

Optimizing shelter operations and Improving adoption rates

Austin Animal Centre

Introduction

- The Problem: The animal shelter wants to significantly improve adoption rates and make its daily operations run more smoothly.
- I used their raw data showing all the animals and their outcomes to find the biggest barriers to adoption.
- The core objective of this project was to analyze Austin's animal shelter operations data to identify opportunities for improving adoption rates and optimizing resource allocation.

Executive Summary

- The animal shelter received over 78,000 animals, with dogs and cats accounting for over 94% of the population.
- Neutered/Sterilised animals have a higher adoption percentage (60%) as compared to intact animals.
- The "Other" animal group carries a 71.5% euthanasia rate.

Dataset

- This analysis is built on the *Austin Animal Center Shelter Outcomes* dataset from Kaggle, containing over 78,000 animal records gathered over a number of years of operations.
- The dataset contains detailed information of each animal such as species, breed, age, sterilisation status and what its final outcome was.
- The comprehensive dataset enabled me to transform the raw data into strategic insights.

Data Cleaning

The data cleaning steps undertaken were:

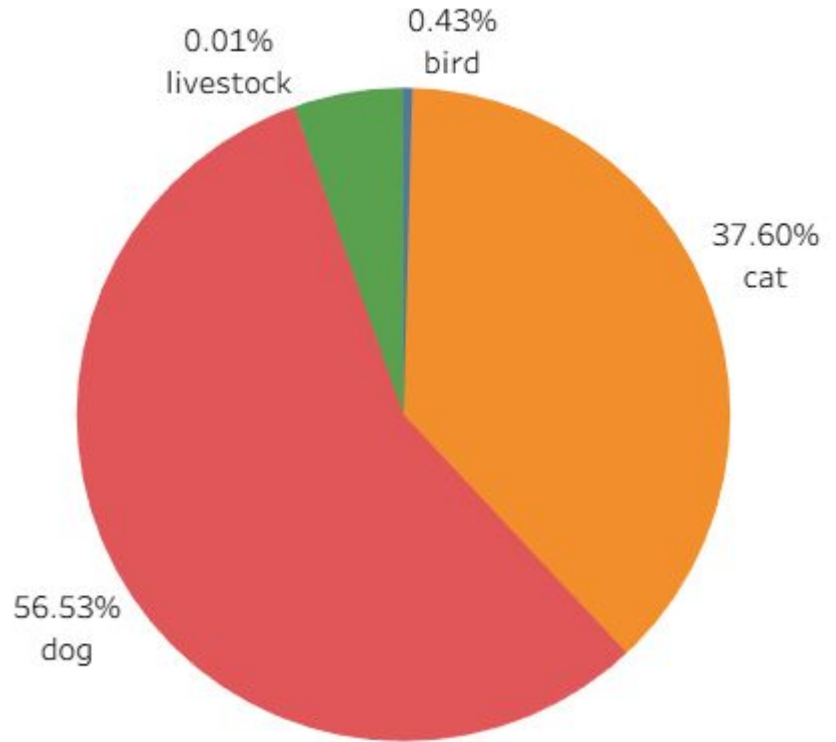
1. Handling Missing Values
2. Standardizing Data Formats
3. Trimming white spaces
4. Reviewing unique values and check the data types

Analysis Summary

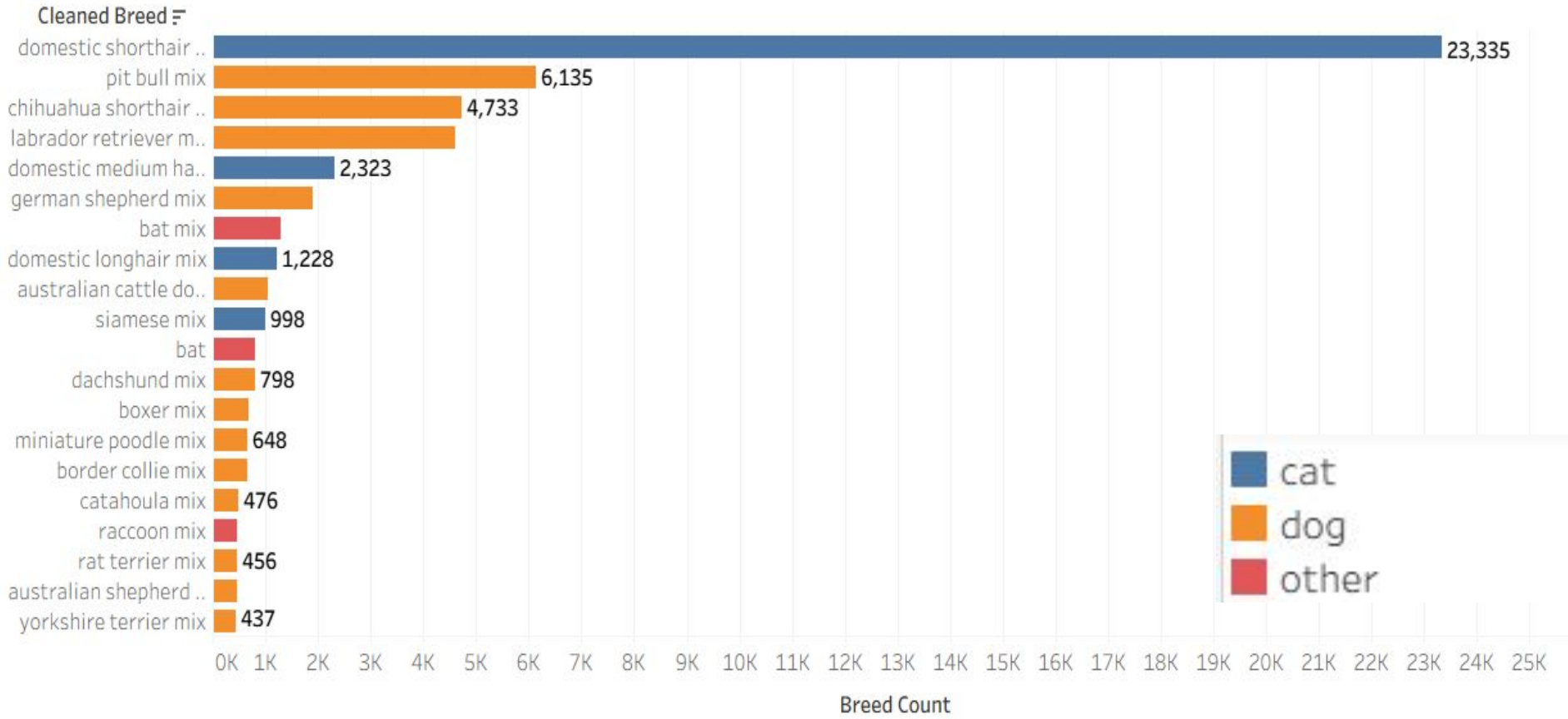
1. Mapping the shelter's intake, detailing species and breeds to confirm where resources are naturally concentrated.
2. Measured adoption success across every key factor: sterilization status, age, species, breed and tracked monthly adoption percentages to find seasonal patterns.
3. Calculating Euthanasia rates by species, and comparing Adoption versus Return To Owner rates to determine if efforts should focus on rehoming or reunification.

Shelter Population Distribution

- Overall dogs have a higher intake population of 56% (44,242) followed by Cats 37% (29,422), Others 5% (4249), birds 0.4% (334) and livestock 0.1% (9).
- Combined, the domestic canine and feline populations account for over 94% of all intakes processed by the shelter.
- 'Other', birds, and livestock, collectively represent less than 6% of the total volume.



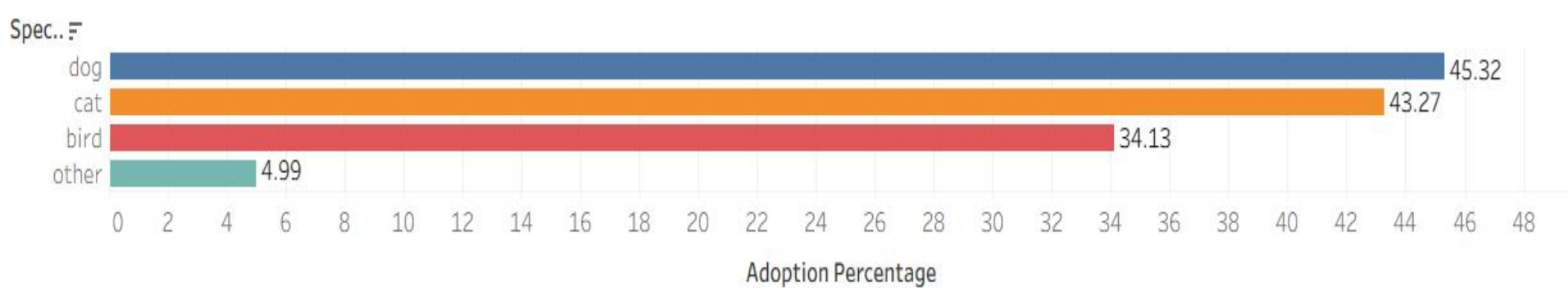
Most Common Breeds in the Shelter



- The Domestic Shorthair Mix feline breed had the highest intake, accounting for 23,335 outcomes significantly surpassing all other categories.
- The next three largest groups are all dogs (Pit Bull Mix, Chihuahua Shorthair Mix, and Labrador Retriever Mix).
- Additionally, the shelter recorded a high volume of Bat Mix 1286 intakes under the 'other' category, representing a significant wildlife intake.

Adoption Rate by Species

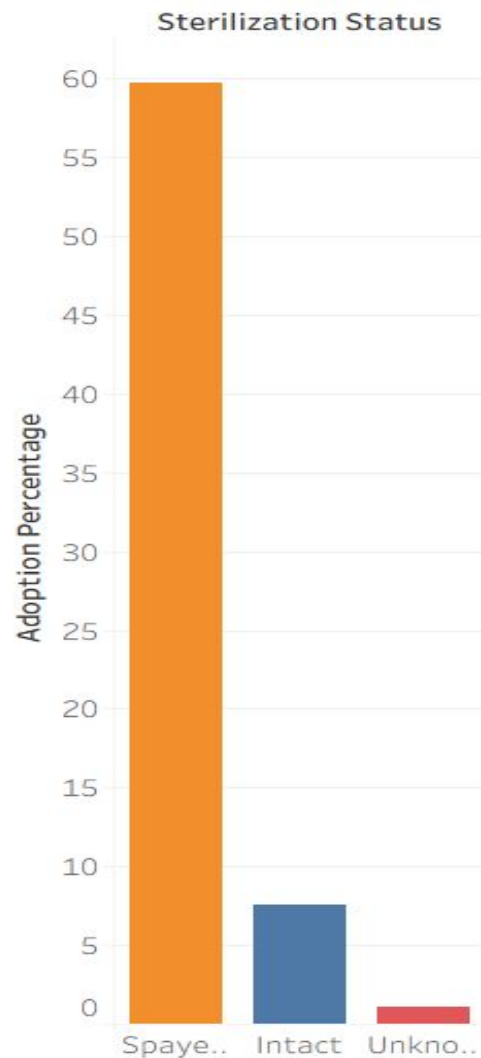
Adoption Percentage per Species



- Dogs and Cats have higher adoption rate, with both groups clustered around the 45% mark (45.32% and 43.27% respectively).
- The Bird population achieves a solid adoption rate of 34.13%, indicating a successful, smaller-scale rehoming program.
- The "Other" species category has a very low adoption success rate of only 4.99%.

Sterilization Status and Adoption Rate

- Animals that are Spayed/Neutered have a much higher adoption success rate of nearly 60%.
- Animals entering the shelter as Intact are adopted only 7.53% of the time, representing a 52-percentage-point difference as compared to neutered animals.
- This disparity confirms that surgical intervention is confirmed as the most effective strategy for achieving positive adoption outcomes and quickly opening up shelter space.



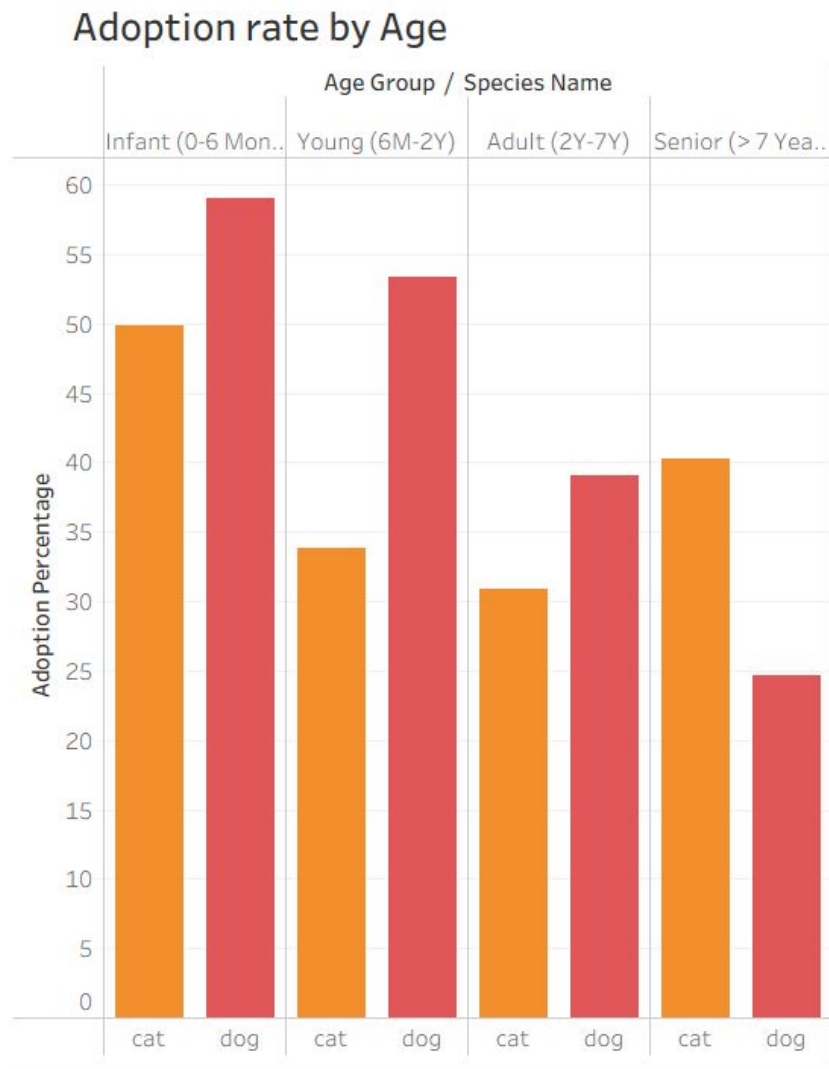
The Age-Adoption Correlation

Rehoming success is overwhelmingly driven by age.

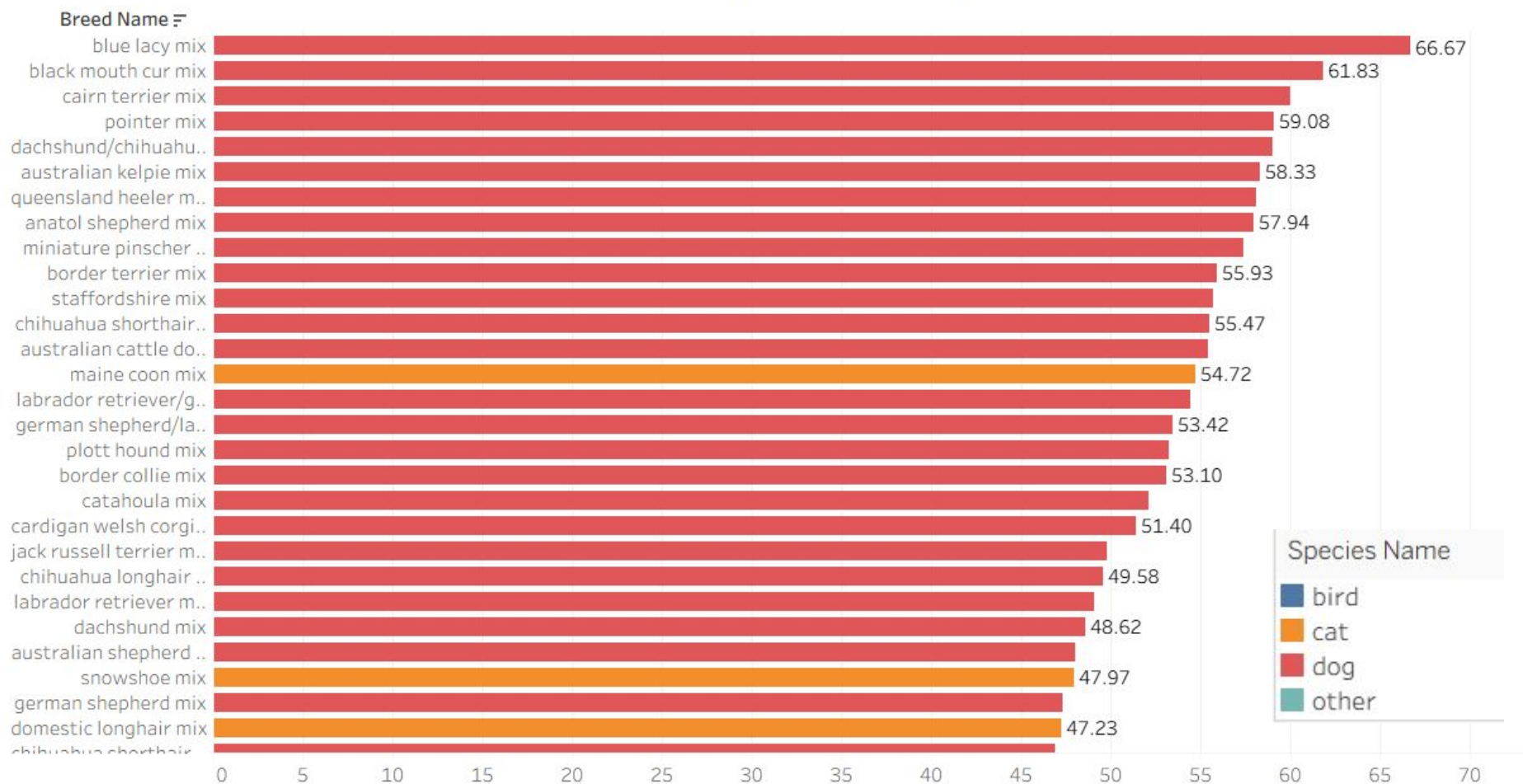
Juvenile animals (puppies and kittens) clear out the fastest, maximizing efficiency.

Adult animals (2-7 years) have also had successful placements.

Seniors (7+ years), who have the lowest adoption rates.



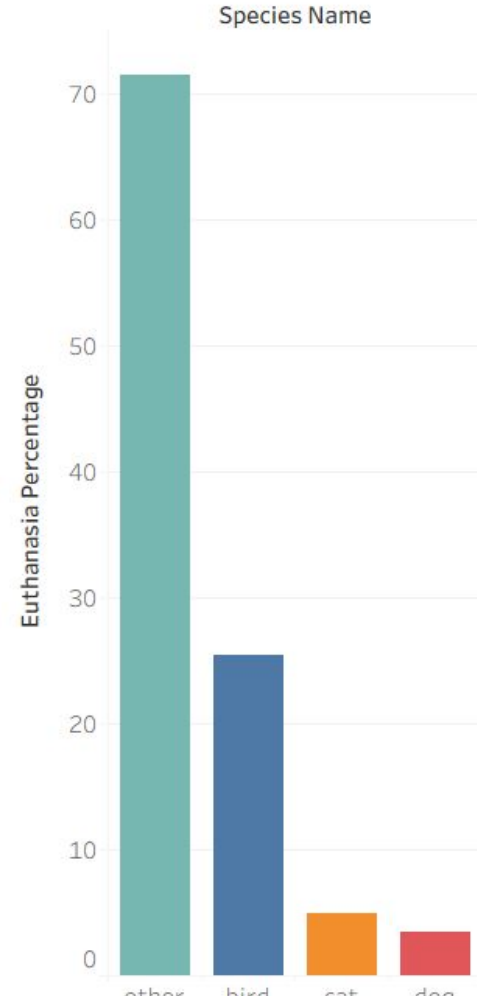
Breed Adoption Percentage



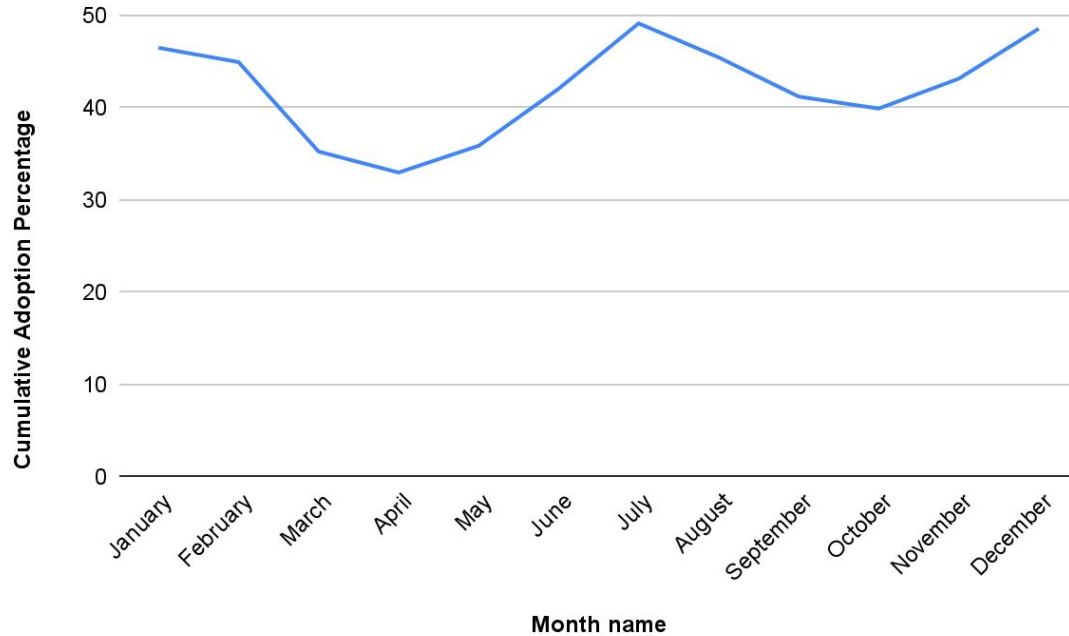
Euthanasia Rates

- The 'Other' animal category and the Bird population are our highest-risk groups, with death rates of 71% and 25%, respectively.
- This proves we urgently need to adopt specialized protocols for sending these animals to other facilities to save their lives.
- Dogs and Cats have low euthanasia rates clustered below 5%, validating the effectiveness of core rehoming and return-to-owner programs.

Euthanasia Rates by Species



Monthly Adoption Rates

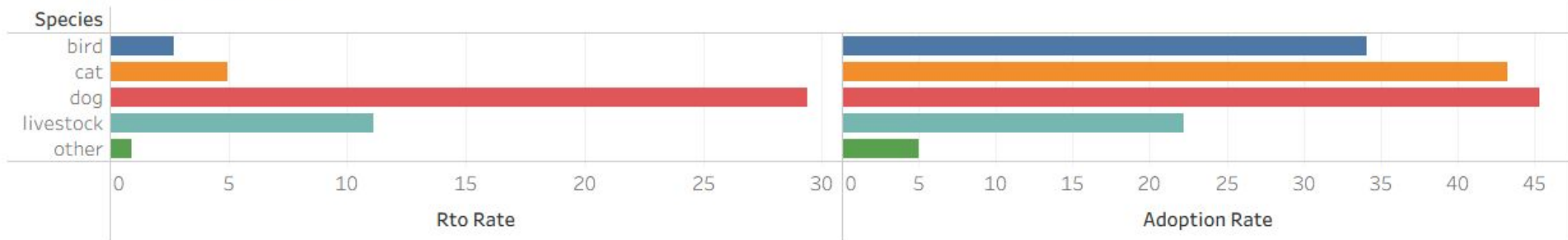


- The adoption rate hits its lowest point of the year (around 33%) in April.
- Adoption success is maximized in July, reaching the annual high (49.2%).

A strong secondary peak occurs during the holiday season in December (48.6%).

Return to Owner Vs Adoption Rates

RTO vs Adoption Rate



- Both RTO (29.37%) and Adoption (45.32%) are highly successful outcomes in dogs. Investment must be made in both finding owners and finding new homes.
- Cats have a higher adoption (43.27%) while their RTO rate is negligible (4.98%). Resources should be shifted to streamlining the adoption process.
- Livestock (RTO 11.11%) and Birds (RTO 2.69%) have very low RTO rates, showing outcomes are driven almost entirely by adoption or specialized placement.

Recommendations

1. Maximize surgical operations immediately to sterilize all animals, which is the best way to close the huge adoption gap between sterilised and intact pets.
2. Establish a Wildlife/Exotic Transfer Protocol to move "Other" species to Wildlife sanctuaries and centers to minimize the 71.5% euthanasia rate.
3. Develop specialized programs i.e fee waivers and focused marketing to improve adoption rates for low-success groups, especially Senior animals and Pit Bull Mixes.
4. Launch mandatory, aggressive foster and marketing campaigns during the critical spring months (March-May) to counteract the 33% adoption slump identified in April.