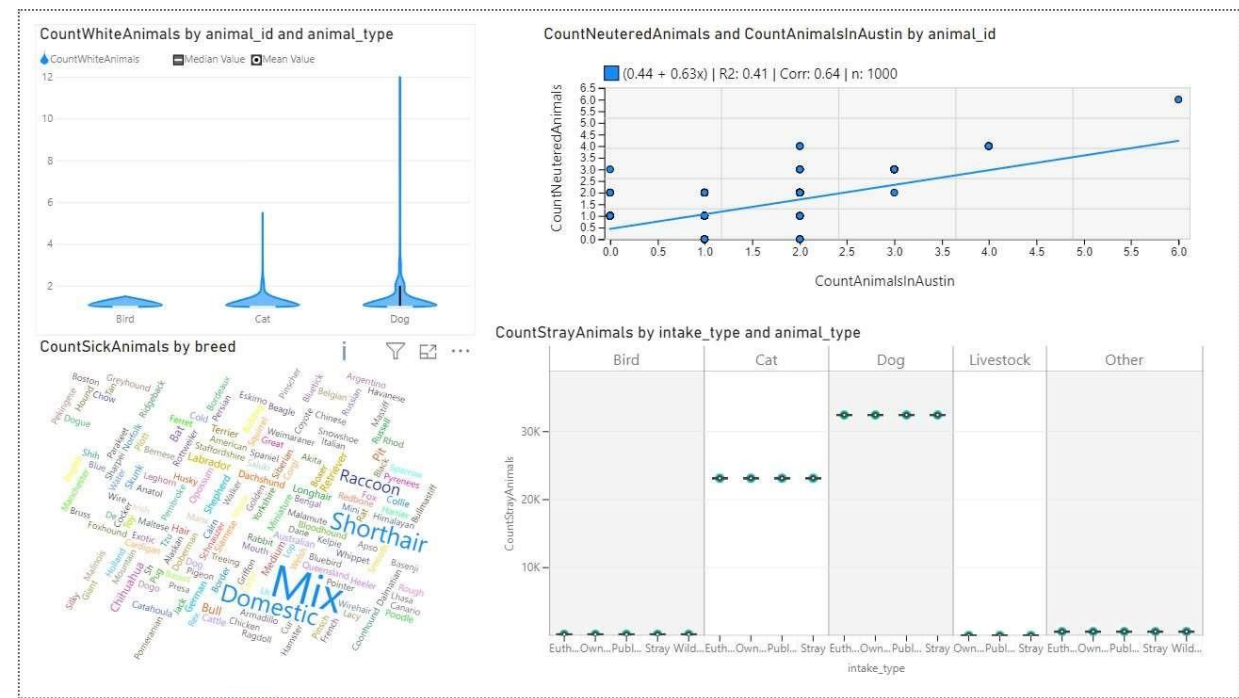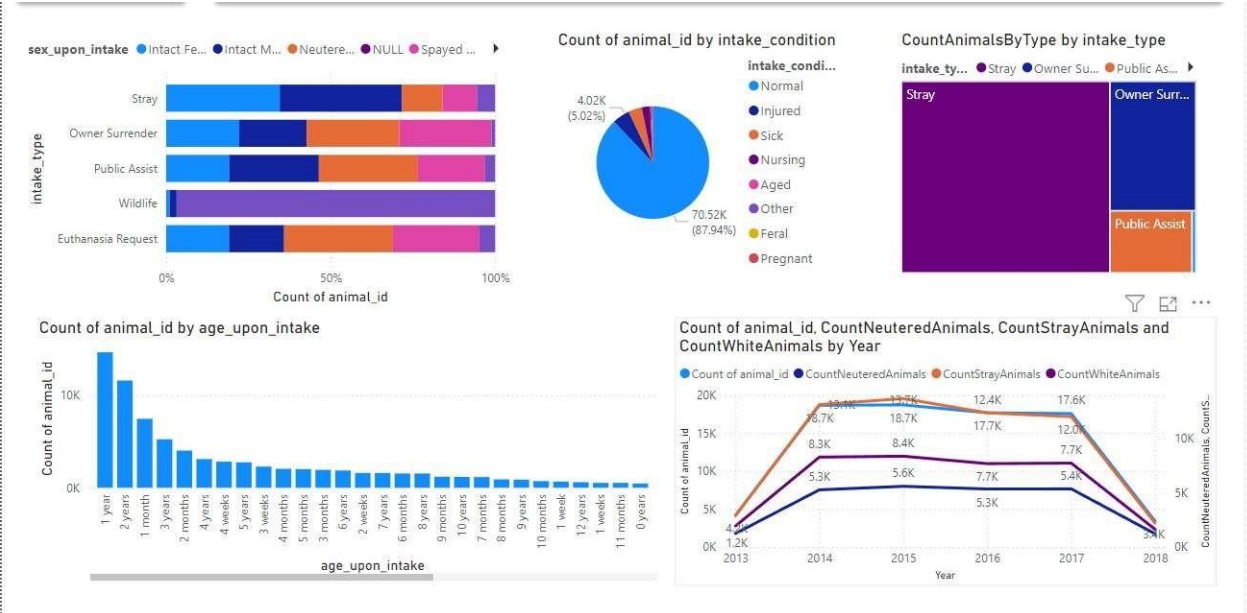| UID	2022701010
Name	Hawaiza Siddiqui
Class and Batch	BE CSE DS - Batch K

Experiment no 6

Aim :

To design interactive dashboards using Power BI for visualizing and analyzing an Animal/Wildlife/Marine dataset, employing both basic and advanced charts to uncover insights and trends.

Objectives:

1. To create visually appealing and interactive dashboards that provide insights into the dataset.
2. To explore the distribution, trends, and relationships within the dataset using various types of visualizations.
3. To enable data-driven storytelling by highlighting key patterns, anomalies, and correlations.

Database: https://www.kaggle.com/datasets/aaronschlegel/austin-animal-center-shelter-intakes-and -outcomes
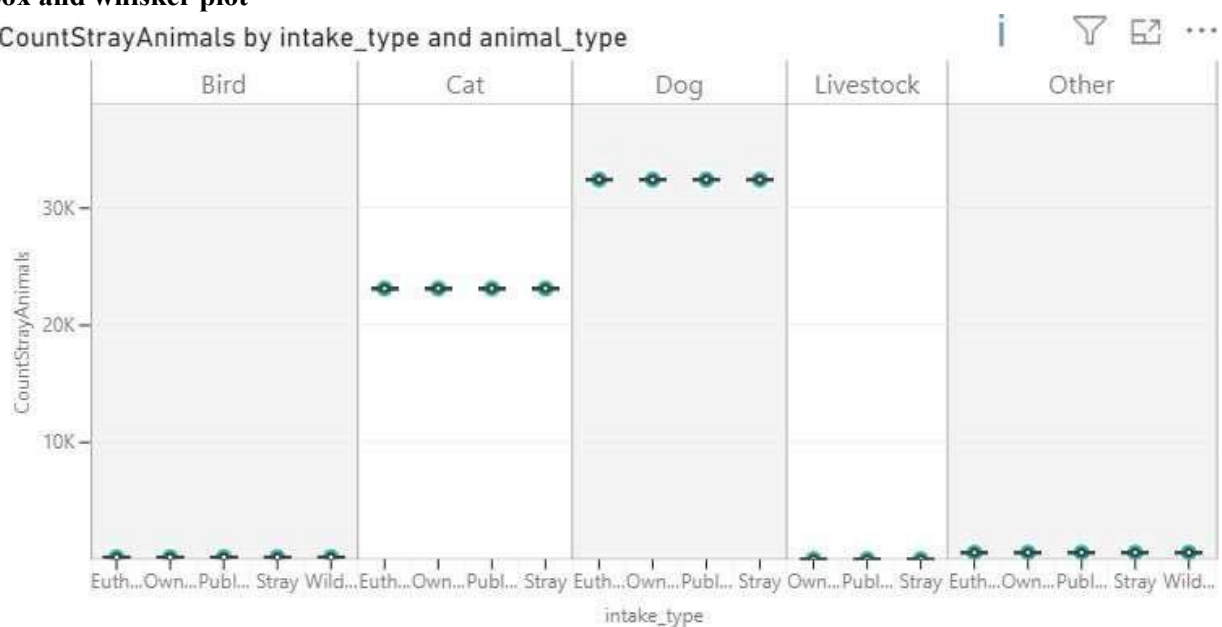
DashBoard -

Visualization -

Advance Chart -

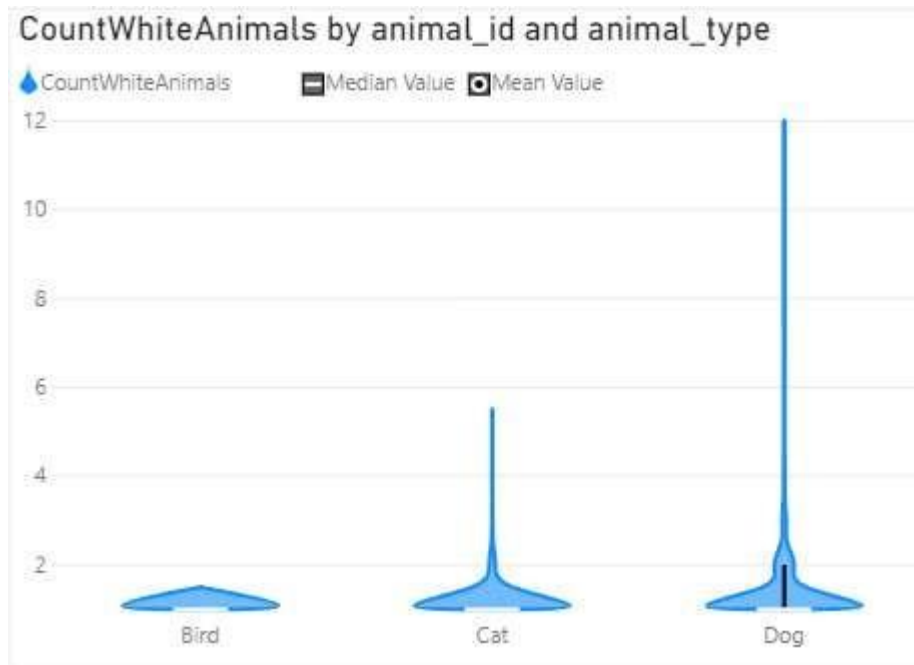**Word Cloud** -

CountSickAnimals by breed

Box and whisker plot -

CountStrayAnimals by intake_type and animal_type

Violin Plot -

CountWhiteAnimals by animal_id and animal_type

◆ CountWhiteAnimals　　■ Median Value　◉ Mean Value

Regression Plot -

CountNeuteredAnimals and CountAnimalsInAustin by animal_id

$(0.44 + 0.63x)$ | R2: 0.41 | Corr: 0.64 | n: 1000
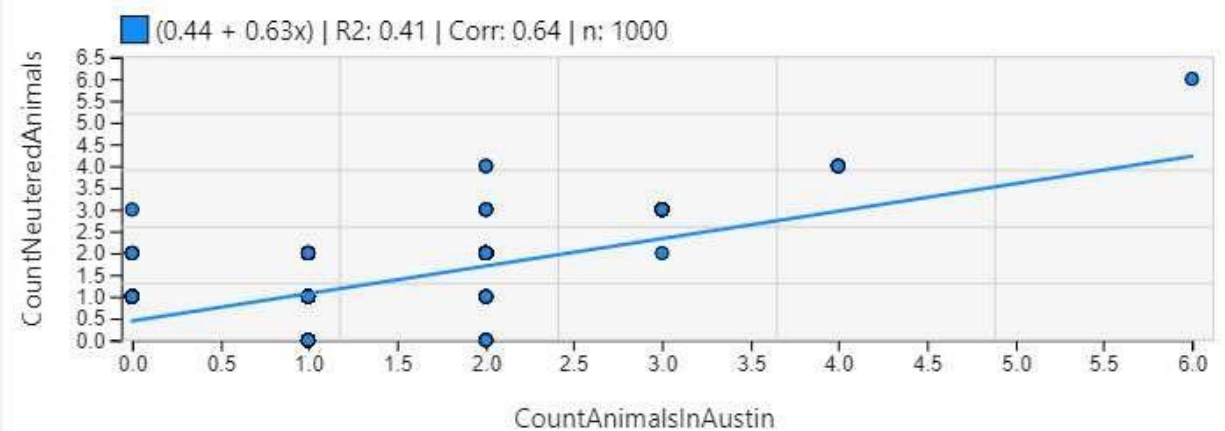
Basic Chart -
Bar Chart -
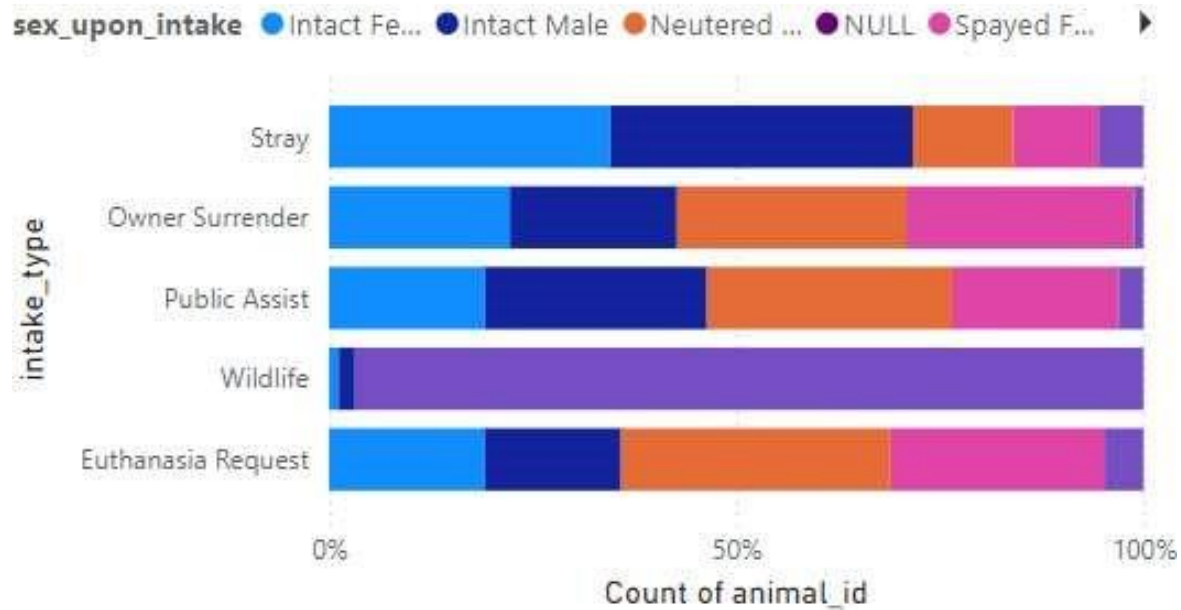
Pie Chart -

Line Chart -

Count of animal_id, CountNeuteredAnimals, CountStrayAnimals and CountWhiteAnimals by Year
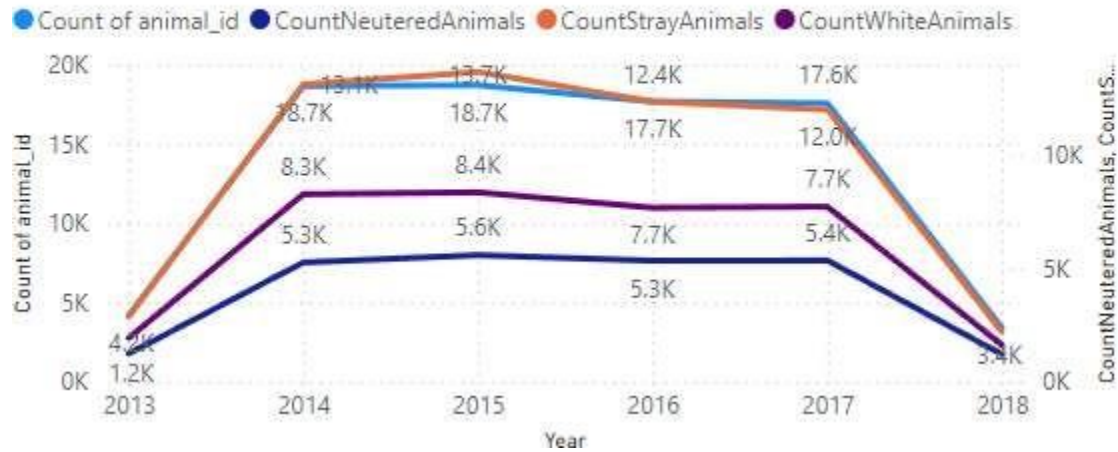
Histogram -

Count of animal_id by age_upon_intake

Tree Map -

CountAnimalsByType by intake_type

intake_type ● Stray ● Owner Surren... ● Public Assist ▶

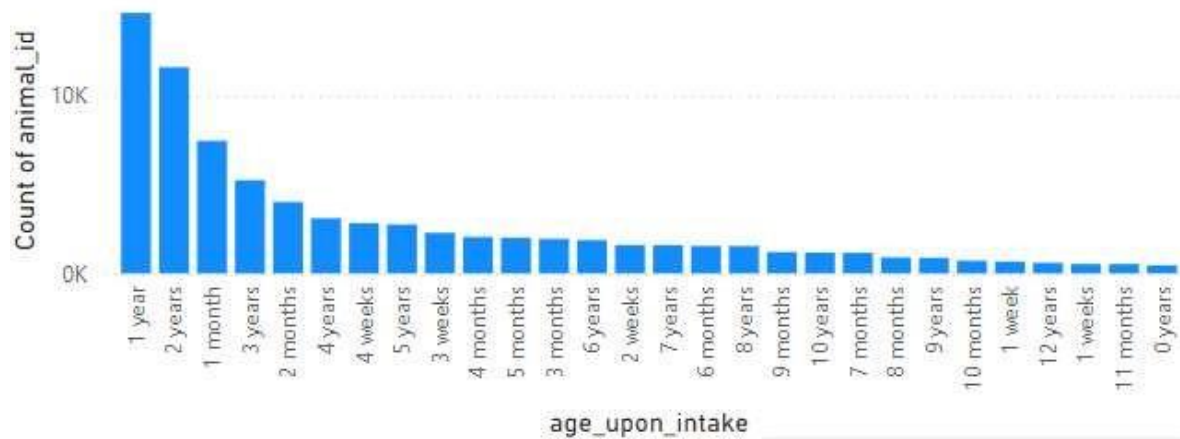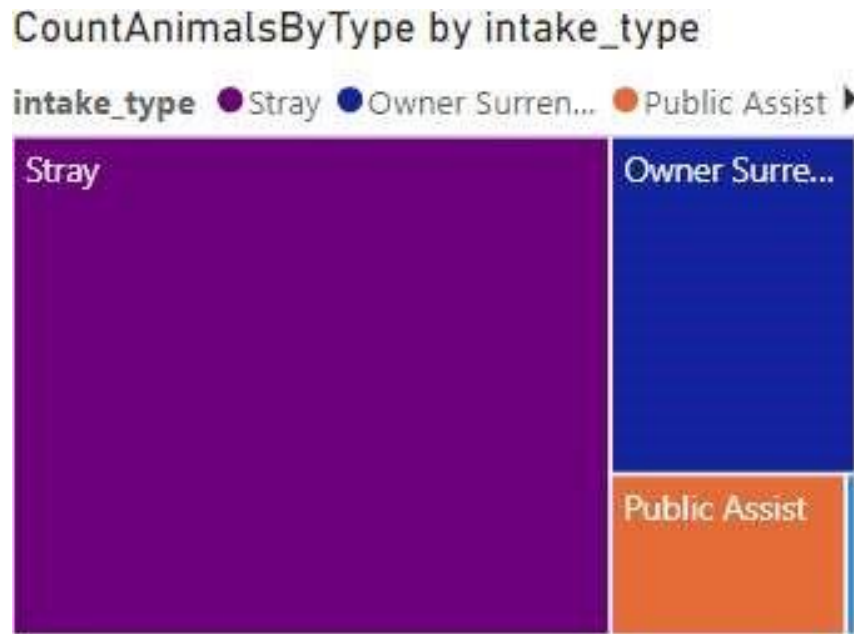**Important Observations -**

There was a sharp increase from 2013 to 2014, with the count rising from about 4,200 to 18,700 animals. The peak was reached in 2014 with approximately 18,700 animals.

From 2014 to 2017, there was a slight but steady decline, with the count decreasing to about 17,600 animals by 2017.

There's a dramatic drop from 2017 to 2018, with the count falling to around 3,400 animals.

The overall trend shows high variability, with a rapid increase early on, followed by a period of relative stability, and then a sharp decline at the end.

2018 shows the lowest count in the given time period, even lower than 2013.

Intake conditions: The pie chart shows that the vast majority of animals (87.94%) are admitted in "Normal" condition. Injured animals make up the next largest group at 5.02%.

Intake types: Stray animals form the largest category of intake, followed by owner surrenders and public assists, as shown in the horizontal bar chart and the tree map.

Age distribution: The bar graph showing age upon intake indicates that younger animals, particularly those under 1 year old, are most commonly admitted.

Yearly trends: There's a noticeable peak in animal intake around 2014-2015, followed by a decline in subsequent years.

Animal types: Dogs and cats appear to be the primary animals in the system, based on various charts including the violin plot.

Neutered animals: The line graph shows an increase in neutered animals over time, peaking around 2015-2016.

Breed diversity: The word cloud suggests a wide variety of dog breeds, with "Mix" being prominently featured, indicating many mixed-breed dogs.

Correlation: There appears to be a positive correlation between neutered animals and animals in Austin, as shown in the scatter plot.

Seasonal patterns: While not extremely pronounced, there seem to be some fluctuations in intake numbers across different years, which could indicate seasonal patterns.

Data filtering: The dashboard allows filtering by breed, animal type, and color, suggesting these are important categorization factors in the dataset.

Dax Queries Made -

1. **Count of Neutered Animals**
This query calculates how many animals were neutered upon intake:

```
CountNeuteredAnimals =

CALCULATE(

    COUNT(aac_intakes[animal_id]),

    aac_intakes[sex_upon_intake] = "Neutered Male" ||
aac_intakes[sex_upon_intake] = "Spayed Female"

)
```

3. **Count of Animals by Type**

Calculate the count of each animal type (e.g., Dog, Cat):

CountAnimalsByType =

COUNTROWS(

    FILTER(aac_intakes, aac_intakes[animal_type] = "Dog")

)

4. **Percentage of Stray Animals**

Calculate the percentage of animals that were stray upon intake:

PercentageStrayAnimals =

DIVIDE(

    CALCULATE(COUNT(aac_intakes[animal_id]), aac_intakes[intake_type] = "Stray"),

    COUNTROWS(aac_intakes)

)

This returns the ratio of stray animals to the total number of animals.

5. **Number of Sick Animals**

This query counts how many animals were brought in sick:

CountSickAnimals =

CALCULATE(

    COUNT(aac_intakes[animal_id]), aac_intakes[intake_condition] = "Sick"

)

6. Count of Animals Found in Specific Location

To count how many animals were found in a specific location, for example, Austin (TX):

CountAnimalsInAustin =

CALCULATE(

      COUNT(aac_intakes[animal_id]),

      CONTAINSSTRING(aac_intakes[found_location], "Austin (TX)")

)

7. Average Time between datetime and datetime2

To compute the average time difference (in days) between the two datetime fields:

AverageTimeBetweenDates =

AVERAGEX(

      aac_intakes,

                       DATEDIFF(aac_intakes[datetime], aac_intakes[datetime2], DAY)

)

8. Count of Animals by Color

To count how many animals are of a specific color, for example, "White":

CountWhiteAnimals =

CALCULATE(

      COUNT(aac_intakes[animal_id]),

      CONTAINSSTRING(aac_intakes[color], "White")

)

9. Distinct Count of Breeds

To know how many unique breeds of animals you have:

DistinctBreeds =

DISTINCTCOUNT(aac_intakes[breed])

10. Most Frequent Intake Type

This query returns the intake type that occurs most frequently:

MostFrequentIntakeType =

TOPN(1,

    SUMMARIZE(

        aac_intakes,

        aac_intakes[intake_type],
            "IntakeCount", COUNT(aac_intakes[animal_id])

    ),

    [IntakeCount], DESC

)

11. Top 5 Breeds by Count

The top 5 most frequent breeds:

Top5Breeds =

TOPN(

```
        5,

        SUMMARIZE( aac_intakes,

                aac_intakes[breed],

                            "BreedCount", COUNT(aac_intakes[animal_id])

        ),

        [BreedCount], DESC

)
```

12. Cumulative Count of Animals by Date

To create a running total of animals taken in over time:

```
CumulativeAnimalsByDate =

CALCULATE(

        COUNT(aac_intakes[animal_id]),

        FILTER(

                ALL(aac_intakes[datetime]),

                        aac_intakes[datetime] <= MAX(aac_intakes[datetime])

        )

)
```

Conclusion :- From this experiment, I learned to plot advance visualization like 3d chart , box and whisker plot , violin plot etc in power bi using dax queries..