The Health Care Cost Savings of Pet Ownership

Prepared for: The Human Animal Bond Research Initiative (HABRI) Foundation

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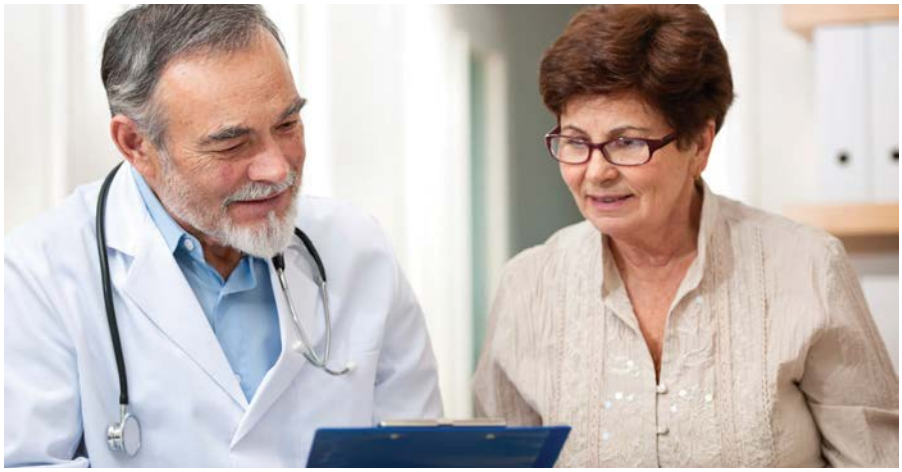
Executive Summary

The following reports the findings of our analysis of the healthcare cost savings associated with the human-animal bond (HAB) associated with pet ownership. Using quantitative data obtained from previous studies, we estimate the health care cost savings are attributable to pet ownership. Our research does not include the distinct, and valuable, health and quality of life benefits achieved through service and therapy animals.



The evidence of the health benefits of pet ownership is reflected in a growing body of academic and professional research. Still, relatively few studies provide the data needed to specifically assess the potential savings in healthcare costs. Nevertheless, there are two areas where we can make conservative estimates of the contributions of pet ownership to lowering total healthcare spending:

1. Fewer physician office visits by pet owners; and
2. Reduced incidence of obesity among dog owners who frequently walk their pets.

Data, assumptions, and key findings of this analysis include:

- The 2015-2016 National Pet Owners Survey from the American Pet Products Association reports that 65 percent of all households in the United States have one or more pets, equating to an estimated 132.8 million adult pet owners. Households with one or more dogs represent 44 percent of all United States households, or 89.9 million adults.
- Studies from multiple nations report that pet owners go to a physician's office less often than non-owners. The most conservative of these research findings reports an average of 0.6 fewer visits per year. The average cost of each physician office visit is assumed to be $139.
- 23 percent of dog owners walk their dog 5 or more times per week. The incidence of obesity among people who regularly walk their dogs is 5 percent lower than non-pet owners, which results in decreasing obesity-related healthcare spending by $419 million per year.
- Because this analysis is limited and conservative, total health care cost savings associated with pet ownership is likely to be even greater. Further research will allow us to better quantify the substantial impact that pet ownership has on reducing healthcare expenditures in the United States.

Table 1: Annual Health Care Cost Savings of Pet Ownership Physician Visits and Obesity Treatment

Savings Related to Physician Office Visits	$11,370,651,000
Savings Related to Obesity Treatments	$419,228,000
Total Annual Cost Saving	$11,789,879,000

Source: authors' estimates

Report Findings

Introduction

The following reports the findings of our analysis of the healthcare cost savings associated with the human-animal bond (HAB) associated with pet ownership. We begin with an overview of the history of research on the human-animal bond and then report on the theoretical constructs that form the basis of our understanding of the dynamics of HAB. This is followed by an examination of the literature assessing the health benefits of pet ownership. Our research does not include the distinct, and valuable, research regarding the health and quality of life benefits achieved through service and therapy animals. Based on those studies that offer the requisite quantitative data, we then estimate the health care cost savings attributable to pet ownership.

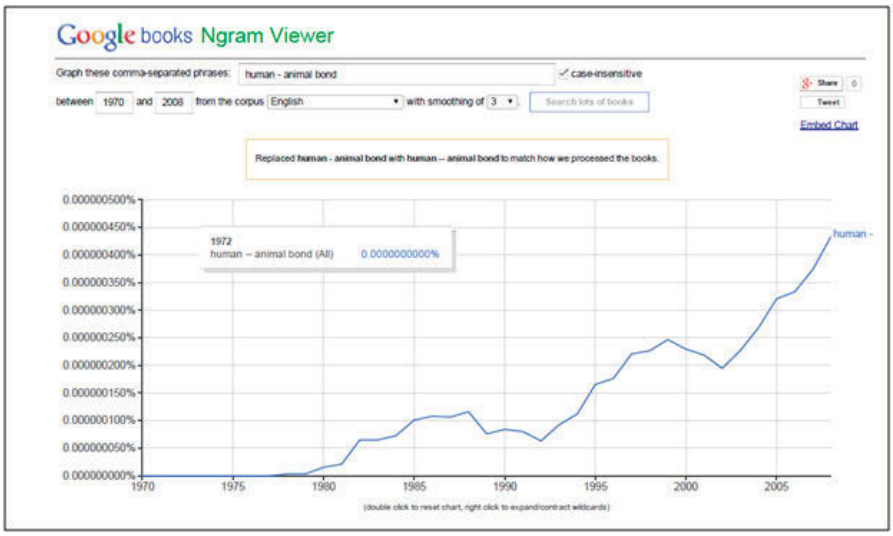
Cultural Presence

Animals, more specifically pets, are playing more centralized role within social and cultural phenomenon. The ongoing Google Books Project has currently amassed more than 15 million books that are estimated to represent approximately 12 percent of all books published since the introduction of the printing press (Bohannon, 2010; Michel et al., 2011). This effort has resulted in a series of data sources that allow analysis of the written culture of the world in a manner previously thought impractical or impossible. Its Ngram Viewer is the largest cultural database, with over five million books and over five hundred billion words, which enables a dynamic analysis of key concepts as they appear in written culture. The database originators, Jean-Baptiste Michel and Erez Lieberman Aiden, have coined the term 'culturomics' to describe this major advance in our ability to quantify written culture *(Culturomics, n.d.)*.

Ngrams are words or series of words that appear in literature (a 1-gram is a single word; a bigram, a 2-word sequence; a trigram, a 3-word sequence; etc…). For this analysis, the Ngrams associated with human-animal bonding and its non-case sensitive variants were analyzed. From the results shown in Figure 1, it is easy to identify the era and directional strength of cultural penetration in the English lexicon. The term human-animal bond was effectively non-existent until the late 1970s, but has since shown rapid gains in usage signifying the emergence of a variety of research streams that explore psychological, cultural, and medical aspects of the human-animal bond.

Health Impacts

Since a 1980 seminal study showing the relationship between pet ownership and long term survivability from a heart attack (Freidman, et al, 1980), there has been a growing body of research examining specific health effects of pet ownership. The following reviews a sample of the relevant literature focusing on studies offering quantitative measures of health outcomes. In addition, while the literature is international in scope, we focus on studies from developed western nations (Germany, United Kingdom, and Canada) or countries with similar cultural traditions with the United States (Australia). We separate the literature by type of health impact measured.



Physician Visits.

Reporting the findings of longitudinal studies of the population health, Heady and Grabka (2007) report fewer physician office visits for pet owners in Germany and Australia. In Germany, pet owners visited a doctor's office 11.0 times per year versus 12.9 times per year for non-owners, a 15.8 percent reduction. Using multiple data analysis techniques to control for a wide range of demographic factors, the percentage reductions in physician visits between pet owners and non-owners ranges from 7.5 percent to 25 percent. In Australia, pet owners visit a physician 4.9 times in a year versus 5.6 times for non-owners, 12.5 percent lower. This difference estimate is lowered to 11 percent after controlling for other variables affecting health. Similarly, Siegel (1990) reported fewer annual doctor visits by pet owners (8.42 visits per year) and non-owners (9.49 visits per year), a reduction of 11.3 percent. Siegel further observed that dog owners have lower average rate of physician visits compared to other pet owners at 8.2 visits per year.

Infections.

Decristophoris (2012) examined risk factors associated with the spread of multi-drug resistant staphylococci among nursing home residents with pet contact. The research observed a lower percent infection rate among residents who had contact with pets. Multi-drug resistant infections are difficult and costly to treat.

Cardiovascular Disease.

A 2013 Scientific Statement from the American Heart Association offers the most comprehensive review of studies regarding the impacts of pet ownership on cardiovascular disease (Levine, et al). Summary impacts by disease include:

- **Hypertension:** Some of the reviewed studies indicate lower blood pressure among pet owners, but the literature is mixed, especially when other health factors are included in the research. The only study using randomized test designs is reported in an unpublished

conference paper, but found that pet owners have lower blood pressure than non-owners. Importantly, this study observed that when non-owners became pet owners, they also enjoyed subsequent lower blood pressure levels. With only 30 participants, while informative, this research does not offer sufficient quantifiable impacts to estimate population effects that could be quantified.

- **Cholesterol:** There are a few studies that observe clinically modest improvements in blood cholesterol associated with pet ownership (total cholesterol counts of 201 versus 206). However, these differences are too small to assume changes in healthcare expenditures. Similarly, there is also a small effect observed in triglyceride levels. The exception is one small study of 32 individuals that reported a clinically meaningful drop in triglycerides among seniors aged 60 and above with average rates for pet owners at 109 mg/dl versus 192 mg/dl for non-owners. A triglyceride level of 192 is borderline high and could lead to a prescription drug treatment regimen.

- **Physical Activity:** There are several studies that have found that dog owners who walk their dogs have higher levels of physical activity. The implication of these studies is that the additional exercise can lead to improved health. The studies reviewed only examine difference in physical activity among dog owners.

- **Obesity:** Closely related to physical activity, the incidence of obesity (BMI > 30 kg/m2) is measured at 17 percent for dog walkers, 22 percent for non-owners, and 28 percent for dog owners who do not walk their dog. One of the cited studies (Cutt, et al, 2008), reports that 23 percent of dog owners walk their dog 5 or more times per week.

- **Stress:** Owning a pet reduces reactivity stress. As an example, one study provided pets to individuals in high-stress occupations. Blood pressure, heart rate, and plasma renin activity all decreased after having a pet for 6 months. These same type of benefits occur among individuals with high cardiac risk factors that some studies associate with decreased cardiac mortality. Interestingly, this literature on stress reduction covers many types of pets, other than dog and cats, including snakes, fish, chimpanzees, and goats.

The American Heart Association review concludes that: "pet ownership, particularly dog ownership, is probably associated with decreased [cardiovascular disease]" and that "pet ownership, particularly dog ownership, may have some causal role in reducing [cardiovascular disease] risk." (Levine, et al, 2013, page 4.)

Nutrition Supplements.

In an interesting study, researchers at Purdue University observed food consumption behavior among Alzheimer's patients residing in long term care facilities (Lakdawalla, 2003). Placing an aquarium in the facility boosted patient food intake resulting in decreased need for food supplements and lowering total care costs.

Allergies.

There are numerous studies examining the relationship of exposure to pets and the likelihood of developing pet allergies. Exposure to indoor dogs and cats in very early years reduces the risk of allergies at age 18 (Wegienka, et al, 2011). Perinatal exposure, to dogs and cats, likely reduces the risk of developing allergic disease including

asthma (Lodge, et al, 2012; Dharmage, et al, 2012). However, Carlsen, et al (2012), find neither benefit nor harm from pet exposure on the risk of childhood asthma or allergies.

Psychological Benefits.

Perhaps the most exciting work in assessing the impacts of human-animal bonds on owner's health falls under a broad category of mental health. Pets can be a source of comfort for everyday stress, significant loss events (death, disasters), and in recovery from a variety of maladies. The most recent avenue of exploring mental health aspects involves the role of companion, therapeutic, and service animals in the treatment of post-traumatic stress disorder – especially among disaster victims and military veterans. However, while positive mental health findings appear in the literature, we found no studies that specifically report subsequent lower use of healthcare services allowing a quantitative assessment of cost savings.

Estimating Health Cost Savings of Pet Ownership

As noted, the evidence of the health benefits of pet ownership is reflected in a growing body of academic and professional research. Still, relatively few studies are designed to provide the data needed to specifically assess the potential savings in healthcare costs. This substantially limits our ability to capture all of the savings associated with pet ownership in the United States. Nevertheless, there are two areas where we can make reasonably conservative estimates of the contributions of pet ownership to lowering total healthcare spending:

- Impacts on the visits to physician offices; and
- Reduction in obesity among dog owners who regularly walk their pets.

Estimates of healthcare costs can vary greatly depending on service requirements, location, and negotiated fees between providers and insurers. Over 80 percent of the United States population is covered by some form of health insurance, and the introduction of the Affordable Care Act further complicates the assessment of costs in the healthcare system. We utilize multiple sources of healthcare cost data for this analysis.

The Number of Pet Owners

The number of pet owners used for this analysis comes from the 2015-2016 National Pet Owners Survey from the American Pet Products Association (APPA). The survey had over 25,000 respondents covering general pet ownership. About 65 percent of all households report having one or more pets. Households with one or more dogs represent 44 percent of all United States households. The APPA survey covers households in the United States. To convert households to population counts, we utilized data for the United States Census Bureau's American Community Survey that reports population characteristics for the 2009-2013 period. Importantly, we only include adults living in households in our estimates of health care cost savings. Table 2 shows the estimated adult population count by household type used in this analysis. Notably, we do not include estimates of non-family households with more than two adults in residence; therefore, our population counts will be slightly understated compared to the actual population.

Table 2: Population Count by Household Type

Description	Population Count
Family Households	
Married	119,435,236
Female Head of Household	15,912,434
Male Head of Household	5,764,477
Unmarried Couples	14,468,615
Non-Family Households	
1 Person Households	33,718,661
2 Person Households	15,004,392
Total Estimated Pet Owners (65 percent of population)	132,797,480

Source: American Pet Products Association, U.S. Census Bureau, authors' estimates

ESTIMATING OFFICE VISITS

Estimates of the cost of physician office visits can be found from many public and private sources. For this analysis, we utilize the Healthcare Bluebook online database. This database uses nationwide data to estimate average "fair" prices for healthcare services. The estimates provided fall within a range of costs found through other sources. The cost of a physician office visit is separated by patient tenure (established or new patient) and level of service. The level of service is divided into five service levels that correspond to time spent by the doctor in the visit and the complexity of the case (see Table 3).

We assume that the "average" avoided physician office visit would involve Level 3 services. As noted previously, there are multiple studies reporting lower average number of physician office visits among pet owners. The smallest differential, after adjusting for other health characteristics, reported is from the Australian study with about 0.6 fewer average office visits per year for pet owners. At $139 per visit, this suggests that healthcare system savings from reduced physician office visits totals about $11.4 billion per year (see Table 4).

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Table 4: Health Care Cost Savings of Pet Ownership Physician Office Visits

Description	Estimates
Pet Owners	132, 797, 480
Average Difference in Number of Office Visits for Pet Owners	-0.616
Average Cost of an Office Visit	$139
Estimated Cost Savings	$11, 370, 651, 000

Source: APPA, Census, Healthcarebulebook.com, authors' estimates

Obesity.

As noted in many medical publications and the popular press, obesity is a disease of epidemic proportions. Base on the research findings reported above, we assume that 23 percent of dog owners walk their dog(s) at least 5 times per week. We treat this as the level of activity needed to achieve weight related health benefits. The reported incidence rate of obesity for active dog owners is 5 percent lower than non-owners. Based on the APPA survey and Census data, there are an estimated 89.9 million dog owners in the United States, which leads to an estimated 1 million fewer cases of obesity in the United States health care system (see Table 5). The National Health and Nutrition Examination Survey (NHANES) conducted

Table 3: Physician Office Visit Costs for Established Patients

Level	Description	Cost
1	5 minutes, minor case	$38
2	10 minutes, minor care requiring limited treatment	$143
3	15 minutes, moderate issue, treatment, and counseling, coordination of care with other providers	$139
4	25 minutes, moderate or higher care required	$206
5	40 minutes, complex medical issue	$396

Source: www.healthcarebluebook.com

The reduction in health care costs associated with a lower incidence rate of obesity among United States dog owners is more than $419 million per year.

for the Centers for Disease Control reports that the health care costs of obesity include outpatient office visits, emergency room visits, and prescription drug costs. These costs are reported as unique costs separate from any other individual health care spending. Adjusting the 2009 NHANES cost estimates for inflation, total annual drug costs per person to treat obesity is about $144, physician office visits add $244 to annual costs, and average emergency room visits increase per person costs by about $17 per year for a total of more than $405 per year in health care savings. We assume these costs represent marginal cost savings in addition to the savings associated with regular physician office visits. The reduction in health care costs associated with a lower incidence of obesity among United State dog owners is more than $419 million per year.

Table 5:Health Care Cost Savings of Pet Ownership Obesity

Description	Cost
Dog Owners	89,893,679
Dog Walkers (5 or more times per week)	20,675,546
Difference in Incidence Rate of Obesity (Dog Walkers v. Non-Owners)	-5 percent
Total Annual Costs of Obesity (per person)	$405.53
Average Annual Costs of Office Visits	$244.44
Average Annual Costs of Prescription Drugs	$143.64
Average Annual Costs of Emergency Room Visits	$17.45
Estimated Cost Savings	$419,228,000

Source: APPA, Levine, et al (2013), National Health and Nutrition Examination Survey, authors' estimates

...Pet owners in the United States enjoy many positive health outcomes including lower stress, improved cardiovascular health, enhanced sense of well-being, reduced allergic sensitivities, and many other physical and mental health benefits.

Total Estimated Health Care Cost Savings

There are many health care cost savings associated with pet ownership that we do not include in this analysis due to a lack of data. Even with this truncated assessment, health care cost savings from physician office visits and the treatment costs of obesity associated with pet ownership totals at least $11.8 billion annually (see Table 6). As the literature on the health care consequences of human-animal bonding matures, an expanded assessment of health care savings will become possible.

Table 6: Health Care Cost Savings of Pet Ownership Physician Visits and Obesity Treatment

Description	Estimates
Savings Related to Physician Office Visits	$11,370,651,000
Savings Related to Obesity Treatments	$419,228,000
Total Annual Cost Saving	$11,789,879,000

Sources: authors' estimates

Conclusions

The preponderance of research suggests that pet owners in the United States enjoy many positive health outcomes including lower stress, improved cardiovascular health, enhanced sense of well-being, reduced allergic sensitivities, and many other physical and mental health benefits. Examining the economic benefits of just two of these areas of health care improvement, physician office visits and treatment for obesity, we find major cost savings associated with pet ownership totaling almost $11.8 billion per year. As this research area attracts more attention and studies are initiated with specific economic variables included to capture potential health care costs savings, we will gain a much deeper understanding of the greater total economic value of the human-animal bond.

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Author Biographies

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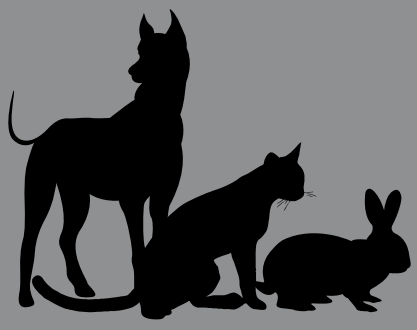

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