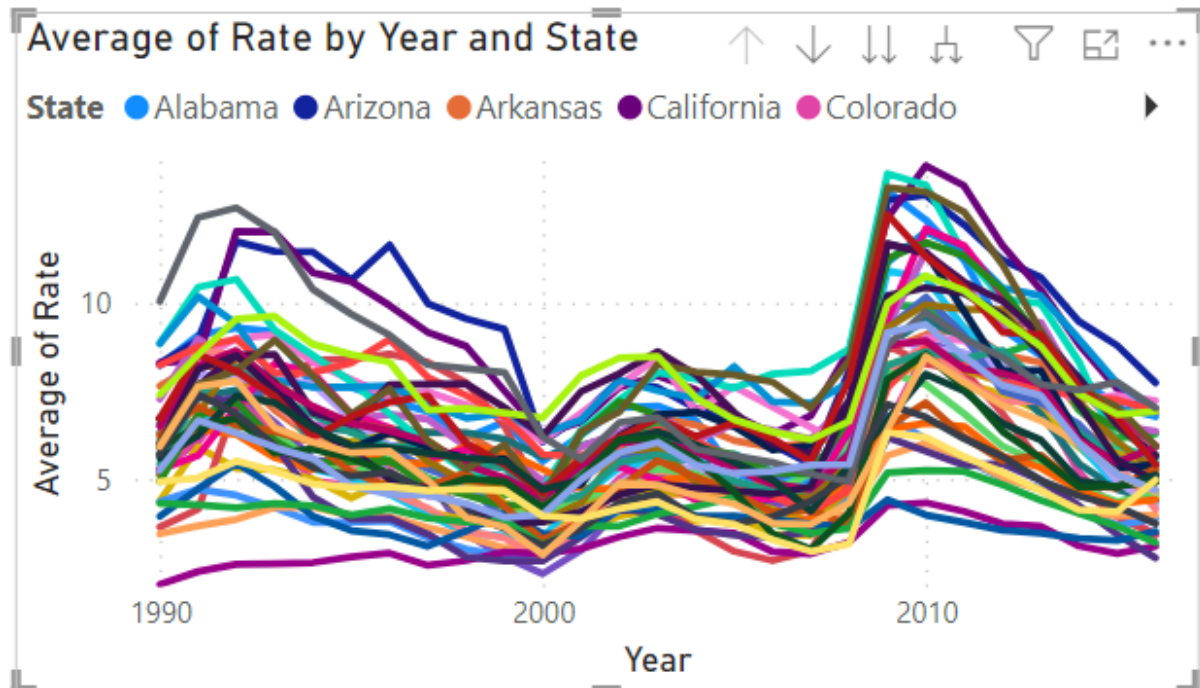**Installing Power BI and creating dashboards**
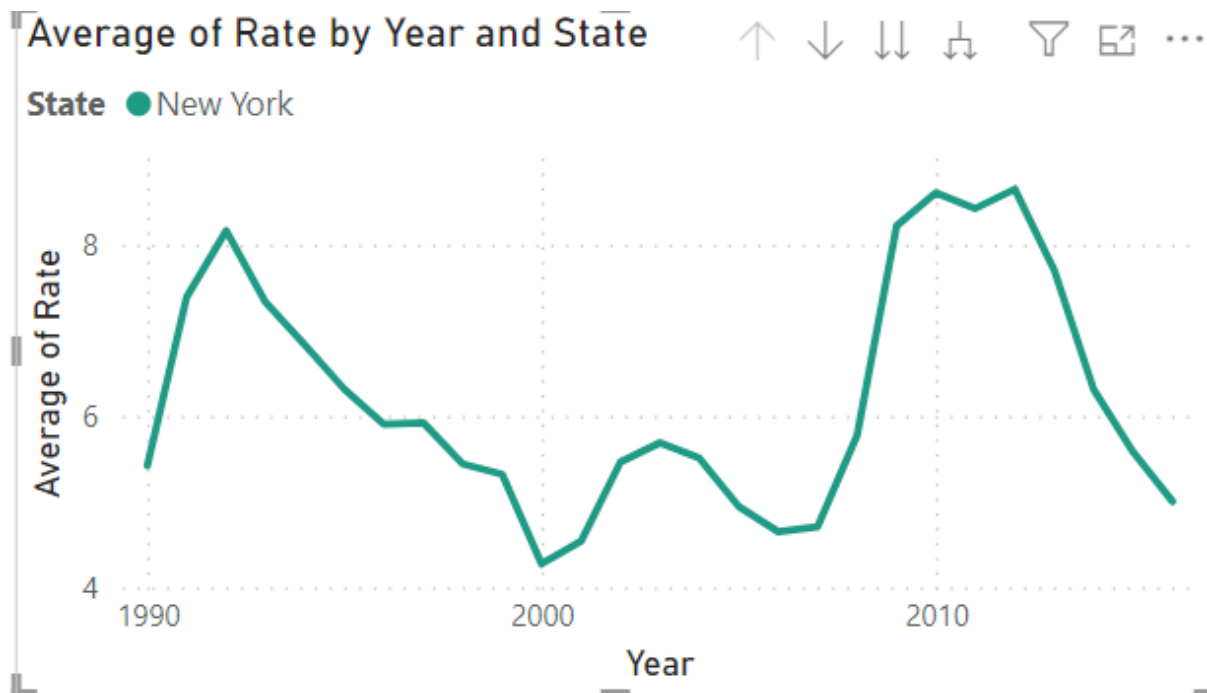
Executive summary

After getting the data warehouse model ready and populating it with data, next comes deriving important insights from that data to make some strategic business decisions. This is where data visualization comes into picture. We use Power BI for the purpose of visualization. Visualization makes it easy and simple for the stakeholders to understand the important conclusions provided by the data. Thus, to begin the task of visualization we first download the Power BI desktop application and install it. Next, we download the USEmpStats excel file provided with the assignment. Now we have the data visualization tool and the data source separately. We need to connect the data source (excel file) to Power BI to import the data to do further analysis. We use the Get data option in Power BI to accomplish this task. After selecting the excel file we see that the data gets loaded in the preview mode. We load the data set and next the Power BI workspace opens. There are five primary objects that we can access to get our charts ready. The "quick view" pane on the left, the visualization canvas in the center, the filters toolkit, the visualizations toolkit, and the fields toolkit. Now we review the data model and the relationships between different tables. For this data source we see that there is a single table. We further go to the model option (third in the quick view pane) to see the data model. The Data option (second in the quick view pane) shows the options to review and modify the data source. This is the place where we can add columns or remove them or combine two or more columns to form a new column. Here we combine month and year column by entering a formula in the formula bar. We also change the name of the field and the datatype. Next, we change the data category of state and county column from text to State or Province. We make sure that the rate field is of type percent and the summarization is of type average. After making these minor transformations in the data we

are sure that the data is ready to be analyzed. Now we open the report view by clicking on the top button in the quick view pane. We selected some columns from the fields pane that we wish to see in the charts. At first, the columns are displayed as a table but when we proceed to visualization tab and select a suitable chart that fits the data, we see that table automatically converts to a chart. We can use the format option in the visualization tab to change the line color of the chart. Also, we can see forecasts by going to the analytics option in the visualization tab. We can change the flatness of the forecast chart by tuning the seasonality. Additionally, if we wish to see data from a specific time interval, we use the filter tab to enter specific years or months. This is how we play around with the options until we reach the charts that give us meaningful insights. We proceed further from this exercise and repeat the process for our oracle database with minor tweaks. We would additionally need to download the correct version of the ODAC19 (Oracle Data Access Components 19.16) to connect our oracle database to Power BI and import the warehouse. We also download the wallet folder to ensure secure database connection. Once we connect to the database, we are good to go. We establish relationships between the four tables and from there we make different charts to derive business insights. We created a dashboard with all the charts and exported it as pdf and attached to the appendix.
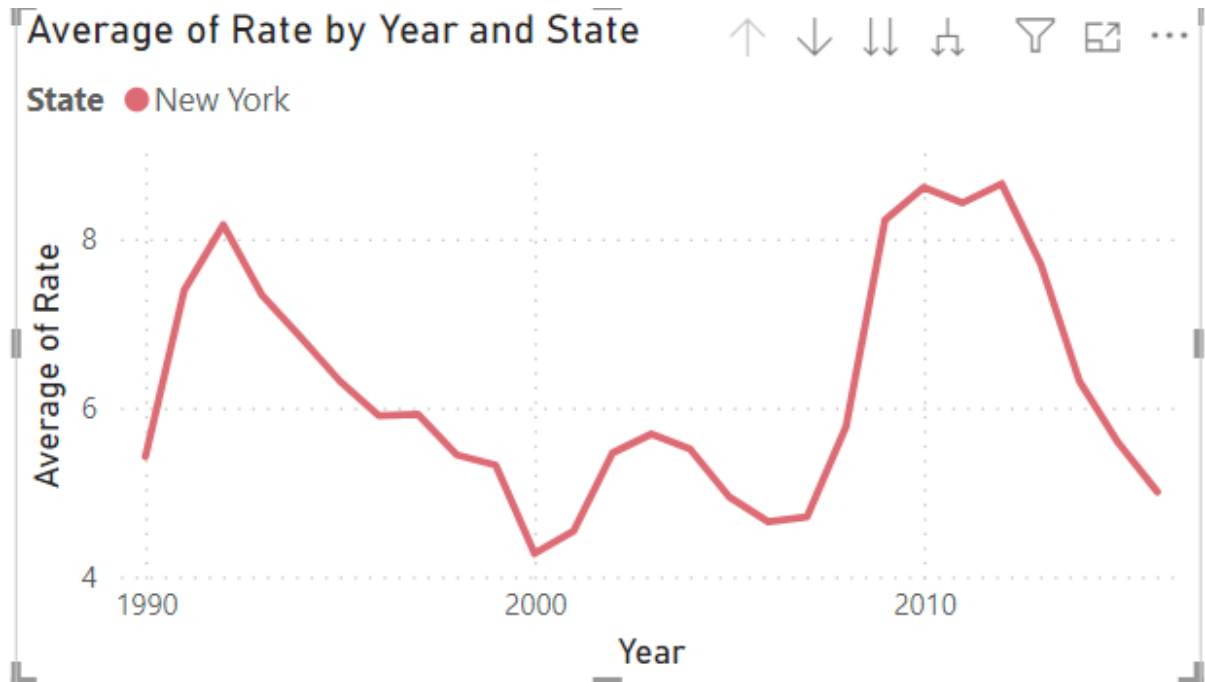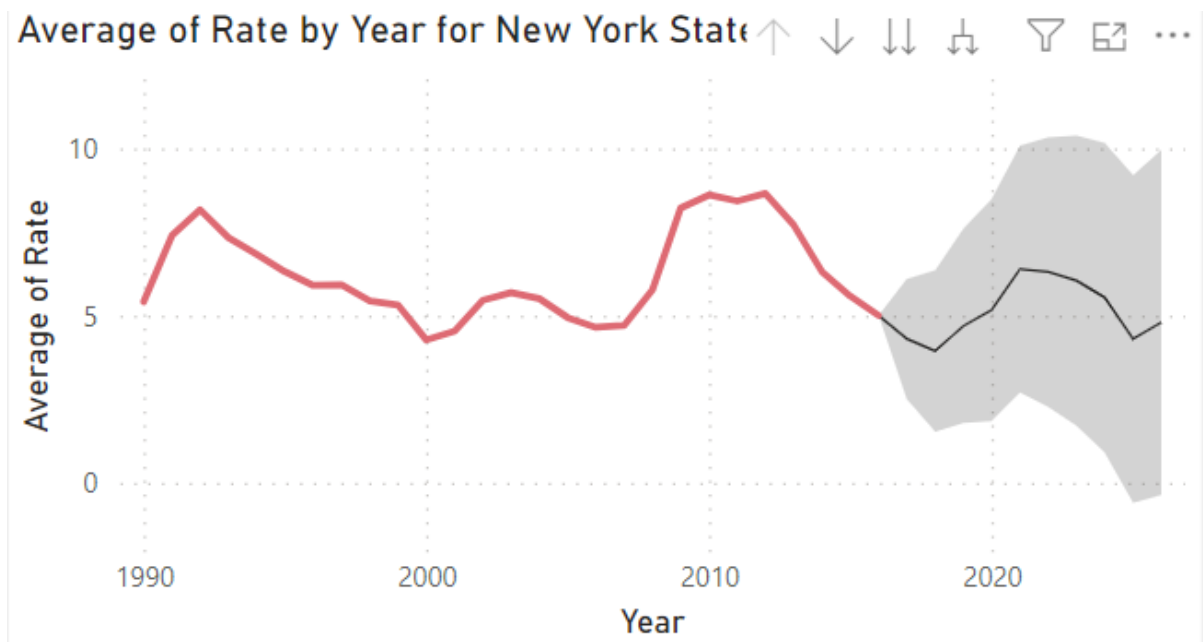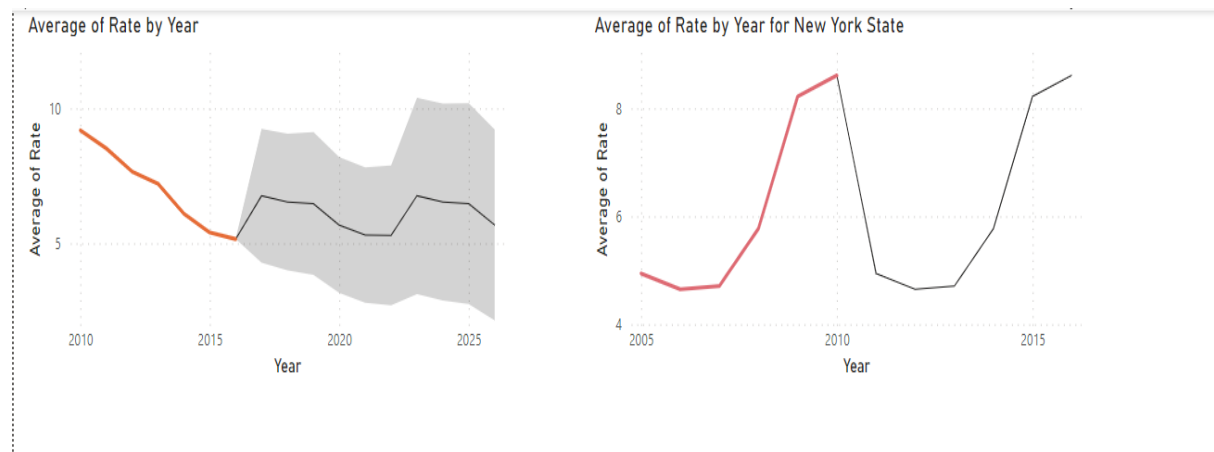
1.

Average of Rate by Year and State

State ● Alabama ● Arizona ● Arkansas ● California ● Colorado ▶

2.

Average of Rate by Year and State

State ● New York

3.

Average of Rate by Year and State

State ● New York

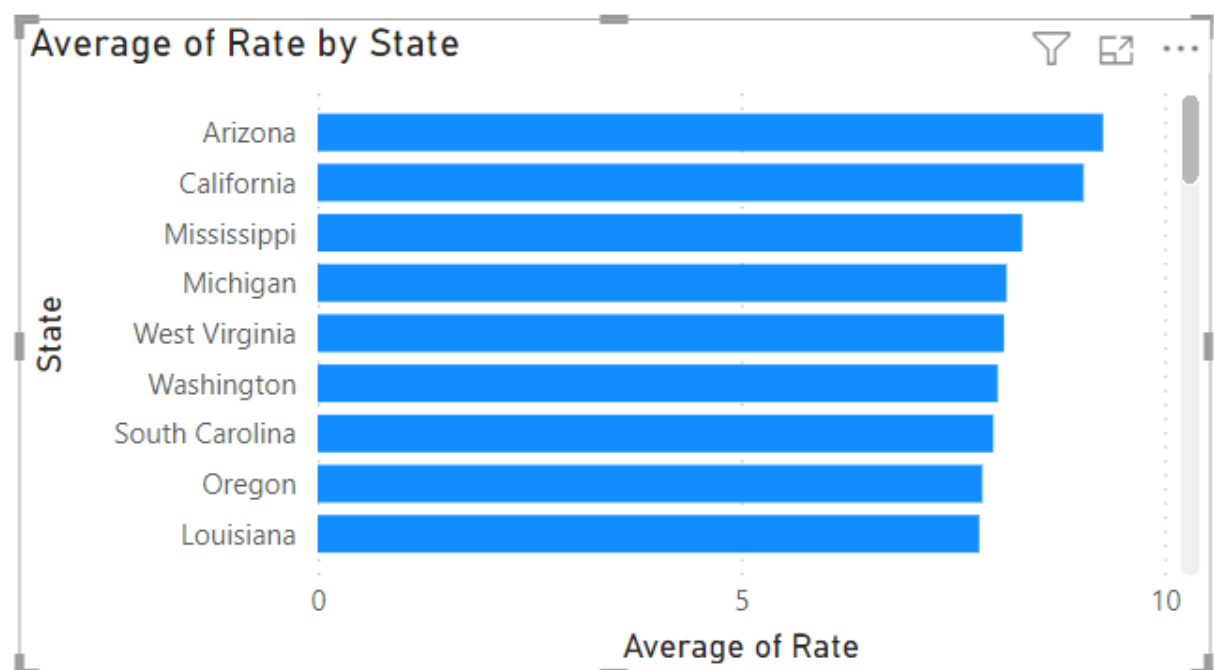**4.**

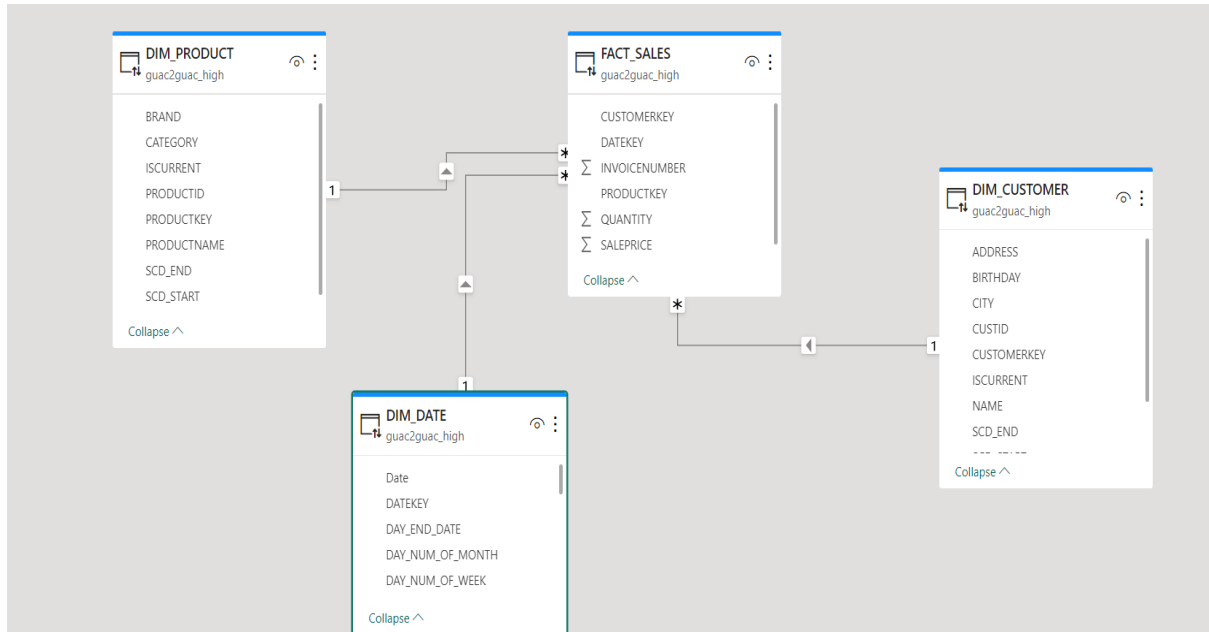Average of Rate by Year for New York State

5.

The first chart shows the average employment rate by year and also forecasts the average rate until the year 2026. Here, the forecast length is 10 and seasonality is 6 points.

The second chart shows the average employment rate by year in the New York State. It shows the employment rate between 2005 and 2010 and forecasts the employment rate until 2016. Here, the forecast length is 6 and seasonality is 6 points.
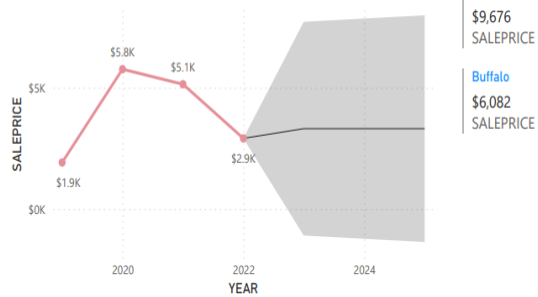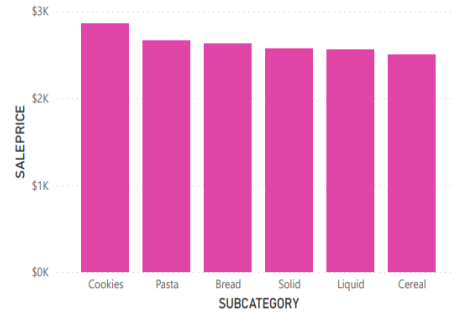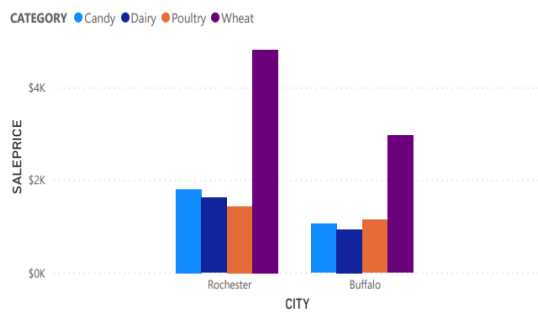
6.

7.

8.

This dashboard shows the total amount of sale made in cities- Rochester and Buffalo. The Sale Forecast by Year chart shows the total sale by year and forecasts the sale for the next two years.

Sale price by Subcategory chart depicts the total sale by the subcategory, the total sale of cookies was the highest in all the subcategories.

Sale price by City and Category chart shows the sale made in the cities- Rochester and Buffalo by the categories. Wheat is the topmost category by sale price in both the cities.

Quantity by ProductName shows the total quantity of the products sold. Chocolate chip cookies is the highest sold product.