



Sardar Patel Institute of Technology

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(Autonomous College Affiliated to University of Mumbai)

ADVANCED DATA VISUALIZATION EXPERIMENT 6

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Batch L

AIM:

Design Interactive Dashboards and Storytelling using using Power BI or Tableau on the dataset
- Animal / Wildlife / Marine

- Basic - Bar chart, Pie chart, Histogram, Timeline chart, Scatter plot, Bubble plot
- Advanced - Word chart, Box and whisker plot, Violin plot, Regression plot (linear and nonlinear), 3D chart, Jitter
- Use of DAX queries in Power BI
(<https://learn.microsoft.com/en-us/power-bi/transform-model/desktop-quickstart-learn-dax-basics>)
- Write observations from each chart

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.

DATASET:

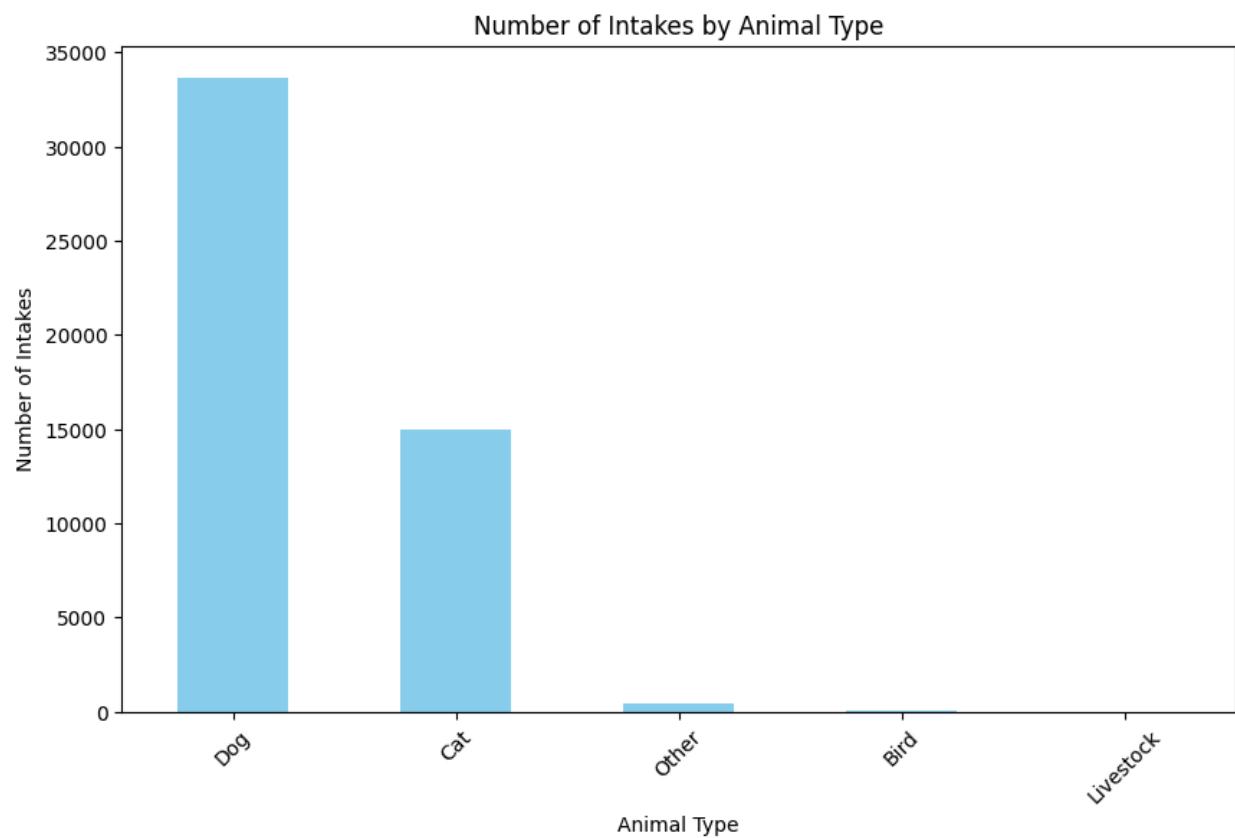
<https://www.kaggle.com/datasets/jackdaoud/animal-shelter-analytics>

Animal ID

- 1 Name
- 2 DateTime
- 3 MonthYear
- 4 Found Location
- 5 Intake Type
- 6 Intake Condition
- 7 Animal Type
- 8 Sex upon Intake
- 9 Age upon Intake
- 10 Breed
- 11 Color

Graphs & Observations :

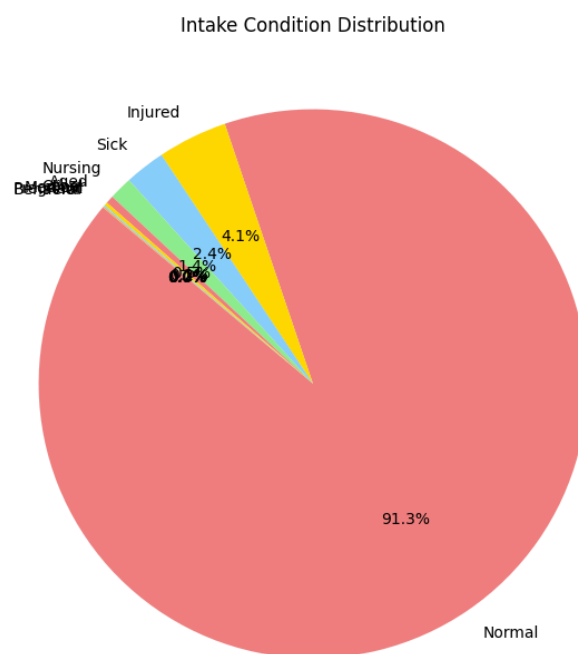
Bar Chart:



Observation: The bar chart shows the frequency of each animal type being taken in. It helps identify which species is most commonly found. We can see that dog and cat are the most common types adopted.

```
Query: AnimalTypeIntakes =  
CALCULATE(  
    COUNTROWS('AnimalDataset'),  
    'AnimalDataset'[Animal Type] IN {"Dog", "Cat", "Bird", "Other"},  
    FILTER('AnimalDataset', YEAR('AnimalDataset'[DateTime]) = 2023)  
)
```

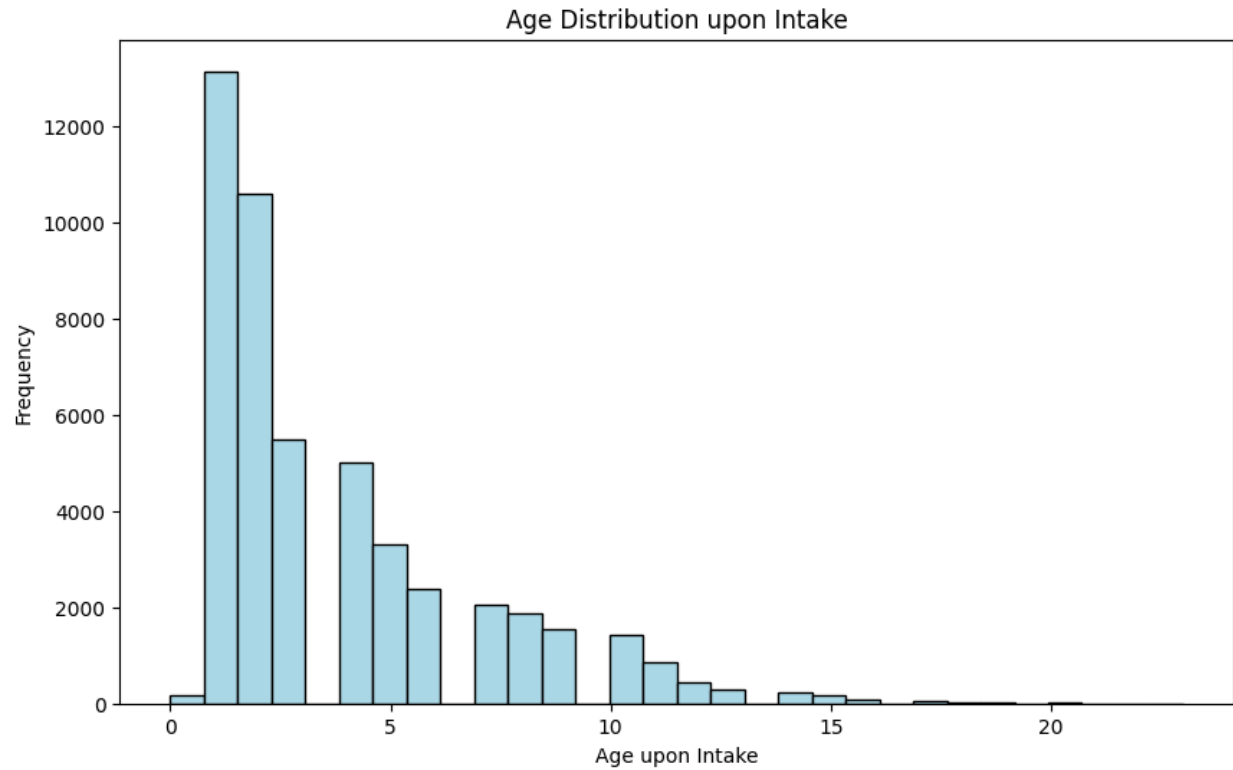
Pie Chart: Intake Condition Distribution



Observation: This pie chart shows the proportion of animals in various intake conditions. It gives insights into the overall health or condition of animals at intake. We can see that almost 92 percent of the animals were normal upon entering the shelter.

```
Query: IntakeConditionCount = COUNTROWS('Table')
```

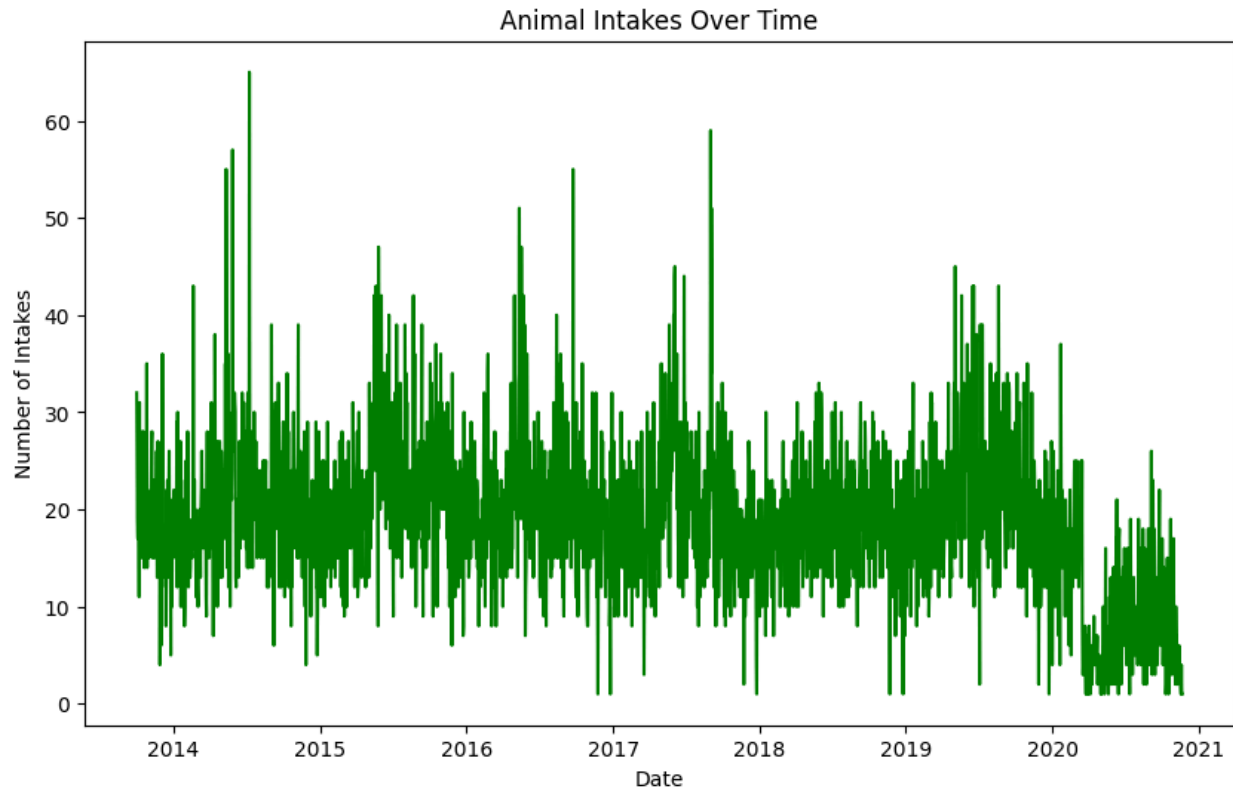
Histogram: Age Distribution upon Intake



Observation: This histogram shows the distribution of ages at which animals are brought in, helping identify common age groups. We can see that 0 to 5 years is the most common age of intake.

Query: AgeHistogram = SUMMARIZE('Table', 'Table'[Age upon Intake], "Count", COUNT('Table'[Age upon Intake]))

Timeline Chart: Animal Intakes Over Time

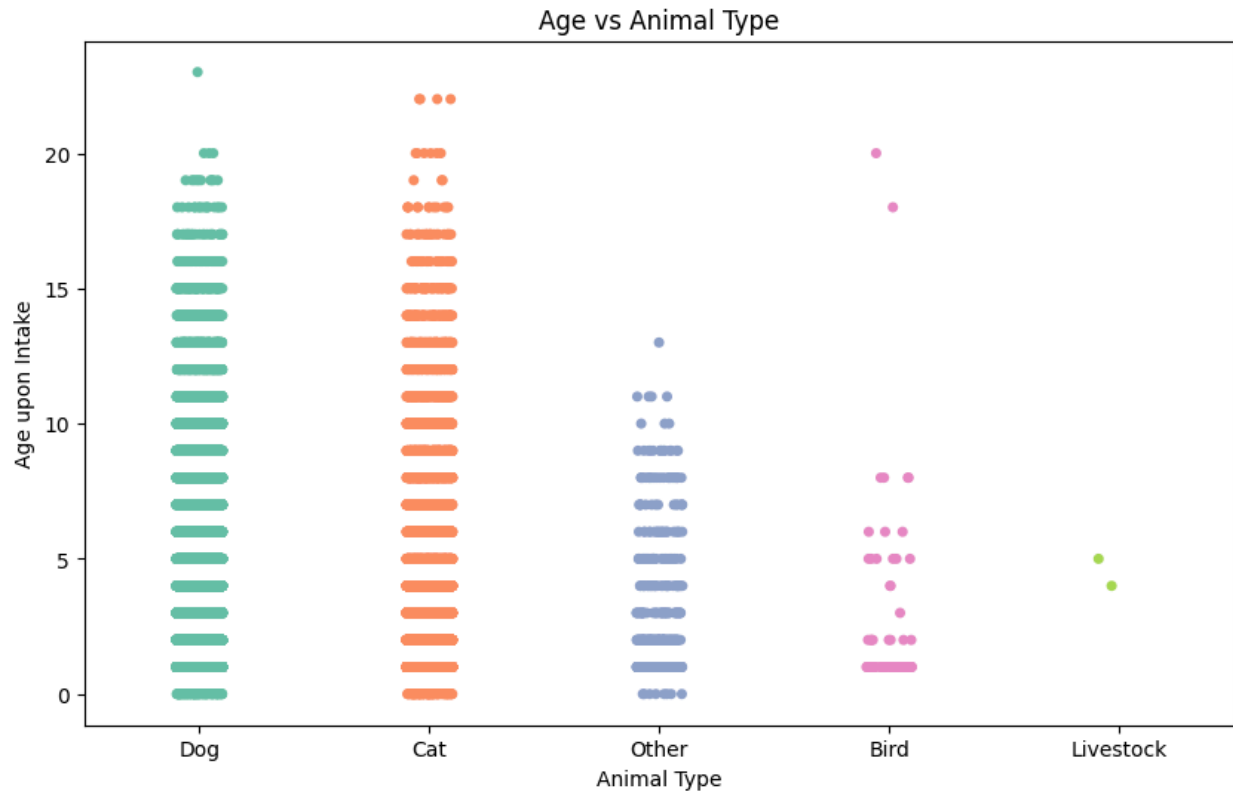


Observation: The timeline chart helps visualize the number of animals taken in over a period, showing trends or spikes.

```
Query:MonthlyIntakes =
CALCULATE(
    COUNTROWS('AnimalDataset'),
    FILTER(
        'AnimalDataset',
        NOT(ISBLANK('AnimalDataset'[DateTime]))
    )
)
```

```
IntakesByMonth =
SUMMARIZE(
    'AnimalDataset',
    'AnimalDataset'[MonthYear],
    "Total Intakes", [MonthlyIntakes]
)
```

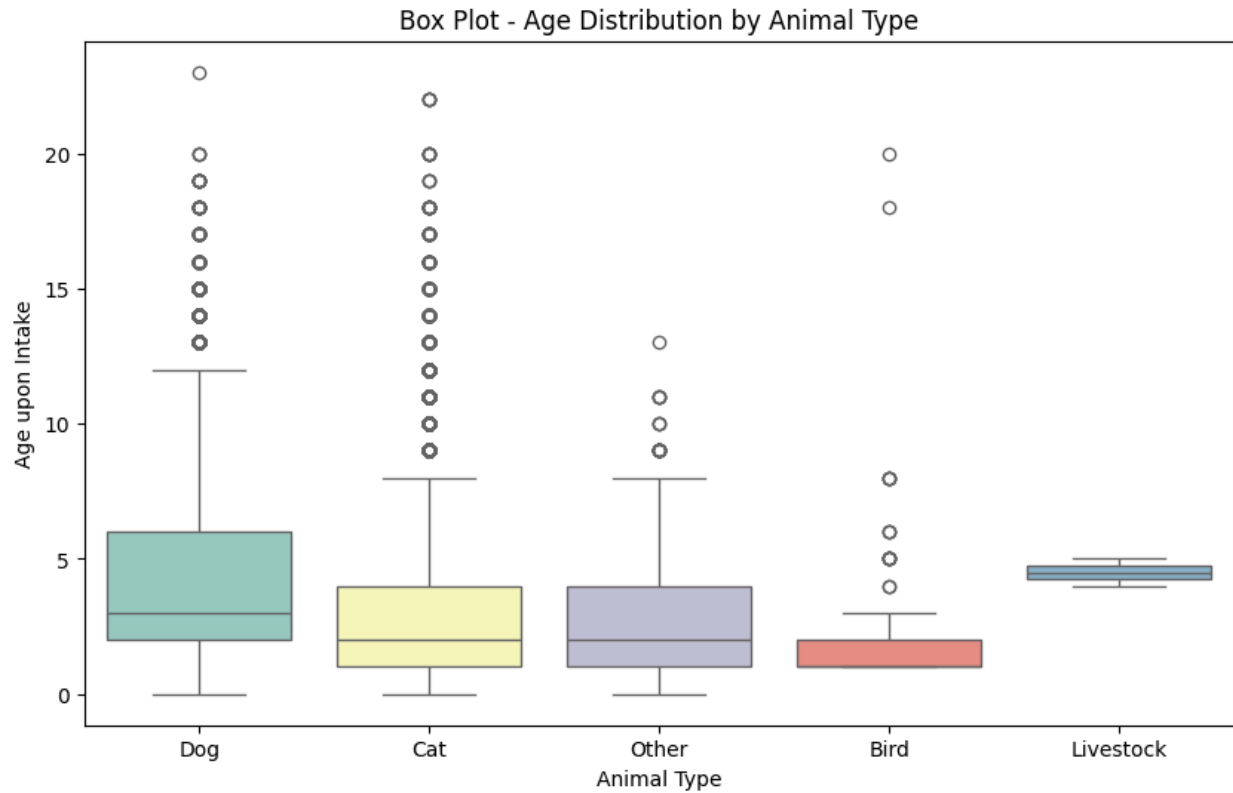
Scatter Plot: Age vs Animal Type



Observation: The scatter plot shows how age is distributed across different animal types, which helps detect trends related to age and species.

Query: AvgAgePerAnimal = AVERAGE('Table'[Age upon Intake])

Box and Whisker Plot: Age by Animal Type



Observation: The box plot helps understand the spread of age for each animal type, showing medians, quartiles, and outliers.

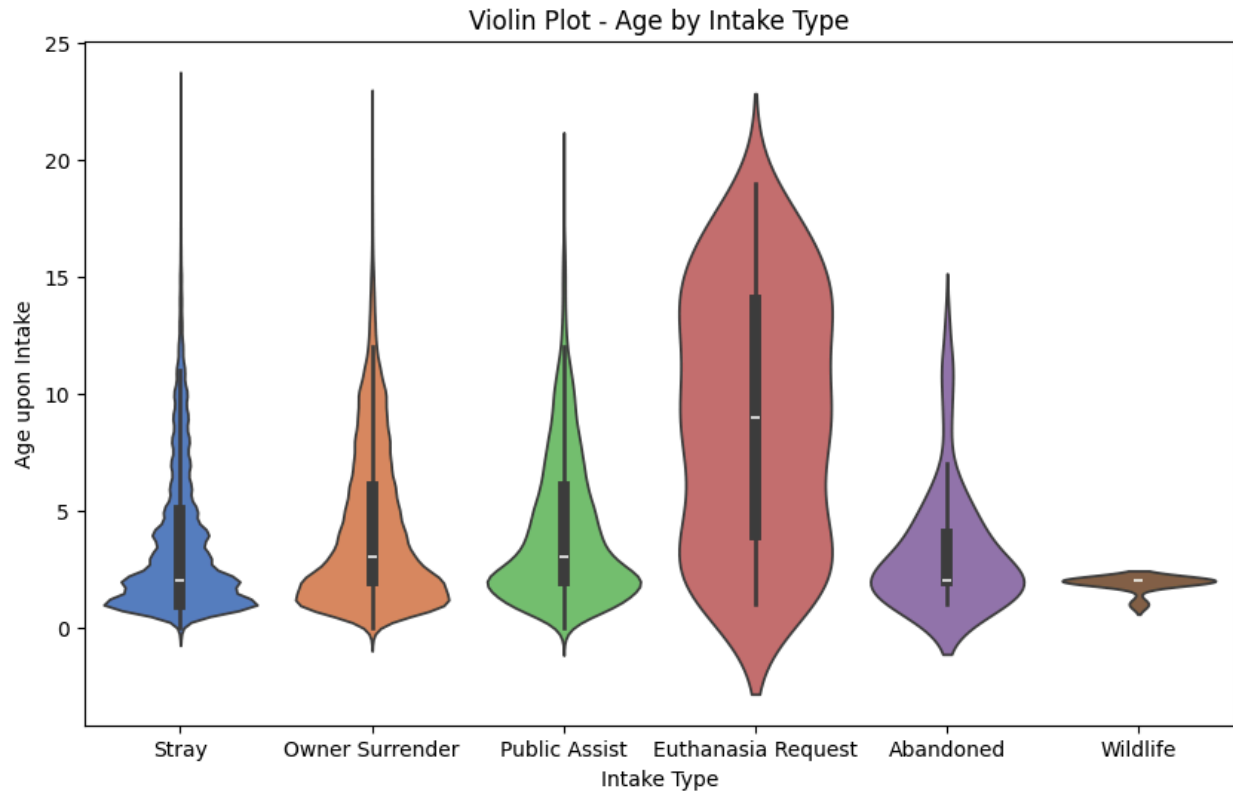
```
Query: AgeStatistics =
CALCULATE(
    AVERAGEX(
        'AnimalDataset',
        'AnimalDataset'[Age upon Intake]
    ),
    'AnimalDataset'[Animal Type]
)
```

```
LowerQuartile =
PERCENTILEX.INC('AnimalDataset', 'AnimalDataset'[Age upon Intake], 0.25)
```

```
UpperQuartile =
PERCENTILEX.INC('AnimalDataset', 'AnimalDataset'[Age upon Intake], 0.75)
```

```
MedianAge =
MEDIANX('AnimalDataset', 'AnimalDataset'[Age upon Intake])
```

Violin Plot: Age by Intake Type



Observation: The violin plot provides a detailed visualization of age distribution within each intake type.

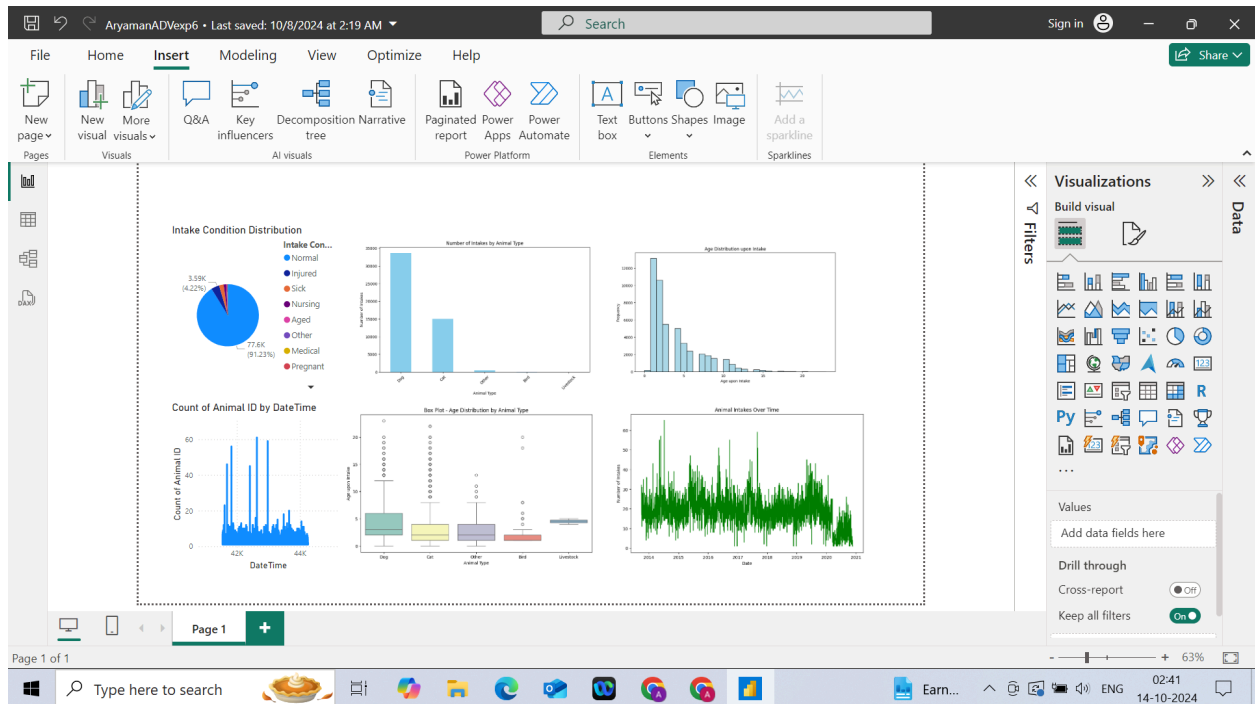
Query:

AgeDistributionViolin =

```
CALCULATE(
    AVERAGEX(
        'AnimalDataset',
        'AnimalDataset'[Age upon Intake]
    ),
    FILTER(
        'AnimalDataset',
        'AnimalDataset'[Intake Type] <> BLANK()
    )
)
```

AgeDensity =

```
NORM.DIST('AnimalDataset'[Age upon Intake], 0, 1, TRUE)
```

Conclusion: I successfully explored various data visualization techniques in Power BI. Through interactive dashboards, I have gained insights into animal intakes, conditions, and age distributions. The advanced visualizations provide deeper understanding, and DAX measures offer a more refined analysis of the data.