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PREVENTING EVICTION AND HOUSING LOSS: TAKING ADVANTAGE OF A ONE HEALTH APPROACH AND THE HUMAN- COMPANION ANIMAL BOND

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INTRODUCTION

Housing loss is at epidemic proportions in the United States, especially in cities like Baltimore, Maryland.¹⁰ Baltimore has a high rate of housing eviction

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10. PUB. JUST. CTR., JUSTICE DIVERTED: HOW RENTERS ARE PROCESSED IN THE BALTIMORE CITY RENT COURT 54 (2015).

and housing loss.¹¹ According to a report released by the Public Justice Center, an average of 6,880 evictions have occurred annually in the city since 2012.¹² Eviction rates tend to be high among vulnerable populations living in rental units in low-income neighborhoods.¹³ Housing loss is a public health problem that can lead to, and exacerbate several acute and chronic health conditions.¹⁴ Eviction is not only associated with adverse physical and mental health outcomes, including anxiety, depression, and suicide,¹⁵ but it also precipitates additional traumatic life events and continues to negatively impact individuals long after its occurrence.¹⁶ Among other consequences, housing loss through eviction can lead to prolonged periods of homelessness, which places individuals at greater risk for numerous adverse health outcomes, including exposure to violence and drug overdose.¹⁷

Once eviction occurs, opportunities for housing are scarce.¹⁸ For evicted people and families with companion animals, also referred to as pets, there is an added challenge of finding pet-friendly housing.¹⁹ Given the vital role that housing stability plays in public health, it is worthwhile to examine strategies to

11. *Id.* at 11.

12. *Id.* at 10.

13. *Id.*

14. See generally Hugo Vásquez-Vera et al., *The Threat of Home Eviction and Its Effects on Health Through the Equity Lens: A Systematic Review*, 175 SOC. SCI. & MED. 199, 199–200 (2017) (discussing public health impacts of eviction).

15. *Id.* at 202–04; Mark P. Taylor et al., *The Psychological Costs of Unsustainable Housing Commitments*, 37 PSYCH. MED. 1027, 1029 (2007); Katherine A. Fowler et al., *Increase in Suicides Associated with Home Eviction and Foreclosure During the U.S. Housing Crisis: Findings from Sixteen National Violent Death Reporting System States, 2005–2010*, 105 AM. J. PUB. HEALTH 311, 313–14 (2015); Matthew Desmond & Carl Gershenson, *Housing and Employment Insecurity Among the Working Poor*, 63 SOC. PROBS. 1, 50 (2016).

16. See Matthew Desmond & Rachel Tolbert Kimbro, *Eviction's Fallout: Housing, Hardship, and Health*, 94 SOC. FORCES 295, 317 (2015) (discussing higher rates of material hardship and depression in mothers years after being evicted); Eric Dunn & Marina Grabchuk, *Background Checks and Social Effects: Contemporary Residential Tenant-Screening Problems in Washington State*, 9 SEATTLE J. SOC. JUST. 319, 326–27, 335 (2010) (noting extensive negative impact that an “eviction history” can have on future housing prospects); Margot B. Kushel et al., *Housing Instability and Food Insecurity as Barriers to Health Care Among Low-Income Americans*, 21 J. GEN. INTERNAL MED. 71, 76 (2006) (finding correlation between housing instability and barriers to health care).

17. NAT'L ACADS. OF SCIS., ENG'G & MED., PERMANENT SUPPORTIVE HOUSING: EVALUATING THE EVIDENCE FOR IMPROVING HEALTH OUTCOMES AMONG PEOPLE EXPERIENCING CHRONIC HOMELESSNESS 38 (2018).

18. *Affordable Housing, Eviction, and Health*, U.S. DEP'T HOUS. & URB. DEV. OFF. POL'Y DEV. & RSCH.: EVIDENCE MATTERS (Summer 2021), <https://www.huduser.gov/portal/periodicals/em/Summer21/highlight1.html>.

19. See M.D. Salmen et al., *Human and Animal Factors Related to the Relinquishment of Dogs and Cats in Twelve Selected Animal Shelters in the United States*, 3 J. APPLIED ANIMAL WELFARE SCI. 207, 212 (1998) (finding that approximately twenty-seven percent of individuals interviewed while surrendering cats and dogs to shelters listed “human housing issues” as a reason for the surrender).

keep people in their current housing, especially for those most at risk of housing loss. Exploring the nature of housing loss in Baltimore among vulnerable communities is one way to evaluate whether it is possible to keep members of these communities in their homes and break the cycle of homelessness. There are many interrelated causes of housing loss, so it is valuable to pinpoint the primary cause(s) as much as possible.

The research discussed in this paper arose from the observations of Donna Bernstein, a consumer protection attorney and advocate at the Baltimore office of Maryland Legal Aid (MLA) as well as an author on this paper, that were shared with members of the Johns Hopkins team. She observed that many of her clients surrendered their companion animals while under financial stress, particularly prior to eviction or housing loss. These observations suggest that it might be possible to learn more about the facts leading up to housing loss by looking at companion animal relinquishment. This also opens the possibility that intervention strategies at the point of companion animal relinquishment could delay or prevent housing loss. If such strategies were implemented and found to be effective, they would have the immediate benefit of preventing housing loss for both companion animals and their owners.

The concept of “one health” is a recent development in the field of public health that helps re-conceptualize complex public health problems and offers a new approach to address them.²⁰ The one health framework is a collaborative, multisectoral, transdisciplinary way to visualize public health issues.²¹ It recognizes that the health of communities is closely connected to the health of animals and our shared environment.²² The one health approach focuses on the interrelationship between humans, animals, and diseases, including zoonotic diseases, antimicrobial resistance, food safety, and food security.²³ One health connects human health with the health of animals and the environment by creating a conversation surrounding overlapping experiences and challenges. Thus, influencing policy decisions, community planning, and grassroots organizing.²⁴ A key one health concept that merits further discussion is the human-companion animal bond.²⁵ We believe that this bond can be utilized as a basis for a series of interventions to prevent housing loss through eviction. We

20. *One Health Basics*, CTRS. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/onehealth/basics/index.html> (last updated Nov. 8, 2022).

21. *Id.*

22. *Id.*

23. *Id.*

24. *Id.*

25. *Id.*

explore the human-companion animal bond in detail in the next section of this paper.²⁶

This paper applies and extends the one health approach to illustrate and address the issue of housing instability in Baltimore more completely. Our research extends the one health concept by connecting animal welfare and human health. It identifies companion animal relinquishment as an indicator for risk of eviction, and a focal point for launching strategies to prevent housing loss. The human-animal bond is an important part of public health and it is equally important to analyze the precursors to, and consequences of, breaking the human-companion animal bond. We seek to identify new strategies and construct more comprehensive interventions within existing strategies to combat housing instability in Baltimore. One health informs our discussion of the problems facing humans and animals when relinquishment occurs, as well as influences the potential support systems aiming to keep humans and animals together within stable housing.

Our research examines the hypothesis that those in low income and vulnerable communities, who are at a high risk for housing loss through eviction, seek to surrender their companion animals prior to eviction. Financial stress is a major factor leading to eviction.²⁷ Numerous factors lead to financial distress, including the costs associated with maintaining companion animals, such as cats and dogs, along with unanticipated costs for other items.²⁸ If this hypothesis is supported by data analysis, intervention strategies to combat housing loss should be implemented at or before the time of companion animal relinquishment. If this point in time is consistently before eviction, it could provide a window for intervention to stop eviction. Because it is preferable to keep people in their homes, intervention strategies deployed at or before relinquishment could be an important public health tool to prevent homelessness. Additionally, it would allow humans and their companion animals to stay together, increasing the positive health outcomes for humans and animals alike.

To tackle housing loss and eviction most effectively through a one health approach, we created a team including researchers at Johns Hopkins Bloomberg School of Public Health, Maryland Legal Aid, Baltimore Animal Rescue and Care Shelter (BARCS), and Charm City Companions, as well as others who joined based on their own interest and support for the project.²⁹ We evaluated three strategies to alleviate financial stress associated with companion animals with the goal of reducing relinquishments and evictions. Strategy 1 relies on

26. See *infra* Part II.

27. Fowler, *supra* note 15, at 311–12.

28. Salmen, *supra* note 19, at 212.

29. Many of these team members are co-authors of this paper.

lawyers from Maryland Legal Aid to provide information and resources to pet owners at BARCS at or before the time of relinquishment, including offering a Medicaid waiver to a subset of recipients.³⁰ Strategy 2 relies on the grant awarded by the Center for Medicaid and Medicare to Baltimore City Health Department to design and implement an Accountable Health Community model.³¹ Strategy 3 focuses on expanding existing Hospital Benefit Programs to address housing issues.³² Each of the three strategies could provide assistance to pet owners facing the possibility of eviction by connecting individuals to information and resources.

I. THE PUBLIC HEALTH IMPLICATIONS OF THE HUMAN-COMPANION ANIMAL BOND

Companion animals play an essential role in the lives of their owners. This human-companion animal bond is well documented and characterized.³³ According to the American Society for the Prevention of Cruelty to Animals (ASPCA), a companion animal is considered any domestically bred animal that can assist in owners emotional, physical, and behavioral needs, as well as needs in the home.³⁴ Cats and dogs are common companion animals, but companion animals can range as wide as ferrets, birds, guinea pigs, fish, and even small farm animals.³⁵ People who own companion animals experience a wide variety of benefits, including improved mental and physical health.³⁶ This section will review the literature on the mental and physical health benefits of the human-animal bond as well as the historical evolution of companion animal ownership.

Pet ownership and the human-animal bond is not a new phenomenon. Evidence shows that mankind has treated animals as pets for thousands of years.³⁷ Over two hundred years ago, the British Veterinary Association suggested that companion animals provide benefits to their owners.³⁸ While there is a rich history of pet ownership across the globe, companion animals continue

30. See *infra*, Part III. Three Strategies to Potentially Prevent Housing Loss

31. See *infra*, Part III.B. Strategy 2: Accountable Health Communities Model

32. See *infra*, Part III.C. Strategy 3: Hospital Community Benefit Programs

33. Keith A. Anderson et al., *Fostering the Human-Animal Bond for Older Adults: Challenges and Opportunities*, 39 *ACTIVITIES, ADAPTATION & AGING* 32, 33 (2015).

34. *Definition of Companion Animal*, ASPCA, <https://www.aspc.org/about-us/aspc-policy-and-position-statements/definition-companion-animal> (last visited Apr. 16, 2023).

35. For purposes of our research, we limited our study of companion animals to cats and dogs.

36. Anderson et al., *supra* note 36, at 32–33.

37. *Id.* at 33 (estimating that pet ownership spans as far back as 10,000 BC).

38. Andrew T. B. Edney, *Companion Animals and Human Health: An Overview*, 88 *J. ROYAL SOC'Y OF MED.* 704, 707 (1995).

to gain popularity in the U.S.³⁹ Currently, more American families possess a companion animal than ever before.⁴⁰ It is estimated that up to 60% of households have at least one companion animal.⁴¹

Pet ownership, and the emotional bond between owner and companion animal, is associated with increased health benefits.⁴² These benefits include reduced levels of anxiety and depression,⁴³ and increased feelings of happiness.⁴⁴ Companion animals also support their owners through stressful situations.⁴⁵ Many owners report feeling less stressed when their companion animal is present.⁴⁶ Research suggests that pet owners, specifically those who receive Medicaid benefits, are better at coping with stressful life events than people who do not own pets.⁴⁷ This evidence favors forming an emotional bond with a companion animal in order to increase mental health, as opposed to simply owning a pet without the existence of an emotional bond.

Companion animals also provide social benefits for owners.⁴⁸ Mueller et al. conducted a study on the human–animal interaction and social support for older adults.⁴⁹ The study found that the presence of a companion animal reduces the risk of loneliness in the older adult population.⁵⁰ A separate study shows that in terms of social development, children who grow up with a companion animal have higher self-esteem and better non-verbal communication, popularity, and social competence than children who do not grow up with companion animals.⁵¹

Research suggests that the human-animal bond also provides positive physical benefits such as decreased blood pressure, heart rate, and an increase

39. Nancy R. Gee et al., *Human-Animal Interaction and Older Adults: An Overview*, 8 FRONTIERS PSYCH. 1, 1–2 (2017).

40. *Pet Population Still on the Rise, with Fewer Pets per Household*, AM. VETERINARY MED. ASS'N (Dec. 1, 2021), <https://www.avma.org/javma-news/2021-12-01/pet-population-still-rise-fewer-pets-household>.

41. Wendy G. Turner, *The Role of Companion Animals Throughout the Family Life Cycle*, 9 J. FAM. SOC. WORK 11, 11 (2005).

42. Erika Friedmann & Heesok Son, *The Human-Companion Animal Bond: How Humans Benefit*, 39 VETERINARY CLINICS N. AM.: SMALL ANIMAL PRAC. 293 (2009).

43. *Id.*

44. Judith M. Siegel, *Companion Animals: In Sickness and in Health*, 49 J. SOC'Y ISSUES 157 (1993).

45. Nancy A. Pachana et al., *Relations Between Companion Animals and Self-Reported Health in Older Women: Cause, Effect, or Artifact?*, 12 INT'L J. BEHAV. MED. 103, 104 (2005).

46. *Id.*

47. Edney, *supra* note 40, at 704.

48. *Id.*

49. Gee et al., *supra* note 41, at 2.

50. *Id.* at 2–3.

51. Edney, *supra* note 40, at 705.

in overall well-being.⁵² Franklin et al. found that pet owners, compared to non-owners, decreased their medication use for health issues such as blood pressure, cholesterol, and heart problems.⁵³ Pet owners also reported fewer visits to a physician.⁵⁴ After stratifying for body mass index, socioeconomic status (SES), and smoking status, pet owners were found to have lower blood pressure than non-owners.⁵⁵

The paper, *The Importance of the Human-Animal Bond*, explains that people with health issues, ranging from chronic issues to severe conditions, have a heightened emotional connection with their companion animals.⁵⁶ Owners who are sick spend on average 30% more time with their pets than healthy owners.⁵⁷ Those who did not have a companion animal showed to have more headaches, feelings of panic, fears, and GI issues than pet owners.⁵⁸ The study states that having a companion animal can also be protective the year following a cardiac episode.⁵⁹ There was a 22% difference between survival rates after one year when comparing those who had a pet and those who did not. The survival rate for pet owners was 94% compared to non-owners at 72%.⁶⁰ Dr. Edney et al. has shown that being in the presence of a companion animal lowers blood pressure for those under stress.⁶¹ When comparing risk factors of heart disease among individuals, pet owners were at a decreased risk compared to non-owners.⁶² Companion animals can also sense the warning signs of a seizure, create a safer space for their owners⁶³ and can also be a helpful resource to those suffering from chronic illnesses.⁶⁴ A study conducted by Kabel, et. al. showed how animals can play a role in managing symptoms of those diagnosed and living with HIV.⁶⁵ Study participants stated that the pets were a guardian or “spiritual custodian”

52. Jennifer Jorgenson, *Therapeutic Use of Companion Animal Health Care*, 29 J. NURSING SCHOLARSHIP 249 (2007).

53. Adrian Franklin et al., *Investigating the Therapeutic Benefits of Companion Animals: Problems and Challenges*, 3 QUALITATIVE SOCIO. REV. 42, 43 (2007).

54. *Id.*

55. *Id.*

56. Mills, *The Importance of the Human-Animal Bond*, 138 VETERINARY RECORD 21, 638 (Dec. 2018).

57. *Id.*

58. Siegel, *supra* note 46.

59. *Id.*

60. *Id.*

61. Edney, *supra* note 40.

62. *Id.*

63. *Id.*

64. Allison Kabel et al., *The Dog Narratives: Benefits of the Human-Animal Bond for Women with HIV*, 14 J. HIV/AIDS & SOC. SERVS. 405, 412–13 (2015).

65. *Id.*

and provided more comfort and security to people living with chronic illness.⁶⁶ A study conducted by Anderson et al. showed a survival analysis that found that pet owners who suffered a heart attack, were less likely to die during the following years than those who did not own pets.⁶⁷

Overall, the literature provides ample evidence that having a companion animal promotes physical activity. However, despite all the explored benefits, there are some health issues that arise with companion animals.⁶⁸ These problems are minor but include allergies, asthma, animal bites, and scratches, as well as falling caused by the animal.⁶⁹ While these problems do exist, on a community level the physical benefits of the human-animal bond outweigh the negatives.

As adults age, especially those with lower socioeconomic status, their risk for developing emotional and physical disorders increases.⁷⁰ Pet ownership can reduce the impact of these potential issues by reducing social isolation, providing companionship, and increasing physical activity.⁷¹ In addition to companionship, pets provide emotional support and protection.⁷² Another study conducted by Curl et al. showed that older adults who walked their dogs had a lower body mass index, fewer limitations in activities of daily living, and overall, less frequent visits with physicians.⁷³ The results also showed an increase in moderate and vigorous exercise.⁷⁴ Those with a companion animal, particularly dogs, are more likely to be active than those without an animal.⁷⁵ According to Pachanna et al., pet owners reported being more physically active than those who do not own pets.⁷⁶

II. ANALYSIS OF DATA

A. Personhood Laws

As our discussion about the human-companion animal bond indicates, human owners become extremely attached to their companion animals and that

66. *Id.* at 412–13.

67. *Id.* at 33.

68. Friedman & Son, *supra* note 44.

69. *Id.*

70. Anderson et al., *supra* note 36 at 32.

71. *Id.*

72. *Id.*

73. Angela L. Curl et al., *Dog Walking, the Human–Animal Bond and Older Adults' Physical Health*, 57 GERONTOLOGIST 930, 935 (2017).

74. *Id.*

75. Gee et al., *supra* note 41 at 3.

76. Pachana et al., *supra* note 47, at 104.

bond provides health benefits.⁷⁷ Armed with this knowledge, and the knowledge that, on balance, most people will not relinquish their companion animals easily, we sought to examine the reasons for companion animal relinquishment, focusing on low income and vulnerable communities in Baltimore City. We entered into a data sharing agreement with The Baltimore Animal Rescue and Care Shelter (BARCS) and obtained its companion animal relinquishment data from 2009 to 2018.

BARCS is Maryland's largest animal shelter.⁷⁸ It is a 501(c)3 organization and receives some funding from Baltimore City for its work with Baltimore City Animal Control.⁷⁹ It is an open-access animal shelter, meaning that it is required to accept every animal brought to it by relinquishers, good Samaritans, or animal control officers.⁸⁰ BARCS aims to serve primarily vulnerable and low-income communities in Baltimore City.⁸¹ BARCS receives animals from a number of different sources, including wild and stray animals brought in by animal control and companion animals relinquished by their owners or guardians.⁸² In some instances, another shelter or an animal welfare organization may transfer an animal to BARCS.⁸³ While dogs and cats account for nearly 93% of the 108,153 animals that came into contact with BARCS from January 1, 2009, to June 19, 2018, a total of 43 species entered the shelter during that time period, including alligators, snakes, birds, fish, and horses.⁸⁴ Animals that enter the BARCS system may be euthanized, adopted out, lost pets may be returned to their owners, transferred to another shelter or organization such as the Maryland SPCA, or, in the case of wildlife, released back into the natural environment. Unfortunately, some animals die of natural causes while at the shelter.

For the purposes of our study, we focused on cats and dogs relinquished to BARCS by their owner or guardian. Relinquishers self-report reasons for leaving their companion animal(s) with BARCS by selecting from a list.⁸⁵ The list of reasons is set out in Table 6, below. The list does not include "financial stress"

77. *See supra* Part I. The Public Health Implications of the Human-Companion Animal Bond

78. *About Us*, BALTIMORE ANIMAL RESCUE & CARE SHELTER, <https://www.barcs.org/about/> (last visited Apr. 16, 2023).

79. *Id.*

80. *Id.*

81. *Id.*

82. *Frequently Asked Questions*, BALTIMORE ANIMAL RESCUE & CARE SHELTER, <https://www.barcs.org/about-faqs/> (last visited Apr. 16, 2023).

83. *About Us*, *supra* note 80.

84. *Annual Reports & Statistics*, BALTIMORE ANIMAL RESCUE & CARE SHELTER, <https://www.barcs.org/about-reports/> (last visited Apr. 16, 2023).

85. *See infra* Table 6.

or “threat of eviction,” but it does include several reasons that imply that such conditions may underlie relinquishment. For our analysis, we created groups of companion animals relinquished to BARCS, such as animals relinquished for reasons intrinsic to the animal itself (health, age, aggression, etc.), and animals relinquished for reasons pertaining to the life circumstances of the owner or guardian. A third group could include animals relinquished due to the presence of other pets that cannot coexist with the given animal or leave an owner with too few resources to support another companion animal, as well as litters resulting from the unexpected pregnancy of a pet. Clearly the division between these categories is not absolute – for instance, an animal could potentially be relinquished due to an owner’s inability to afford veterinary care, implicating both the animal’s health and the owner’s financial situation in the relinquishment. However, animals relinquished for different reasons may experience different outcomes, making this distinction meaningful.

B. Methodology

BARCS provided us with eighteen Excel spreadsheets containing its records from January 1, 2009, to June 19, 2018. Combined, the spreadsheets documented 115,428 instances of intake or provision of affordable veterinary services (see Figure 1 for a breakdown of different operations). After review by the Johns Hopkins Bloomberg Institutional Review Board and IACUC, we imported the spreadsheets into Stata 13 and merged them into a single dataset. We deleted columns containing names and contact information, leaving a total of eighty-one columns remaining in the dataset. We also developed a Stata do-file to clean the dataset for analysis by removing operations other than “owner/guardian surrender” and “return,” species other than dogs and cats, animals that were dead upon arrival to BARCS, and animals relinquished in 2018 due to our lack of data for the entirety of this year.

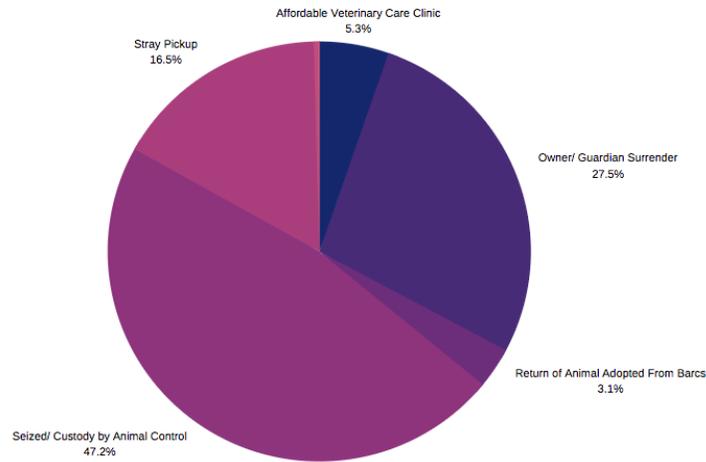


Figure 1. Distribution of Intake Operations/Services

We provided the dataset to the Bloomberg School of Public Health’s Spatial Science for Public Health Center, which geocoded observations in the “owner/guardian surrender” category and provided us with a new dataset containing only relinquishments associated with Baltimore City addresses (22,155 observations). This dataset served as the basis for our analysis, because the focus of our project is Baltimore City. However, the appendix highlights the results of the same analysis run on all 35,000+ animals relinquished to BARCS, regardless of origin.

C. BARCS Surrender Data Analysis

We began our analysis by removing sixty-nine observations that appeared to be incorrectly coded, with some variables indicating that the given animal was alive upon intake and others indicating that it was deceased. We also removed observations of animals relinquished with a euthanasia or cremation request, reasoning that these intake operations are akin to an owner “putting down” an elderly, sick or aggressive animal, rather than to a fracturing of the human-animal bond caused by poverty, housing loss, and other socioeconomic drivers. After these changes, we had a total of 19,842 intake operations involving 19,660 individual animals from January 1, 2009, to December 31, 2017.

The dataset includes several columns describing the animals taken into BARCS, including columns for species, gender, breed, estimated age, health, the extent to which any health conditions can be treated, and aggressiveness. We have some of this data displayed below. It also includes the intake date, time, and type (e.g., relinquishment), the owner’s reported reasons for relinquishment

and address, and the outcome date, time, and type (e.g., adoption). Using the intake date and time and the outcome date and time, we created a new variable indicating the number of days that each animal spent at BARCS. The following sections summarize the population of animals relinquished to BARCS from addresses in Baltimore City by the different variables in the dataset.

D. Variables

1. Age of Animals

The dataset contains both continuous and categorical variables describing the age of dogs and cats accepted by BARCS. We observed missing data for the continuous age variable for 1,430 of the 19,842 observations (7.21%), compared to missing data for the categorical age variable for only 53 of 19,842 observations (0.27%). Concerns regarding missing data, as well as the accuracy of the continuous variable (we observed negative values for some observations), ultimately led us to rely on the categorical variable for our analysis. Initially, the categorical variable distinguished between unweaned, juvenile, young adult, adult, and elderly animals, but we opted to amalgamate unweaned, juvenile, and young adult into one category representing dogs and cats up to a year in estimated age at the time of relinquishment. The BARCS data labels dogs 1-8 years as adults and dogs over 8 years as elderly, and cats 1-11 years as adults and cats over 11 years as elderly.

Of all cats 5,978 (46.66%) of all cats are juveniles, while only 1,852 (26.54%) of dogs are juveniles. Conversely, only 528 (4.20%) of all cats are categorized as elderly, while 923 (13.23%) of all dogs are categorized as elderly (Table 1).

Table 1. Age Distribution of Animals

Age Category	Cat	Dog	Total
Juvenile	5,978 (46.66%)	1,852 (26.54%)	7,830 (39.57%)
Adult	6,296 (49.14%)	4,202 (60.23%)	10,498 (53.05%)
Elderly	538 (4.20%)	923 (13.23%)	1,461 (7.38%)
Total	12,812	6,977	19,789

2. Health Status of Companion Animals

The dataset includes a categorical variable distinguishing between animals that were healthy, sick, injured, both sick and injured, or pregnant at the time of intake. All 22,088 observations in the dataset fall into one of these five categories. The dataset also includes a variable indicating the extent to which health conditions could be treated (manageable, rehabilitate-able, untreatable). The variable is missing data for 376 observations and another 260 observations are listed as “unassigned.” A total of 17,441 (87.90%) of the animals appear to be in healthy condition upon intake (Table 2). Only 881 (4.53%) of animals were found to be unhealthy or untreatable (Table 3).

Table 2. Condition of animal when taken to BARCS

Intake Condition	Cat	Dog	Total
Appears Healthy	11,523 (89.71%)	5,918 (84.58%)	17,441(87.90%)
Injured	200 (1.56%)	178 (2.54%)	378 (1.91%)
Sick	929 (7.23%)	817 (11.68%)	1,746 (8.80%)
Sick and Injured	55 (0.43%)	67 (0.96%)	122 (0.61%)
Pregnant	138 (1.07%)	17 (0.24%)	155 (0.78%)
Total	12,845	6,997	19,842

Table 3. Treatability of Animal when Relinquished

Treatable	Cat	Dog	Total
Healthy	11,095 (88.21%)	5,704 (82.82%)	16,799 (86.30%)
Treatable– Manageable	132 (1.05%)	125 (1.82%)	257 (1.32%)
Treatable – Rehabilitate-able	823 (6.54%)	446 (6.48%)	1,269 (6.52%)
Unassigned	133 (1.06%)	127 (1.84%)	260 (1.34%)
Unhealthy– untreatable	396 (3.15%)	485 (7.04%)	881 (4.53%)
Total	12,579	6,887	19,466

3. Dangerousness

The dataset includes a dichotomous variable distinguishing between animals deemed dangerous and not dangerous by BARC staff at intake, along with a categorical variable identifying the reasons underlying the determination

of dangerousness. Only 57 (0.44%) cats were deemed dangerous while 216 (3.09%) dogs were identified as dangerous (Table 4). The most prevalent indicator used to identify danger was if the animal had bitten a human (Table 5).

Table 4. Dangerousness of Animal when Relinquished

Danger	Cat	Dog	Total
No	12,788 (99.56%)	6,781 (96.91%)	19,569 (98.62%)
Yes	57 (0.44%)	216 (3.09%)	273 (1.38%)
Total	12,845	6,997	19,842

Table 5. Reason for Being Labeled “Dangerous” when Relinquished

Danger Reason	Cat	Dog	Total
Aggressive	6 (10.53%)	12 (5.55%)	18 (6.60%)
Bit Cat	1 (1.75%)	4 (0.46%)	5 (1.83%)
Bit Dog	0 (0.00%)	23 (10.65%)	23 (8.42%)
Bit Human	50 (87.72%)	177 (81.94%)	227 (83.15%)
Total	57	216	273

4. Reason for Relinquishment

The dataset includes 32 reasons for relinquishment provided by the surrendering owner/guardian at intake, listed in the table below. Since the reasons are self-reported, they could be subject to bias. Nevertheless, they do provide an overall picture of the drivers of relinquishment to BARCS. Some of the reasons (e.g., health of the animal, behavior) deal more with the relinquished animals themselves, while some point to circumstances and events in the owner’s life (e.g., homeless owner, landlord issues, cannot afford). For our analysis, we are interested in the latter, as we may be able to prevent relinquishments related to life events and circumstances of owners through interventions and the provision of services. Eviction is not specifically listed, but several reasons (e.g., moving, landlord issues, homeless owner, cannot afford) could represent proxies for the pre-conditions leading to eviction.

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Table 6. Reason for Relinquishment

Reason for Relinquishment	Cat	Dog	Total
Abandoned by owner	396 (3.08%)	187 (2.67%)	583 (2.94%)
Allergic to animal	524 (4.08%)	90 (1.29%)	614 (3.09%)
Animal control violations	28 (0.22%)	168 (2.40%)	196 (0.99%)
Behavior – aggressive to animal	75 (0.58%)	142 (2.03%)	217 (1.09%)
Behavior – aggressive to people	152 (1.18%)	235 (3.36%)	387 (1.95%)
Behavior – needs training	212 (1.65%)	210 (3.00%)	422 (2.13%)
Behavior – not housebroken	289 (2.25%)	37 (0.53%)	326 (1.64%)
Cannot afford	732 (5.70%)	465 (6.65%)	1197 (6.03%)
Change in lifestyle	309 (2.41%)	259 (3.70%)	568 (2.86%)
Death of owner/family	250 (1.95%)	115 (1.64%)	365 (1.84%)
Divorce/separation	39 (0.30%)	54 (0.77%)	93 (0.47%)

Existing pets disliked the animal	232 (1.81%)	70 (1.00%)	302 (1.52%)
Health of animal	964 (7.50%)	935 (13.36%)	1,899 (9.57%)
Health of owner/family	506 (3.94%)	300 (4.29%)	806 (4.06%)
Homeless owner	269 (2.09%)	163 (2.33%)	432 (2.18%)
Insurance restrictions	7 (<0.00%)	12 (0.17%)	19 (<0.00%)
Landlord issues	672 (5.23%)	663 (9.48%)	1,335 (6.73%)
Military transfer/deployed	15 (0.12%)	27 (0.39%)	42 (0.21%)
Moving	1,395 (10.86%)	979 (13.99%)	2,374 (11.96%)
Not enough time	223 (1.74%)	432 (6.17%)	655 (3.30%)
Owner arrested	26 (0.20%)	65 (0.93%)	91 (0.46%)
Public housing authority lease	2 (<0.00%)	1 (<0.00%)	3 (<0.00%)
Personal issues	445 (3.46%)	259 (3.70%)	704 (3.55%)
Physical – too big/small/old/young	21 (0.16%)	82 (1.17%)	103 (0.52%)
Pit bull ruling	NA	46 (0.66%)	46 (0.23%)
Pregnant animal/unwanted litter	420 (3.27%)	67 (0.96%)	487 (2.45%)

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Pregnancy of owner/new baby	144 (1.12%)	73 (1.04%)	217 (1.09%)
Sheds	210 (0.16%)	0 (0%)	21 (0.11%)
Too many animals	3,693 (28.75%)	333 (4.76%)	4,026 (20.3%)
Too much responsibility	522 (4.06%)	434 (6.20%)	956 (4.82%)
Travel too much	5 (<0.00%)	8 (0.11%)	13 (<0.00%)
Unwanted gift	257 (2.00%)	86 (1.23%)	343 (1.73%)
Total	12,845	6,997	19,842

5. Year

The analyzed relinquishment dataset includes nine years of data, from 2009 to 2017 separated by type of animal. Since 2009, the number of dogs and cats relinquished annually from Baltimore City has declined, with dog relinquishments experiencing a larger decrease (- 63%) than cats (- 57%) (Figure 2). In 2017, the number of cat relinquishments was more comparable to that of dogs than in 2009. However, the crude number of cat relinquishments remained higher than dogs throughout the eight-year period.

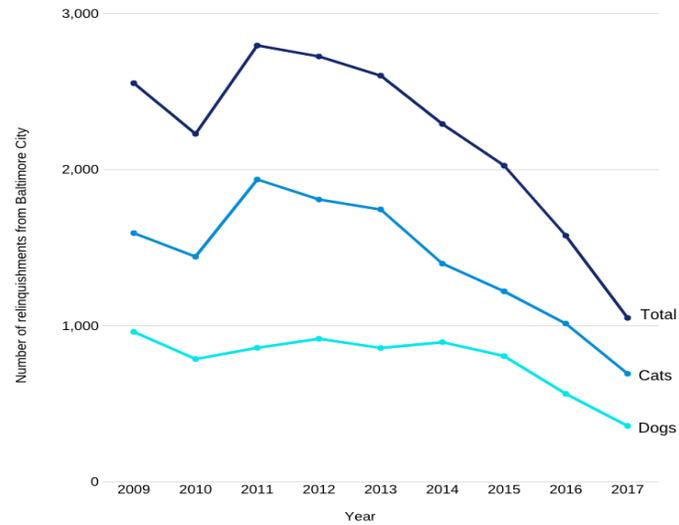


Figure 2. Relinquishments in Baltimore City from 2009-2017.

The decrease in annual relinquishments from 2009 to 2017 are potentially due to BARCS's programs to help prevent relinquishment. These programs include a pet food pantry for owners struggling to feed their animals and clinics providing free and affordable veterinary services.⁸⁶ This trend is highlighted in Figure 3 below.

86. Resources, BALTIMORE ANIMAL RESCUE & CARE SHELTER, <https://www.barcs.org/resources/> (last visited Apr. 16, 2023).

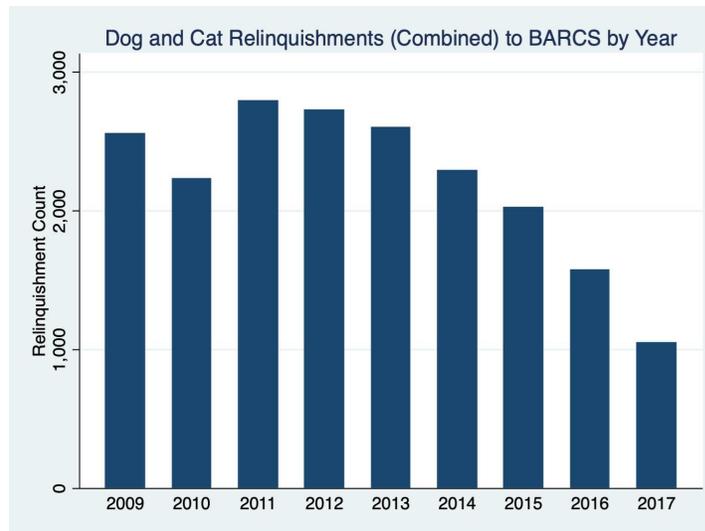


Figure 3: Dog and Cat Relinquishments, by year

6. Time

The time variable indicates the number of days each animal spent at BARCS. The time varies substantially by species and outcome (i.e., adopted, transferred). Cats spend longer periods of time at BARCS than dogs, with the median amount of time being six days and two days respectively. Animals that are adopted or transferred to another shelter/organization spend longer periods of time at BARCS, with the median amount of time being thirty-six days and seven days respectively. Ultimately, we did not include the time variable in the models, because the outcome likely predicts the time spent in the shelter rather than the time spent in the shelter predicting the outcome.

7. Analysis of Outcome

From 2009 to 2017, 61.84% of dogs and 68.31% of cats were adopted or transferred to another shelter or organization. Approximately 1% of cats and 3.3% of dogs were returned to their owner or guardian. This suggests that relinquishment usually ends the bond between a person and their companion animal. A small percentage of dogs and cats died while at BARCS or lacked identification of outcome.

Table 7. Outcome of animals relinquished to BARCS by species

Outcome Type	Cat	Dog	Total
Admin Missing	19 (0.15%)	10 (0.14%)	29 (0.15%)
Adoption	5,905 (45.97%)	1,978 (28.27%)	7,883 (39.73%)
Died	104 (0.81%)	19 (0.27%)	123 (0.62%)
Euthanasia	3,819 (29.73%)	2,407 (34.40%)	6,226 (31.38%)
Return to Owner/ Guardian	129 (1.00%)	234 (3.34%)	363 (1.83%)
Transfer Out	2,869 (22.34%)	2,349 (33.57%)	5,218 (26.30%)
Total	12,845	6,997	19,842

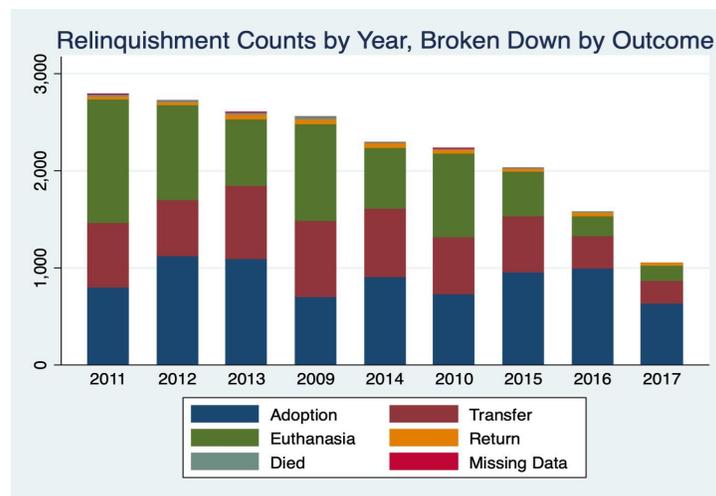


Figure 4: Relinquishment by Year and Outcome

8. Reasons for Relinquishment

Relinquishers were asked to provide a reason for relinquishment. There was no specific choice that directly asked about financial distress. However, based on the choice descriptions, we were able to divide the reasons for relinquishments into three different groups; human-centric, animal-centric, and other (see Tables 8 & 9). Human-centric reasons are any reason caused by human circumstances, in or out of the relinquisher's control. Animal-centric reasons are any reason pertaining specifically to the animal, such as animal behavior, animal health, or allergies. The "other" category includes reasons for relinquishment that do not meet the definitions of human-centric or animal-centric relinquishment. Our analysis focused on human-centric reasons for relinquishment because the human-centric reasons likely indicate financial distress or other underlying conditions that could lead to housing loss.

Our team also mapped the addresses of the animal relinquishments. Based on the data for cats and dogs, we discovered that relinquishments were clustered in communities that characteristically are more likely to experience financial stress. Figure 1 shows that the majority of relinquishments are from Baltimore City neighborhoods (shown in the maps as community statistical areas) where the population is living below the poverty line. In other words, the communities that come to BARCS are Baltimore citizens that are more likely to experience financial stress and its attendant consequences. This analysis indicates that BARCS serves the very population that is at high risk for housing loss. This is a community that could directly benefit from early interventions related to housing preservation. BARCS or another organization could provide resources and information to these citizens to hopefully stop eviction and animal relinquishment.

Table 8: Reasons for Relinquishments divided into different categories. Variable number 1 is human-centric reasons, variable number 2 is animal centric reasons, and variable 0 is other reasons for relinquishment.

Reasons for Relinquishment	Variable number			Grand Total
	0	1	2	
Abandoned by Owner	567			567
Allergic to Animal			608	608
Animal Control Violations			196	196
Behavior- aggressive to animal			215	215
Behavior- aggressive to people			379	379
Behavior- needs training			417	417
Behavior- not housebroken			321	321
Cannot Afford	1151			1151
Change in Lifestyle	542			542
Death of Owner / Family	341			341
Divorce / Separation	92			92
Existing pets disliked animal			293	293
Health of Animal			1770	1770
Health of Owner / Family	778			778
Homeless owner	420			420
Insurance Restrictions	19			19
Landlord Issues	1306			1306
Military Transfer/deployed	42			42
Moving	2339			2339
Not Enough Time	645			645
Owner Arrested	89			89
Personal Issues	691			691
Physical- too big/sm/old/young			96	96
Pit Bull Ruling	46			46
Preg. animal/unwanted litter			424	424
Pregnancy of Owner/new baby	201			201
Public Housing Authority Lease	3			3
Sheds			18	18
Too Many Animals			3638	3638
Too Much Responsibility		921		921
Travel too much	13			13
Unwanted Gift	317			317
Grand Total	943	9580	8375	18898

Table 9: A breakdown of human-centric, animal-centric, and other reasons for relinquishment. As shown in the table, human-centric reasons for relinquishment make up the majority of the reasons for surrendering a companion animal.

Reason	Number	Percentage
Human-Centric	9580	50.69%
Animal-Centric	8375	44.32%
Other	943	4.99%
Total	18898	

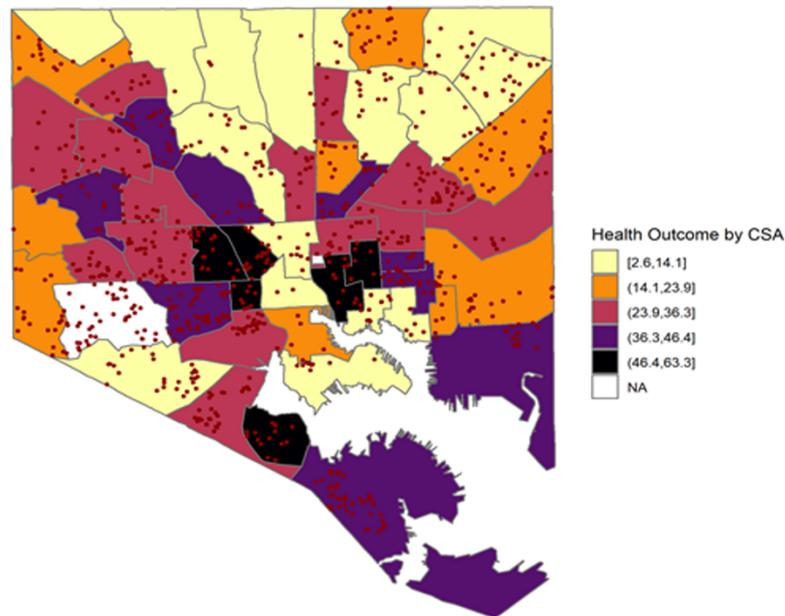


Figure 5: Relinquishments over percent living below the poverty line divided into community service areas (CSA). Higher rates of people living below the poverty line are indicated by black, purple, and pink. The red dots are specific addresses of relinquishers in 2017.

Analyzing relinquishments and socioeconomic factors shows that designing interventions around companion animal relinquishment at BARCS could be feasible. First, more than half of the reasons for relinquishment point toward human factors and financial stress. Second, BARCS serves the communities most at risk for housing loss, and thus is a focal point for those most likely to benefit from assistance.

III. THREE STRATEGIES (AND RELATED INTERVENTIONS) TO POTENTIALLY PREVENT HOUSING LOSS

Based on the analysis presented above, approximately half of the relinquishments occurred due to human-centric reasons. Many, if not most, of these reasons are likely related to financial stress. Therefore, offering housing loss prevention to people who cite human-centric reasons for giving up their pets would result in positive public health outcomes.

To reduce relinquishments and evictions, we developed three strategies to alleviate the financial stress associated with companion animals and housing. Each strategy includes a set of feasible interventions. Strategy 1 relies on a waiver for a subset of Medicaid recipients. Strategy 2 involves designing and implementing an Accountable Health Community model using the grant awarded by the Centers for Medicaid and Medicare to Baltimore City Health Department. Strategy 3 utilizes existing Hospital Benefit Programs to address housing issues. Each of the three strategies and their interventions could support pet owners facing the possibility of eviction by connecting individuals with information and resources before eviction occurs.

A. *Strategy 1: Medicaid Home and Community-Based Services Waiver*

As a first step, pet owners who seek relinquishment should be triaged based on their (1) home address and (2) reason(s) for relinquishment. It is possible that other professional services, such as social services, could be useful to this population. An organization such as Maryland Legal Aid can assist pet owners in obtaining available resources including Medicaid waivers when applicable.

Medicaid is a form of health insurance allocated to adults under 65 within 138% of the Federal Poverty Line.⁸⁷ Every state is required to offer mandatory Medicaid.⁸⁸ However, states can offer additional benefits to qualifying participants. One such benefit is the Home and Community-Based Service waiver (HCBS waiver).⁸⁹

Through HCBS waivers, Medicaid can assist qualifying recipients by evaluating housing needs, producing personalized housing support plans, and facilitating connections to ensure the continuation of existing rental or leasing

87. *Am I Eligible for Medicaid?*, MD. DEP'T OF HEALTH, <https://health.maryland.gov/mmcp/Pages/Apply%20for%20Medicaid.aspx> (last visited Apr. 16, 2023).

88. *Mandatory & Optional Medicaid Benefits*, CTRS. FOR MEDICARE & MEDICAID SERVS., <https://www.medicaid.gov/medicaid/benefits/mandatory-optional-medicaid-benefits/index.html> (last visited Apr. 16, 2023).

89. *Home & Community Based Services 1915(c)*, CTRS. FOR MEDICARE & MEDICAID SERVS. [hereinafter HCBS 1915(c)], <https://www.medicaid.gov/medicaid/home-community-based-services/home-community-based-services-authorities/home-community-based-services-1915c/index.html> (last visited Apr. 16, 2023).

agreements. HCBS waivers can also be used to identify and address barriers preventing participants from retaining stable housing.⁹⁰ Since Medicaid cannot be used to pay for housing (rent, or room and board), HCBS waivers are a critical resource.

It is appropriate, and within the scope of the Medicaid law, for beneficiaries to use HCBS Waivers to receive financial assistance to both prevent housing loss and the surrender of companion animals. HCBS waivers should connect individuals with resources to cover certain costs associated with companion animals such as pet deposits and monthly pet fees. Utilizing HCBS waivers to eliminate some financial strain could help residents keep their homes, and safeguard the bond between residents and their animal companions.

Maryland established a HCBS Waiver Program to provide more comprehensive support to participants.⁹¹ The goal of the waivers is to provide support to individuals needing long-term care but wanting to avoid an institutional setting.⁹² Appendix C of the Application for the HCBS Waiver, discusses housing support services.⁹³ Service requirements include “identifying resources for security deposit, moving costs, furnishings, assistive technology, environmental modifications, utilities, and other one-time costs” and “advocacy and linkage with community resources to prevent eviction.”⁹⁴ Since the inability to pay monthly pet fees could lead to eviction, a pet-deposit should be categorized as a “one-time cost.” Qualifying individuals could use the waiver to access the resources necessary to retain housing. Individuals could also receive support in the form of an “individualized housing support plan,” which would address any obstacles to finding or retaining housing.⁹⁵

Unfortunately, the HBCS waiver is only available to a narrow subset of Medicaid Beneficiaries. While the number of people who enrolled in Medicaid increased by 53 percent between 2013 and 2017,⁹⁶ 15.90 percent of Baltimore City residents living at or below 138 percent of the Federal Poverty Level are

90. *Id.*

91. *Home & Community Based Services*, MD. DEP’T OF HEALTH, <https://health.maryland.gov/mmcp/waiverprograms/pages/home.aspx> (last visited Apr. 16, 2023).

92. *Id.*

93. *Application for 1915(c) Home and Community Based Services Waiver*, CTRS. FOR MEDICARE & MEDICAID SERVS. [hereinafter 1915(c) Application], <https://www.medicaid.gov/medicaid/section-1115-demo/demonstration-and-waiver-list/81941> (click “Approval Application” under “Supporting Documents”) (last visited Apr. 16, 2023).

94. *Id.*

95. *Id.*

96. Louise Norris, *Maryland and the ACA’s Medicaid Expansion*, HEALTH INS. & HEALTH REFORM AUTH. (Mar. 21, 2023), <https://www.healthinsurance.org/medicaid/maryland>.

uninsured (Figures 6 and 7).⁹⁷ This population also has the highest rate of companion animal relinquishment in 2017 (Figure 5), and the highest eviction rates. (Figure 8).

Our analysis shows that using HCBS waivers to prevent housing loss and companion animal loss would safeguard human health and animal welfare. Medicaid can support qualifying individuals at risk of eviction by providing housing support, such as fees associated with companion animals. As a result, people and their companion animals can stay together and remain housed.

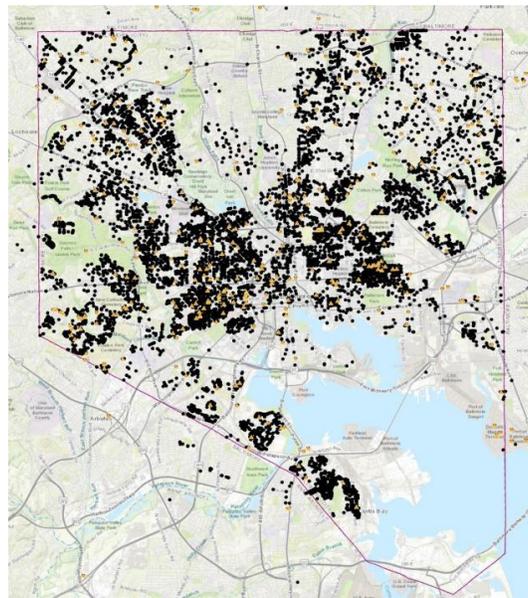


Figure 8. Map displaying addresses in Baltimore City in 2017 where courts issued warrants of restitution. The clusters of warrants of restitution cases overlap with the areas of poverty and high rates of relinquishment.

Interventions for Strategy 1: Medicaid HCBS Waiver

To implement our first strategy, we identified the following potential interventions, with a focus on information and resource sharing:

⁹⁷ Percent Uninsured by Income Level, OPEN DATA NETWORK, https://www.opendatane트워크.com/entity/0500000US24510/Baltimore_city_MD/health.health_insurance.pctui?year=2014&age=18%20to%2064&race=All%20races&sex=Both%20sexes&income=All%20income%20levels (last visited Apr. 16, 2023).

1. Develop a phone application (app) for low-income companion animal owners that provides information about, and links for access to, legal and financial information, and guidance to assist them in addressing their financial and companion animal-related problems. The app would include prompts used to determine if individuals are eligible for the Medicaid HCBS Waiver. An app would be an efficient and effective way to reach this population due to the popularity and ease of smartphone usage. The app could be advertised on the BARCS and Charm City Companions websites as well as on flyers at each location. The app could include a questionnaire that would assess whether an individual could utilize the HCBS waiver.
2. Provide free or sliding scale veterinary services and pet supplies to alleviate the financial burden underlying certain animal relinquishment cases.⁹⁸ Research suggests that people often put the health needs of their companion animals before their own⁹⁹ (Michigan National Poll on Health Aging). This intervention would allow low-income individuals to care for their companion animal without sacrificing their own health. The app suggested above could include this information. Additionally, individuals using these services can be contacted about HCBS waivers and given more information if they are identified as Medicaid participants or eligible for Medicaid.
3. Provide a suite of professional services at BARCS such as legal services (similar to the “Lawyer in the Library” Program), an animal law clinic program, or a housing law clinic program skilled in Medicaid law to assist individuals with Medicaid or who are eligible for Medicaid.

B. Strategy 2: Accountable Health Communities Model

The Center for Medicaid and Medicare Innovation (CMMI) awarded the Baltimore City Health Department a 4.3 million dollar grant in 2017 intended to be used over five years to analyze and address social factors contributing to health outcomes.¹⁰⁰ The Baltimore City Health Department must “design,

98. Cathleen Connell et al., *Pets Help Older Adults Cope with Health Issues, Get Active and Connect with Others, Poll Finds*, U. MICH. INST. FOR HEALTHCARE POL’Y & INNOVATION (Apr. 3, 2019), <https://ihpi.umich.edu/news/pets-help-older-adults-cope-health-issues-get-active-and-connect-others-poll-finds>.

99. *Id.*

100. *Baltimore Accountable Health Community*, BALT. CITY HEALTH DEP’T, [hereinafter *Baltimore Accountable Health Community*] <https://health.baltimorecity.gov/baltimore-accountable-health-community> (last visited Apr. 16, 2023).

implement, and evaluate” an Accountable Health Communities (AHC) model¹⁰¹ serving Baltimore to “both address beneficiaries’ health-related social needs as well as drive stakeholder alignment with social needs resources.”¹⁰² The AHC model is a CMMI Innovation model focused on clinical-community collaboration.¹⁰³

The AHC model focuses on four topics:¹⁰⁴

1. Utilizing screening tools to identify Medicaid and Medicare beneficiaries at “all participating healthcare providers;”
2. referring qualifying beneficiaries to “an AHC navigation hub;”
3. tracking and sharing data; and
4. collaborating with stakeholders at the city and state level to adequately recognize social needs and provide solutions to shortcomings.¹⁰⁵

During the first two years of the Baltimore City program, the AHC model “offered screening to over 3,000 patients at 10 unique clinical delivery sites” in addition to “navigat[ing] over 1,000 patients to over 100 community-based organizations offering essential HRSN resources.”¹⁰⁶ Johns Hopkins Hospital, Johns Hopkins Bayview, and Medstar Harbor Hospital are three of the ten clinical sites.¹⁰⁷

In July 2020, Baltimore City released a report evaluating the first two years of the program.¹⁰⁸ The report measured progress and acknowledged areas of improvement.¹⁰⁹ The City specifically identified “strengthen[ing] partner alignment” as an area of improvement.¹¹⁰ The report concluded that health-related social needs were strongly related to health inequities in Baltimore City.¹¹¹ The report noted “a history of underinvestment and population loss,

101. 43 U.S.C. § 1396n § 1915(c). Section 1115A of the Social Security Act (as added by Section 3021 of the Patient Protection and Affordable Care Act) authorizes The Accountable Health Communities (AHC) model.

102. *Baltimore Accountable Health Community*, *supra* note 102.

103. *Accountable Health Communities Model*, CMS, (Apr. 13, 2023), <https://innovation.cms.gov/innovation-models/ahcm>.

104. BALT. CITY HEALTH DEP’T, BALTIMORE ACCOUNTABLE HEALTH COMMUNITIES: INTERIM REPORT 4 (2020) [hereinafter INTERIM REPORT].

105. *Baltimore Accountable Health Community*, *supra* note 102.

106. *Id.* at 2.

107. *Id.* at 7.

108. INTERIM REPORT, *supra* note 106, at 3.

109. *Id.*

110. *Id.* at 3.

111. *Id.* at 2, 4.

redlining policies, and structural racism in certain Baltimore City communities [which] has contributed to current unmet health related social needs (HRSNs) such as financial strain, food insecurity, and unstable or inadequate housing.”¹¹²

The most relevant component of the AHC Model is the CHARMcare Council, which includes Community Based Organizations and governmental and clinical stakeholders.¹¹³ The CHARMcare Council focuses on identifying and improving available resources as well as assessing AHC referrals.¹¹⁴

BARCS and Charm City Companions (CCC) are good candidates for the CHARMcare Council as they could provide valuable information to stakeholders. BARCS and CCC could also connect Medicaid beneficiaries with resources that would alleviate housing costs, including costs accompanying companion animals such as pet deposits and monthly pet fees. In advocating for resources, BARCS and CCC could stress the positive impact companion animals have on human health.

Interventions for Strategy 2: Accountable Health Communities Model

To implement our second strategy, we identified the following potential interventions:

1. Provide informational brochures that contain general and contact information for organizations that can support pet owners in crisis. People who must relinquish their companion animals during times of crisis may not know what resources are available or how to access services. Creating a brochure of such services, and categorizing them by topic (housing aid, legal aid, veterinary care, mental health, professional services) can guide users in taking the necessary steps to keep their companion animals. The brochure could be offered at the navigation hub within ACH.
2. Develop a phone application (app) for low-income companion animal owners that provides information about, and links for access to, legal and financial information relating to their financial and companion animal related problems. An app would be an efficient and effective way to reach this population due to the popularity and ease of smartphone usage. The app could be offered at the navigation hub within the ACH model.
3. Establish a formal, Baltimore Citywide intervention task force. The task force would meet regularly and facilitate discussion between

112. *Id.* at 3.

113. *Id.* at 11.

114. *Id.*

homelessness advocates and animal welfare advocates about how companion animal ownership and housing are related. The task force could nominate a member, or members, to join the CHARMcare Council.

4. Develop a community ambassador program to organize and facilitate meetings among community members. Community ambassadors would have valuable insight because they know what problems that community members face and what resources are available. Community ambassadors should join the CHARMcare Council and share their insights

C. Strategy 3: Hospital Community Benefit Programs

Nonprofit hospitals are required to fund community projects for communities in their catchment area to keep their tax-exempt status.¹¹⁵ These Hospital Community Benefit Programs can potentially help patients who are facing financial crises and potential housing and companion animal loss. After the AHC grant expires, Hospital Community Benefit Programs could utilize the infrastructure the AHC model developed to connect patients with resources.

Based on our relinquishment, income, and poverty data, the zip codes of main concern are: 21225, 21213, 21205, 21224, 21230, 21223 and 21231.¹¹⁶ As shown in Figure 9, the areas with the most human centric reasons for relinquishing animals correlate with those living in poverty. These areas fall into the catchment areas of Johns Hopkins and Johns Hopkins Bayview (Figure 10), Bon Secours Hospital, and Medstar Harbor Hospital.

115. *Charitable Hospitals – General Requirements for Tax-Exemption Under Section 501(c)(3)*, INTERNAL REVENUE SERV., <https://www.irs.gov/charities-non-profits/charitable-hospitals-general-requirements-for-tax-exemption-under-section-501c3> (last updated July 15, 2022).

116. *See supra* Figure 8.

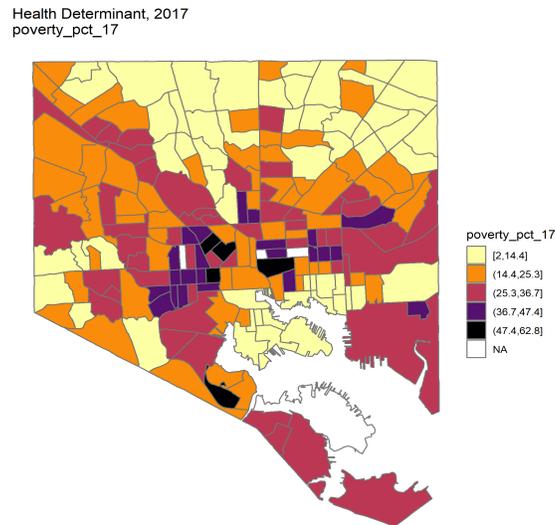


Figure 9. Human-caused or human-centric relinquishments per 1,000 people by census tract in 2017. The black, purple, and pink areas indicate areas with higher rates of relinquishment due to human-centric reasons (often suggesting financial stress). These areas show where our team would want to focus our efforts.

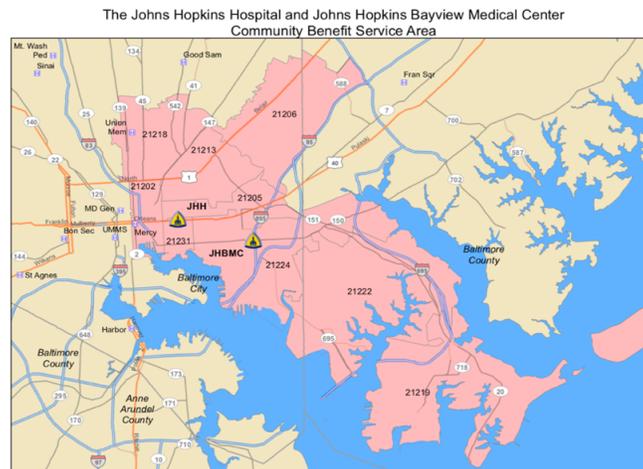


Figure 10. The Johns Hopkins Hospital and Bayview Medical Center community benefit service area. These service areas overlap with some of the high rates of poverty, low income, and high rates of animal relinquishments in Baltimore City indicating where the focus of our intervention strategies should be.

In the most recent Community Benefit Narrative Report, Johns Hopkins Bayview recognized housing/homelessness as one of the health needs in its community benefit services area.¹¹⁷ However, Bayview does not have community health programs related to housing.¹¹⁸ Johns Hopkins Hospital has a program called Health Leads which provides resources to those in need of shelter, food, clothing, and job training assistance.¹¹⁹ This report also identifies 43.9% of individuals in the community benefit service area for both Hopkins hospitals use public insurance, such as Medicaid.¹²⁰

Medstar Harbor Hospital's community benefit program focuses on communities within the 21225 zip code, which surrounds the hospital and has high rates of poverty.¹²¹ Medstar Harbor Hospital's most recent Community Benefit Narrative Report identified services for the area's homeless population as a gap in their program.¹²² However, Medstar Harbor Hospital does not currently have housing initiatives. Moving forward, Medstar Harbor Hospital should focus on creating housing initiatives and addressing costs associated with animal companions.

Bon Secours Hospital's community benefit program has three objectives: healthy people, healthy economy, and healthy environment.¹²³ To fulfill their objectives, the hospital has an eviction prevention program and financial assistance program to prevent housing loss and homelessness.¹²⁴ Bon Secours Hospital connects homeless individuals with community support and offers affordable apartment units in Baltimore to families and individuals.¹²⁵

Interventions for Strategy 3: Hospital Community Benefit Programs

To implement our third strategy, we identified the following potential interventions:

117. JOHNS HOPKINS HOSP., JOHNS HOPKINS HEALTH SYSTEM FISCAL YEAR 2018 COMMUNITY BENEFITS REPORT NARRATIVE 13, 17 (2018) [hereinafter FY18 REPORT].

118. *Community Health Needs Initiatives*, JOHNS HOPKINS MED., https://www.hopkinsmedicine.org/about/community_health/johns-hopkins-bayview/health_needs_initiatives/ (last visited Apr. 16, 2023).

119. FY18 REPORT, *supra* note 119, at 16.

120. JOHNS HOPKINS HOSP., JOHNS HOPKINS HEALTH SYSTEM FISCAL YEAR 2017 COMMUNITY BENEFITS REPORT NARRATIVE 6 (2017).

121. *Id.* at 40.

122. MD. HEALTH SERVS. COST REV. COMM'N, MEDSTAR HARBOR HOSPITAL FY 2018 COMMUNITY BENEFIT NARRATIVE REPORT (2018).

123. MD. HEALTH SERVS. COST REV. COMM'N, BON SECOURS HEALTH SYSTEM 2017 COMMUNITY BENEFIT REPORT 9 (2017).

124. *Id.* at 18.

125. *Id.*

1. Create and distribute informational materials highlighting the importance of offering and supporting pet-friendly stable housing options to hospitals in the Baltimore area. F
2. Provide additional materials should be tailored for the houseless community to list beneficial programs and services. These materials should be available at animal shelters.
3. Establish a formal, Baltimore Citywide intervention task force that meets regularly and facilitates discussion between homelessness advocates and animal welfare advocates. The task could reach out to hospitals to advocate for housing programs within Hospital Community Benefit programs.
4. Develop a community ambassador program to organize and facilitate group meetings. Community ambassadors have a unique perspective because they are familiar with the problems in the community and also know what resources are available. Members should gather community support to persuade hospitals to address housing instability within Hospital Community Benefit programs.

IV. CONCLUSION

The bond between humans and companion animals positively affects human health. This connection is part of the growing public health initiative known as One Health, which focuses on the interplay between human, animal, and environmental health.¹²⁶ Our data analysis reveals that a sizable number of animals are relinquished for human-centric financial reasons. Individuals under financial stress who relinquish a companion animal may be at risk of eviction due to a lack of financial resources.

After extensive analysis of over nine years of data, our team suggests pursuing three strategies to reduce relinquishments and combat housing loss in the Baltimore area: (1) utilizing Medicaid waivers for a subset of eligible beneficiaries; (2) encouraging BARCS and Charm City Companions to join CHARMcare council; and (3) expanding existing Hospital Community Benefit programs to include housing resources.

These strategies use pre-existing programs to help sustain the healthy bond between humans and animals, promote financial stability, and keep humans and animals in their homes. The proposed strategies would connect individuals with resources to remain in stable housing and retain companion animals. If services or information were available where individuals go to relinquish companion animals, like BARCS, individuals could connect with representatives from Maryland Legal Aid, and file necessary paperwork to access available resources. The strategies would alleviate some financial

126. CTRS. FOR DISEASE CONTROL & PREVENTION, *supra* note 20.

burden on individuals with companion animals and potentially keep individuals and companion animals together in stable housing.

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