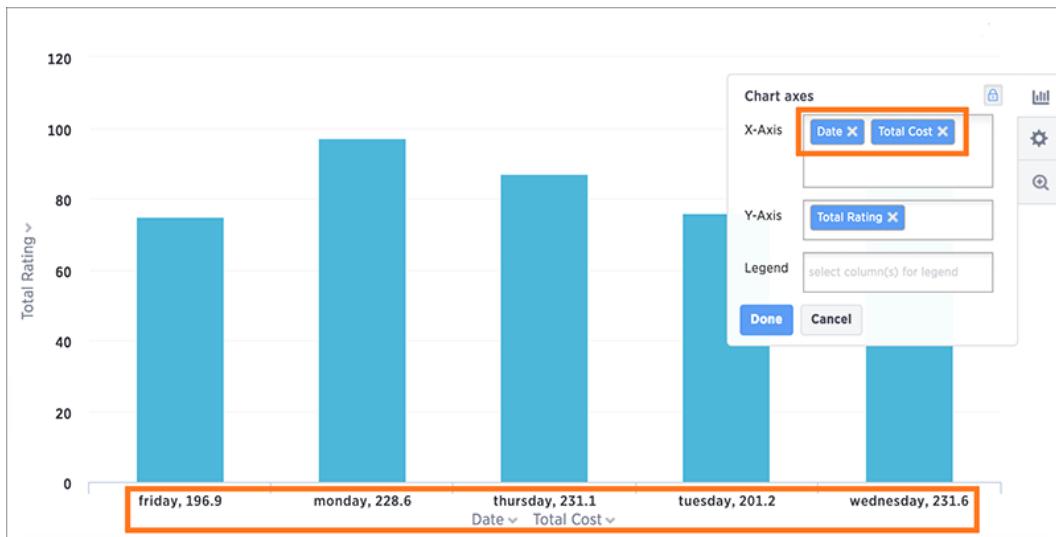


Figure 57: Reordering X-Axis columns

3. Click **Done**.

Your chart will reorganize itself to reflect the new label order.

Lock the chart configuration

When you are able to configure the chart, you can lock the configuration to prevent the axes and legend from changing.

Locking the chart configuration locks the chosen axes and legend values. In addition, the chart type is also locked.

To lock the chart configuration:

1. While viewing your answer as a chart, hover over it and click **Configure Chart** near the top right.

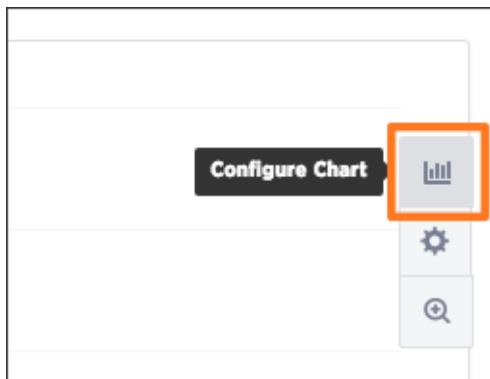


Figure 58: Configure Chart icon

2. Click the lock icon to lock or unlock the chart configuration.

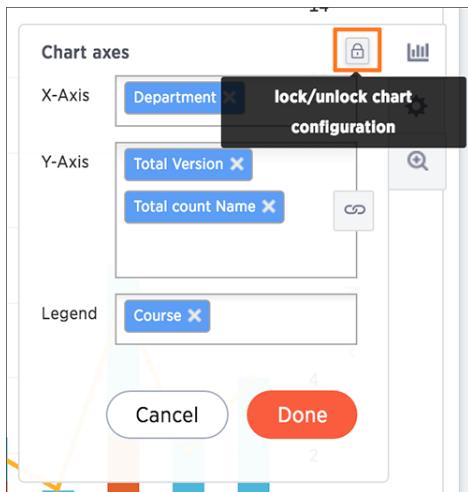


Figure 59: Lock chart configuration icon

3. Click **Done**.

Hide and show values

You can hide and show values on the chart using the legend.

Clicking on a legend item will hide it from the chart. You can click it again to show it.

To hide and show values:

1. While viewing your answer as a chart, hover over it and click **Configure Chart** on the right.

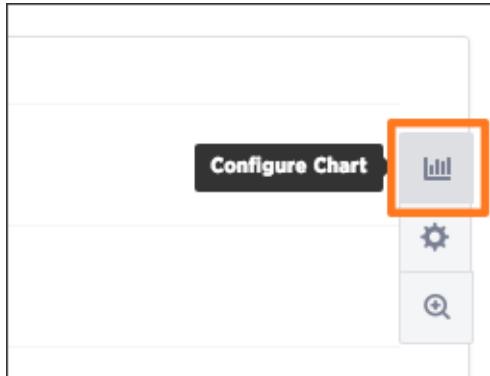


Figure 60: Configure Chart icon

2. Make sure you have a column in the **Legend** field.

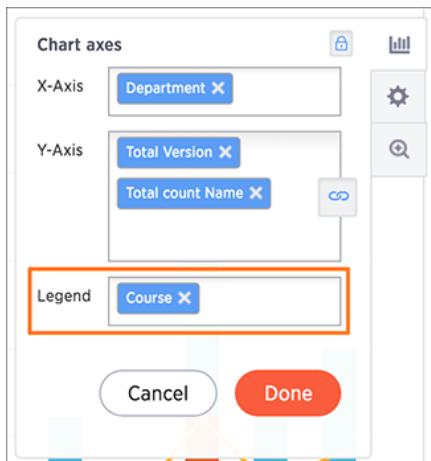


Figure 61: Legend field

3. On the chart, click the legend value you would like to hide. Click the hidden legend value again to show it.

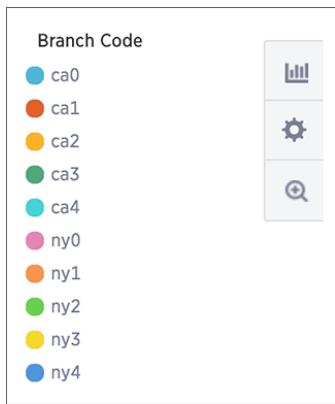


Figure 62: Legend values list

You can also click **only** next to a legend value to only show that value on the chart.

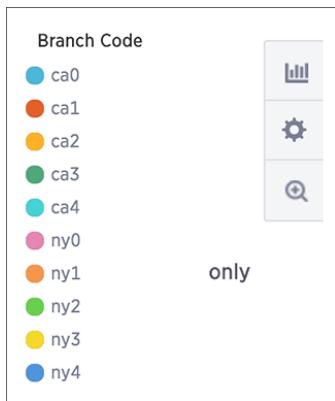


Figure 63: Show only one legend value

Change chart colors

You can easily change the legend colors in a chart.

To change the colors used in the legend of a chart, click on the square next to the attribute whose color you wish to change.

To change the chart colors:

1. While viewing your answer as a chart, hover over it and click **Configure Chart** on the right.

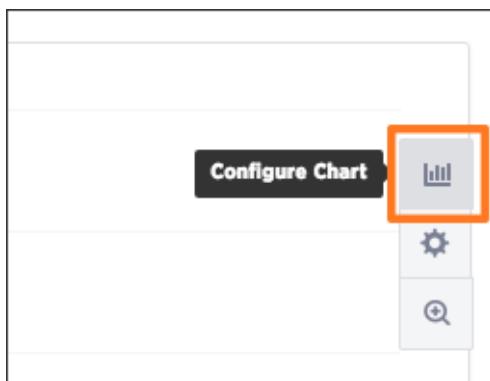


Figure 64: Configure Chart icon

2. Make sure you have a column in the **Legend** field.

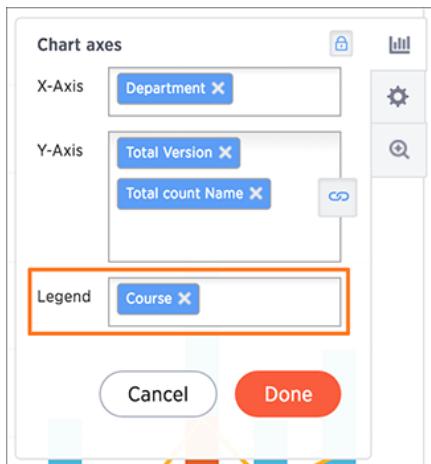


Figure 65: Legend field

3. On the chart, click the color icon of the legend value you would like to change the color of.

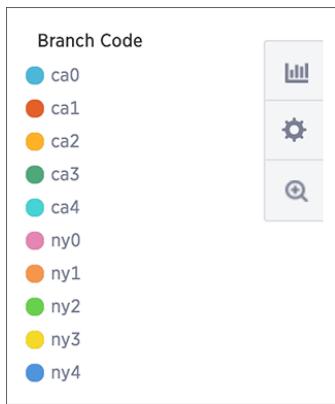


Figure 66: Legend values list

4. Use the color selector to choose a new color to represent that legend value.

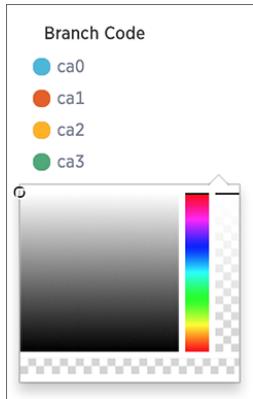


Figure 67: Legend color template

5. Click outside of the selector to apply your change.

Show data labels

You can configure charts to show the y-axis data values.

Some charts have additional options under **Configuration Options** that are covered in each chart type topic.

To show data labels:

1. While viewing your answer as a chart, click **Change chart configuration**.

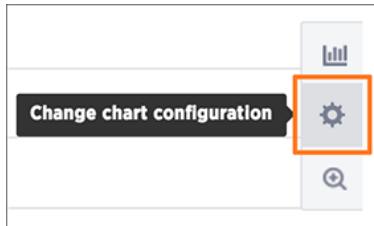


Figure 68: Configure Chart icon

2. Select **Show Data Labels**.

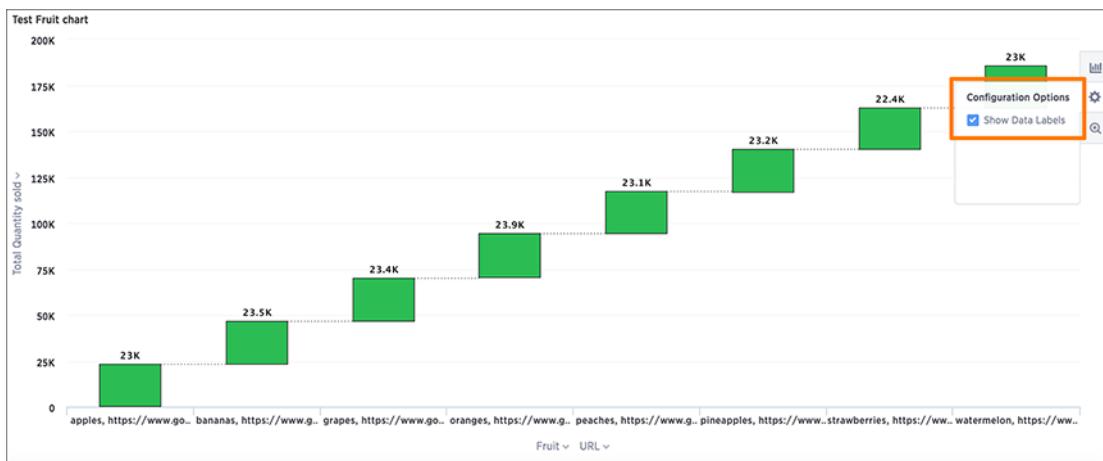


Figure 69: Toggle on Show Data Labels

Zoom into a chart

You can zoom into your chart by selecting an area with your mouse.

To zoom into a chart:

1. While viewing your answer as a chart, click **Zoom into chart** on the right side of the chart.



Figure 70: Zoom into chart icon

2. Click **Select an area**.

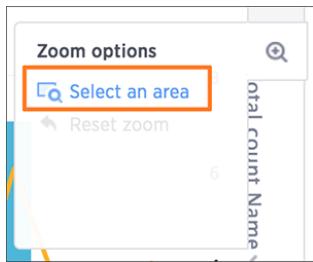


Figure 71: Select an area to zoom

3. Select an area on your chart to zoom into by clicking and dragging your mouse.

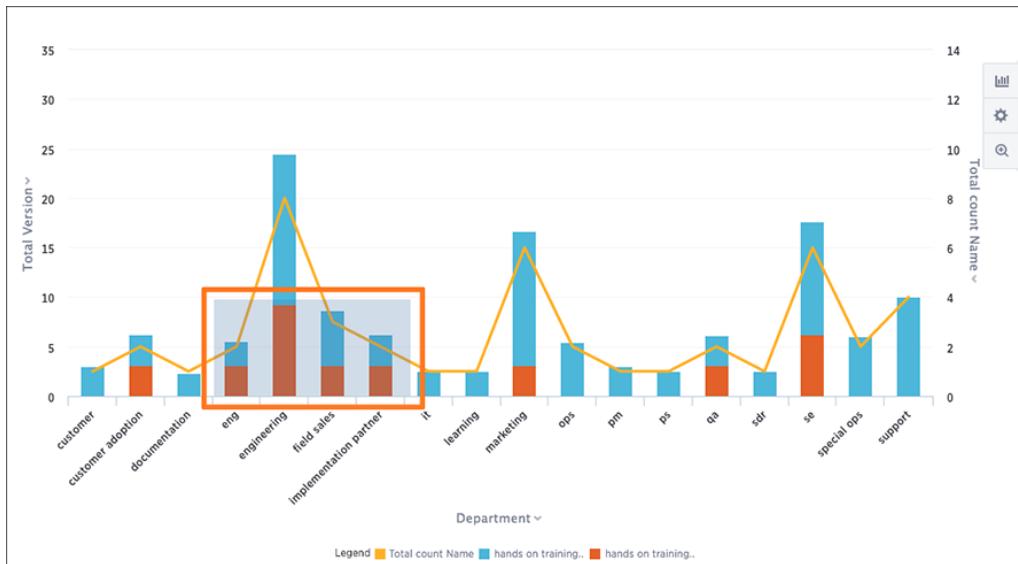


Figure 72: Click and drag to select an area

Your chart will be reconfigured to only show the selected area.

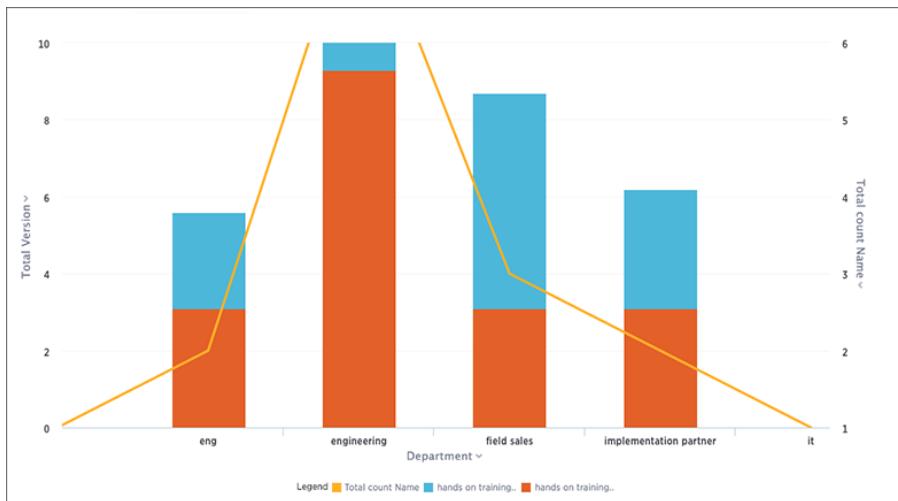


Figure 73: Zoomed in chart area

4. If you would like to return to the original chart view, click **Reset zoom** under **Zoom options**.

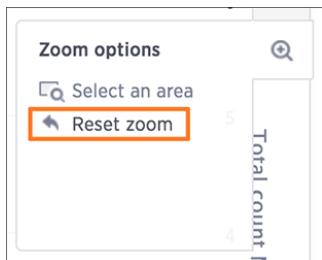


Figure 74: Reset zoom option

About filters

Filters narrow down the search result to only include the data you want to see.

When you add a value to your search, it becomes a filter. Simple filters can be applied to an answer, while pinboard filters can be applied to all visualizations of a pinboard. You can find out more about [pinboard filters in the pinboards section](#).

In search, filters appear in white boxes in the search bar.

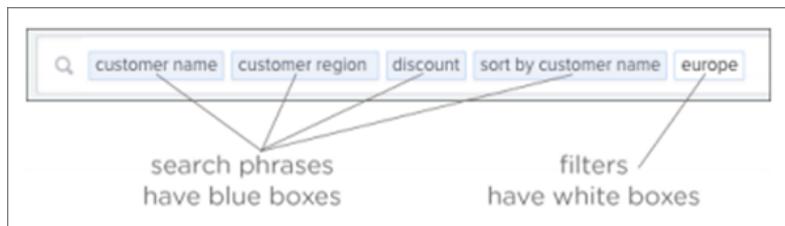


Figure 75: Search bar with filters

In an answer or a pinboard, filters appear just below the title. For pinboards, your filters apply to all worksheet-based visualizations in the pinboard.



Figure 76: Pinboard filters

If you ever find that your search or pinboard does not appear to contain all the data you want to see, check for any existing filters and remove them by clicking the **X** to see all the data.

Note that filtering on NULL and empty values is a special case. You can find out more about how these values are represented and how to filter for them in [About filtering on null, blank, or empty values](#).

About simple filters

Simple filters can be applied to searches in a few different ways.

You can use the search bar or the **Change Configuration** menu to add a filter to a search. You can apply simple filters to your search, whether it shows a table or a chart. Your filters remain part of the search even when you change the visualization type.

When adding a filter from the **Change Configuration** menu, numeric columns and text columns provide you with a checkbox selector for values. If the column

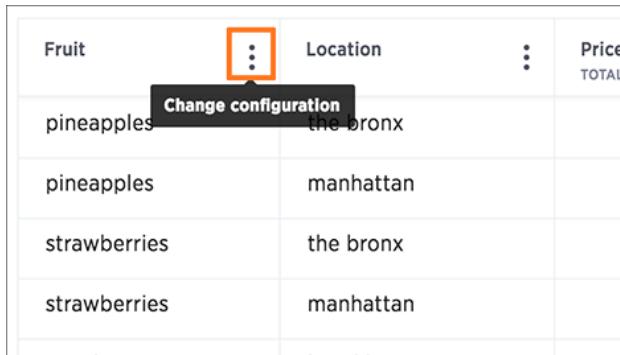
contains a date, you'll see a calendar selector when applying a filter. This is also where you'll go to apply [bulk filters](#).

Add a filter to a table

You can add a simple filter from a column header while viewing your answer as a table.

To add a filter from column headers:

1. While viewing your answer as a table, click **Change configuration** on the column header you want to filter, and select **Filters**.



Fruit	Location	Price TOTAL
pineapples	the bronx	
pineapples	manhattan	
strawberries	the bronx	
strawberries	manhattan	

Figure 77: Change configuration of a column

2. Select the values to include in your answer. Then click **Done**. If there are too many values, you can use the filter search bar to find the ones you want.

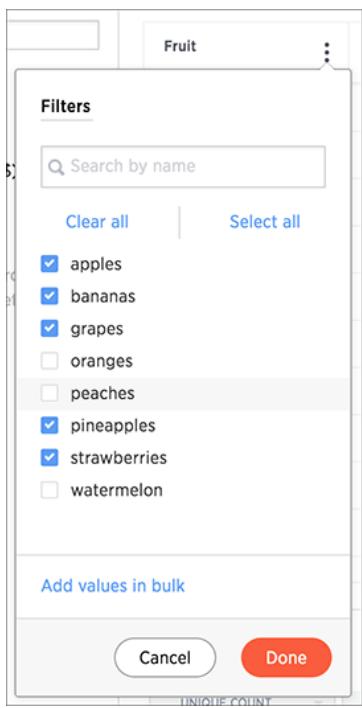


Figure 78: Column filters value box

Add a filter to a chart

You can add a simple filter from a chart axis while viewing your answer as a chart.

You can filter a chart in two ways:

1. Click on the legend labels to toggle the values on or off.
2. Follow the steps shown here to filter on the axis values.

To add a filter from the chart axes:

1. While viewing your answer as a chart, click the chart axis you want to filter on, and select **Filter**.

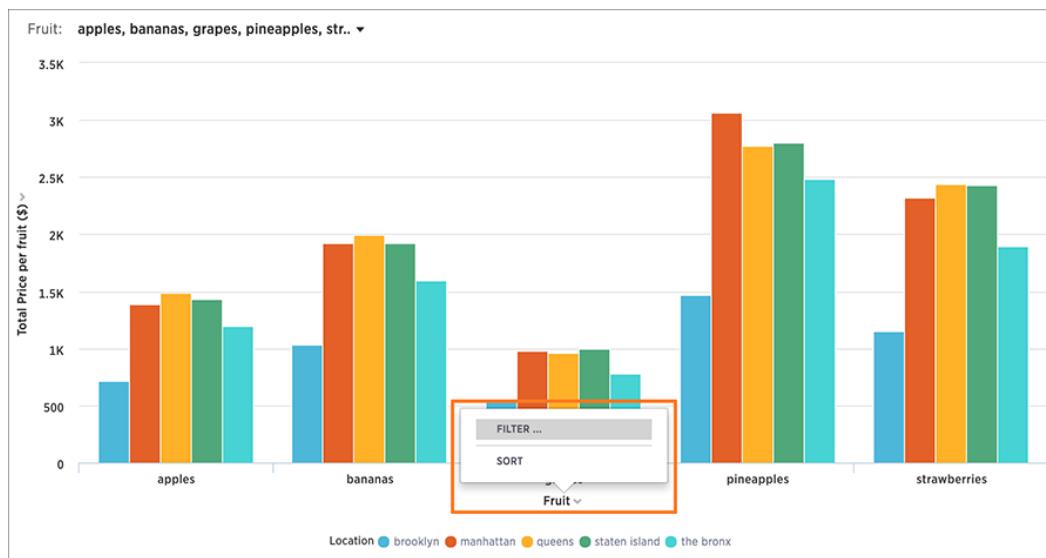


Figure 79: Choose filter from a chart axis

2. Select the values you would like to include in your answer. Then click **Done**.

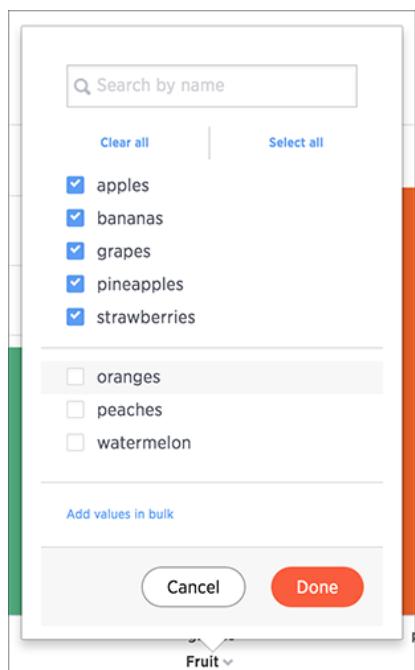


Figure 80: Axis filters value box

Add a filter from the search bar

You can add a simple filter from the search bar while creating your answer.

To add a filter from the search bar:

1. Click in the search bar and type the values you want to include in the search.

Typing a value in the search bar acts as a filter.



Figure 81: Filter from the search bar

You can also use filter keywords like yesterday, after, next month, 2016 to filter your search. To see more filter keywords, refer to the [keyword reference](#).

2. Click outside of the search bar or push `enter` to apply your filter.

About bulk filters

If you have a large worksheet or table with thousands or millions of rows, you may want to create bulk filters. You can paste in a list of filter values, without having to click the box next to each value in the filter selector.

Bulk filters can be very useful when you have a very large worksheet or table. You can use them to filter a large list of values easily. For example, this is useful if you want to only search on a list of products that your manager sent to you in an email. You can cut and paste those values into the bulk filter box to quickly generate a report or chart that includes only those items of interest.

Create a bulk filter

You can create a bulk filter by pasting a list of values, separated by commas, semicolons, new lines, or tabs, into the bulk filter box. This allows you to easily search a large list of filters repeatedly.

In this example, we will cut and paste values to create a bulk filter. You could also do this by pasting in a list of text values from an email or cells from an Excel or Google Sheets spreadsheet.

1. When viewing a table, select multiple cells by clicking and dragging.

2. Right click and choose **Copy to Clipboard**.

Most Popular MindTouch Pages November 2015			
Page Title	URL	Views <small>TOTAL</small>	...
welcome to the help center	https://help.thoughtspot.com/help_center	2,422	
installation and setup	https://help.thoughtspot.com/02_administrators/installation_and_setup	2,000	
administration	https://help.thoughtspot.com/02_administrators	1,151	
the basics	https://help.thoughtspot.com/01_the_basics	879	
knowledge base	https://help.thoughtspot.com/03_knowledge_base	743	
keywords	https://help.thoughtspot.com/help_center/keywords	727	
release notes	https://help.thoughtspot.com/03_knowledge_base/release_notes	677	
help center	https://help.thoughtspot.com/help_center	630	
tips & tricks	https://help.thoughtspot.com/help_center/tips_tricks	620	
administrator guide 2.2	https://help.thoughtspot.com/02_administrators/administrator_guide_2.2	581	

Figure 82: Copy to the Clipboard

3. Click the **Filters** icon in the column header, and click **Add values in bulk**:

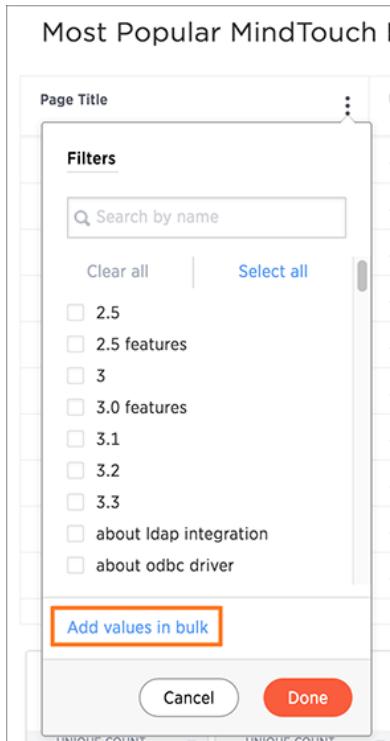


Figure 83: Add values in bulk

4. Paste the values into the bulk filter box.

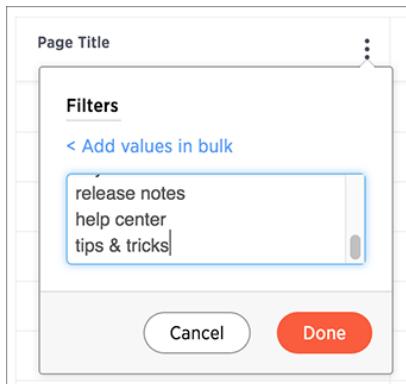


Figure 84: Paste values into the bulk filter box

5. Click **Done**.

Delete a filter

You can delete a filter from an answer to return to the original unfiltered search result.

There are multiple ways to delete a filter.

To delete a filter:

1. Click the **x** on the filter term in the search bar.



Figure 85: Delete the filter term from the search bar

2. You can also click the **x** on the filter bar above the answer.

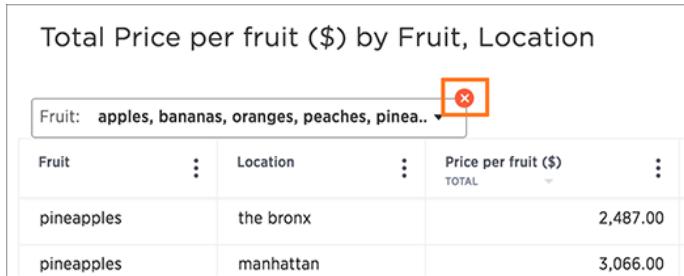


Figure 86: Delete the filter term from the filter bar

About filtering on null, blank, or empty values

Filtering on null, blank, or empty values can be tricky if your data contains both of these. You can use this method to see what's really going on with these types of values, and to get the filtering behavior you want.

How NULL and blank values are displayed

When you view a table or chart, you may see values that appear as **{blank}**.

These can actually be one of two types of values:

- NULL values, which are essentially missing values.
- blank or empty values, like an empty string of text or a string containing only whitespace (spaces, tabs).

Both of these types of values are represented as **{blank}**, but if you filter on **{blank}**, the filter will apply to only the NULL values. That is, only the NULL values will be included in your result. It can be hard to tell what's going on if you have a data source that contains both NULL and blank/empty values.

To show NULL and blank values differently

If you need to differentiate between NULL and blank values, you can [Add a formula](#) to make them appear differently in charts and tables. In this example,

we'll use `<text_column>` to refer to the text column which contains both NULL and blank values:

```
if ( strlen ( <text_column> ) = 0 ) then if ( isnull ( <text_column> ) ) then  
  'null' else 'empty' else <text_column>
```

This formula will show "null" where the value contained in the column is actually NULL. When the value is blank or empty, it will show up as "empty".

To allow filtering on both NULL and blank values

If you want to keep the same display format for NULL and blank values, but be able to filter on both using "`{blank}`", your [formula](#) will be slightly different. You can use a formula like:

```
if ( strlen ( <text_column> ) = 0 ) then null else <text_column>
```

Use the filter you created instead of the original text column in your search to get the result you desire.

Filtering on your formula

After creating the above formula that fits what you want to do, you can filter on the formula column you created in the search bar by typing the value `{blank}`, which will act as a filter. Or you can filter by left clicking on a `{blank}` value in your search result table, then right clicking and selecting **Show only "{Blank}"**.

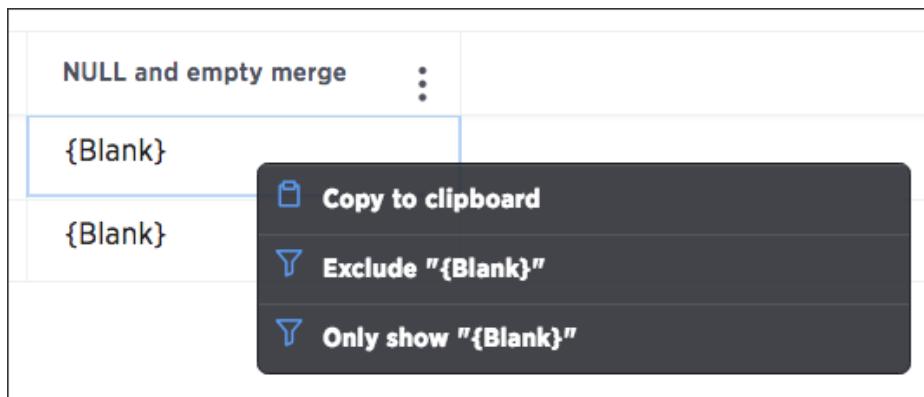


Figure 87: Show only NULL and blank values

Other search actions

There are other search actions you can perform by interacting directly with your answer.

These actions can be performed in an ad hoc way, or you can pin your answer to a pinboard to save your configurations.

Change the view

You can change the view of your answer so it appears as a table or a chart.

To change the view of your answer:

While viewing your answer, toggle between the two views by clicking either **Data View** for a table or **Select Chart Type** for a chart.



Figure 88: Toggle between the two views

Sort your search

Sorting your search allows you to order your answer, making it easier to read.

By default, sorting applies in descending order. You can click on a column header to sort again to sort in ascending order.

To sort your search:

1. If you are in the data (table) view, click the column header you would like to sort on.

 **Tip:** Hold shift and click another column to add a secondary sort. You can even add tertiary sorting and so on by continuing to use this trick.

2. If you are in the chart view, click the axis label of your chart and select **Sort**.

Change the date bucketing

You can change the date bucketing on tables and charts for columns with date values.

The default date bucketing takes the entire search result into account. For example, if your search includes last month, dates will be bucketed daily instead of monthly. You can change this default bucketing choice.

To change the date bucketing:

1. Click the date bucket dropdown on the column header of your table or on the axis label of your chart.

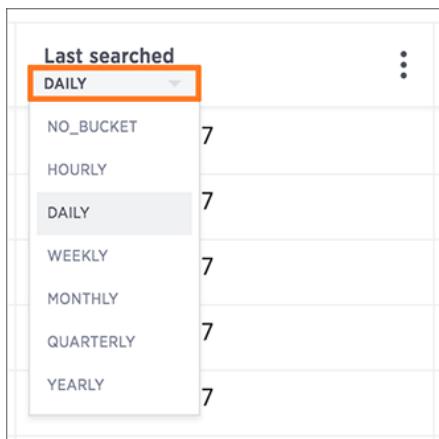


Figure 89: Date bucketing chooser

2. Select a different date bucket.

Show underlying data

Viewing the underlying data of your answer gives you an un-aggregated view of the underlying data.

You can see the most granular details of a given result set, i.e. it shows the un-aggregated view. This feature lets you understand what an answer consists of. For example, if you search for "customer region revenue", the answer shows the aggregate revenue value for each customer region. You can then click on any row and then on **Show underlying data**, to see each value that "revenue"

constitutes of, for any given region. You can even download the results shown when you choose **Show underlying data** from a chart. The download file limit is 100,000 rows.

To show underlying data:

1. Right click on the visualization or table cell of interest, and select **Show underlying data**.

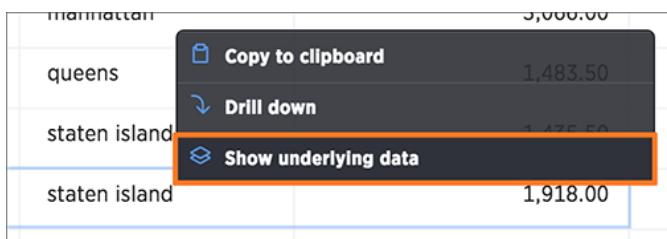


Figure 90: Show underlying data option

A new window will open, displaying a summary and the underlying data.

2. Click **Download** to download a CSV file of the data.

The screenshot shows a modal window titled "Showing underlying data". At the top, it displays a "Summary" section with "Fruit: bananas" and "Location: staten island Total Price per fruit (\$): 1,918.00". Below this is a "Underlying Data" section containing a table with four rows. The table has columns for "Location", "Fruit", and "Price per fruit (\$)". The data is as follows:

Location	Fruit	Price per fruit (\$)
staten island	bananas	2.00

At the bottom right of the window are two buttons: "Download" (highlighted with a red box) and "+ Add Columns".

Figure 91: Download underlying data

3. Click **+ Add Column** to add more columns. After selecting columns to add, click **Confirm Changes**.

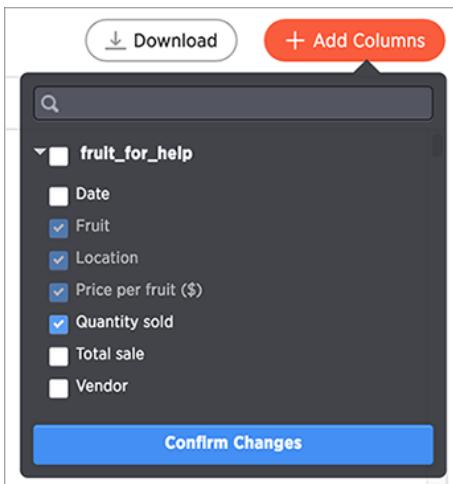


Figure 92: Add columns to underlying data

Drill down

Drilling down allows you to see more information about the columns used within your search.

To drill down:

1. Right click on the visualization or table cell of interest, and select **Drill down**.

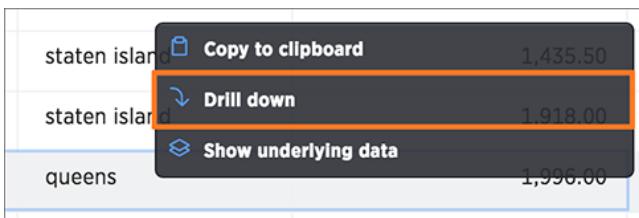


Figure 93: Drill down option

2. Click on any of the listed data to recreate the search with that data included.

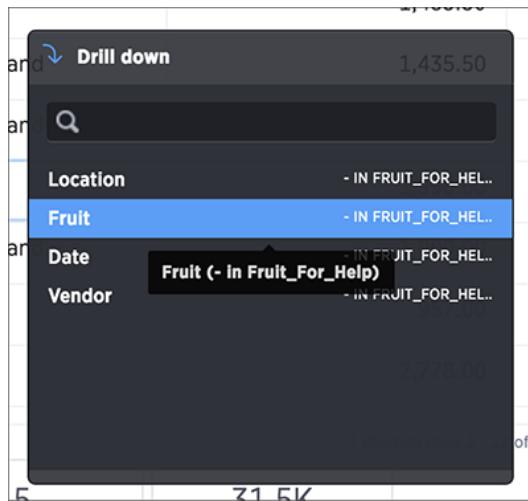


Figure 94: Drill down list

Exclude and include row values

You can include or exclude row values from your answer.

To exclude or include row values:

Right click on the visualization or table cell of interest, and select **Exclude "value"** or **Include "value"** if available.

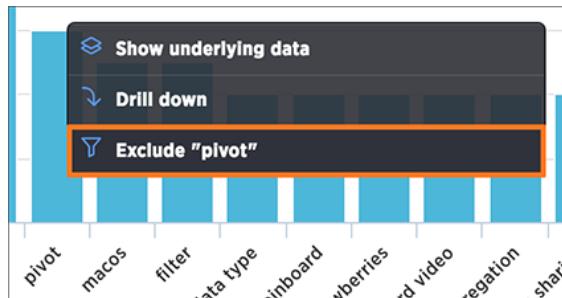


Figure 95: Exclude value option

About conditional formatting

You can apply conditional formatting to tables or charts to highlight values in the data. This makes values above, below, or within a particular threshold stand out.

You can add visual cues for KPIs (Key Performance Indicators) or threshold metrics to charts and tables, to easily show where you are falling short or exceeding targets. These visual cues are called conditional formatting, which applies color formatting to your search result. For tables, you can add conditional formatting to set the background color of cells in a table based on the values they contain. For charts, you can add conditional formatting to show the threshold(s) you defined, and the data that falls within them will be shown using the same color.

Many companies create pinboards with key metrics they want to track in daily or weekly staff meetings. Using conditional formatting, they can see at a glance how they are performing relative to these metrics.

Apply conditional formatting to a table

You can use conditional formatting to show table cells with a background color determined by the value they contain.

To apply conditional formatting to a table:

1. In the column header of your table for the column you want to apply formatting to, click the three dot **Change Configuration** icon.

Number of sessions	
TOTAL	
	Change configuration
3	
6	

Figure 96: Three dot menu

2. Select **Conditional Formatting**.
3. Click the **+** icon in the **Conditional Formatting** menu.

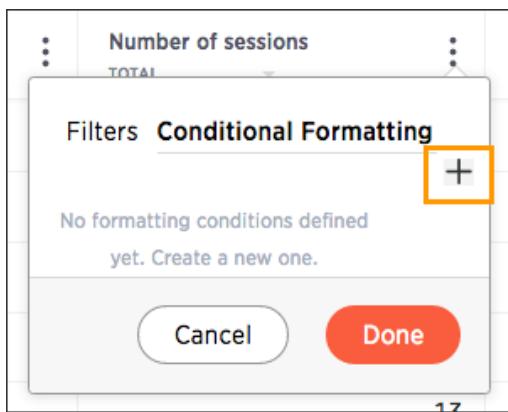


Figure 97: Conditional formatting menu

4. Define the sets of values and the color to use for each set.

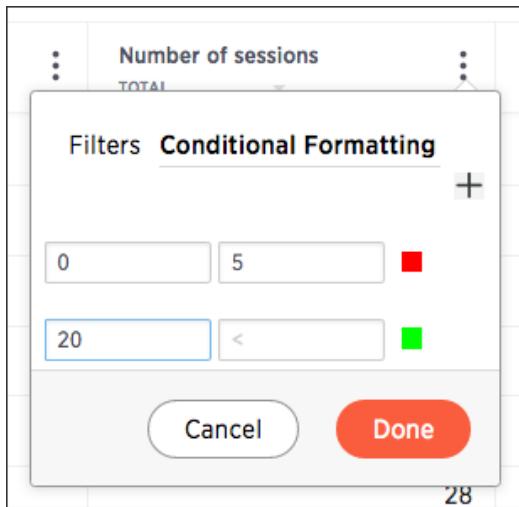


Figure 98: Define the sets of values and color

5. Click **Done** after defining all of your conditional formatting sets.

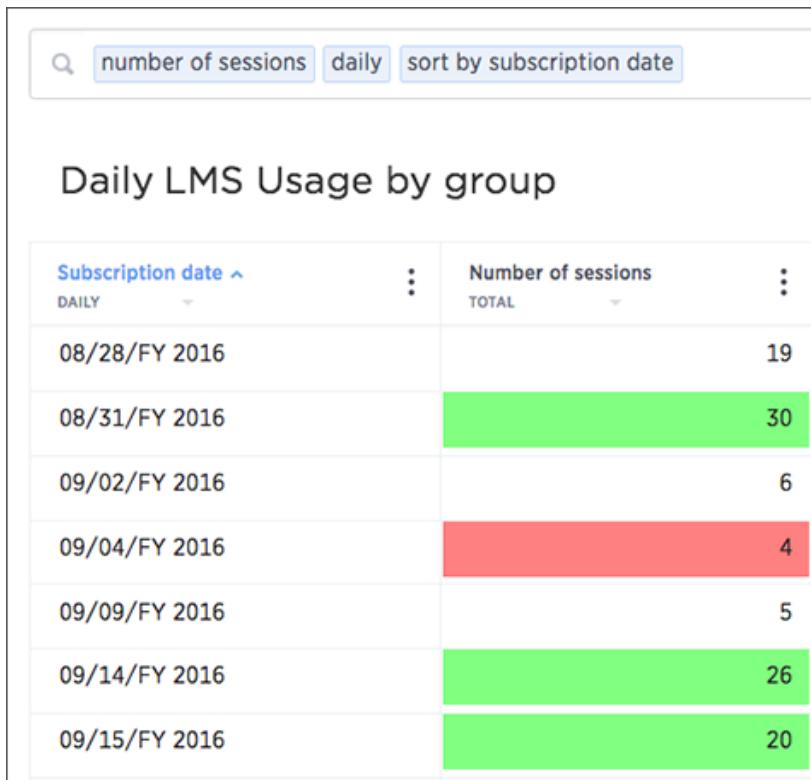


Figure 99: Table with conditional formatting

6. Note that if you change to a chart type, you will need to apply conditional formatting again. Conditional formatting is tied to the specific visualization.

Apply conditional formatting to a chart

You can use conditional formatting to show charts with a target value or range drawn as a line in the chart, and the legend colors determined by where values fall relative to the target.

To apply conditional formatting to a chart:

1. Click the axis label of your chart. Select **Conditional Formatting**.
2. Click the + icon in the Conditional Formatting menu.

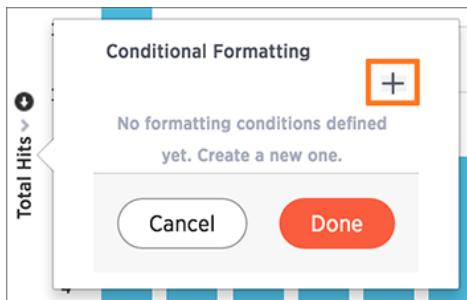


Figure 100: Conditional formatting menu

3. Define the ranges of values and the color to use for each range you want to track. To add another range, click the + icon and repeat.

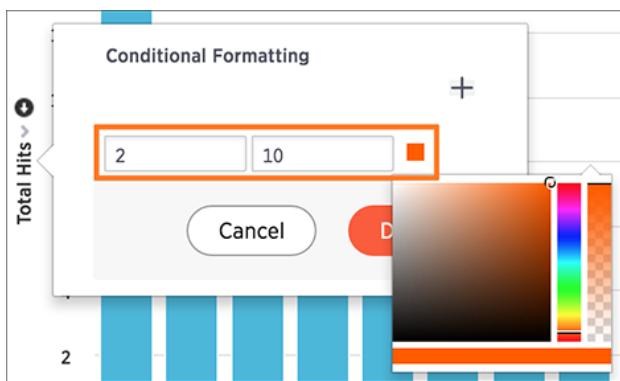


Figure 101: Define the sets of values and color

4. Click **Done** after defining all of your conditional formatting ranges.

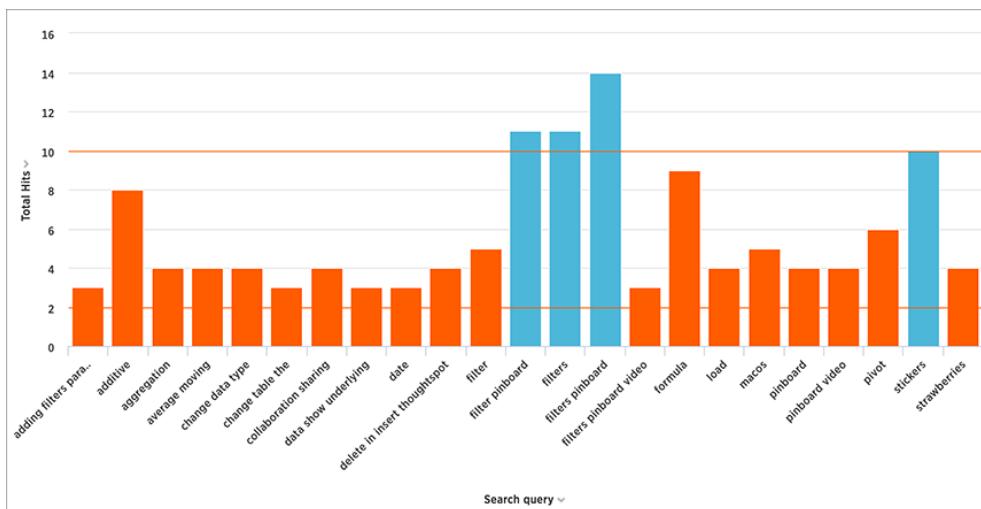


Figure 102: Chart with conditional formatting

5. Note that if you change the chart type, you will need to apply conditional formatting again. It is tied to the specific visualization.

Copy an answer

You can make a copy of an answer if you would like to make edits without changing the original answer.

Making a copy of an answer allows you to make your own edits without overwriting the original. When saving a copy, you can type in a new name.

1. Click on **Answers**, on the top navigation bar.



Figure 103: Answers

2. On the answer list page, click the answer you would like to copy.
3. Click **Actions** and select **Make a copy**.

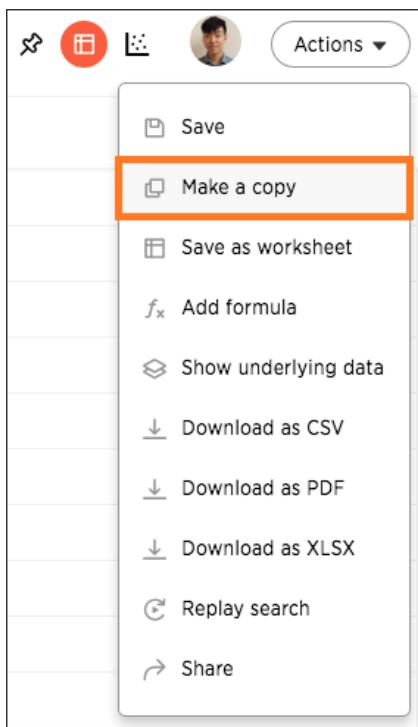


Figure 104: Make a copy of the answer

4. Give your answer a new name and description. Then click **Save**.

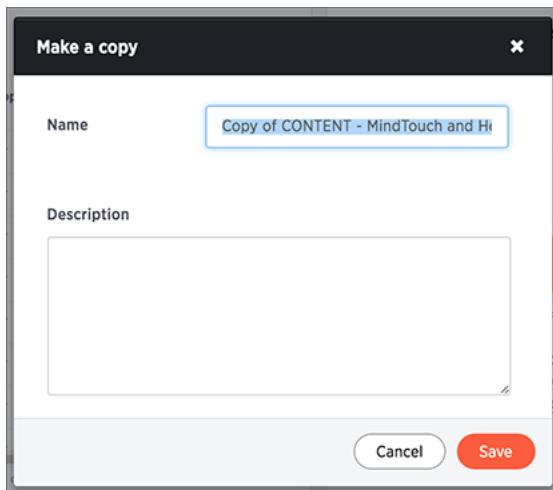


Figure 105: Name and save your answer copy

Download your search

You can download your search as either a table or chart.

You have the option to download your table as a CSV (comma separated values), PDF, or XLSX (Excel) file. When you download a chart, it will be a PNG file.

To download your search:

Click **Actions**.

For a table, choose between **Download as CSV**, **Download as PDF**, or **Download as XLSX**.

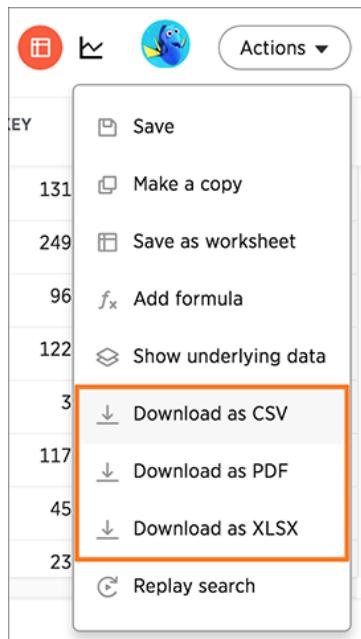


Figure 106: Download your table options

For a chart, select **Download**.

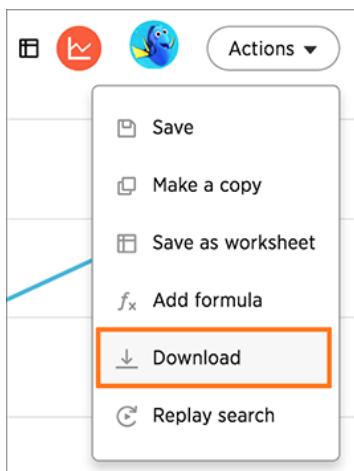


Figure 107: Download your chart option

Replay search

You can instantly generate a step-by-step replay showing the creation of a table or chart.

The replay feature shows how to create the chart or table you are viewing. Use it to teach yourself, or take a screencam of it and create your own ThoughtSpot training for your team.

1. When viewing a chart or table, click **Actions** and select **Replay search**.

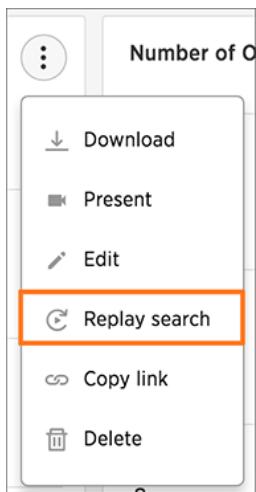


Figure 108: The Replay search icon

2. Then, select **Start Replay** to view the video.

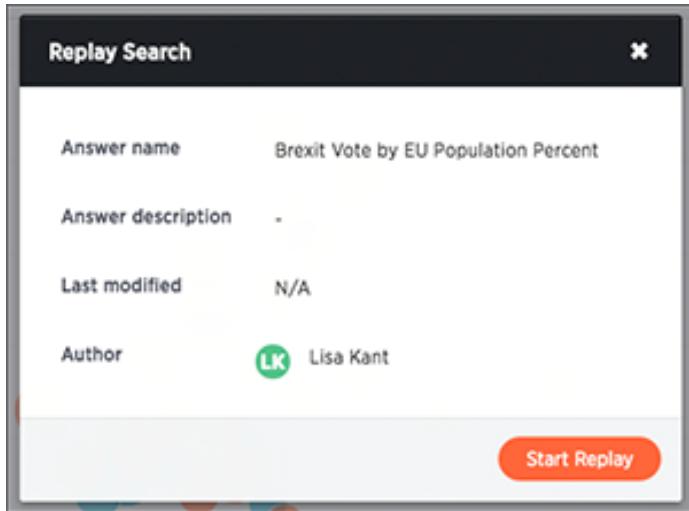


Figure 109: Start Replay

The replay will start automatically. You can pause and resume it by clicking on it.

Chapter 3: Advanced searches

Topics:

- [About keyword searches](#)
- [About worksheets from searches](#)
- [About formulas in searches](#)
- [About formulas and aggregation](#)
- [About conversion formulas](#)
- [About pivot tables](#)

Most searches in ThoughtSpot are easy to do without training. But there are some advanced search features that are very powerful. This section explains how to use the more advanced features.

Some of the more advanced features are:

- [Keyword searches](#) allow you augment your search with predefined keywords. These keywords range from date, time, number, and filter words.
- [Worksheets created from searches](#) allow you to save a search as a worksheet, optionally link it to other data sources, and do another search on top of it. This workflow allows you to produce some complex reports, like those that would require nested SQL queries in some other tools.
- [Formulas in searches](#) brings the power of formulas to regular searches, instead of requiring that you first create a worksheet. This allows any user to do mathematical operations, use if...then...else logic, check for empty (null) values, bucket their data, etc.
- [Aggregation formulas](#) are widely used in business intelligence since they provide better insight into data. They provide the ability to aggregate a numeric value (measure) at specific attribute levels or subsets of the full dataset.

- [Conversion formulas](#) allow you to convert data types when you want to use them in another formula that only accepts specific data types.
- [Pivot tables](#) derived their name from their ability to rotate, or pivot, their own graphical structure. You can drag and drop fields to change the display to get different summaries or create cross tabulations.

About keyword searches

Use keywords when asking a question to narrow and further define your search.

In addition to column names, values, and filters, the search bar also accepts keywords. These keywords serve a variety of predefined purposes, and are divided into different groups. The groups are as follows:

- **Basic keywords**

You can use keywords such as "top" and "bottom" to, for example, only see results for the best or worst performing sales rep.

- **Date keywords**

Date keywords give you the freedom to narrow your search by days, weeks, months, quarters, or years. There are also a number of date related keywords such as "after", "before", and "year-over-year". Use the new date keywords to describe dates in the future. This is useful for exploring things that are scheduled for a future date, such as shipments due to go out in the next week.

- **Time keywords**

Time keywords are the most useful when trying to figure out how many visitors you've received within the last "n minutes or hours".

- **Text keywords**

You can use text keywords to find similar words or phrases that contains a certain word. For example, product name contains "green".

- **Number keywords**

These keywords allows you to define your search by sum, average, count, max, min, and other accumulations.

- **Filter keywords**

Filter keywords work in the same way as filters on table columns or chart axes.

You can access a list of keywords and other reference materials in the [references](#) section or in the help center. Open the help center by clicking **Help** on the top navigation bar. Within the help center, you'll find videos and documentation that pertain to the current version of ThoughtSpot. Here is where you can also find a list of keywords. You can expand each section to see which keywords are available and examples on how to use them.

The screenshot shows the ThoughtSpot Help Center interface. On the left, there's a sidebar with a red circular logo containing 'TS' and a list of keyword categories: Basic keywords, Date keywords, Time keywords, Text keywords, Number keywords, and Filter keywords. To the right, the main area has a title 'KEYWORDS' and a search bar with placeholder text 'What are you looking for?'. Below the search bar, under the heading 'Basic keywords', there are two sections: 'top' and 'bottom'. The 'top' section contains examples like 'top sales rep by count sales for average revenue > 10000' and 'sales rep average revenue for each region top'. The 'bottom' section contains examples like 'revenue average', 'revenue by state', and 'customer by revenue for each sales rep'. At the bottom, there's an example for 'top n': 'top 10 sales rep revenue'.

Figure 110: Help center keywords list

Search using growth over time

You can show growth over time by using the "growth of" keyword in your search. This keyword compares the data from different date periods, and returns a percentage of growth.

To search using growth over time:

1. Type `growth of` into the search bar, and choose a measure you're interested in seeing the growth of.

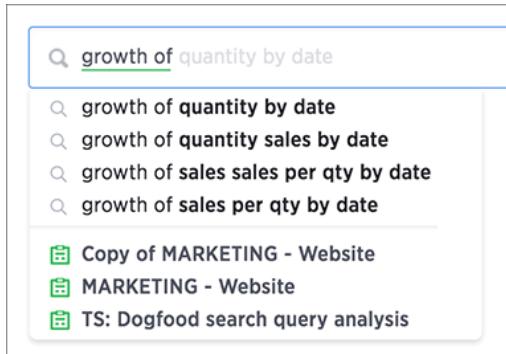


Figure 111: Growth of suggestions

You will see a list of suggestions to choose from based on your sources. You can also type a different column name containing numeric data to compare.

2. Then, type `by`, followed by a date column name.
3. Switch to the Chart view for a visual representation of your search.

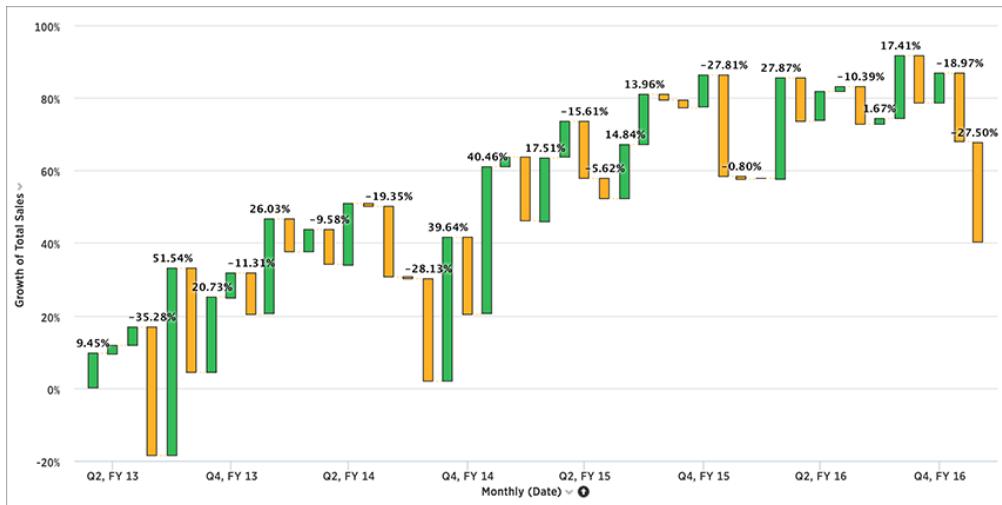


Figure 112: Growth of total sales waterfall chart

The growth is calculated as a positive or negative percentage, for each period relative to the last period in the series. The line chart is a good way to display your data, but the waterfall chart is especially effective to show growth.

4. You can also do year-over-year analysis, which compares each time period to the corresponding time period in the prior year. This type of growth analysis

is more common in retail and other seasonal businesses. To do this, type monthly year-over-year after your growth of phrase in the search bar.

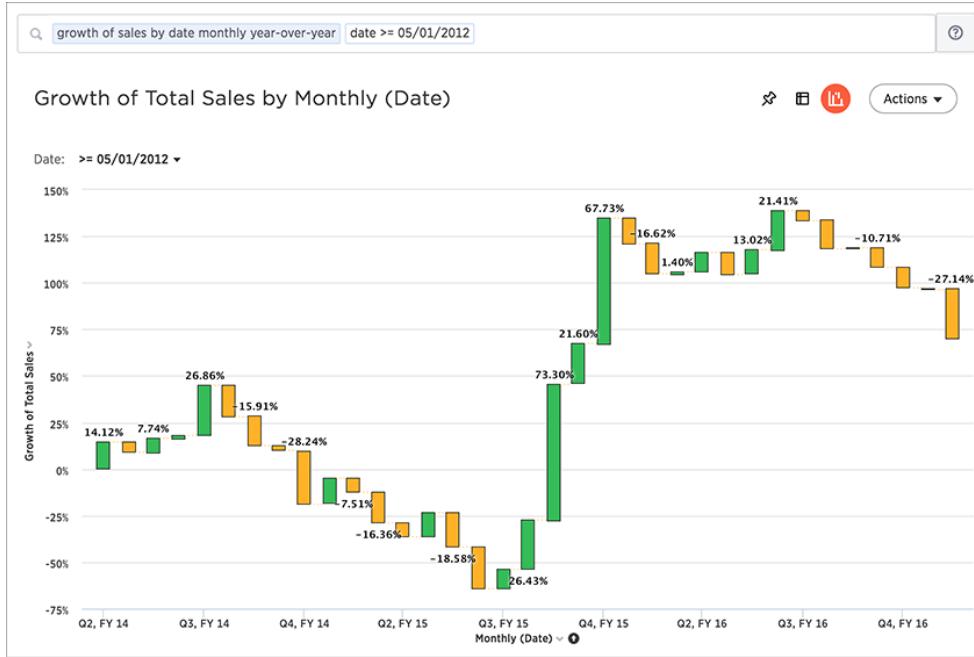


Figure 113: Growth of by monthly year-over-year

This compares data between the same month from different years. For example, it will allow you to compare sales from June of this year to the sales from June of last year. Note that for the first year, values are labeled as "{Blank}" in the Data View since there are no previous data to compare them to.

5. Add an attribute to your search see the breakdown of how each grouping of the attribute contributed to the overall growth of your measure. Click **Configure Chart** and add your attribute to the Legend field.

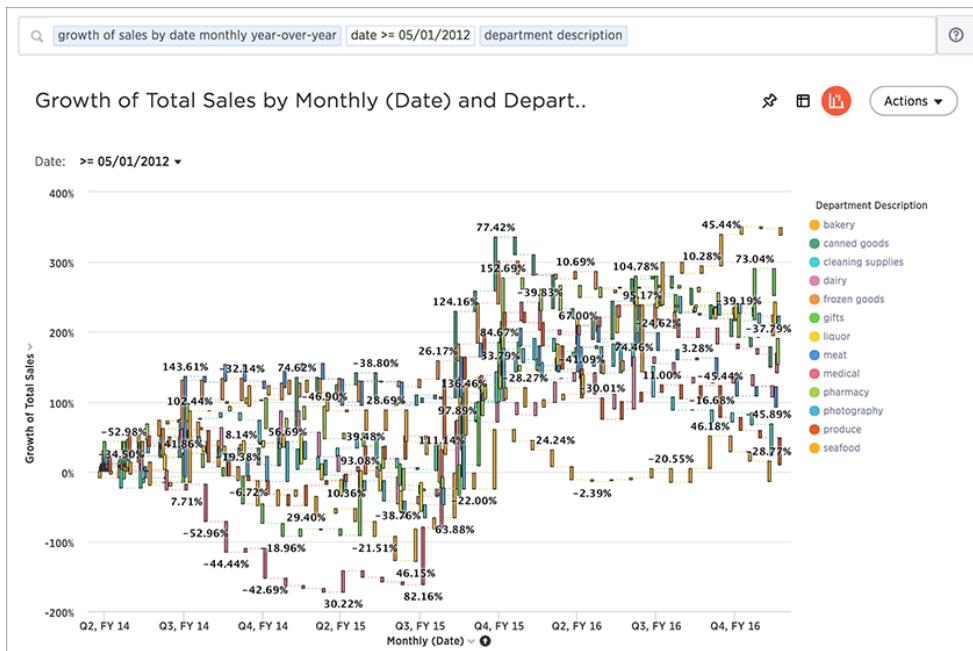


Figure 114: Growth of broken up by category

It looks like Q4, FY 15 was a much more productive period for a number of categories compared to a year ago.

About worksheets from searches

If you want to do an advanced search that involves what is essentially a search on top of another search, try saving your search as a worksheet. Then you can use the saved worksheet as a data source for a new search.

Introduction to worksheets from searches

Although a worksheet created from a search is effectively the same as any worksheet, we'll call it an "aggregated worksheet" here to avoid confusion. When you do a search on a data source, ThoughtSpot is only able to aggregate one column by one other column. Because of this, you may come across searches you can't do in one pass, because they are essentially nested queries. But you can create the equivalent of nested queries using an aggregated worksheet,

which is essentially an answer that you save as a worksheet. Then you can use that worksheet just like any other data source. You can even link it to other sources by defining a relationship. When you save an answer as a worksheet, and then use it as a source in a new search, it is similar to doing a nested query in SQL, only much easier to create.

In order to create a worksheet from a search, you must belong to a group that has the privilege Has administration privileges or Can Manage Data. If you are not able to create aggregated worksheets, contact your administrator and request the **Can Manage Data** privilege.

Aggregated worksheet workflow

Suppose you have created a search on the sales fact table that shows the top ten Sales Reps by revenue for the first quarter. Then you want to do some further investigations on that set of data, like ranking them by how much they discounted a specific product using data from the orders fact table. Unless you save your first answer as a worksheet, certain explorations like this won't be possible. If you want to do this, here are the steps at a high level:

1. Create the first search, and [save it as an aggregated worksheet](#).
2. Link your worksheet to any other data sources you'll need.
3. Create a new search that includes your aggregated worksheet and the other sources you linked with it.
4. You may want to create a new worksheet that includes these data sources.
This will make it easy for people to search using the same group of aggregated worksheet and tables that you created.

Best practices for using aggregated worksheets

Aggregated worksheets can be used in a variety of ways. But keep in mind these details about how they work:

- Only users with administrative privileges are able to create aggregated worksheets and link them.
- You can't link an aggregated worksheet with a sharded table. If you do this and try to search on it, you will get an error.
- Joins are directional, meaning that the order of the objects being linked matters. The table/aggregated worksheet with the foreign key needs to occur in the first (left) position. The one with the primary key needs to go in the second (right) position.

Worksheet from a search example scenarios

Here are two common examples of when you would need to use aggregated worksheets.

Example 1

Our first example involves creating an aggregated worksheet with a default filter.

Say you want to create a worksheet that only shows data for a particular US state. In your search, enter “customer state = texas”.

Then click **Actions**, and select **Save as worksheet**. Give your worksheet a name, then click **Save** to create your worksheet.

Now you have a worksheet that only contains data that pertains to Texas. You can share this worksheet with others to search across.

Another popular example of this concept includes creating a worksheet with only active employee data.

Example 2

Our second example involves joining two aggregated worksheets.

Say you want to plot the revenue of the top five states over time. Search for revenue, store state, and top 5. Save this answer

as an aggregated worksheet called "Top 5 states". Then start another search with the tokens revenue, store state, and date. Save this answer as an aggregated worksheet called "Total monthly purchases".

Now you want join these two worksheets. Navigate to the **Data** tab and make a relationship between the two worksheets, involving store state.

Now, to start a new search, select your two aggregated worksheets as data sources, selecting the appropriate columns: store state from Top 5 States, and date and total sales from Total Monthly Purchases. You will only see data for the top five revenue states.

Save a search as a worksheet

This procedure walks you through creating a worksheet from a search.

To create a worksheet from a search (i.e. an aggregated worksheet):

1. Start a new search, or edit an existing visualization from a pinboard.

Any filters or aggregations created during this search will be reflected in the worksheet.

2. If you want to use a different aggregation than the default one for any column, set it from the column header.

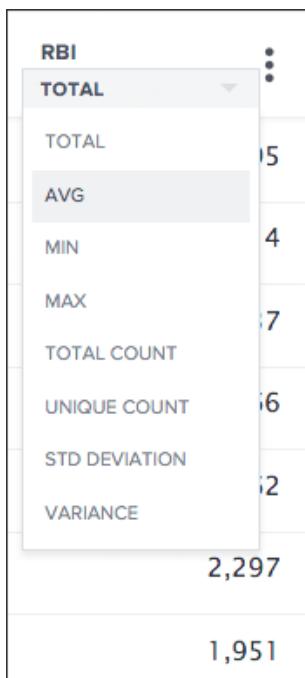


Figure 115: Select an aggregation

3. Save the answer as a **Worksheet**.

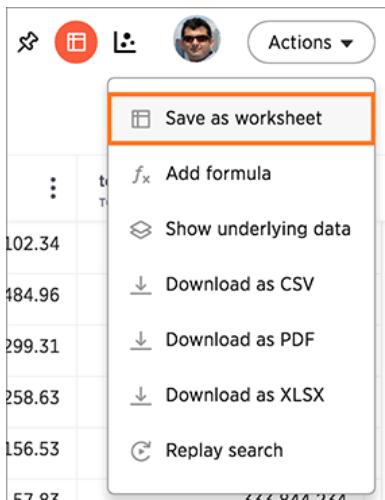


Figure 116: Save as a Worksheet

Create a search from a search saved as a worksheet

After creating a worksheet from a search (also called an aggregated worksheet) and linking it to related data, you're ready to create your new search.

To do a search on the aggregated worksheet, along with any data sources you linked:

1. Click the search icon, and select **Data Source**. Choose your linked sources.

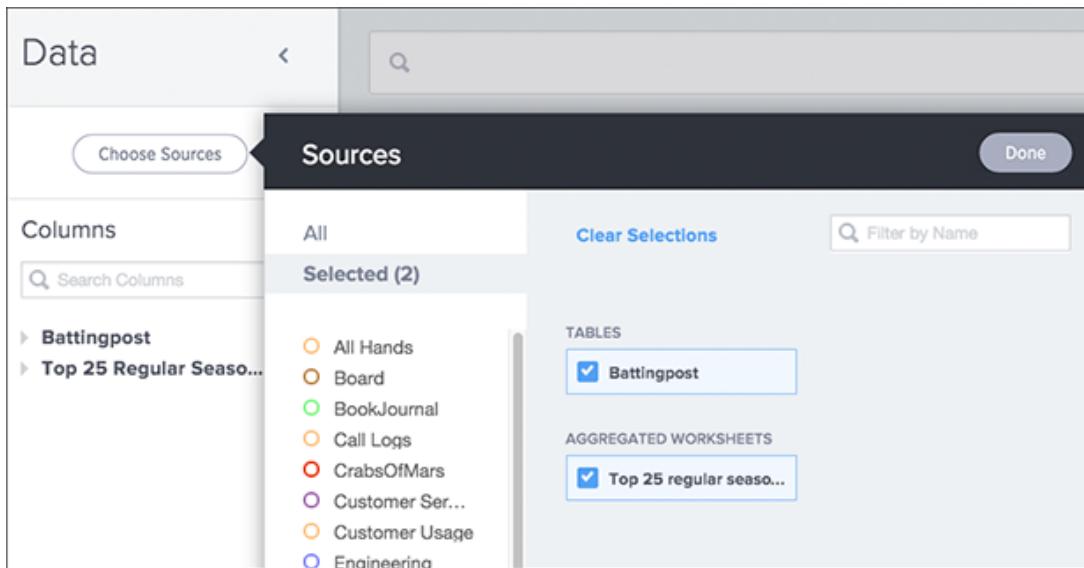


Figure 117: Select sources

2. Do a search using columns from the linked sources, including any aggregations you created.
3. Test the result, to make sure it's what you expect.

If your search shows no data found or doesn't look right to you, it is possible that one of the links between your sources was made on the incorrect column. Check the relationships you created and try linking using a different column, to see if that gives the expected search results.

4. Once you have the expected answer, you can create a worksheet to make it easier for you and other people to use. To do this, click the Data icon.
5. Click the **Actions** icon from the upper right side of the screen, and select **Create worksheet**.

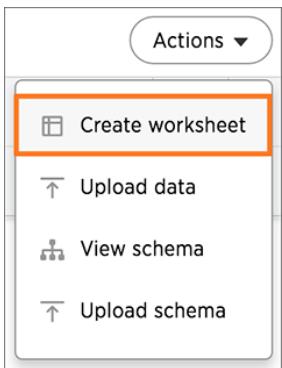


Figure 118: The Create worksheet icon

6. Choose both views using **Choose Sources**.
7. You may need to rename some columns appropriately for searching.
8. Share the worksheet with the appropriate users and groups.

About formulas in searches

To provide richer insights, you can add a formula to your search. The Formula Builder includes many types of operators, such as logical (if, then, else), math, date, and text string functions.

You can create a formula from directly within a search. If you have the privilege that allows you to create or edit worksheets, you can also create a formula within a worksheet. Formulas in worksheets act as derived columns, so that anyone who uses the worksheet as a data source will see the formula as just another column.

Adding a formula within a search works much the same way as adding a formula to a worksheet. However, you will be able to edit the formula directly from within the answer. If you add the answer to a pinboard and share it with the **Edit** privilege, other people can see the formula results, too. In order to make edits to the formula, they also need to have the **Edit** privilege on the underlying data.

Add a formula to a search

You can add a formula directly within a search. Some common reasons for using a formula in a search are to perform mathematical functions, check for and replace null values, or add if...then...else logic.

To create a formula in a search:

1. Start a new search, or choose an existing answer from a pinboard to edit.
2. If the answer shows a chart, switch to **Data View**.

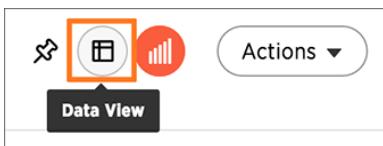


Figure 119: Switch to Data View

3. In the upper right hand side of the table, click **Actions** and select **Add formula**.

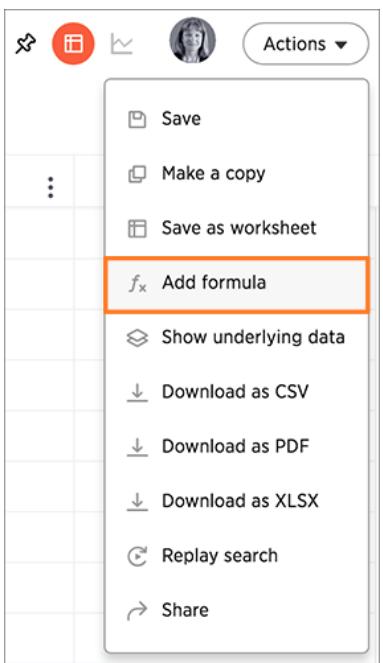


Figure 120: Create a new formula in an answer

4. Type your formula in the Formula Builder.

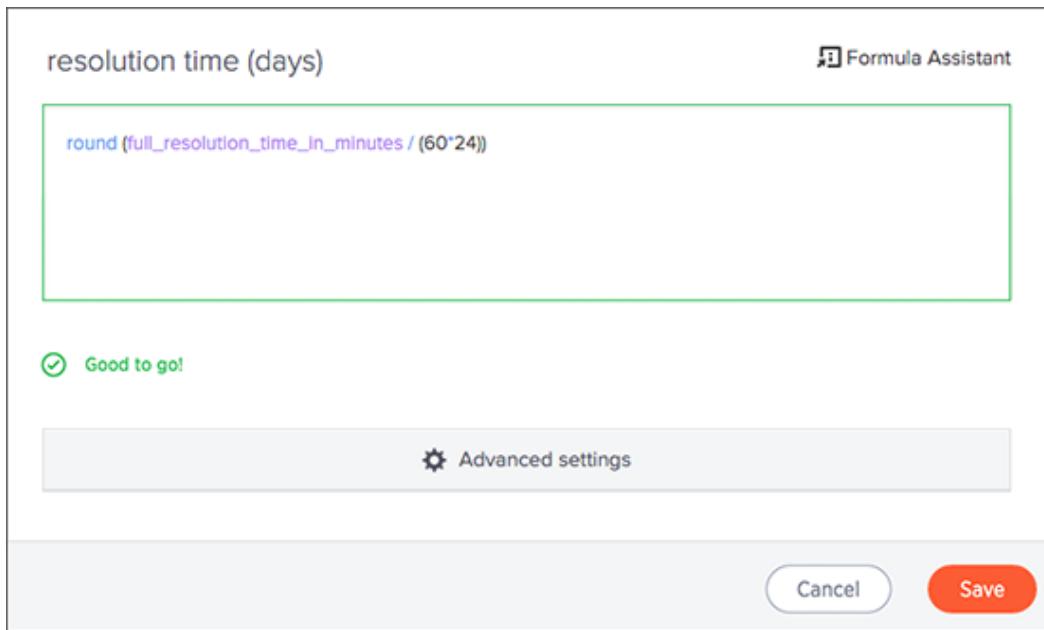


Figure 121: Use the Formula Builder

- Note:** Formulas elements are color coded by type and can include the formula operators and functions (blue), the names of columns (purple), and/or constants (black).
5. You can see a list of formula operators with examples by clicking on **Formula Assistant**.

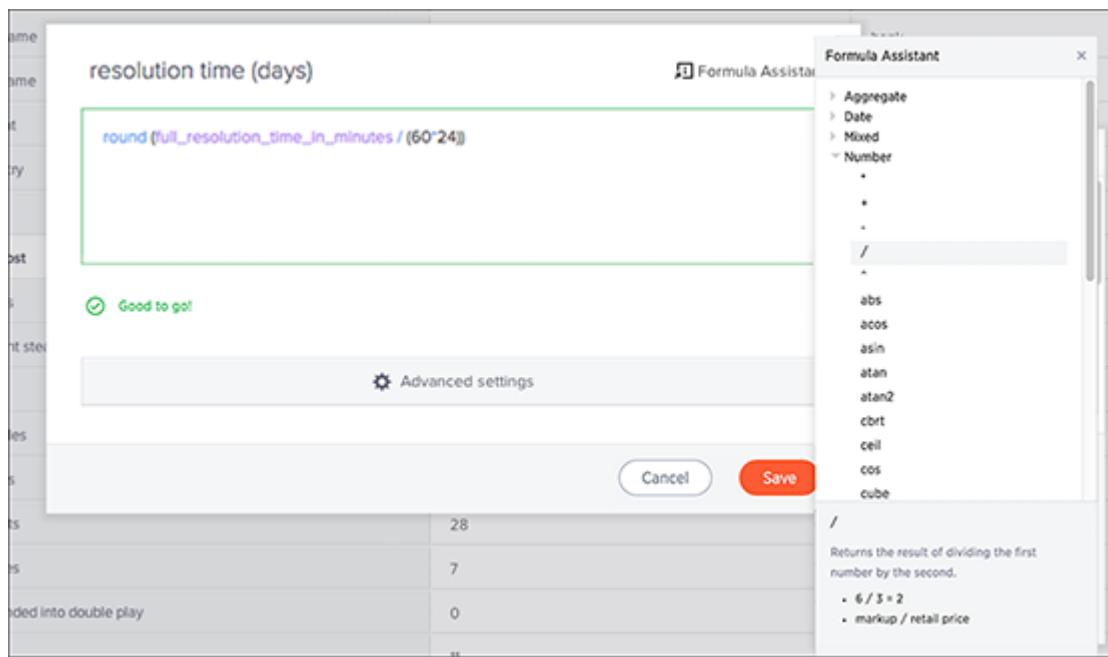


Figure 122: Examples in the Formula Assistant

6. If you want to change what your formula returns, use the **Advanced settings**.

Depending on your formula, you may be able to change:

- Data type
- ATTRIBUTE or MEASURE
- Aggregation type

The screenshot shows the ThoughtSpot Formula Builder interface. At the top, there's a title 'resolution time (days)' and a 'Formula Assistant' button. Below the title is a code editor containing the formula: `round((full_resolution_time_in_minutes / (60*24)))`. A green box highlights this code area. Below the code editor is a message 'Good to go!' with a checkmark icon. Underneath is a section titled 'Advanced settings' with three tabs: 'Data type' (set to 'Numeric'), 'Measure or attribute' (set to 'MEASURE'), and 'Aggregation'. The 'Aggregation' tab is expanded, showing a dropdown menu with various options: TOTAL, AVG, MAX, MIN, STD DEVIATION, TOTAL, TOTAL COUNT, UNIQUE COUNT, and VARIANCE. A red 'Save' button is located at the bottom right of this menu. The bottom part of the interface shows a table with columns for 'Value', 'Label', and 'Min/Max'. The first row has a value of 'false', a label of '8', and a min/max of '<=120min'. The second row has a value of 'true', a label of '8', and a min/max of '<=120min'.

Figure 123: Advanced settings in the Formula Builder

7. Name the formula by clicking on its title and typing the new name. Click **Save**.

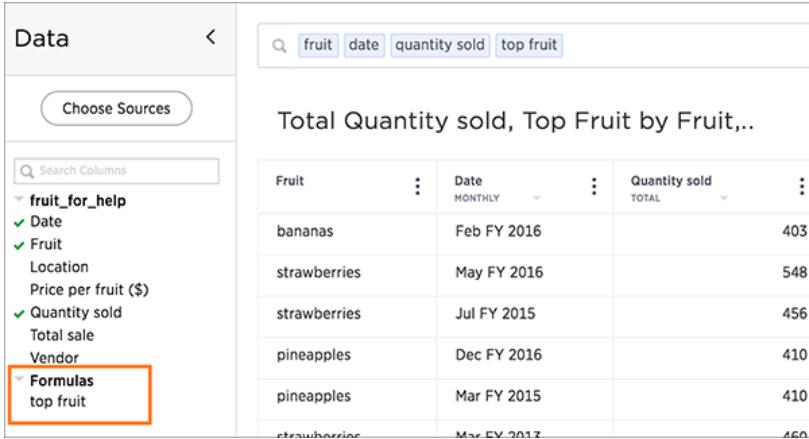
View or edit a formula in a search

You can always go back and view or edit a formula that has been added to a search. Do this by clicking the edit icon next to its name in the **Columns** listing.

Anyone who has edit privileges on an answer can also edit any formulas it contains. To view or edit an existing formula in an answer:

1. Navigate to the pinboard that contains the answer with the formula, and open it.
2. Scroll down to the bottom of the **Columns** listing. You will see a data source called **Formulas**.

3. Expand **Formulas**, and you'll see a list of all the formulas in this answer.



Fruit	Date	Quantity sold
bananas	Feb FY 2016	403
strawberries	May FY 2016	548
strawberries	Jul FY 2015	456
pineapples	Dec FY 2016	410
pineapples	Mar FY 2015	410
strawberries	Mar FY 2017	460

Figure 124: Formulas section expanded to show formulas in the answer

4. Click the edit icon next to the formula name.



Figure 125: The edit formula icon

5. Type your formula in the Formula Builder.

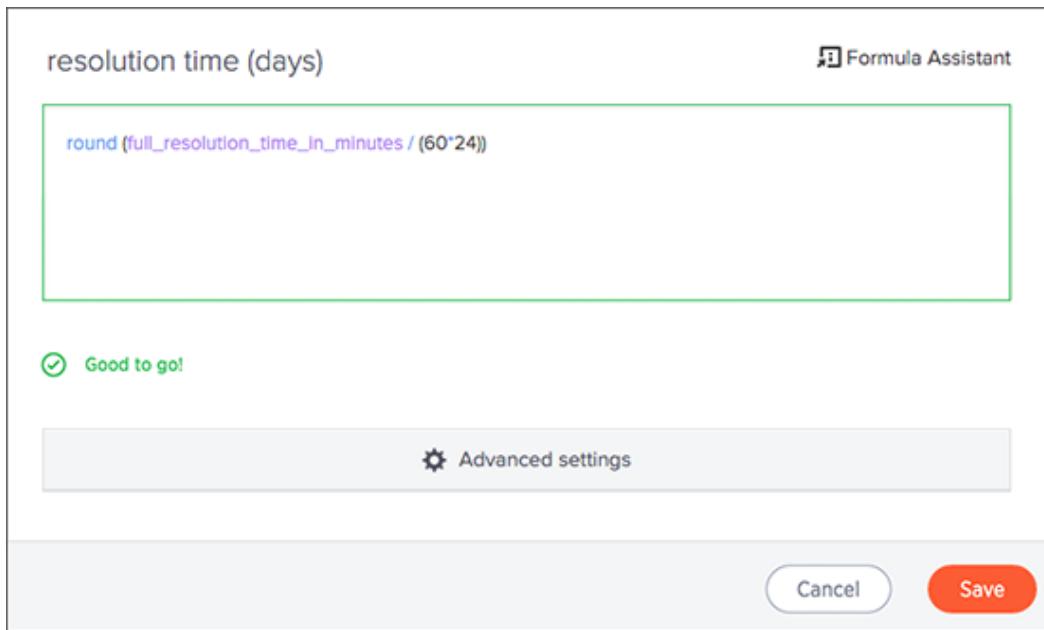


Figure 126: Use the Formula Builder

 **Note:** Formulas elements are color coded by type and can include the formula operators and functions (blue), the names of columns (purple), and/or constants (black).

6. Click **Save** to save the formula with your changes.

About formulas and aggregation

When working with formulas, it is useful to understand the difference between regular (or row-wise) formulas and aggregation formulas.

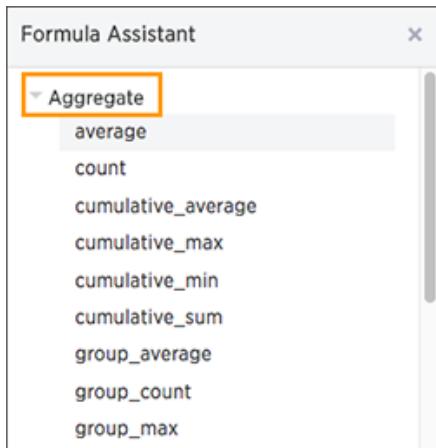
Regular and aggregation formulas

Formulas can be broken down into two types:

Table 4: Regular and aggregation formulas

Formula	Aggregation formula
Acts on individual rows and returns one result per row.	Combines rows together and returns a single result for a group of rows.
Examples: add, subtract, multiply, divide, contains, if...then...else	Examples: Average, cumulative sum, moving average, standard deviation

You can tell which formulas are aggregation formulas by looking at the **Formula Assistant**. Aggregation formulas have their own section.

**Figure 127: Aggregation formulas in the Formula Assistant**

Advanced aggregation formulas

Some more advanced aggregation formulas are widely used in business intelligence, since they provide better insight into data. Some of the more advanced aggregation formulas are:

- **Grouping formulas** apply a specific aggregate to a value, and group the results by an attribute in the data.
- **Cumulative formulas** measure from the start of your data to the current point. They're often applied on time-based data.
- **Moving formulas** measure within a window (usually time-based) that you define.

Data from any rows that are not included in the search result will not be incorporated, and you cannot create a filter on aggregated data.

Using division with aggregation in a search

Whenever your search result combines rows, your formula will get aggregated automatically. For example, if your search contains words like "region", "monthly", or "department", the results will be grouped (aggregated) by that category. The administrator can change the default aggregation that gets applied through a configuration, and you can also change it using the dropdown list in the column header of the search result.

For example, this search would typically return a sum of total sales by department:

```
sum sales department
```

This search would return an average of sales by month:

```
average sales monthly
```

When you're using division in your formula, and the search is aggregated like this, you may have to change the order of operations to get the result you expect. This is best understood by using a real world example.

Suppose you want to calculate the gross margin by department for a grocery store. The formula for gross margin is:

```
profit / sales
```

But if you use that as your formula, you won't get the expected calculation. Why? It's because the formula will be evaluated in this order: For each row, divide profit by sales and then total up all the results. As you can see, the results do not look like gross margin values, which should be between 0 and 1.



Gross margin by department	
Department Description :	Gross Margin without Sum () :
photography	2,012.54
bakery	1,890.42
cleaning supplies	1,493.94
frozen goods	2,453.36
meat	1,152.35
dairy	800.57
gifts	1,736.05

Figure 128: Aggregated search with a division formula

Instead, you'd need to use a formula that uses the order of operations you want:

```
sum (profit) / sum (sales)
```

Now the result is as expected, because the formula totals the profits for all rows, and then divides that by the total of sales for all rows, returning an average gross margin:

Gross margin by department		
Department Description :	Gross Margin without Sum () :	Gross Margin with Sum () :
photography	2,012.54	0.56
bakery	1,890.42	0.54
cleaning supplies	1,493.94	0.40
frozen goods	2,453.36	0.69
meat	1,152.35	0.31
dairy	800.57	0.21
gifts	1,736.05	0.55

Figure 129: Aggregated search with a corrected division formula

About cumulative formulas

Cumulative formulas are aggregate formulas that allow you to calculate the average, max, min, or sum of your data over time, optionally grouped by an attribute (like region or department).

Each of the cumulative formulas accepts a measure and one or more attributes. And each returns the aggregate of the measure accumulated by the attribute(s) in the order specified. Although we usually talk about cumulative formulas over time, you could use them over any other sequential data.

The cumulative formulas include:

Table 5: Cumulative formulas

Function	Description	Examples
cumulative_average	Takes a measure and one or more attributes. Returns the average of the measure, accumulated by the attribute(s) in the order specified.	<ul style="list-style-type: none"> • <code>cumulative_average (revenue, order date, state)</code>
cumulative_max	Takes a measure and one or more attributes. Returns the maximum of the measure, accumulated by the attribute(s) in the order specified.	<ul style="list-style-type: none"> • <code>cumulative_max (revenue, state)</code>
cumulative_min	Takes a measure and one or more attributes. Returns the minimum of the measure, accumulated by the attribute(s) in the order specified.	<ul style="list-style-type: none"> • <code>cumulative_min (revenue, campaign)</code>
cumulative_sum	Takes a measure and one or more attributes. Returns the sum of the measure, accumulated by the attribute(s) in the order specified.	<ul style="list-style-type: none"> • <code>cumulative_sum (revenue, order date)</code>

Calculate the cumulative sum

You can use the cumulative function in a search to measure from the start of your data to the current point.

This example will demonstrate using the cumulative_sum formula, also known as a running total. To use the cumulative function in a search:

1. Start a new search.

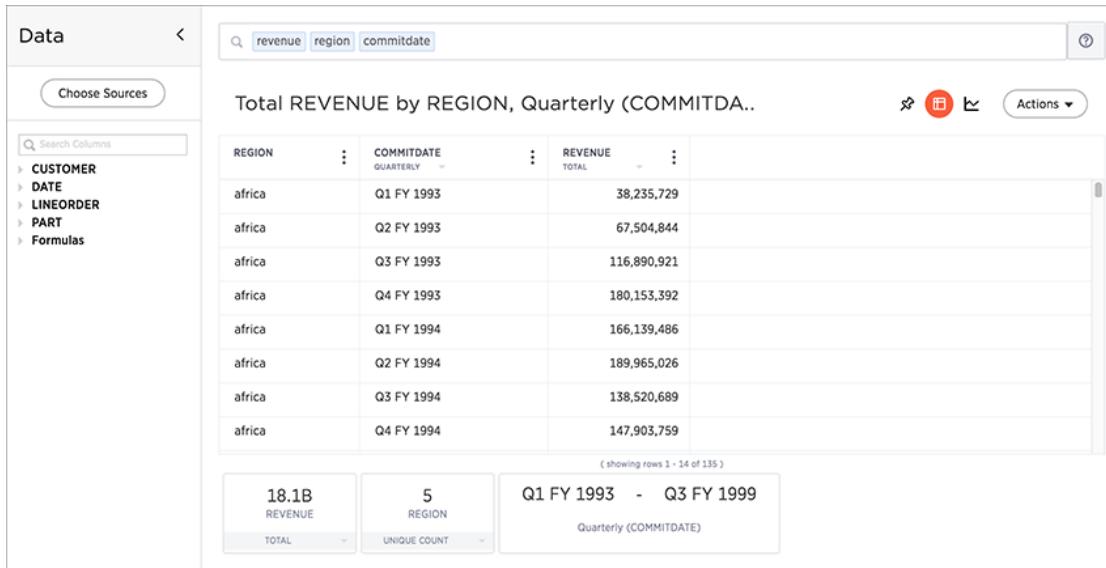


Figure 130: Aggregation Answer example

2. In the upper right hand side of the table, click **Actions** and select **Add formula**.

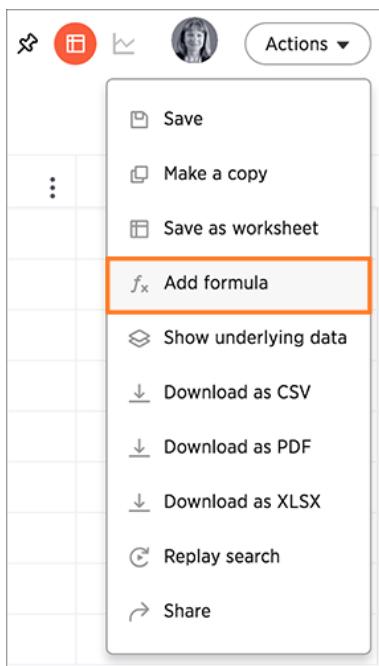


Figure 131: Create a new formula in an answer

3. Enter the cumulative_sum formula, providing a measure and one or more attributes. The example will return the sum of revenue, accumulated by the commit date.

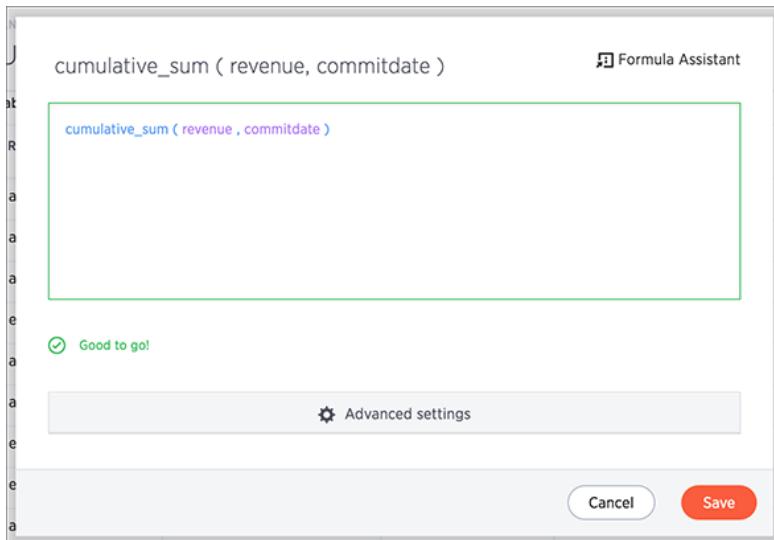
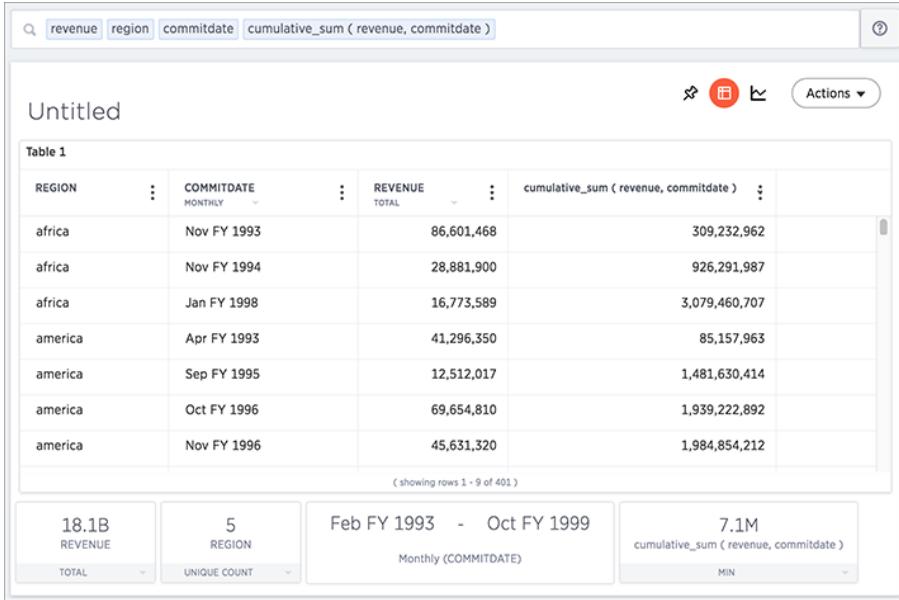


Figure 132: Cumulative Sum Formula

4. Name the formula by clicking on its title and typing the new name. Click **Save**.

5. The formula will appear in the search bar and in the table as its own column.



The screenshot shows a ThoughtSpot dashboard with a search bar at the top containing the query: `revenue region commitdate cumulative_sum (revenue, commitdate)`. Below the search bar is a table titled "Untitled" with the header "Table 1". The table has four columns: REGION, COMMITDATE, REVENUE TOTAL, and cumulative_sum (revenue, commitdate). The data shows revenue for various regions and dates, with the cumulative sum column showing the total revenue up to each date. At the bottom of the table, a message says "(showing rows 1 - 9 of 401)". Below the table are four summary cards:

- 18.1B** REVENUE TOTAL
- 5** REGION UNIQUE COUNT
- Feb FY 1993 - Oct FY 1999** Monthly (COMMITDATE)
- 7.1M** cumulative_sum (revenue, commitdate) MIN

Figure 133: Cumulative Sum Table

A headline box displaying the cumulative sum within the entire table will appear at the bottom. You can click on it to toggle between different aggregations.

About grouping formulas

What if you want to aggregate a value by a specific attribute (for example, show revenue by product)? This is known as a grouped aggregation, but some people call it a pinned measure or level-based measure.

You can do this for any aggregation using the grouping formulas. Each of the grouping formulas accepts a measure and one or more attributes. And each returns the aggregate of the measure grouped by the attribute(s).

The grouping formulas include:

Table 6: Grouping formulas

Function	Description	Examples
group_average	Takes a measure and one or more attributes. Returns the average of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • group_average (revenue, customer_region)
group_count	Takes a measure and one or more attributes. Returns the count of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • group_count (revenue, customer_region)
group_max	Takes a measure and one or more attributes. Returns the maximum of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • group_max (revenue, customer_region)
group_min	Takes a measure and one or more attributes. Returns the minimum of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • group_min (revenue, customer_region)
group_stddev	Takes a measure and one or more attributes. Returns the standard deviation of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • group_stddev (revenue, customer_region)
group_sum	Takes a measure and one or more attributes. Returns the sum of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • group_sum (revenue, customer_region)
group_unique_count	Takes a column name and one or more attributes. Returns the number of unique values in a column, grouped by the attribute(s).	<ul style="list-style-type: none"> • group_unique_count (product, supplier)
group_variance	Takes a measure and one or more attributes. Returns the variance of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • group_variance (revenue, customer_region)

About moving formulas

Moving formulas are aggregate formulas that allow you to calculate the average, max, min, or sum of your data over a predetermined interval, or window, with an adjustable range.

Each of the moving formulas accepts a measure, two integers to define the window, and one or more attributes. And each returns the aggregate of the measure over the given window. Moving formulas can be used to smooth out any irregularities in your data to easily recognize trends. The larger the interval you set, the more the peaks and valleys are smoothed out. While the smaller the interval, the closer the moving averages are to the actual data points.

The moving formulas include:

Table 7: Moving formulas

Function	Description	Examples
moving_average	Takes a measure, two integers to define the window to aggregate over, and one or more attributes. Returns the average of the measure over the given window. The attributes are the ordering columns used to compute the moving average. The window is (current - Num1...Current + Num2) with both end points being included in the window. For example, "1,1" will have a window size of 3. To see periods in the past, use a negative number for the second endpoint, as in the example "moving_average(sales, 1, -1, date)".	<ul style="list-style-type: none"> • <code>moving_average (revenue, 2, 1, customer region)</code>
moving_max	Takes a measure, two integers to define the window to aggregate over, and one or more attributes. Returns the maximum of the measure over the given window.	<ul style="list-style-type: none"> • <code>moving_max (complaints, 1, 2, store name)</code>

Function	Description	Examples
	<p>The attributes are the ordering columns used to compute the moving maximum. The window is (current - Num1...Current + Num2) with both end points being included in the window. For example, "1,1" will have a window size of 3. To see periods in the past, use a negative number for the second endpoint, as in the example "moving_max(sales, 1, -1, date)".</p>	
moving_min	<p>Takes a measure, two integers to define the window to aggregate over, and one or more attributes. Returns the minimum of the measure over the given window. The attributes are the ordering columns used to compute the moving minimum. The window is (current - Num1...Current + Num2) with both end points being included in the window. For example, "1,1" will have a window size of 3. To see periods in the past, use a negative number for the second endpoint, as in the example "moving_min(sales, 1, -1, date)".</p>	<ul style="list-style-type: none"> <code>moving_min (defects, 3, 1, product)</code>
moving_sum	<p>Takes a measure, two integers to define the window to aggregate over, and one or more attributes. Returns the sum of the measure over the given window. The attributes are the ordering columns used to compute the moving sum. The window is (current - Num1...Current + Num2) with both end points being included in the window. For example, "1,1" will have a window size of 3. To see periods in the past, use a negative number for</p>	<ul style="list-style-type: none"> <code>moving_sum (revenue, 1, 1, order date)</code>

Function	Description	Examples
	the second endpoint, as in the example "moving_sum(sales, 1, -1, date)".	

Calculate the moving average

You can use the moving formulas to compute a measure within a moving window of your data, usually defined by time.

This example will demonstrate using the moving_average formula. To use the moving function in a search:

1. Start a new search.

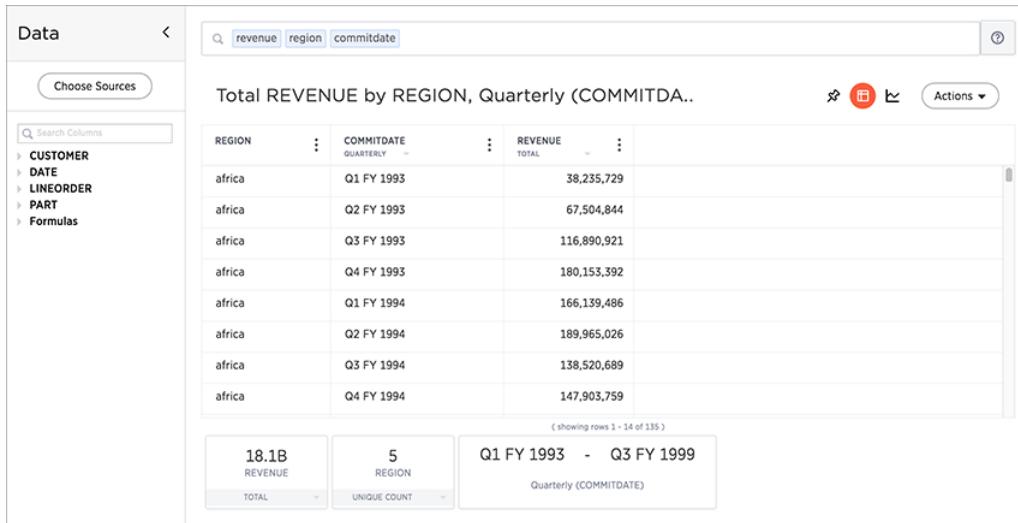


Figure 134: Aggregation Answer example

2. In the upper right hand side of the table, click **Actions** and select **Add formula**.

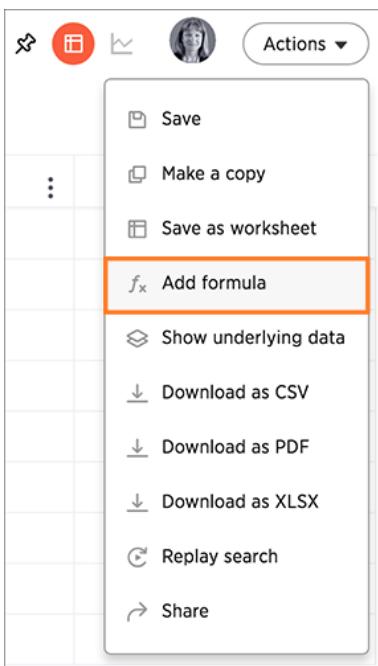


Figure 135: Create a new formula in an answer

3. Enter the moving_average formula, providing a measure, a window, and one or more attributes. The example will return the average of revenue, within the commit date window size of 3. The window includes the previous, current, and next rows.

The attributes are the ordering columns used to compute the moving average. The window is (current - Num1...Current + Num2) with both end points being included in the window. For example, "1,1" will have a window size of 3. To see periods in the past, use a negative number for the second endpoint, as in the example "moving_average(sales, 1, -1, date)".

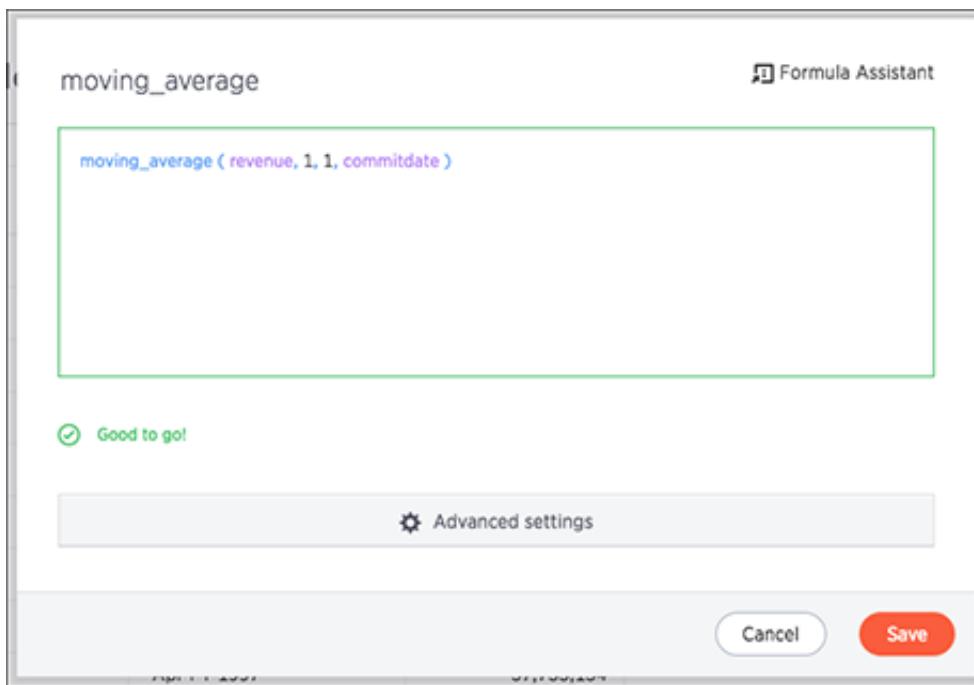
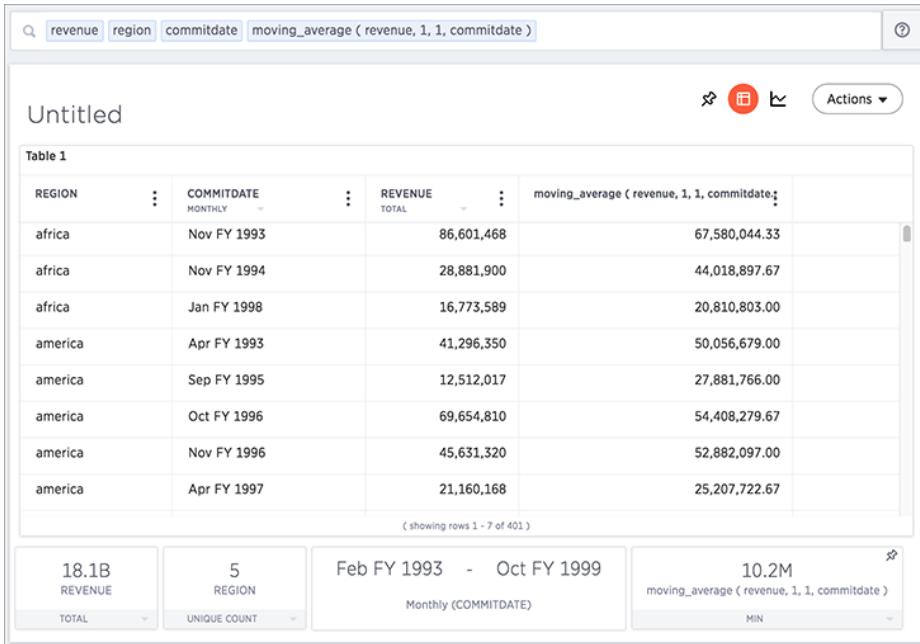


Figure 136: Moving Average Formula

4. Name the formula by clicking on its title and typing the new name. Click **Save**.
5. The formula will appear in the search bar and in the table as its own column.



The screenshot shows a ThoughtSpot search interface with the following details:

- Search Bar:** Contains terms: revenue, region, commitdate, moving_average (revenue, 1, 1, commitdate).
- Table Header:** Untitled, Table 1.
- Table Data:**

REGION	COMMITDATE	REVENUE	moving_average (revenue, 1, 1, commitdate)
africa	Nov FY 1993	86,601,468	67,580,044.33
africa	Nov FY 1994	28,881,900	44,018,897.67
africa	Jan FY 1998	16,773,589	20,810,803.00
america	Apr FY 1993	41,296,350	50,056,679.00
america	Sep FY 1995	12,512,017	27,881,766.00
america	Oct FY 1996	69,654,810	54,408,279.67
america	Nov FY 1996	45,631,320	52,882,097.00
america	Apr FY 1997	21,160,168	25,207,722.67
- Bottom Metrics:**
 - 18.1B REVENUE TOTAL
 - 5 REGION UNIQUE COUNT
 - Feb FY 1993 - Oct FY 1999 Monthly (COMMITDATE)
 - 10.2M moving_average (revenue, 1, 1, commitdate) MIN

Figure 137: Moving Average Table

A box displaying the moving average within the entire table will appear at the bottom. You can click on it to toggle between aggregation types.

About conversion formulas

Some formulas require the input to be of a particular data type. If you find that you want to pass a value to the function, but it is of the wrong data type, you can convert it using a conversion formula.

The following are the default conversion formulas:

- to_bool
- to_integer
- to_string
- to_float

Information on the usage for these formulas is in the [Formula reference](#).

Booleans are interpreted in the following ways:

Table 8: How Boolean Values are Interpreted when Changing Data Type

Data Type	Description
to_bool(integer)	Boolean true maps to integer 1 and boolean false to integer 0.
to_bool(string)	Boolean true maps to string "true" and boolean false to string "false".
to_double(boolean)	0 maps to boolean false, everything else to boolean true.
to_integer(boolean)	0 maps to boolean false, everything else to boolean true.
to_string(boolean)	The string "true" maps to boolean true, everything else to boolean false.

About pivot tables

Pivot tables in ThoughtSpot use the well known drag-and-drop interface. Creating a pivot table enables exploring alternate visualization of data in a wide table. The basic idea is that some data is easier to consume when laid out horizontally, while others, vertically.

Previously, ThoughtSpot used a pivot keyword to select which fields can be columns and which can be rows, thus moving columns to be rows and vice versa. Now, the pivot table is a chart type.

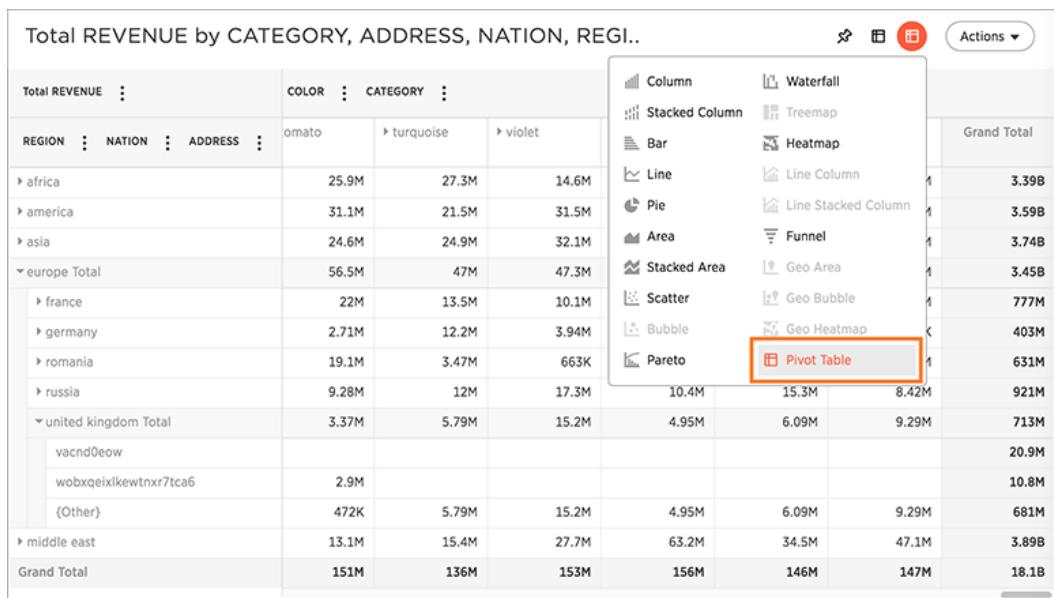


Figure 138: Pivot table chart type

Choose **Pivot Table** under Select Chart Type to view your search as a pivot table. Add rows, measures, and columns to the search bar and restructure your table by moving these values under **Configure Chart** or by dragging and dropping them.

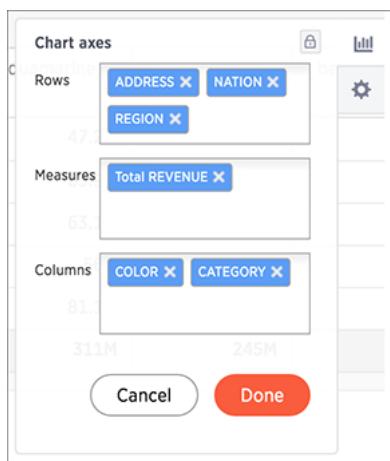


Figure 139: Chart axes: rows, measures, columns

Some additional details about pivot tables include:

- Pivot tables show the grand totals for columns and rows.
- You can toggle on the Heatmap mode found under Configuration Options to add color coordination to your data.

Total REVENUE ::			COLOR ::	CATEGORY ::				
REGION ::	NATION ::	ADDRESS ::	violet	wheat	white	yellow		
► africa			3M	14.6M	18M	36.1M		
► america			5M	31.5M	28.9M	15.8M		
► asia			9M	32.1M	4.84M	21.5M		
▼ europe Total			47M	47.3M	41.6M	37.6M	38.4M	3.45B
► france			5M	10.1M	11.6M		16.3M	777M
► germany			2M	3.94M	9.35M	1.73M	301K	403M
► romania			7M	663K	5.3M	14.6M	4.09M	631M
► russia			12M	17.3M	10.4M	15.3M	8.42M	921M
▼ united kingdom Total			79M	15.2M	4.95M	6.09M	9.29M	713M
vacnd0eow								20.9M
wobxqeixlkewtnxr7tca6								10.8M
{Other}			79M	15.2M	4.95M	6.09M	9.29M	681M
► middle east			4M	27.7M	63.2M	34.5M	47.1M	3.89B
Grand Total			36M	153M	156M	146M	147M	18.1B

Configuration Options 

Show Data Labels **39B**

Heatmap mode **59B**

Figure 140: Heatmap mode enabled

- Click a column or row to expand it. Additionally, you can expand or collapse all by right clicking the arrow on the top left of a cell.



Figure 141: Expand or collapse all option

- When you pin a pivot table to a pinboard, it will retain your expansion settings.

The pivot table chart type has these limitations:

- Pivot table is not available if the dataset contains more than 100,000 rows.
- Columns with cardinality beyond 100 are grouped into {Other}.
- Show underlying data menu is unavailable.
- Conditional formatting is not functional.

Chapter 4: About pinboards

Topics:

- [Create a pinboard](#)
- [Add an answer to a pinboard](#)
- [Edit the layout of a pinboard](#)
- [About pinboard filters](#)
- [About scheduled pinboards](#)
- [Other pinboard actions](#)

Pinboards act like live dashboards, and are collections of your related charts, tables, and headline.

You can pin charts and tables to any pinboard which you created, and those that have been shared with you with the **Edit** privilege. When you create a pinboard, you can share it with other people with either the **View** or **Edit** privilege. Pinboards are interactive, allowing you to perform actions like filtering, excluding values, and drilldown on the visualizations.

Create a pinboard

Create a new pinboard to group and manage related search results.

You can also create a new pinboard when you [add an answer to a pinboard](#).

To create a pinboard:

1. Click on **Pinboards**, on the top navigation bar.



Figure 142: Pinboards

2. Click **+ New Pinboard** on the pinboards list page.

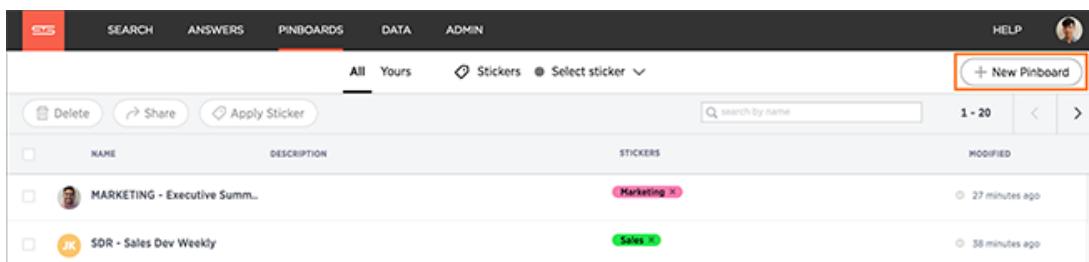


Figure 143: New Pinboard button

3. In the New Pinboard dialog box, give your pinboard a name and description.

Then click **Create**.

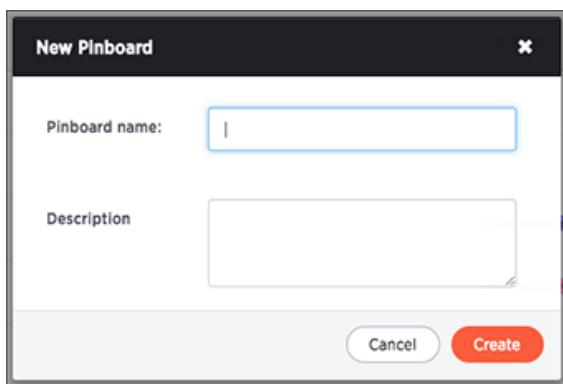


Figure 144: New Pinboard menu

Add an answer to a pinboard

Instead of saving an answer you can add it to a pinboard by pinning it.

To add an answer to a pinboard:

1. While viewing your answer of interest, click the **Add to pinboard** icon on the top right of the answer.

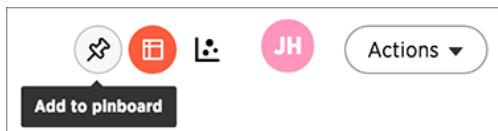


Figure 145: Pin an answer to a pinboard icon

2. In the Copy to pinboard(s) dialog box, click the **+** icons next to the pinboards you would like to add your answer to.

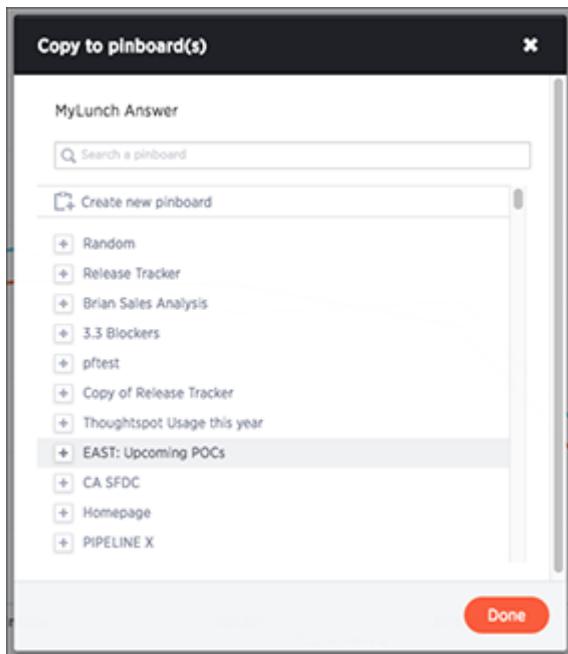


Figure 146: Add filters menu

- i** **Tip:** You can also select **Create new pinboard** at the top of the list to create a new pinboard, then add your answer to it.

Edit the layout of a pinboard

Editing the layout of a pinboard lets you snap visualizations into place, choose between set visualization sizes, and reset your layout.

Visualizations within a pinboard are easy to move around and snap into place on a relative flow layout. Your pinboard layout is also responsive to your browser resolution. This helps keep the layout of your pinboard neat and organized.

In addition, the size picker at the bottom of a visualization dropdown lets you toggle between predetermined sizes for each visualization. Charts and graphs can be toggled between a small, medium, and full width size, while headlines can be only one size (small). One row of the pinboard can hold a predetermined number of visualizations of each size.

1. Click on **Pinboards**, on the top navigation bar.



Figure 147: Pinboards

2. On the pinboard list page, click the pinboard you would like to edit.
3. Resize your visualizations by choosing between the predetermined sizes under the visualization dropdown menu.

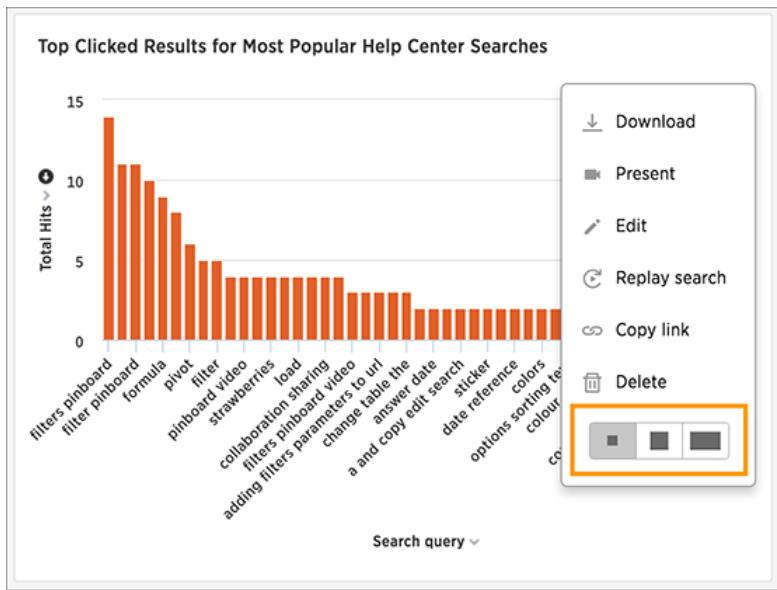


Figure 148: Resize your visualization

4. Drag and drop your visualizations on the layout grid to reorder your pinboard.
5. If you are unhappy with your layout or you would like ThoughtSpot to configure your layout for you, go ahead and [reset your layout](#).
6. Save your pinboard by clicking **Actions** and **Save**.

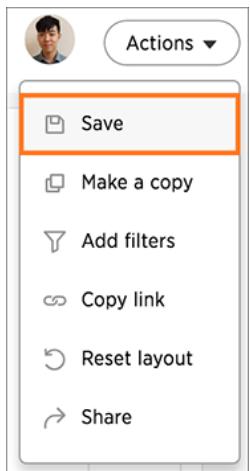


Figure 149: Save your pinboard

About pinboard filters

Filters, including bulk filters, can be applied to pinboards just as with tables and charts. These kinds of filters apply to an entire pinboard, making it easy to see only the data that you are interested in across the tables and charts within a pinboard.

Pinboard filters can be very useful when you want to apply the same filters to more than one related visualization. You can narrow the focus of your pinboard for specific purposes or audiences.

When you apply a filter, the pinboard is not automatically saved with your filter applied. This is to encourage ad hoc filtering. Therefore, people with read-only access can create pinboard filters. You must have edit access to the pinboard, and view access (or higher) to the underlying data source in order save a pinboard filter.

Note that pinboard filters only apply to the tables and charts that are based on worksheets. If a pinboard also includes tables and charts that were created from underlying tables or on user uploaded data, the filters don't apply to them.

Create a pinboard filter

You can create a filter in the pinboard view for any pinboard. This allows you to easily manipulate the visualizations and view the modified presentation in one place.

Here is an example that shows you how to add a single filter to a pinboard. To create a pinboard filter:

1. Click the **Actions** button, and click **Add filters**.

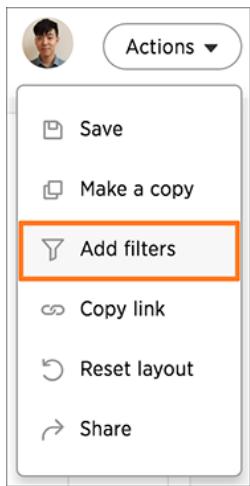


Figure 150: Add filters under Actions

2. In the populated columns menu, click the **Add filter** icon next to the columns you would like to use as filters.

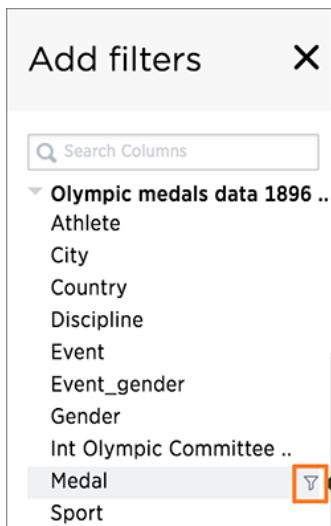


Figure 151: Add filters menu

3. Choose the values you are interested in by typing them in, selecting the appropriate checkboxes, or using **Add values in bulk**. Then click **Done**.



Figure 152: Select Filter Values

4. Your applied filter will sit at the top of the pinboard, where you can either edit or delete it.

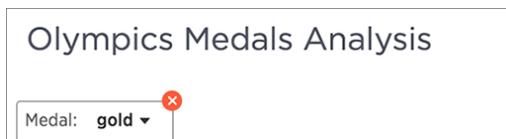


Figure 153: Applied Pinboard Filter

When you apply a filter, the pinboard is not automatically saved with your filter applied to every object in the pinboard that was created from a worksheet. Pinboard filters do not apply to tables and charts built directly on top of base tables.

About scheduled pinboards

You can get pinboards emailed to you on a regular basis and do analysis offline.

This introduces an additional format for you to consume and share pinboards with others, including those who don't have a ThoughtSpot account.

Scheduled pinboards should help with preparing for recurrent meetings, when reviewing the same pinboard is necessary. They should also be useful when you have metrics you want to monitor at a consistent interval, like daily or monthly sales targets.

Contact ThoughtSpot Support if scheduled pinboards is not enabled on your cluster.

Scheduled pinboard creators

Administrators and users with can schedule pinboard privilege can schedule and manage pinboard jobs. These scheduled pinboard creators must have at least edit-only and view-only rights to the pinboard they want to share.

 **Caution:** It is recommended that admins carefully choose who to give can schedule pinboard privilege to, since there is a possible security hole where a user with limited access can get a pinboard email with all access data.

Row level security

The scheduled pinboards respect row level security rules. This means if the recipients are users in ThoughtSpot, then they can only see data based on their own access to the pinboard. If the user does not have at least view-only access to the pinboard, then they will not see anything in the email. However, if the recipients are from outside of the cluster, then they will have access to the dataset of the pinboard based on the sender's permissions.

Scheduled pinboard formats

The pinboard visualizations are attached to the scheduled email as CSV or PDF files. Saved configurations such as pinboard filters are applied to the attachments. Refer to the table to see how the pinboard data is represented in each file format.

Table 9: CSV - PDF report comparison

CSV	PDF
The CSV file gets data only for table visualizations.	The PDF file gets data for all visualizations.
The email has n CSV attachments, where there are n table visualizations in the pinboard.	The email has only one attachment file, which includes every visualization on its own page.
Table visualizations have all data rows that they're supposed to have.	Table visualizations include only the first 100 rows.
In the case of a corrupted pinboard: no email is sent. An error message indicating failure to export data is visible on the Admin Jobs Management page.	In the case of a corrupted pinboard: the PDF attachment has empty/error screenshots.
In the case of a corrupted visualization: an email with the visualizations whose data can be exported is sent. An error message indicating visualization export error is visible on the Jobs Management page.	In the case of a corrupted visualization: the PDF attachment has empty/error slots for the corrupted visualizations.

The size of each email is limited to 25 MB, which matches most email services size limitations.

And the total number of recipients for a scheduled pinboard job cannot exceed the default of 1000.

Schedule a pinboard job

You can schedule a pinboard job for any pinboard by using the Add a schedule prompt page.

You can add multiple schedules with different configurations for a single pinboard. However, each job is limited to one pinboard schedule. In order to add a schedule, you must have administrator or can schedule pinboard privilege, and at least edit-only and view-only access to the pinboard.

To schedule a pinboard:

1. Log in to ThoughtSpot from a browser.
2. Click on **Pinboards**, on the top navigation bar.



Figure 154: Pinboards

3. Select the pinboard you would like to create a schedule for.
4. Click **Actions** and select **Manage schedules** to view all of the schedules set for the pinboard.

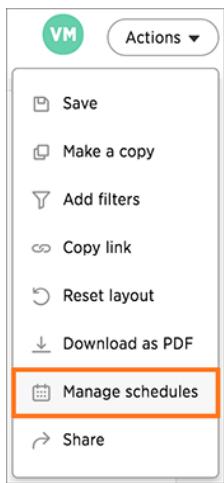
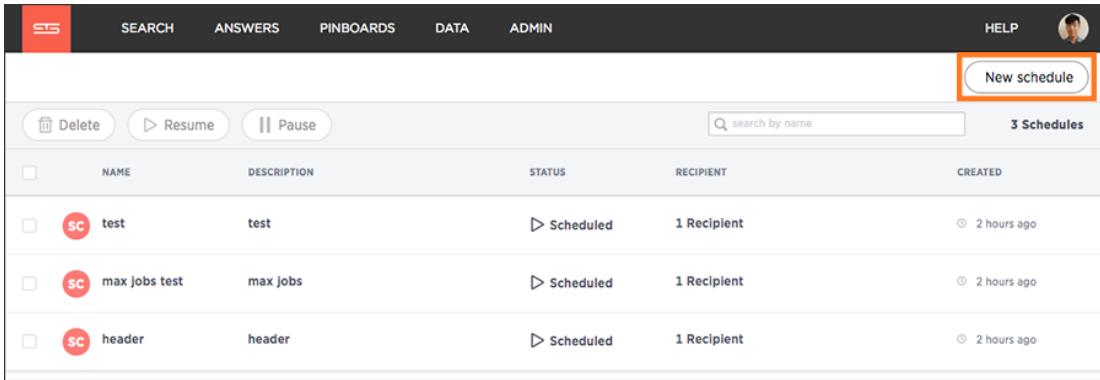


Figure 155: View pinboard schedules

5. Click **New schedule** to add a new pinboard schedule.

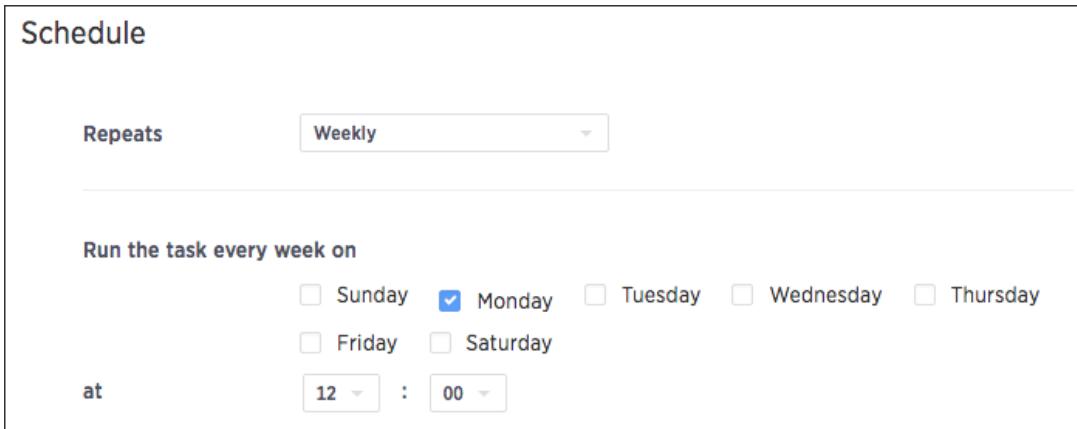


The screenshot shows the ThoughtSpot web interface with the 'PINBOARDS' tab selected in the top navigation bar. Below the navigation, there are three buttons: 'Delete', 'Resume', and 'Pause'. To the right is a search bar with placeholder text 'search by name' and a count '3 Schedules'. The main area displays a table with three rows of scheduled pinboards:

	NAME	DESCRIPTION	STATUS	RECIPIENT	CREATED
<input type="checkbox"/>	SC test	test	> Scheduled	1 Recipient	2 hours ago
<input type="checkbox"/>	SC max jobs test	max jobs	> Scheduled	1 Recipient	2 hours ago
<input type="checkbox"/>	SC header	header	> Scheduled	1 Recipient	2 hours ago

Figure 156: Add a new pinboard schedule

6. On the Add a schedule prompt page, set the times you would like to schedule the pinboard for.



The screenshot shows the 'Schedule' configuration dialog. At the top, it says 'Schedule'. Below that, 'Repeats' is set to 'Weekly'. Under 'Run the task every week on', 'Monday' is checked. Below that, 'at' is followed by a time selector showing '12 : 00'.

Figure 157: Set the pinboard schedule

Scheduled pinboards can be set to repeat every n minutes, hourly, daily, weekly, or monthly. For some of these, you can also choose specific times of the day or days of the week. Make sure to note the Server time zone which is the timezone which will be used.

7. Enter the name and description of your schedule. Then select whether you'd like to send the pinboard as CSV or PDF attachments.

Server time zone	America/Los_Angeles
Name	Weekly Pinboard Report
Description	Weekly pinboard report schedule for sales.
Type	<input checked="" type="radio"/> CSV <input type="radio"/> PDF
CSV files will be sent only for the tables in this pinboard.	

Figure 158: Set the pinboard type

CSV files provide all data for tables, with one attachment per table. Use CSV files to perform further analysis offline. PDF files show all visualizations in the pinboard. Each chart takes up a whole page in the file, while only the first 100 rows of a table are included. Use PDF files to skim the data.

8. Add recipients by entering ThoughtSpot users or groups. Suggestions are shown as you type. Click **Add** to add the selected users or groups. You can also add recipients that are not ThoughtSpot users by entering their email addresses. To do so, you must first set the whitelist domains. Contact ThoughtSpot Support to set your whitelist domains.

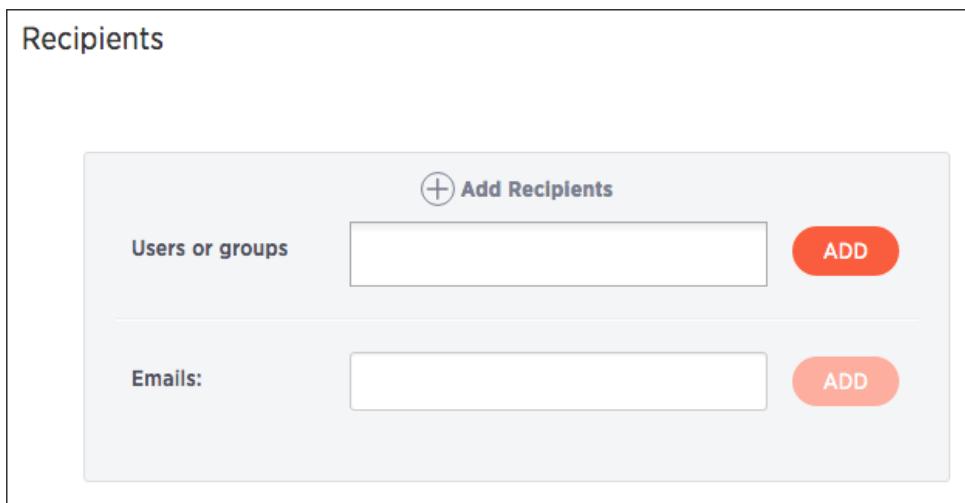


Figure 159: Set the pinboard recipients

You are limited to 1000 recipients per job.

9. Click **Schedule** to save your scheduled pinboard.

Other pinboard actions

Other pinboard actions include actions you normally perform on your search as well as actions that you can only perform on a pinboard.

Most of these actions are found under the Actions button.

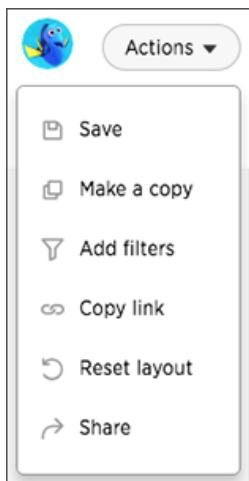


Figure 160: Pinboard actions button

Search actions within a pinboard

You can perform many of the same search actions on individual visualizations within a pinboard as you can within a search.

You can interact directly with a visualization of a pinboard to perform ad hoc searches or edit it. These search actions include the following:

- Editing a search - You can edit the original search and reconfigure the answer. In the dropdown of a visualization, click **Edit**.

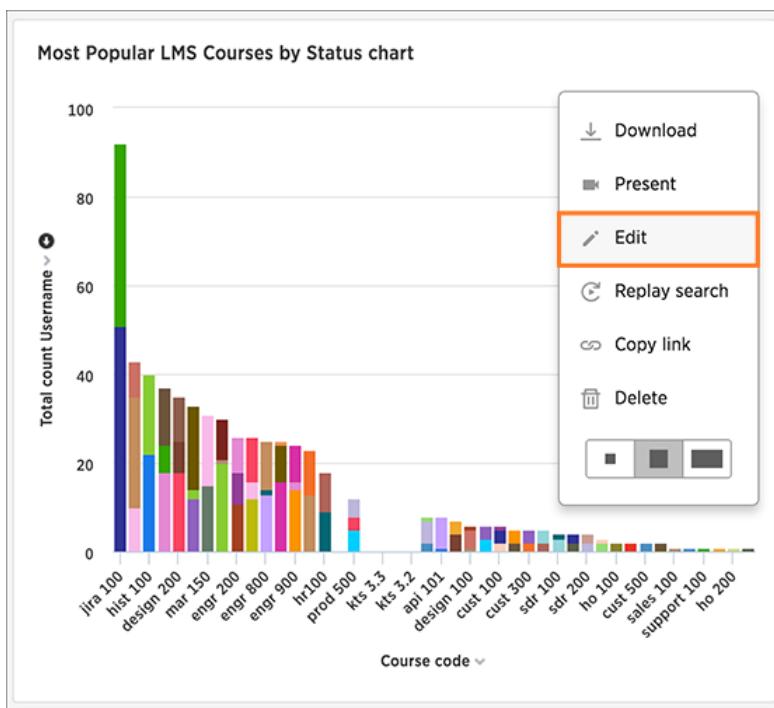


Figure 161: Edit a pinboard visualization

You will be taken to an edit mode, where you can view and change sources, search different columns, see the what am I looking at option, change the view, save the answer as a worksheet, add a formula, change the table, and change the chart.

- Sorting
- Changing the date bucketing

- Showing underlying data
- Drilling down
- Excluding and including row values
- Applying conditional formatting
- Filtering
- Downloading the answer
- Replaying the search

Copy a pinboard

You can make a copy of a pinboard if you would like to make edits without changing the original pinboard.

Making a copy of a pinboard allows you to make your own edits without overwriting the original. When saving a copy, you can type in a new name.

1. Click on **Pinboards**, on the top navigation bar.



Figure 162: Pinboards

2. On the pinboard list page, click the pinboard you would like to copy.
3. Click **Actions** and select **Make a copy**.

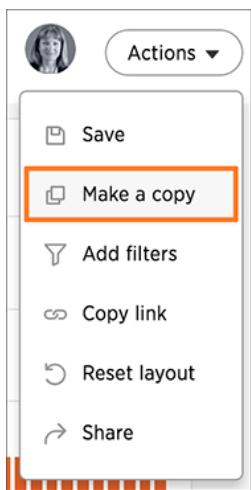


Figure 163: Make a copy of the pinboard

4. Give your pinboard a new name and description. Then click **Save**.

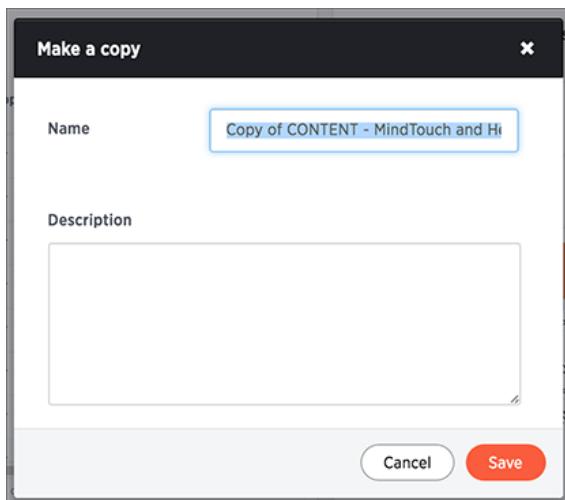


Figure 164: Name and save your pinboard copy

Copy the link for a pinboard or visualization

In pinboards, there is a copy link option that lets you copy the link to access the pinboard and visualizations directly.

You can copy and paste the copied link to include in a presentation or spreadsheet, or email or Slack it to other people in your company. Note that

when clicking the link, the person must be authenticated to ThoughtSpot to see the visualization (e.g. by logging in or LDAP).

You can also use this link for embedding the chart or table in another Web page, Web portal, or application when using the ThoughtSpot JavaScript API with Embedding or the REST API. For details, read the ThoughtSpot Application Integration Guide.

To copy the link for a pinboard:

1. Click on **Pinboards**, on the top navigation bar.



Figure 165: Pinboards

2. On the pinboard list page, click the pinboard you would like to get a link for.
3. Click **Actions** and select **Copy link**.

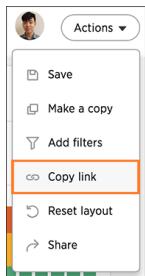


Figure 166: Copy pinboard link option

4. Copy the pinboard link. The highlighted portion is the pinboard ID.

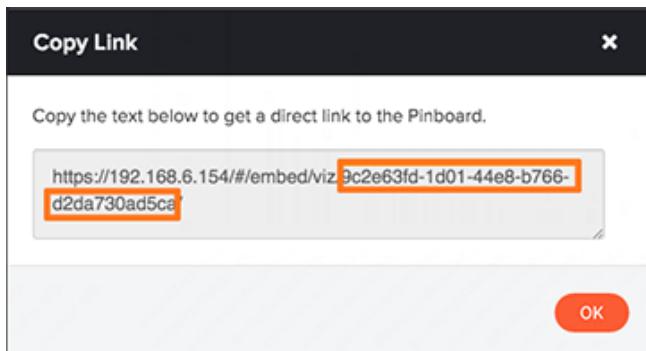


Figure 167: Copy pinboard link

5. To copy an individual visualization link, click **Copy link** under the dropdown menu of the visualization you would like to get a link for.

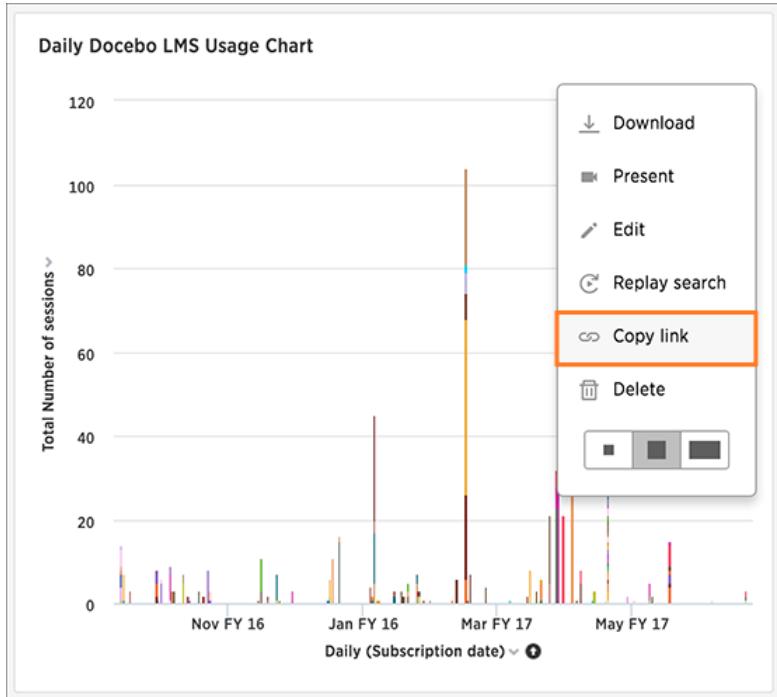


Figure 168: Copy visualization link option

6. Copy the visualization link. The highlighted portion is the visualization ID.

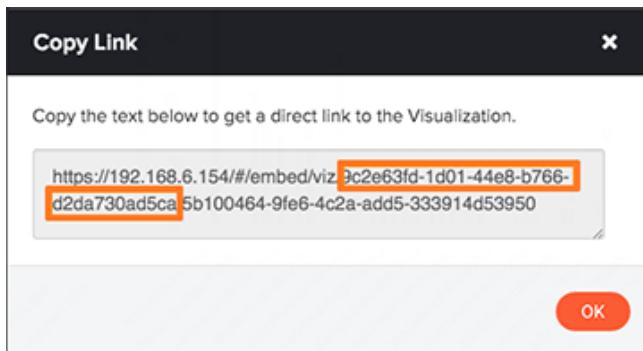


Figure 169: Copy visualization link

Reset a visualization

Resetting a visualization removes any changes you've made to its form.

After performing ad hoc actions or edits to a visualization of your pinboard, you can reset the visualization to its original form.

To reset a visualization:

1. On an altered visualization, click the reset icon.

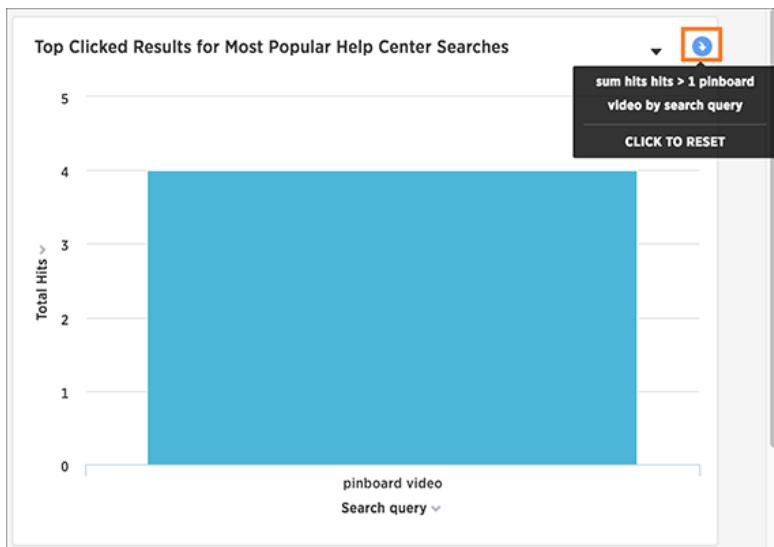


Figure 170: Save your pinboard

2. Save your pinboard by clicking **Actions** and **Save**.

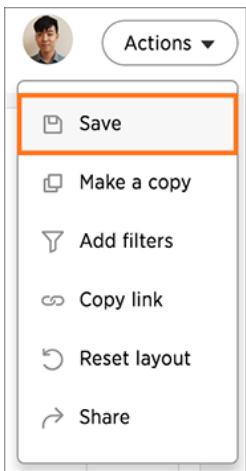


Figure 171: Save your pinboard

Reset the layout of a pinboard

Reset the layout of a pinboard to undo your changes or have ThoughtSpot create a layout for you.

You can reset the layout of your pinboard if you would like to undo your edits or have ThoughtSpot optimize your layout space for you. This action will keep the sizes of your visualizations, but not the order.

To reset the layout of a pinboard:

1. Click on **Pinboards**, on the top navigation bar.



Figure 172: Pinboards

2. On the pinboard list page, click the pinboard you would like to edit.
3. Click **Actions** and select **Reset layout**.

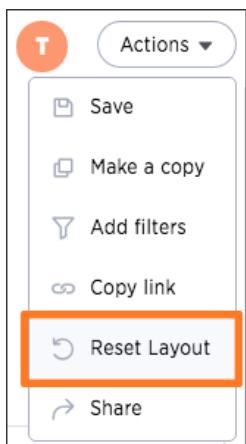


Figure 173: Reset your pinboard layout option

4. Save your pinboard by clicking **Actions** and **Save**.

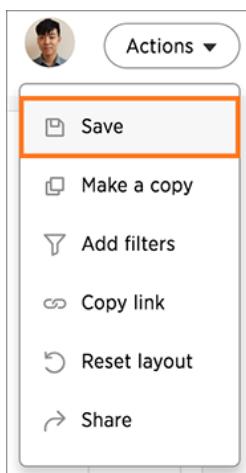


Figure 174: Save your pinboard

Download a pinboard

You can download a pinboard as a PDF file, without having to download each visualization separately.

Downloading a pinboard works just as it would when downloading an answer.

To download a pinboard:

Click **Actions**, and select **Download as PDF**.

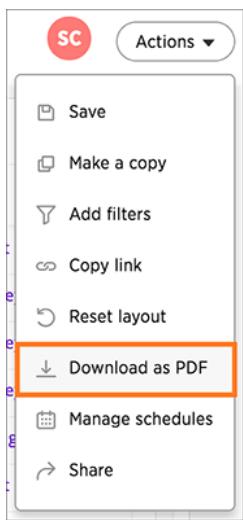


Figure 175: Download your pinboard

Start a slideshow

Displaying your pinboard as a slideshow is a good way to present its contents to others.

Presenting your pinboard displays your visualizations in order from left to right and top to bottom.

To start a slideshow:

1. Click on **Pinboards**, on the top navigation bar.



Figure 176: Pinboards

2. On the pinboard list page, click the pinboard you would like to present.
3. Click **Present** under the dropdown menu of the visualization you would like to start the slideshow with.

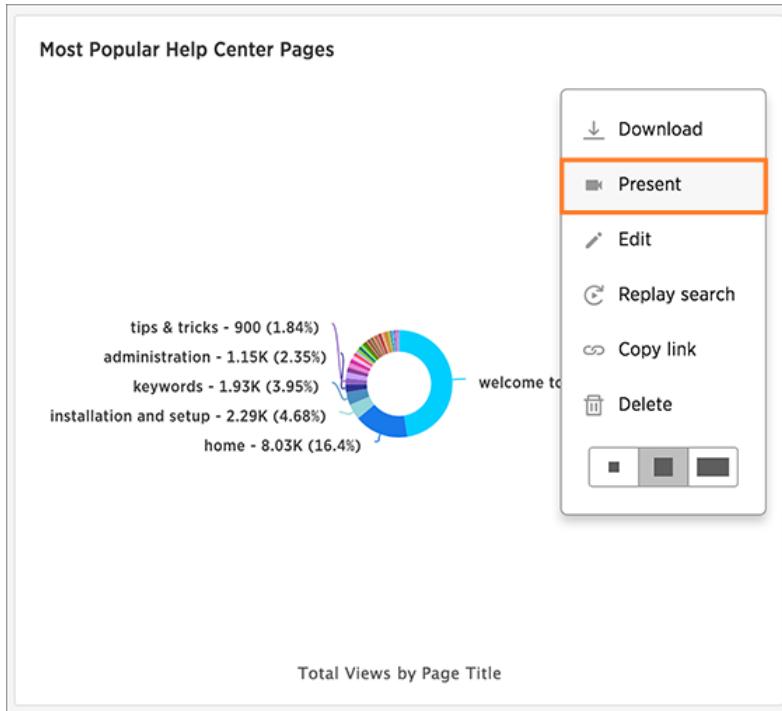


Figure 177: Present a visualization

4. Use the left and right arrow keys to navigate between your pinboard's visualizations.

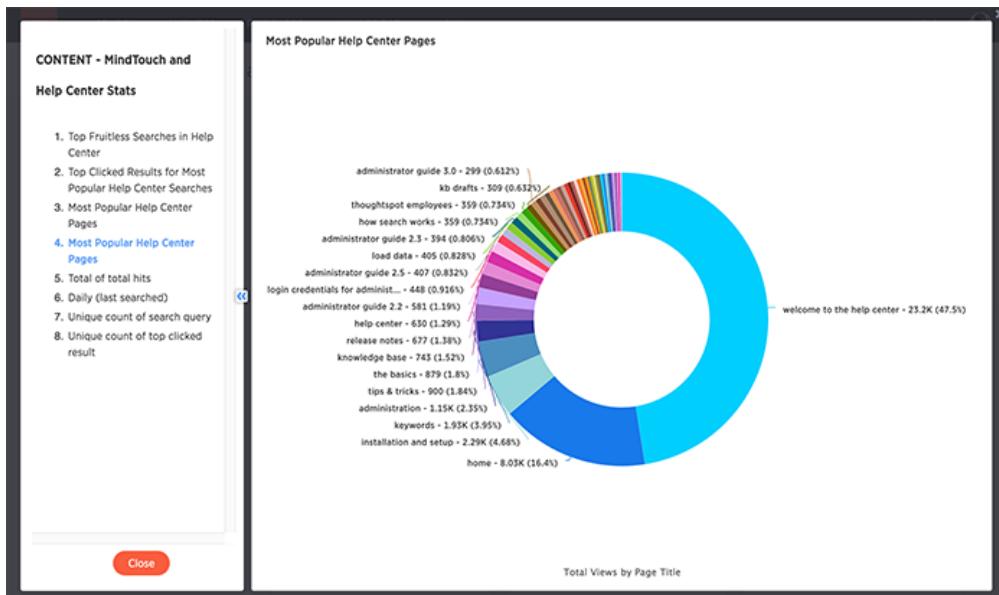


Figure 178: Pinboard slideshow view

Click the **x** at the top right of the screen or push the **Esc** key to exit the slideshow view.

Delete a visualization

You can remove a visualization from your pinboard.

To delete a visualization:

1. Click on **Pinboards**, on the top navigation bar.



Figure 179: Pinboards

2. On the pinboard list page, click the pinboard you would like to edit.
3. Click **Delete** under the dropdown menu of the visualization you would like to delete.

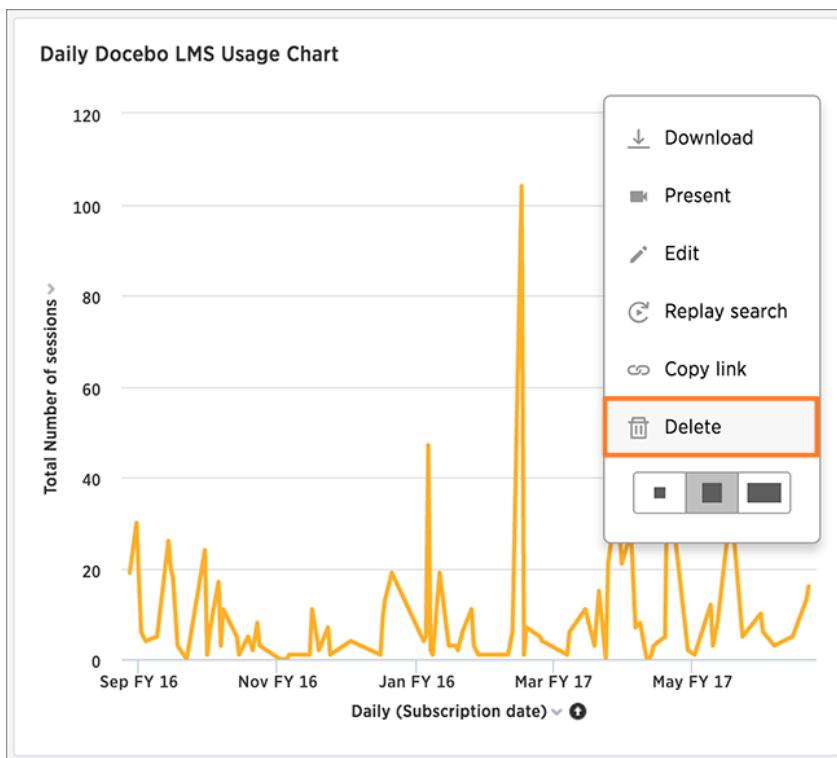


Figure 180: Delete a visualization

4. Save your pinboard by clicking **Actions** and **Save**.

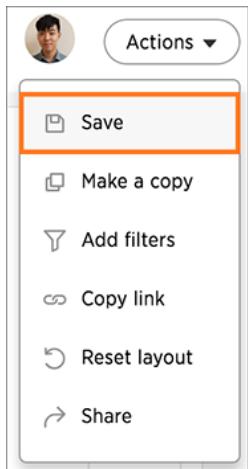


Figure 181: Save your pinboard

Chapter 5: Working with data

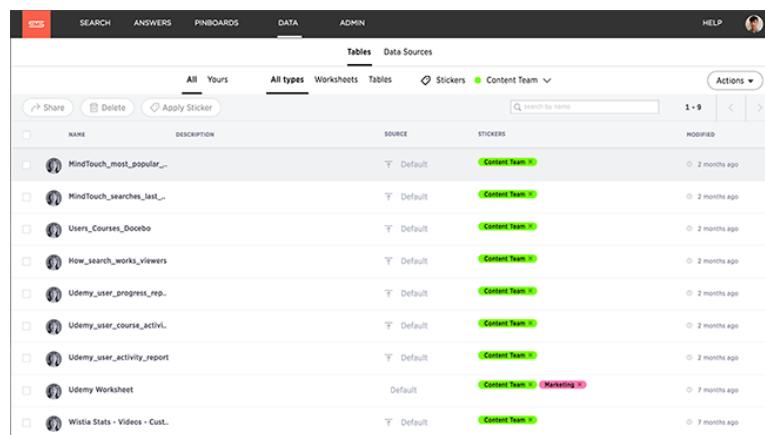
Topics:

- Generate CSV files with the data to be loaded
- Load data from a web browser
- Append data from a web browser
- About sharing

The **Data** tab takes you to a list page of all of the tables and data sources available to you.

Use the filters at the top of the page to find the data you are interested in. Clicking on the name of one of a table or data source shows you detailed information about it. You won't be able to change these settings or edit the table unless it was shared with you with the **Edit** privilege. To see how to edit a data source, refer to the ThoughtSpot Administrator Guide.

From the **Data** screen, you can also delete or apply stickers to tables and data sources in bulk by selecting them and clicking the appropriate action button.



The screenshot shows the ThoughtSpot Data page interface. At the top, there is a navigation bar with tabs for SEARCH, ANSWERS, PINBOARDS, DATA (which is currently selected), and ADMIN. Below the navigation bar, there are two main sections: 'Tables' and 'Data Sources'. Under 'Tables', there are filters for 'All', 'Yours', 'All types', 'Worksheets', 'Tables', and 'Stickers'. There is also a search bar and a 'Actions' dropdown. The main area displays a list of data sources with columns for NAME, DESCRIPTION, SOURCE, STICKERS, and MODIFIED. Each data source entry includes a small preview icon, the name, a description, the source type (e.g., Default), the applied stickers (e.g., Content Team), and the last modified date. The list includes entries like 'MindTouch_most_popular...', 'MindTouch_searches_last...', 'Users_Courses_Doebo', 'How_search_works_viewers', 'Udemy_user_progress_rep.', 'Udemy_user_course_activi...', 'Udemy_user_activity_report', 'Udemy Worksheet', and 'Wistia Stats - Videos - Cust...'. Most entries have the 'Content Team' sticker applied.

Figure 182: Data page

There are three types of data sources that you may see in the data list. They are tables, worksheets, and

user uploaded data. You will most likely only see worksheets and user uploaded sources. These are the most commonly used data sources for searching.

Name	Icon	Definition	Created By
Table	 Default	Raw tables loaded by an Administrator.	Administrators
Worksheet		Collection of related tables, optimized for searching. (Like a view).	Anyone
User Imported	 Imported	Table uploaded by a user through the Web browser.	Anyone

Figure 183: Types of Data Sources

Generate CSV files with the data to be loaded

The first step in loading data is to obtain or create one or more flat files that contain the data to be loaded into ThoughtSpot.

Your data should be in a CSV (comma separated values) or delimited flat file before you load it. A CSV file is a text file made up of data fields separated by a delimiter and optionally enclosed with an enclosing character. If your data contains multiple tables, you'll have a separate CSV for each table.

A CSV file contains:

- A delimiter that marks the separation between fields in the data. The delimiter is usually comma, but it can be any character.
- Fields optionally enclosed with double quotes.

Use these guidelines when creating the CSV file:

- Columns in the CSV file must be in the same order as defined in the target table.
- If the CSV contains column headers, they must match the column names in the database exactly.
- Often a | (pipe) or tab is used as the delimiter, because it may be less likely to occur within the data values.
- When a field contains a double quote, it must be escaped with the character specified in the escape character argument in tsload.
- When a field contains the delimiter, the field must be enclosed in double quotes.

For more information about CSV files and the rules for creating them, check http://en.wikipedia.org/wiki/Comma-separated_values.

1. If your source is another database:
 - a) Connect to the source database.

- b) Export each of the tables you wish to import into ThoughtSpot as a CSV file, specifying a delimiter of comma, | (pipe) or tab.
2. If your source is an Excel spreadsheet, save it as a CSV file.

Load data from a web browser

The simplest way to load data is to upload a CSV or Excel file from the ThoughtSpot Web interface. This method is recommended for small, one time data loads. Using this method, the data schema is created for you automatically.

Loading data from a Web browser requires your data to be in a CSV (comma separated values) or a native Excel file.

Any user who belongs to a group that has the privilege **Has administration privileges** or **Can upload user data** will be able to upload their own data from the browser.

CSV is a common format for transferring data between databases. Your ETL (extract, transform, load) process will typically generate CSV files. You can also create a CSV file from a Microsoft Excel spreadsheet by opening the spreadsheet in Excel, choosing **Save As** and selecting CSV.

ThoughtSpot supports a wide range of [date and timestamp formats](#) in the CSV file.

Loading data through the Web browser is recommended for smaller tables (under 50MB) with simple relationships between them. If you are loading a fact table that joins to dimension tables, you must load the fact table first, and then the dimension tables. The joining key must be a single column of unique values in the dimension table. NULL values in the fact table will not be able to be joined.

Blank values in user uploaded CSV files are interpreted as NULL values. These include the values (case insensitive):

- NULL

- \N
- NA
- N/A
- [space]

To load the CSV or Excel file into ThoughtSpot:

1. [Log in to ThoughtSpot from a browser.](#)
2. Click on **Data**, on the top navigation bar.



Figure 184: Data

3. Click the **Actions** button in the upper right corner, and select **Upload Data**.

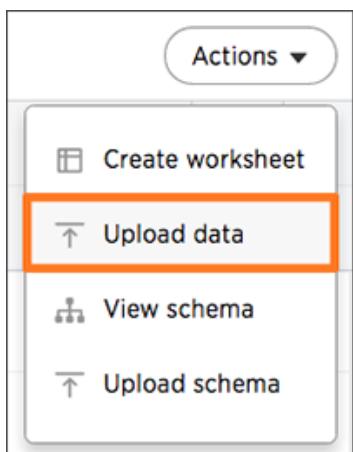


Figure 185: Upload data

4. Upload the CSV or Excel file by doing one of these options:
 - Click on **Browse your files** and select the file.
 - Drag and drop the file into the drop area.
5. Answer the question **Are the column names already defined in the file header?**
6. Answer the question **Are the fields separated by?** Click **Next**.

7. Click on the column header names to change them to more useful names, if you'd like. Click **Next**.
8. Review the automatically generated data types for each column, and make any changes you want. There are four data types: Text, Integer, Decimal, and Date.
9. Click **Import**.
10. Click **Link to Existing Data** if you want to link the data you uploaded to the data in another table or worksheet. Or click **Search** if you want to begin a new search.

Append data from a web browser

You can append data to your existing system tables through the ThoughtSpot application, even if the tables were initially loaded using Data Connect or tsload.

Loading data from a Web browser requires your data to be in a CSV (comma separated values) or a native Excel file. The file must have the same structure as the table it is being loaded into, including number and type of columns, in the same order as the target table.

Any user who belongs to a group that has the privilege **Has administration privileges** or **Can upload user data** will be able to upload their own data from the browser.

CSV is a common format for transferring data between databases. Your ETL (extract, transform, load) process will typically generate CSV files. You can also create a CSV file from a Microsoft Excel spreadsheet by opening the spreadsheet in Excel, choosing **Save As** and selecting CSV.

ThoughtSpot supports a wide range of [date and timestamp formats](#) in the CSV file.

Loading data through the Web browser is recommended for smaller tables (under 50MB) with simple relationships between them. If you are loading a fact

table that joins to dimension tables, you must load the fact table first, and then the dimension tables. The joining key must be a single column of unique values in the dimension table. NULL values in the fact table will not be able to be joined.

Blank values in user uploaded CSV files are interpreted as NULL values. These include the values (case insensitive):

- NULL
- \N
- NA
- N/A
- [space]

To append data into ThoughtSpot:

1. [Log in to ThoughtSpot from a browser.](#)
2. Click on **Data**, on the top navigation bar.



Figure 186: Data

3. Click the on the table you would like to append data to.
4. Click the **Load data** button.

A screenshot of the 'Load data' interface for the 'stackedexample' table. At the top, there are tabs for IMPORTED, Columns, Data, Relationships, Dependents, Row security, and a 'Load data' button which is highlighted with a red box. Below the tabs is a table with columns: COLUMN NAME, DESCRIPTION, DATA TYPE, COLUMN TYPE, ADDITIVE, AGGREGATION, and HIDDEN. The table contains three rows: Company (VARCHAR, ATTRIBUTE, NO, NONE, NO), Number of emplo.. (INT64, MEASURE, YES, SUM, NO), and Department (VARCHAR, ATTRIBUTE, NO, NONE, NO). There are also 'Click to edit' links for each row's description.

Figure 187: Load data

5. Upload the CSV or Excel file by doing one of these options:
 - Click on **Browse your files** and select the file.

- Drag and drop the file into the drop area.
6. Answer the question **Are the column names already defined in the file header?**
 7. Answer the question **Do you want to append to the existing data or overwrite it?**
 8. Answer the question **Are the fields separated by?** Click **Next**.
 9. Click on the column header names to change them to more useful names, if you'd like. Click **Next**.
 10. Review the automatically generated data types for each column, and make any changes you want. There are four data types: Text, Integer, Decimal, and Date.
 11. Click **Import**.
 12. Click **Link to Existing Data** if you want to link the data you uploaded to the data in another table or worksheet. Or click **Search** if you want to begin a new search.

About sharing

Whenever you are working in ThoughtSpot, you are in your own private environment until you share your work with others. This applies to searches, pinboards, and any data you upload.

Objects you can share

This is a list of objects a regular, non-administrator user can share. Administrators have more granular control over data security.

You can share with groups and with individual people. You can share several different types of objects:

Table 10: What you can share

Object type	Description	Default security model	Sharing procedure
Uploaded data	Data that was uploaded using a Web browser.	Only the user who uploaded the data (and any user with administrator privileges) has access to it by default. They can share a table (or selected columns) with other people or groups.	Share uploaded data
Pinboards	A pinboard of saved search results.	Anyone who can view a pinboard can share it.	Share a pinboard
Answers	The result of a single search.	Anyone who can view an answer can share it.	Share answers

Share a pinboard

You do not have to be an administrator or the owner to share saved pinboards.

Any user can share them, based on the access levels the user has.

Whenever you view a pinboard you have the option of sharing it with others.

What you are really sharing is a live link to the pinboard, when you click **Share with....** So whenever someone else views it, they will see the most recently saved version with the most recent data.

1. Configure the pinboard to look as you'll want it to appear when shared.
2. Click the **Share** icon.

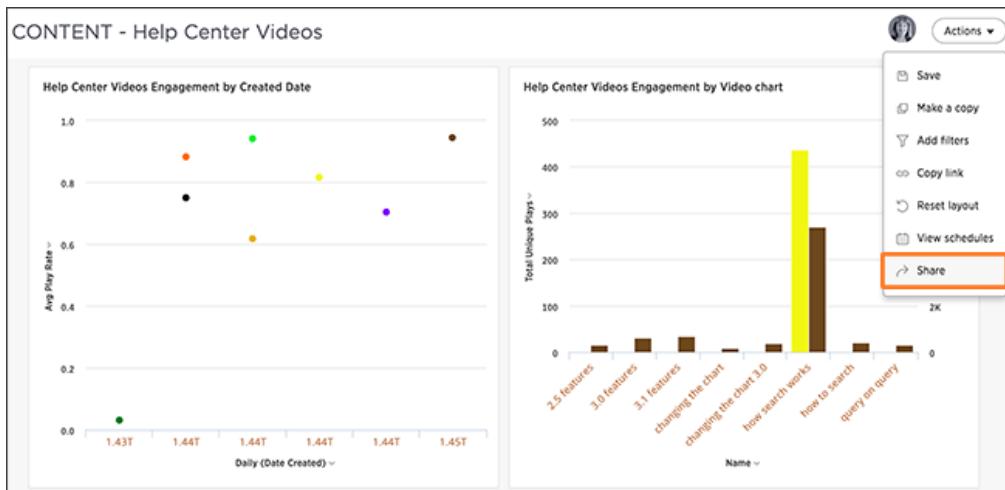


Figure 188: Share with option

- Click **+ Add users or groups** and select users or groups that you want to share with.

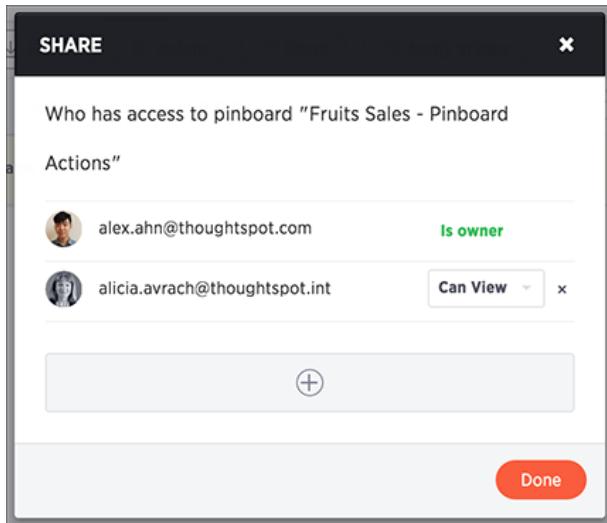


Figure 189: Configure sharing settings

- Configure the level of access by selecting from the dropdown list. You will only see options available, based on your own access level. For example, if you have only **View** access, you cannot share as **Edit**. You can select:

- **Can View** to provide read-only access. If the person doesn't have access to the underlying data, they can only view a shared pinboard. If they change anything on the pinboard, their changes are not saved. In order to persist the changes, the user would need to make a copy of the modified pinboard.
 - **Can Edit** to allow modification. Enables renaming or deleting the shared pinboard. If a person with edit privileges modifies a shared pinboard, their changes will be saved to it.
5. Click **Add and Save**.
 6. Click **Add Permissions**.

Share answers

You do not have to be an administrator or the owner, to share saved answers. Any user can share them, based on the access levels the user has.

Whenever you view an answer, you have the option of sharing it with others. It will be shared in its current state, so if you have modified the answer by interacting with the table or chart, the modified version is what will be shared.

1. Configure the answer to look as you'll want it to appear when shared.
2. Save the answer by clicking **Actions** and **Save**.
3. Click **Actions** and then **Share**.

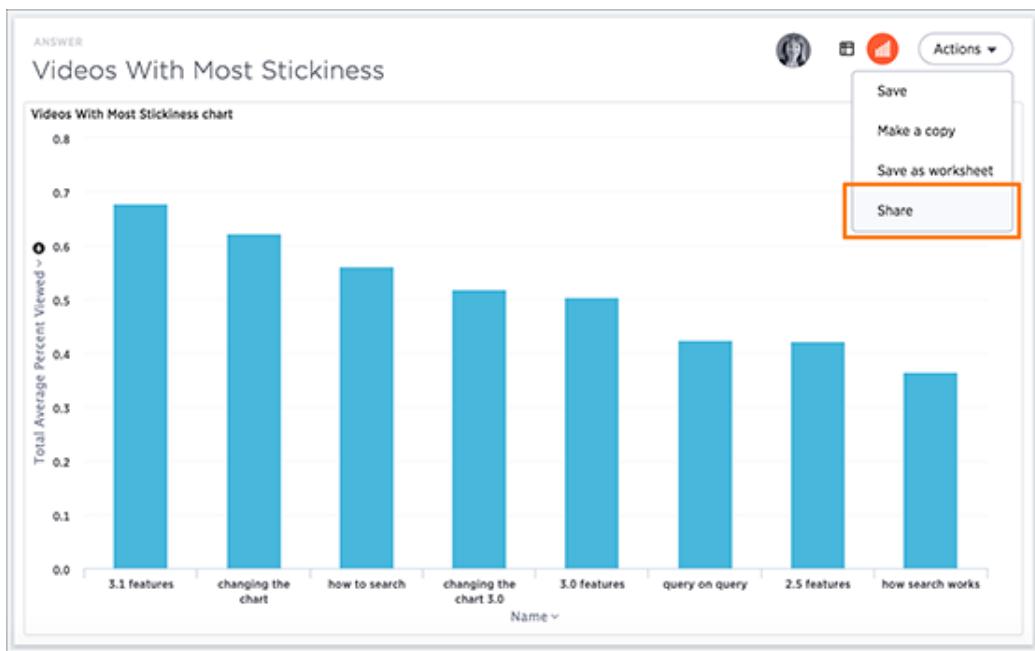


Figure 190: Share an answer

4. Click **+ Add users or groups** and select users or groups that you want to share with.

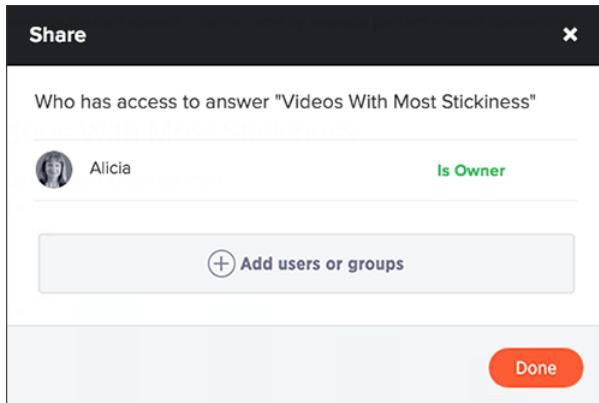


Figure 191: Configure answer sharing settings

5. Configure the level of access by selecting from the dropdown list. You can select:

- **Can View** to provide read-only access. If the user doesn't have access to the underlying worksheet, they can only view the shared answer.
- **Can Edit** to allow modification. Enables renaming or deleting the shared answer. If a user with edit privileges modifies a shared answer, their changes will be saved to it.

6. Click **Add and Save**.

7. Click **Done**.

Share uploaded data

If you upload a spreadsheet, you can share **Can View** or **Can Edit** privileges with other people, who can further share them with others.

Data that you uploaded from a Web browser is only visible to you and to the administrator. You can share the entire uploaded table, or only some of its columns.

Share uploaded data by following these steps:

1. Click on **Data**, on the top navigation bar.



Figure 192: Data

2. Click on the name of the uploaded data you want to share.

3. Click the **Share** icon.

			Tables	Data Sources		
	All	Yours	All types	Worksheets	Tables	Stickers
	Share	Delete	Apply Sticker			
	NAME	DESCRIPTION	SOURCE			
<input type="checkbox"/>	 Fish1 WS					
<input type="checkbox"/>	 Fish Worksheet					
<input checked="" type="checkbox"/>	 fish_seas_oceans		Default			

Figure 193: Select tables to share

4. Select **Entire Table** or **Specific Columns**.

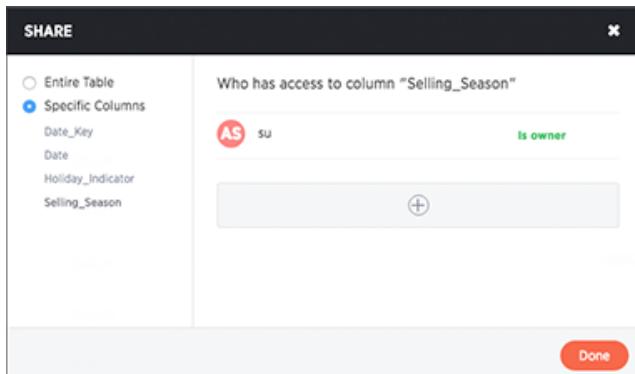
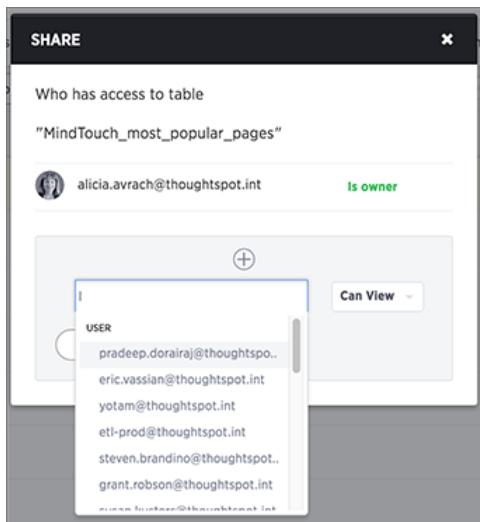


Figure 194: Configure table sharing settings

5. If you selected **Specific Columns**, select the column(s) to share.
6. Click **+ Add users or groups** and select the users and groups that you want to share with.

Figure 195: Select people to share with



7. Configure the level of access by selecting from the dropdown list. You can select:

- **Can View** to provide read-only access. This enables viewing the table data and defining worksheets on the table.
- **Can Edit** to allow modification. This enables renaming, modifying, or deleting the entire table and adding or removing its columns.

8. Click **Add and Save**.

9. Click **Done**.

Revoke access (unshare)

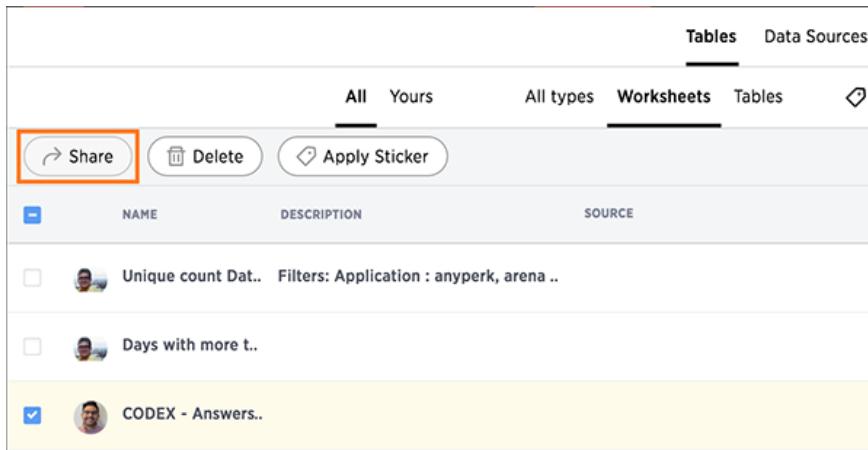
You may need to revoke access to an object (table, worksheet, or pinboard) that you have previously shared. Unsharing an object is very similar to sharing it.

To unshare one or more objects:

1. Go to the area where the object(s) you want to unshare is located. From the top menu bar:
 - If the object is a table or worksheet, click **Data**.
 - If the object is a pinboard, click **Pinboards**.
 - If the object is an answer, click **Answers**.

2. Find the object(s) in the list, and check the corresponding box(es).

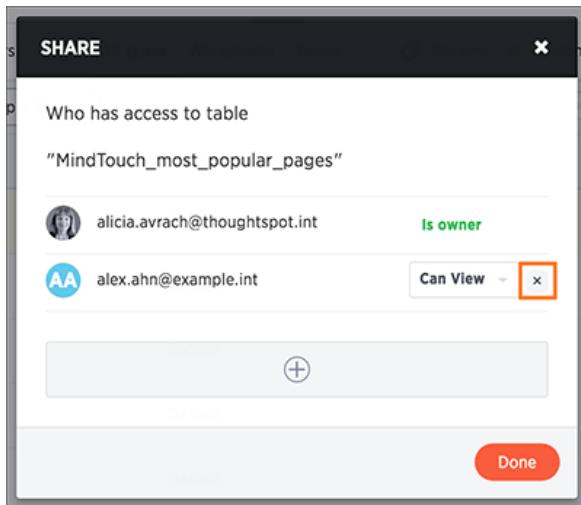
3. Click the **Share** icon.



The screenshot shows a list of objects in the ThoughtSpot interface. At the top, there are tabs for 'Tables' and 'Data Sources'. Below the tabs are buttons for 'All', 'Yours', 'All types', 'Worksheets' (which is selected), and 'Tables'. There is also a search icon. A red box highlights the 'Share' button, which has a circular arrow icon. Other buttons include 'Delete' and 'Apply Sticker'. The main list area has columns for 'NAME', 'DESCRIPTION', and 'SOURCE'. Three items are listed: 'Unique count Dat.. Filters: Application : anyperk, arena ..' (unchecked), 'Days with more t.. (unchecked)', and 'CODEX - Answers.. (checked, highlighted with a yellow background)'. The 'CODEX - Answers..' row is also highlighted with a yellow background.

Figure 196: The Share icon

4. Click the **X** next to the users and groups that you want to remove from sharing.



The screenshot shows the 'SHARE' dialog box. It asks 'Who has access to table "MindTouch_most_popular_pages"'. It lists two users: 'alicia.avrach@thoughtspot.int' (Is owner) and 'alex.ahn@example.int' (Can View). A red box highlights the 'x' icon next to 'alex.ahn@example.int'. At the bottom are 'Done' and 'Cancel' buttons.

Figure 197: Click the X to unshare

5. Click **Done**.

Chapter 6: About the Help Center

Topics:

- [What you can find in the Help Center](#)

The online Help Center serves as your first line of support for when you run into any questions while using ThoughtSpot.

The Help Center can be accessed by clicking on **Help** on the top navigation bar. This opens a simple dialog box with links to How to search, Keywords, Release notes, Documentation, and Downloads. Click one of them to open a new tab containing your selected topic.

What you can find in the Help Center

The Help Center provides links to different resources that were created to help you use ThoughtSpot.

The Help Center provides the following resources:

- **A search bar** - You can use the search bar to search through all of ThoughtSpot's documentation and videos.
- **Short training videos** - Each of these videos cover a popular topic or feature, especially those that have just been released.
- **Keyword reference** - This reference contains all of the keywords that you can use to improve your search experience. The keywords are categorized into sections, and each of them are accompanied by an example.
- **Release Notes** - A new Release Notes is made available with every major, minor, and patch release. It contains information on new features and bug fixes.
- **Documentation** - The Documentation section includes links to various documentation guides and topics.
- **Downloads** - You can download ThoughtSpot clients and API files from here, including ODBC and JDBC drivers and the Data API.
- **Support contact information** - If you still can't find what you're looking for, you can contact support.

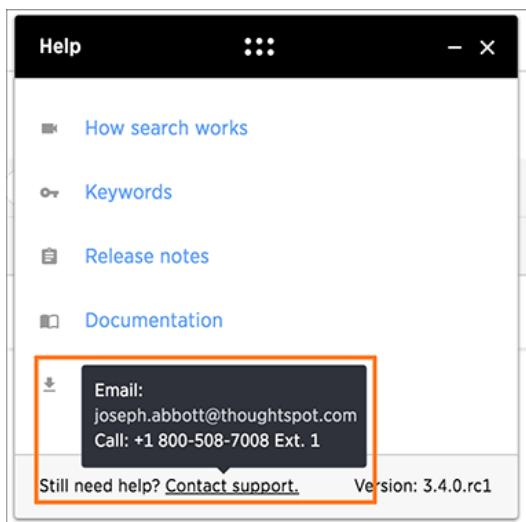


Figure 198: Contact support

- Version information: The version number of the ThoughtSpot instance you are currently using can be found in the Help Center.

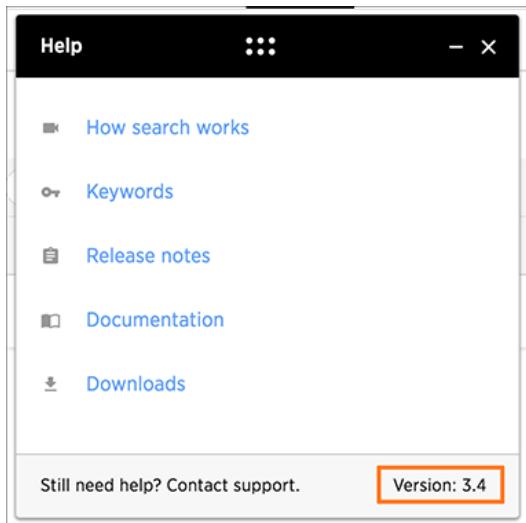


Figure 199: Version number

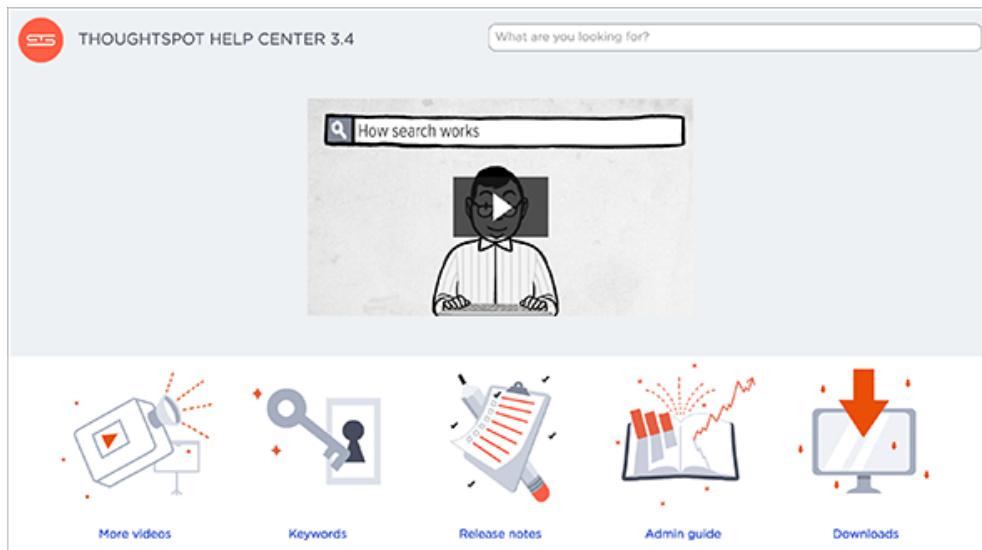


Figure 200: Help Center home page

Chapter 7: Reference guide

Topics:

- [Keyword reference](#)
- [Formula reference](#)
- [Date and time formats reference](#)

This Reference Guide contains keyword, formula, and date and time format lists with examples to use with all the features found in ThoughtSpot.

Included in this guide are:

- [Keyword reference](#) lists the available keywords to use in your search. These are also listed in the Help Center, which is available from **Help** on the top navigation bar in ThoughtSpot.
- [Formula reference](#) lists the available formula operators and functions. These are also listed in the Formula Assistant, which is available from the place in ThoughtSpot where you build formulas.
- [Date and time formats reference](#) lists the accepted date, time, and timestamp formats that you can use when uploading data through the Web interface or using the ThoughtSpot Loader.

Keyword reference

You can use keywords when asking a question to help define your search. This reference lists the various keywords.

You can also see this list of keywords and examples from within the help center.

Table 11: Basic keywords

Function	Examples
top	<ul style="list-style-type: none"> • top sales rep by count sales for average revenue >10000 • sales rep average revenue for each region top
bottom	<ul style="list-style-type: none"> • bottom revenue average revenue by state • customer by revenue for each sales rep bottom
top <i>n</i>	<ul style="list-style-type: none"> • top 10 sales rep revenue
bottom <i>n</i>	<ul style="list-style-type: none"> • bottom 25 customer by revenue for each sales rep
sort by	<ul style="list-style-type: none"> • revenue by state sort by average revenue • revenue by customer sort by region

Table 12: Date keywords

Function	Examples
after	<ul style="list-style-type: none"> • order date after 10/31/2014
before	<ul style="list-style-type: none"> • order date before 03/01/2014
between ... and ...	<ul style="list-style-type: none"> • order date between 01/01/2012 and 01/01/2013
day of week	<ul style="list-style-type: none"> • revenue by day of week last 6 months
week	<ul style="list-style-type: none"> • revenue by week last quarter
month	<ul style="list-style-type: none"> • revenue by month last year

Function	Examples
daily	<ul style="list-style-type: none"> shipments by region daily
weekly	<ul style="list-style-type: none"> revenue weekly
monthly	<ul style="list-style-type: none"> commission > 10000 monthly
quarterly	<ul style="list-style-type: none"> sales quarterly for each product
yearly	<ul style="list-style-type: none"> shipments by product yearly
<i>day of week</i>	<ul style="list-style-type: none"> count shipments Monday
<i>month</i>	<ul style="list-style-type: none"> commission January
<i>month year</i>	<ul style="list-style-type: none"> commission by sales rep February 2014
<i>year</i>	<ul style="list-style-type: none"> revenue by product 2013 product name contains snowboard
yesterday	<ul style="list-style-type: none"> sales yesterday for pro-ski200 by store
week to date	<ul style="list-style-type: none"> sales by order date week to date for pro-ski200
month to date	<ul style="list-style-type: none"> sales by product month to date sales > 2400
quarter to date	<ul style="list-style-type: none"> sales by product quarter to date for top 10 products by sales
year to date	<ul style="list-style-type: none"> sales by product year to date
last day	<ul style="list-style-type: none"> customers last day by referrer
last week	<ul style="list-style-type: none"> customers last week by store
last month	<ul style="list-style-type: none"> customers last month by day
last quarter	<ul style="list-style-type: none"> customers last quarter sale >300
last year	<ul style="list-style-type: none"> top 10 customers last year by sale by store for region west

Function	Examples
last <i>n</i> days	<ul style="list-style-type: none"> visitors last 7 days
last <i>n</i> weeks	<ul style="list-style-type: none"> visitors last 10 weeks by day
last <i>n</i> months	<ul style="list-style-type: none"> visitors last 6 months for homepage visits > 30 by month
last <i>n</i> quarters	<ul style="list-style-type: none"> visitors last 2 quarters by month by campaign
last <i>n</i> years	<ul style="list-style-type: none"> visitors last 5 years by revenue for sum revenue >5000
growth of ... by ...	<ul style="list-style-type: none"> growth of sales by order date
growth of ... by ... daily	<ul style="list-style-type: none"> growth of sales by order date daily
growth of ... by ... monthly	<ul style="list-style-type: none"> growth of sales by date shipped monthly sales > 24000
growth of ... by ... weekly	<ul style="list-style-type: none"> growth of sales by receipt date weekly for proski2000
growth of ... by ... quarterly	<ul style="list-style-type: none"> growth of sales by date shipped quarterly
growth of ... by ... yearly	<ul style="list-style-type: none"> growth of sales by date closed yearly
daily year-over-year	<ul style="list-style-type: none"> growth of revenue by order date daily year-over-year
weekly year-over-year	<ul style="list-style-type: none"> growth of revenue by date shipped weekly year-over-year
monthly year-over-year	<ul style="list-style-type: none"> growth of revenue by receipt date monthly year-over-year
quarterly year-over-year	<ul style="list-style-type: none"> growth of revenue by date shipped quarterly year-over-year
<i>n</i> days ago	<ul style="list-style-type: none"> sales 2 days ago

Function	Examples
n weeks ago	<ul style="list-style-type: none"> sales 4 weeks ago by store
n months ago	<ul style="list-style-type: none"> sales 2 months ago by region
n quarters ago	<ul style="list-style-type: none"> sales 4 quarters ago by product name contains deluxe
n years ago	<ul style="list-style-type: none"> sales 5 years ago by store for region west
today	<ul style="list-style-type: none"> sales today by store
next day	<ul style="list-style-type: none"> shipments next day by order
next week	<ul style="list-style-type: none"> shipments next week by store
next month	<ul style="list-style-type: none"> appointments next month by day
next quarter	<ul style="list-style-type: none"> opportunities next quarter amount > 30000
next year	<ul style="list-style-type: none"> opportunities next year by sales rep
next n days	<ul style="list-style-type: none"> shipments next 7 days
next n weeks	<ul style="list-style-type: none"> shipments next 10 weeks by day
next n months	<ul style="list-style-type: none"> openings next 6 months location
next n quarters	<ul style="list-style-type: none"> opportunities next 2 quarters by campaign
next n years	<ul style="list-style-type: none"> opportunities next 5 years by revenue

Table 13: Time keywords

Function	Examples
detailed	<ul style="list-style-type: none"> ship time detailed
last minute	<ul style="list-style-type: none"> count homepage views last minute
last hour	<ul style="list-style-type: none"> count unique visits last hour

Function	Examples
last <i>n</i> minutes	<ul style="list-style-type: none"> count visitors last 30 minutes
last <i>n</i> hours	<ul style="list-style-type: none"> count visitors last 12 hours
hourly	<ul style="list-style-type: none"> visitors by page name hourly
<i>n</i> minutes ago	<ul style="list-style-type: none"> sum inventory by product 10 minutes ago
<i>n</i> hours ago	<ul style="list-style-type: none"> sum inventory by product by store 2 hours ago

Table 14: Text keywords

Function	Examples
begins with	<ul style="list-style-type: none"> product name begins with 'pro'
contains	<ul style="list-style-type: none"> product name contains "alpine" description contains "snow shoe"
ends with	<ul style="list-style-type: none"> product name ends with 'deluxe'
not begins with	<ul style="list-style-type: none"> product name not begins with "tom's"
not contains	<ul style="list-style-type: none"> product color not contains 'tan' product color not contains 'red'
not ends with	<ul style="list-style-type: none"> product name not ends with "trial"
similar to	<ul style="list-style-type: none"> course name similar to 'hand'
not similar to	<ul style="list-style-type: none"> course name not similar to 'hand'

Table 15: Number keywords

Function	Examples
sum	<ul style="list-style-type: none"> sum revenue
average	<ul style="list-style-type: none"> average revenue by store

Function	Examples
count	<ul style="list-style-type: none"> • count visitors by site
max	<ul style="list-style-type: none"> • max sales by visitor by site
min	<ul style="list-style-type: none"> • min revenue by store by campaign for cost > 5000
standard deviation	<ul style="list-style-type: none"> • standard deviation revenue by product by month for date after 10/31/2010
unique count	<ul style="list-style-type: none"> • unique count visitor by product page last week
variance	<ul style="list-style-type: none"> • variance sale amount by visitor by product for last year

Table 16: Filter keywords

Function	Examples
between... and	<ul style="list-style-type: none"> • revenue between 0 and 1000
>	<ul style="list-style-type: none"> • sum sale amount by visitor by product for last year sale amount > 2000
<	<ul style="list-style-type: none"> • unique count visitor by product by store for sale amount < 20
>=	<ul style="list-style-type: none"> • count calls by employee lastname >= m
<=	<ul style="list-style-type: none"> • count shipments by city latitude <= 0
=	<ul style="list-style-type: none"> • unique count visitor by store purchased products = 3 for last 5 days
!=	<ul style="list-style-type: none"> • sum sale amount region != canada region != mexico

Formula reference

ThoughtSpot allows you to create derived columns in worksheets using formulas.

This reference lists the various operators and functions you can use to create formulas.

You can also see this list of operators and examples from within the Formula Builder by selecting **Formula Assistant**.

Aggregate functions

These functions can be used to aggregate data.

Table 17: Mixed functions for use in formulas

Function	Description	Examples
average	Returns the average of all the values of a column.	<ul style="list-style-type: none">• <code>average (revenue)</code>
count	Returns the number of rows in the table containing the column.	<ul style="list-style-type: none">• <code>count (product)</code>
cumulative_average	Takes a measure and one or more attributes. Returns the average of the measure, accumulated by the attribute(s) in the order specified.	<ul style="list-style-type: none">• <code>cumulative_average (revenue, order date, state)</code>
cumulative_max	Takes a measure and one or more attributes. Returns the maximum of the measure, accumulated by the attribute(s) in the order specified.	<ul style="list-style-type: none">• <code>cumulative_max (revenue, state)</code>

Function	Description	Examples
cumulative_min	Takes a measure and one or more attributes. Returns the minimum of the measure, accumulated by the attribute(s) in the order specified.	<ul style="list-style-type: none"> • <code>cumulative_min (revenue, campaign)</code>
cumulative_sum	Takes a measure and one or more attributes. Returns the sum of the measure, accumulated by the attribute(s) in the order specified.	<ul style="list-style-type: none"> • <code>cumulative_sum (revenue, order date)</code>
group_average	Takes a measure and one or more attributes. Returns the average of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • <code>group_average (revenue, customer region, state)</code>
group_count	Takes a measure and one or more attributes. Returns the count of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • <code>group_count (revenue, customer region)</code>
group_max	Takes a measure and one or more attributes. Returns the maximum of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • <code>group_max (revenue, customer region)</code>
group_min	Takes a measure and one or more attributes. Returns the minimum of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • <code>group_min (revenue, customer region)</code>
group_stddev	Takes a measure and one or more attributes. Returns the standard deviation of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • <code>group_stddev (revenue, customer region)</code>

Function	Description	Examples
group_sum	Takes a measure and one or more attributes. Returns the sum of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • <code>group_sum (revenue, customer region)</code>
group_unique_count	Takes a measure and one or more attributes. Returns the unique count of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • <code>group_unique_count (product , supplier)</code>
group_variance	Takes a measure and one or more attributes. Returns the variance of the measure grouped by the attribute(s).	<ul style="list-style-type: none"> • <code>group_variance (revenue, customer region)</code>
max	Returns the maximum value of a column.	<ul style="list-style-type: none"> • <code>max (sales)</code>
min	Returns the minimum value of a column.	<ul style="list-style-type: none"> • <code>min (revenue)</code>
moving_average	Takes a measure, two integers to define the window to aggregate over, and one or more attributes. The window is (current - Num1...Current + Num2) with both end points being included in the window. For example, "1,1" will have a window size of 3. To define a window that begins before Current, specify a negative number for Num2. Returns the average of the measure over the given window. The attributes are the ordering columns used to compute the moving average.	<ul style="list-style-type: none"> • <code>moving_average (revenue, 2, 1, customer region)</code>

Function	Description	Examples
moving_max	Takes a measure, two integers to define the window to aggregate over, and one or more attributes. The window is (current - Num1...Current + Num2) with both end points being included in the window. For example, "1,1" will have a window size of 3. To define a window that begins before Current, specify a negative number for Num2. Returns the maximum of the measure over the given window. The attributes are the ordering columns used to compute the moving maximum.	<ul style="list-style-type: none"> • <code>moving_max (complaints, 1, 2, store name)</code>
moving_min	Takes a measure, two integers to define the window to aggregate over, and one or more attributes. The window is (current - Num1...Current + Num2) with both end points being included in the window. For example, "1,1" will have a window size of 3. To define a window that begins before Current, specify a negative number for Num2. Returns the minimum of the measure over the given window. The attributes are the ordering columns used to compute the moving minimum.	<ul style="list-style-type: none"> • <code>moving_min (defects, 3, 1, product)</code>

Function	Description	Examples
moving_sum	Takes a measure, two integers to define the window to aggregate over, and one or more attributes. The window is (current - Num1...Current + Num2) with both end points being included in the window. For example, "1,1" will have a window size of 3. To define a window that begins before Current, specify a negative number for Num2. Returns the sum of the measure over the given window. The attributes are the ordering columns used to compute the moving sum.	<ul style="list-style-type: none"> • <code>moving_sum (revenue, 1, 1, order date)</code>
stddev	Returns the standard deviation of all values of a column.	<ul style="list-style-type: none"> • <code>stddev (revenue)</code>
sum	Returns the sum of all the values of a column.	<ul style="list-style-type: none"> • <code>sum (revenue)</code>
unique count	Returns the number of unique values of a column.	<ul style="list-style-type: none"> • <code>unique count (customer)</code>
variance	Returns the variance of all the values of a column.	<ul style="list-style-type: none"> • <code>variance (revenue)</code>

Conversion functions

These functions can be used to convert data from one data type to another. Conversion to or from date data types is not supported.

Table 18: Conversion functions for use in formulas

Function	Description	Examples
to_bool	Returns the input as a boolean (true or false).	<ul style="list-style-type: none"> <code>to_bool (0) = false</code> <code>to_bool (married)</code>
to_date	Accepts a date represented as an integer or text string, and a second string parameter that can include strftime date formatting elements. Replaces all the valid strftime date formatting elements with their string counterparts and returns the result. Does not accept epoch formatted dates as input.	<ul style="list-style-type: none"> <code>to_date (date_sold, '%Y-%m-%d')</code>
to_double	Returns the input as a double.	<ul style="list-style-type: none"> <code>to_double ('3.14') = 3.14</code> <code>to_double (revenue * .01)</code>
to_integer	Returns the input as an integer.	<ul style="list-style-type: none"> <code>to_integer ('45') + 1 = 46</code> <code>to_integer (price + tax - cost)</code>
to_string	Returns the input as a text string.	<ul style="list-style-type: none"> <code>to_string (45 + 1) = '46'</code> <code>to_string (revenue - cost)</code>

Date functions

Table 19: Date functions for use in formulas

Function	Description	Examples
add_days	Returns the result of adding the specified number of days to the given date.	<ul style="list-style-type: none"> <code>add_days (01/30/2015, 5) = 02/04/2015</code> <code>add_days (invoiced, 30)</code>

Function	Description	Examples
date	Returns the date portion of a given date.	<ul style="list-style-type: none"> • <code>date (home visit)</code>
day	Returns the number (1-31) of the day for the given date.	<ul style="list-style-type: none"> • <code>day (01/15/2014) = 15</code> • <code>day (date ordered)</code>
day_number_of_week	Returns the number (1-7) of the day in a week for the given date with 1 being Monday and 7 being Sunday.	<ul style="list-style-type: none"> • <code>day_number_of_week (01/30/2015) = 6</code> • <code>day_number_of_week (shipped)</code>
day_number_of_year	Returns the number (1-366) of the day in a year for the given date.	<ul style="list-style-type: none"> • <code>day_number_of_year (01/30/2015) = 30</code> • <code>day_number_of_year (invoiced)</code>
day_of_week	Returns the day of the week for the given date.	<ul style="list-style-type: none"> • <code>day_of_week (01/30/2015) = Friday</code> • <code>day_of_week (serviced)</code>
diff_days	Subtracts the second date from the first date and returns the result in number of days, rounded down if not exact.	<ul style="list-style-type: none"> • <code>diff_days (01/15/2014, 01/17/2014) = -2</code> • <code>diff_days (purchased, shipped)</code>
diff_time	Subtracts the second date from the first date and returns the result in number of seconds.	<ul style="list-style-type: none"> • <code>diff_time (01/01/2014, 01/01/2014) = -86,400</code> • <code>diff_time (clicked, submitted)</code>
hour_of_day	Returns the hour of the day for the given date.	<ul style="list-style-type: none"> • <code>hour_of_day (received)</code>
is_weekend	Returns true if the given date falls on a Saturday or Sunday.	<ul style="list-style-type: none"> • <code>is_weekend (01/31/2015) = true</code> • <code>is_weekend (emailed)</code>

Function	Description	Examples
month	Returns the month from the given date.	<ul style="list-style-type: none"> month (01/15/2014) = January month (date ordered)
month_number	Returns the number (1-12) of the month for the given date.	<ul style="list-style-type: none"> month_number (09/20/2014) = 9 month_number (purchased)
now	Returns the current timestamp.	<ul style="list-style-type: none"> now ()
start_of_month	Returns the date for the first day of the month for the given date.	<ul style="list-style-type: none"> start_of_month (01/31/2015) = Jan FY 2015 start_of_month (shipped)
start_of_quarter	Returns the date for the first day of the quarter for the given date.	<ul style="list-style-type: none"> start_of_quarter (09/18/2015) = Q3 FY 2015 start_of_quarter (sold)
start_of_week	Returns the date for the first day of the week for the given date.	<ul style="list-style-type: none"> start_of_week (06/01/2015) = 05/30/2015 Week start_of_week (emailed)
start_of_year	Returns the date for the first day of the year for the given date.	<ul style="list-style-type: none"> start_of_year (02/15/2015) = FY 2015 start_of_year (joined)
time	Returns the time portion of a given date.	<ul style="list-style-type: none"> time (3/1/2002 10:32) = 10:32 time (call began)
year	Returns the year from the given date.	<ul style="list-style-type: none"> year (01/15/2014) = 2014 year (date ordered)

Mixed functions

These functions can be used with text and numeric data types.

Table 20: Mixed functions for use in formulas

Function	Description	Examples
!=	Returns true if the first value is not equal to the second value.	<ul style="list-style-type: none"> <code>3 != 2 = true</code> <code>revenue != 1000000</code>
<	Returns true if the first value is less than the second value.	<ul style="list-style-type: none"> <code>3 < 2 = false</code> <code>revenue < 1000000</code>
<=	Returns true if the first value is less than or equal to the second value.	<ul style="list-style-type: none"> <code>1 <= 2 = true</code> <code>revenue <= 1000000</code>
=	Returns true if the first value is equal to the second value.	<ul style="list-style-type: none"> <code>2 = 2 = true</code> <code>revenue = 1000000</code>
>	Returns true if the first value is greater than the second value.	<ul style="list-style-type: none"> <code>3 > 2 = true</code> <code>revenue > 1000000</code>
>=	Returns true if the first value is greater than or equal to the second value.	<ul style="list-style-type: none"> <code>3 >= 2 = true</code> <code>revenue >= 1000000</code>
greatest	Returns the larger of the values.	<ul style="list-style-type: none"> <code>greatest (20, 10) = 20</code> <code>greatest (q1 revenue, q2 revenue)</code>
least	Returns the smaller of the values.	<ul style="list-style-type: none"> <code>least (20, 10) = 10</code> <code>least (q1 revenue, q2 revenue)</code>

Number functions

Table 21: Number functions for use in formulas

Function	Description	Examples
*	Returns the result of multiplying both numbers.	<ul style="list-style-type: none"> <code>3 * 2 = 6</code> <code>price * taxrate</code>

Function	Description	Examples
+	Returns the result of adding both numbers.	<ul style="list-style-type: none"> $1 + 2 = 3$ price + shipping
-	Returns the result of subtracting the second number from the first.	<ul style="list-style-type: none"> $3 - 2 = 1$ revenue - tax
/	Returns the result of dividing the first number by the second.	<ul style="list-style-type: none"> $6 / 3 = 2$ markup / retail price
^	Returns the first number raised to the power of the second.	<ul style="list-style-type: none"> $3 ^ 2 = 9$ width ^ 2
abs	Returns the absolute value.	<ul style="list-style-type: none"> abs (-10) = 10 abs (profit)
acos	Returns the inverse cosine in degrees.	<ul style="list-style-type: none"> acos (0.5) = 60 acos (cos-satellite-angle)
asin	Returns the inverse sine (specified in degrees).	<ul style="list-style-type: none"> asin (0.5) = 30 asin (sin-satellite-angle)
atan	Returns the inverse tangent in degrees.	<ul style="list-style-type: none"> atan (1) = 45 atan (tan-satellite-angle)
atan2	Returns the inverse tangent in degrees.	<ul style="list-style-type: none"> atan2 (10, 10) = 45 atan2 (longitude, latitude)
cbrt	Returns the cube root of a number.	<ul style="list-style-type: none"> cbrt (27) = 3 cbrt (volume)
ceil	Returns the smallest following integer.	<ul style="list-style-type: none"> ceil (5.9) = 6 ceil (growth rate)
cos	Returns the cosine of an angle (specified in degrees).	<ul style="list-style-type: none"> cos (63) = 0.45 cos (beam angle)

Function	Description	Examples
cube	Returns the cube of a number.	<ul style="list-style-type: none"> • <code>cube (3) = 27</code> • <code>cube (length)</code>
exp	Returns Euler's number (~2.718) raised to a power.	<ul style="list-style-type: none"> • <code>exp (2) = 7.38905609893</code> • <code>exp (growth)</code>
exp2	Returns 2 raised to a power.	<ul style="list-style-type: none"> • <code>exp2 (3) = 8</code> • <code>exp2 (growth)</code>
floor	Returns the largest previous integer.	<ul style="list-style-type: none"> • <code>floor (5.1) = 5</code> • <code>floor (growth rate)</code>
ln	Returns the natural logarithm.	<ul style="list-style-type: none"> • <code>ln (7.38905609893) = 2</code> • <code>ln (distance)</code>
log10	Returns the logarithm with base 10.	<ul style="list-style-type: none"> • <code>log10 (100) = 2</code> • <code>log10 (volume)</code>
log2	Returns the logarithm with base 2 (binary logarithm).	<ul style="list-style-type: none"> • <code>log2 (32) = 5</code> • <code>log2 (volume)</code>
mod	Returns the remainder of first number divided by the second number.	<ul style="list-style-type: none"> • <code>mod (8, 3) = 2</code> • <code>mod (revenue, quantity)</code>
pow	Returns the first number raised to the power of the second number.	<ul style="list-style-type: none"> • <code>pow (5, 2) = 25</code> • <code>pow (width, 2)</code>
random	Returns a random number between 0 and 1.	<ul style="list-style-type: none"> • <code>random () = .457718</code> • <code>random ()</code>
round	Returns the first number rounded to the second number (the default is 1).	<ul style="list-style-type: none"> • <code>round (35.65, 10) = 40</code> • <code>round (battingavg, 100)</code>
safe_divide	Returns the result of dividing the first number by the second. If the second	<ul style="list-style-type: none"> • <code>safe_divide (12, 0) = 0</code>

Function	Description	Examples
	number is 0, returns 0 instead of NaN (not a number).	<ul style="list-style-type: none"> safe_divide (total_cost, units)
sign	Returns +1 if the number is greater than zero, -1 if less than zero, 0 if zero.	<ul style="list-style-type: none"> sign (-250) = -1 sign (growth rate)
sin	Returns the sine of an angle (specified in degrees).	<ul style="list-style-type: none"> sin (35) = 0.57 sin (beam angle)
spherical_distance	Returns the distance in km between two points on Earth.	<ul style="list-style-type: none"> spherical_distance (37.465191, -122.153617, 37.421962, -122.142174) = 4,961.96 spherical_distance (start_latitude, start_longitude, start_latitude, start_longitude)
sq	Returns the square of a numeric value.	<ul style="list-style-type: none"> sq (9) = 81 sq (width)
sqrt	Returns the square root.	<ul style="list-style-type: none"> sqrt (9) = 3 sqrt (area)
tan	Returns the tangent of an angle (specified in degrees).	<ul style="list-style-type: none"> tan (35) = 0.7 tan (beam angle)

Operators

Table 22: Operators for use in formulas

Operator	Descriptions	Examples
and	Returns true when both conditions are true, otherwise returns false.	<ul style="list-style-type: none"> (1 = 1) and (3 > 2) = true

Operator	Descriptions	Examples
		<ul style="list-style-type: none"> lastname = 'smith' and state = 'texas'
if...then...else	Conditional operator.	<ul style="list-style-type: none"> if (3 > 2) then 'bigger' else 'not bigger' if (cost > 500) then 'flag' else 'approve'
ifnull	Returns the first value if it is not null, otherwise returns the second.	<ul style="list-style-type: none"> ifnull (cost, 'unknown')
isnull	Returns true if the value is null.	<ul style="list-style-type: none"> isnull (phone)
not	Returns true if the condition is false, otherwise returns false.	<ul style="list-style-type: none"> not (3 > 2) = false not (state = 'texas')
or	Returns true when either condition is true, otherwise returns false.	<ul style="list-style-type: none"> (1 = 5) or (3 > 2) = true state = 'california' or state = 'oregon'

Text functions

Table 23: Text functions for use in formulas

Function	Description	Examples
concat	Returns the two values as a concatenated text string.	<ul style="list-style-type: none"> concat ('hay', 'stack') = 'haystack' concat (last_name, first_name)
contains	Returns true if the first string contains the second string, otherwise returns false.	<ul style="list-style-type: none"> contains ('broomstick', 'room') = true contains (product, 'trial version')
edit_distance	Accepts two text strings. Returns the edit distance (minimum number of operations required	<ul style="list-style-type: none"> edit_distance ('attorney', 'atty') = 4

Function	Description	Examples
	to transform one string into the other) as an integer. Works with strings under 1023 characters.	<ul style="list-style-type: none"> edit_distance (color, 'red')
edit_distance_with_cap	Accepts two text strings and an integer to specify the upper limit cap for the edit distance (minimum number of operations required to transform one string into the other). If the edit distance is less than or equal to the specified cap, returns the edit distance. If it is higher than the cap, returns the cap plus 1. Works with strings under 1023 characters.	<ul style="list-style-type: none"> edit_distance_with_cap ('pokemon go', 'minecraft pixelmon', 3) = 4 edit_distance_with_cap (event, 'burning man', 3)
similar_to	Accepts a document text string and a search text string. Returns true if relevance score (0-100) of the search string with respect to the document is greater than or equal to 20. Relevance is based on edit distance, number of words in the query, and length of words in the query which are present in the document.	<ul style="list-style-type: none"> similar_to ('hello world', 'hello swirl') = true similar_to (current team, drafted by)
similarity	Accepts a document text string and a search text string. Returns the relevance score (0-100) of the search string with respect to the document. Relevance is based on edit distance, number of words in the query, and length of words in the query which are present in the document. If the	<ul style="list-style-type: none"> similarity ('where is the burning man concert', 'burning man') = 46 similarity (tweet1, tweet2)

Function	Description	Examples
	two strings are an exact match, returns 100.	
spells_like	Accepts two text strings. Returns true if they are spelled similarly and false if they are not. Works with strings under 1023 characters.	<ul style="list-style-type: none"> spells_like ('thouhgtspot', 'thoughtspot') = true spells_like (studio, distributor)
strlen	Returns the length of the text.	<ul style="list-style-type: none"> strlen ('smith') = 5 strlen (lastname)
strpos	Returns the numeric position (starting from 0) of the first occurrence of the second string in the first string, or -1 if not found.	<ul style="list-style-type: none"> strpos ('haystack_with_needles', 'needle') = 14 strpos (complaint, 'lawyer')
substr	Returns the portion of the given string, beginning at the location specified (starting from 0), and of the given length.	<ul style="list-style-type: none"> substr ('persnickety', 3, 7) = snicket substr (lastname, 0, 5)

Date and time formats reference

This is a list of all the date and time formats you can load into ThoughtSpot, whether using data upload from the browser or tsload.

Using ThoughtSpot Loader

For date data types, the default format is yearmonthday e.g. "Dec 30th, 2001" and is represented as 20011230. Use the date format specifications supported in the [strftime library function](#).

For time and datetime data types, the default is yearmonthday hour:minute:second e.g. Dec 30th, 2001 1:15:12 and is represented as 20011230

01:15:12. Use the datetime format specifications supported in the [strftime library function](#).

Using data upload from a browser

These date and time formats are supported in an Excel or CSV file when uploading via the browser:

- 1/30/2014
- 2014-01-30
- 2014-1-9
- 30-Jan-2014
- 2014-Jan-13
- 2014-01-30 10:32 AM
- 2014-01-30 14:52
- 2014-01-30 10:32:22
- 2014-01-30 10:32:22 AM
- 2014-01-30 10:32:22.0
- 2014-01-30 10:32:22.0 AM
- 2014-01-30 10:32:22.000
- 2014-01-30 10:32:22.000 AM
- 1/9/2014
- 30-Jan-14
- 01-Mar-02 (assumes 2002)
- 3/1/2002 10:32 AM
- 3/1/2002 14:52
- 3/1/2002 10:32:22
- 3/1/2002 10:32:22 AM
- 3/1/2002 10:32:22.0
- 3/1/2002 10:32:22.0 AM

- 3/1/2002 10:32:22.000
- 3/1/2002 10:32:22.000 AM
- 30-Jan-14 10:32 AM
- 30-Jan-14 14:52
- 30-Jan-14 10:32:22
- 30-Jan-14 10:32:22 AM
- 30-Jan-14 10:32:22.0
- 30-Jan-14 10:32:22.0 AM
- 30-Jan-14 10:32:22.000
- 30-Jan-14 10:32:22.000 AM
- Fri Oct 04 2013 3:26 PM
- Fri Oct 04 2013 13:46
- Fri Oct 04 2013 10:32:22
- Fri Oct 04 2013 10:32:22 AM
- Fri Oct 04 2013 10:32:22.0
- Fri Oct 04 2013 10:32:22.0 AM
- Fri Oct 04 2013 10:32:22.000
- Fri Oct 04 2013 10:32:22.000 AM
- 14:52
- 10:32 AM
- 10:32:22
- 10:32:22 AM
- 10:32:22.0
- 10:32:22.000
- 10:32:22.0 AM
- 10:32:22.000 AM

Chapter 8: Contact ThoughtSpot

You can contact ThoughtSpot by phone, mail, email, or by filing a support ticket.

File a support ticket

If you encounter a technical issue, file a support ticket using the Support Portal ticket filing system at:

<http://support.thoughtspot.com/>

Please provide as much detail as possible about your issue, to help us resolve it quickly.

You need a Support Portal login to file a ticket. Please contact ThoughtSpot to get an account, if necessary.

Address

ThoughtSpot, Inc.

1 Palo Alto Square, Building 1, Suite 200

Palo Alto, CA 94306

Phone numbers

Table 24: Phone numbers

Phone Number	Description
1-800-508-7008 ext 1	ThoughtSpot Support
1-800-508-7008	Toll free number for ThoughtSpot headquarters.

Email

Table 25: Email addresses

Reason for contacting	Email
For sales inquiries.	sales@thoughtspot.com
For customer support and software update inquiries.	support@thoughtspot.com
For other inquiries.	hello@thoughtspot.com

Chapter 9: Copyright

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