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Unique New York: Examining the impact of breed labels, phenotypic variations, and geography on length of stay in a multi-location New York limited intake animal shelter

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Unique New York:

Examining the impact of breed labels, phenotypic variations, and geography on length of stay in a multi-location New York limited intake animal shelter

by

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Abstract

New York City (NYC) is a unique area for a shelter welfare as it has limited dog-friendly housing and an abundance of dogs. A common barrier to entry for NYC dog adopters trying to rent apartments is the breed label the shelter assigned to their dog, despite the fact breed labelling is primarily based off intuition and physical appearance. Following research by Gunter, Barber and Wynne (2016) that saw adoption rates at a Florida animal shelter increase following the removal of breed labels from the shelter's kennel cards, some shelters ceased using breed labels. One was Bideawee, a limited admission shelter with three locations in the greater New York area, including one in NYC. In this study, we looked at if the length of stay (LOS) of dogs at Bideawee changed following the removal of breed labels from adoption cards. Bideawee dog adoption data from 16-month time periods before and after breed labels were removed was compared. The average LOS of a dog at Bideawee decreased 8.3 days once breed labels were removed (*Mdn* = 19.0) compared to when breed labels were in place (*Mdn* = 30.3). A Mann Whitney test indicated that this difference was statistically significant $U(N_{\text{no breed labels}} = 1259, N_{\text{breed labels}} = 987) = 386309.5$, $z = -15.41$, $p < .001$. Dogs with a "green" behavior assessments (on a scale of green, blue, yellow, red) were almost four and a half times more likely to be adopted faster than "red" dogs (HR: 4.495, 95% CI 2.755-7.335, $p < .001$) before breed labels was removed, but only two times as likely to be adopted faster afterwards (HR: 2.220, 95% CI 1.514-3.254, $p < .001$). The return rate stayed constant across the two time periods at 6%, despite the sometimes-held belief that without dog labels breed labels will increase. This study provides new insight on dog adoptions and factors impacting LOS in the Greater NYC area and helps evaluate the recommendations on the use of breed labels in shelters. Similar studies should be conducted in open admission shelters to determine if results hold.

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The 2015-2016 American Pet Products Association (APPA) annual report estimates that 44% of all United States (US) households, or approximately 52 million households (US Census Bureau) have a dog. Only 23% of these dogs are acquired via animal shelters, while more than half (54%) are acquired via a breeder or from a friend or family member. 1.6 million dogs are adopted from animal shelters in the US annually, but approximately 3.3 million dogs enter shelters each year ("Pet Statistics – ASPCA," n.d.). While the number of dogs entering the shelter system is down 15% from 2011, it is still the case that overall, for every dog leaving the shelter system, two dogs are entering. It is essential to evaluate and identify actions shelters nationwide can take that increase the percent of dogs acquired at shelters.

Literature Review

When a dog enters the shelter system, it is likely to experience one of three outcomes: the dog will either be reclaimed by its owner, adopted, or euthanized (Lepper, Kass, & Hart, 2002). Of the 3.3 million dogs that enter the shelter system annually, approximately 20% will be euthanized and 20% will be reclaimed by their owner ("Pet Statistics – ASPCA," n.d.). The remaining 60%, comprised of around 2 million dogs, are available for adoption. These dogs are kept in shelters that vary in resources, with some shelters, due to their limited donations and funds, keeping dogs in penurious living conditions (Protopopova, Mehrkam, Boggess, & Wynne, 2014). To determine why some dogs get adopted more quickly, and therefore removed from the risk of euthanasia or a long stay in a shelter environment faster, there has been an increase in animal shelter research that examines factors associated with increased adoption success and

reduced intake rates (Gunter, Barber, & Wynne, 2016; Rowan & Kartal, 2018). Researchers are taking a critical look at the US shelter system as whole, with scientific publications on animal sheltering increasing from five to ten publications per year in the 1970s to over 50 per year in the present day (Rowan & Kartal, 2018).

Which dogs are available for adoption at shelters though? Where do they come from, and what are their traits and temperaments? Attempts to capture the characteristics and patterns associated with dogs in shelters at a nationwide level have been largely unsuccessful (Hoffman, Harrison, Wolff, & Westgarth, 2014; Zawistowski, Morris, Salman, & Ruch-Gallie, 2010). A search for statewide shelter numbers yield similar results; trends are difficult to obtain and are mostly unavailable (Rowan & Kartal, 2018). As a result, most animal shelter research is conducted locally, in one region, city, or town (Protopopova & Gunter, 2017). Animal shelter research related to population demographics and variables driving adoption success in the US has been conducted locally in New York State (Brown, Davidson, & Zuefle, 2013), Florida (Gunter, Barber, & Wynne, 2016; Protopopova & Wynne, 2014), Arizona (Patronek & Crowe, 2018), and California (Lepper, Kass, & Hart, 2002). Surprisingly, there are very few studies that examine the population demographics driving adoption success at shelters in major cities like Los Angeles, Chicago, and New York City.

Population demographics and length of stay (LOS)

The demographics of local animal shelter populations are studied to determine which factors contribute to dogs having shorter shelter lengths of stay (LOS, also known as time to adoption) or increased live release rates (percentage of adoptions versus euthanasia or natural death). These factors vary widely at the local level (Brown, Davidson, & Zuefle, 2013; Lepper, Kass, & Hart, 2002; Patronek & Crowe, 2018; Rowan & Kartal, 2018; Brown). A main reason

for the differences in compositions of shelters is that some shelters are limited intake (LI) shelters, while others are open admission (OA) shelters. LI shelters only euthanize animals for critical illness or extreme behavior issues, while OA facilities euthanize for critical illness, behavior issues and space limitations. However, LI shelters sometimes screen a dog's health and temperament before admitting the dog into the shelter, while OA facilities are required, sometimes by law, to take in animals regardless of temperament, available space, or other factors. As a result, dogs available for adoption at LI shelters differ physically and behaviorally from dogs available for adoption in OA shelters, and different adoption patterns may occur in the two types of facilities (Brown, Davidson, & Zuefle, 2013).

LI and OA shelters also measure results differently. As discussed before, there are three primary outcomes for dogs entering shelters, euthanasia, adoption, or reclaiming by owner. Putting aside the group of dogs reclaimed by owners and looking at dogs either without owners or with owners that are not reclaiming them, there are two outcome options, euthanasia or adoption. In a LI shelter, where dogs are not euthanized unless there is a severe medical need, adoption is the only possible outcome. Because of this, studies conducted at LI shelters use LOS in days, a continuous variable, as the outcome (Brown, Davidson, & Zuefle, 2013). Studies at OA shelters can utilize LOS as the outcome variable if the study is solely evaluating time to adoption (Žák, Voslářová, Večerek, & Bedáňová, 2015), but more often the outcome is a binary live-or-die, live release rate (Lepper, Kass, & Hart, 2002; Marston, Bennett, & Coleman, 2005; Patronek & Crowe, 2018).

Breed labelling and LOS

Phenotypic information like coat color, age, size, and gender continues to be the focus of many local shelter research studies as the outward physical appearance of dogs has been found to

correlate with adoption success (Gunter, Barber, & Wynne, 2016). This correlation led researchers to examine the process and outcome of breed labelling. In shelters where the dogs' backgrounds are largely unknown, breed labelling may be a process of intuition, prior experiences, or physical appearance. As a result, how dogs are labelled is inconsistent and varies by shelter (Hoffman, Harrison, Wolff, & Westgarth, 2014). This is in line with the results of a study by the National Canine Research Council that evaluated the inter-rater reliability of over 900 canine professionals and the professionals' abilities to visually identify dogs compared to the dogs' DNA profiles. The study found both inter-rater reliability and validity of visual identification be significantly low, or below chance in both cases (Voith et al., 2013).

Despite the lack of structure, science and agreement in the process of breed labelling, breed labels can still impact a shelter dog's outcome. A study of over 20,000 dogs from an animal shelter in Tucson, Arizona found that the dogs assigned breed labels associated with a stigmatized breed like "Pitbull" had a live release rate of only 80.5%, compared to the live release rate of 91.7% for dogs assigned breed labels that were not considered stigmatized (Patronek & Crowe, 2018). When breed labels were used on the kennel cards at a shelter in Orange County, Florida, only 52% of Pitbull-type dogs were adopted. When these breed labels were removed, 64% of Pitbull-type dogs were adopted, and the rate of euthanasia for Pitbull-type dogs decreased by a corresponding 12%. In addition, all other breed groups also had their adoption rates increase following the removal of breed labels (Gunter, Barber, & Wynne, 2016).

Other factors that can impact LOS

Population demographics and breed labelling are not the only two variables that can impact a dog's LOS. Another factor researchers have commonly noted as an area for further research is behavior assessments (Brown & Morgan, 2015; Hawes, Kerrigan, & Morris, 2018;

Hoffman, Harrison, Wolff, & Westgarth, 2014; Protopopova & Gunter, 2017). Behavior assessments predict how suitable a dog will be as a companion, usually by putting the dog through a battery of tests (Patronek, Bradley, & Arps, 2019). The assessments aim to identify dogs that do well around humans and other dogs in order to adopt those dogs out to good homes, and dogs that could be a danger to humans or other dogs in order to rehabilitate them. Dogs that are deemed dangerous from a behavior assessment are more likely to be euthanized (Mornement, Coleman, Toukhsati, & Bennett, 2015). While there are standardized behavior assessments, such as the SAFER and BARK assessments, the behavior assessment a shelter uses does not have to be a standardized behavior assessment. It can be an assessment the shelter creates entirely on its own. Which assessment a shelter uses is entirely up to that shelter alone, resulting in varying assessments being used in shelters within even the same region or city (Mornement, Coleman, Toukhsati, & Bennett, 2010).

Multiple studies have found the predictive ability of behavior assessments to be poor (Mornement, Coleman, Toukhsati, & Bennett, 2015; Patronek, Bradley, & Arps, 2019). It has been found that the average rate of false positives (dogs identified as having behavior issues when they actually did not) from behavior assessments in a shelter is 63.8%, and the average rate of false negatives (dogs identified as not having behavior issues when they actually did) is 8.5% (Patronek, Bradley, & Arps, 2019). These findings put into question whether behavior assessments truly need to be explored further in future animal shelter research.

A second factor is a shelter's physical location. If a shelter is based in a more suburban or rural area, a high-energy, loud dog may not be as problematic as it could be in an urban setting with small spaces and close neighbors. If the shelter is located nearby dog-friendly parks and trails, though, people residing in the area may be more open to adopting larger, more active dogs

(Marston, Bennett, & Coleman, 2005). The socioeconomic and cultural factors of the area where the shelter studied is based also can impact LOS and live release (Bir, Widmar, & Croney, 2017; Brown, Davidson, & Zuefle, 2013; Marston, Bennett, & Coleman, 2005; Protopopova & Gunter, 2017; Protopopova & Wynne, 2014). When Marston, Bennet, and Coleman's evaluated three animal shelters in Melbourne, Australia in 2005, they found that:

> Often dogs were left [at the animal shelter] with bags of food, toys, or bedding. It is difficult to understand the desperation of these obviously caring owners and distressing to think that they feel they have no other recourse available [...] certainly, the high number of explicitly abandoned dogs received at the city shelter seems indicative of underlying human welfare issues. (pg. 42)

Nationally, people with incomes below $50,000 are significantly more likely than their wealthier counterparts to rehome animals due to cost and housing issues (Weiss, Gramann, Victor Spain, & Slater, 2015). In underserved neighborhoods, which are typically low socio-economic areas, approximately 87% of pets were found to be "intact" (not neutered or spayed), compared to the national average of about 9%. Having a population of dogs where the majority are intact greatly increases the chances of dogs producing unwanted litters, and community members subsequently dropping the litters off at a local animal shelter (Hemy, Rand, Morton, & Paterson, 2017).

In addition, three hundred cities, towns and regions across the US have breed-specific legislation that may drive these breed-labeled dogs out of their new families. While legislation varies from place to place, all limit the acquisition of dogs in some manner, whether it be through a size or weight restriction, by breed label, or from a restriction generated by other phenotypes. (Hoffman, Harrison, Wolff, & Westgarth, 2014). Even when dog legislation is not in place city-wide, landlords or management groups can still enact dog restrictions on a residence-by-residence basis. A study by the ASPCA found that among people living in rental housing,

housing issues were the top reason for rehoming a pet (Weiss, Gramann, Victor Spain, & Slater, 2015).

Unique New York

Landlord pet-related restrictions and dog rehoming are common occurrences in New York City ("NYC"), where the unique combination of limited dog-friendly housing and an abundance of dogs results in many dog owners being put in tough situations. Approximately 500,000 dogs reside in NYC (Chen, 2008), but a study conducted by StreetEasy, one of the most utilized housing search websites in the NYC area, found that the neighborhood with the greatest share of dog-friendly rental buildings, Battery Park City, only had 63% of rentals open to dogs. This means that there is no neighborhood in NYC where at least two-thirds of the rentals are dog friendly ("NYC's Most Dog-Friendly Neighborhoods," n.d.). In addition, the NYC Housing Authority (NYCHA) limits public housing residents to one cat or dog per household. The dog must weigh less than 25 pounds and not be a full- or mixed-breed Doberman Pinscher, Pitbull or Rottweiler ("NYCHA Pet Policy," n.d.).

A survey of pet owners who were relinquishing their large dogs to OA shelters in NYC and Washington, D.C. ("DC") found that 32% of the NYC owners had reservations about adopting the dog in the first place due to housing concerns, and 45% of the NYC owners said that more space or pet-friendly housing would have helped them keep the dog instead of giving it up to the shelter (Weiss et. al, 2014). Even when dogs are allowed in a residence, it can come at a cost. Landlords can charge a one-time, upfront pet fee of $250 to $1,000, or charge "pet rent" of $30-$50 a month ("How much are pet fees in NYC," n.d.).

One barrier for pet owners looking to rent or buy in NYC is the breed labelling. Landlords can review the paperwork of a dog adopted from a shelter and reject the dog based off

the breed label assigned. The owner then must choose between returning the dog and finding a different apartment, a stressful and difficult situation for all involved. However, following the release of the aforementioned 2016 research by Gunter, Barber and Wynne, which concludes that "removing breed labels from kennel cards and online adoption profiles may be a simple, low-cost strategy to improve shelter dog outcomes" (pg. 16), a number of animal shelters, including ones in NYC, ceased using breed labels.

Bideawee, a LI, not-for-profit shelter with three locations in the greater New York area, including one in NYC, phased out the use of breed labels on their adoption cards between December 2017 and January 2018. While shelters typically differ in terms of intake, personnel, and policies (Protopopova, Mehrkam, Boggess, & Wynne, 2014), all three Bideawee locations have the same overarching management and structure. The organization's dog adoption data has never been examined before and, to our knowledge, no study has been conducted on a LI, multiple-location animal shelter in New York City. An analysis of their data will both evaluate the impact of the shelter's decision to remove breed labels and contribute new information to the repository of US local animal shelter studies. In this study, we aim to:

1. Review and compare the population demographics of Bideawee's dog adoption data for two 16-month time periods, one when breed labels were being used and one when no breed labels were being used;
2. Determine if the LOS of dogs at Bideawee changed with the removal of breed labels;
3. Analyze the impact additional factors like phenotypic variations, behavior assessments results and place origin have on LOS, both before and after breed labels were removed; and,

4. Identify other opportunities for Bideawee to utilize their population demographics and LOS data.

A Three-Part Study

In order address all four objectives, the study needed to be run in three parts:

1. Determine the population demographics ("Part I: Population Demographics")
2. Conduct LOS Analyses ("Part II: LOS Analyses")
3. Identify practical applications for Bideawee's shelter data ("Part III: Practical applications of shelter data")

Part I: Population Demographics

Methods

Facilities

Bideawee is a not-for-profit, 501(c)(3), LI shelter for cats and dogs. The organization was founded in 1903 by Mrs. Flora Kibbe, who originally called the shelter "Bide-A-Wee," which means "stay a while" in Scottish. Bideawee has three LI facilities in New York State: New York City, Westhampton, and Wantagh (Figure 1). The New York City location has been in place for over 100 years and is the city's oldest LI shelter. Most adoptions are done at the New York City and Westhampton locations; Wantagh is primarily an intake and administrative facility. Each of the three facilities has an animal hospital onsite that provides medical services to the cats and dogs brought in. The Westhampton animal hospital serves both resident animals and private clients, while the New York City and Wantagh animal hospitals are only for animals onsite. The Westhampton and Wantagh locations also have Pet Memorial Parks where people can lay their animal to rest, regardless of whether the animal was adopted from Bideawee or not.

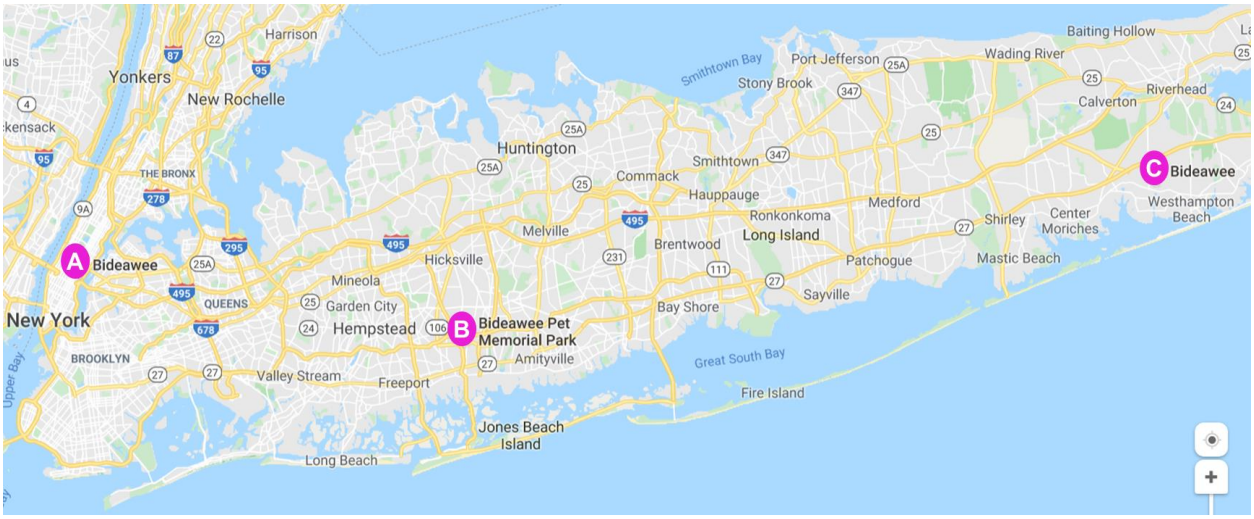

Figure 1. Bideawee locations in New York: Manhattan (A), Wantagh (B), Westhampton (C)

While all three facilities have the same executive leadership, processes, and policies in place, the sites are in very different areas of New York. The Manhattan location is located at the intersection 38th Street and 1st Avenue, right off the busy FDR highway. It is 10-15 minutes away from Grand Central station. The Wantagh and Westhampton locations are based in Long Island and are one-hour and two-hour drives from Manhattan, respectively. Bideawee's multi-location structure allows for a unique opportunity to compare the characteristics of both the dogs and adopters at the different shelter sites while having shelter administration and practices held constant.

Data

All data was obtained from PetPoint, a platform shelters nationwide use (at a local level) to track the intake and outcomes of animals that come through their organizations. Bideawee has used PetPoint for over a decade but has never done a formal, academic analysis of the data input into the system. This study evaluated Bideawee's adoption data over two 16-month periods, one before Bideawee phased out the use of breed labels on their adoption cards in December 2017

and January 2018, and one after the change was made. From February 1, 2016 to June 30, 2017, almost all dogs adopted had breed labels on their adoption cards ("Breed Labels Used" group). From February 1, 2018 to June 30, 2019, almost all dogs had no breed label on their adoption cards ("Breed Labels Not Used" group). Instead, the shelter listed (and currently lists) dogs only as "Mixed Breed, [expected adult size]," with the [expected adult size] being Small, Medium, or Large. Comparing the two equivalent time periods allows for measurement of the impact of the removal of breed labels while limiting the effects of seasonality.

A total of 3,525 records were reviewed (Figure 2) and 2,246 records were used in the final analyses. The Breed Labels Used group included 987 dogs, and the Breed Labels Not Used group included 1,259 dogs (Table 2). When a dog had duplicate entries because it was returned multiple times within the 16-month time periods evaluated, all entries were removed except for the dog's final stay in the shelter.

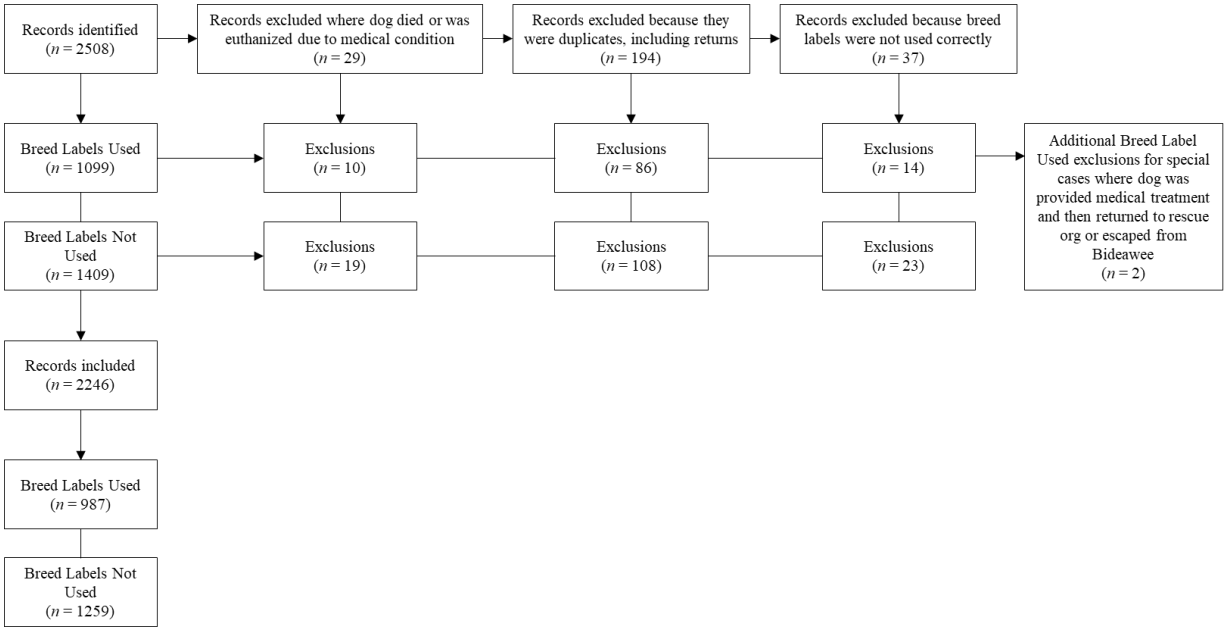

Figure 2. Data review process

Table 2

Final group sizes

Group	Time Period	Count
Breed Labels Used	February 2016 - June 2017	987
Breed Labels Not Used	February 2018 - June 2019	1,259

Data Analysis

Data sets were created using Microsoft Excel and data were analyzed in IBM *SPSS* 26. The "Frequencies" and "Descriptives" tools were used to calculate the means, medians and counts associated with each variable in both the Breed Labels Used and Breed Labels Not Used time periods.

Results

Breed label use

Breed label use was indicated as binary variable, "yes" or "no". 100% of the dogs in the Breed Labels Used group (n = 987) had "yes" for this variable and 100% of the dogs in the Breed Labels Not Used group (n = 1259) had "no" for this variable (Table 2).

Sex

The dogs could either be male or female (Table 3). There was one record where the dog was initially listed as "U" for unknown, but with further research was confirmed female. Her record was changed accordingly.

Table 3

Sex distribution within groups

Sex	Breed Labels Used	Breed Labels Not Used

Male	48%	49%
Female	52%	51%

Size

Staff assign each dog a size at intake, either small, medium or large (Table 4). Puppies are assigned sizes based off what size they are expected to be when they are fully grown. There are no formal guidelines to the size assignments, the staff assigns sizes based on intuition and experience.

Table 4

Size distributions within groups

Size	Breed Labels Used	Breed Labels Not Used
Small	63%	38%
Medium	26%	35%
Large	11%	27%

Age group

Dogs were grouped by estimated age in months at intake (Table 5).

Table 5

Age group distributions within groups (Patronek & Crowe, 2018)

Age Group	Age in Months	Distribution Breed Labels Used	Distribution Breed Labels Not Used
Puppy	Younger than 6 months	61%	54%
Juvenile	6-12 months	5%	9%
Young Adult	12-36 months	24%	25%

Adult	36-96 months	9%	11%
Senior	Older than 96 months	1%	1%

Coat color

The primary coat colors were grouped based on eight categories: black, blonde, brindle, brown, grey, red, tan, and white (Table 6).

Table 6

Coat color distribution within groups

Coat Color	Breed Labels Used	Breed Labels Not Used	Primary Color Listed on PetPoint Record
Black	34%	32%	Black, Black/Black, Black/Blond, Black/Brindle, Black/Brown, Black/Fawn, Black/Grey, Black/Silver, Black/Tan, Black/White/Brown, Black/White, Black/Yellow, Charcoal/White, Sable, Smoke/White, Smoke/Black
Blonde	3%	2%	Apricot, Blond, Blond/Black, Blond/Brown, Blond/Tan, Blond/White, Golden, Golden/Buff, Golden/White, Yellow, Tan/Cream, Yellow/White
Brindle	4%	4%	Brindle, Brindle/Black, Brindle/Brindle, Brindle/Brown, Brindle/Red, Brindle/Tan, Brindle/White
Brown	30%	20%	Bronze/Brindle, Brown, Brown/Black, Brown/Black/White, Brown/Brindle, Brown/Bronze, Brown/Brown, Brown/Chocolate, Brown/Cream, Brown/Grey, Brown/Golden, Brown/Tan, Brown/White, Chocolate, Chocolate/Blue, Chocolate/Black, Chocolate/Tan, Chocolate/White
Grey	2%	2%	Blue, Blue Black/Brown, Blue/Mahogany, Blue/White, Grey, Grey/Black, Grey/Blue, Grey/Orange, Grey/White, Silver/Tan
Red	1%	3%	Liver/White, Red, Red/Black, Red/Brown, Red/Tan, Red/White
Tan	15%	22%	Beige, Beige/Black, Beige/Tan, Beige/White, Buff, Fawn, Fawn/Black, Tan, Tan/Black, Tan/Buff, Tan/Brown, Tan/Rust, Tan/Tan, Tan/White, Taupe/Grey, Taupe/Black, Taupe/White

White	11%	15%	Brown/White/Black, Buff/White, Cream, Cream/Beige, Cream/Black, Cream/Brown, Cream/Silver, Cream/Tan, Cream/White, White/Beige, White, White/Black, White/Blond, White/Brindle, White/Cream, White/Brown, White/Fawn, White/Golden, White/Grey, White/Liver, White/Red, White/Sandy, White/Tan, White/Yellow

Reasons for entering the shelter

A dog could enter the shelter for three reasons: rescue, owner surrender, or owner return (Table 7). Rescue dogs are either brought in to Bideawee from a rescue organization or, in the case of strays, a Good Samaritan. Owner surrenders are dogs not originally adopted from Bideawee that were brought to Bideawee by an owner to give up. The organization does occasionally turn away owner surrenders and charges a $250 fee for processing surrenders (by comparison, the OA city-run Animal Care & Control center charges a $10 fee). Owner returns are dogs that were adopted from Bideawee that were returned to the shelter by their adopted owner. There is no fee for returning a dog adopted from Bideawee back to Bideawee.

Table 7

Distribution of reasons for entering the shelter within groups

Reason	Breed Labels Used	Breed Labels Not Used
Rescued	91%	91%
Owner Surrender	3%	3%
Owner Return	6%	6%

Condition at intake

A dog could be healthy or unhealthy at intake (Table 8).

Table 8

Distribution of conditions at intake within groups

Condition	Breed Labels Used	Breed Labels Not Used
Healthy	90%	99%
Unhealthy	10%	1%

Place of origin

Bideawee takes in dogs from rescue groups inside and outside the US and tracks, in PetPoint, where each dog came from. Dogs coming into Bideawee could be categorized into five regions: New York City, Tri-State Area, the South, California, and Outside the Continental US (Table 9). It should be noted that Bideawee only began bringing dogs in from California following the increase in wildfires in the state in 2018. As a result, there are no dogs from California in the Breed Labels Used group.

Table 9

Distribution of place of origin within groups:

Place of Origin	Breed Labels Used	Breed Labels Not Used	Details
New York City	7%	6%	Owner surrenders, owner returns and strays brought to the Manhattan Bideawee location, plus dogs taken in from Animal Care & Control
Tri-State Area	3%	12%	Owner surrenders, owner returns and strays brought to the Westhampton and Wantagh locations, plus dogs taken in from municipal shelters in New York state, New Jersey and Connecticut
The South	79%	58%	Dogs brought in from rescue organizations in Alabama, Georgia, Tennessee, Texas and Florida
California	0%	4%	Dogs brought in from rescue organizations in Los Angeles and San Francisco
Outside the Continental US	11%	20%	Dogs brought in from rescue organizations in the Bahamas, Puerto Rico, Antigua and the US Virgin Islands

Behavior color assessment

Bideawee performs a behavior assessment on their dogs at intake that results in each dog being assigned one of five colors. Dogs can be categorized as green, blue, yellow, red, or white (Table 10). Green and blue indicate the dog has no restrictions and can be handled by all volunteers. Blue dogs are considered in between green and yellow dogs and used to be called "mellow yellow," to the point where in the system some dogs initially had their behavior color assigned as "mellow yellow." This was formally switched to blue sometime in 2018 (there is no clear point of transition in the data). Any dog labelled "mellow yellow" had their code changed to blue for this analysis.

A true yellow dog (not a "mellow yellow") can be slightly mouthy, shy, or jumpy, and a volunteer needs additional training (at least 40 hours working with green and blue dogs) before being able to interact with yellow dogs. Red dogs are dogs that are possessive of their toys or food, have a bite history, are excessively jumpy, or that pull very hard when walked. These dogs can be reactive and aggressive to both humans and animals. As a result, volunteers must have at least 80 hours of experience (40 hours with green and blue dogs, 40 hours with yellow dogs) before being trained to handle red dogs. White color-coded dogs are staff only, for either behavioral or medical purposes. A sticker indicating the behavior assessment color is attached to each dog's adoption card in order to quickly communicate behavior information to volunteers. Since the color assigned is noted on the adoption card, potential adopters see this information as well and factor it into their decisions.

Some dogs never receive behavior assessments because they were adopted too quickly or there was not enough staff on hand to evaluate the dog. These dogs were coded as "no color

assigned" and included in the dataset. This study will not examine the behavior assessment mechanism beyond the assigned color code due to the previously discussed questions around validity and accuracy of behavior assessments. All designated colors will be taken at face value.

Table 10

Behavior assessment color distribution within groups

Behavior Color	Breed Labels Used	Breed Labels Not Used
No Color	9%	8%
Green	68%	39%
Blue	2%	29%
Yellow	19%	21%
Red	2%	3%
Staff Only	0%	0%

Bideawee site for adoption & Mobile adoptions

Dogs were adopted from the Manhattan, Westhampton or Wantagh sites (Table 11). Bideawee also has a mobile adoption van and uses it to adopt out Bideawee dogs at adoption events across the five boroughs of NYC. A second "mobile adoption" field was coded as yes (dog adopted at a mobile adoption event) or no (dog adopted onsite).

Table 11

Distribution of adoptions by site and by type within groups

Site of Adoption		
Location	Breed Labels Used	Breed Labels Not Used
Manhattan	67%	66%
Westhampton	31%	32%

Wantagh	2%	2%
Type of Adoption		
Mobile Adoption	10%	13%
Onsite adoption	90%	87%

Borough / area dog adopted to

This dataset includes the zip codes of each dogs' adopters. No further information about the adopters was used and all adopters are completely anonymous. Using the zip codes and online zip code databases ("NYC Neighborhood ZIP Code Definitions," n.d.; "Long Island Zip Codes," n.d.), the post-adoption locations of each dog could be grouped into eight buckets (Table A1). Ultimately, there were eight locations the dog could end up post-adoption: one for each of NYC's five boroughs (Bronx, Brooklyn, Manhattan, Queens, Staten Island, Long Island), Long Island, New York State – Other (adoptions in New York State that took place outside of NYC or Long Island), and Outside of New York State (Table 12).

Further investigation into the "Outside of New York State" category (Table 13) revealed dogs went to several US states, mainly on the East coast. The top states for out-of-state adoptions were New Jersey, Connecticut, and Massachusetts.

Table 12

Distribution of post-adoption locations within groups

Location	Breed Labels Used	Breed Labels Not Used
Manhattan	29%	28%
Brooklyn	14%	17%
Queens	8%	10%
Bronx	3%	4%

Staten Island	2%	1%
Long Island	31%	31%
NY State-Other	4%	2%
US outside of NY State	9%	7%

Table 13

Distribution of out-of-state adoptions within groups

State	Breed Labels Used	Breed Labels Not Used
California	1%	0%
Connecticut	15%	9%
Maine	0%	1%
Maryland	1%	0%
Massachusetts	12%	3%
New Hampshire	1%	0%
New Jersey	61%	75%
North Carolina	1%	0%
Ohio	1%	0%
Pennsylvania	4%	7%
Rhode Island	1%	1%
South Carolina	0%	1%
Vermont	0%	2%
Washington, DC	1%	0%

Part II: LOS Analysis

Methods

LOS Calculation

Each dog's initial LOS was calculated in days by subtracting the adoption date from the date of intake to determine the total number of days the dog was at Bideawee. Then, a report was run in PetPoint called "Holding History," which notes when dogs were on hold, or not available for adoption, for the following reasons: bite quarantine, courtesy hold (meaning the dog was adopted but was staying at the shelter for a day or two longer before going to its new home), media hold (Bideawee uses some of its dogs for photoshoots and TV interviews), medical quarantine, and transfer pending (the dog was being moved to a different Bideawee location). The report has hold start and end dates, therefore, the length of each hold in days was calculated by subtracting the end date from the start day. Each dog's number of days on hold were then subtracted from their initial LOS to get a final LOS that truly captured the time the dog was available for adoption.

Data Analysis

Data sets were created using Microsoft Excel and data were analyzed with IBM *SPSS* 26. The "Compare Means" feature in SPSS was used to analyze LOS by location and in total for the Breed Labels Used and Breed Labels Not Used time periods. To evaluate differences in average LOS between the Breed Labels Used and Breed Labels Not Used groups, non-parametric Mann Whitney tests were run in SPSS. The alpha level was .05, but in the cases of multiple comparisons a Bonferroni correction was used to reduce the risk of type 1 error. This correction decreased the alpha level to .0167.

To evaluate if any factors other than breed labelling impacted LOS, two separate Cox regression models were run in SPSS for the Breed Labels Used and Breed Labels Not Used groups. The output from the models were compared in Microsoft Excel. A Cox regression model was the best fit for this data as the model can work with non-normal, censored independent

variables, while a traditional multiple regression model cannot. LOS is not normally distributed (its distribution skews left) and is also censored (it cannot be less than zero). Cox regressions are a type of survival analysis. In most survival analyses, one examines the effect several variables have on the time to extinction (death) of the subjects. In this case, "time to extinction" is actually "time to adoption," a positive event. So, unlike most survival models, the goal is for the subjects to reach extinction (adoption) faster.

The key assumption for a Cox regression model is that each covariate in the model meets the test of proportional hazards. If a covariate fails, the test of proportional hazards it can invalidate the model's results entirely. This test checks that the ratio of the hazard functions (the odds of adoption at any time in this model) for two individuals (dogs) does not vary with time. The test of proportional hazards was run in R using cox.zph function (Fox, 2002; Zhang, Reinikainen, Adeleke, Pieterse, & Groothuis-Oudshoorn, 2018) and tested all covariates that could be included in the model: size, coat color, behavior assessment color, sex, age group, health status, place of origin, mobile adoption (yes/no), and site of adoption. Condition at intake (χ^2=8.4781, p<.000) and place of origin (χ^2=43.3779, χ^2=169.9202, χ^2=11.4270 for the different locations; p<.000 in all cases) were found to be in violation of the test of proportional hazards. As a result, condition at intake was removed from the model, as most dogs were healthy in the dataset, and place of origin was designated as a stratifying variable in both models instead of a covariate. The alpha level for the Cox regression models was .05.

Results

Impact of breed labels on LOS

The average LOS of a dog at Bideawee decreased by over a week (8.3 days) and the median decreased by approximately a week and a half (11.3 days) following the removal of

breed labels (Table 14). All mean and median lengths of stay by location decreased by similar quantities.

Table 14

Impact of breed labels on LOS by location, by average days and median days

Mean			
Location	Breed Labels Used	Breed Labels Not Used	Difference
All locations	34.9	26.6	(8.3)*
Manhattan	32.9	23.7	(9.2)*
Westhampton	39.0	32.4	(6.6)*
Wantagh	38.0	26.7	(11.3)
Median			
Location	Breed Labels Used	Breed Labels Not Used	Difference
All locations	30.3	19.0	(11.3)*
Manhattan	30.3	18.0	(12.3)*
Westhampton	31.9	21.0	(10.9)*
Wantagh	25.1	16.1	(9.0)

Note. * Mann Whitney test significant, $p < .001$

Impact of other variables on LOS

The only covariate that had a statistically significant effect on LOS in both the Breed Labels Used and Breed Labels Not Used time periods was behavior assessment color (Table 15). Dogs with a "green" behavior assessments were almost four and a half times more likely to be adopted faster than "red" dogs (HR: 4.495, 95% CI 2.755-7.335, $p < .001$) before breed labels were removed, but only two times as likely to be adopted faster afterwards (HR: 2.220, 95% CI

1.514-3.254, p < .001). The odds of a faster time to adoption for "yellow" and "blue" dogs versus "red" dogs also significantly decreased in the Breed Labels Not Used time period.

Table 15

Impact of breed labels on LOS by location, in days

Category	Breed Labels Used HR (95% CI)	Breed Labels Not Used HR (95% CI)
Size of Dog[a]		
Medium	0.885 (0.75 - 1.045)	1.109 (0.96 - 1.28)
Large	0.931 (0.751 - 1.154)	0.877 (0.739 - 1.042)
Coat Color[b]		
Blonde	1.129 (0.778 - 1.638)	1.069 (0.706 - 1.618)
Brindle	0.681 (0.488 - 0.949) *	0.752 (0.56 - 1.009)
Brown	0.822 (0.699 - 0.968) *	0.986 (0.837 - 1.161)
Grey	1.475 (0.933 - 2.332)	1.03 (0.664 - 1.598)
Red	0.882 (0.444 - 1.752)	1.161 (0.822 - 1.64)
Tan	1.164 (0.952 - 1.423)	1.348 (1.149 - 1.582) **
White	0.880 (0.703 - 1.1)	1.051 (0.873 - 1.266)
Behavior Evaluation Color[c]		
Green	4.495 (2.755-7.335)**	2.220 (1.514-3.254)**
No Color Assigned	5.669 (3.356-9.574)**	2.931 (1.922-4.469)**
Blue	4.549 (2.33-8.879)**	1.846 (1.266-2.693)**
Yellow	2.909 (1.772-4.774)**	1.713 (1.171-2.507)*
Staff Only	0.831 (0.179-3.862)	2.099 (0.282-15.618)
Male Sex	0.897 (0.788 - 1.021)	0.998 (0.891 - 1.118)
Age Group[d]		
Juvenile	1.357 (0.979 - 1.881)	1.049 (0.841 - 1.309)
Young Adult	0.968 (0.809 - 1.159)	0.876 (0.746 - 1.027)
Adult	0.846 (0.663 - 1.08)	0.762 (0.616 - 0.943) *
Senior	0.49 (0.263 - 0.91) *	0.633 (0.364 - 1.098)

Onsite adoption	1.302 (1.037 - 1.633) *	1.04 (0.871 - 1.241)
Bideawee Site for Adoption[e]		
Westhampton	0.858 (0.736 – 1.000) *	0.905 (0.789 - 1.039)
Wantagh	0.693 (0.416 - 1.155)	0.91 (0.585 - 1.416)

Note. * $p < .05$; ** $p < .001$; Stratifying variable = Place of Origin
[a]Small as reference group
[b]Black as reference group
[c]Red as reference group
[d]Puppy as reference group
[e]Manhattan as reference group

Part III: Practical Applications of Shelter Data

Methods

Weighted average median household income

Median household incomes were estimated for each dog adopted in New York State (Table 16) by linking the dog's adopter's zip code with the New York State 5-year average median household income by Zip Code Tabulation Area (ZCTA) from the US Census Bureau's 2013-2017 American Community Survey (ACS). Zip codes are USPS creations and therefore not used by the US Census. To use the US Census data, you need the ZCTA. Zip codes were transformed to ZCTAs using a publicly available key ("ZCTA to ZIPCode Crosswalk," n.d.). In major cities, most zip codes are direct one-to-one matches. 98.9% of the zip codes in this dataset were a one-to-one match with their ZCTA. For the approximately 1% where the zip code straddled two ZCTAs and the key makers had to decide which zip code the ZCTA should match with, the ZCTA was taken at face value and presumed to be correct.

"Hot spots" in NYC for Bideawee dog adoptions

Maps with "hot spots" of Bideawee dog adoptions (areas with high frequencies of adoptions) could be created using the ZCTAs from the weight average median household income

calculations. First, a shapefile of all NYC ZCTAs was downloaded so the ZCTAs could be mapped in ArcGIS Pro ("2010 New York City Zip Code Tabulation Areas," n.d.). Then, an Excel table of each adoption by ZCTA was loaded into ArcGIS Pro and converted to an Attribute table. Using the "Summarize" feature in ArcGIS Pro, the number of adoptions per ZCTA were counted, and then joined with the NYC ZCTA shapefile. Once the count of adoptions was joined to each ZCTA, heat maps could be created for that showed the number of adoptions per ZCTA, for (1) the Breed Labels Used time period, (2) the Breed Labels Not Used time period, and (3) the Breed Labels Used and Breed Labels Not Used time periods, combined.

The NYC Open Data site provides free access to shapefiles of the dog runs and all public parks in NYC (City of New York, n.d.). These shapefiles were added to the maps as well, to evaluate if any of the "hot spots" were near a high concentration of parks.

Determination of the most common "lifecycles" for Bideawee dogs

A "lifecycle" for a Bideawee dog is their path from their place of origin, to their Bideawee adoption site, finishing at their post-adoption location. Each dog had a path built by linking their place of origin, adoption site and post-adoption locations together. The dogs with the same paths were then grouped together (Table 17) so path frequencies could be analyzed, and the most common paths could be identified.

Data Analysis

Data sets were created and analyzed using Microsoft Excel. The maps for the "hot spots" analyses were created using ESRI ArcGIS Pro.

Results

Weighted average median household income

Table 16

Differences in median household incomes between groups (NYC, Long Island & NY State only)

Location	Breed Labels Used	Breed Labels Not Used
All NY State	$85,345	$83,339
Manhattan	$95,007	$95,241
Brooklyn	$66,574	$66,018
Queens	$65,562	$63,643
Bronx	$40,508	$42,574
Staten Island	$77,784	$77,056
Long Island	$93,376	$91,941
NY State-Other	$99,178	$97,628

"Hot spots" in NYC for Bideawee dog adoptions

During the Breed Labels Used time period (Figure 3), the ZCTAs with the most adoptions were 10025 (Upper West Side) and 10016 (Murray Hill). Bideawee's dog adoptions were mainly in Manhattan and parts of Queens and Brooklyn close to Manhattan (Long Island City, Brooklyn Heights, Queens). The organization's reach expands in the Breed Labels Not Used time period (Figure 4), with higher frequencies of adoption in further-out places (relative to midtown Manhattan) such as 10463 (Riverdale, Bronx), 11215 (Park Slope, Brooklyn) and 11385 (Ridgewood and Flushing, Queens). New "hot spots" also appear in Manhattan in 1009 (East Village) and 10011 (Chelsea). When the two time periods are combined to view the geographic data holistically (Figure 5), it becomes apparent that the most adoptions for Bideawee by ZCTA occurs in 10025 (Upper West Side). Other "hot spots" in Manhattan include the Lincoln Center area near the Upper West Side, the East Village and the Lower East Side. In Brooklyn, high frequencies of adoptions occur in the Brooklyn Heights, Bed Sty, Bushwick,

Greenpoint and Williamsburg areas. In Queens, Long Island City is the top area for adoptions. The Bronx and Staten Island are largely untouched, even in areas near parks, as are further-out neighborhoods in Brooklyn and Queens.

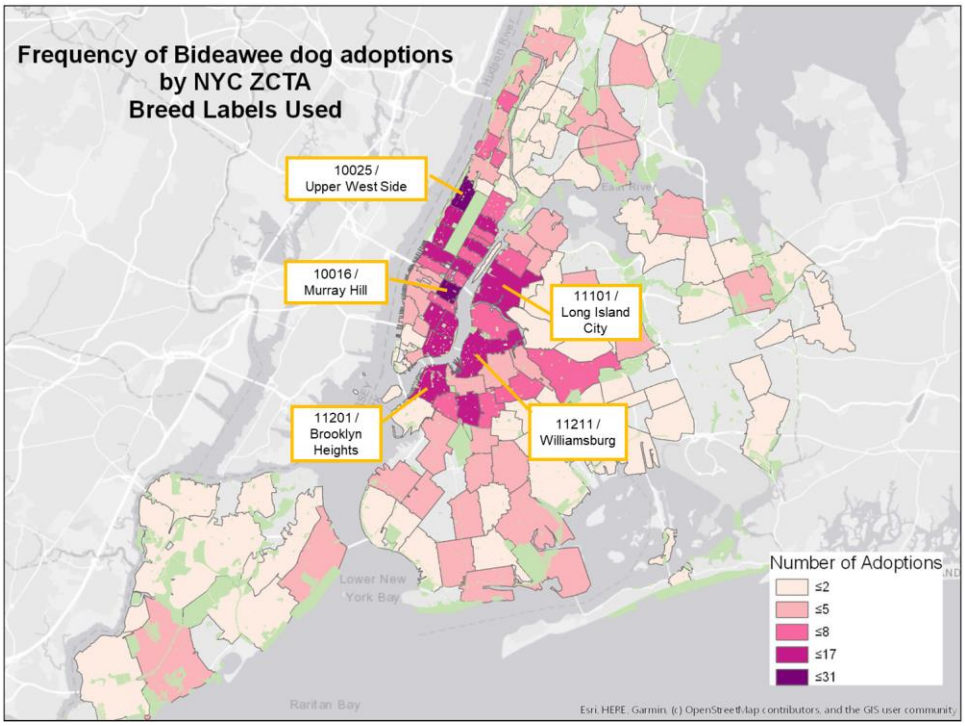

Figure 3. Frequency of Bideawee dog adoptions by NYC ZCTA, February 2016-June 2017. Light green indicates parks.

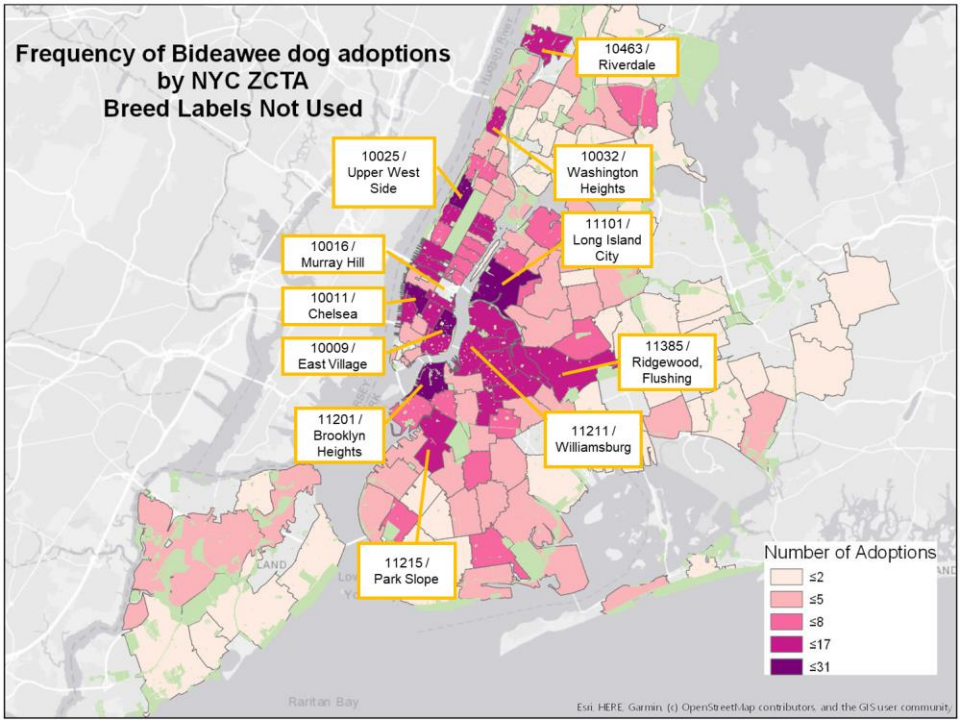

Figure 4. Frequency of Bideawee dog adoptions by NYC ZCTA, Breed Labels Not Used. Light green indicates parks.

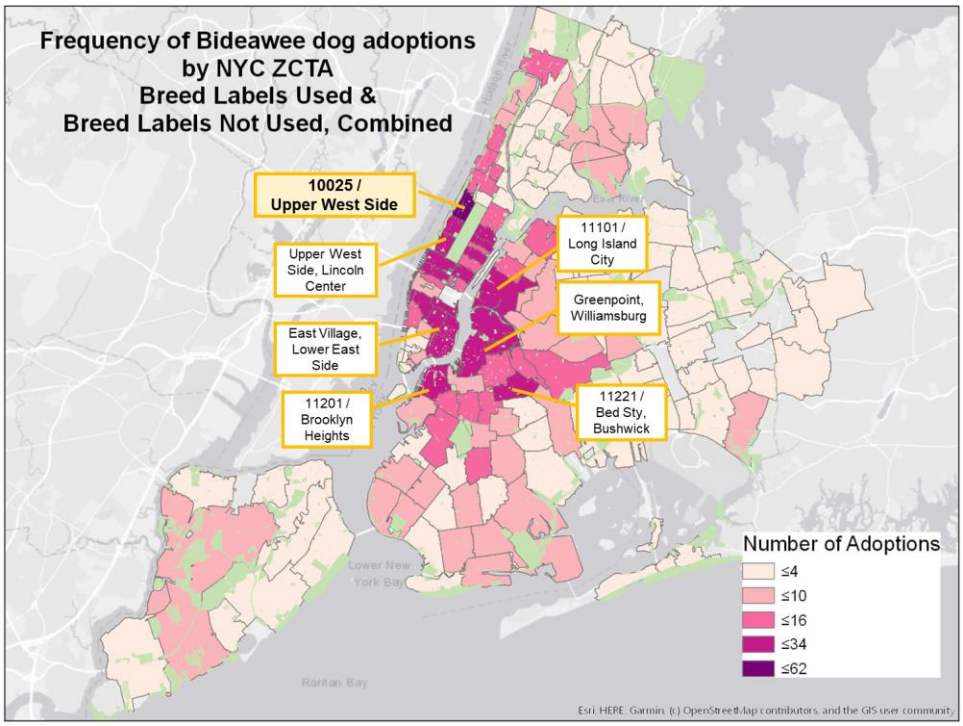

Figure 5. Frequency of Bideawee dog adoptions by NYC ZCTA, February 2016-June 2017 and February 2018-June 2019, combined. Light green indicates parks.

Most common "lifecycles" for Bideawee dogs

Table 17

Top ten "life cycles" of a Bideawee Dog

Origin	Adoption Site	Outcome Borough	*N*	Percent of dogs, all locations
The South	Westhampton	Long Island	417	19%
The South	Manhattan	Manhattan	401	18%
The South	Manhattan	Brooklyn	217	10%
The South	Manhattan	Queens	125	6%
The South	Manhattan	US - Outside of NY State	109	5%
Outside Continental US	Manhattan	Manhattan	103	5%
Outside Continental US	Westhampton	Long Island	97	4%
Tri-State Area	Westhampton	Long Island	87	4%
Outside Continental US	Manhattan	Brooklyn	58	3%
The South	Manhattan	Bronx	56	2%

Discussion Parts I-III

Part I: Population Demographics

Across all the variables analyzed, the only factor with significant changes in category proportions between the Breed Labels Used time period and the Breed Labels Not Used time period was size. In the Breed Labels Used time period, 63% of the dogs were small dogs. In the Breed Labels Not Used time period, the dogs were more evenly distributed across the size groups: 38% of the dogs were small dogs, 35% medium, and 27% large. In the Part II LOS analyses, this shift in the proportion of dogs by size is shown to not significantly impact LOS.

No other category had a significant change in category proportions between the two time periods, with the exception, of course, of breed labels – 100% of the dogs in the Breed Labels Used time period had Breed Labels, while 0% of the dogs in the Breed Labels Not Used time period were labelled. This supports the Part II findings that removal of breed labels led to decreases in LOS – most factors analyzed did not notably change over time (and, in Part II, were found not to have statistical significance).

Part II: LOS Analyses

The average LOS of a dog at Bideawee decreased 8.3 days (-23.8%) once breed labels were removed compared to when breed labels were in place, with similar decreases occurring across all locations. It is notable while the LOS significantly decreased, the rate of returns remained constant at 6%. These findings refute a common myth that removing breed labels limits the amount of information an owner has about a dog and, in turn, will result in more returns.

In addition, Cox regression models showed that the only characteristic of the dogs adopted at Bideawee that significantly impacted their odds of a faster adoption (and therefor a shorter LOS) was the behavior assessment color assigned to the dog at intake. The fact that there was only one covariate in the model with a significant impact on LOS strengthens the prediction that the change in breed label use drove the decrease in LOS, rather than the reduced LOS being the result of other factors like change in population's age groups or adoption site. As the findings from this study and the study conducted by Gunter, Barber & Wynne (2016) suggest, breed labelling can extend the LOS of a dog at a shelter, despite there being no scientific basis for a dog's breed assignment. Reducing the LOS of dogs at shelters puts dogs in home faster and opens up space in shelter facilities, allowing for additional dogs to be rescued. Because of this,

shelters that have not removed breed labels from their kennel cards should consider doing so in the future.

The Cox regression models showed that dogs with a “red” behavior assessment color were the least likely to be adopted quickly in both time periods, but the “red” dogs had higher odds of being adopted relative to their green, yellow and blue companion in the time period where breed labels were not used. The importance of the behavior assessment color emphasizes the need to evaluate the standardization, reliability and accuracy of both Bideawee’s and other shelters’ behavior assessments, as these models indicate that the color assigned can significantly impact how long a dog stays in the shelter environment.

Part III: Practical Applications of Shelter Data

This study identified other opportunities for Bideawee to utilize their population demographics and LOS data. The weighted average median household income, “hot spot” maps, and common “life cycles” of Bideawee dogs provide marketing data to shelter and help the organization identify underpenetrated areas of New York state and city. Bideawee can use this data to expand their reach and attract new adopters from areas such as Staten Island and the Bronx via mobile adoption events and advertising.

Limitations

There are some limitations to consider for this study. First, administrative or personnel factors may have had an impact on LOS; namely, the CEO of the Bideawee organization changed between the Breed Labels Used and Breed Labels Not Used time periods. This change could have shifted staff and volunteer attitudes and enthusiasm in ways that cannot be quantitatively accounted for in models or statistical tests. In addition, all PetPoint data was

entered by staff during work hours in busy shelter environments, and therefore is subject to possible incorrect data entries due to human error.

Another limitation to consider is that behavioral assessment colors were taken at face value and were not analyzed for accuracy or true predictive value. In the time period analyzed (February 2016-June 2019), Bideawee did not have a behaviorist on staff. Behavior assessments were assigned by freelance or temporary behaviorists or by staff who were not certified in animal behavior. In addition, looking at the PetPoint data, it appears that behavior assessments were conducted inconsistently, sometimes testing for reactivity or fear, other times testing for possessiveness, and even other times simply assigning a color to a dog without make any notes about behavior in the system. This could result in dogs of similar temperaments being assigned different colors. Future studies should look at LOS with behavior data that all came from one, standardized assessment.

A final limitation is, as noted in Part II Data Analysis discussion, that LOS is a tricky outcome variable to work with, as it is heavily left-skewed and censored at zero. This means that nonparametric models must be utilized for analyses, however various alternative analyses do exist. One alternative to this analysis is to define LOS as a binary outcome, where one outcome is “dog adopted in less than X days,” and the other is “dog adopted in greater than or equal to X days” (Patronek & Crowe, 2018; Protopopova, Mehrkam, Boggess, & Wynne, 2014). Another possibility is to proceed with applying parametric statistical models instead of nonparametric ones when the sample size is large (usually greater than 100) (Brown, Davidson, & Zuefle, 2013; Gunter, Barber, & Wynne, 2016). The many different approaches for analyzing local shelter data could possibly contribute, in part, to why the results and factors that significantly impact time to adoption vary across different local shelter studies. Additional research into models that make

LOS analyses easy to conduct and understand would be beneficial and drive further uniformity among models in future studies.

Areas for Future Study

All the calculations in this study would not have been possible without the day-to-day intakes and outcomes of dogs at Bideawee being tracked in PetPoint. This study encapsulates just a few of the many ways a shelter-specific database can enable organizations to track the effects of policy changes and other actions over time. While most US shelters already utilize computerized databases to track adoptions, the next step is for more shelters to make their datasets available for research. More data not only allows for analyses at a broader level and a clearer, bigger picture of US dog adoption rends, but also empowers the shelter welfare community to identify the best ways to find dogs across the country their best home, and faster.

Additional studies should be conducted on shelters of a similar profile (limited intake New York City shelters) in order to identify drivers of dog adoptions and the impact of the removal of breed levels beyond the local level. Similar studies should also be conducted in open admission shelters to determine if results hold across both limited intake and open admission shelters. Accruing more data and results on removing breed labels will strengthen the case for shelters to act, and hopefully, increase the number of dogs placed in loving homes each year.

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Appendix A

Table A1

Borough / Area groups and corresponding zip codes

Borough / Area	Zip Codes
Bronx	10451, 10452, 10453, 10454, 10455, 10456, 10457, 10458, 10459, 10461, 10460, 10462, 10463, 10465, 10467, 10466, 10468, 10469, 10470, 10471, 10472, 10473, 10474, 10475
Brooklyn	11201, 11203, 11204, 11205, 11206, 11207, 11208, 11209, 11210, 11212, 11211, 11213, 11214, 11215, 11217, 11216, 11218, 11219, 11220, 11221, 11222, 11223, 11224, 11225, 11226, 11228, 11229, 11230, 11231, 11232, 11233, 11234, 11235, 11236, 11237, 11238, 11249
Manhattan	10001, 10002, 10003, 10004, 10005, 10006, 10007, 10009, 10010, 10012, 10011, 10013, 10014, 10016, 10018, 10017, 10019, 10021, 10022, 10023, 10024, 10025, 10026, 10027, 10028, 10029, 10030, 10031, 10032, 10033, 10034, 10035, 10036, 10037, 10038, 10039, 10040, 10044, 10065, 10069, 10075, 10280, 10128
Queens	11004, 11101, 11102, 11103, 11104, 11105, 11106, 11354, 11356, 11358, 11357, 11361, 11362, 11364, 11366, 11365, 11367, 11368, 11369, 11370, 11372, 11373, 11374, 11375, 11377, 11378, 11379, 11385, 11411, 11412, 11413, 11414, 11415, 11416, 11418, 11419, 11420, 11421, 11428, 11432, 11433, 11436, 11434, 11692, 11693, 11694
Staten Island	10301, 10303, 10304, 10305, 10306, 10308, 10309, 10310, 10312, 10314
Long Island	11742, 11772, 11001, 11003, 11010, 11023, 11030, 11040, 11510, 11520, 11516, 11530, 11542, 11545, 11554, 11553, 11559, 11560, 11561, 11563, 11566, 11570, 11572, 11575, 11590, 11596, 11598, 11701, 11702, 11703, 11704, 11705, 11706, 11709, 11710, 11713, 11714, 11715, 11716, 11717, 11719, 11722, 11720, 11725, 11726, 11727, 11729, 11730, 11731, 11735, 11733, 11738, 11740, 11741, 11742, 11743, 11746, 11747, 11751, 11752, 11754, 11755, 11756, 11757, 11758, 11762, 11763, 11764, 11766, 11767, 11768, 11769, 11772, 11776, 11777, 11778, 11779, 11782, 11780, 11783, 11784, 11786, 11787, 11788, 11789, 11790, 11791, 11792, 11793, 11794, 11796, 11795, 11797, 11801, 11803, 11804, 11901, 11931, 11933, 11934, 11935, 11937, 11940, 11941, 11942, 11944, 11946, 11949, 11950, 11951, 11952, 11953, 11954, 11955, 11959, 11960, 11961, 11967, 11968, 11971, 11972, 11976, 11977, 11978, 11980
New York – Other (not NYC or Long Island)	10709, 10987, 10509, 10510, 10512, 10520, 10522, 10523, 10532, 10553, 10550, 10567, 10583, 10701, 10706, 10703, 10707, 10708, 10710, 10801, 10804, 10901, 10919, 10940, 10950, 10952, 10956, 10977, 10980, 10982, 10989, 10993, 10994, 11109, 12015, 12210, 12401, 12508, 12522, 12548, 12553, 12572, 12566, 12604, 12790, 13210

Outside NY State	01062, 01540, 01550, 01772, 01844, 02115, 02134, 02138, 02215, 02478, 02332, 02601, 02720, 02879, 03440, 02903, 04685, 05148, 05254, 06070, 06239, 06333, 06340, 06403, 06443, 06460, 06461, 06477, 06484, 06512, 06605, 06608, 06706, 06831, 06851, 06877, 06878, 06880, 06903, 06906, 07001, 07003, 07002, 07005, 07009, 07020, 07029, 07030, 07032, 07040, 07036, 07042, 07047, 07058, 07060, 07067, 07070, 07075, 07080, 07083, 07086, 07087, 07093, 07094, 07105, 07110, 07111, 07302, 07304, 07305, 07306, 07307, 07310, 07311, 07405, 07424, 07432, 07480, 07450, 07481, 07621, 07630, 07646, 07650, 07666, 07670, 07728, 07920, 07950, 07960, 08008, 07974, 08015, 08403, 08527, 08816, 08820, 08854, 08859, 08861, 08863, 08865, 12401, 15146, 18327, 18702, 19010, 19055, 19096, 19403, 19444, 20009, 21224, 28460, 29651, 94010