Advanced data visualization

Experiment-6

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Aim: Using DAX queries create Interactive Dashboard for Marine life / wildlife dataset

Dataset:
Animal - Name of the animal.
Height (cm) - Height range in centimeters for the animal.
Weight (kg) - Weight range in kilograms for the animal.
Color - Common colors associated with the animal's appearance.
Lifespan (years) - Average lifespan of the animal in years.
Diet - Type of diet the animal primarily follows (e.g., Carnivore, Herbivore).
Habitat - Typical habitat or environment where the animal is found.
Predators - Natural enemies or organisms that prey on the animal.
Average Speed (km/h) - The average speed range the animal can achieve in kilometers per hour.
Countries Found - Countries or regions where the animal is commonly found.
Conservation Status - The conservation status of the animal as per relevant conservation organizations.
Family - Taxonomic family the animal belongs to.
Gestation Period (days) - Range of days representing the gestation or pregnancy period of the animal.
Top Speed (km/h) - The maximum speed the animal can achieve in kilometers per hour.
Social Structure - Information about the social behavior or structure of the animal (e.g., Solitary, Group-based).
Offspring per Birth - The typical number of offspring born per birth or reproduction event for the animal.

Output:

Q1. .What are the population distributions of various species across different regions?

```
// Try other DAX queries by right clicking a table, column, or measure in t
EVALUATE
    SUMMARIZE(
        Animal,
        Animal[Countries Found],
        "Species_Count", COUNT(Animal[Animal])
    )
```

Results | Result 1 of 1 | Copy

	Animal[Countries Found]	[Species_Count]
1	Africa	7
2	Eastern and Southern Af...	4
3	Sub-Saharan Africa	4
4	European Alps	1
5	Amazon Rainforest	2
6	North America	7
7	Central and South Amer...	10
8	Middle East, North Africa	1
9	Middle East	1

Q2.How has the population of specific species changed over time?

```
// Try other DAX queries by right clicking a table, column, or measure in the
EVALUATE
 SUMMARIZE(
'expanded_wildlife_species_population',
'expanded_wildlife_species_population'[Species],
'expanded_wildlife_species_population'[Year],
"Total Population", SUM('expanded_wildlife_species_population'[Population])
)
```

	expanded_wildlife_speci...	expanded_wildlife_speci...	[Total Population]
1	Elephant	1990	248797
2	Tiger	1990	254472
3	Panda	1990	271331
4	Blue Whale	1990	261584
5	Dolphin	1990	246813
6	Penguin	1990	250353
7	Kangaroo	1990	256807
8	Shark	1990	255108
9	Wolf	1990	267752
10	Eagle	1990	249138
11	Elephant	1991	233269
12	Tiger	1991	245105

Q3.Are there any correlations between environmental factors and species population?

```
EVALUATE
SUMMARIZE(
    final_animal_dataset,
    final_animal_dataset[Habitat],
    "Total Sightings", COUNT(final_animal_dataset[Animal])
)
```

Result:

Results | Result 1 of 1 | Copy

	final_animal_dataset[Ha...	[Total Sightings]
1	Savannas	2
2	Grasslands	29
3	Savannah	1
4	Savannahs	3
5	Mountains	4
6	Amazon Rainforest	1
7	Middle East	1
8	Desert	2
9	Tundra	2
10	Freshwater Rivers	1
11	North Atlantic	1
12	Oceans	14
13	Coastal Waters	2
14	Lakes	1
15	Rainforests	39
16	Forests	28
17	Deserts	3
18	Deep-sea	6

Q4. What are the trends in animal sightings and marine life in various geographic areas?

```
EVALUATE
SUMMARIZE(
expanded_wildlife_species_population,
expanded_wildlife_species_population[Region],
expanded_wildlife_species_population[Species],
expanded_wildlife_species_population[Year],
"Total_Sightings",
SUM(expanded_wildlife_species_population[Sighting_Count])
)
```

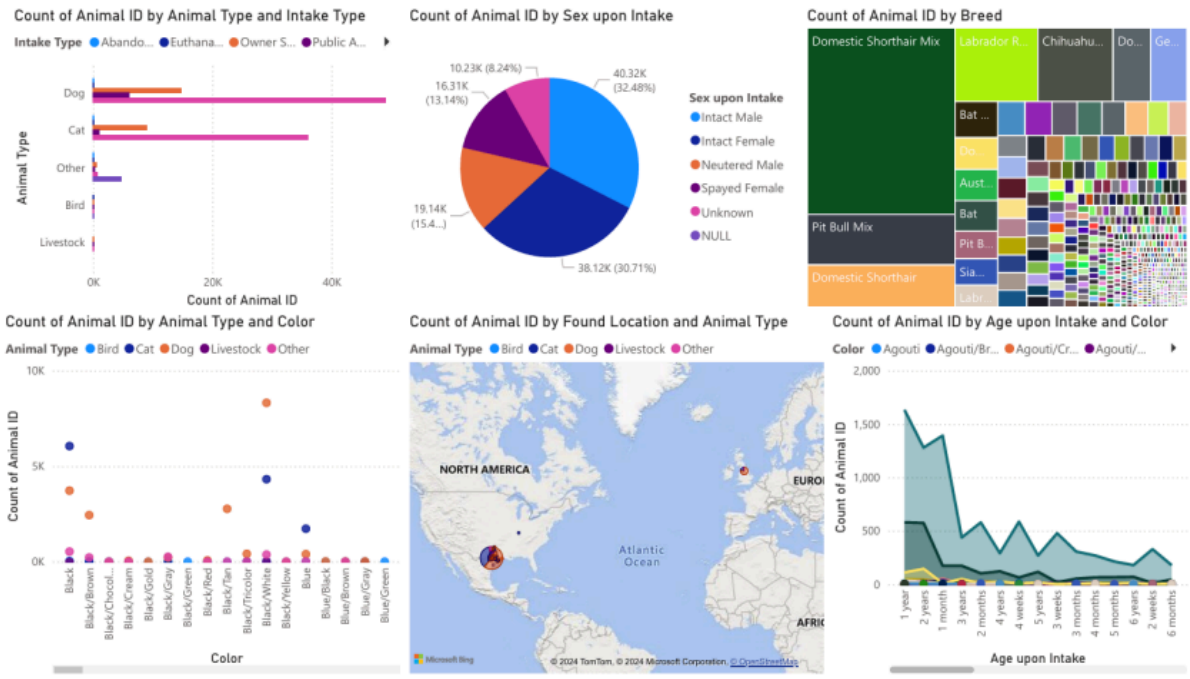
	expanded_wildlife_speci...	expanded_wildlife_speci...	expanded_wildlife_speci...	[Total_Sightings]
1	Europe	Elephant	1990	541
2	Europe	Tiger	1990	532
3	Europe	Panda	1990	718
4	Europe	Blue Whale	1990	442
5	Europe	Dolphin	1990	349
6	Europe	Penguin	1990	542
7	Europe	Kangaroo	1990	681
8	Europe	Shark	1990	885
9	Europe	Wolf	1990	769
10	Europe	Eagle	1990	496
11	Australia	Elephant	1990	551
12	Australia	Tiger	1990	464

Q5. Are there any significant outliers or anomalies in species population data?

```
EVALUATE
VAR TotalPopulationTable =
SUMMARIZE(
expanded_wildlife_species_population,
expanded_wildlife_species_population[Species],
"TotalPopulation",
SUM(expanded_wildlife_species_population[Population])
)
VAR OverallMean =
AVERAGEX(TotalPopulationTable, [TotalPopulation])
VAR OverallStdDev =
STDEVX.P(TotalPopulationTable, [TotalPopulation])
VAR LowerBound = OverallMean - 2 * OverallStdDev
VAR UpperBound = OverallMean + 2 * OverallStdDev
RETURN
ADDCOLUMNS(
TotalPopulationTable,
"Is_Outlier",
IF(
[TotalPopulation] < LowerBound ||
[TotalPopulation] > UpperBound,
"Yes",
"No"
)
)
```

	expanded_wildlife_speci...	[TotalPopulation]	[Is_Outlier]
1	Elephant	8544881	No
2	Tiger	8527255	No
3	Panda	8571561	No
4	Blue Whale	8482214	No
5	Dolphin	8651687	No
6	Penguin	8635003	No
7	Kangaroo	8492623	No
8	Shark	8597554	No
9	Wolf	8626399	No
10	Eagle	8593553	No

Interactive Dashboard:



Q1. What does the chart of "Count of Animal ID by Animal Type and Intake Type" reveal?
Ans: The chart highlights the distribution of different animal types (e.g., dogs, cats, birds, livestock, and others) based on their intake type (e.g., abandonment, euthanasia, owner surrender). The majority of animals belong to common domestic categories such as dogs and

cats. Intake types vary, but "owner surrender" and "public assistance" appear most frequently for these common animals.

Q2. What insight can be drawn from the "Count of Animal ID by Sex upon Intake" chart?
Ans: This chart shows the gender distribution of animals upon intake. The majority of animals are categorized as either neutered males or spayed females, with a smaller percentage being intact males or females. Unknown or NULL values suggest there may be missing data or unclassified animals.

Q3. How does the breed distribution compare in the "Count of Animal ID by Breed" chart?
Ans: The breed distribution is dominated by mixed breeds such as Domestic Shorthair Mix (for cats) and PitBull Mix (for dogs). These two breeds far outnumber others, indicating that these are the most common animals in the dataset. Other breeds are represented but in smaller numbers.

Q4. What does the "Count of Animal ID by Animal Type and Color" chart tell us?
Ans: This chart shows that black and black/white colored animals are the most common across multiple animal types (especially dogs and cats). More unusual colors, such as black/green or black/gold, are much rarer. This implies that more traditionally colored animals are either more prevalent or more commonly admitted.

Q5. What can be inferred from the "Count of Animal ID by Found Location and Animal Type" chart?
Ans: The chart visualizes where animals were found, split by their type (dog, cat, bird, livestock, etc.). While the exact locations aren't displayed here, it implies that certain animal types are more frequently found in specific areas. Dogs and cats dominate the found locations.

Q6. What insight is provided by the "Count of Animal ID by Age upon Intake and Color" chart?
Ans: This chart reveals the age distribution of animals when they are taken into the system. A significant number of animals are younger, especially in the 1–5 year range. The color of the animals doesn’t seem to have a strong correlation with age upon intake, but certain colors like black and brown dominate across all ages.

Conclusion: The integration of advanced charts and DAX queries within Power BI dashboards provided a comprehensive and interactive platform for analyzing the Animal/Wildlife/Marine dataset. The basic visualizations offered a foundational understanding, while the advanced charts and DAX queries allowed for deeper insights and custom analyses. This combination supports effective storytelling and data-driven decision-making in conservation efforts.