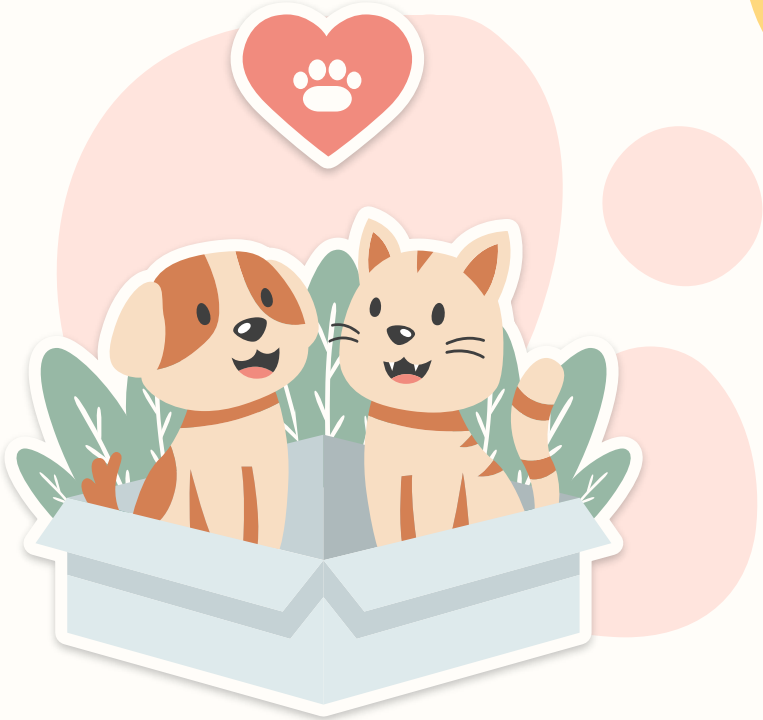
Pet Ownership Analysis

Python Dashboard Presentation



Introduction

Having a pet

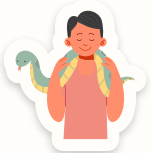
Companionship

A pet provides constant, non-judgmental presence that alleviates feelings of loneliness and creates a profound emotional bond within home

Responsibility

Caring for a living creature establishes a consistent routine and fosters a sense of accountability through the daily demands of feeding, grooming, and safety

Health benefits



Interacting with animals is scientifically shown to lower stress levels, reduce blood pressure, and encourage physical activity through play or daily walks

Introduction

Popular pet names

Dogs

- Max
- Bella
- Luna
- Charlie
- Lucy
- Bailey
- Cooper
- Daisy
- Rocky

Cats

- Kitty
- Oliver
- Leo
- Luna
- Bella
- Simba
- Chloe
- Charlie
- Lucy

After you get a pet – the first thing you could do is to name him/her. We named our cat – Loki. He is on the picture below.

Introduction

What to do with your pet

- Play and cuddle daily
- Provide regular exercise
- Feed balanced meals
- Groom and clean
- Vet check-ups
- Positive training
- Ensure a safe environment
- Engage in fun activities
- Show love and care

Introduction

USA even has a National Pet Day	
Date	April 11th
Purpose	To celebrate and promote responsible pet ownership and appreciate the companionship of pets
Importance	Raising awareness about pet adoption, responsible pet ownership, and animal welfare. Encouraging people to provide love and care to their pets
Origin	Founded in 2006 by Colleen Paige, an animal welfare advocate and a lover of animals
Activities	• Adopt a pet from a shelter or rescue • Volunteer at animal shelters • Donate to animal-related charities • Educate about pet care and safety • Host pet-friendly events • Share photos of pets on social media

Our Python Presentation

Promotes core benefits of pet ownership

Companionship

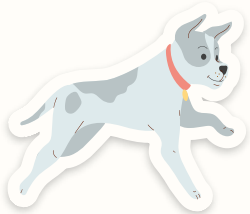
Identifies the regions with the largest pet communities, celebrating the millions of individual bonds that fulfill our universal need for companionship

Responsibility

By visualizing the high percentage of households that own pets across the country, we highlight the widespread commitment to the daily responsibility of nurturing and protecting animal life

Health Benefits

Comparing dog and cat ownership rates allows us to celebrate the diverse ways pets promote human health, whether through the active lifestyle encouraged by dogs or the stress-reducing presence of cats



Presentation Dashbard Data

Population and ownership of dogs and cats by household broken down by state.
Provided by: American Veterinary Medical Association

location	total_households	pet_ownership_pct	total_pet_households	dog_ownership_pct	total_dog_households	dog_mean_number	dog_population	cat_ownership_pct	total_cat_households	cat_mean_number	cat_population
Total / Avg	117,791.0	56.9	65,787.0	37.0	42,942.0	1.6	69,294.0	31.6	35,675.0	2.0	73,147.0
Alabama	1,828.0	59.5	1,088.0	44.1	807.0	1.7	1,410.0	27.4	501.0	2.5	1,252.0
Arizona	2,515.0	59.5	1,497.0	40.1	1,008.0	1.8	1,798.0	29.6	743.0	1.9	1,438.0
Arkansas	1,148.0	62.4	716.0	47.9	550.0	2.0	1,097.0	30.6	351.0	2.3	810.0
California	12,974.0	52.9	6,865.0	32.8	4,260.0	1.6	6,687.0	28.3	3,687.0	1.9	7,118.0
Colorado	1,986.0	61.3	1,217.0	42.5	845.0	1.6	1,349.0	32.3	642.0	1.9	1,191.0
Connecticut	1,337.0	54.4	728.0	28.3	379.0	1.3	507.0	31.9	427.0	1.9	796.0
Delaware	334.0	56.6	189.0	33.7	113.0	1.4	163.0	33.7	113.0	1.7	187.0
District of Columbia	287.0	21.9	63.0	13.1	38.0	1.1	42.0	11.6	33.0	1.9	63.0
Florida	7,609.0	54.4	4,138.0	35.7	2,718.0	1.5	4,210.0	27.3	2,079.0	2.1	4,375.0
Georgia	3,798.0	55.1	2,093.0	40.1	1,522.0	1.6	2,479.0	27.3	1,037.0	2.1	2,162.0
Idaho	568.0	62.0	352.0	42.7	242.0	1.5	357.0	34.6	196.0	2.0	393.0
Illinois	5,026.0	51.8	2,602.0	32.4	1,627.0	1.5	2,365.0	26.3	1,321.0	1.9	2,453.0
Indiana	2,478.0	59.9	1,484.0	39.9	989.0	1.6	1,619.0	34.4	852.0	2.2	1,912.0
Iowa	1,219.0	53.6	654.0	33.4	407.0	1.5	610.0	30.3	370.0	2.2	805.0
Kansas	1,133.0	61.0	691.0	42.3	480.0	1.6	774.0	33.3	378.0	1.9	731.0
Kentucky	1,777.0	61.6	1,094.0	45.9	816.0	1.9	1,531.0	36.8	654.0	2.1	1,349.0
Louisiana	1,702.0	55.1	937.0	36.4	619.0	1.8	1,115.0	25.9	441.0	2.0	877.0
Maine	548.0	62.9	345.0	34.6	190.0	1.6	300.0	46.4	254.0	1.9	498.0
Maryland	2,169.0	52.3	1,134.0	30.8	667.0	1.4	915.0	29.8	645.0	2.6	1,677.0
Massachusetts	2,618.0	50.4	1,318.0	23.6	618.0	1.4	850.0	34.1	892.0	1.8	1,593.0
Michigan	3,804.0	55.4	2,108.0	34.6	1,318.0	1.5	2,036.0	31.3	1,192.0	2.0	2,420.0

Tabulator Widget

Pet Ownership Dashboard

Pet Ownership Analysis | Header | DASHBOARD | Loading Indicator

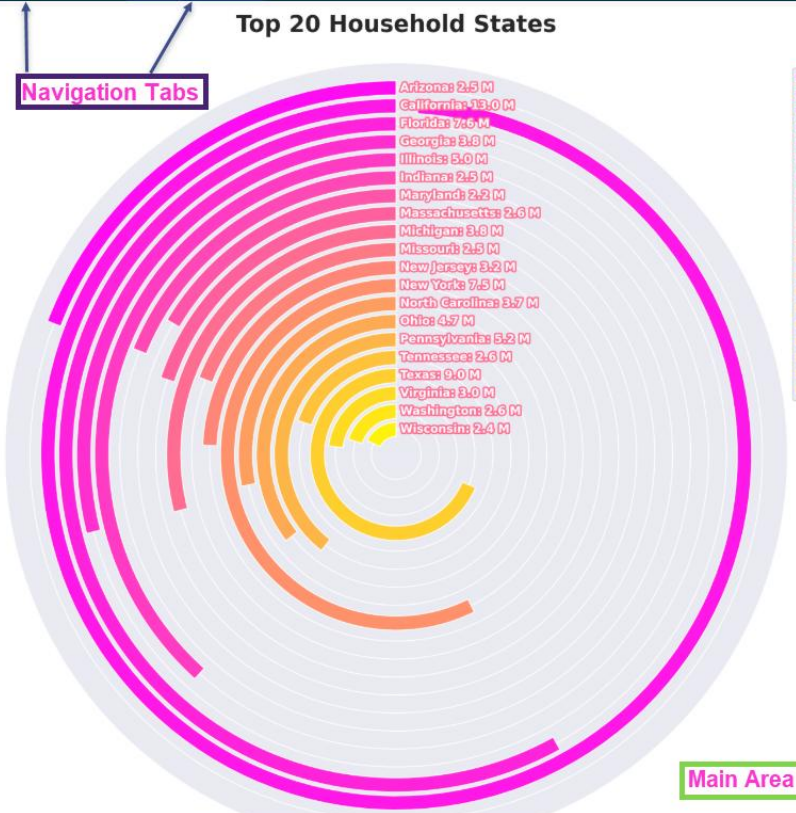
Pet Data (1000s) | Pet Households | Pet Ownership Density | Pet Population | Pet Ownership | Pet Mean Population

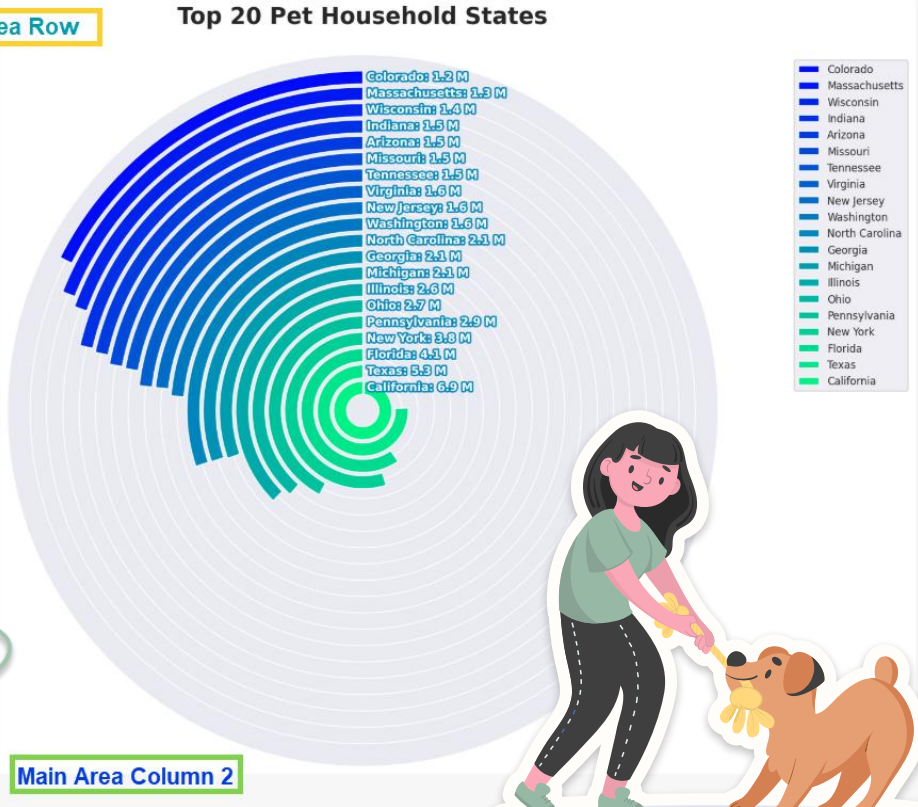
Navigation Tabs

Main Area Row

Main Area Column 1

Main Area Column 2



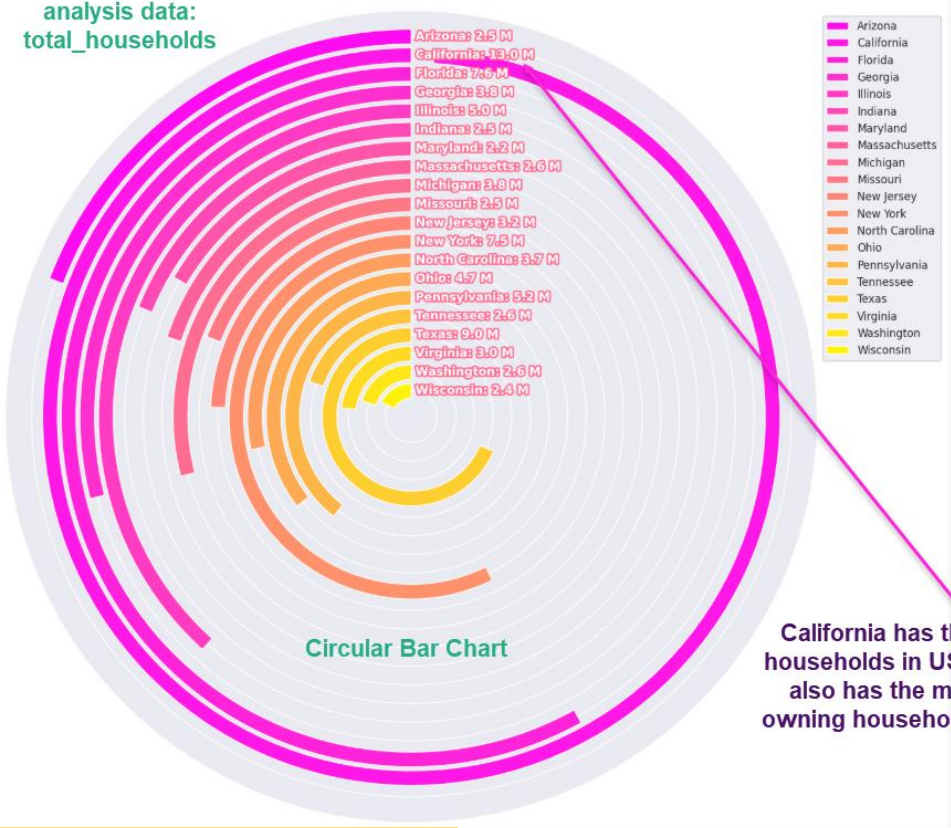


Top Pet Owning Households

Circular bar chart displays data as concentric bars radiating from a common starting point around a central axis, where the bar that extends furthest around the circle represents the highest value.

Top 20 Household States

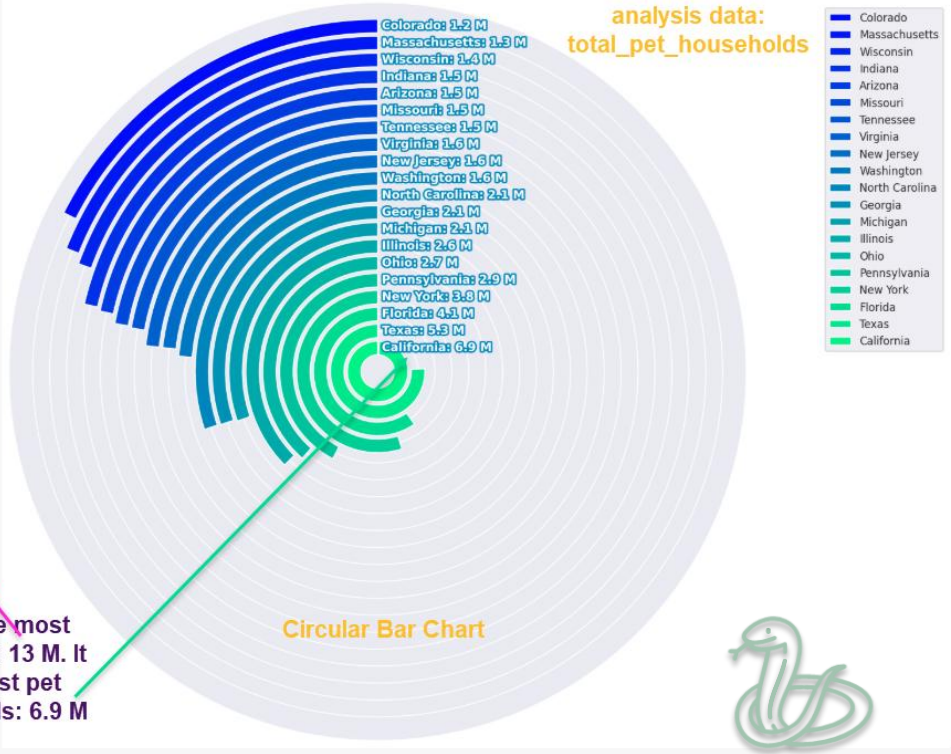
analysis data:
total_households



California has the most households in US: 13 M. It also has the most pet owning households: 6.9 M

Top 20 Pet Household States

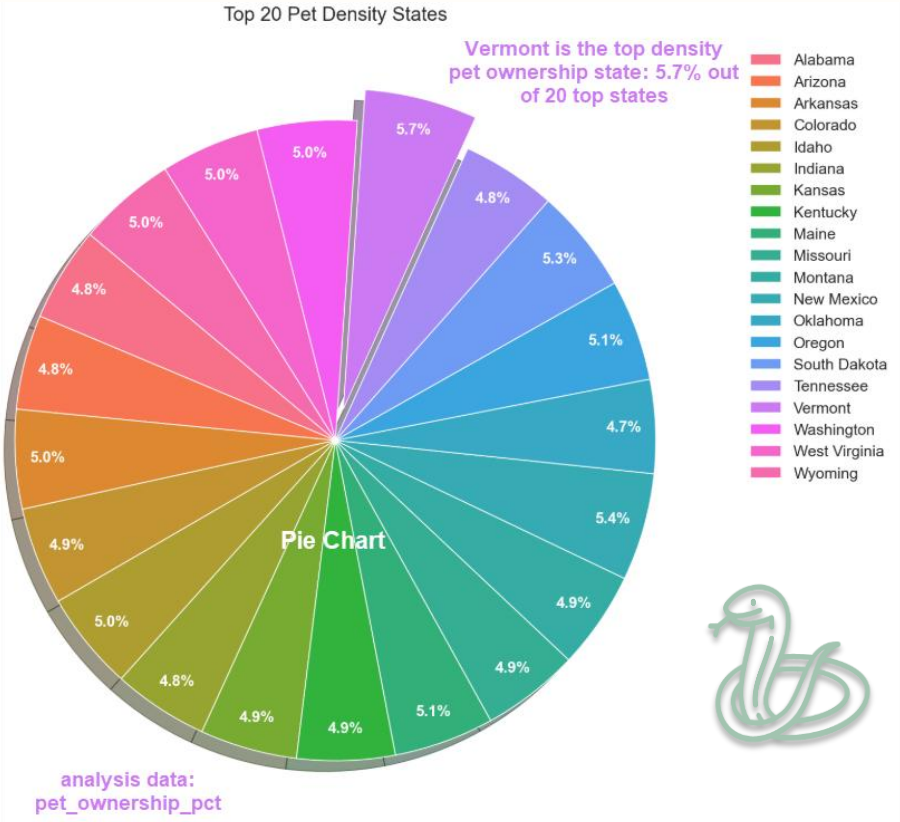
analysis data:
total_pet_households

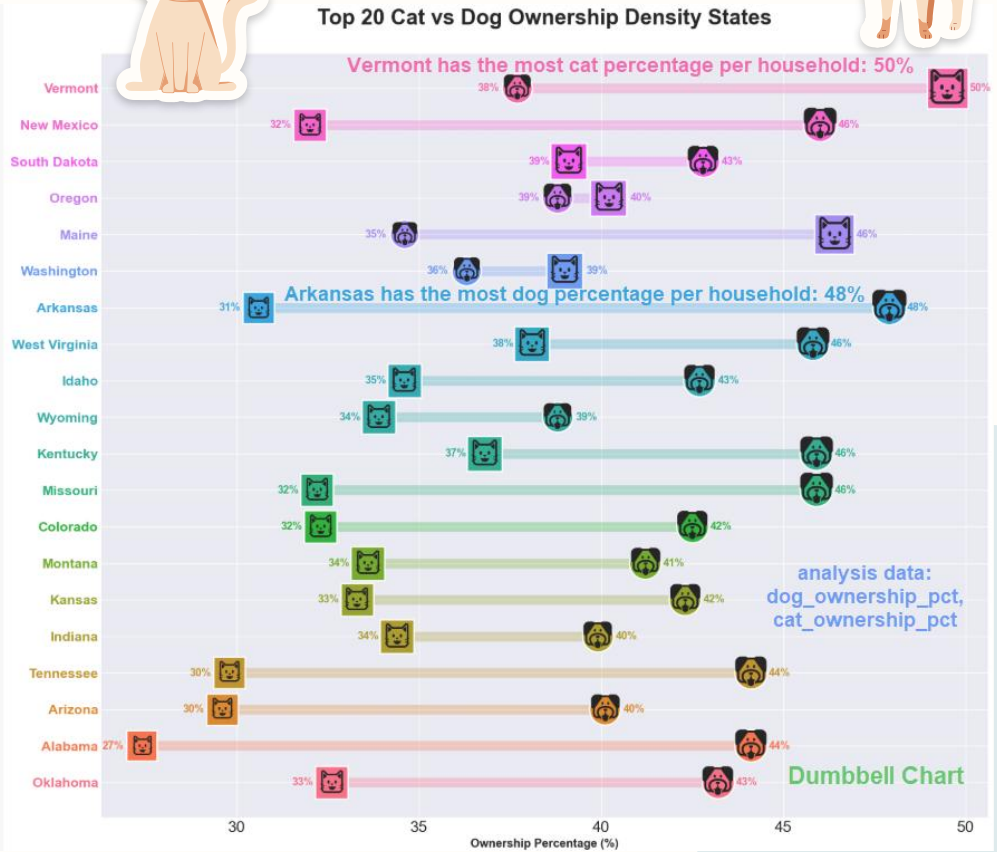


Top Pet Density States

Pie chart is a circular graphic that represents categorical data by dividing a circle into slices, where the area of each slice reflects its proportional contribution to the whole based on a percentage of the total 360 degrees equal to 100%.

Dumbbell chart is a graph for comparing two data points. The chart consists of two graphics unified with a straight line.





Top Pet Population States

Bubble chart is a scatter plot with different sizes of data points. This is an ideal plot for displaying three-dimensional data, X value, Y value, and data size.

Waffle chart combines multiple small rectangles into a large rectangular graphic. We can use it to show the totals of categorical data.

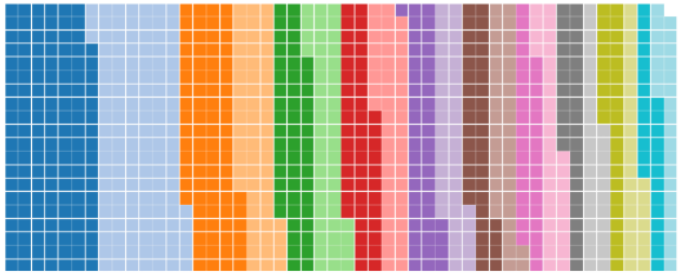
Top 20 Cat Population States

California has the most number of cats: 7.1 M

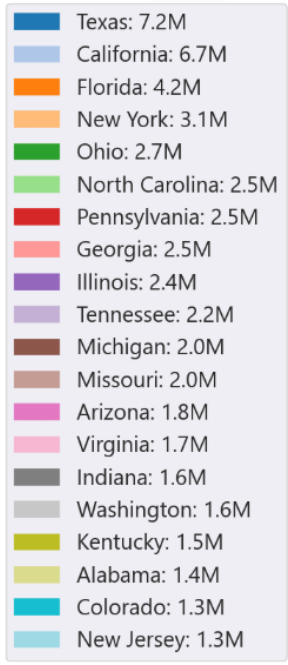
Bubble Chart

analysis data: cat_population

Top 20 Dog Population States



Texas has the most number of dogs: 7.2 M

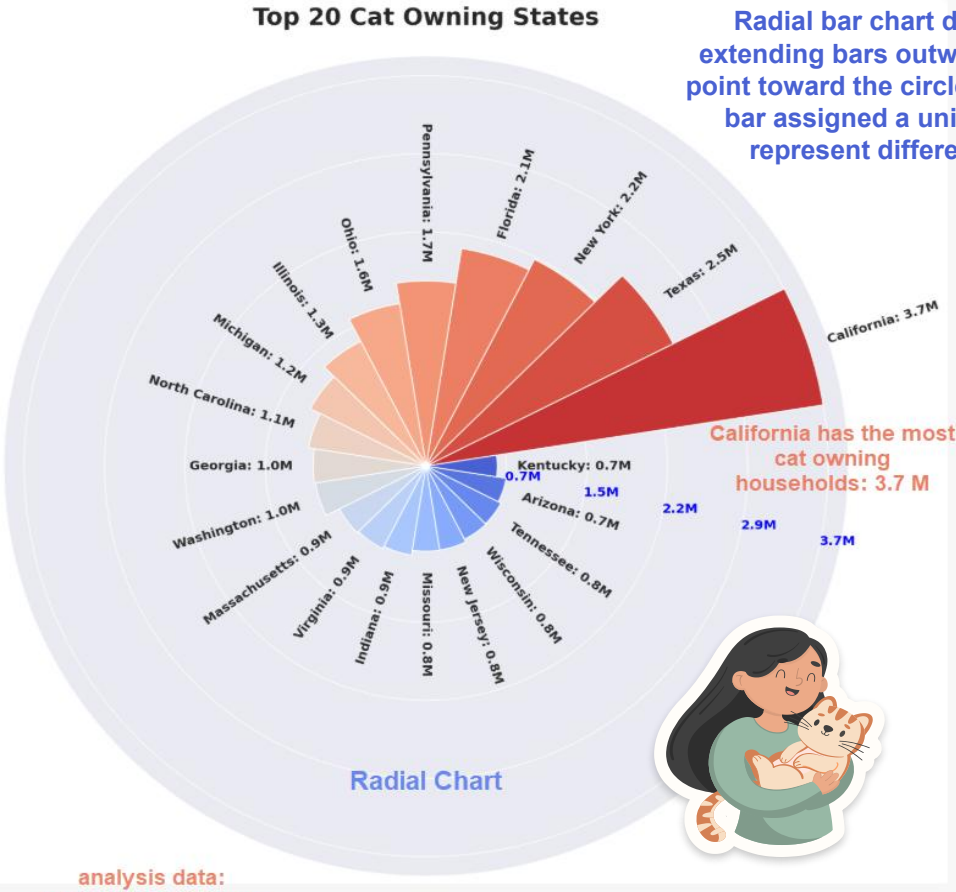


Waffle Chart

analysis data: dog_population

Top Pet Household States

Radial bar chart displays data by extending bars outward from a central point toward the circle's edge, with each bar assigned a unique direction to represent different categories.



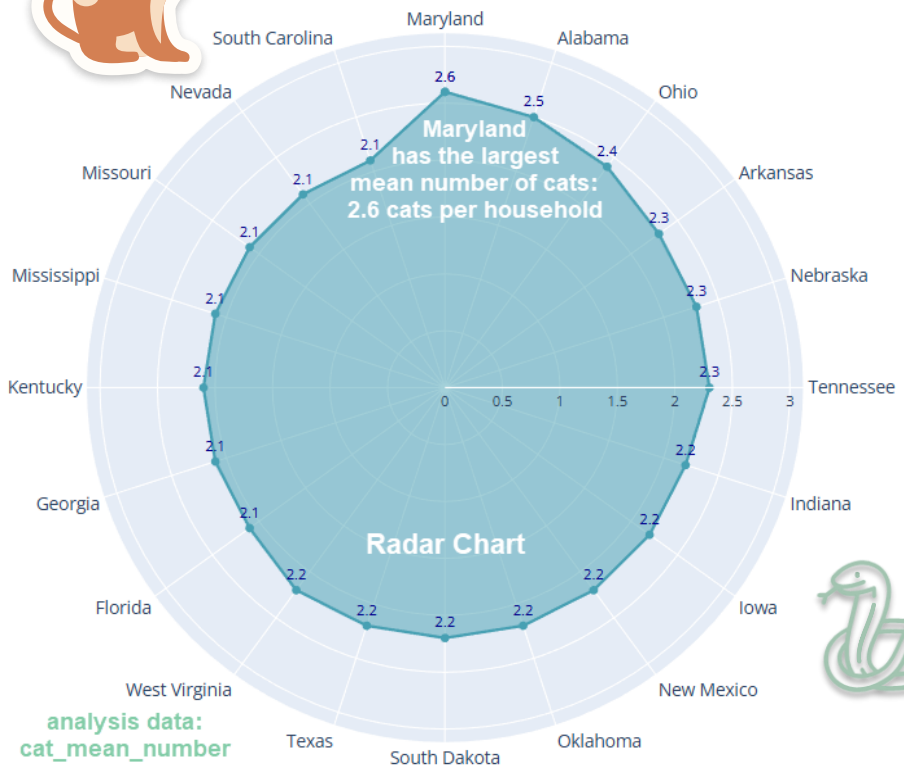
analysis data:
total_cat_households

analysis data:
total_dog_households

Top Pet Mean Number States

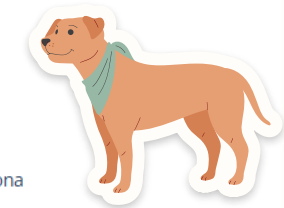
Top 20 Cat Mean Population by State

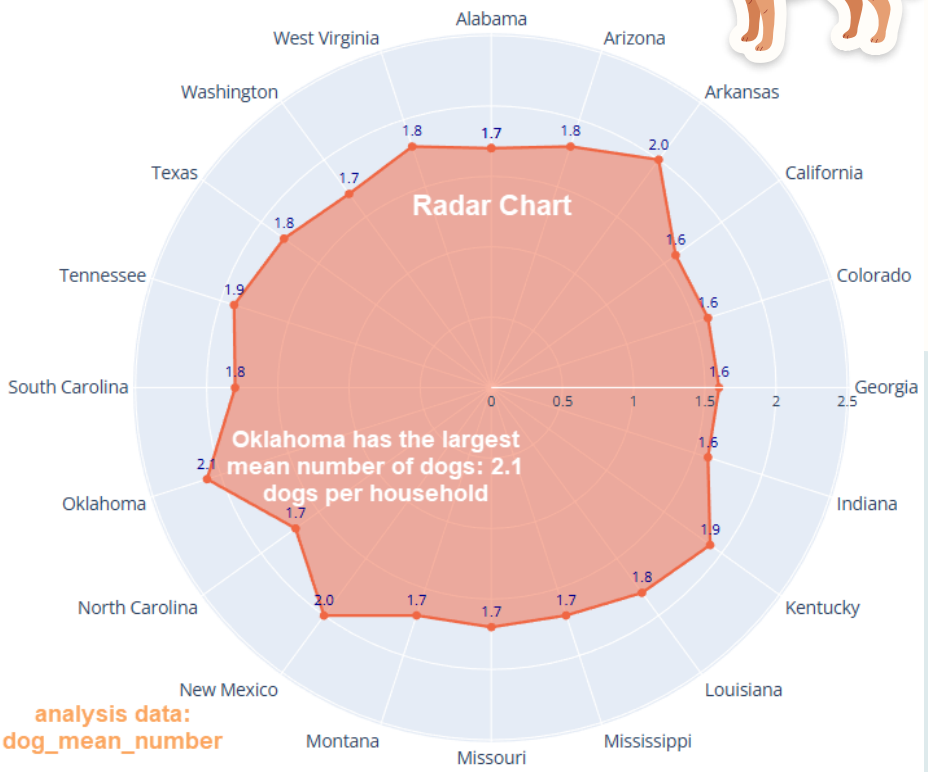
A radar chart displays multivariate data by plotting each category as an individual axis radiating from the center, effectively treating categorical data as multiple variables for comparison.



analysis data:
cat_mean_number

Top 20 Dog Mean Population by State





analysis data:
dog_mean_number

Technology and Tools

Jupiter Notebook

Python language libraries in Jupiter Notebook environment

Numpy

Used for chart rotation angles, bar length and width, grid ticks calculations

Pandas

Reads pet data from excel file, creates Tabulator widget total row, converts data to numeric format

Matplotlib

Implements radial, dumbbell, pie, and circular bar charts

Pywaffle

Used to create a waffle chart

Plotly

Gives a hand in designing radar and bubble charts

Seaborn

Used for color palette, setting a chart grid style, removing plot lines

Panel

Helps develop a Tabulator and a Dashboard Template

Jupiter Code Class Diagram

Dashboard Manager

Creates a dashboard with all visuals organized in tabs

pet_ownership_analysis.DashboardManager

- df
- _chart_manager
- __init__(self, df)
- cache_data(self, df)
- create_dashboard_tabs(self)
- show_dashboard(self, inline=True)

pet_ownership_analysis.ChartManager

- _df
- fp
- __init__(self, df)
- setup_fonts(self)
- get_color(self, name, number)
- create_cat_mean_radar_chart(self, show=False)
- create_dog_mean_radar_chart(self, show=False)
- create_cat_population_bubble_chart(self, show=False)
- create_dog_population_waffle_chart(self, show=False)
- create_cat_owning_radial_chart(self, show=False)
- create_dog_owning_radial_chart(self, show=False)
- create_pet_ownership_dumbbell_chart(self, show=False)
- create_pet_ownership_density_pie_chart(self, show=False)
- create_pet_households_circular_bar_chart(self, show=False)
- create_households_circular_bar_chart(self, show=False)
- create_data_tabulator_table(self)

```
#Run dashboard
data_manager = DataManager()
dashboard_manager = DashboardManager(data_manager.data_frame)
dashboard_manager.show_dashboard(inline=False)
```

pet_ownership_analysis.DataManager

- data_frame
- __init__(self)
- load_data(self)
- organize_data(self)

Chart Manager

Creates plotly and matplotlib charts, and a panel tabulator widget

Data Manager

Loads data from pets excel file and renames columns

Thank You!

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