Sardar Patel Institute of Technology,Mumbai
Department of Electronics and Telecommunication Engineering
B.E. Sem-VII- PE-IV (2024-2025)

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Experiment no 6

Aim :

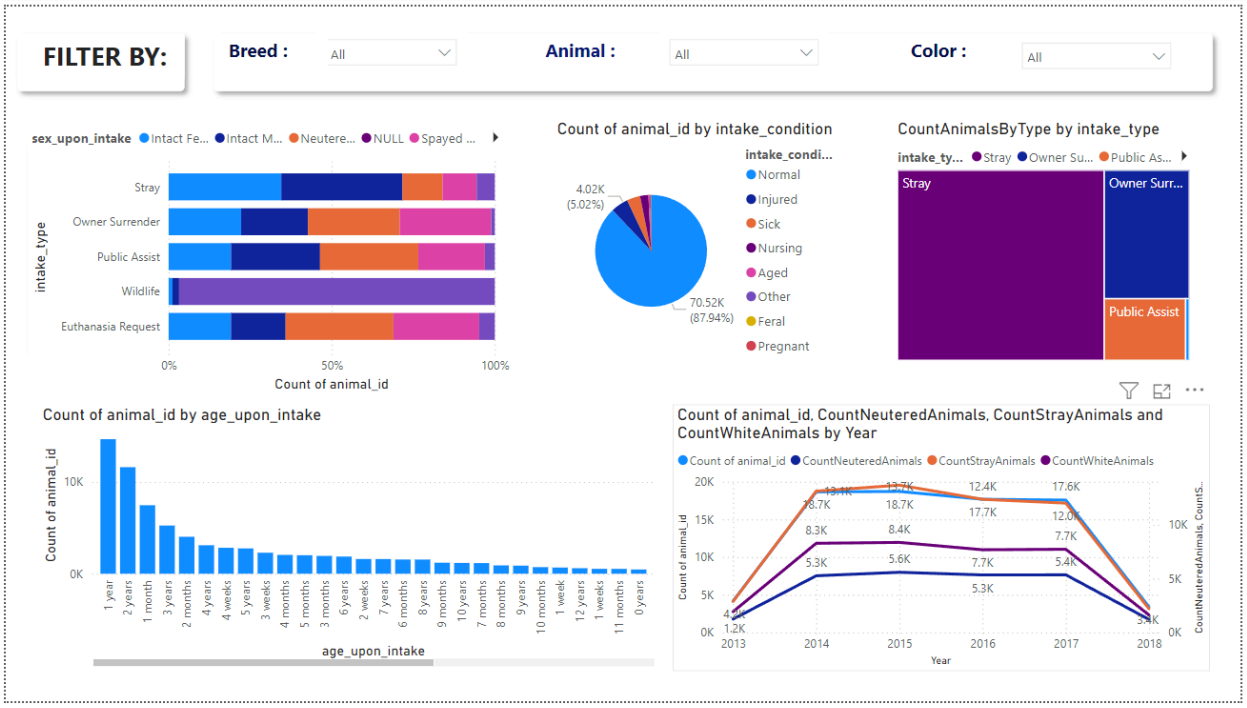
To design interactive dashboards using Power BI for visualizing and analyzing an Animal/Wildlife/Marine dataset, employing both basic and advanced charts to uncover insights and trends.

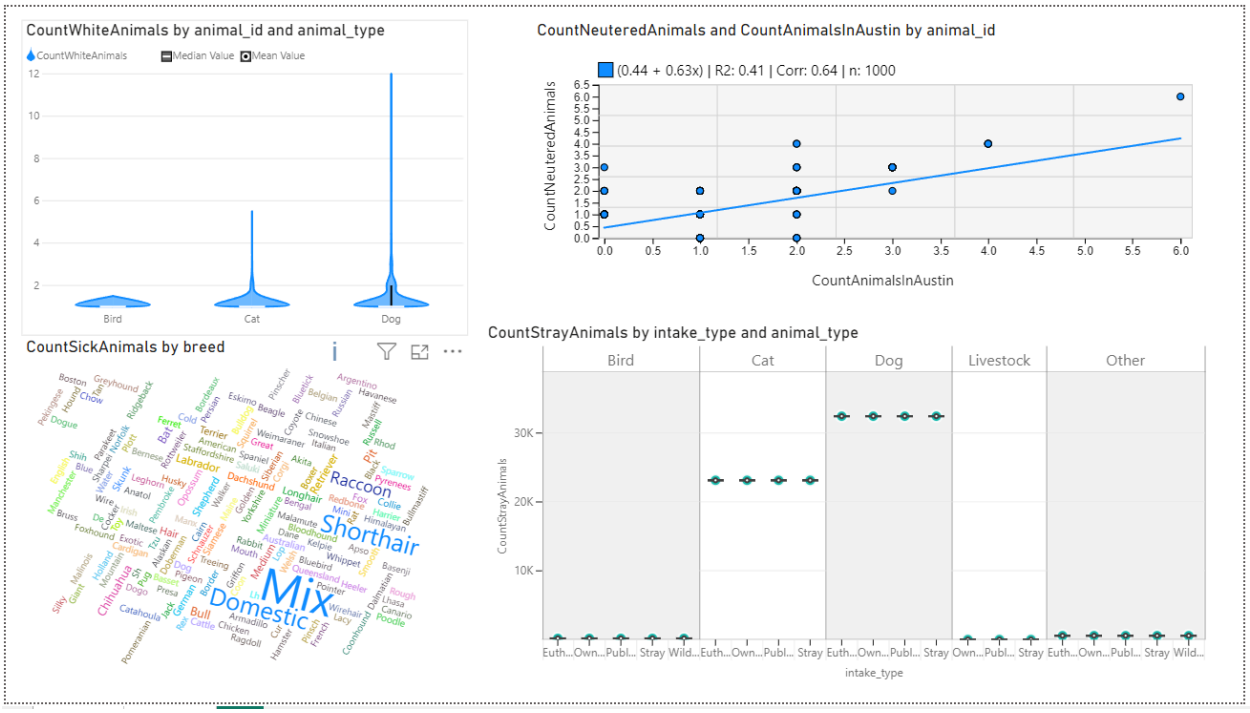
Objectives:

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 -

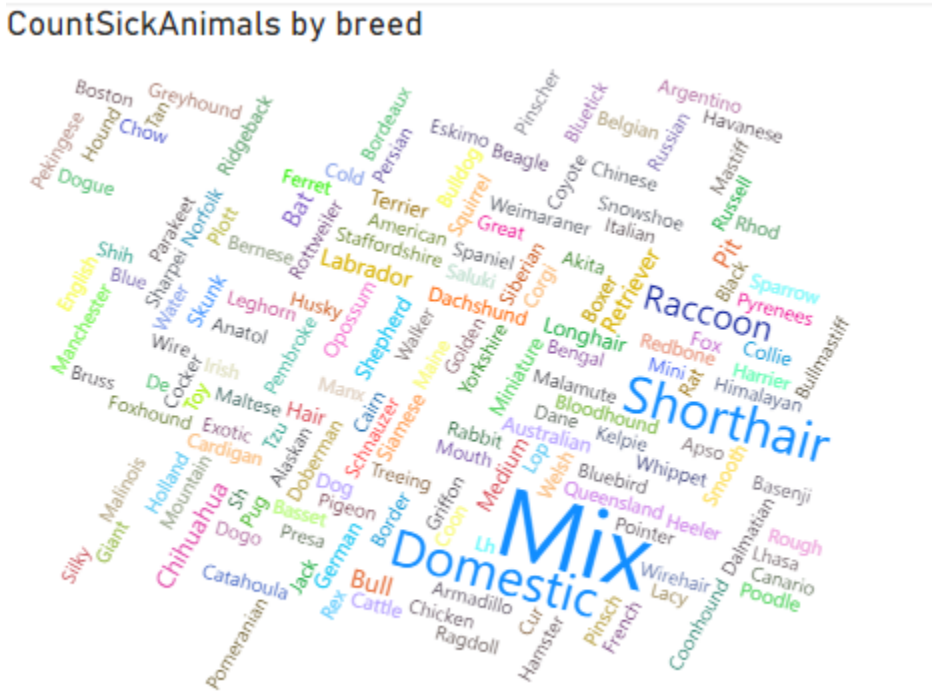

FILTER BY:
Breed :
All
Animal :
All
Color :
All
sex_upon_intake Intact Fe... Intact M... Neutere... NULL Spayed ...
intake_type
Stray
Owner Surrender
Public Assist
Wildlife
Euthanasia Request
0%
50%
100%
Count of animal_id
Count of animal_id by intake_condition
intake_condi...
Normal
Injured
Sick
Nursing
Aged
Other
Feral
Pregnant
4.02K (5.02%)
70.52K (87.94%)
CountAnimalsByType by intake_type
intake_ty... Stray Owner Su... Public As...
Stray
Owner Surr...
Public Assist
Count of animal_id by age_upon_intake
Count of animal_id
10K
0K
1 year
2 years
1 month
3 years
2 months
4 years
4 weeks
5 years
3 weeks
4 months
5 months
3 months
6 years
2 weeks
7 years
6 months
8 years
9 months
10 years
7 months
8 months
9 years
10 months
1 week
12 years
1 weeks
11 months
0 years
age_upon_intake
Count of animal_id, CountNeuteredAnimals, CountStrayAnimals and CountWhiteAnimals by Year
Count of animal_id CountNeuteredAnimals CountStrayAnimals CountWhiteAnimals
20K
15K
10K
5K
0K
2013
2014
2015
2016
2017
2018
Year
CountNeuteredAnimals, CountS...


CountWhiteAnimals by animal_id and animal_type
CountWhiteAnimals Median Value Mean Value
12
10
8
6
4
2
Bird
Cat
Dog
CountSickAnimals by breed
Mix
Domestic
Shorthair
Raccoon
CountNeuteredAnimals and CountAnimalsInAustin by animal_id
(0.44 + 0.63x) | R2: 0.41 | Corr: 0.64 | n: 1000
CountNeuteredAnimals
CountAnimalsInAustin
CountStrayAnimals by intake_type and animal_type
Bird
Cat
Dog
Livestock
Other
CountStrayAnimals
30K
20K
10K
intake_type

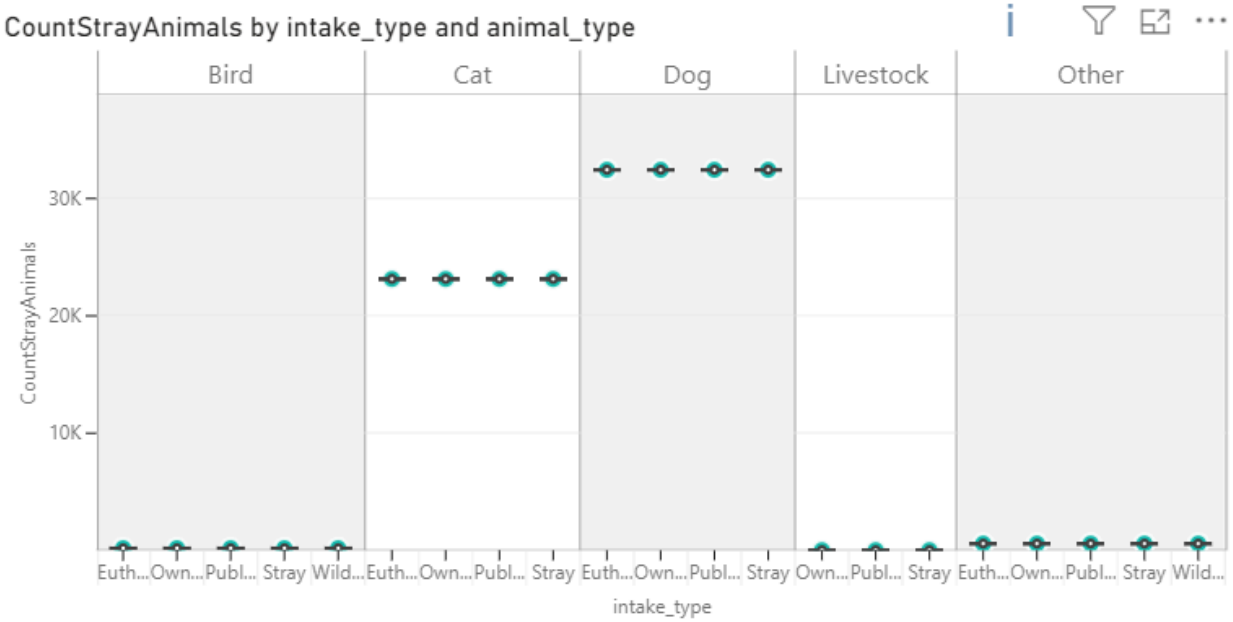
Visualization -

Advance Chart -

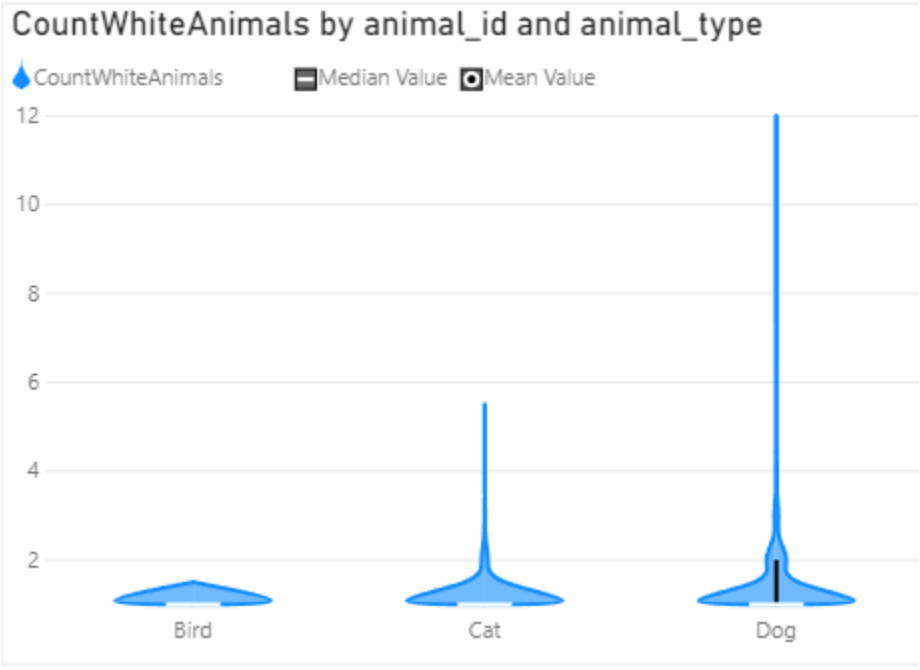
Word Cloud -



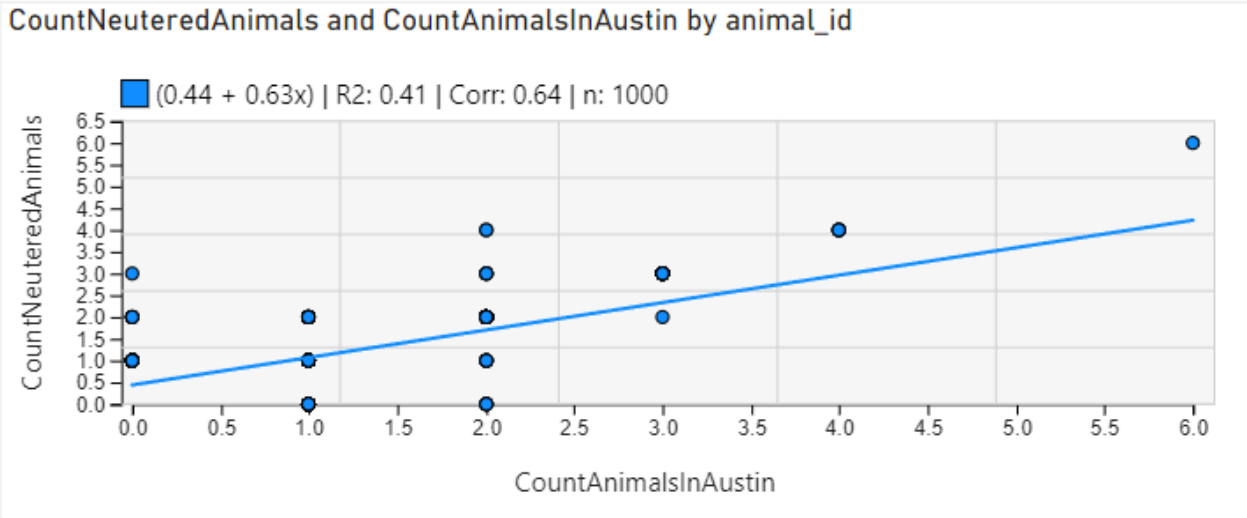
Box and whisker plot -



Violin Plot -

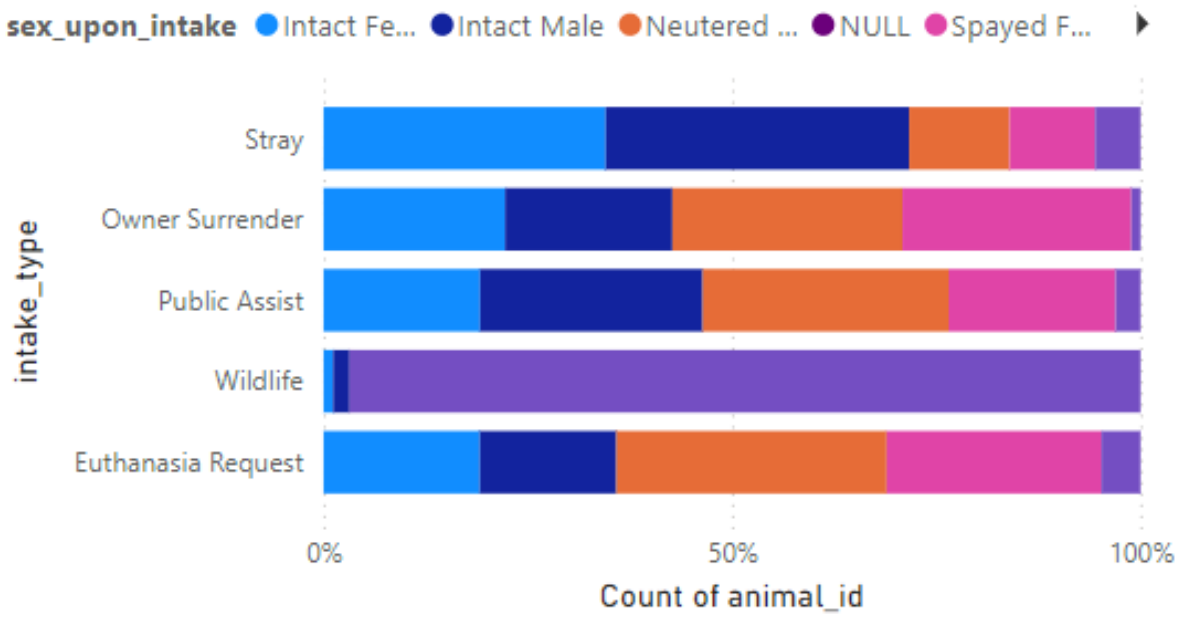


Regression Plot -

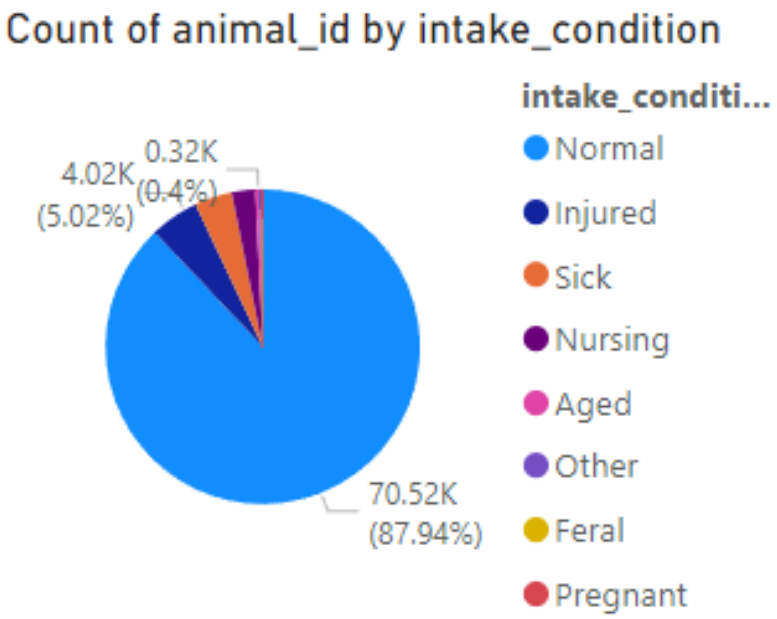


Basic Chart -

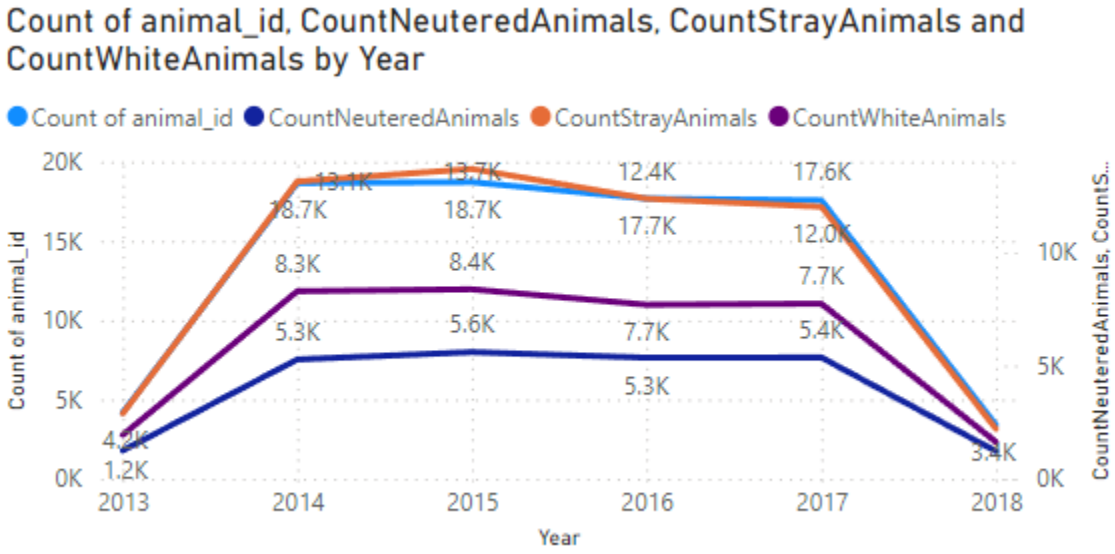
Bar Chart -



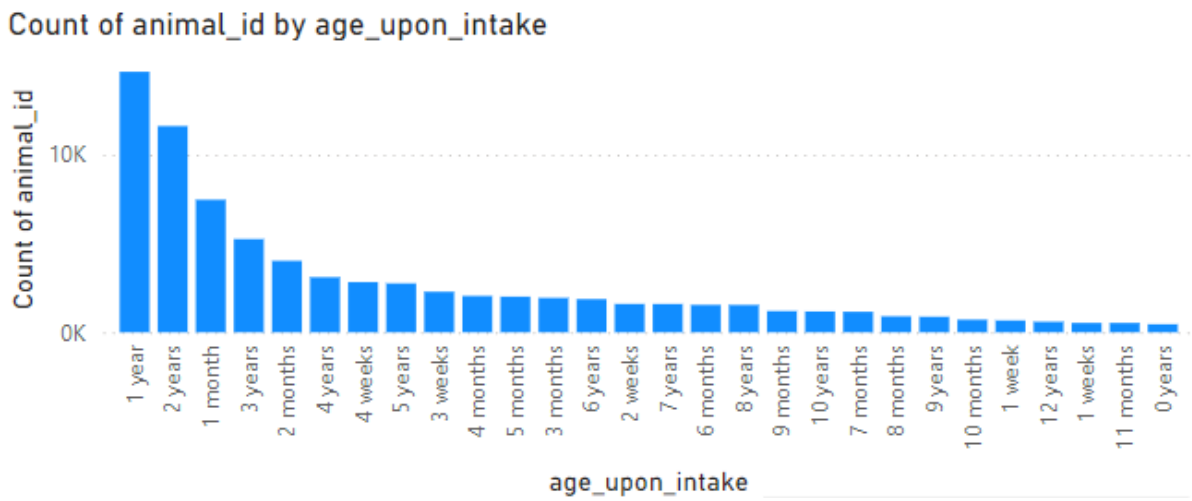
Pie Chart -



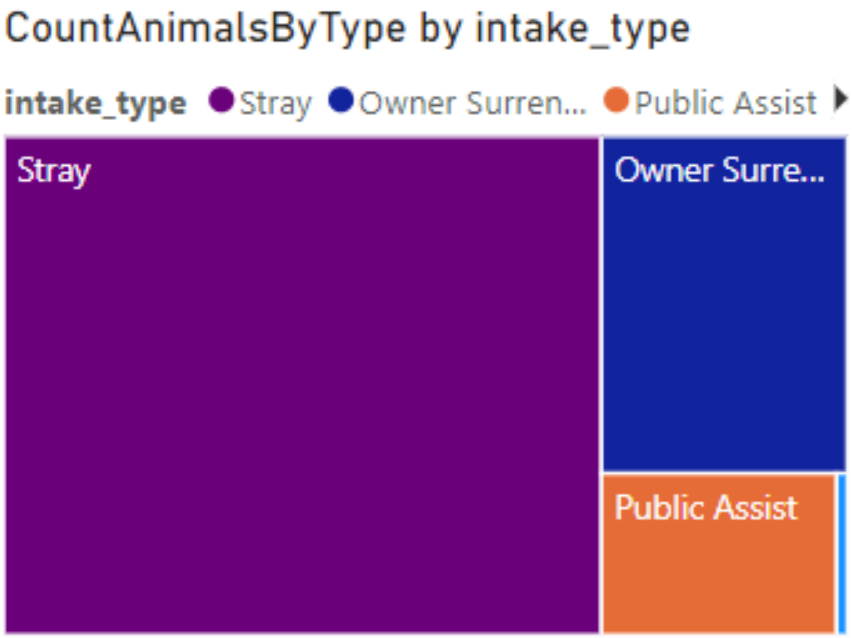
Line Chart -



Histogram -



Tree Map -



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..