



From Stray to Stay - Leveraging Data to Improve Pet Adoption and Shelter Efficiency

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Project Overview: Austin Animal Center

Largest no-kill municipal animal shelter in the U.S.

Provides care and shelter for thousands of animals annually.

Services include:

- Intake of stray, lost, and surrendered animals
- Medical examinations & treatments
- Behavioral evaluations
- Adoption & foster programs

Operates under a no-kill policy, making efficiency and care quality critical.

Faces high intake volume, limited capacity, and continual resource challenges.



Motivation & Business Goals

Motivation:

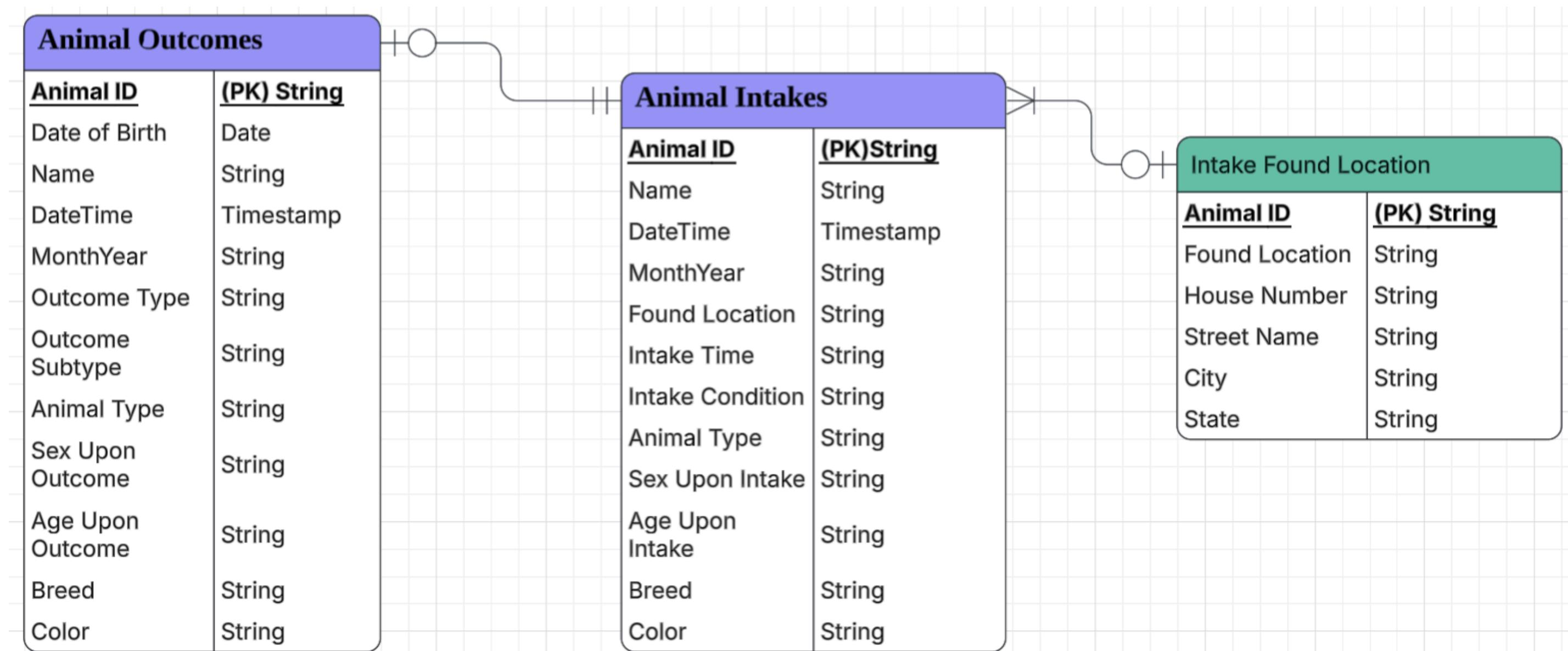
- Rising intake numbers and resource limitations drive the need for deeper data insights.
- Maintaining no-kill operations requires improving efficiency, reducing overcrowding, and supporting animal welfare.

Business Goals:

- Improve Adoption Rates
- Reduce Length of Stay(LOS)
- Optimize Resource Allocation



Entity Relationship Diagram



Data Overview

Animal Intake Data Dictionary

Column Name	Description	Data Type
Animal ID	Unique identifier assigned to each animal	String
Name	Name of the animal, if known	String
DateTime	Exact date and time the animal entered the shelter	Timestamp
MonthYear	Month-year value derived from DateTime	String
Found Location	Location where the animal was found	String
Intake Type	Reason or category of intake (e.g., Stray, Owner Surrender)	String
Intake Condition	Condition of the animal at intake (e.g., Normal, Sick, Injured)	String
Animal Type	Species classification (Dog, Cat, etc.)	String
Sex upon Intake	Sex and reproductive status at intake	String
Age upon Intake	Estimated age at intake	String
Breed	Recorded breed(s) of the animal	String
Color	Color description of the animal	String
Intake Time	Exact date and time the animal entered the shelter(Cleaned)	Timestamp

Dataset Summary

- We selected Austin Animal Center Intake + Outcome data from the past five years (2020–2025).
 - The dataset contains approximately 112k event-level records.
 - 98.4% of intake events are matched to a corresponding outcome.
 - The data includes timestamps, locations, animal characteristics, and behavioral outcomes.

Data Cleaning



Key Data Quality Issues Identified

- **Timestamp errors** (some year fields recorded as 00xx)
- **Unstructured addresses** (highly inconsistent formats in the Found Location field)

Used **REGEXP + SAFEPARSE_TIMESTAMP** to fix abnormal year values and standardize location

- **Duplicate rows**

Removed **exact duplicate rows**

Retained valid **multiple intake events** for the same animal

- **Age field anomalies** (a very small number of negative values)

Removed **2 negative-age records**

- **Missing names** (does not impact analysis)



Exploratory Data Analysis

Annual Trends

	year	total_rows
0	2020	9584
1	2021	12039
2	2022	11891
3	2023	11223
4	2024	11815
5	2025	3744

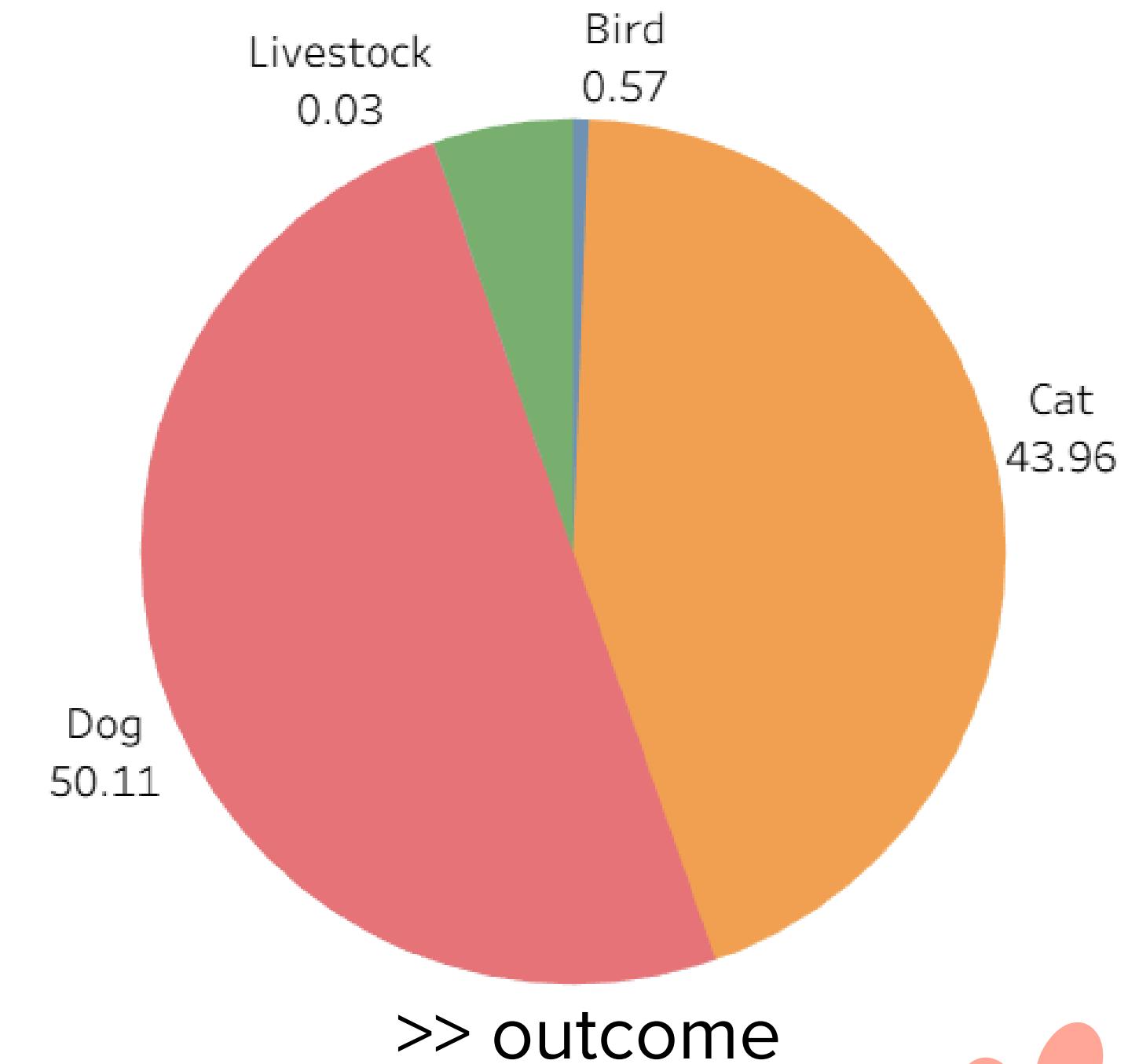
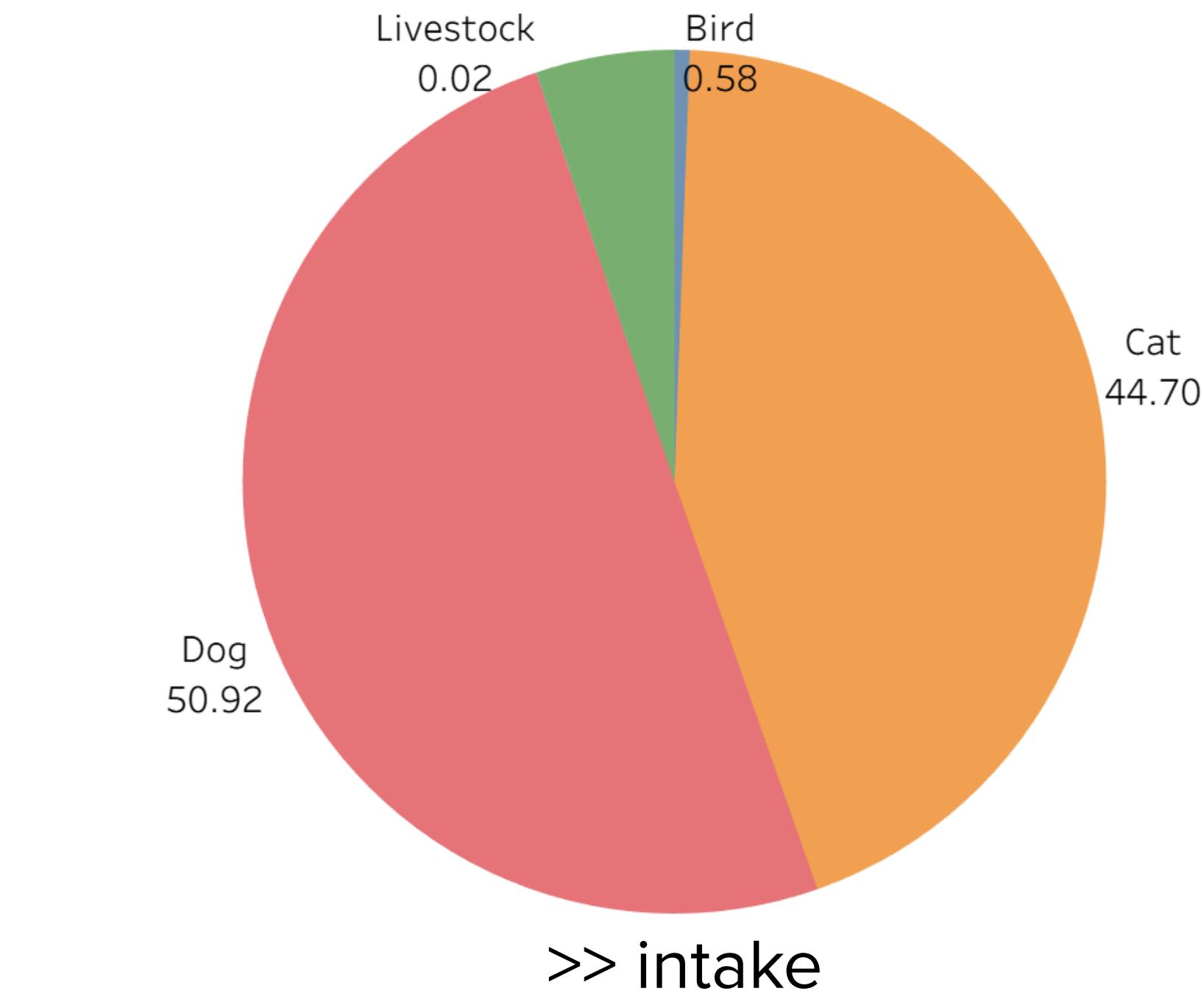
>> intake

	year	total_rows
0	2020	9774
1	2021	11965
2	2022	11882
3	2023	11149
4	2024	11822
5	2025	3606

>> outcome

- We see a noticeable dip in 2020 for both intakes and outcomes, likely due to COVID. After that, the numbers stabilize at around 11–12k records per year.

Animal Type Composition



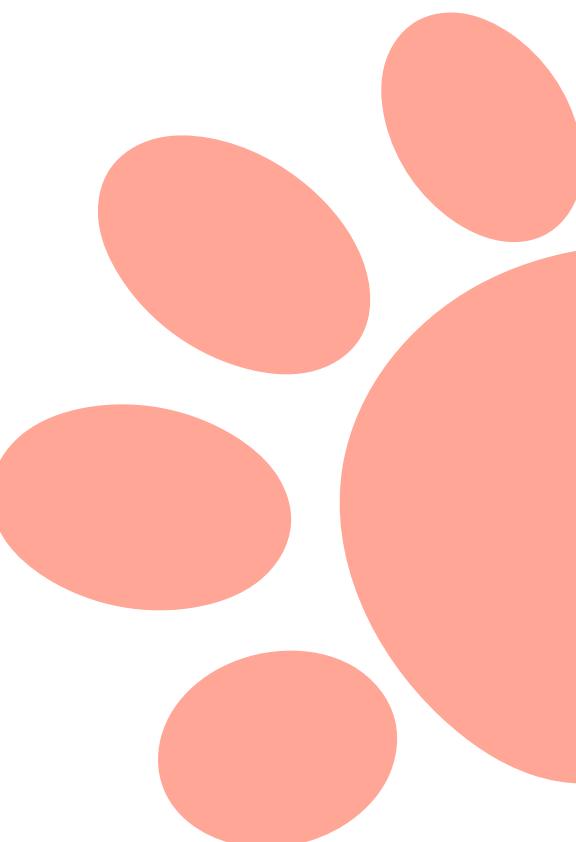
Reason

Animal Type	Intake Type	intake_count
Cat	Stray	20054
Dog	Stray	18512
Other	Wildlife	2095
Bird	Stray	150
Livestock	Stray	12

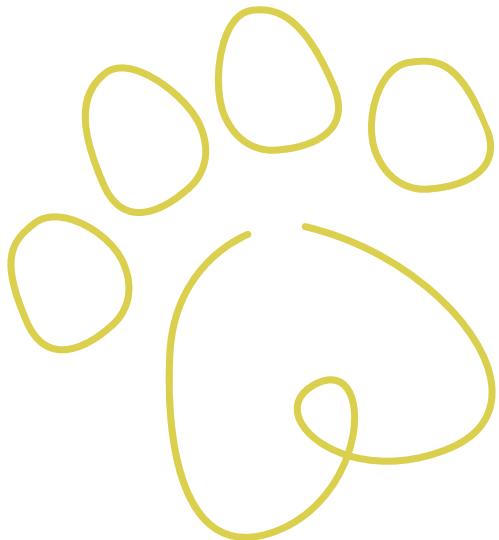
>> Intake : Majority are strays → shelter acts as the city's primary safety net for lost pets.

outcome_type	outcome_type_count	outcome_type_percentage
Adoption	34707	57.65
Transfer	14776	24.55
Return to Owner	5701	9.47
Euthanasia	3215	5.34
Rto-Adopt	688	1.14

>> Outcomes: The majority of animals leave the shelter through positive outcomes



Most Common Breeds



Domestic Longhair
Labrador Retriever
Chihuahua Shorthair Siberian Husky Chihuahua Shorthair Mix

Raccoon
Pit Bull Mix
Pit Bull Domestic Shorthair Mix

German Shepherd Mix
German Shepherd Labrador Retriever Mix
Australian Cattle Dog Mix Siberian Husky Mix Bat Siamese Great Pyrenees Guinea Pig

Domestic Medium Hair

Tableau Dashboards

Austin Animal Center — Data Summary Dashboard |2024

Updated 11/14/2025 with data through May 2025



Shelter Performance Summary

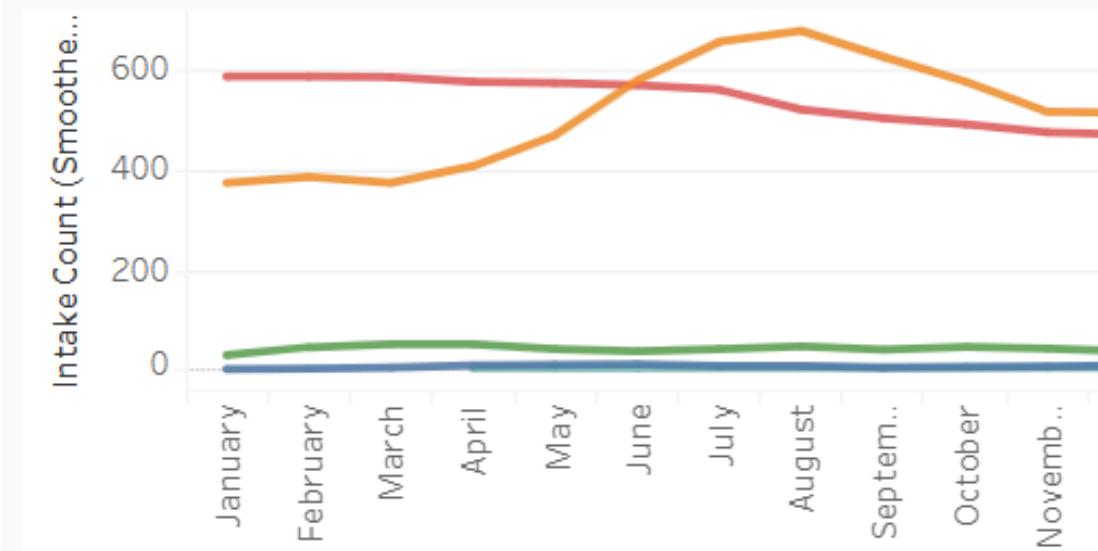
Total Animals
11,815

Total Outcomes
12,171

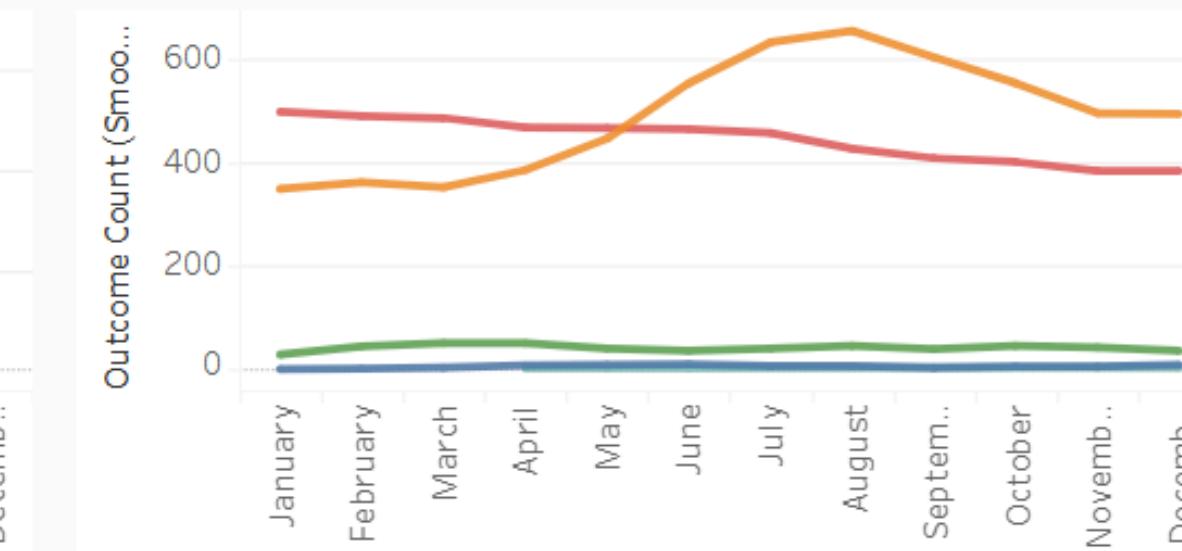
Live Release Rate
92.00%

Adoption Rate
62.53%

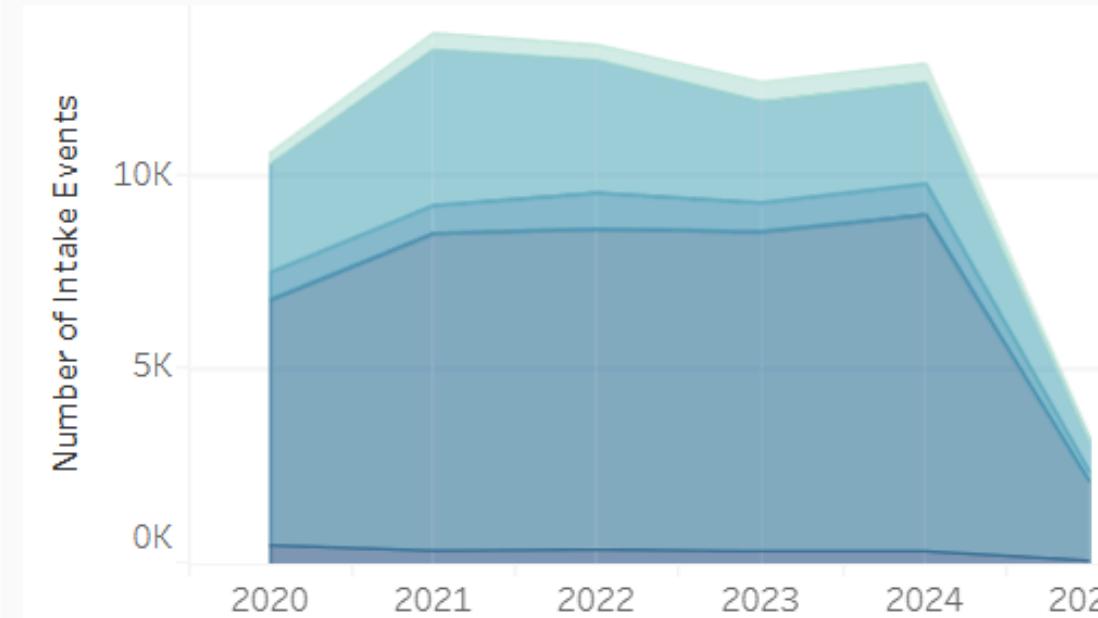
Monthly Intake Trends by Species



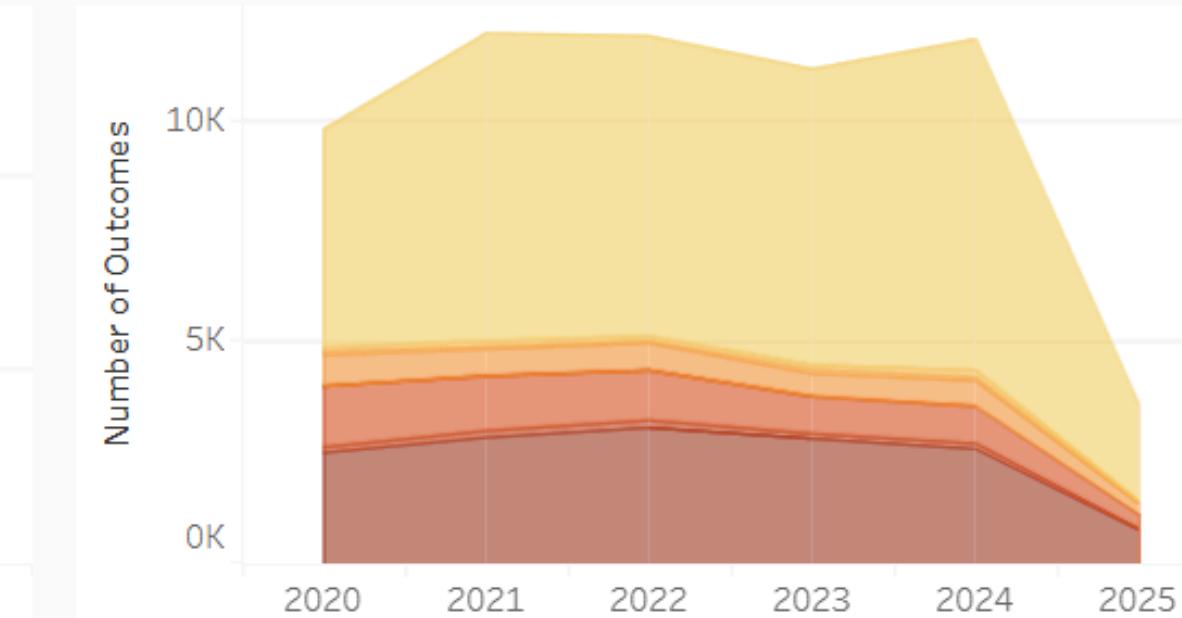
Monthly Outcome Trends by Species



Intake Composition by Intake Type



Outcome Composition by Outcome Type



select year
2024

Animal Type
Bird
Cat
Dog
Livestock
Other

Outcome Type
Adoption
Died
Disposal
Euthana...
Lost
Missing
Relocate
Return t...
Rto-Adopt

Intake Type
Abandoned
Euthanasia ...
Owner Surre...
Public Assist
Stray
Wildlife



Intake—Outcome Behavior Analytics

Updated 11/14/2025 with data through May 2025

Key insights on shelter intake locations, repeat intake risk, and species-specific LOS patterns



Animal Type

Bird

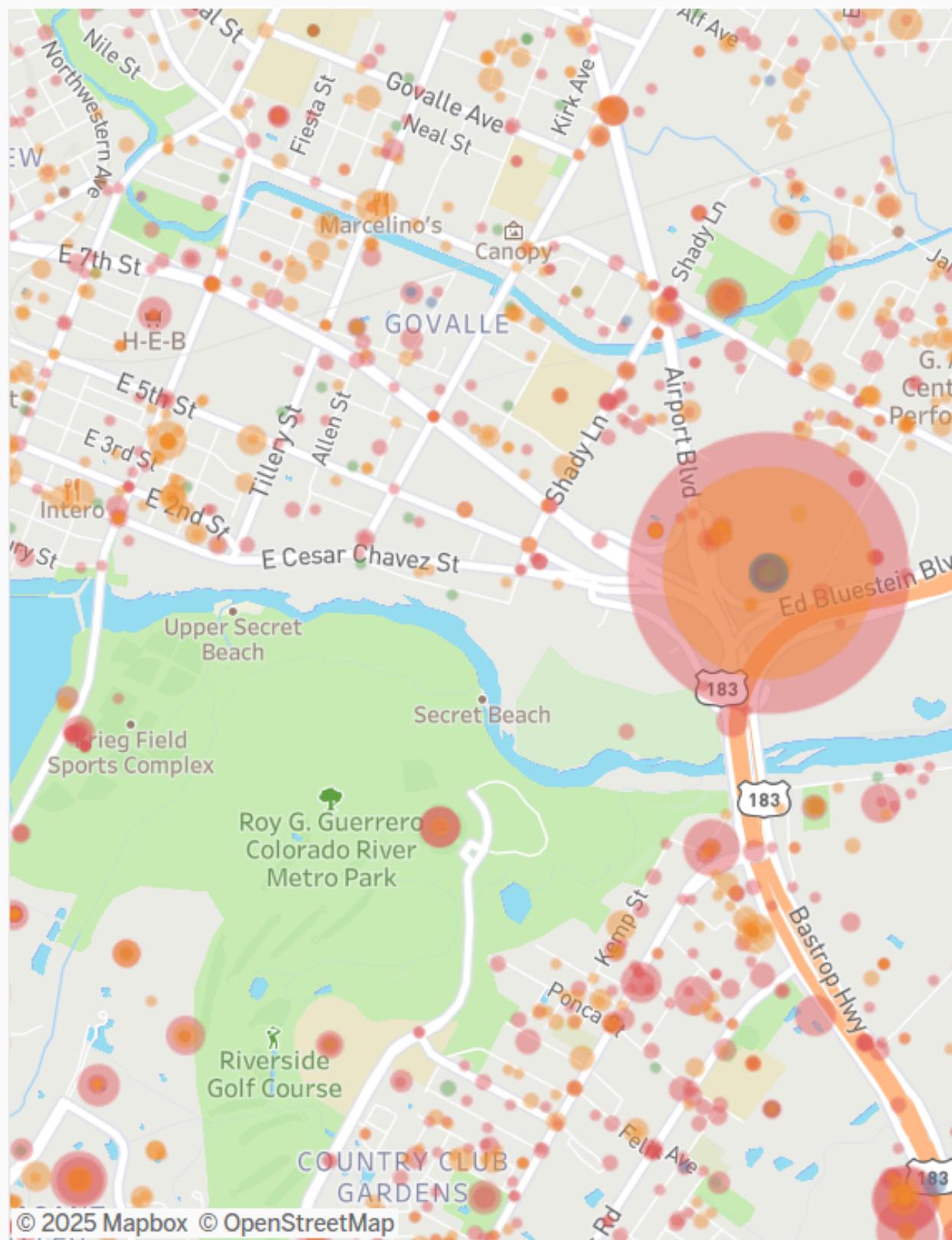
Cat

Dog

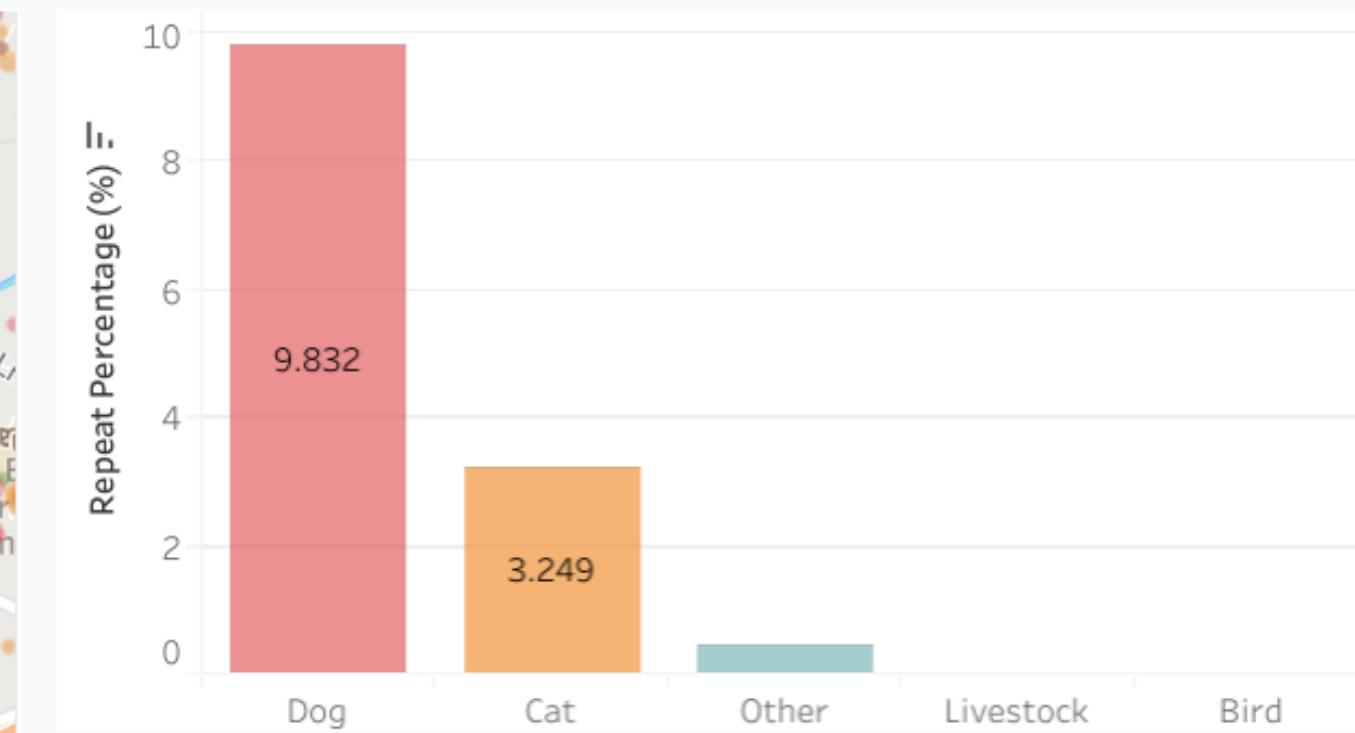
Livestock

Other

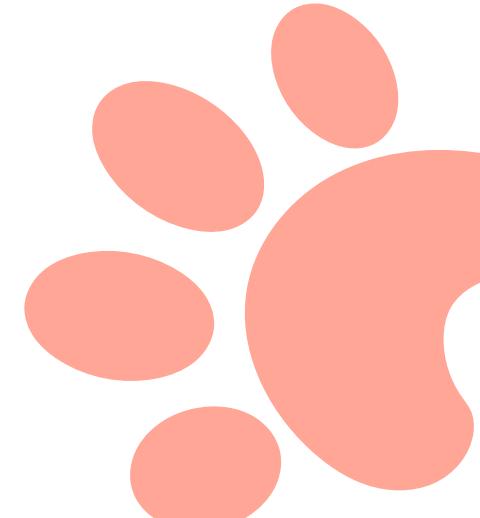
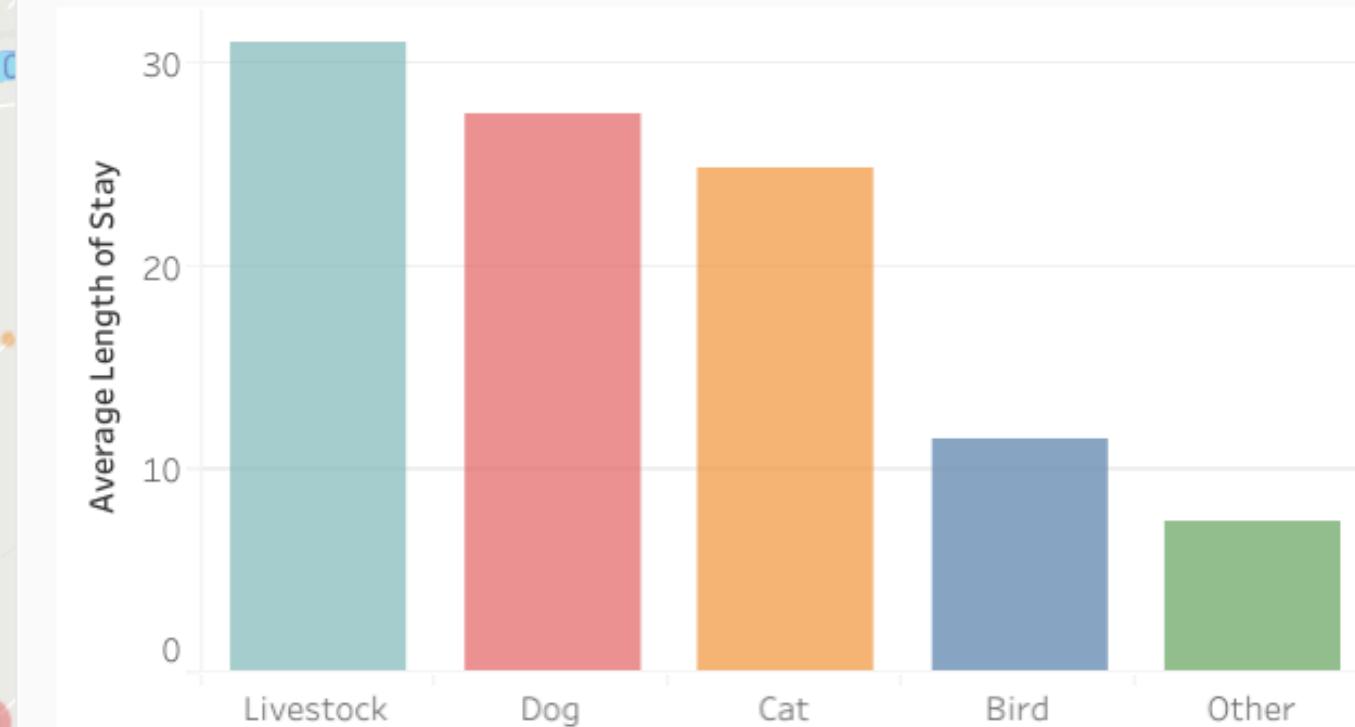
Geospatial Distribution of Intake Locations



Repeat Intake Percentage by Animal Type



LOS Comparison Across Species



Limitations

Geographic Constraints

Data comes only from Austin Animal Center, thus findings may not generalize to shelters with different policies, population densities, or intake patterns.

Location Data Inconsistent or Inaccessible

Limited precision of neighborhood-level hotspot analysis due to found location values having loose structure

Attempts to integrate ZIP code and neighborhood data were restricted because the necessary datasets required paid licenses, preventing deeper geographic and demographic analysis.

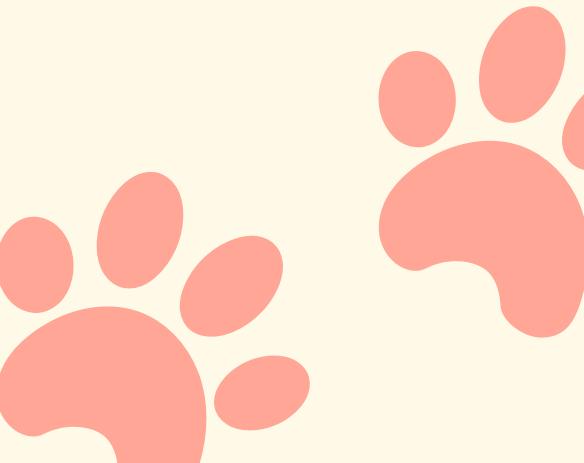
Partial 2025 Data

The final year in the dataset is incomplete, affecting annual comparisons and trend forecasts.

Restricted to Event-Level Data

The shelter tracks events, not animals' full life timelines.

Some behavioral or environmental factors remain unobservable.



Recommendations

Targeted marketing for long-stay or high-risk groups

Use breed, color, age, and repeat-intake patterns to prioritize promotional efforts and boost visibility for harder-to-place animals.

Seasonal staffing and resource adjustments

Increase medical, behavioral, and intake capacity during Spring/Summer peaks to prevent potential backlog and reduce length of stay.

Post-adoption and community support to reduce repeat intakes

Offer training resources, follow-up support, and strengthened Return-to-Owner programs—especially for dogs, which show the highest repeat-intake rate.

Geographic outreach in high-stray areas

Focus microchipping, signage, and community partnerships in identified hotspot neighborhoods to reduce stray inflow and improve reunification.

Final Thoughts



Our analysis shows that Austin Animal Center demonstrates strong performance as a no-kill shelter, with intake and outcome volumes remaining well balanced and most animals leaving through positive outcomes

- Seasonal intake peaks in spring/summer
- Species and breed patterns affect outcomes
- Dogs show higher repeat-intake rates
- Length of stay varies widely by outcome type

Looking ahead, expanding geographic analysis, comparing trends across shelters, or even applying predictive modeling can further strengthen data-driven planning and improve the long-term outcomes of this project

Thank you
&
Question

