



Free Training Transcript: Connecting to Cubes

Welcome to this Cubes video. You can download the data source to follow along in your own copy of Tableau, though you will also need to install the necessary drivers, and cube data sources are unsupported on Macs.

Introduction to Cubes

Tableau has optimized native data connections to both relational databases and multi-dimensional data sources. This video covers some of the functional differences when working with these “OLAP” or “Cube” data sources.

Cube data sources, such as Microsoft Analysis Services and Oracle Essbase, process and transform data from a relational database into pre-aggregated results with defined hierarchical structures.

Differences versus Relational Data Sources

The pre-defined nature of a cube data source does affect some functionality in Tableau. If possible, we suggest connecting directly to the underlying relational database.

When using a cube, we cannot take an extract. There is no equivalent of the “Other Databases” option for unsupported cube data sources. And at this time Macs do not support connecting to cubes, so everything in this video is applicable only to Tableau Desktop in Windows, though workbooks using cube data can be published and will function in the browser and on mobile devices.

KPIs

Cube data sources allow for the definition of KPIs as a data type. Tableau does not recognize these KPI data types, but we can recreate them in Tableau just as we would when using a relational data source.

Grouping

When using a relational data source, there is a paperclip icon in the tooltip to group fields. This option is not available when working with cube data sources. Grouping can be done with a Calculated Member written in the MDX language, which is covered in the Analysis with Cubes and MDX video.

Connecting

To connect to a cube data source select the server from the list of options or connect to a local cube file. For this video, we will be using a local cube. In the connect pane, choose “other files”. Navigate to the .cube file and open it. For Step 1: local cube file should be

selected. Step 2 can be left as is. Under step 3, click Connect – if you get an error, verify that you have installed the driver available under this video. For Step 4 and 5, select SuperCube. And we'll tidy up the name.

We're brought directly to sheet 1, but let's click back on the data source page. At the bottom we see the metadata view with field names, with the ability to rename fields and change data types. Unlike relational databases, we do not have the ability to preview the data. We'll go back to sheet 1. (Note this cube uses a different version superstore than the rest of the videos).

Tableau displays the dimensions and measures exactly as they are defined in the cube. Drag the Sales measure out to the Rows shelf. Tableau creates a bar chart automatically just like normal, but you'll notice that the sales field doesn't have an aggregation like SUM or AVG next to it. The aggregation is part of the cube definition and cannot be switched within Tableau. Data structure and aggregation changes will require working with the cube's architect. When we right click on the Sales in the Rows shelf, there is no aggregation menu option. However, quick table calculations are still available.

Hierarchies and Filters

In the Dimensions pane, you will notice that hierarchies, including time fields, are also predefined in the cube and cannot be changed here. We'll expand Customer Geography and bring Region to columns. Let's right click to Show Filter. Cube hierarchies have a different type of filter than those in relational databases – they show all of the levels of the hierarchy and allow for “ragged” selections, where totals from different hierarchy levels are visible side by side. Tableau shows all of the levels expanded by default, but if we double click on a hierarchy level, it will collapse down.

Let's create a new sheet, and double click Sales again. This time we'll bring Order Date's Calendar date to columns. We'll drill down to Quarter name. This looks similar to “Discrete Time” from a relational data source, but it does not work identically. If we drag off “Year”, notice that the quarters do not collapse down into only Q1-4. The hierarchy levels are maintained.

Continuous Date Filters

Right-click and “Show Filter” we see the same hierarchical filter as we saw with Region. And we have limited options to change the layout. What if we want a continuous time filter? If we look at the Order Date dimensions, there are non-hierarchical date fields – with a different icon from the Calendar Date hierarchy. Click on that icon in front of Tableau Date. We see it's is “String” by default, but there is an option for “Date”. The icon

changes to a calendar and if we bring this field to columns, and remove Quarter name, we see it is a continuous field. However, we should only use continuous dates for Filters and not as a dimension in the view. When using cubes, a continuous date is always at the lowest level of detail and Tableau cannot roll it up to a Yearly or Monthly continuous view. So let's undo this. And we'll just use the Tableau Date as a filter. Note that we now have the continuous date slider available in the view, and we have all the regular options for interactive filters for dates.

Sets for Non-Hierarchical Quick Filters

If we want our filters to look more like those that Tableau creates in a relational data source, we can use Sets. Expand the Product Groups hierarchy and Right-click on Product Category. Choose "Create Set". We'll name this "Category Filter". And we'll select furniture, office supplies and technology. This shows up as a set at the bottom. Let's bring sales into the view. Then if we wight click and select Show Filter. This interactive filter functions similarly and has all of the display options of a quick filter in a relational data source.

Conclusion

Thank you for watching this Cubes training video. We invite you to continue with the Free Training videos to learn more about using Tableau.