Bharatiya Vidya Bhavan's
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Experiment no - 6

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

- ● Basic - Bar chart, Pie chart, Histogram, Time line 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

Interactive Dashboards and Storytelling Using Power BI on Animal/Wildlife/Marine Dataset

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.

Possible Sources of Data:

- ● Publicly available datasets on animal, wildlife, or marine life from sources like Kaggle, UCI Machine Learning Repository, government wildlife agencies, or NGOs. ● Marine life survey data from environmental research organizations.
- ● Wildlife observation data from conservation projects

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Basic Charts

1. Bar Chart:
    - Visualize the count of different species or categories (e.g., endangered, vulnerable, etc.).
    - Observation: Identifies which species are most prevalent or at risk within the dataset.
2. Pie Chart:
    - Show the proportion of species within different categories (e.g., marine vs. terrestrial).
    - Observation: Highlights the distribution of species types in the dataset.
3. Histogram:
    - Display the frequency distribution of a numerical variable (e.g., species population size).
    - Observation: Helps understand the spread and concentration of population sizes.
4. Timeline Chart:
    - Track changes in species population over time.
    - Observation: Reveals trends and fluctuations in species population across years.
5. Scatter Plot:
    - Examine the relationship between two numerical variables (e.g., population vs. habitat size).
    - Observation: Identifies correlations or patterns between variables.
6. Bubble Plot:
    - Add a third dimension (e.g., species threat level) to the scatter plot.
    - Observation: Shows how an additional variable impacts the relationship between the first two variables.

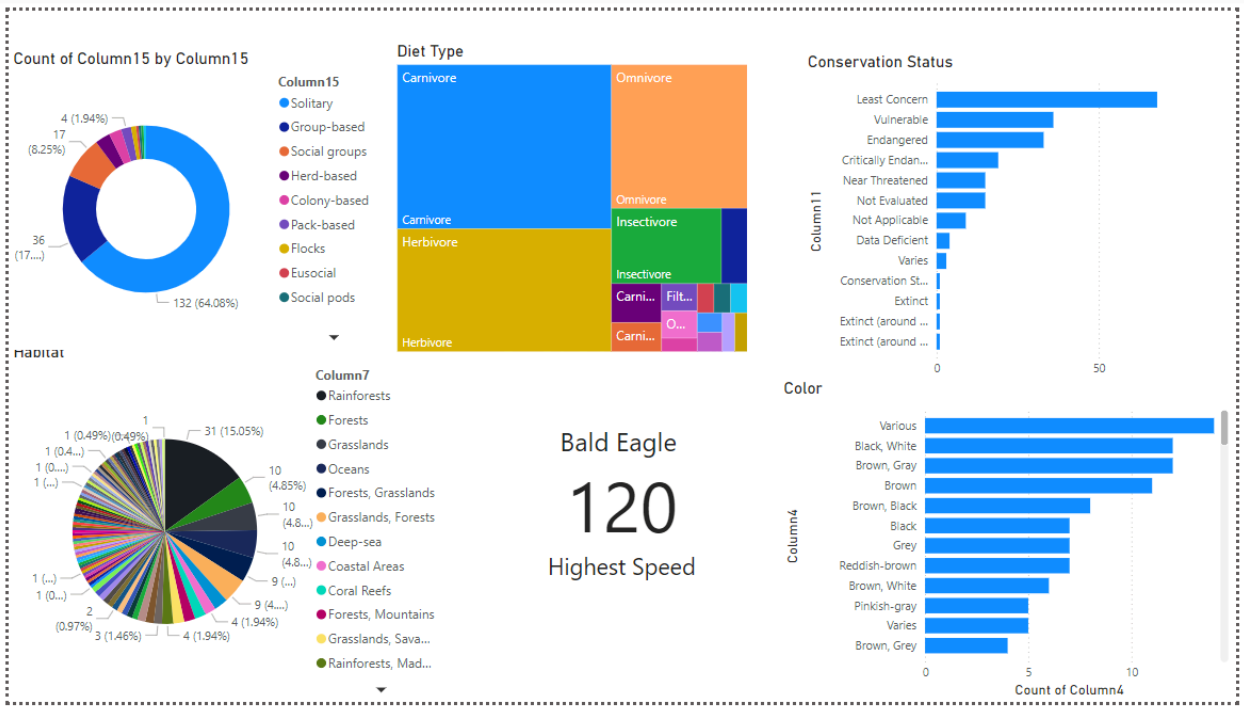
Advanced Charts

1. Word Chart:
    - Visualize the most frequently mentioned species names or habitats.
    - Observation: Highlights the most common species or regions within the dataset.
2. Box and Whisker Plot:
    - Compare the distribution of species population across different regions or categories.
    - Observation: Identifies the median, quartiles, and outliers within the data.
3. Violin Plot:
    - Show the distribution of species population density for different regions. ○ Observation: Provides a detailed view of the distribution's shape, revealing where

data is more concentrated.

4. Regression Plot (Linear and Nonlinear):
   - ○ Model the relationship between species population and environmental factors.
   - ○ Observation: Shows both linear and nonlinear trends, helping to predict future population changes based on environmental factors.
5. 3D Chart:
   - ○ Visualize the relationship between three variables (e.g., species population, habitat size, and geographic region).
   - ○ Observation: Offers a comprehensive view of how three factors interact with each other.
6. Jitter Plot:
   - ○ Visualize data points that may overlap in a scatter plot, adding a slight random variation.
   - ○ Observation: Helps in identifying the true spread of data points, especially in dense areas.

Dashboard:



Observations:

- **Dominant Category:** "Social pods" are the most prevalent category, accounting for 64.08% of the data.
- **Diversity:** The data is relatively diverse, with 10 distinct categories represented.
- **Minor Categories:** Several categories have low counts, including "Solitary," "Herd-based," and "Colony-based."

Diet Type

- **Carnivore Dominance:** Carnivores are the most common diet type, followed by herbivores.
- **Insectivores:** A smaller proportion of animals are insectivores.
- **Omnivores:** Omnivores are represented in a relatively small number of categories

Conservation Status

- **Least Concern:** The majority of animals fall under the "Least Concern" category.
- **Vulnerable and Endangered:** A significant number of animals are classified as "Vulnerable" or "Endangered."
- **Extinct:** Several species are listed as "Extinct" or "Extinct (around 1900)."

Habitat

- **Rainforests:** Rainforests are the most common habitat, followed by grasslands.
- **Diverse Habitats:** A wide range of habitats are represented, including forests, oceans, grasslands, and coastal areas.
- **Specific Combinations:** Some habitats have unique combinations, such as "Grasslands, Savannahs," and "Rainforests, Mountains.

Color

- **Brown and Grey:** Brown and grey are the most common colors among the animals.
- **Variety:** There is a variety of colors present, including black, white, red, and pink.
- **Unique Combinations:** Some animals have unique color combinations, such as "Brown, Grey," and "Black, White.

Bald Eagle

- **Highest Speed:** The bald eagle is identified as having the highest speed, reaching 120.

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.