BROADWAY ACROSS AMERICA

REPORT TOPICS

BUSINESS INTELLIGENCE

DATA ANALYSIS

OBSERVATIONS

QUESTIONS

Analysis By:

SIDDHESH POWAR

DATE: 09/05/2019

TABLE OF CONTENTS

1. APPROACH AND TOOLS USED FOR ANALYSIS

The tools which have been used for this analysis are **Excel** and **Microsoft Power BI** which I believe, is currently a trending tool similar to Tableau, which is used in major businesses and is also very effective for conveying beautiful stories through data.

Firstly, I modified the raw data provided in the original excel sheet by cleaning the data and making it organized along with best viewable formatting and sorting needed for an effective analysis. I removed any redundancies and validated the data. The entire sheet of the raw data was migrated into another sheet for this Data Preparation.

Then, I subdivided the data into different sheets for understanding the data in a better way by using combinations of columns and records to create Pivot Tables and created Pivot Charts to display meaningful insights into the data and aptly use the data for producing effective results.

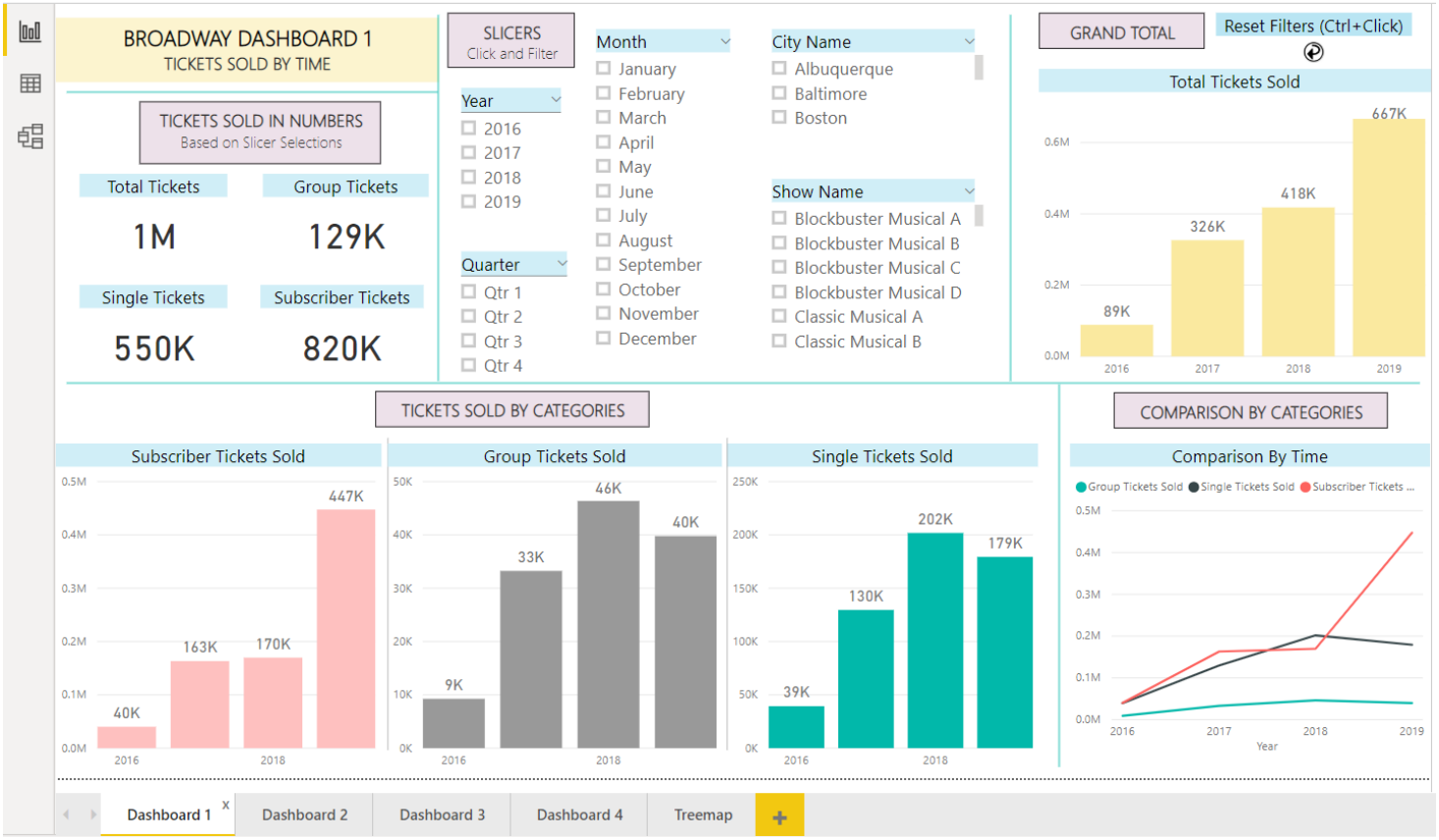
Moving on to the crucial part of this analysis, I exported the entire data into Power BI and then used Power Query Editor for Data Modeling and created measures using DAX for measuring metrics and KPIs. The final data was then imported into the Report Layout for creating Visualizations and combining the report into interactive Dashboards for telling story through the data and solving the business questions.

Note: For Power BI dashboards I have manipulated the city names in the data by providing more details to get effective visualizations.

2. DATA ANALYSIS

My analysis contains **4 Interactive Dashboards** created using Power BI and **9 charts**. I have tried to analyze data in the best way possible considering the current trends in the industry and provide detailed insights derived from the analysis by highlighting the key findings from the data. I have based my analysis on the patterns and trends observed from the data visualizations, which can help with strategic business decision-making. I have created some Key Performance Indicators using measures by diving deep into the data to understand the metrics which could answer several business questions on different levels and dimensions.

3. DASHBOARD 1

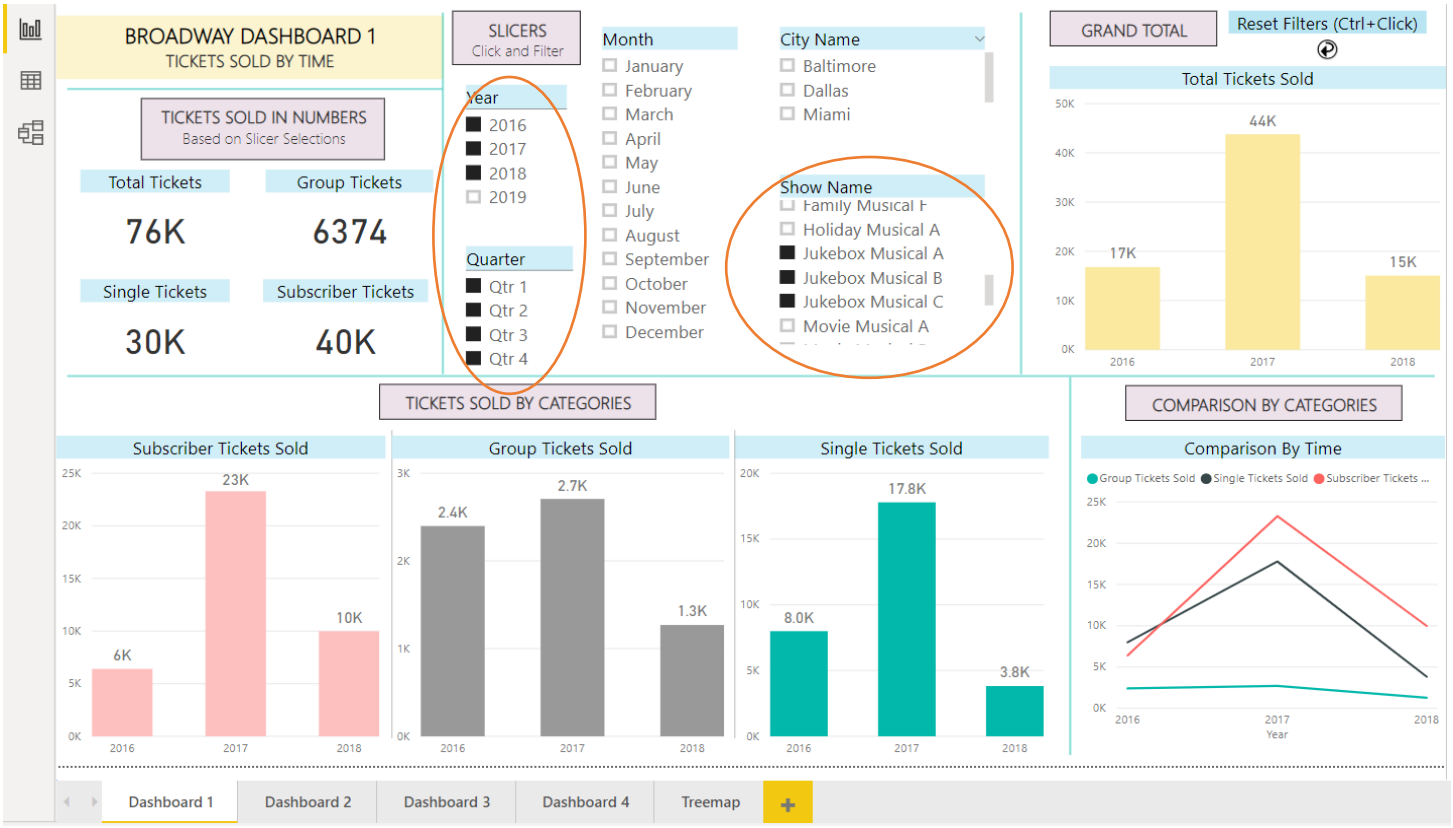


This Dashboard is designed to understand the different trends in number of tickets sold over the years. It is an interactive dashboard with different divisions of visualizations. We can view these visuals by interactively selecting any part of data we want to study, and we can observe the data change dynamically. Also, we have slicers to view the data as per our requirement.

"Tickets Sold by Categories" shows the trends in the number of tickets sold starting from 2016 to 2019 based on the ticket type: Subscriber Tickets, Group Tickets, and Single Tickets. From this we can observe the trend is steadily increasing for each category. But for Group Tickets and Single Tickets there has been a slight dip in the number of tickets sold in the year 2019. To understand this behavior, I have compared these categories using line graph in the **"Comparison by Categories"** Year-Over-Year. As you can see the red line which represents the Subscriber tickets which is significantly increasing since 2018 versus the other two categories which have shown a slight decline in the year 2019. The trend in overall tickets sold over the years has been plotted in the **"Grand**

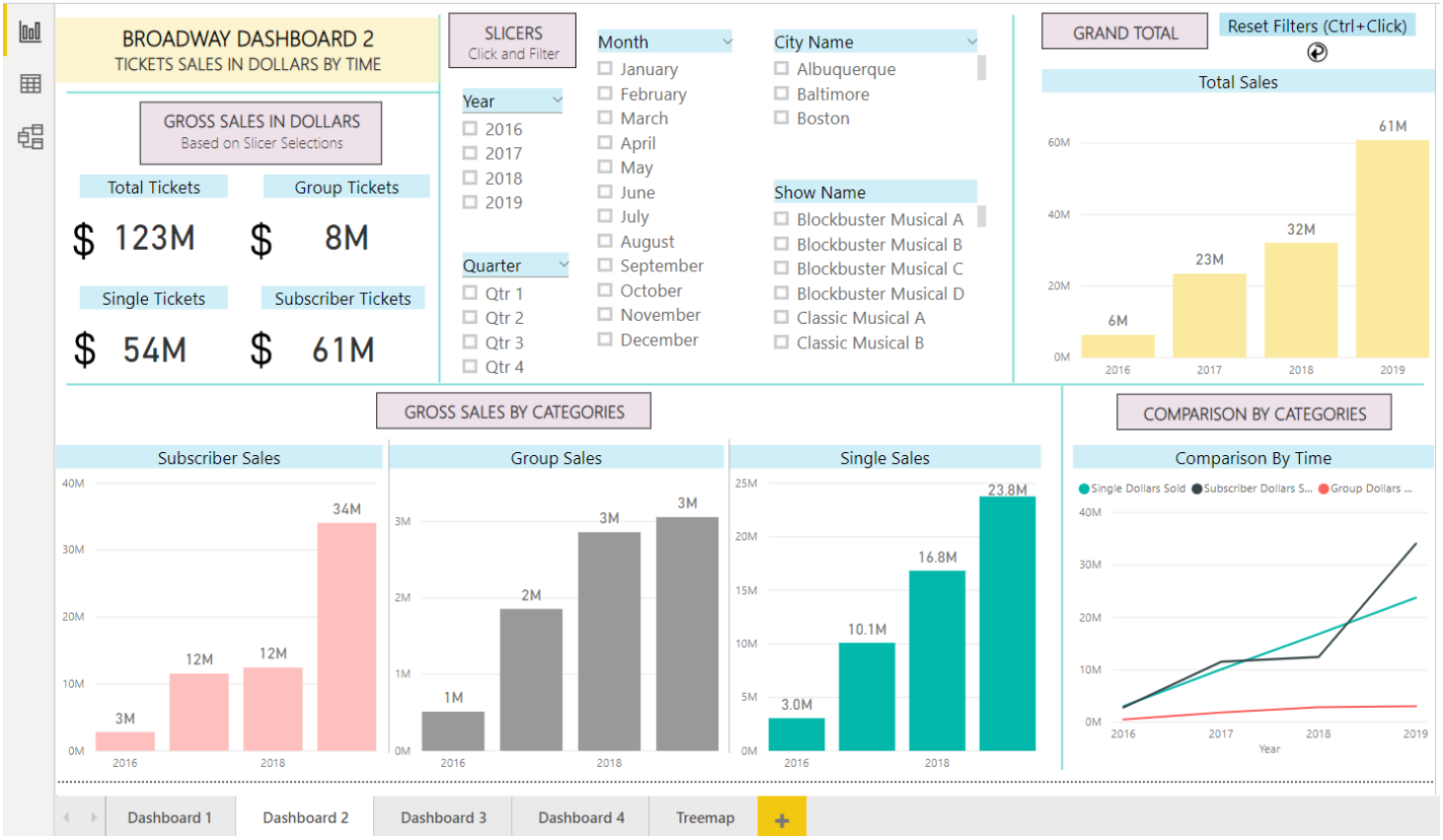
Total" section where we can see the bars have steadily increased over the years and the year 2019 is the highest with 667K tickets sold overall. On the left **"Tickets Sold in Numbers"** shows the figures which indicate the number of tickets sold by different categories and overall. Here we can see that total 1 million tickets have been sold since 2016. **"Slicers"** contain different types of filters and slicers options available to us to slice and dice the data as per our requirement. Here we can slice the data according to the show names, years, months, and quarters. These slicers will help us to observe the trends for particular year/month/quarter for any specific show(s). We can also have multiple selections to compare the trends of several different shows. I have provided an example below which studies the popularity of the Jukebox Musical Shows in **Dashboard 1-A.**

DASHBOARD 1-A



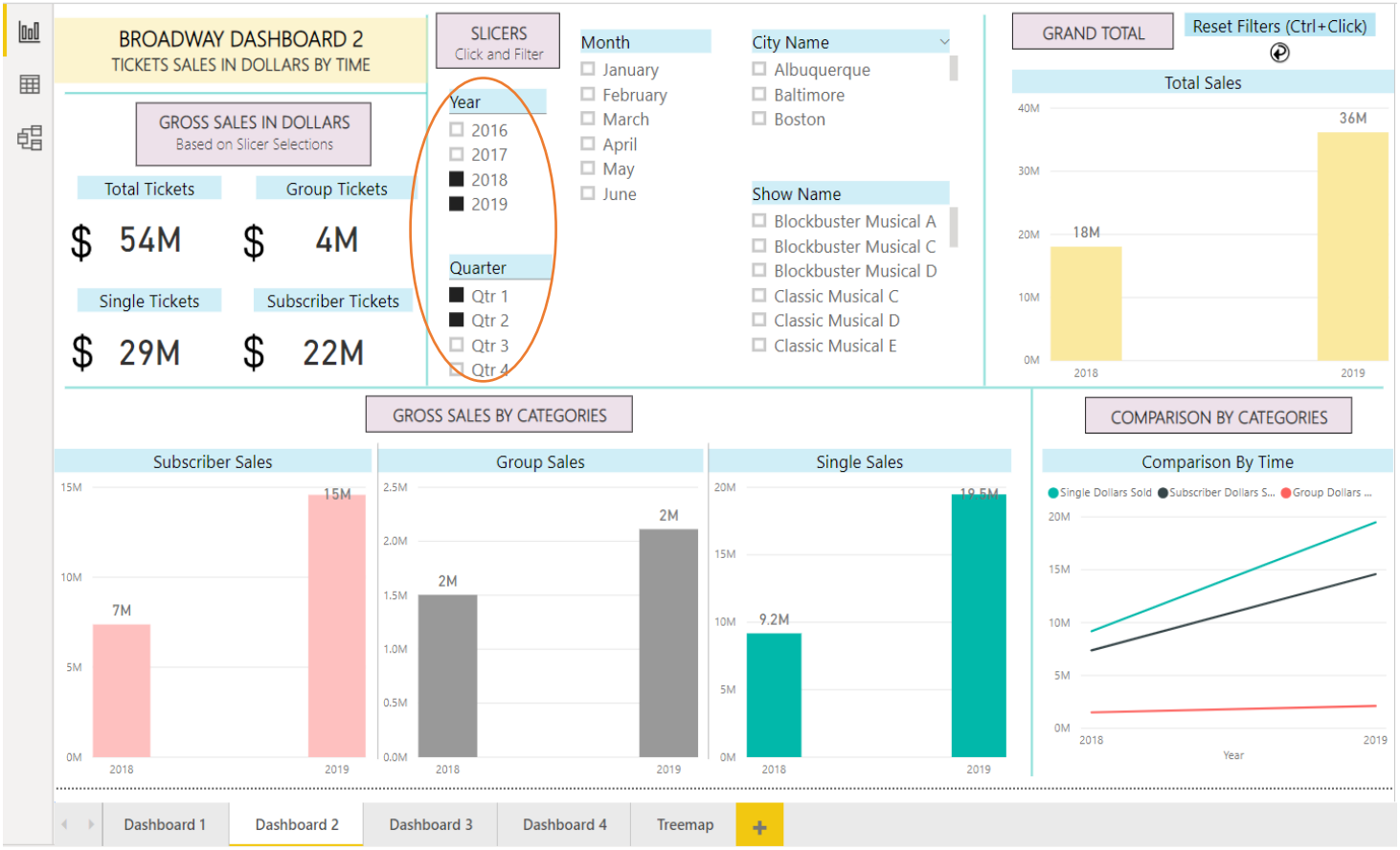
The **Dashboard 1-A** above, gives us an example of how we can slice and dice the data. Here, you are observing the trends for 'Jukebox Musical Shows' for the years 2016-2018 and all 4 quarters. As you can see, the Jukebox Musical Shows have been quite popular in the year 2017 as compared to the other two years with 76K total tickets being sold.

4. DASHBOARD 2



This dashboard is similar to the previous one but gives us the picture of gross sales over the time. As you can see the number of subscriptions has increased steadily over the years and there has been a steep increase from the last year as the subscriber sales have jumped from $12 million to $34 million. The similar trend can be observed in the line graph which shows the comparison between the three categories and as you can see the black line which represents the subscriber sales is showing a sharp increase since 2018 compared to others. The overall total sales is steadily increasing with time and rose from $32 million to $61 million with 90.6% increase from last year. We can see the grosses in numbers on the left where we can see that there is $123 million gross sales since 2016 with subscriber grosses being the highest at $61 million. I have provided an example below to show how we can slice the data for studying the sales since last 2 years for the first 2 quarters.

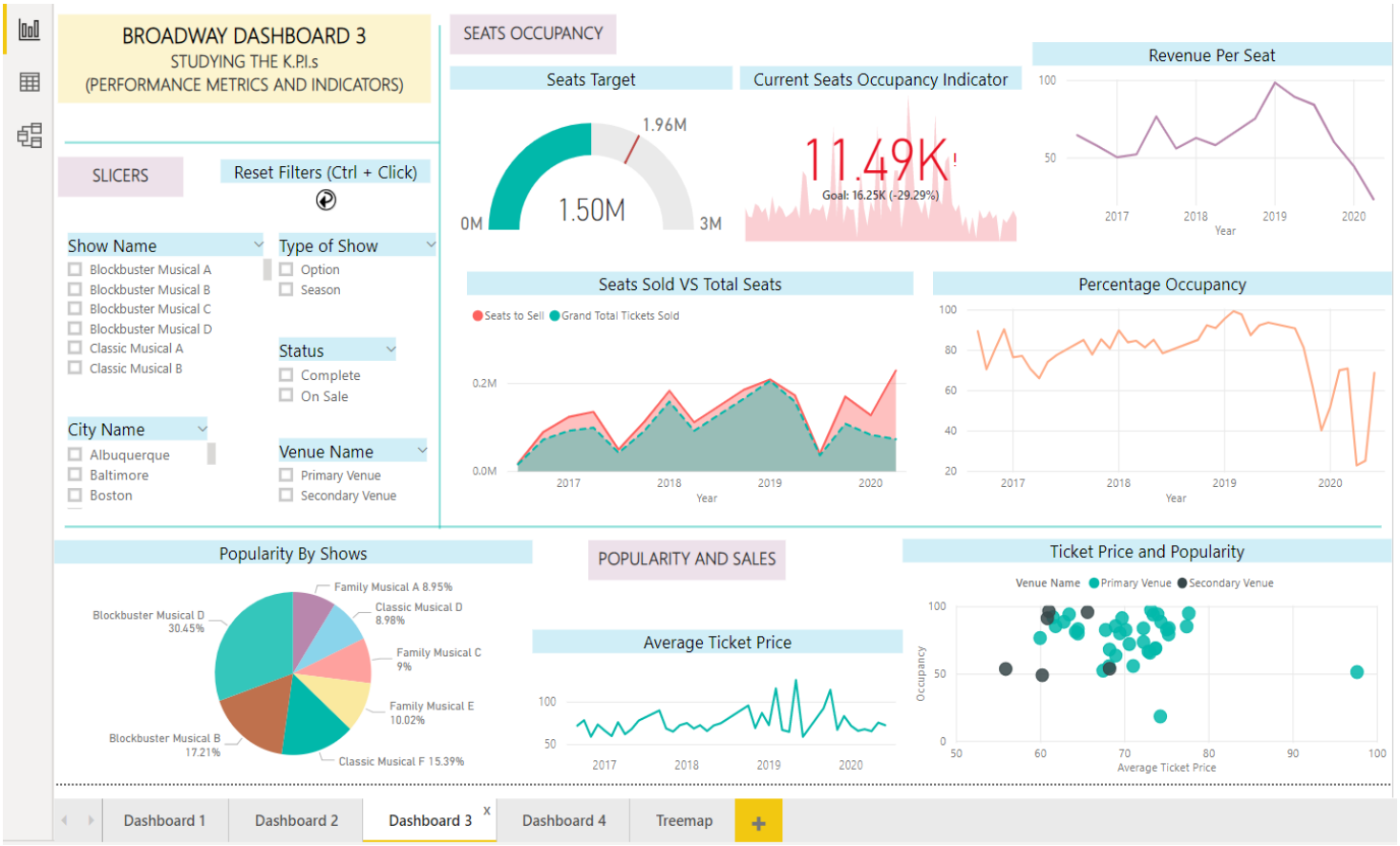
DASHBOARD 2-A



Here we can see that the data hase been sliced to study the gross sales since last year for the first half of the year. As you can see, the gross sales this year has been clearly more than the previous year with 114% increase in the first half of the year. There has been a total of $54 million in gross sales in the first half since last year. Also, we can see that the single sales and subscriber sales in the comparison line chart has increased sincle last year in the first 2 quarters. However, the group ticket sales which is represented by the red line haven't shown any significant changes since last year.

Similarly we can slice and filter the data for any year/quarter/month and for any show we want to understand. This dashboard will interactively display all the trends and figures which we want to study specifically.

5. DASHBOARD 3



This dashboard helps us study different Key Performance Indicators and Success Metrics. Here, I have created several measures to study the performances of different activites which can enable us in making some smart decisions in the business. I have tried to create these KPIs using different formulas and calculations which will help us understand the data effectively.

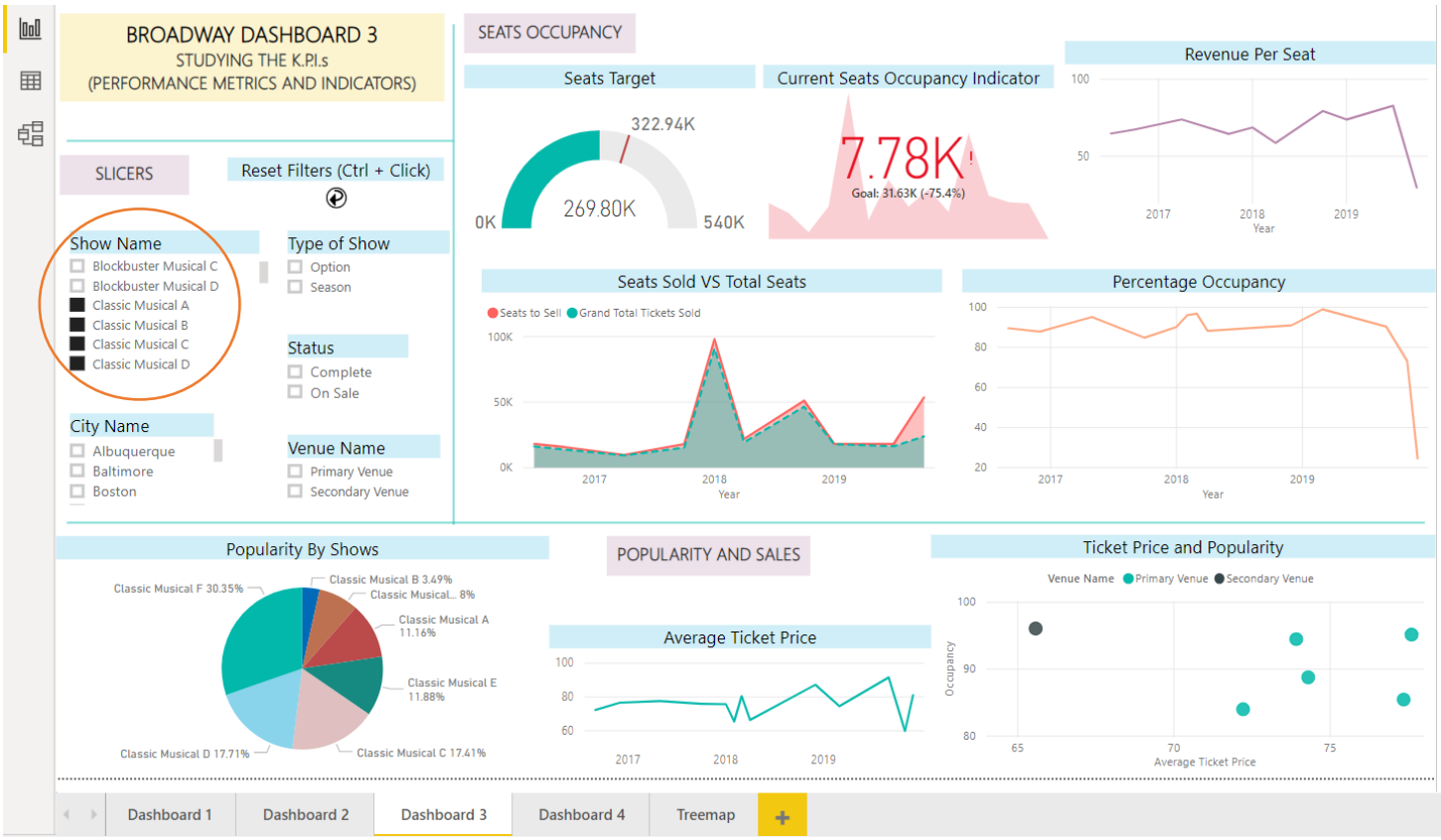
The different measures for studying the performance of the business I have created are: **'Percentage Occupancy'** for measuring the seat occupancy, **'Average Ticket Price'** which will provides us the mean amount which we are receiving per ticket, **'Revenue Per Seat'** as we know in this industry seats can be considered as an asset where every seat is attached with a certain revenue value, **'Seats Occupancy Indicator'** which indicates currently how many seats have been occupied from the target seats and gives us the precentage of how many seats are still remaining, **'Seats Target'** which shows if the seats target has been reached or not.

In the **"Seats Occupancy"** section of this dashboard we can see that, overall 1.5 million seats have been sold out of 1.9 million which is indicated by the Seats Target KPI. The Current Seat Occupancy Indicator KPI shows at this point of time 11.49K seats have been sold out of 16.25K, currently 29.29% behind the target seats/goal. The Revenue Per Seat KPI shows an increase till 2019 but has dropped since then, as currently we are in that particular part of the graph where lot of seats are still left to be sold for 2020 which explains the drop in the revenue. Similarly, Percentage Occupancy KPI indicates that 2019 was best in terms of the number of seats occupied. The seats sold VS total seats area chart clearly shows the wide gap in the red and the green lines in the year 2020 which shows the seats that are still unoccupied.

The **"Popularity and Sales"** section contains Popularity by Shows pie chart which shows Blockbuster Musical D has been the most popular with overall 30% of all the shows. The Ticket Price and Popularity scatter plot shows the correlation between the occupancy and the average ticket price for all the shows categorized by venues. Here, we can see that the occupancy is the highest for most of shows with ticket price between $70-$75 as most of data point are clustered around in that area. We can also observe that, as the average ticket price increases beyond $75 the occupancy tends to decrease. The Average Ticket Price chart shows how the ticket price has varied over the years with 2019 being the peak and with 2020 year yet to start we can observe that this KPI shows inconsistency in the data for the ticket price for 2020.

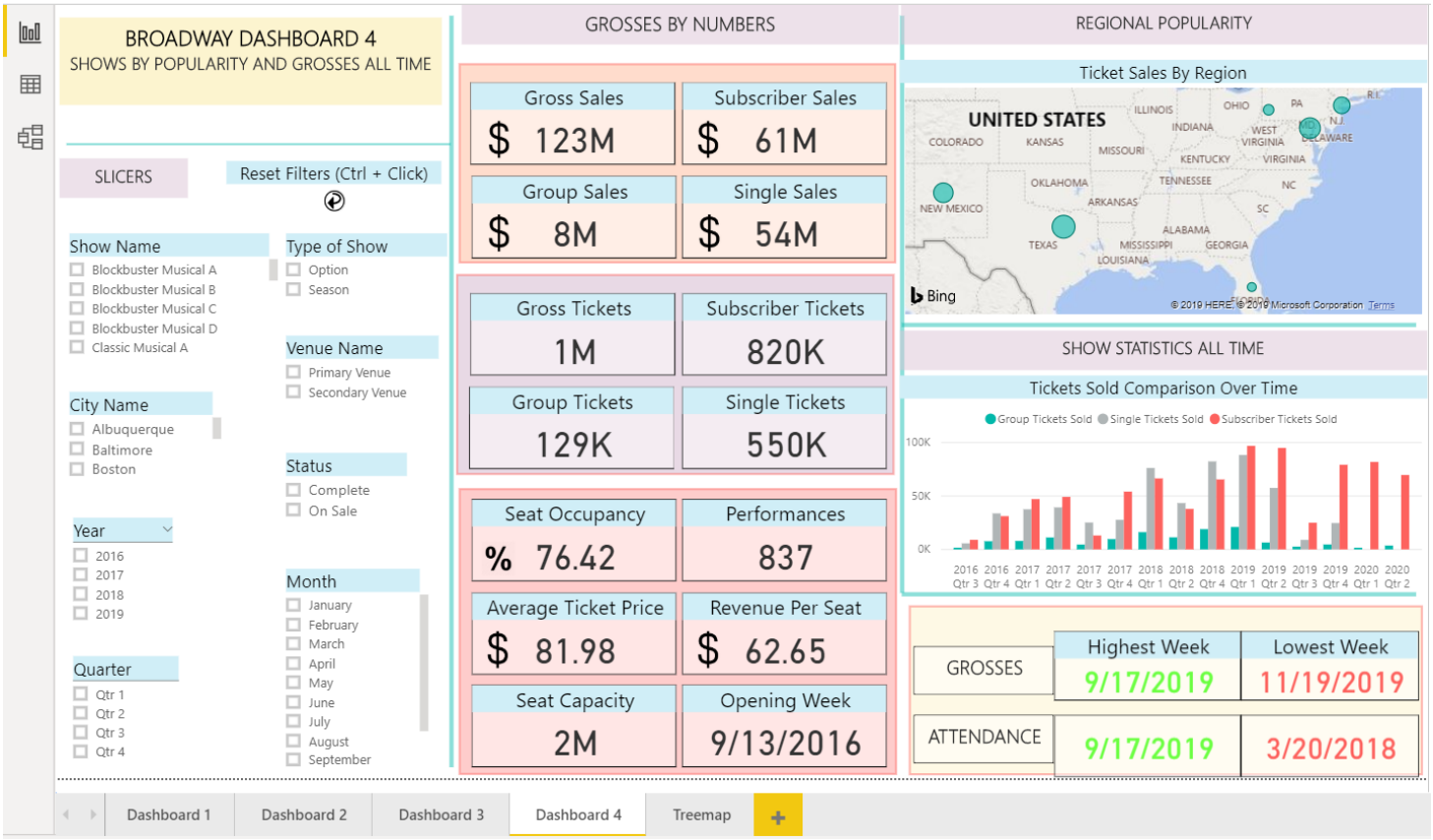
The **"Slicer"** can be used to slice this data for any show we want to understand the perfomances of each KPI for that particular show. The data can also be sliced based on Venue, Status, Cities and, Type of Show. Below, I have provided an example of how the KPIs perform for Classic Musical Shows.

DASHBOARD 3-A



In this dashboard we can see the trends and KPIs for all Classic Musical Shows which have been selected in the slicer. Here we can observe, the seats occupancy and number of seats sold were at the peak in the year 2018. The Classical Musical F show is the most popular amongst them all at 30 % popularity and overall 269K seats were sold out of 322K. Currently, 7.78K seats have been occupied out of 31.63 at this point of time which indicates we are behind by 75.4%.

6. DASHBOARD 4

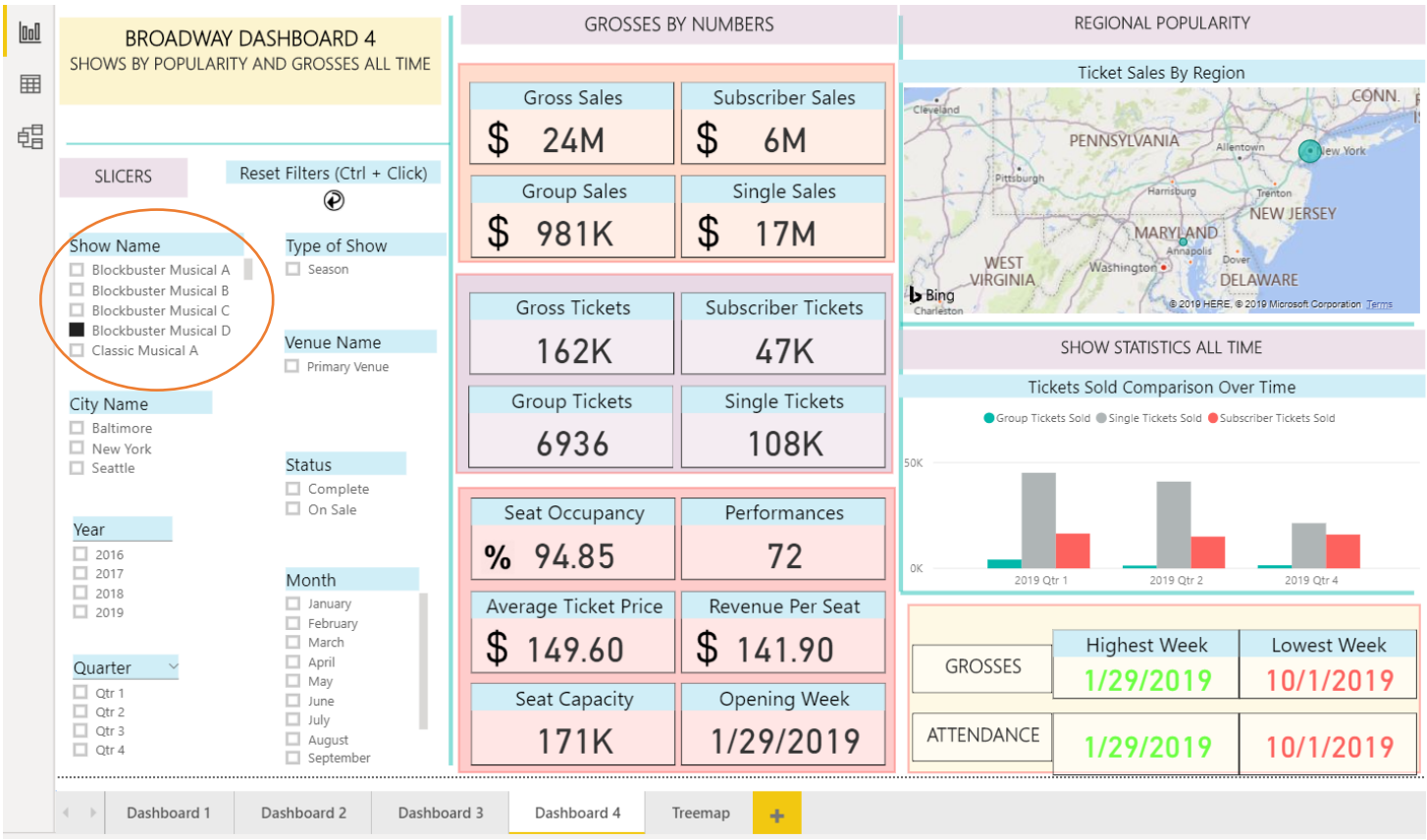


This dashboard gives us all the grossess by numbers which is very critical for understanding how each show has fared considering the industrial trends. Here, we have Year-Over-Year graph further divided into quarterly hierarchy to compare the tickets sold.

As you can see, the numbers have been provided in the “Grosses by Numbers” section which are the figures for overall data for all shows. On the right bottom corner we can see the shows by their Highest Week and Lowest Week for Grosses and Attendance. The “Regional Popularity” shows the data points which have been plotted on the map as per the location. Here, we can see that the data point is largest for Dallas city which indiactes ticket sales have been highest in that city. We can click anywhere on the map to get more information on the sales and simultaneously it will provide the numbers in the dashboard.

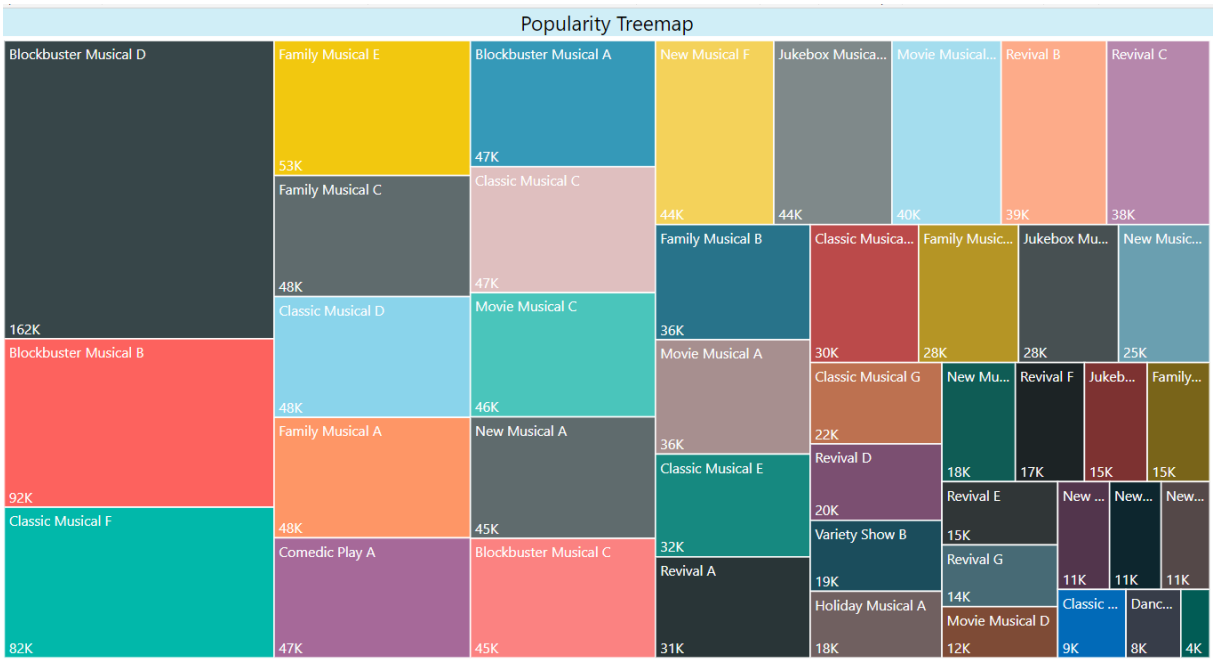
We can slice the data to see the numbers and stats for any show we want within any range of time we want to select. I have provided an example below which shows the stats for Blockbuster Musical D show.

DASHBOARD 4-A



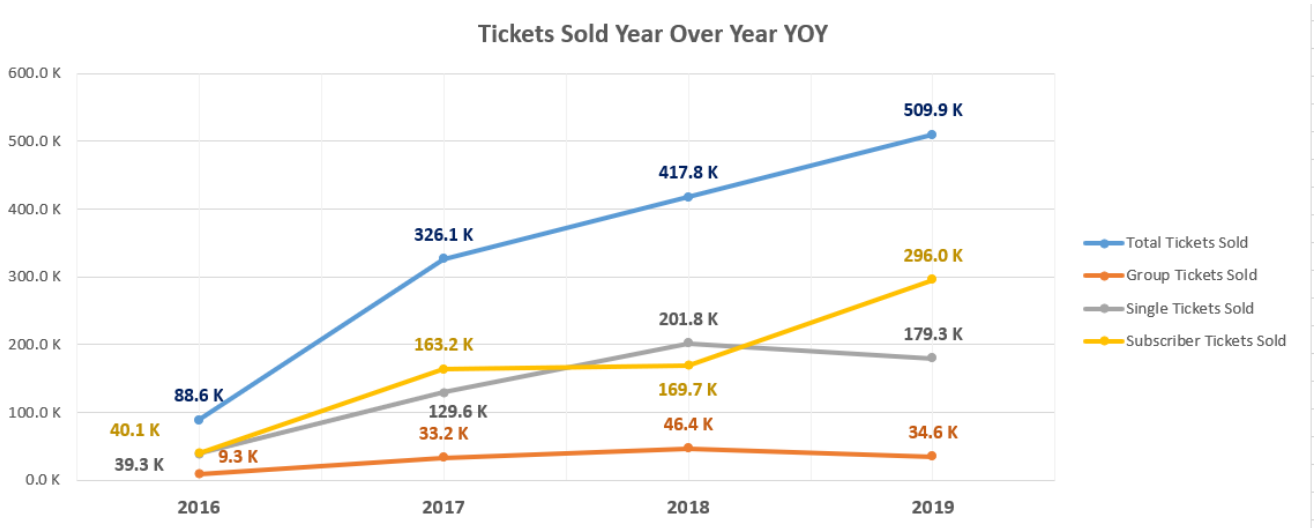
In this dashboard we can see the numbers for **'Blockbuster Musical D'** show. As you can see it gives you the basic idea of how the show has fared overall. Starting from gross sales divided into ticket categories, total tickets sold divided into categories and the KPIs such as seat occupancy, show was performed 72 times, average price of ticket for that show is $149.60, revenue earned per seat is $141.90, the total seating capacity is 171K. It also shows that this show started in the week of 01/29/2019 and the highest week and lowest week by grosses and attendance overall. It also shows the comparison in quarters divided into ticket categories and indicates that the show has taken place a few times in Baltimore and majority of times in New York.

7. CHART 1



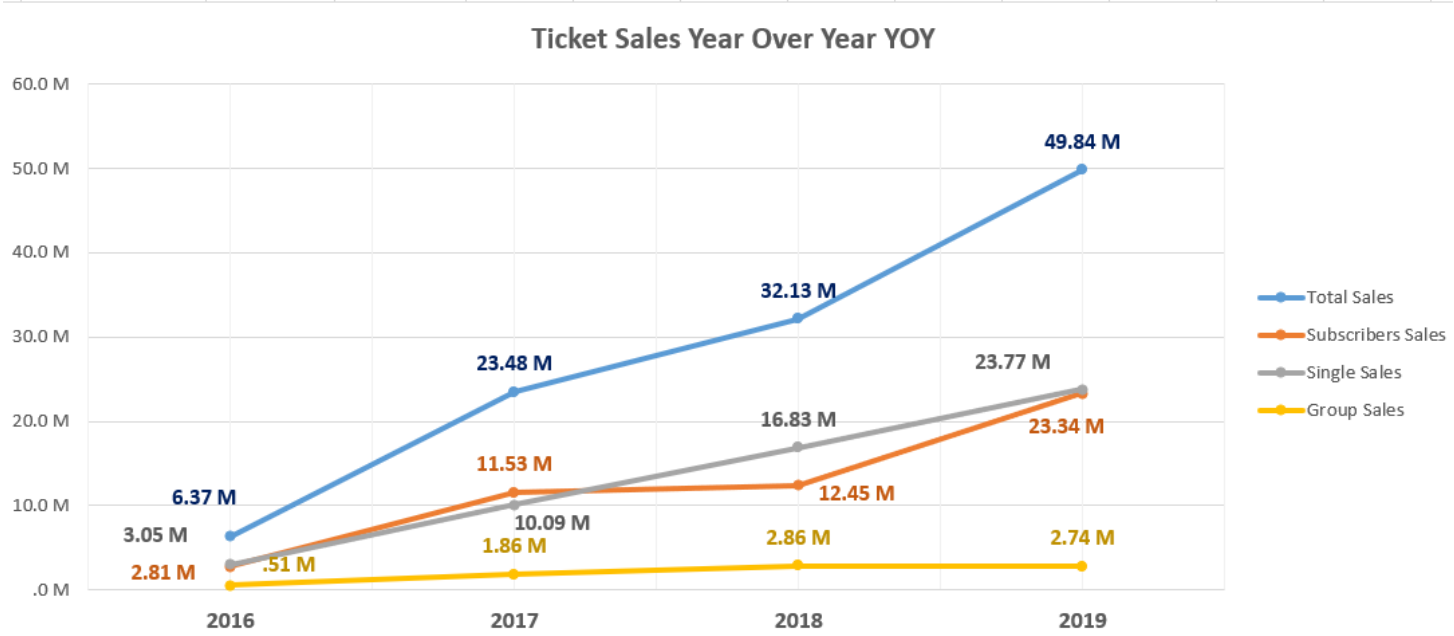
This is popularity tree map which shows the number of tickets sold by each show. Here we can see that Blockbuster Musical D is the largest block which indicates it is the most popular show with 162K tickets sold overall.

CHART 2



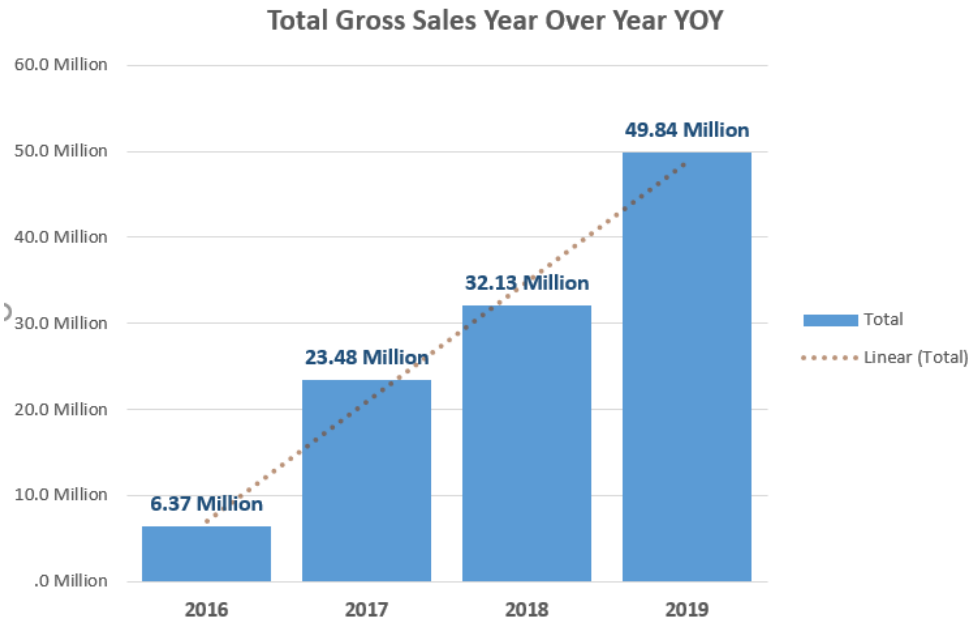
This chart shows the trend in Tickets Sold YOY which shows the trend is steadily increasing with subscriber tickets significantly increasing since 2018.

CHART 3



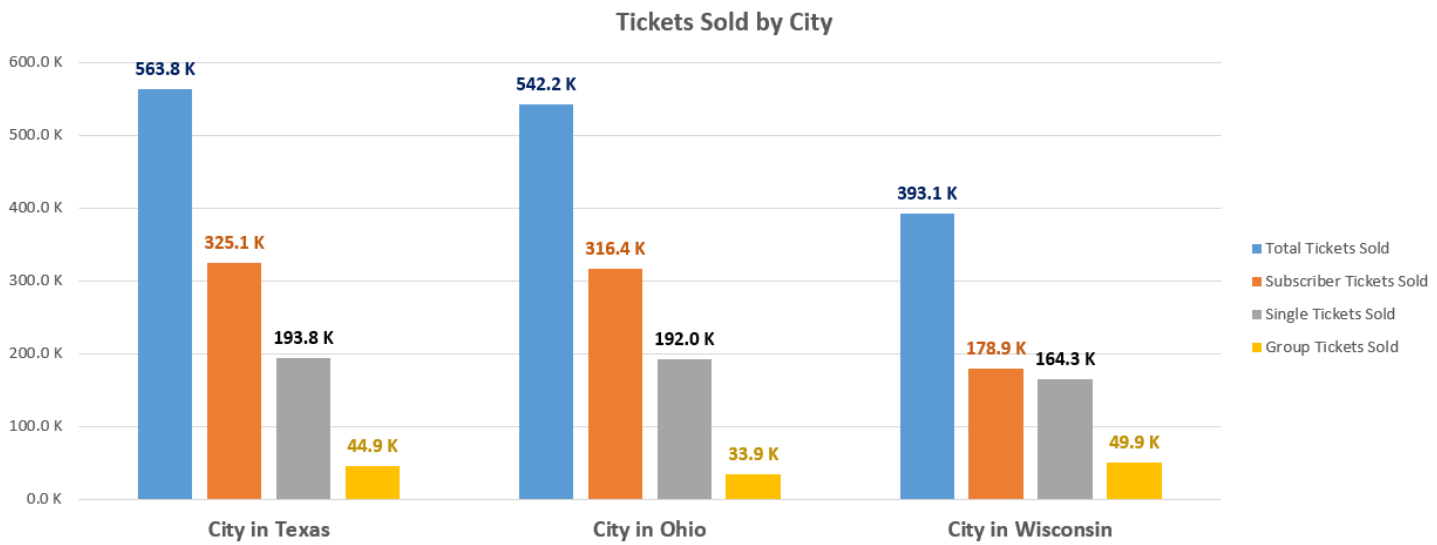
This graph shows YOY for Gross Sales which shows single and group tickets sales following almost a linear trend and subscriber ticket sales varying over time but is increasing since 2018.

CHART 4



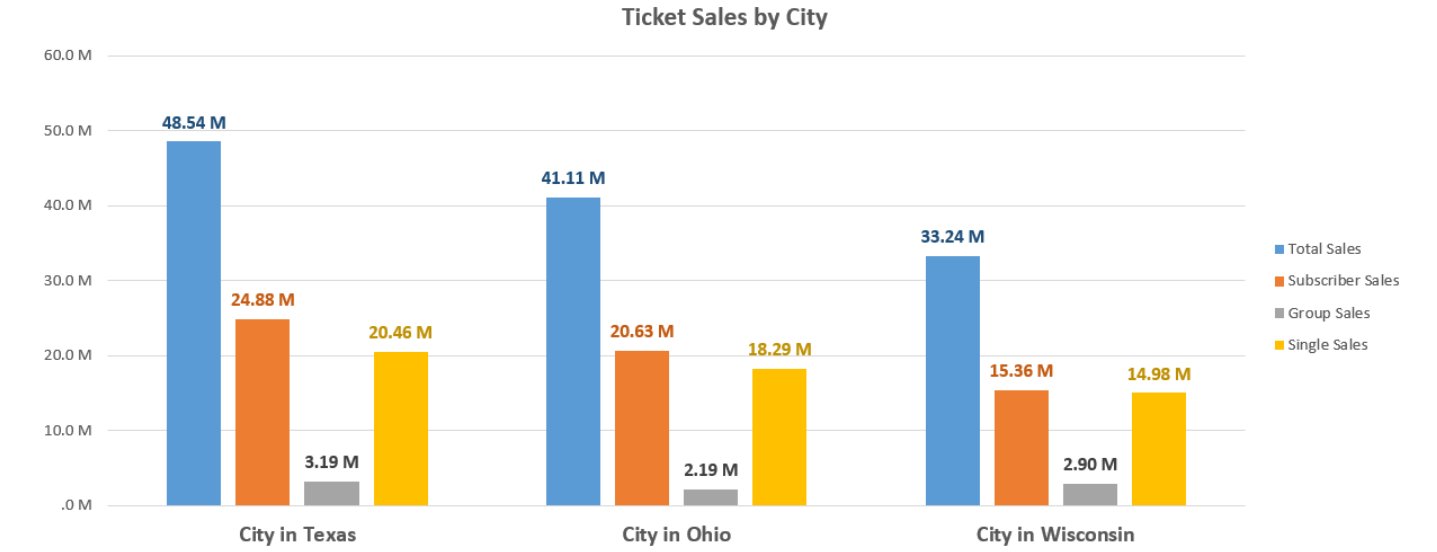
This gives us the overall insight into how sales have fared till now YOY with steady increase in sales observed since 2016.

CHART 5



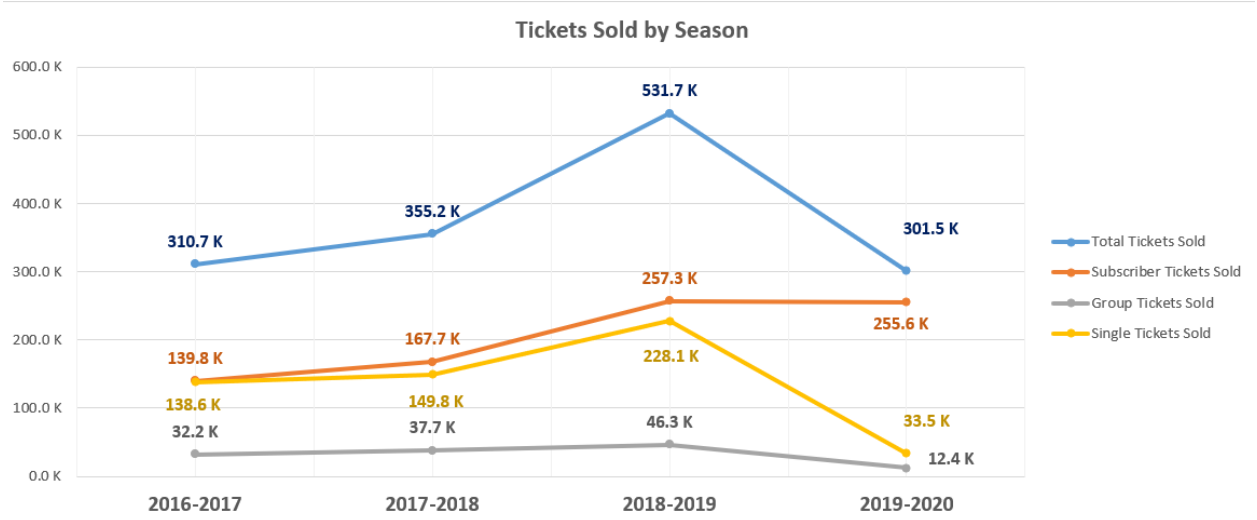
This chart illustrates the number of tickets sold by each region. This chart is created from the raw data which consisted three categories in city column. As you can see, overall Texas has been successful in selling most tickets.

CHART 6



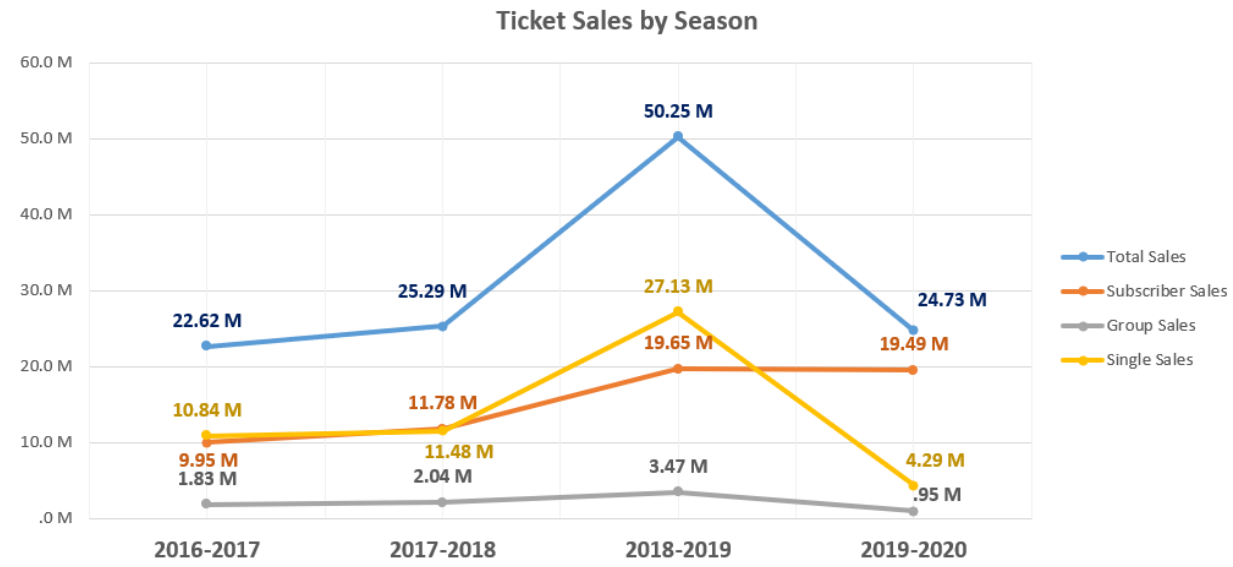
Like the previous graph, this graph shows sales in different cities with Texas being the highest at $48.54M in total sales.

CHART 7



Here, I have plotted the same trend for ticket sold but, on the axis, I have classified the data by season name. Due to the 2019-2020 season going on we have insufficient data to observe the trend for that season thus it shows slight dip. However, we can observe that the season 2018-2019 has been the best so far with highest tickets sold at 531.7K.

CHART 8



Similarly, here we see the ticket sales being highest in the 2018-2019 season at $50.25 million.

8. OBSERVATIONS

- As we have observed in the Dashboard 1, out of the total 1M tickets sold, most tickets have been sold in the year 2019 (667K tickets sold)
- With all categories of tickets being sold increasing steadily over the year, since last year the group tickets and single tickets sold have slightly declined. However, the subscriber tickets sold has significantly increased since the last year.
- In the year 2019 $63 Million have been earned from ticket sales which steeply rose by 90.6% since last year.
- The subscriber sales is gradually increasing compared to the other categories.
- The sales is observed to be the highest in the 1st Quarter overall and lowest in the 4th Quarter.
- Blockbuster Musical D has the highest number of tickets sold at 30% overall.
- The Occupancy increases if the average ticket price is between $70-$75.
- Highest Seat Occupancy was observed in the 1st quarter of 2019 at 99.43% of overall seats.
- Current Seat Occupancy indicator is 11.49K with 29% seats still left to be filled.
- Overall Average Seat Occupancy is 76.42% across 837 Performances.
- Overall Average Revenue Per Seat is $62.45 with Average Ticket Price at $81.98.
- Texas has been successful in selling most tickets and has highest sales.
- The overall highest week in terms of grosses and attendance has been 01/29/2019.

9. QUESTIONS

- Based on the observations, why has there been a slight decline in the Group Tickets and Single Tickets?
- How has the year 2019 been so successful in terms of grosses and tickets sold compared to the previous years?
- How can we continue to improve these grosses in the year 2020?
- How can specific ticket pricing affect the seat occupancy which is observed in the scatter plots?
- Which currently running show has potential to be the highest grossing and in which city?
- Which weeks have been the highest in terms of grosses and attendance for each show?
- Which city has been is favorite for each show by performances?
- Number of Playing weeks for each show?
- How can Revenue Per Seat increase?
- How can we study these KPIs and add more to improve the efficiency?
- How can we retain the customers and tourists using predictive analytics to increase the attendance for each performance?
- How can we target the audiences and understand the pattern of the core customers?
- How can we use Big Data and gather more accurate data for more efficient and detailed targeting of current and future audiences?
- How can we connect the artists and show performances to the ideal audience groups?
- How can we understand the demographics by studying the audiences year over year and not only focus on customer retention but also attract new segment of customers to the theatres?