

Spay and Neuter Rates at the Cocheco Valley Humane Society Over the Past Five Years - Dover, NH

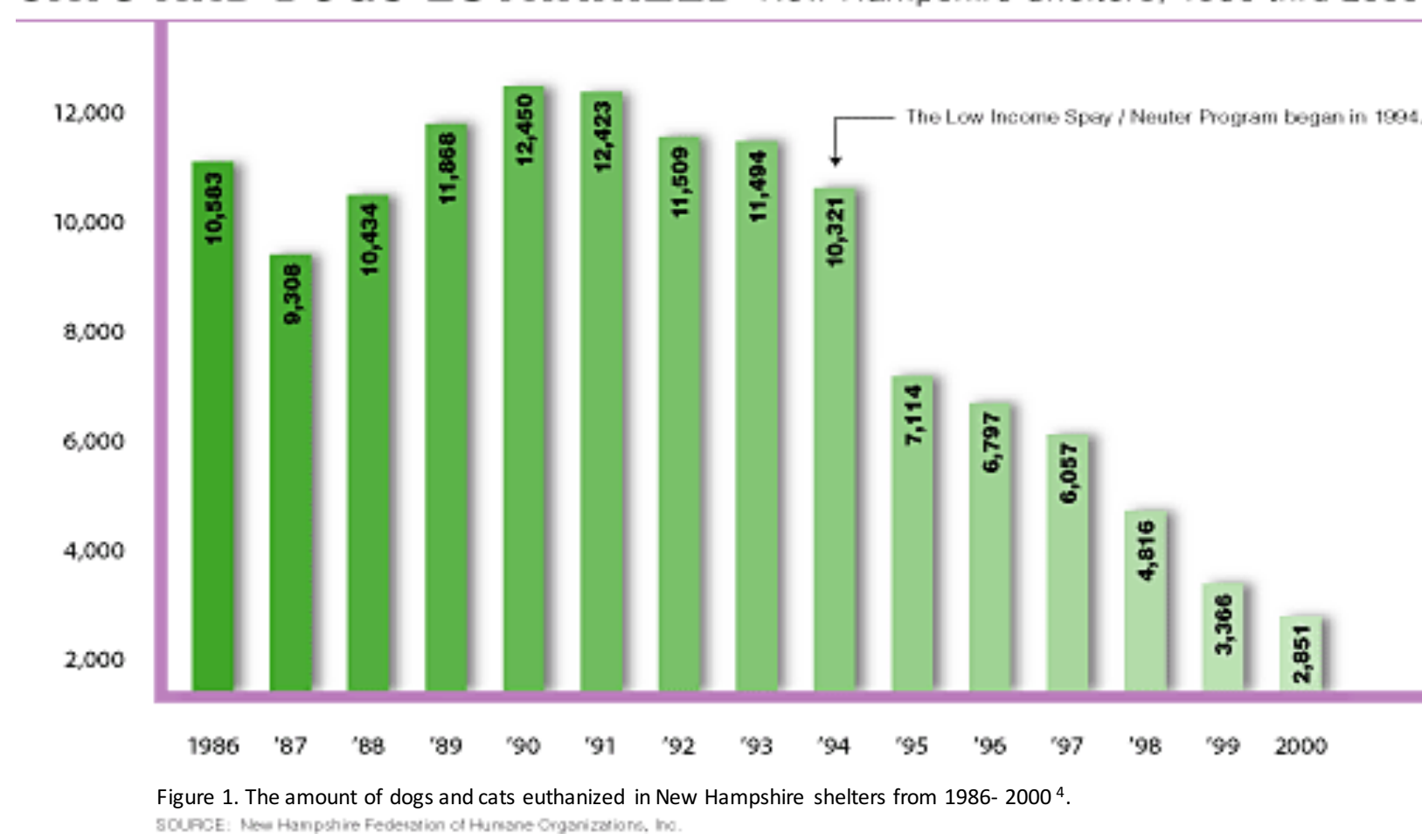
By Marissa Prizio



Introduction

- Pet over-population is a problem world wide.
 - In the United States it is estimated that 3,000 dogs and cats are born per hour ¹.
- Animal shelters help by housing animals until they are rehomed.
 - Shelters have limited capacity and resources.
 - Shelters euthanize around 2.4 million healthy cats and dogs in the United States every year ².
- One solution is the practice of spaying and neutering, also known as altering.
 - Many veterinarians and organizations support altering pets in hopes of making it a social norm ³.
 - The past 20 years have shown dramatic decreases in the number of animals entering and being euthanized in shelters (see Figure 1) ⁴.
 - The veterinary and shelter communities believe these changes are largely due to the spay and neuter effort ¹⁰.

CATS AND DOGS EUTHANIZED New Hampshire Shelters, 1986 thru 2000



Hypothesis

Recent downward trends in shelter intake are due to increased spay/neuter rates, and will be evidenced by an increase in the proportion of altered pets entering the shelter.

Methods

- Records of all animals taken into the Cocheco Valley Humane Society from 2008 – 2017 were obtained and transferred into excel.
- Animals were organized by:
 - Species
 - Sex
 - Stray or Owner Surrender
 - Alter status
 - Year of arrival

Data Analysis

- An animal was removed from the data set if:
 - It was a species other than feline or canine
 - If it was not sexed
 - It was < 2 months old
 - It was listed as anything other than a stray or owner surrender
 - If it was unaltered on arrival and adopted unaltered
 - It was altered on arrival, but also had an alter surgery date at the Humane Society

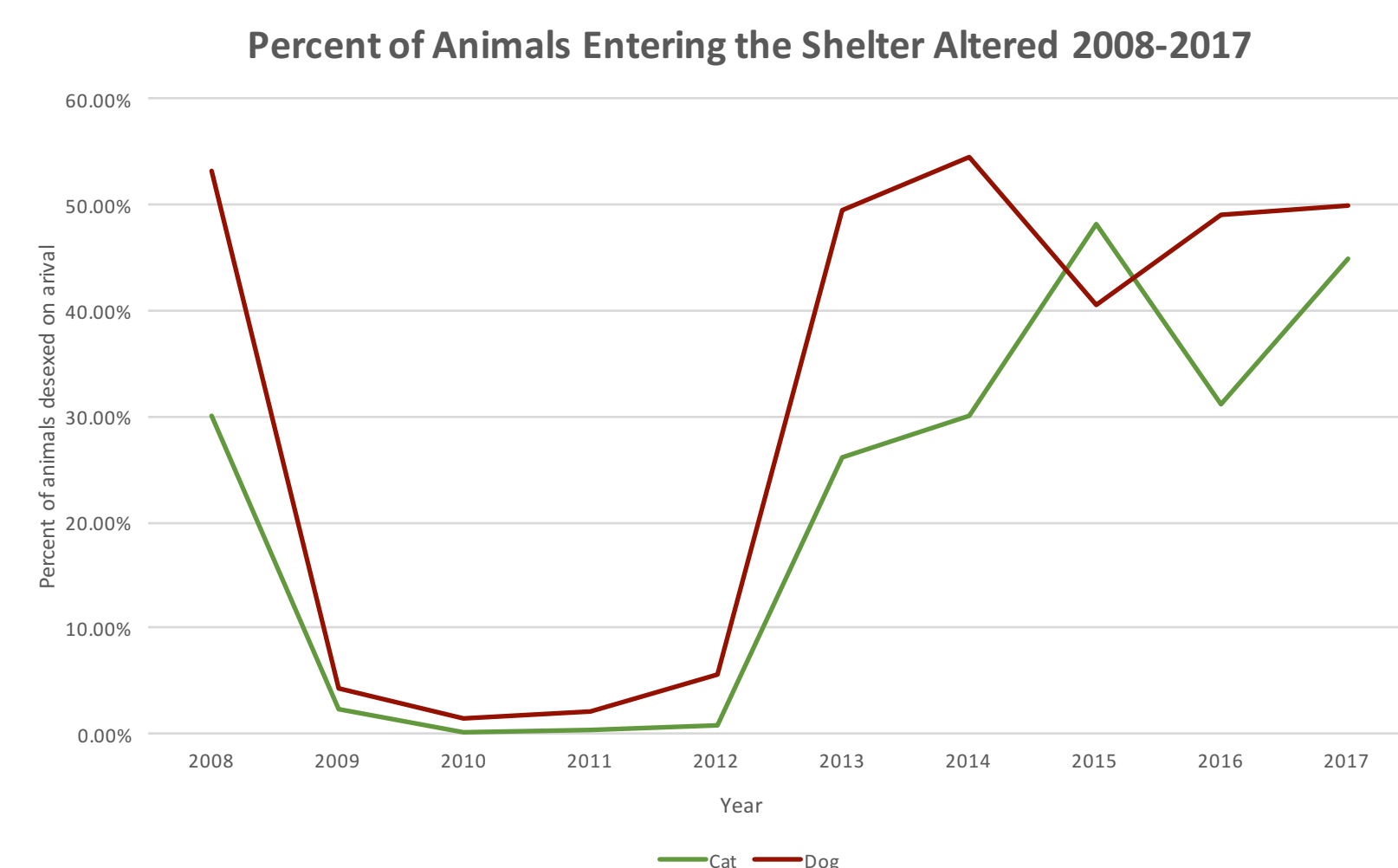
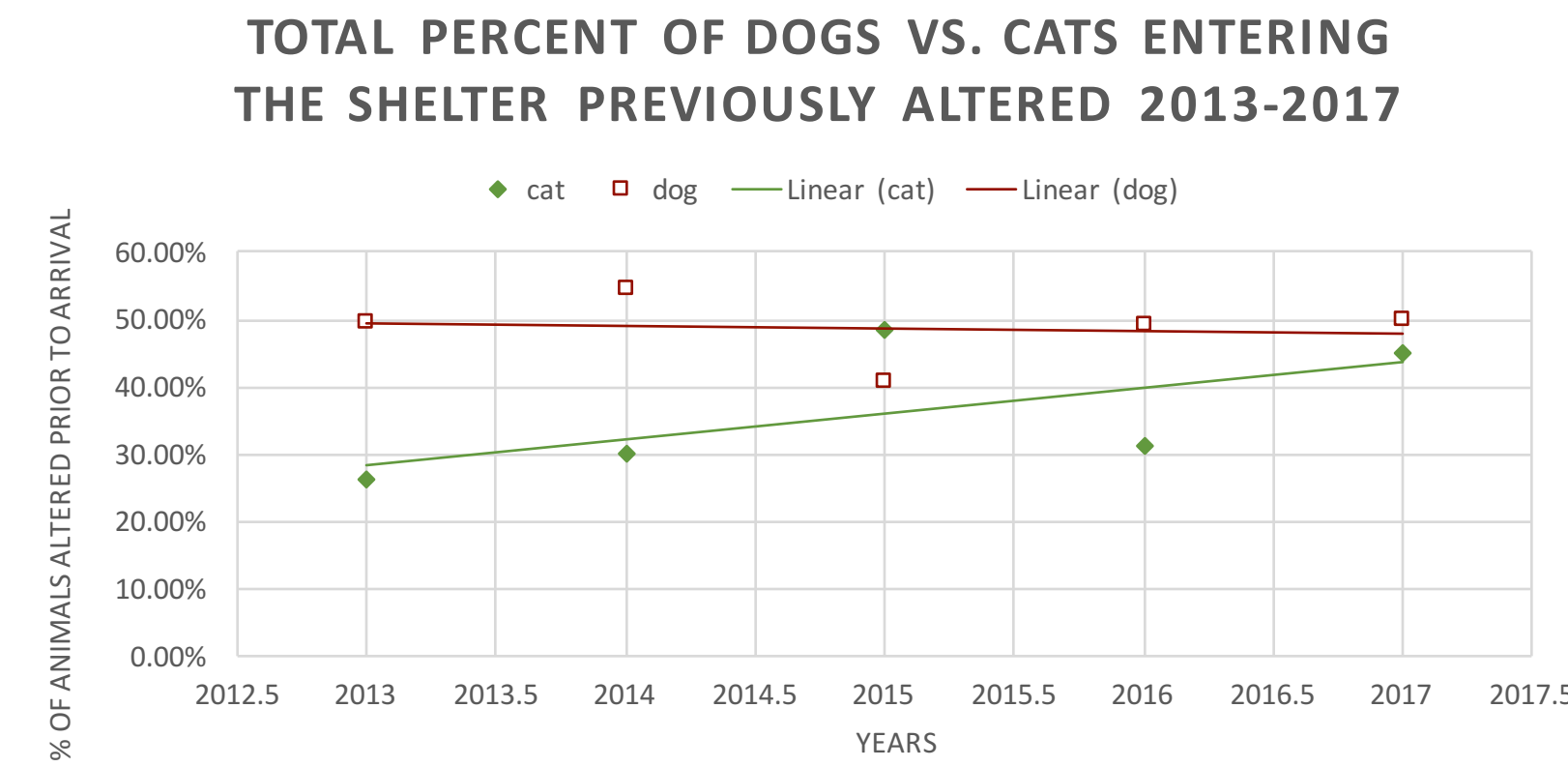


Figure 2.

- Many inconsistencies were found in the records between 2008 – 2012.
 - The result of this was found to be a change in record keeping methods from 2012 – 2013
 - The experiment was adjusted to focus on data from 2013 – 2017.

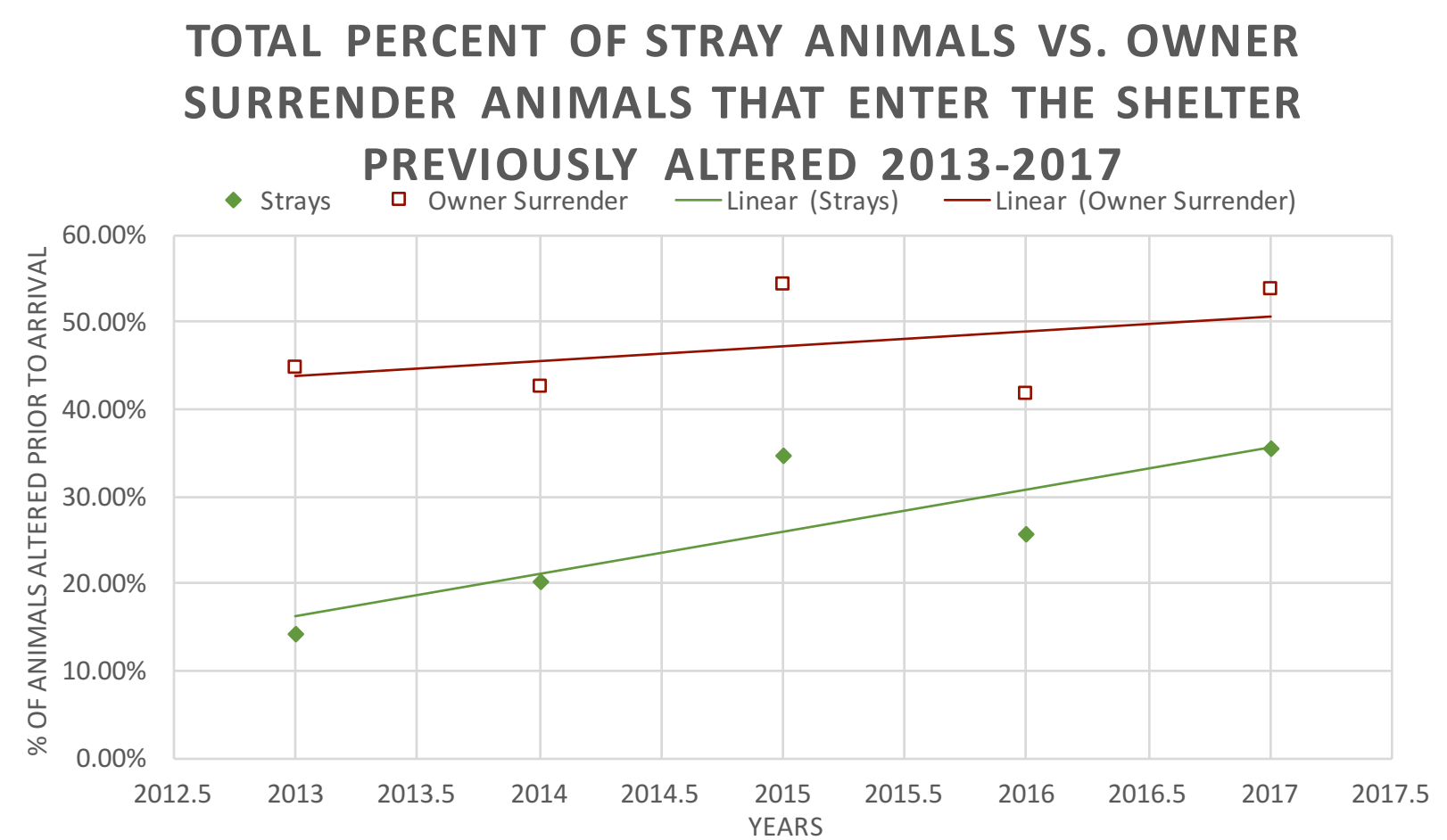
Results



(Figure 3). The R² for Canines is 0.18 with a p-value of 0.82 and the R² for felines is 0.39 with a p-value of 0.61.

	Altered	Not altered	Odds Ratio	P-value
Cats	959	139	0.58	P < .001

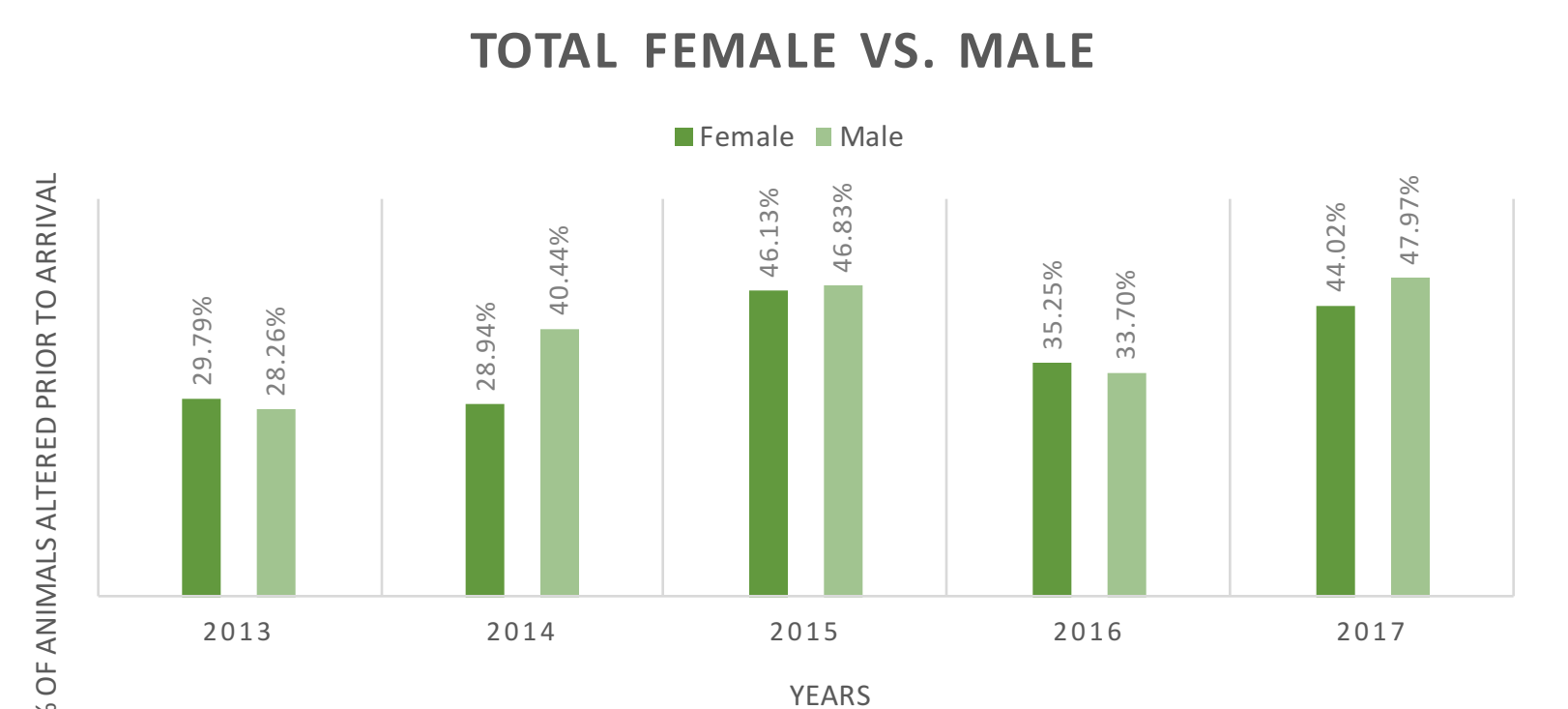
(Table 1). Dogs are 42% more likely to be altered prior to arrival at the shelter than cats.



(Figure 4). The R² for owner surrendered animals is 0.20 with a p-value of 0.80 and the R² for stray animals is 0.68 with a p-value of 0.32.

	Altered	Not altered	Odds Ratio	P-value
Stray	339	1050	0.33	P < .001

(Table 2). Overall animals surrendered by their owners were 77% more likely to be altered prior to arrival at the shelter in comparison to stray animals. Owner surrendered dogs had an alter status odds ratio of 2.35 and cats had an alter status odds ratio of 2.70 in comparison to stray dog and cats respectively. This shows that owner surrendered animals were more likely to be altered regardless of species.



(Figure 5). Female and male animals, regardless of species, showed no significant difference in likelihood of being altered prior to arrival at the shelter.

	Altered	Not altered	Odds Ratio	P-value
Female	608	1079	0.87	0.029

(Table 3). Male animals were 13% more likely to be altered upon arrival to the shelter than female animals. Male cats had a 1.09 odds ratio in comparison to female cats and male dogs had a 1.14 odds ratio in comparison to female dogs. Male animals were more likely to be altered than female animals regardless of species.

Conclusion

- Since 2013 The percent of animals entering the Cocheco Valley Humane Society previously altered has risen, but not consistently.
 - The variation in alter status rates between 2013 and 2017 suggest that the down trend in shelter intake may be associated with, but not directly attributed to an increase in altered pets.

Future Applications

- Now that data collection at the Cocheco Valley Humane Society has been standardized, further research can be done on yearly alter status rates.
- By understanding the factors associated with an animal's likelihood of being altered, the shelter can direct it's funds towards alteration supplies for individuals most likely to be unaltered upon arrival.
 - The current research suggests this to be cats, strays, and female animals.

Special thanks to the Summer Undergraduate Research Fellowship from the Hamel Center for Undergraduate Research, Dr. Sarah Proctor, and the Cocheco Valley Humane Society.

References

1. Hummer, R. L. . Pets in Today's Society. *Am. J. Public Health* 65, 1095–1098 (1975).
2. Pet Overpopulation : The Humane Society of the United States. *The Humane Society Of The United States*. Available at: http://www.humanesociety.org/issues/pet_overpopulation/. (Accessed: 22nd February 2018)
3. Root Kustritz, M. Effects of Surgical Sterilization on Canine and Feline Health and on Society. *Reprod. Domest. Anim.* 47, 214–222 (2012).
4. New Hampshire Federation of Humane Associations promotes humane initiatives for animals at the local, state and regional level - New Hampshire Federation of Humane Organizations. Available at: <http://www.nhfh.org/>. (Accessed: 22nd February 2018)
5. Looney, A. L. *et al.* The Association of Shelter Veterinarians veterinary medical care guidelines for spay-neuter programs. *J. Am. Vet. Med. Assoc.* 233, 74–86 (2008).