Chihuahua Adoption in Texas

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Introduction

Motivations: I have a chihuahua and I love her very much. Chihuahuas are the ninth most popular dogs in Texas with the article going on to state that Chihuahua adoptions increased exponentially in Texas after the Taco Bell commercial which showcased a chihuahua(Fernandez, 2023). I want to investigate possible factors I believe that get certain chihuahuas adopted faster in Texas

Research Questions:

Research Question 1 – Does the age of a Chihuahua get a Chihuahua adopted faster in Texas?

Research Question 2 – Does the sex of a Chihuahua get a Chihuahua adopted faster in Texas?

Methods

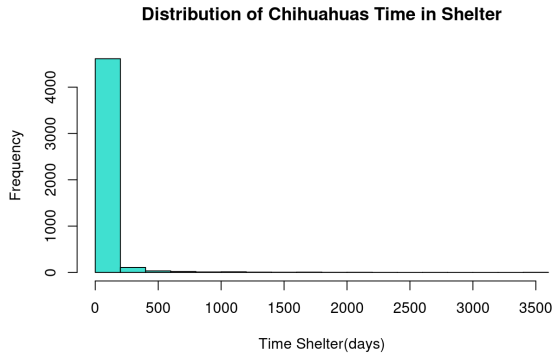
Data Collection:

- Individual Chihuahuas are my sampling units. Chihuahuas in Texas that are in Adoption/Rescue Shelters is my population of interest.
- Sample size was 4842 Chihuahuas.

Measures: I got the data from City of Austin open data portal in which I took the data from Austin Animal Center Intakes as well as the Austin Animal Center Outcomes with the help of Dr. Guyot. I modified the dataset so that it will only contain Chihuahuas and I only considered short hair/long hair chihuahuas. The unit for my age_intake variable is the age of the chihuahua in days, time_shelter is the time they have been in the shelter in days, and sex is the sex of the chihuahua that is either male or female.

Analysis Method: I ran the data in R studios. I ran a GLM model with the variables age_intake and time_shelter being transformed.

Descriptives



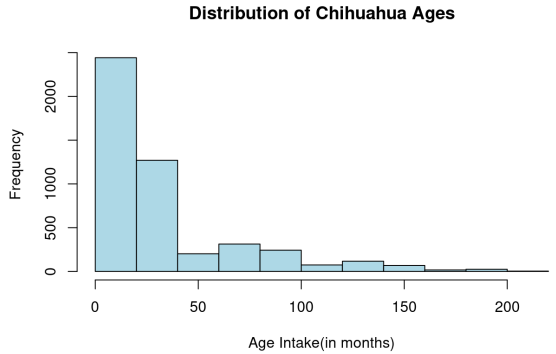


Table 1 – Descriptive Statistics (n=4842)

	Median	**IQR**
time_shelter	6.393056	16.18715
	Median	**IQR**
age_intake	12	28
	Female Count	**Male Count**
sex	2332	2492

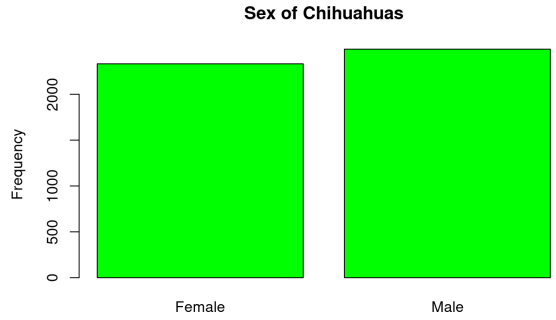


Figure 1 – Images

Results

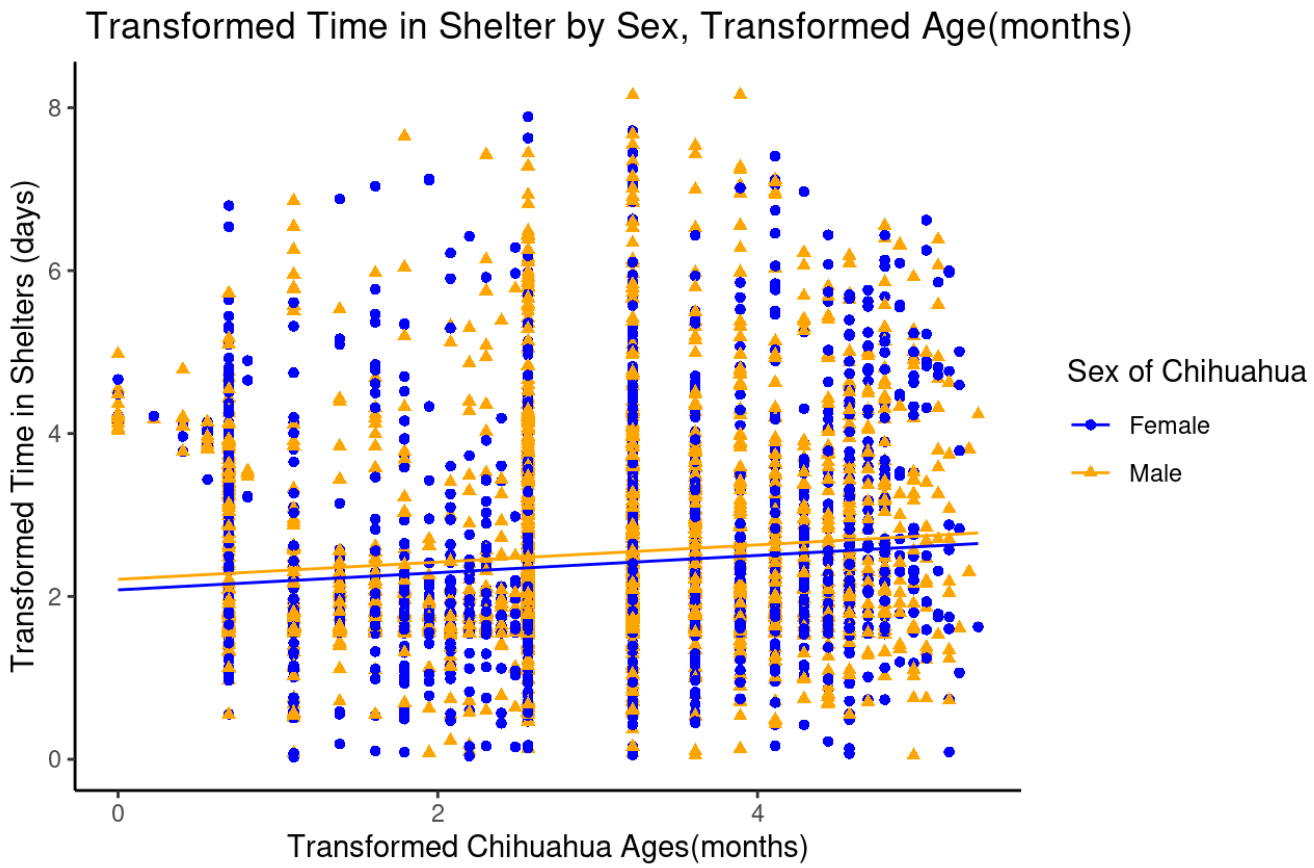
Table 2 – ln_time_shelter GLM Results

	Estimate	**St. Error**	**t-stat**	**p-value**
Intercept	2.08	0.05	41.34	p < .001
sexMale	0.13	0.04	3.55	p < .001
ln_age_intake	0.11	0.02	6.89	p < .001

Model df: 4772

***Adjusted R^2*: 0.01**

1% of the variation in the transformed time spent in shelter is explained by transformed age and sex

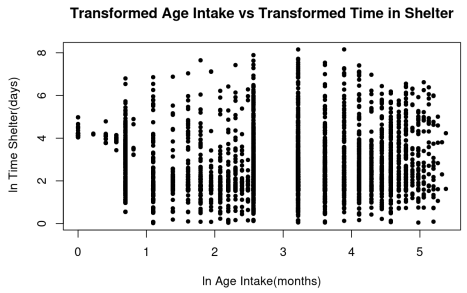


Briefly comment on the interaction: From this plot, we can see that if we hold sex constant, as transformed chihuahua ages increase, the transformed time in shelter does not really increase.
We can also see that the male chihuahuas don't really have an increase in transformed time in shelter, holding transformed age constant.

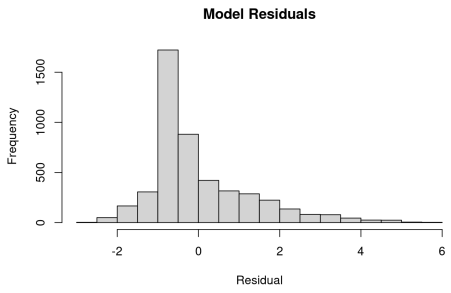
Assumptions

Assumptions: The scatterplot shows a violation of the linearly assumption with a clear non linear relationship. The model residuals are ugly symmetric. There seems to be a slight funneling effect in the beginning n the residual plot which indicates that there is a violation of the equal variances assumption. It was not a random sample as I took the data only from one city in Texas which is Sample of Convenience error. It is independent observations as one chihuahua's adoptability didn't impact another chihuahua.

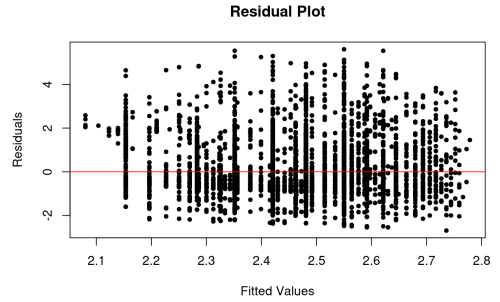
Linearity:



Normality:



Equal Variances:



Discussion

Interpretation: Controlling for sex, transformed age intake is a significant predictor of transformed time in shelter (t= 6.89, df = 4772, p < 00.1)

Controlling for transformed age intake, sex is a significant predictor of transformed time in shelter (t = 3.55, df = 4772, p < .001)

- While holding sex constant, for each 1 month increase in transformed age intake, transformed time in shelter increases by .11 days.
- On average, male chihuahuas have a transformed time in shelter that is .13 days more than female chihuahuas, while holding transformed age intake constant.

- **Limitations:** Equal variance and linearity assumption was failed. Sample only included Chihuahuas from Austin Texas and not other Chihuahuas from other cities which is a Sample of Convenience error.

Implications: The age and sex of a Chihuahua does not really impact how fast Chihuahuas get adopted in Texas. The results may make shelters that adopt out Chihuahuas emphasize other characteristics in marketing their Chihuahuas for adoption that isn't sex or age.

Future Research: Future research that could be done is to look at more variables that could impact how fast adoption happens such as disease status, disposition, and size of the Chihuahua. One thing that I would have changes if I did this study again is to consider the spayed/neutered variable as my categorical variable instead of sex.

References/Acknowledgements:

GLM Lab Handout

Dr. Guyot and Sofia Di Salvo helped me throughout this project.

Fernandez, R. (2023, May 22). These Are the Top 10 Most Popular Dog Breeds in Texas. KEAN 105. https://keanradio.com/popular-dog-breeds-in-texas/