

# Setting up Tableau

This is the step-by-step guide to set-up Tableau for creating the visualizations. It contains the following sections:

1. Downloading and installing Tableau Desktop
2. Connecting Tableau to BigQuery
3. Creating the relationships between the dbt models.

Let's start!

## Downloading and installing Tableau Desktop

You can register a Tableau account and download a 14-day trial of Tableau Desktop on <https://www.tableau.com/products/desktop/download>. Both Windows and Mac are supported. Creating a Tableau account does not require payment details, and there is no charge or payment obligation after the 14-day trial. If you want to keep using Tableau Desktop after the trial period, you will be prompted to buy a license.

After you have downloaded the desktop client, install the software, and log in with your newly created credentials.

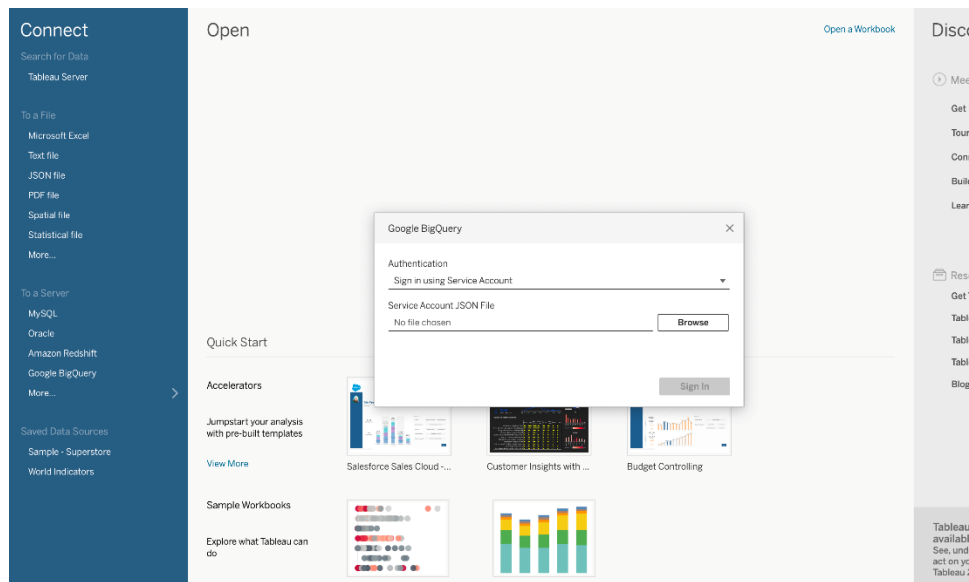
### Tableau Public

Besides Tableau Desktop, Tableau also offers a more limited, but free desktop client called Tableau Public. Tableau Public does not support connecting to BigQuery. You can circumvent this by exporting your tables using BigQuery's UI into CSV files and loading these into Tableau Public.

If you want to see Tableau in its full glory, you can purchase a license, use a trial, or request an academic license (if you are a professor or student).

## Connecting to Google BigQuery

One of Tableau's most appealing features is its multitude of connectors. Tableau can query data out of most systems without hassle. For our use case, we just need to connect to BigQuery. In the home page, we can choose **Google BigQuery** and select the signing in with a service account, as shown in *Figure 8.25*. Upload the **tableau** service account key that you downloaded earlier, and sign in.



**Figure 1 - Connecting to BigQuery in Tableau**

Next, you will need to select the **stroopwafelshop** project and your dbt dataset (**dbt\_lbenninga** in my case). You will see all available tables on the left-hand side as shown in **Figure 8.26**.

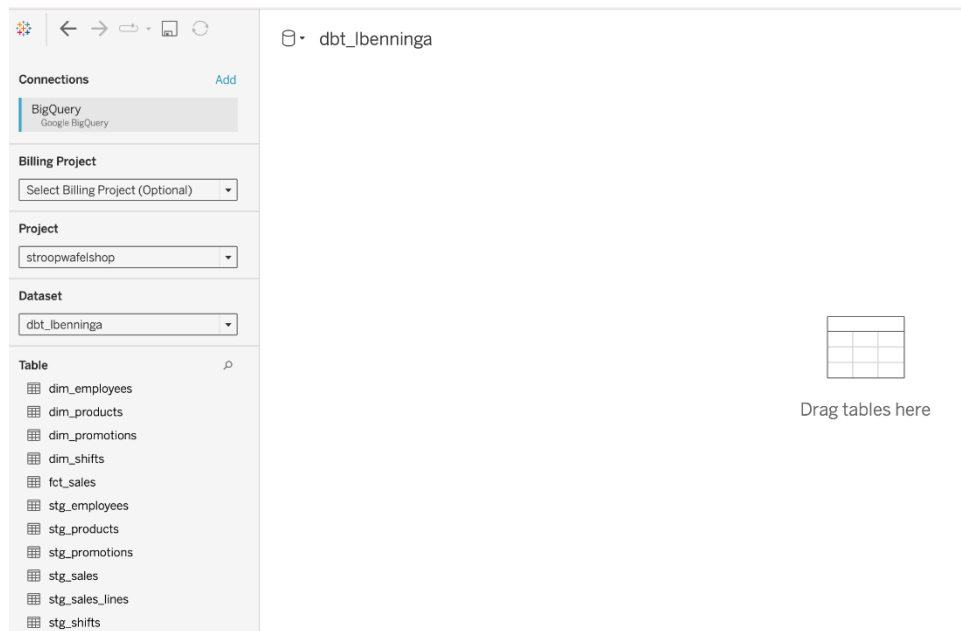


Figure 2 - dbt models in Tableau

## Creating the relationships

Drag the `fct_sales` table onto the canvas on the right to start creating the data model. It is important that the left-most model is the fact table since the analyses will be run from its viewpoint. Next, drag the `dim_products` to the right of `fct_sales`. This will create a **relationship** between the two tables, and at the bottom of the screen you will need to select the **join** fields to connect the data. Choose the appropriate field, which is called `product_id` in both tables. This will display the matched data in the bottom-right portion of the screen and confirm that the join key was valid.

Repeat the process for the `dim_promotions` table (not the `dim_shifts` and `dim_employees` yet) by dragging the tables onto the canvas and matching the *join* keys. Now you have three dimensions to the right of `fact_sales`.

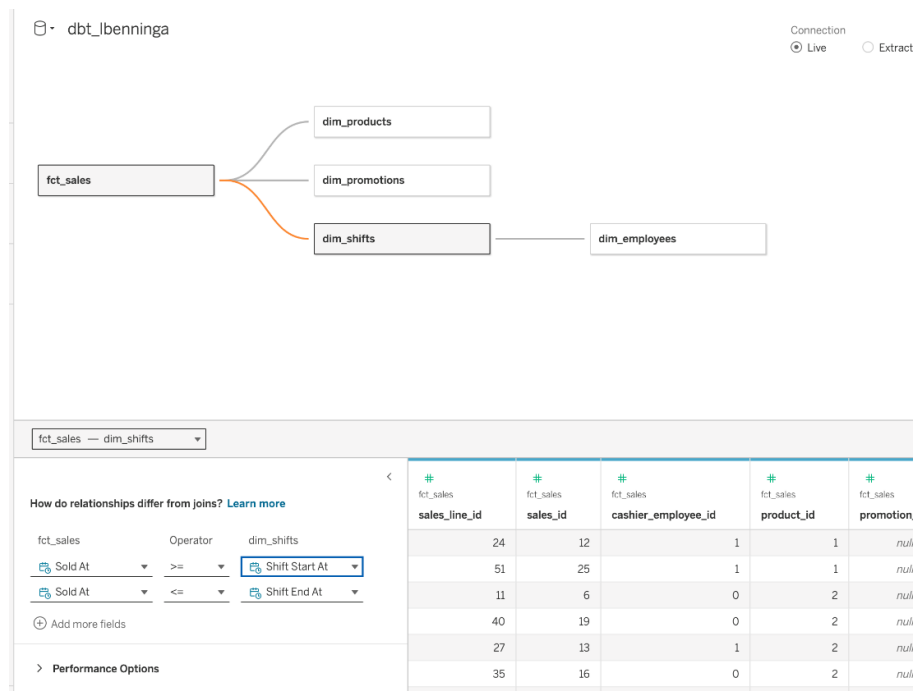
## Employees and shifts

The employees's dimension is slightly different from the other dimensions. A sale has an `employee_id`, which is the one for the cashier, but a shift consists of two employees. If we match the `dim_employees` to the `fct_sales` marts, we will only count sales toward the cashier. Since two people operate the store, Jan stresses that it is essential that both people are counted per sale. To achieve this, we need to match a sale to all the employees who were working the shift during the sale.

First, drag the `dim_shifts` table onto the canvas and match with `fct_sales`. Next, match the `sold_at` field to the `shift_start_at` and `shift_end_at` fields, using the `>=` and `<=` operators so we match all shifts that were active during the sale. Then, drag the `dim_employees` mart onto the canvas to the right of the `dim_shifts` match them on the `employee_id` field.

Now, `fct_sales` will be connected to `dim_employees` through `dim_shifts`, and Tableau can aggregate the sales for all employees related to the sale's shift hours.

With all the connections in place, as shown in **Figure 8.27**, the data model is now ready to be used in visualizations.



**Figure 3 - Defining the relationships in Tableau**

## Tableau Relationships

Tableau offers a data model with intelligent, automatic joins using *relationships*. Tableau will use the appropriate join-type based on the defined visualizations. Read more on Tableau's relationships feature on [https://help.tableau.com/current/pro/desktop/en-us/relate\\_tables.htm](https://help.tableau.com/current/pro/desktop/en-us/relate_tables.htm)