2 Visualizations in Snowflake

2.1 Lab Introduction

2.1.1 Purpose

The purpose of this lab is to show you how to use the visualization features and tools available in Snowsight. Specifically, you'll learn how to leverage Contextual Statistics for specific columns in a table in order to gain quick insights into data. Also, you'll learn how to create a dashboard from an existing query.

If you're a data analyst, you'll learn skills that are immediately useful to your job. If you're a data engineer, you'll gain insight into how the data you provide to users is used and become familiar with the tools they use.

2.1.2 What you'll learn

- How to use auto-complete to write a query
- How to use ad-hoc filters to get insights into data
- How to create a dashboard from a worksheet
- How to add panes to a dashboard
- How to share a dashboard

2.1.3 How to complete this lab

In order to complete this lab, you can type the SQL commands below directly into a worksheet. It is not recommended that you cut and paste from the workbook pdf as that sometimes results in errors.

You can also use the SQL code file for this lab that was provided at the start of the class. You would simply need to open it in TextEdit (mac) or Notepad (Windows), and then copy and paste the SQL code directly into a worksheet.

2.2 Creating a Dashboard

2.2.1 Scenario

Snowbear Air is interested in seeing a year-by-year summary of gross sales. You've been asked to write a query with a graph and share it via a Snowflake dashboard. You've decided to use the PROMO_SALES_CATALOG_STAR schema to accomplish your task.

Let's get started!

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2.2.2 Using skills you've already learned, create a new folder called Visualizations in Snowflake.

2.2.3 Within your new folder, create a new worksheet called 'Dashboard Data'.

2.2.4 Set the context by executing the statements below in your worksheet:

```
USE ROLE TRAINING_ROLE;
USE DATABASE SNOWBEARAIR_DB;
USE SCHEMA PROMO_CATALOG_SALES_STAR;
USE WAREHOUSE LEARNER_WH;
```

2.2.5 Now let's write our query. Just take a moment to review it. You don't need to run it.

```
SELECT
         *
FROM
        YEAR Y
        INNER JOIN QUARTER Q ON Y.YEAR_ID = Q.YEAR_ID
        INNER JOIN MONTH M ON Q.QUARTER_ID = M.QUARTER_ID
        INNER JOIN ORDER_DATE_DIM D ON M.MONTH_ID = D.MONTH_ID

        INNER JOIN REVENUE_FACT RF ON D.DATE_ID = RF.ORDER_DATE_ID

        INNER JOIN CUSTOMER_DIM C ON RF.CUSTOMER_ID = C.CUSTOMER_ID
        INNER JOIN NATION N ON C.NATION_ID = N.NATION_ID
        INNER JOIN REGION R ON N.REGION_ID = R.REGION_ID

        INNER JOIN PART_DIM P ON RF.PART_ID = P.PART_ID
        INNER JOIN SUPPLIER_DIM S ON RF.SUPPLIER_ID = S.SUPPLIER_ID

ORDER BY
            Y.YEAR;
```

As you can see, you are selecting *, which returns all the fields. However, all you need is column YEAR from the YEAR table and the sum of GROSS_REVENUE from the REVENUE_FACT table.

> ***The Auto-Complete Feature***
> The auto-complete feature suggests SQL Keywords, databases, schemas, tables, field names, functions and other object types while you are typing.
> By using auto-complete, you can work faster and make fewer typos.

2.2.6 Add the YEAR column using auto-complete

Remove the asterisk and type Y and then a period as shown below:

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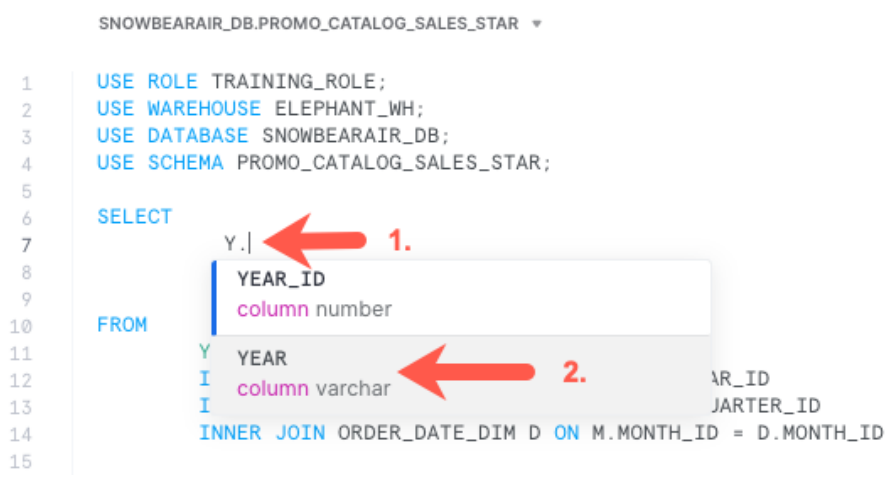

Figure 10: Auto-complete

As you can see, when you type the period the auto-complete feature generates a list of fields from the YEAR table. Select YEAR and hit enter.

2.2.7 Add the next column using auto-complete

Add the column containing the the sum of the gross revenue. Type a comma followed by SUM, note that as you type SUM the auto-complete feature will offer you the choice of a SUM function.

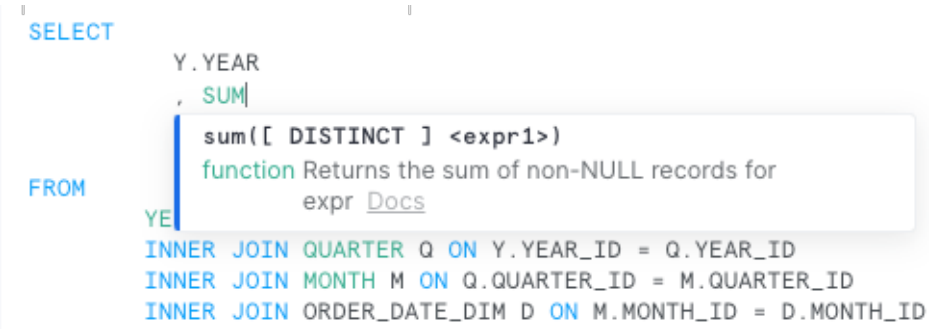

Figure 11: auto-complete recognizing the SUM function

You should now have the query below. Note that we've added a GROUP BY clause.

```
SELECT
          Y.YEAR
        , SUM(RF.GROSS_REVENUE) AS SUM_GROSS_REVENUE

FROM
        YEAR Y
        INNER JOIN QUARTER Q ON Y.YEAR_ID = Q.YEAR_ID
        INNER JOIN MONTH M ON Q.QUARTER_ID = M.QUARTER_ID
        INNER JOIN ORDER_DATE_DIM D ON M.MONTH_ID = D.MONTH_ID
```

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```
        INNER JOIN REVENUE_FACT RF ON D.DATE_ID = RF.ORDER_DATE_ID

        INNER JOIN CUSTOMER_DIM C ON RF.CUSTOMER_ID = C.CUSTOMER_ID
        INNER JOIN NATION N ON C.NATION_ID = N.NATION_ID
        INNER JOIN REGION R ON N.REGION_ID = R.REGION_ID

        INNER JOIN PART_DIM P ON RF.PART_ID = P.PART_ID
        INNER JOIN SUPPLIER_DIM S ON RF.SUPPLIER_ID = S.SUPPLIER_ID

GROUP BY
            Y.YEAR

ORDER BY
            Y.YEAR;
```

2.2.8 Run the query and check the results

You should see the results below:

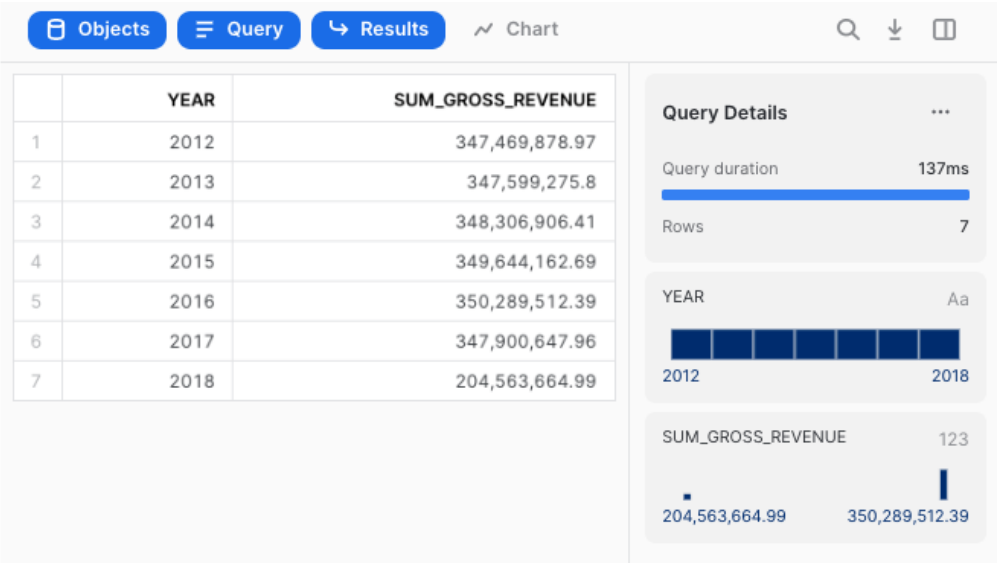

Figure 12: Query results

Note that there are two kinds of information to the right of the result. There are the Query Details pane and the Contextual Statistics panes. The Query Details pane shows the duration of the query and the number of rows returned. The Contextual Statistics panes help you make sense of your data at a glance.

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2.2.9 Click the Query Details pane

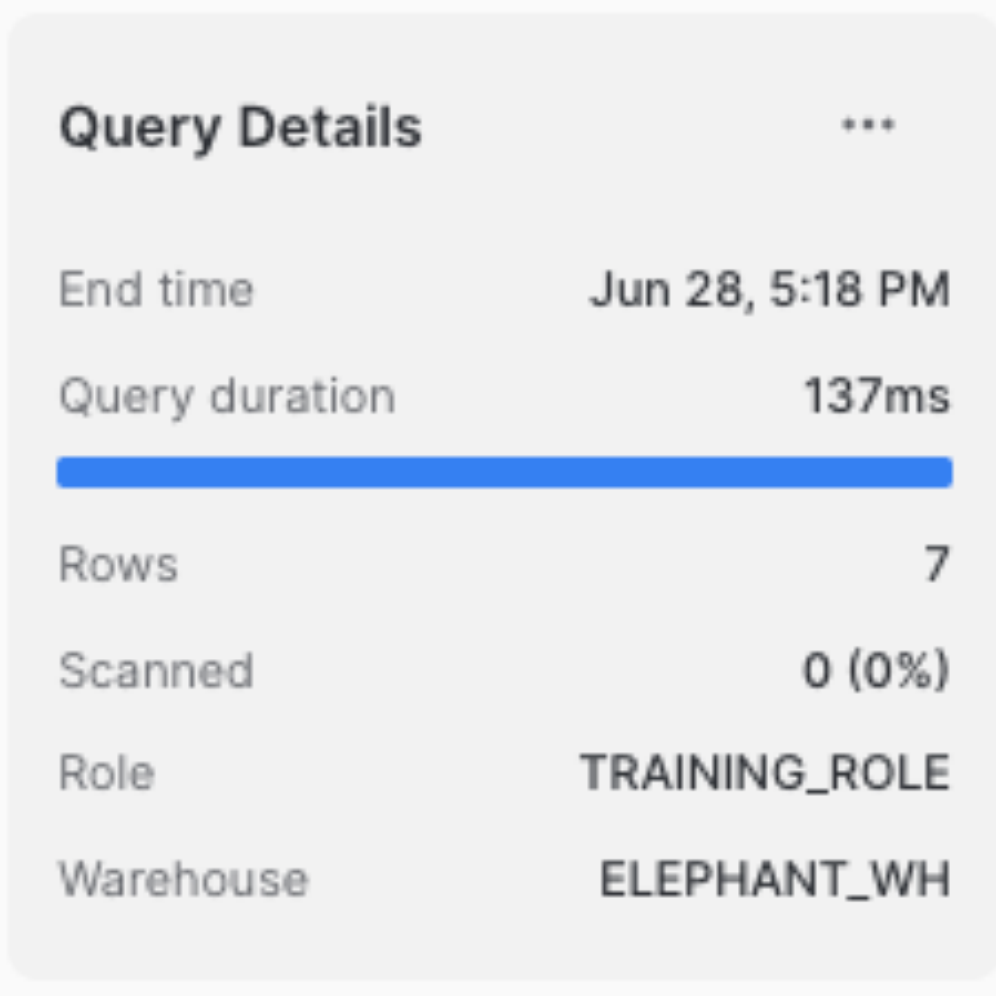

Figure 13: Query results

Note that in addition to the query duration and the rows scanned, it shows the end time of the query, the role used and the warehouse used.

2.2.10 Click on the section with the graph to apply a filter

Note there are two panes with Contextual Statistics, one that shows a graph of data from 2012 to 2018 and is labeled “YEAR”, the other that shows the highest and lowest values in the data set returned and is labeled “SUM_GROSS_REVENUE”. The contextual statistics, one for each column returned by the query, can be used interactively as filters on the query result. Let’s explore how they work.

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2.2.11 Click on the YEAR filter

You should now see the filter. On the left is the data and the YEAR column is highlighted. On the right is the filter itself.

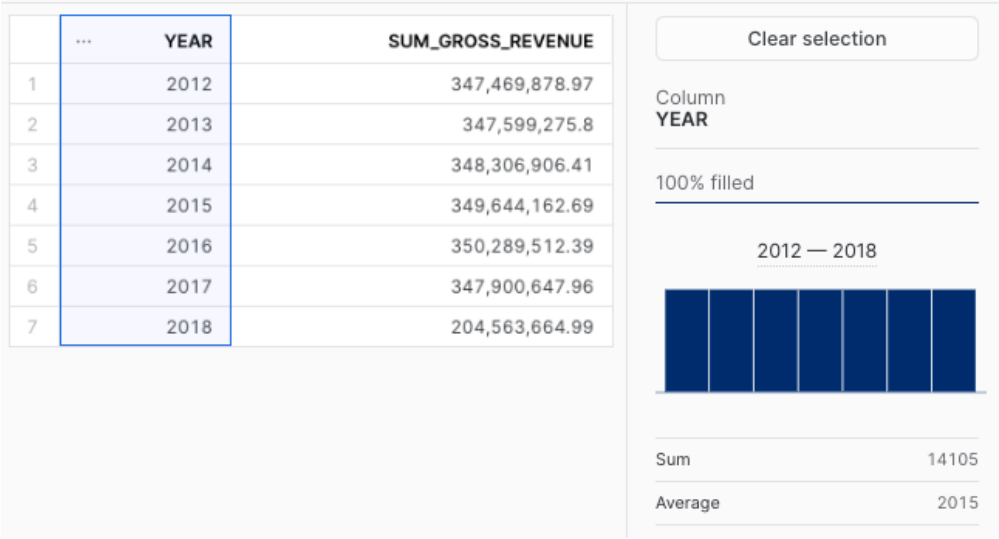

Figure 14: YEAR filter

2.2.12 Click on the leftmost column in the graph's filter

Now the results should be filtered for 2012 only.

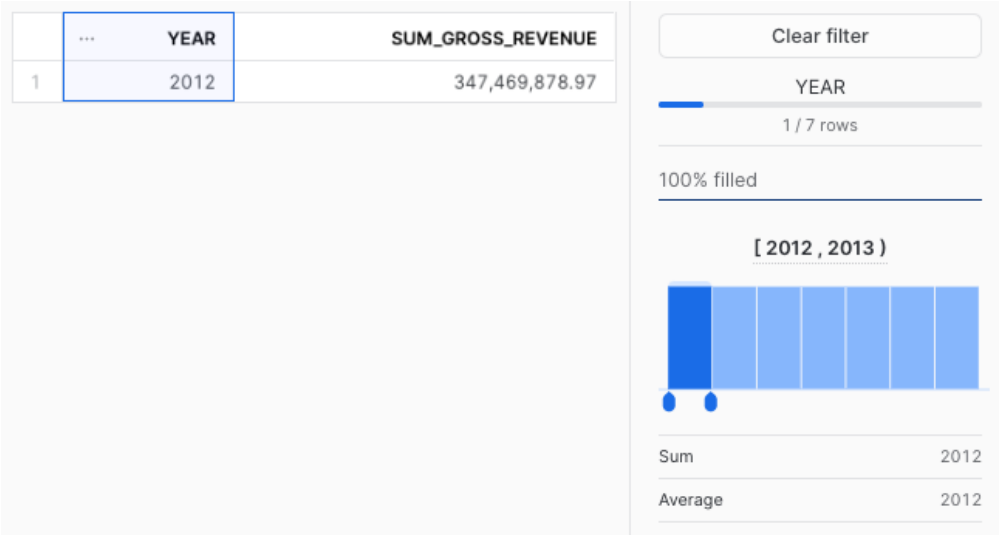

Figure 15: YEAR filter, 2012

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2.2.13 Select 2012 and 2013

Note that there are two oval selectors beneath the chosen column in the filter's graph. Click, hold and drag the right-most selector to include both 2012 and 2013. Your filter should appear as shown below:

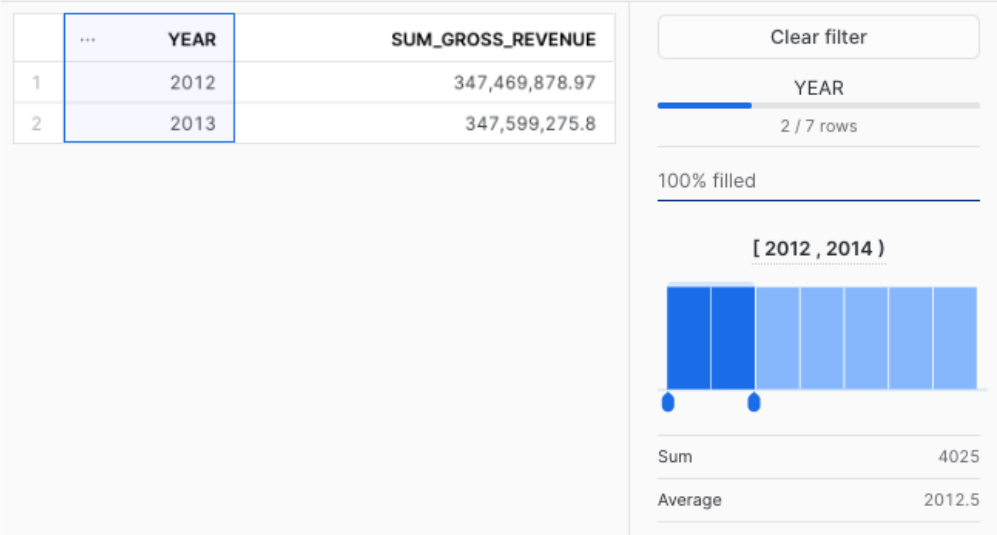

Figure 16: YEAR filter, 2012-2013

Now click different bars, or select any combination of multiple bars to see how the filter changes the data shown.

2.2.14 Click the Clear filter button

The filter should appear as it did before.

2.2.15 Click the Clear selection button

This should clear the column selected and you should see the Query Details pane and the YEAR and SUM_GROSS_REVENUE filters.

2.2.16 Click the SUM_GROSS_REVENUE filter

The filter should appear as below. Click the columns and observe how the data is filtered. Clicking between the columns will display the following message: "Query produced no results". That's because there is a gap between the highest value in the left-most bar and the lowest value of the right-most bar.

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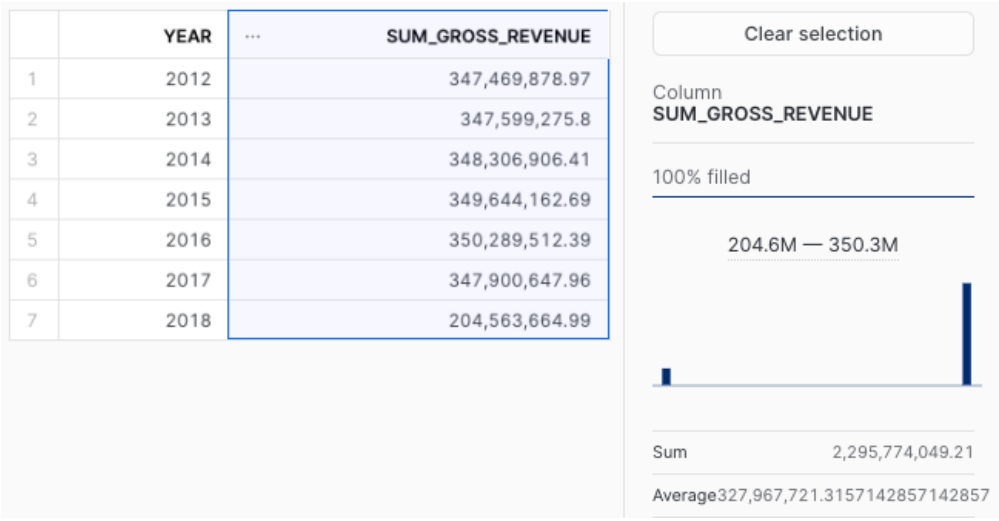

Figure 17: SUM_GROSS_REVENUE filter

2.2.17 Click the Clear filter and Clear selection buttons

2.2.18 Move the worksheet to the Dashboards

Now let's create our dashboard. You can do this by either creating a brand new dashboard, or by moving an existing worksheet to Dashboards. Let's try this second method.

2.2.19 Click the down arrow next to the worksheet name (Dashboard Data)

2.2.20 Select Move to, then New dashboard from the dialog box.

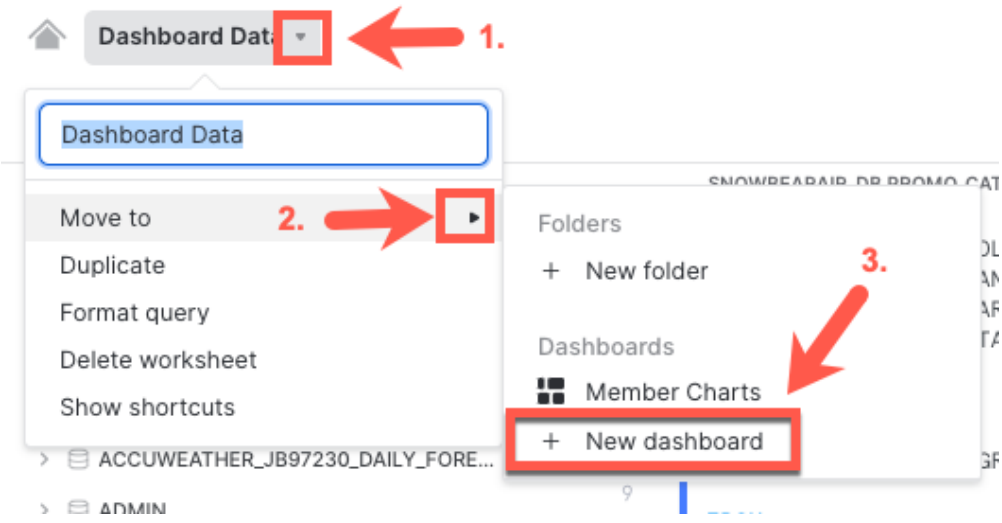

Figure 18: Move to Dashboards

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2.2.21 Name the new dashboard Gross Sales and click the Create Dashboard button.

You should now see a screen that looks like the worksheet itself. This is where you can edit the query that creates the data for the dashboard. In the upper-left hand corner there should be a “Return to Gross Sales” link.

2.2.22 Click the Return to Gross Sales link

You should now see the dashboard but in presentation mode.

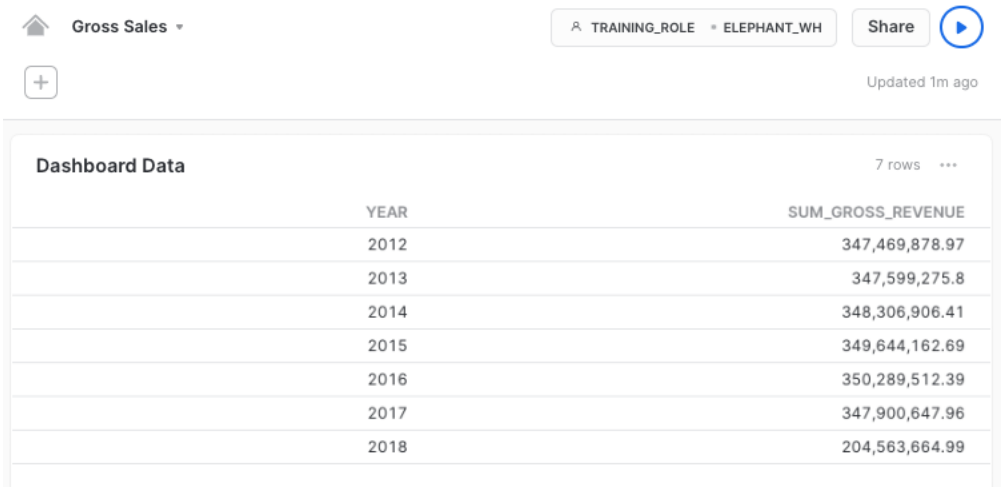

Figure 19: Presentation mode

The data itself is in a “tile” that is present on the dashboard. Tiles are used to present data or graphs in the dashboard.

Now let’s add a graph in a brand new tile.

2.2.23 Click the plus sign just below the home button and the dashboard name to create a graph

A dialog box should appear with a “New Tile from Worksheet” button.

2.2.24 Click the New Tile from Worksheet button

A new worksheet should appear with no SQL code.

2.2.25 Paste the query below into the empty pane.

```
SELECT
          Y.YEAR
        , SUM(RF.GROSS_REVENUE) AS SUM_GROSS_REVENUE

FROM
```

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```
        YEAR Y
        INNER JOIN QUARTER Q ON Y.YEAR_ID = Q.YEAR_ID
        INNER JOIN MONTH M ON Q.QUARTER_ID = M.QUARTER_ID
        INNER JOIN ORDER_DATE_DIM D ON M.MONTH_ID = D.MONTH_ID

        INNER JOIN REVENUE_FACT RF ON D.DATE_ID = RF.ORDER_DATE_ID

        INNER JOIN CUSTOMER_DIM C ON RF.CUSTOMER_ID = C.CUSTOMER_ID
        INNER JOIN NATION N ON C.NATION_ID = N.NATION_ID
        INNER JOIN REGION R ON N.REGION_ID = R.REGION_ID

        INNER JOIN PART_DIM P ON RF.PART_ID = P.PART_ID
        INNER JOIN SUPPLIER_DIM S ON RF.SUPPLIER_ID = S.SUPPLIER_ID

GROUP BY
            Y.YEAR

ORDER BY
            Y.YEAR;
```

2.2.26 Rename this worksheet

Just like with the worksheets we created earlier, a time and date should appear at the top of the worksheet. Click the time/date and change the time and date to “Dashboard Graph”.

2.2.27 Run the query

The result pane identical to the one we saw before should appear.

2.2.28 Click the Chart button

The Chart button is just above the result pane, next to the blue results button.

A line graph should be chosen by default:

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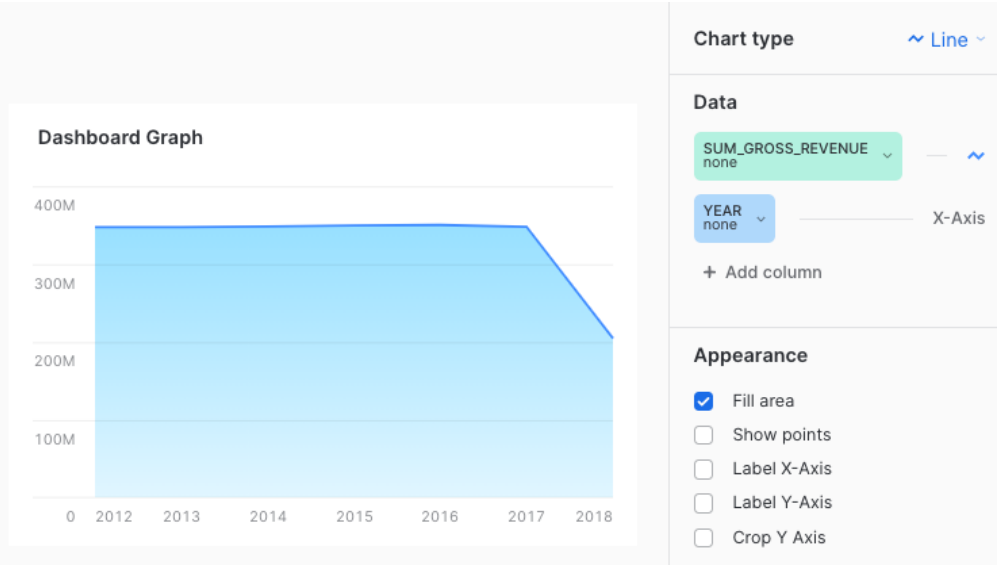

Figure 20: Presentation mode

2.2.29 Click Return to Gross Sales in the upper-left hand corner

You should now see a completed dashboard like the one shown below:

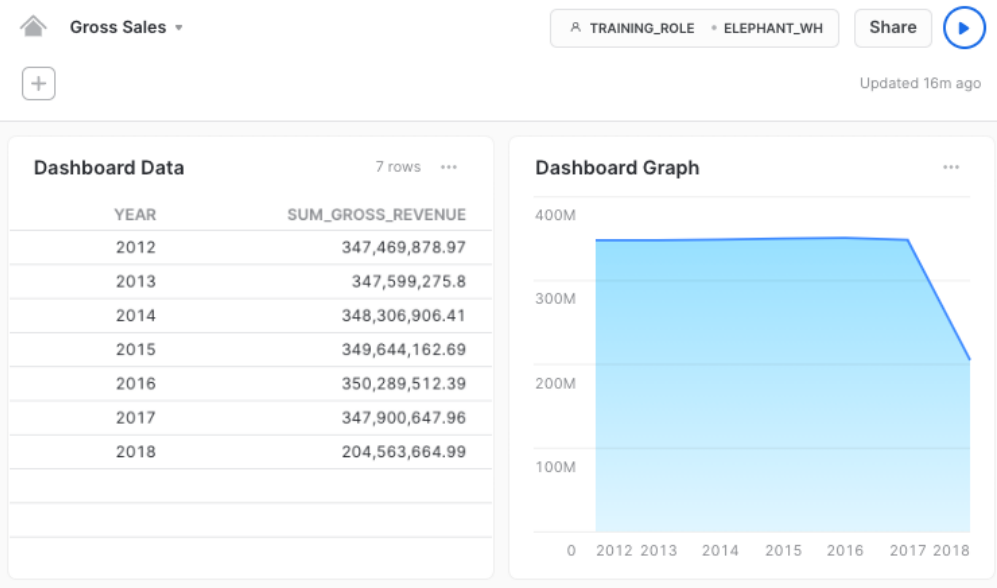

Figure 21: Presentation mode

Now let's see how to share our dashboard.

2.2.30 Click the share button in the upper-right hand corner

In this dialog box you can search for and invite someone to view and use this dashboard.

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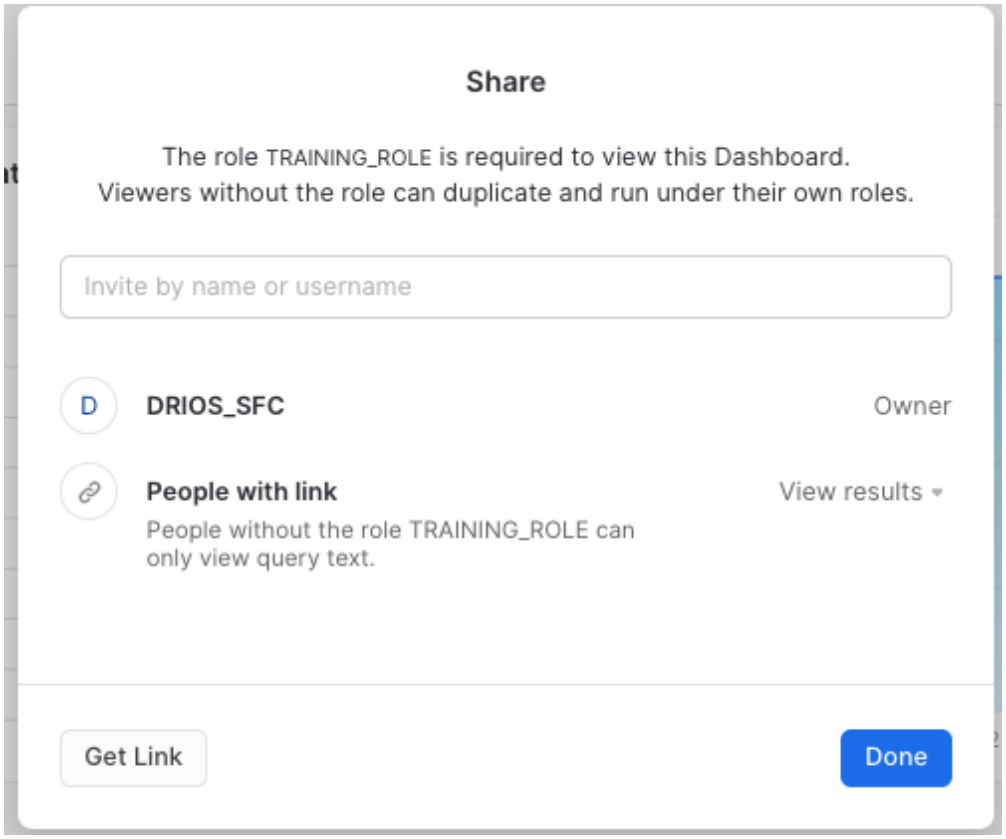

Figure 22: Share dialog box

You don't have anyone to share with, so we'll just walk you through the process so you understand it. It's so simple!

First, you would select a user by typing their user name:

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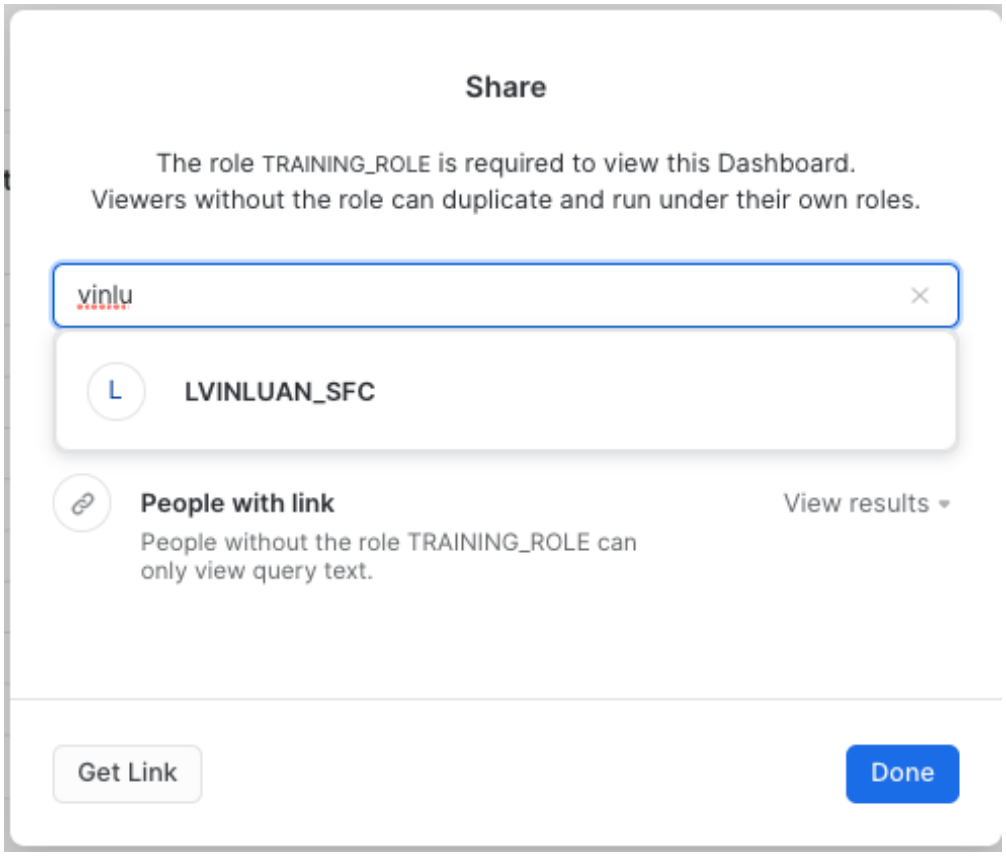

Figure 23: Sharing with a user

Next you would select a permission level for them, such as Edit, View + run, or just View results:

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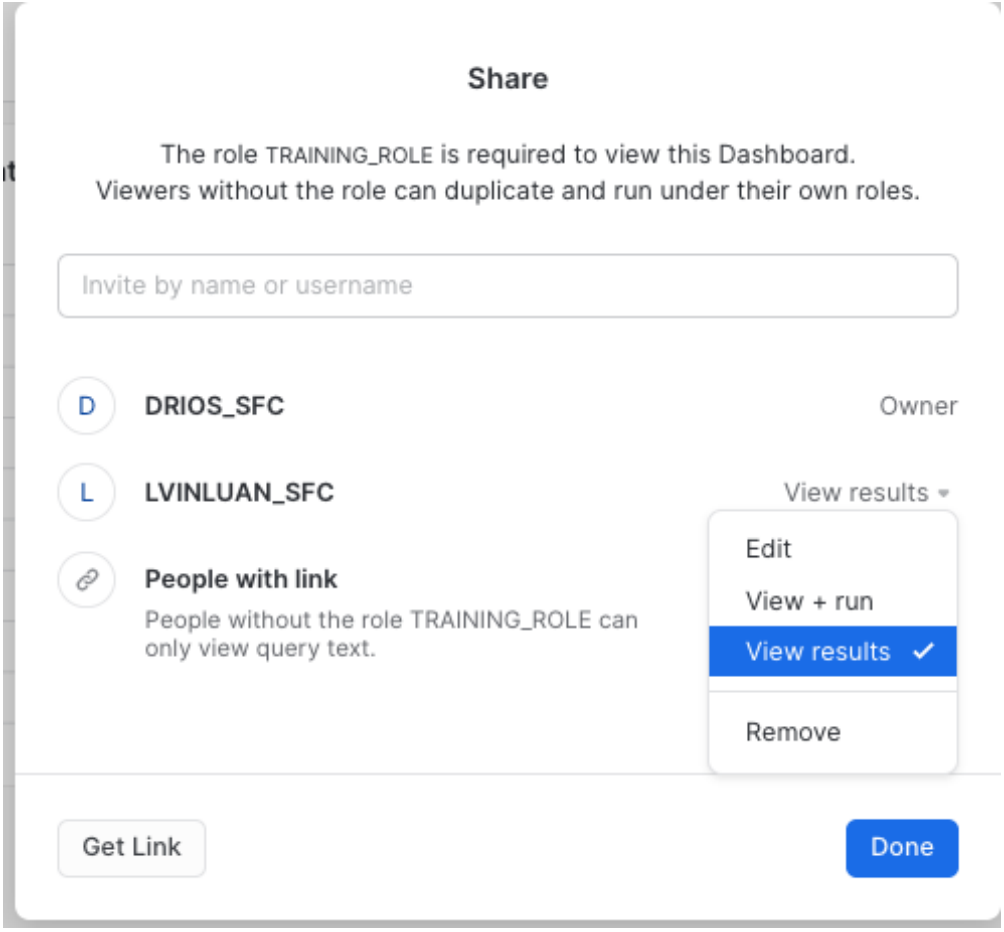

Figure 24: Granting permissions to user

Then you would click the Done button. That's it!

2.3 Key Takeaways

- The auto-complete feature is a useful tool for writing queries. It helps you work faster and with fewer typos.
- While conducting ad-hoc analyses you can use filters to gain insights into your data.
- You can create dashboards out of existing worksheets.
- Snowflake makes it super-easy to share worksheets with colleagues.

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