



Predicting Pet Adoption Speeds

How Cute is that Doggy in the Window

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Agenda

- ❖ Define the problem
- ❖ Obtain the data
- ❖ Explore the data
- ❖ Model the data
- ❖ Evaluate the model
- ❖ Respond to the problem



Hi there.

I'm Kevin.



Define the Problem

Why does this matter?

Define the Problem



Create a model predicting the adoptability of pets – specifically, how quickly is a pet adopted

- ❖ Improve pet profiles' appeal
- ❖ Reduce animal suffering and euthanization
- ❖ Build more happy families

Define the Problem



“
**Based on an animals
profile features, are we
able to predict it's
adoptability?**
”



A beagle puppy is lying on a bed of grey gravel. The puppy has brown, white, and tan fur. A blue semi-transparent overlay covers the entire image. The text 'Obtaining the Data' is written in white, sans-serif font in the center. Below it is a small teal horizontal line. Further down, the text 'How did we get our Information?' is written in a smaller white font. In the bottom left corner, there is a small white number '6' preceded by a short horizontal line.

Obtaining the Data

How did we get our Information?

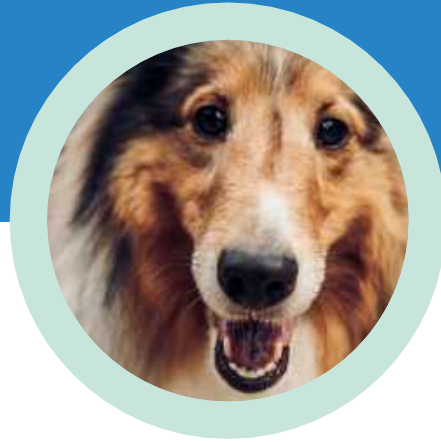
kaggle

PetFinder.my Adoption Prediction

Obtain the Data



Train



Test



Breed



Color

Obtain the Data

Train



TRAIN is the data used to build the model.
This data includes actual adoption speeds of
the animals from the shelter

Test



TEST is the data used to validate the model.
This data is the structured the same as the
Train but without the adoption speeds we
are attempting to predict.

Obtain the Data

Breed



Breed is the data map used to identify the breed in the train/test data sets.

Contains Type, and Breed name for each Breed ID. Type 1 is dog, 2 is cat

Color



Color is the data map used to identify the color name in the train/test data sets.

Contains ColorName for each ColorID

A close-up, slightly blurred photograph of a small, brown and black puppy lying down on a grey carpet. The puppy's eyes are closed, and it appears to be sleeping. The background is out of focus, showing a light-colored wall and floor. The overall tone of the image is soft and calm.

Exploring the Data

What can we learn from the information?

Explore the Data



Train

The training data contained 14,993 total pets and 25 features for each pet



Test

The testing data contained 3,948 total pets and 24 features for each pet



Breed

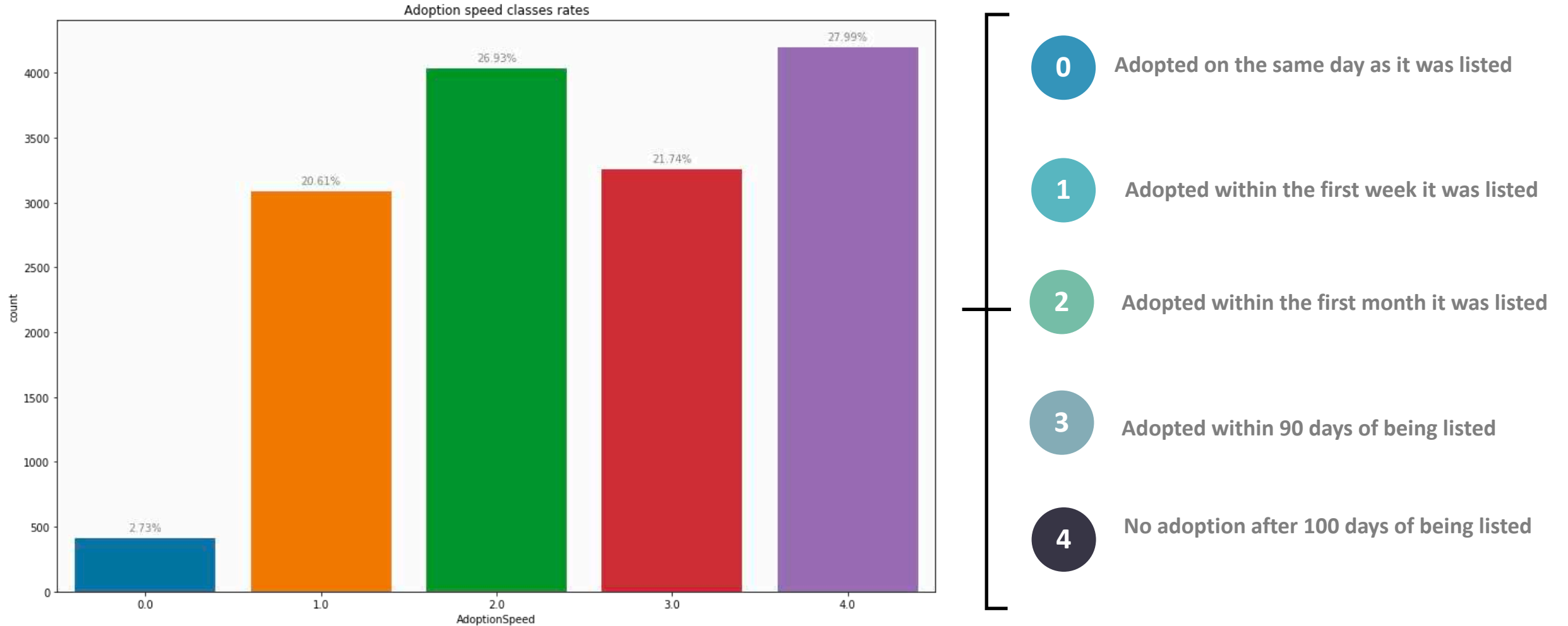
The breed data contained 307 total breed descriptions for the pets



Color

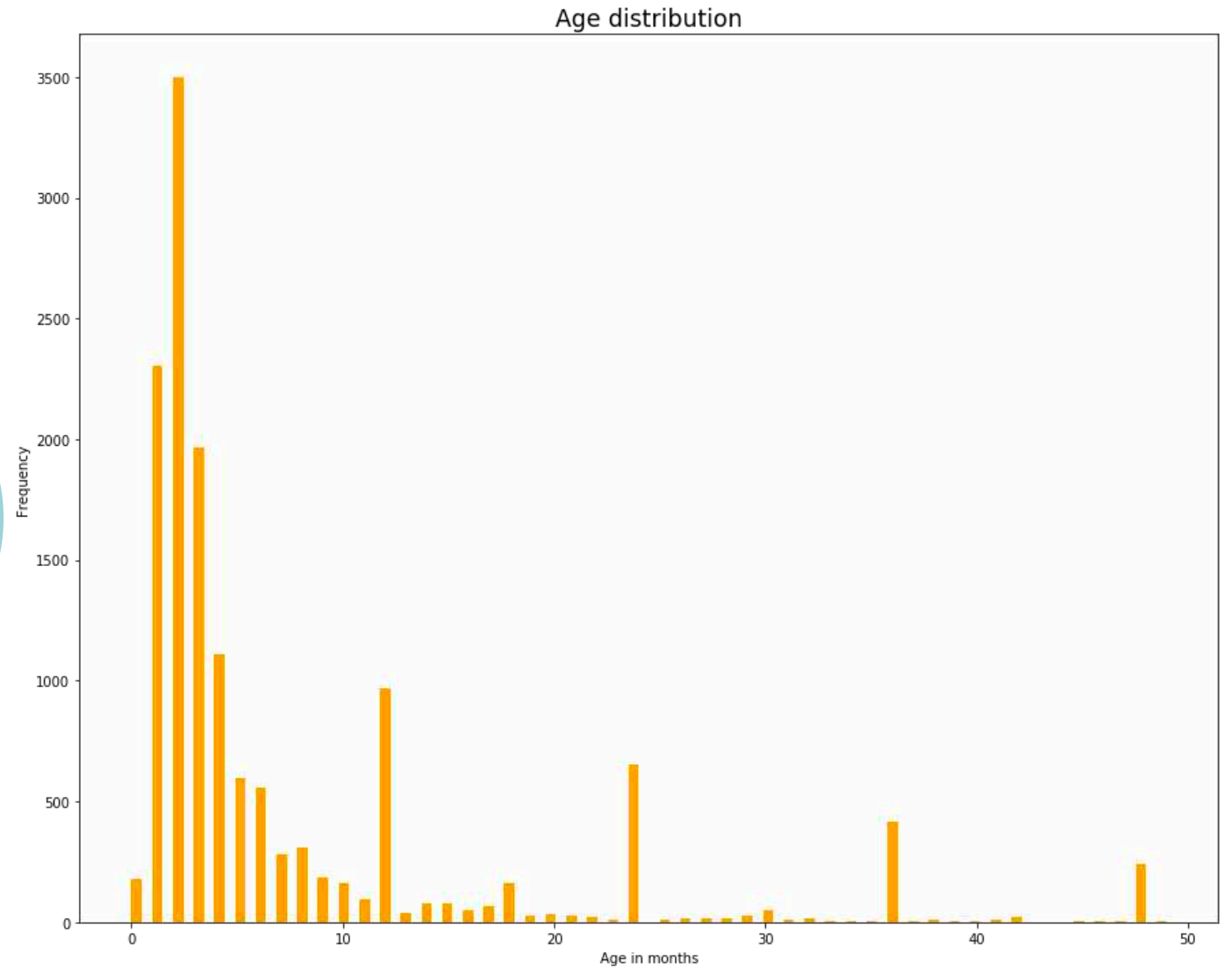
The color data contained seven color options for each pet

Explore the Data



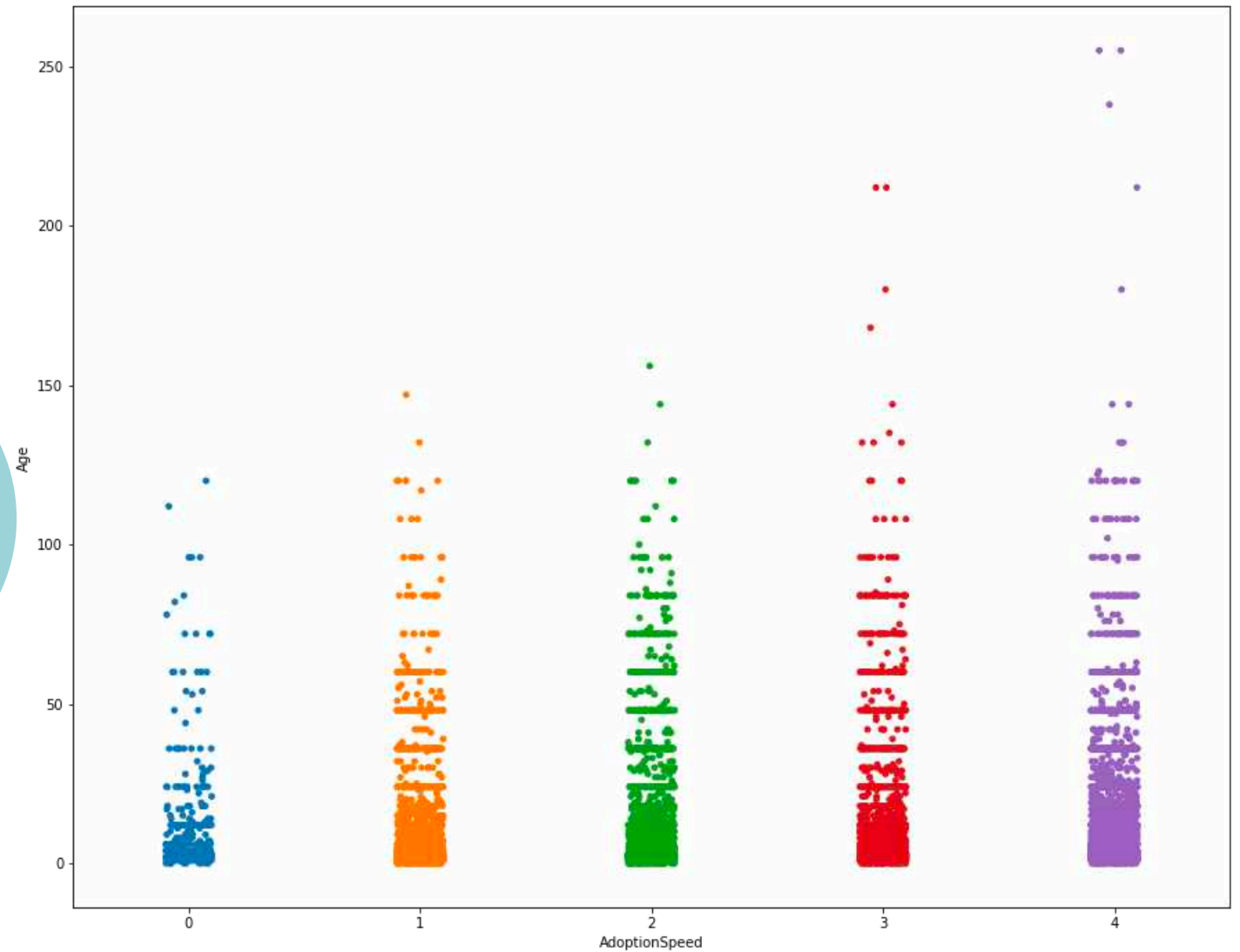
Explore the Data

Age



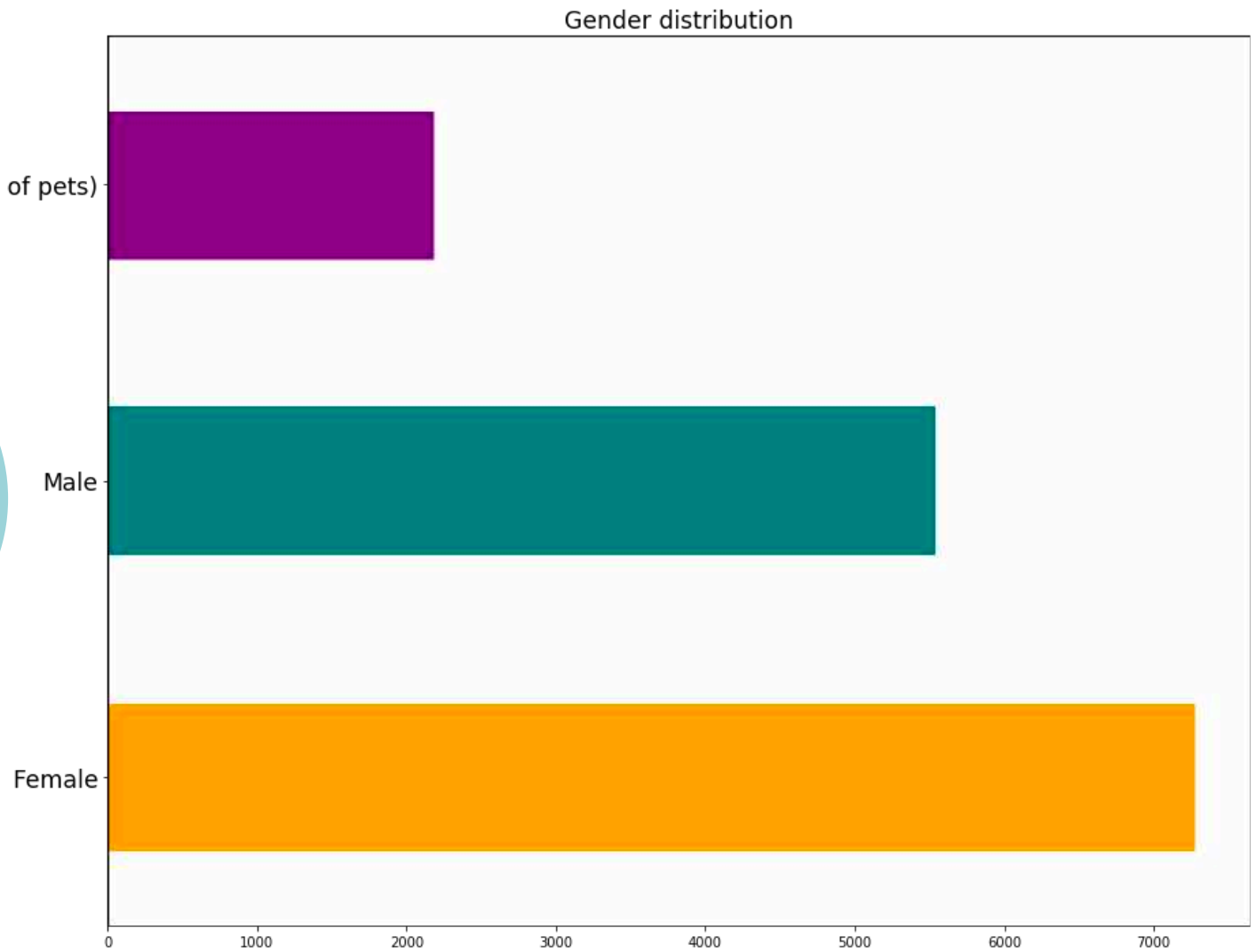
Explore the Data

Age



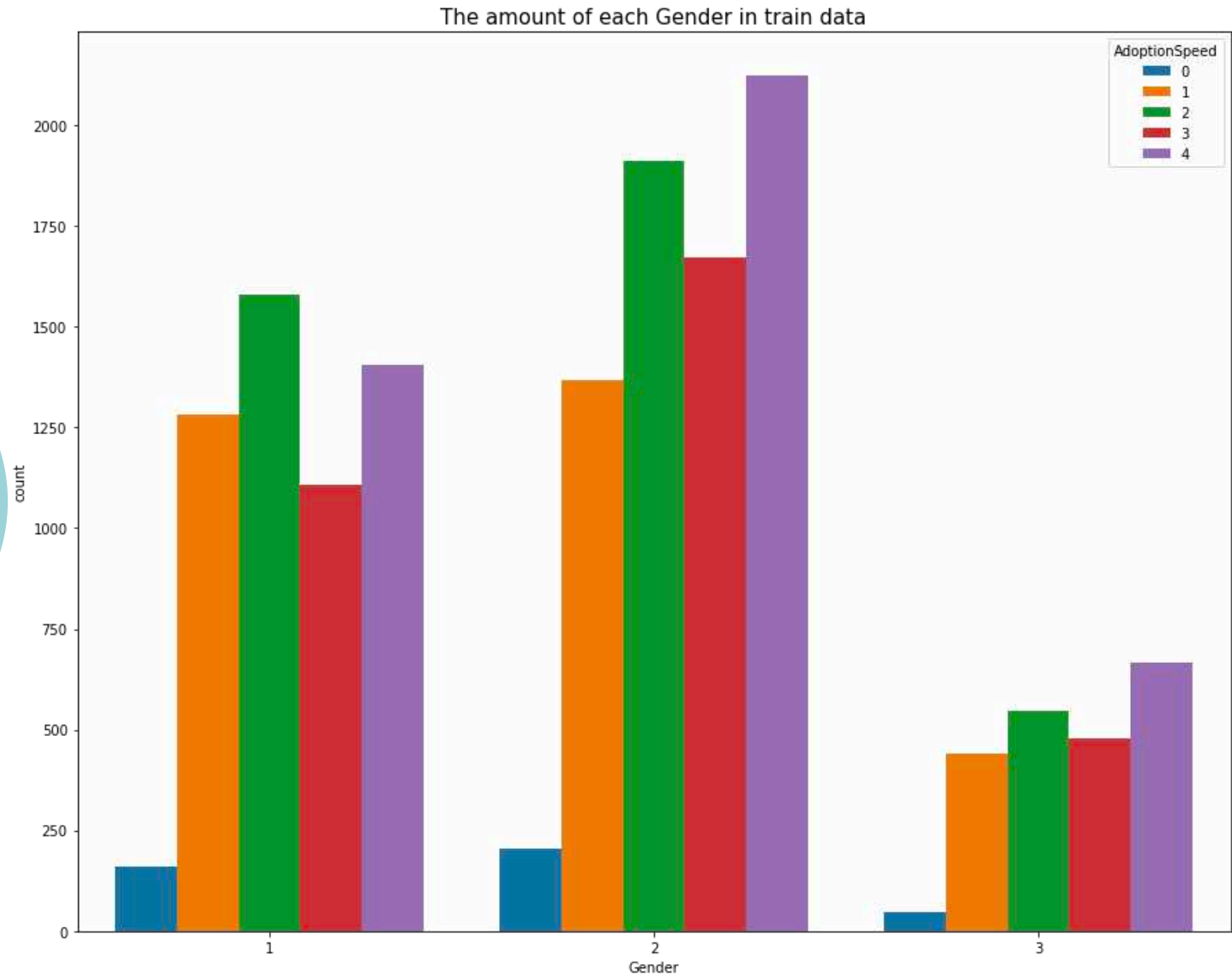
Explore the Data

Gender



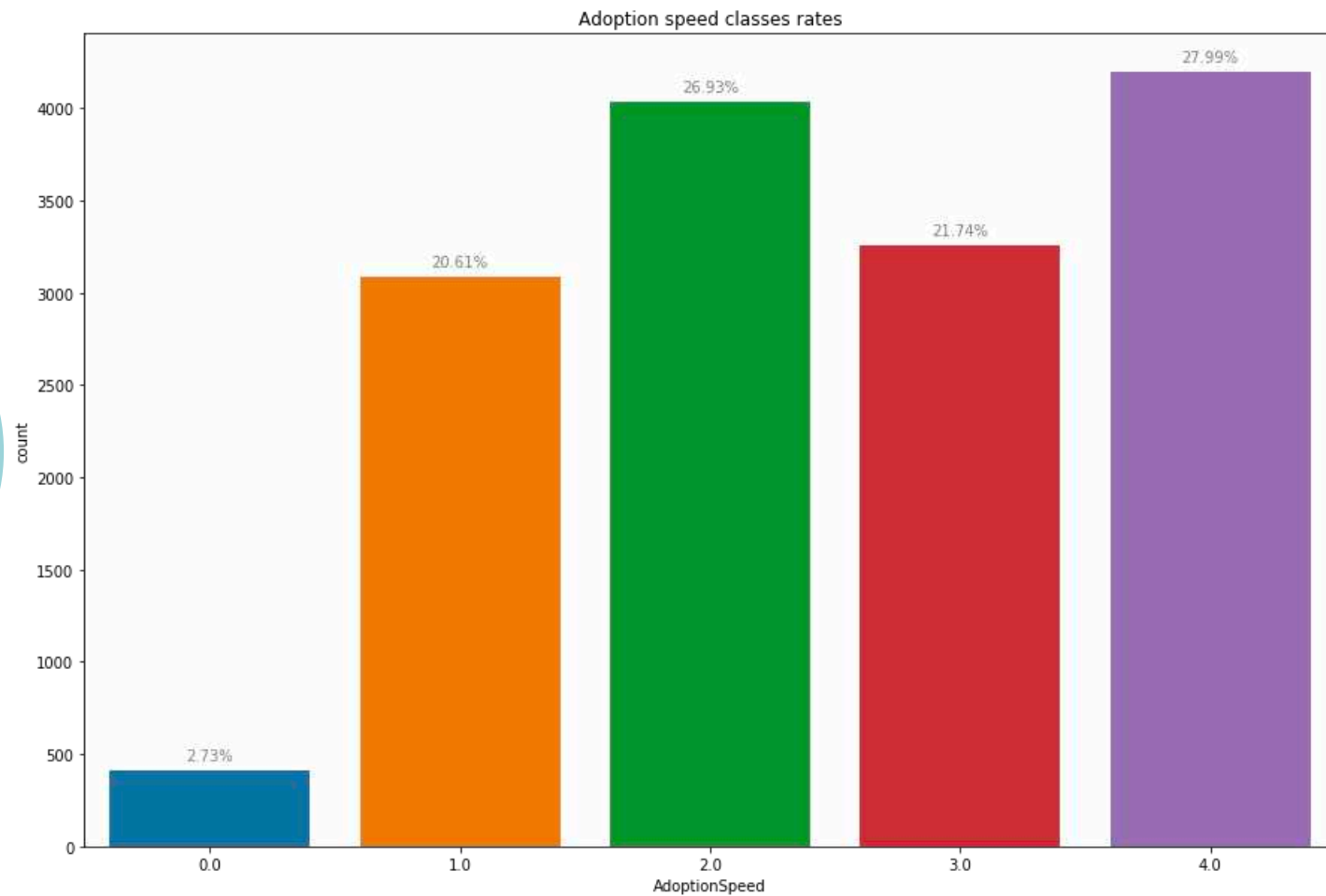
Explore the Data

Gender



Explore the Data

Gender

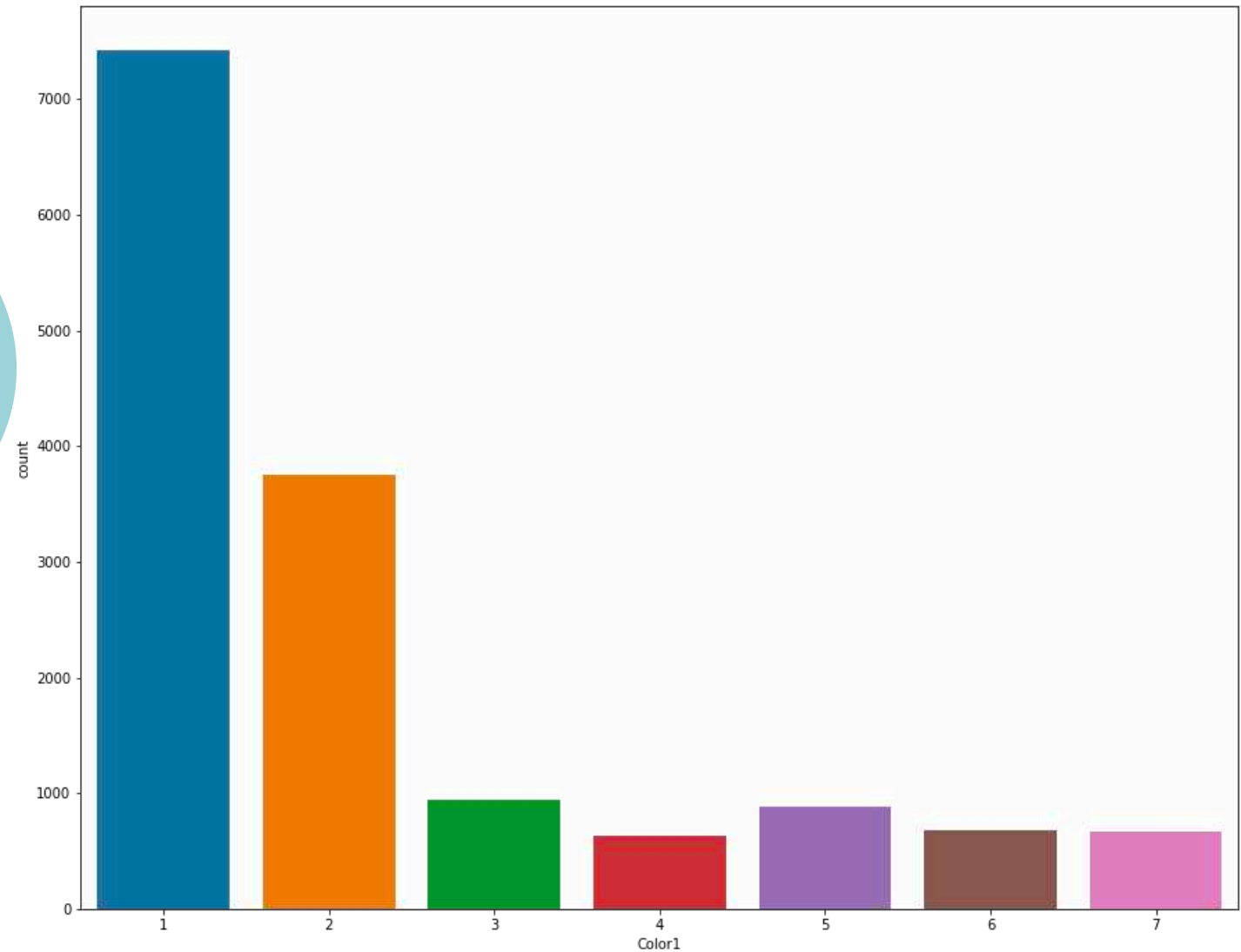


Explore the Data

Color

Color ID:

1 = Black | 2 = Brown | 3 = Golden | 4 = Yellow | 5 = Cream | 6 = Gray | 7 = White

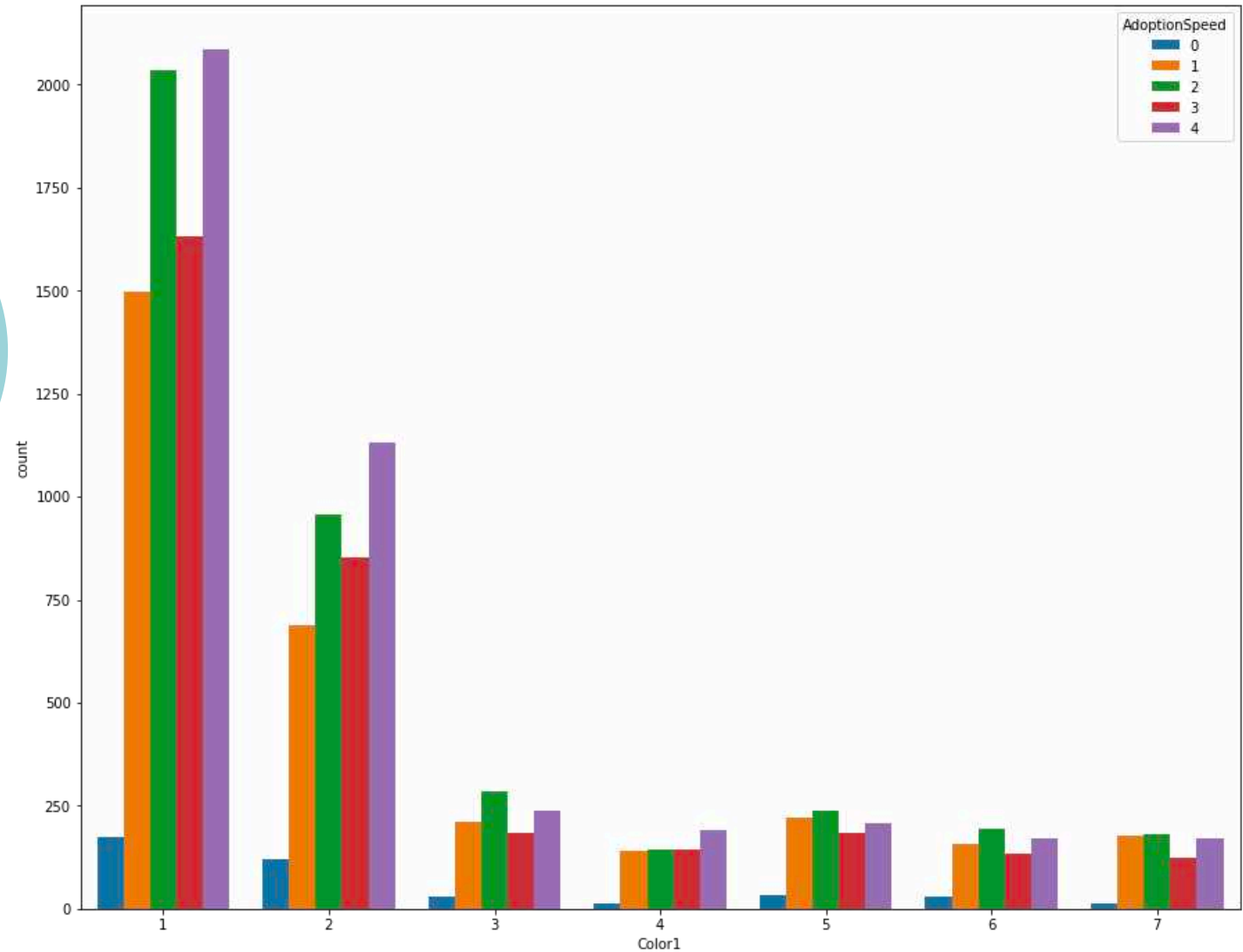


Explore the Data

Color

Color ID:

1 = Black | 2 = Brown | 3 = Golden | 4 = Yellow | 5 = Cream | 6 = Gray | 7 = White



A photograph of several puppies, with a blue color overlay. Two puppies are in the foreground, one light-colored and one dark-colored, looking towards the right. Other puppies are visible in the background, slightly out of focus.

Modeling the Data

Creating our Predictions

Model the Data

Confusion Matrix

A
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V
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l
u
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s

Predicted Values

0 1 2 3 4

0					
1					
2					
3					
4					

Model the Data

Confusion Matrix

A
c
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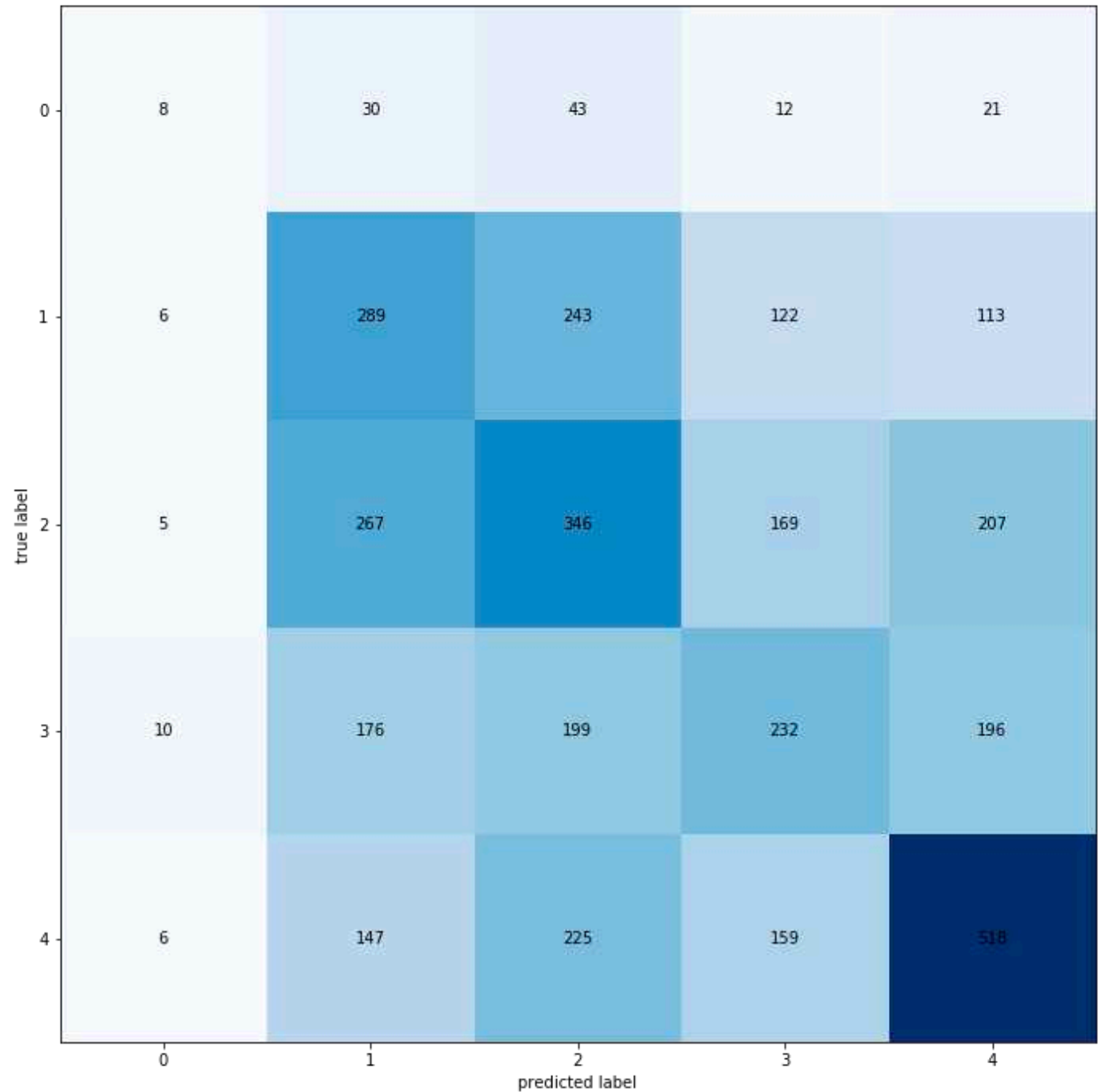
Predicted Values

0 1 2 3 4

0	100	0	0	0	0
1	0	500	0	0	0
2	0	0	1000	0	0
3	0	0	0	500	0
4	0	0	0	0	1000

Model the Data

Confusion Matrix



Evaluate the Model

Attempted Five Varieties of Classifiers

Random Forest | Decision Tree | Logistic Regression
| K Nearest Neighbor (KNN) | Bagging

Evaluate the Model

Confusion Matrix

A
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Predicted Values

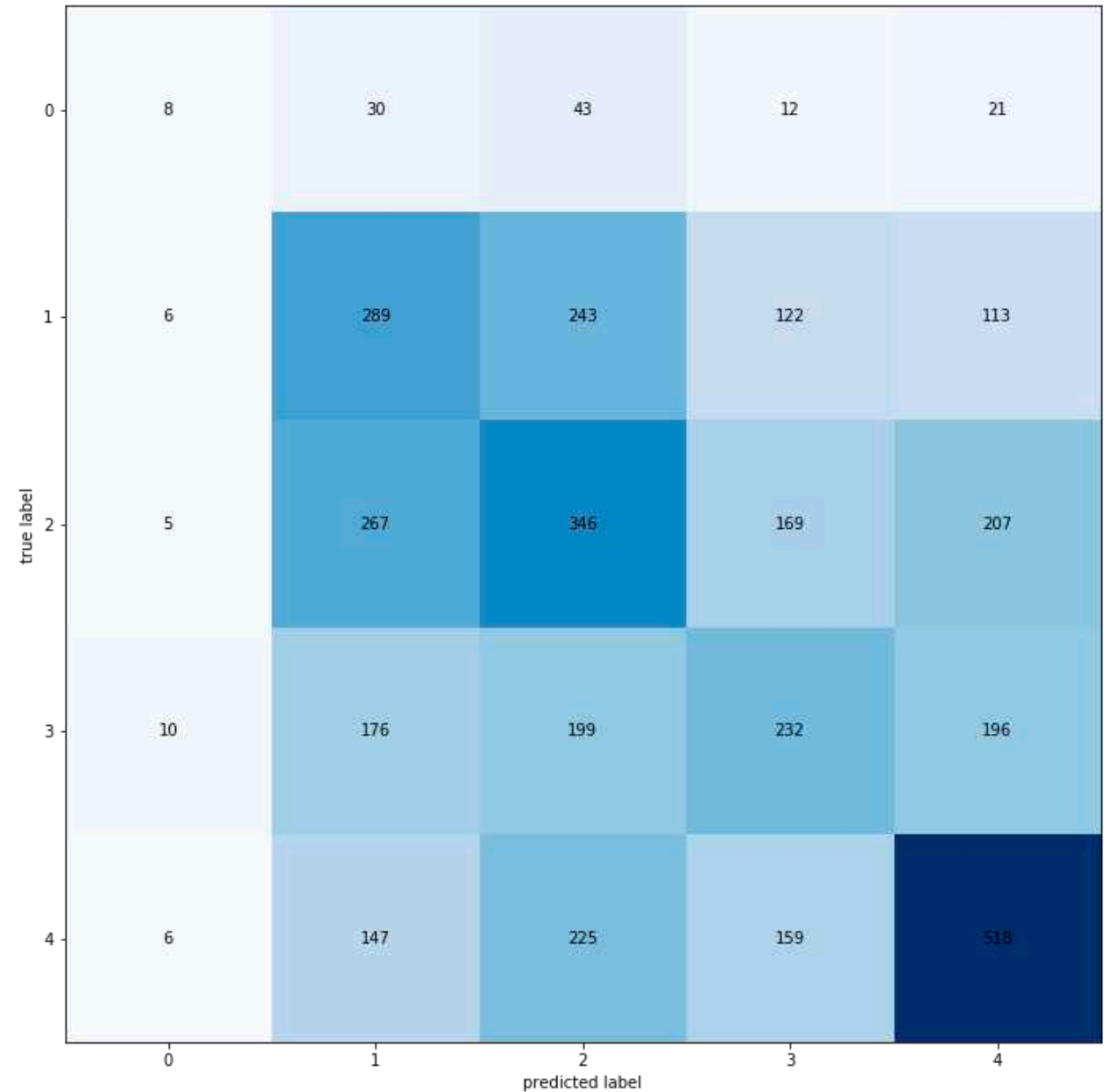
0 1 2 3 4

0	1000	0	0	0	0
1	0	3000	0	0	0
2	0	0	3000	0	0
3	0	0	0	3000	0
4	0	0	0	0	4000

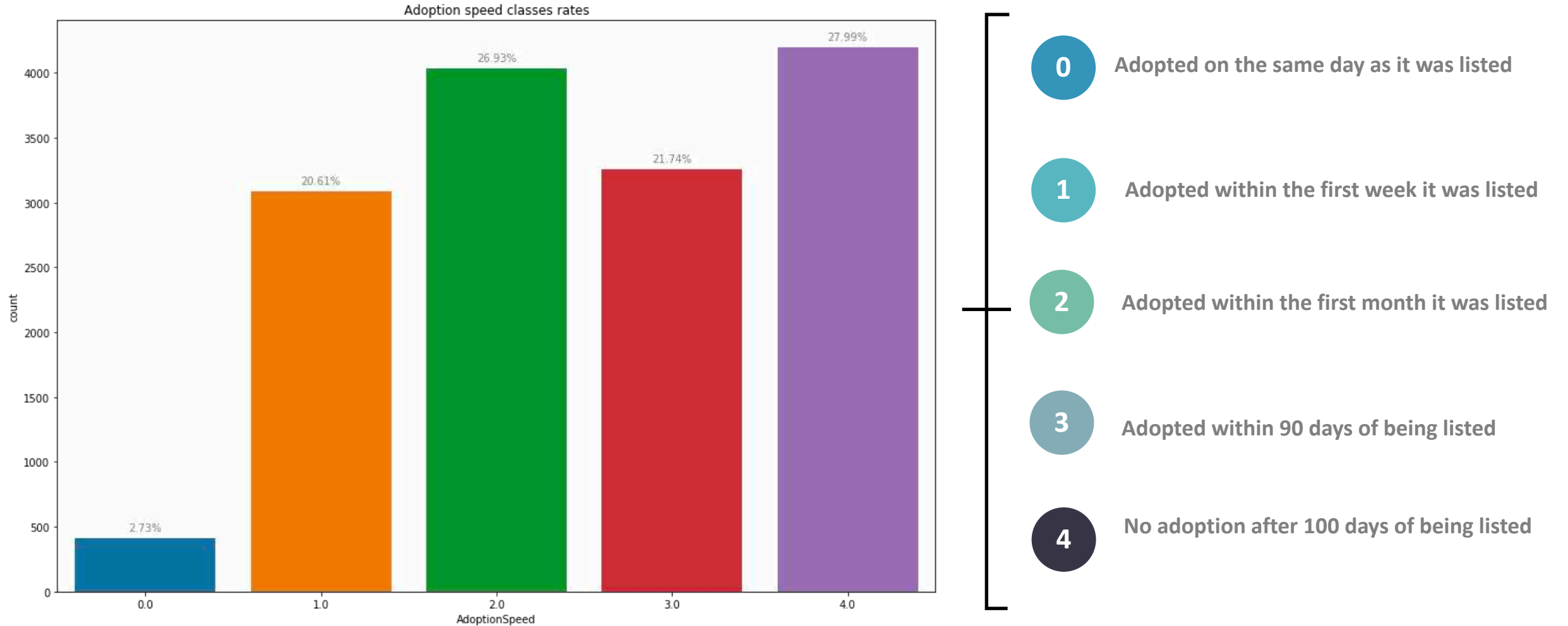
Evaluate the Model

Confusion Matrix

Bagging Classifier



Evaluate the Model



Bagging Metrics

Evaluate the Model



	precision	recall	f1-score	support
Class 0	0.19	0.07	0.10	114
Class 1	0.32	0.36	0.34	773
Class 2	0.33	0.37	0.35	994
Class 3	0.34	0.27	0.30	813
Class 4	0.49	0.51	0.50	1055
micro avg	0.38	0.38	0.38	3749
macro avg	0.33	0.32	0.32	3749
weighted avg	0.37	0.38	0.37	3749

A close-up photograph of a small dog, possibly a Chihuahua, with large, dark eyes and a white patch on its face. The dog is looking directly at the camera. The image is overlaid with a semi-transparent blue filter. The word "Recommendations" is written in white, sans-serif font across the middle of the image.

Recommendations

Where do we go from here?

COMING Soon...



**GENERAL
ASSEMBLY**



Thank you