CAPSTONE PRESENTATION

Haley Boyan
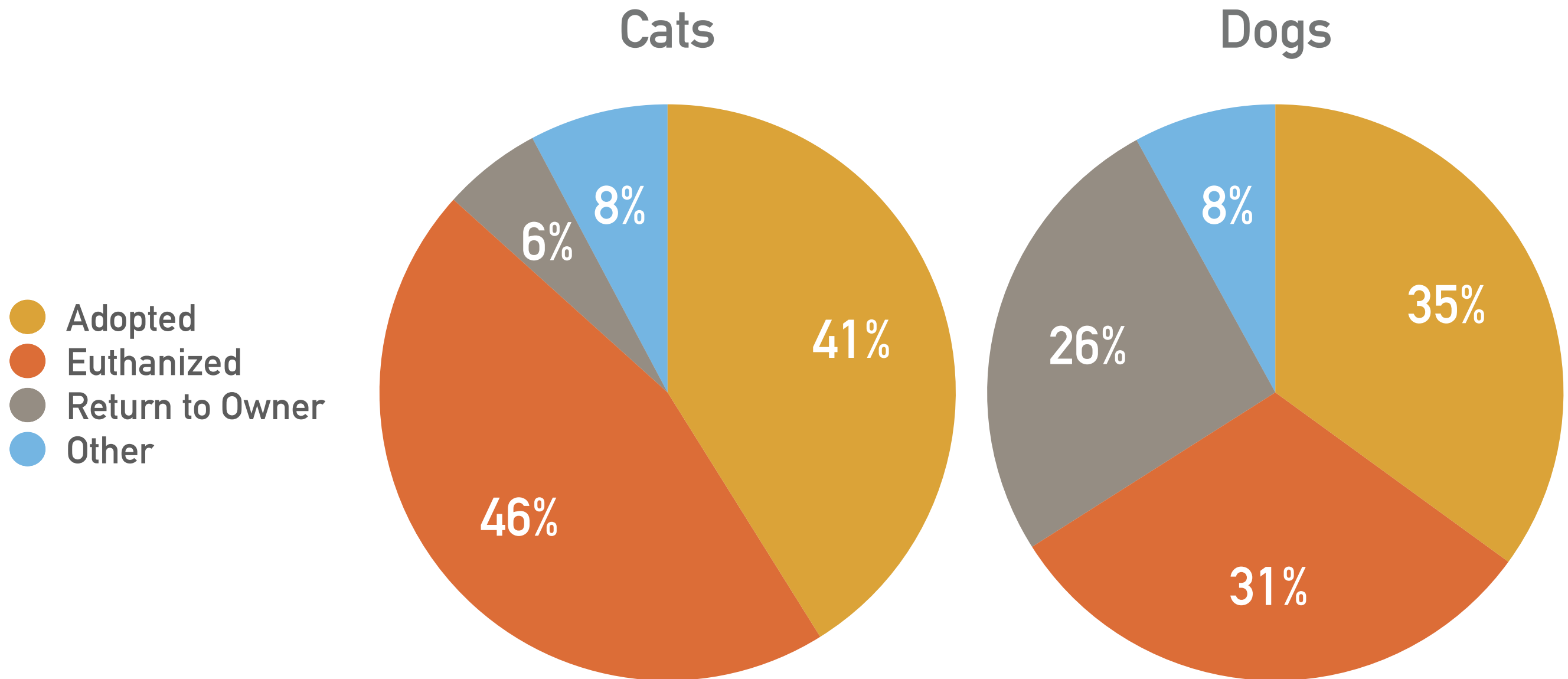
WHAT DETERMINES A SHELTER ANIMAL'S FATE?

THEY'RE NOT AS DOOMED AS WE THOUGHT

(At least in Austin)
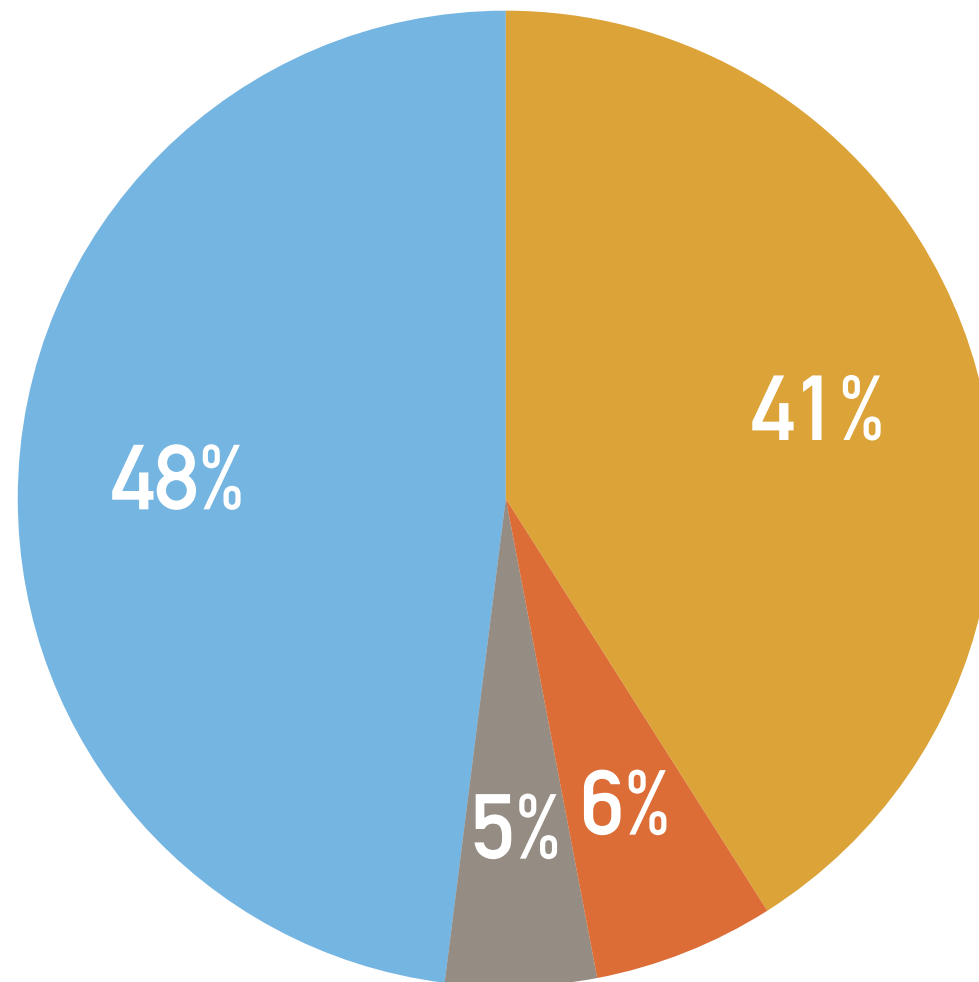
NATIONAL RATES

Cats

Dogs

- Adopted
- Euthanized
- Return to Owner
- Other

Cats
- 41% (Adopted)
- 46% (Euthanized)
- 6% (Return to Owner)
- 8% (Other)

Dogs
- 35% (Adopted)
- 31% (Euthanized)
- 26% (Return to Owner)
- 8% (Other)

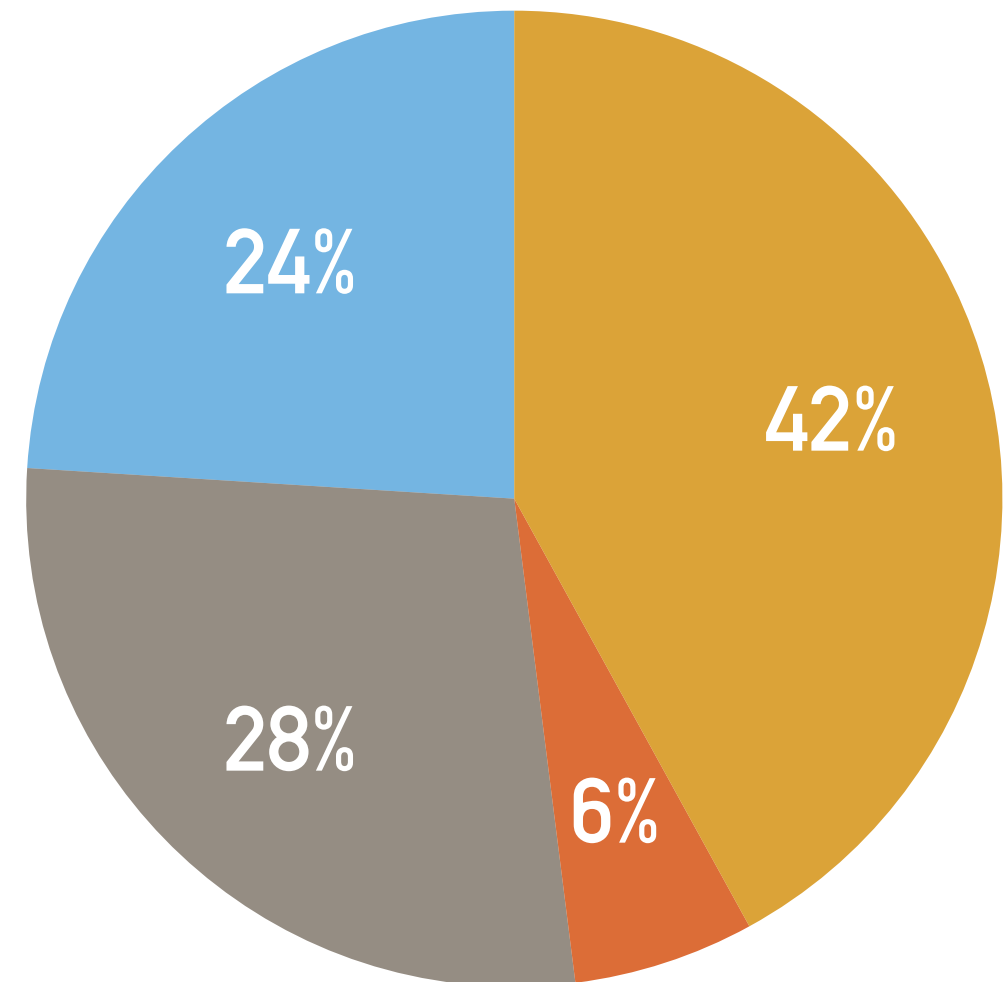*http://www.aspca.org/animal-homelessness/shelter-intake-and-surrender/pet-statistics*

AUSTIN RATES

Cats

Dogs

Adopted
Euthanized
Return to Owner
Other

Cats: 41% Adopted, 6% Euthanized, 5% Return to Owner, 48% Other

Dogs: 42% Adopted, 6% Euthanized, 28% Return to Owner, 24% Other

THE SAD PART

Other Animals

Legend:
- Adopted
- Euthanized
- Return to Owner
- Other
- Disposal

6% 2%
20%
1%
71%
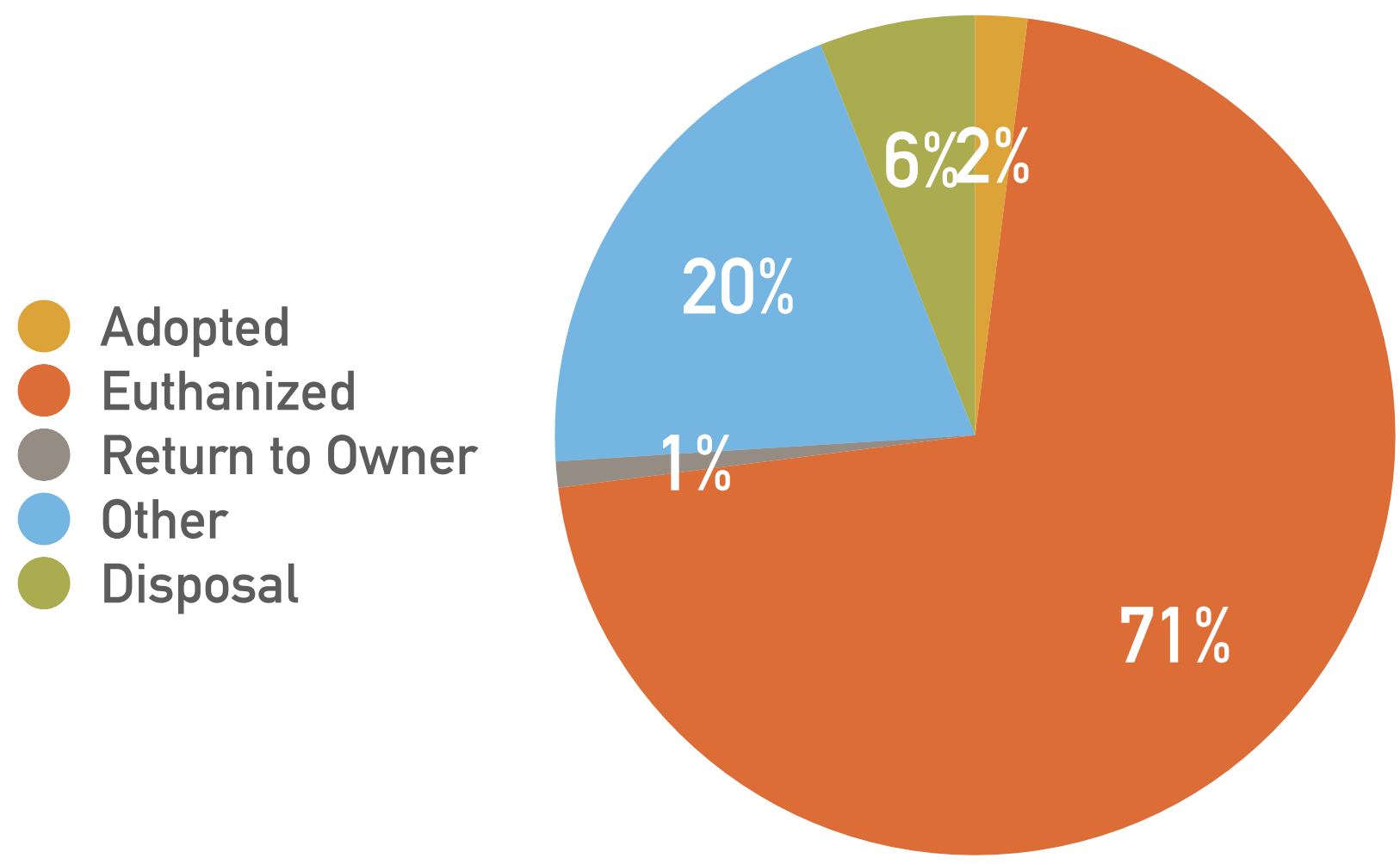
RANDOM FOREST
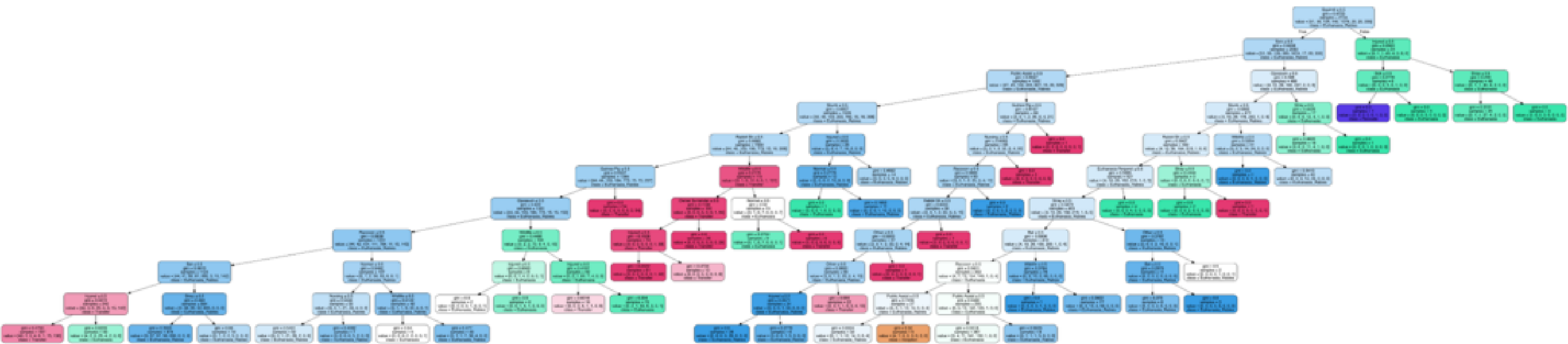
max_depth=10

min_samples_leaf=2
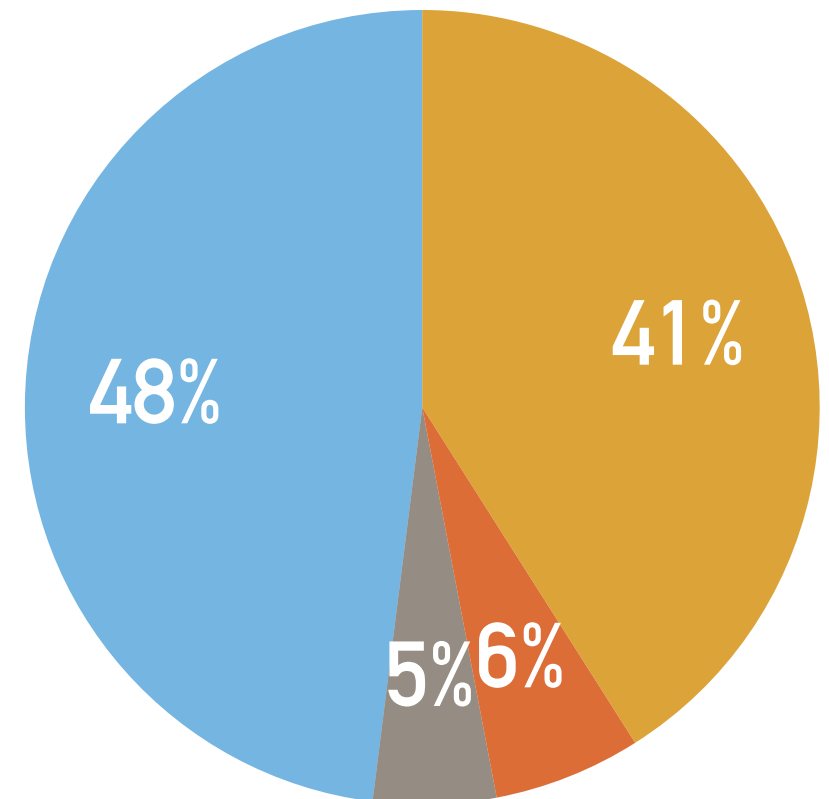
min_samples_split=4

n_estimators=8

0.6949847653687074
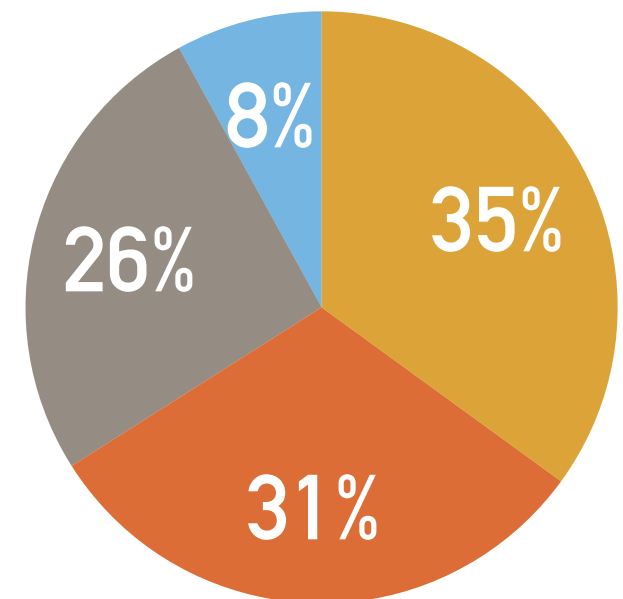
Austin Humane Society's
Feral Cat TNR Program

Cats

41%

48%

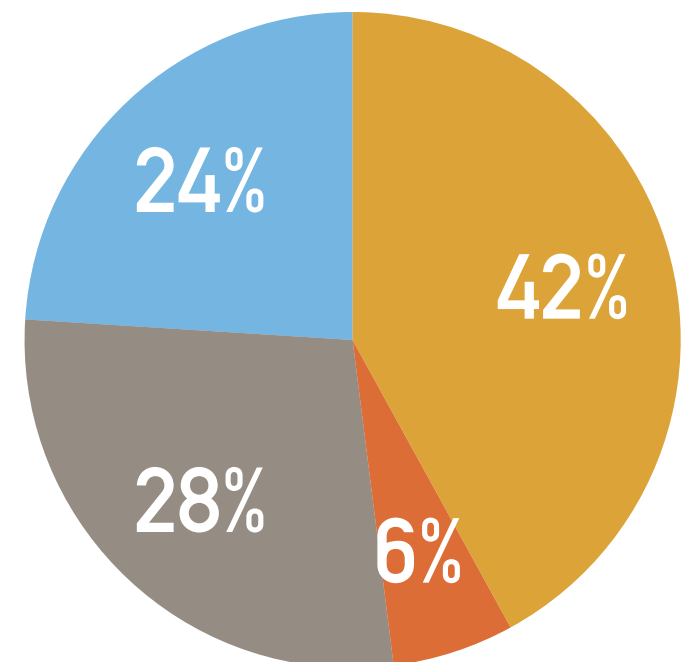5% 6%

- Adopted
- Euthanized
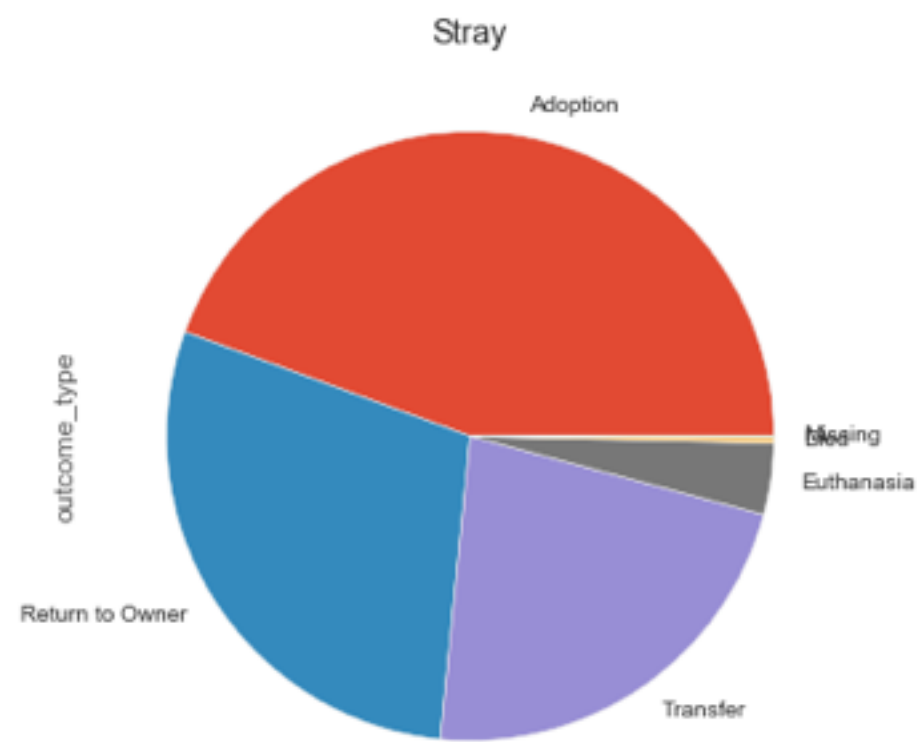- Return to Owner
- Other

National

Austin

On to the dogs!

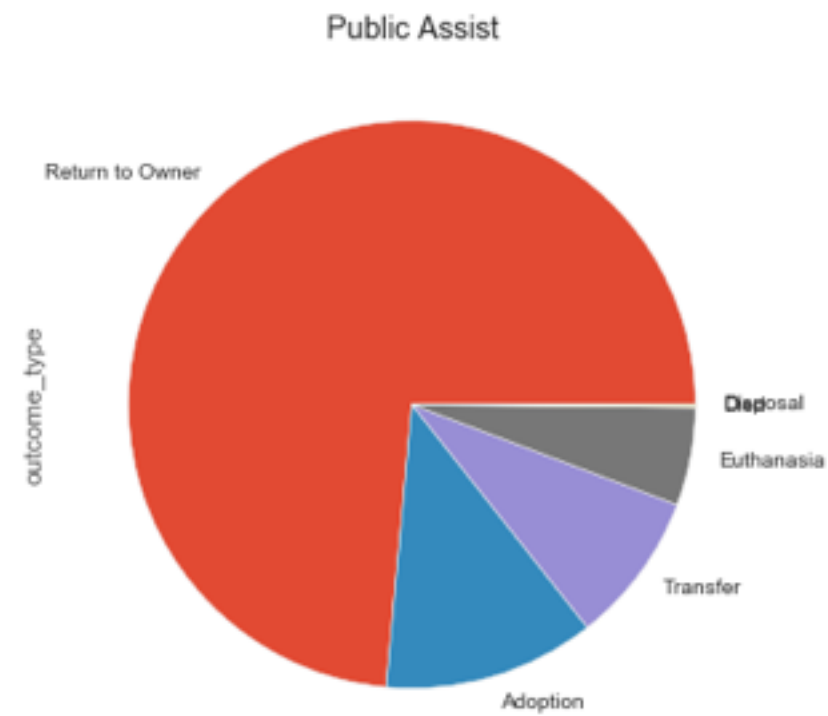# EDA
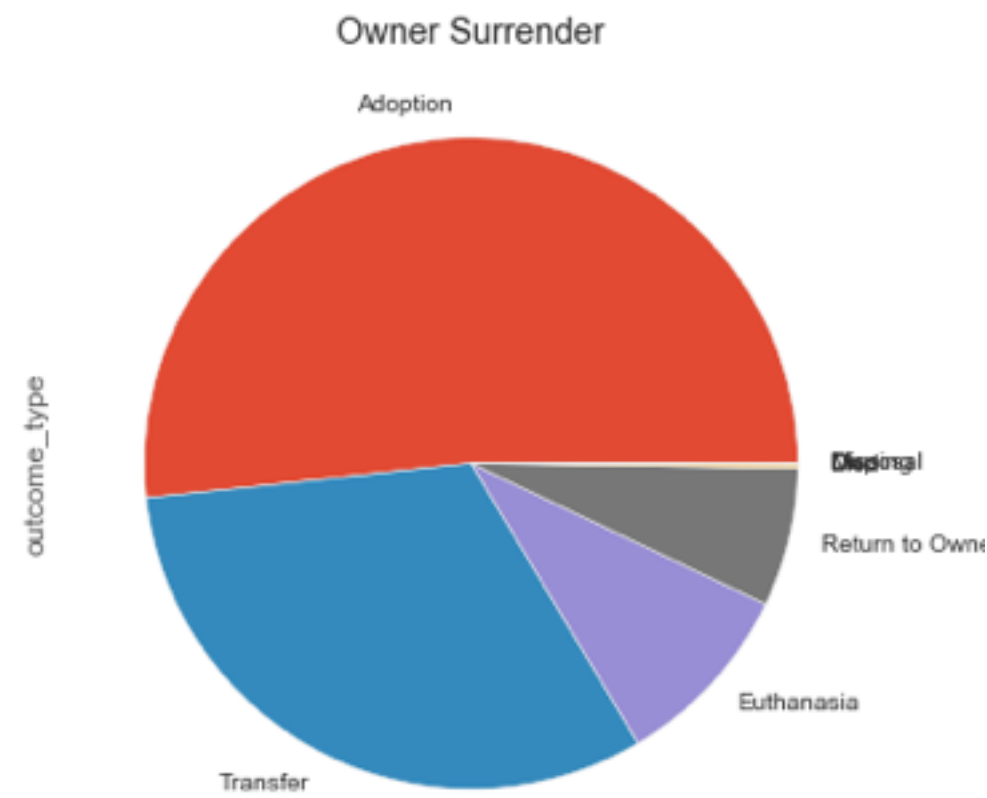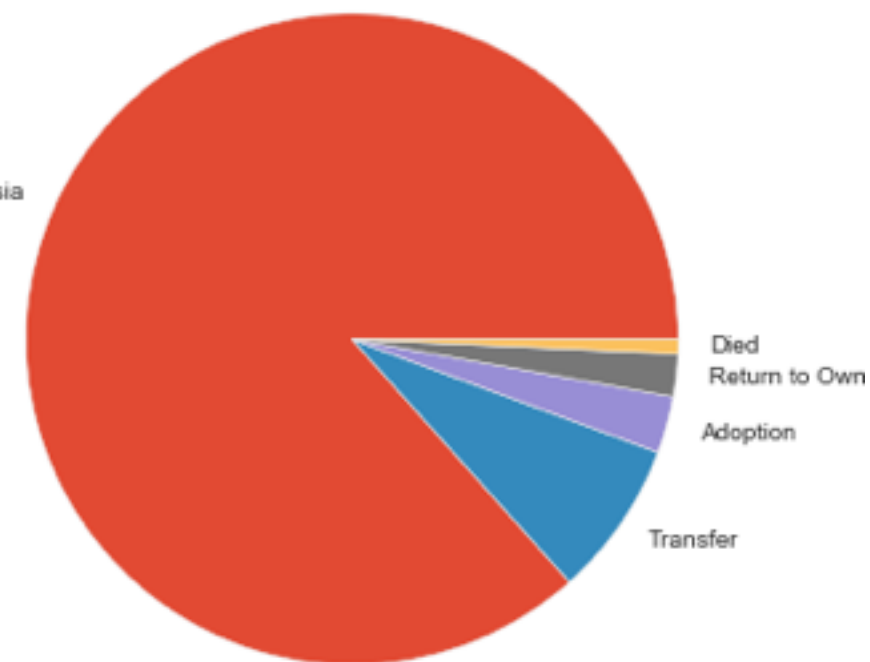
EDA

➤ 90% of dogs are normal upon intake (not sick or injured)

➤ 69% of animals that are fixed in care get adopted

➤ 53% of the dogs are male.

    ➤ 51% of adopted dogs are male

    ➤ 57% of euthanized dogs, as well as dogs returned to owners, are male.

EUTHANIZED ANIMALS

➤ For those euthanized:

  ➤ All had justification. 52% health (suffering/rabies/medical), 47% action (aggressive/behavior)

  ➤ Females 49% suffering, 33% aggressive, 9% behavior, 8% health

  ➤ Males 37% Suffering, 39% aggressive, 12% behavior, 11% health.

BREEDS

➤ TFIDF vectorizer to match breed in Austin data to AKC listing

```
,Pit Bull
,Podengo Pequeno
,Chihuahua Shorthair
,Weimaraner
,Anatol Shepherd
,Labrador Retriever
,Chinese Sharpei
,Great Pyrenees
0,Cairn Terrier
1,Dachshund
2,German Shepherd
3,Black
4,Tan Hound
5,Siberian Husky
6,Miniature Poodle
7,Yorkshire Terrier
8,Norfolk Terrier
9,Basset Hound
0,Australian Shepherd
1,Australian Cattle Dog
2,Belgian Malinois
3,Jack Russell Terrier
4,Chow Chow
5,Doberman Pinsch
6,Japanese Chin
7,Staffordshire
8,Welsh Terrier
9,Shetland Sheepdog
0,Italian Greyhound
1,Vizsla
2,Alaskan Husky
3,Rottweiler
```
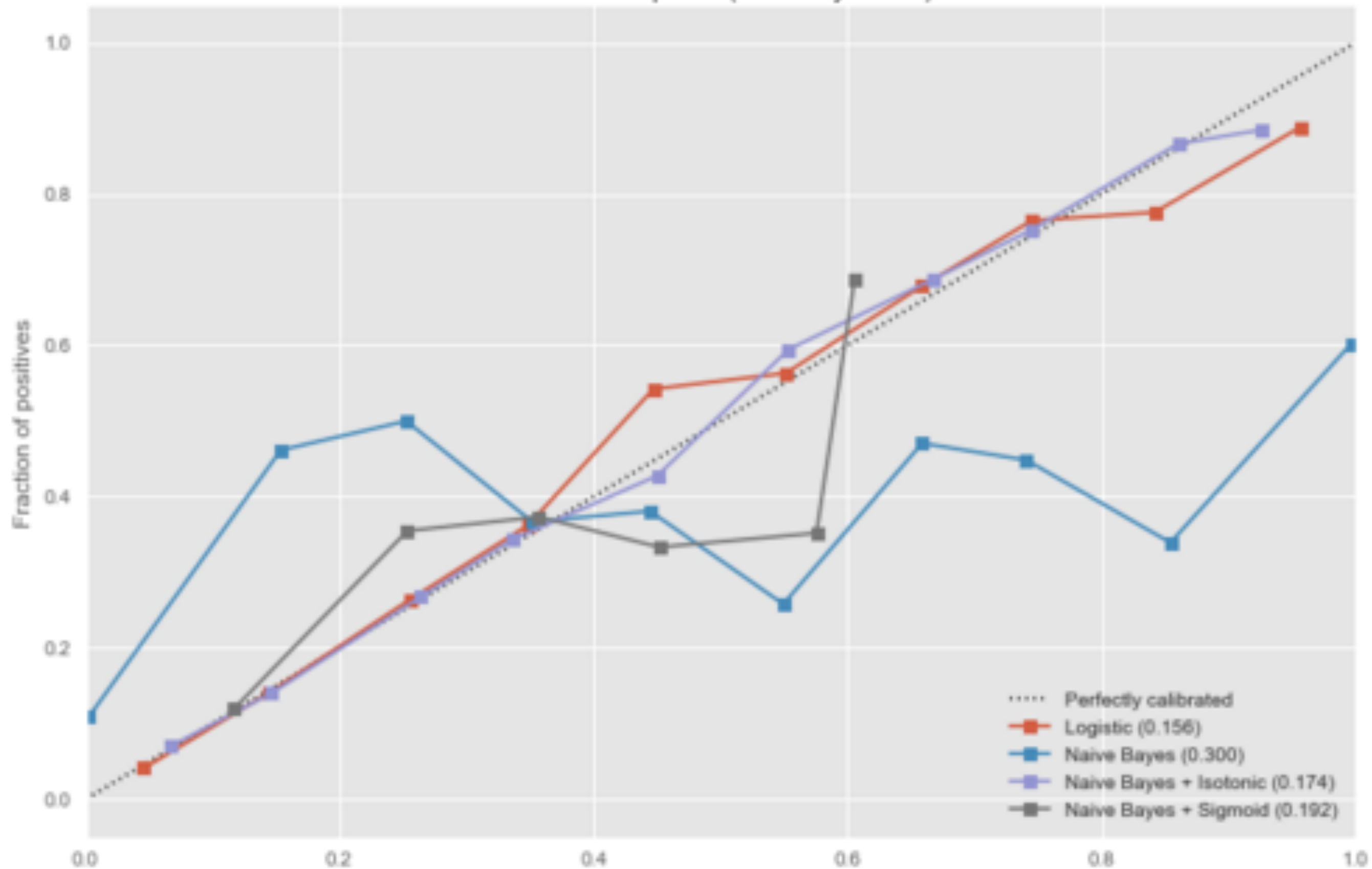
LINEAR SVC

➤ bestmodel = LinearSVC(loss='squared_hinge', dual=False, C=100.0, penalty='l2')

➤ 0.69188207476882313

```
0.007886 Blue
0.009112 Hound Group
0.020408 Bully Breed
0.022227 fixed_out
0.025334 fixed_in
```

```
-0.280887      intake_type_Euthanasia Request
  -0.146592        intake_condition_Nursing
   -0.097786        intake_condition_Sick
-0.091445      intake_type_Owner Surrender
 -0.074900       intake_condition_Pregnant
```

Calibration plots (reliability curve)

Perfectly calibrated
Logistic (0.156)
Naive Bayes (0.300)
Naive Bayes + Isotonic (0.174)
Naive Bayes + Sigmoid (0.192)

FINDINGS

➤ Euthanasia requests will be euthanized

➤ Don't give away your pets!

➤ Strays do surprisingly well

➤ Bully Breeds don't

➤ Austin is not a great place to study this

➤ Classifier vs. Regression (11%)