



# An Overview of the Current and Potential Effects of COVID-19 on U.S. Animal Shelters

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## ABSTRACT

Despite the global COVID-19 pandemic, animal shelters in the United States and around the world are experiencing massive increases in adoption and foster rates. Remaining open as designated essential businesses, these shelters are interviewing adopters in parking lots to maintain social distancing guidelines and watching even long-term or hard-to-adopt residents find permanent homes. The reasons behind these phenomena are varied, but appear to stem in part from the positive benefits humans feel that they receive from sharing their home with an animal. In addition, many believe that being able to spend more time at home is important when adopting a pet, and COVID-19 has allowed people this opportunity. This study examines the adoption phenomena through an anthrozoological lens, and identifies the reasons behind this increase in animal adoption as well as the potential negative effects once the COVID crisis is over. If this increase in adoption will continue as people return to work remains to be seen, and experts question whether relinquishment and abandonment rates will skyrocket as the nation faces widespread unemployment and economic insecurity.

**Keywords:** COVID-19, Animal Shelters, Companion Animals

## 1 Introduction

Amidst a global pandemic, animal shelters across the United States are emptying [1,2]. People are flocking to shelters to adopt pets, while others are fostering animals in need. The ASPCA [2] reports that LA and New York have seen a 70% increase in animal placement in foster homes. In March alone, over 900 animals

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found homes in Los Angeles County [2]. It seems that during this global crisis, which has infected 957,875 humans in the United States as of April 26, 2020, people are choosing to quarantine with new non-human family members [3]. With over 6.5 million companion animals arriving at US shelters annually, the current increase in adoptions represents a potential solution for overcrowding and financial strain in shelters around the nation. [4]. But what are the short and long-term implications of these adoptions? Does this increase in adoptions tell us something only about how Americans are handling their isolation, or is it indicative of a permanent change in commitment to animals?

Due to the nature of this current pandemic, and the lack of scholarly work written about COVID-19 and its relation to animal shelters, a mixed method approach was used. Focus was on literature review, primarily drawing from current news articles and current and past scholarly work. A semi-structured participant interview was also conducted to create an overview of the changing human-shelter animal relationship during the 2020 pandemic. Particular focus will be given to the current response of animal shelters and citizens in the United States to the outbreak of COVID-19 and its subsequent quarantine period. Data sources were chosen based on criteria including their relevance to the current quarantine, their presence and availability to citizens through mainstream media, and their reliability to authoritatively describe the situation in shelters across the US.

Data sources were also chosen that offered information about the on-going COVID-19 crisis outside of animal shelters. These sources were used to inform conclusions about potential impacts on citizen decisions, including the adoption of shelter animals. These sources also allowed a broader view of the pandemic, and future potential impacts of COVID-19 on factors influencing animal adoptions, such as financial strain.

Qualitative methods were applied when reviewing implications of animal adoptions, commitment to animals and in understanding responses to quarantine. Quantitative methods were used when reviewing shelter animal statistics, including current adoption rates, adoption numbers and animal relinquishment numbers. Both methods allowed for an informed review of COVID-19's impacts on animal shelters and the long-term implications of current animal adoption rates.

## **2 Keeping pets home: responses to COVID-19**

On January 30<sup>th</sup> 2020 the World Health Organization [5] declared a Public Health Emergency of International Concern due to COVID-19, and on March 11 2020 upgraded the emergency to official pandemic status. Parts of the US began issuing stay at home orders in March, and as of April 20, residents of forty-two states found themselves under full stay at home quarantine, and several other states created stay at home zones [6]. This amounts to 316 million people quarantined in the US alone [6]. Many Americans spend a large amount of their weeks outside of their homes, with more than half of adults working over 40 hours per week [7]. Social relationships are very important to humans, and this sudden inability to leave the house, to socialize or to commune in large groups is causing psychological distress and anxiety [8,9]. Psychological distress arises from the fear surrounding COVID-19 and from loneliness and concern for friends and family affected by the quarantine [9].

Pets provide a much-needed relationship during quarantine. They may lower blood pressure and raise production of 'happy' hormones such as dopamine and oxytocin, thus helping curb loneliness, relieve stress and increase feelings of satisfaction [1,10]. Having the ability to touch something when physical contact with friends and family has become 'taboo' may also help with feelings of isolation [10]. Pets allow people struggling with cabin fever to have a tangible relationship with another individual during these challenging times, and for some people in quarantine pets offer the only chance to leave the house [10]. One

psychologist explains that even for people quarantined with other humans, animals can offer humor, comic relief distraction from quarantine boredom and stress [10].

### 3 COVID's effects on shelter animals

Prior to COVID-19, owners surrendered cats and dogs to shelters in record numbers, citing a lack of time for the animal and personal issues as their reasons for relinquishment [11]. Over 2.5 million of these pets are euthanized in US shelters annually [12]. Many shelters face a lack of kennel space, and often find themselves with long-term, hard-to-adopt residents (Collins, 2020; 14). These long-term residents face decreased welfare due to prolonged exposure to stressors, which in turn creates behaviors making them harder to adopt, continuing the cycle [15]. Dogs surrendered from private homes (versus strays or returned-to-shelter animals) have an even harder time adapting to shelter life [15]. However, thanks to COVID-19, many of these shelters are now seeing large numbers of pets adopted into new homes as quarantined humans seek out companion animals [14,16].

In response to the COVID-19 outbreak, the Humane Society of the United States [17] created a 'Shelter Kit' of references, information and communication techniques for community shelters. In addition, they have expanded their 'Pets for Life' program, which typically focuses on distributing food, medication and supplies to some of the 20 million pets living in poverty in the U.S. [12]. Launched in 2011, PFL provides care to pets in underserved communities, while working to improve understanding within the animal welfare community regarding social justice, and dispel misconceptions regarding pet-keeping in lower income communities [12]. Keeping these animals out of shelters and with their owners is not only key to lowering intakes at shelters, but to their mental health and that of their human families [18,19]. This program now includes using social distancing measures and the distribution of additional supplies to senior citizens and homebound clients [12,17]. This program may prove key to preventing mass surrenders of animals following the economic downturn caused by COVID-19 (see below).

Shelters across the U.S. were declared essential businesses, as they serve the necessary function of intaking bite holds, rabies quarantines, injured strays, etc. [20]. Shelters are following the National Animal Care and Control Association (NACA) [20] guidelines of limiting intakes during stay-at-home orders to emergencies [14]. Non-emergent or voluntary surrender intakes have been suspended, and overall intakes have dropped 24% nationwide [21]. While this reduction in intake is one reason for the lower numbers of animals in shelters nationwide, it is not the largest influencer of shelter population.

According to Whitney Boylston [14], director of Lake County's Office of Animal Services, animals are 'flying off the shelves,' and the reasons are numerous. Due to COVID-19, shelters have closed their doors to humans, but opened their parking lots [14]. Potential adopters can stop by the shelter, request to meet an animal, and staff will bring the animal outside for a meet and greet [14]. This has been a benefit to several long-term residents, dogs that don't show well in the kennel enclosures [14]. These dogs are being visited by potential adopters in play yards, and finding homes that were out of reach to them previously [14].

The Lake County animal shelter (LCAS) extended the time period on its 'Shelter Sleepover' program, through which potential adopters were able 'borrow' a dog for up to 30 days [14]. The new 'no time limit' program has increased participation by 100% [14]. This program has resulted in numerous adoptions and long-term fosters [14]. Those sleepover hosts without the intention to permanently adopt were asked to assist in sharing stories and photos of their foster animal, and are helping permanently rehome the pet [14]. Boylston [14] reports that other counties are seeing the same change in foster participation and adoptions. LCAS credits the uptick in adoptions and fosters to the fact that people who previously wanted a pet but felt they might not have time to focus on a successful bonding period with a new pet now have unlimited

time at home [14]. In addition, what Boylston [14] calls the ‘paradox of availability’ comes into play—with fewer animals available, people feel like they need to adopt before the pets are gone.

Another positive outcome of having fewer animals comes from the staff being able to devote more one on one time to each pet. Pet personalities are becoming clearer, and the staff can now have more than one dog in the outdoor enclosures at a time for ‘play groups,’ something that Boylston [14] has been wanting to incorporate but lacked the space and staff to successfully implement before now. In addition, the number of pets successfully returned to their owners has gone up, according to Boylston [14], because people stuck at home notice pets missing more quickly.

This phenomenon is not limited to any particular part of the U.S. States as varied as Florida, New York, Colorado are seeing the same results [21]. Nationally relinquishment of animals is down 28% from March of last year [21]. The American Society for Prevention of Cruelty to Animals [22] reports an increase of foster applications by 66%. Shelter staff are not simply playing with the animals that are still being housed in shelters, however. They are preparing their isolation and intensive care areas for a surge in intakes as the death toll rises. Given the uncertainty of the zoonotic potential of COVID-19 for domestic animals, shelters are prepping for required isolation of animals who have been exposed by ill owners [14].

#### **4 After COVID: the future for pets**

Seeing empty kennels and a dearth of available animals might be seen as an inspirational reflection on attitudes towards animals in the U.S. Americans have chosen to take this time at home as an opportunity to extend their families with a pet. However, as an employee at Onslow County Animal Services (OCAS) states: “We hope that everybody coming in to adopt realizes it's a 10 to 15-year commitment. Regardless of what's going on right now, we want this animal to be with them long term” [23]. Dogs and cats require attention, they require food, water, veterinarian checkups and in many cases exercise and toys [24]. People adopting pets out of loneliness, or as a quick decision in a virus-ravaged world, may feel driven to return these pets once their normal lives resume [23]. COVID-19 has disrupted every aspect of people’s lives, but it is assumed that life will return to normal. People will return to work, to their social events and pets will again spend long periods of time alone, often beyond 40 hours a week [7]. Will these newly adopted animals become a part of the new routine, or will they no longer serve a purpose of companionship and be sent back to the shelters?

In times of economic crisis and job loss, human-pet relationships are fluid. After the economy crashed in 2008, shelters saw an increase in the relinquishment of dogs [25]. Cost was listed as a primary reason for pet relinquishment [25]. While there did not appear to be an increase of cat relinquishment during the recession, there was a decrease in the rate of cat adoptions [25]. Euthanasia numbers also rose following the 2008 economic downturn [25]. This study of shelter records suggested that people were discouraged from animal adoption during times of economic crisis—the opposite of what we are seeing currently in the U.S. [25]. Although there was a slight increase in animal relinquishment, the biggest impact came from the number of animals being adopted which in turn increased numbers of euthanasias [25].

Following the 2008 crisis, areas of California which experienced the ‘highest foreclosure rates in the country,’ reported an increase in rates of relinquishment among low income families [26]. Locations with higher concentrations of foreclosures resulted in higher numbers of relinquishments, an unusually large number of which were unaltered [26]. Morris & Steffler [26] point out that studies lacked research into the number of animals that were abandoned, and only covered those relinquished to a shelter. They suggest that given a local animal shelter received 95% of their animals as the result of being abandoned, that to only study relinquishments leaves a lot of the picture out [26]. Another consideration during economic crashes

is the loss of funding towards shelters, thus leaving shelters with more animals and fewer resources, in turn leading to a higher euthanasia rates [26].

The current world situation is unprecedented, thus making any prediction of outcome difficult [27]. Especially challenging is the level of global impact, the historical lows of interest rates and the challenging ‘destruction of demand and supply’ [27]. But that hasn’t stopped economists from trying to predict the long-term economic effects on U.S. and global economies. Andrew Atkeson [28] warns of lasting financial implications from this pandemic, potentially for years to come. With social distancing likely being required for the next 12 to 18 months to avoid any severe public health consequences, Atkeson [28] emphasizes that the economic pressure of this period social distancing must be weighed against the loss of work and human life from COVID-19 if distancing is not maintained. Other economists believe global recession is “almost inevitable” as a result of COVID-19 [27].

In a world where countries are interconnected by commerce and air travel, allowing disease to work its way across the globe, COVID-19 has larger impacts beyond mortality [27]. Car manufacturers have stopped production, many world events such as the Olympic Games have been suspended, tourist destinations that thrive on tourism are deserted [27]. In addition, U.S. job losses are at an all-time high, airlines have grounded entire fleets of planes, and ad revenue has dropped for social media and online sales companies [27]. Given that China, where the virus originally hit, currently makes up 16% of the global economy, it can be assumed that the challenges resulting from quarantines in China and a decrease in production and travel will negatively impact the global economy [27]. There are no sectors that will avoid being affected, with service trade and industry being among the hardest hit [27].

The pet industry will also be affected by this economic crisis. Americans typically spend over 16 billion dollars annually on their pets, and with layoffs at an all-time high in the United States, high bills such as animal care will take a back burner to more pressing human needs, which leads animal shelter personnel to believe that animal relinquishment could increase as this pandemic continues to effect the economy and people’s incomes [14, 25, 29]. Although pet adoptions are currently soaring all over the United States, the upcoming economic downturn could also lead to an all-time high rate of pet relinquishment. One of the biggest factors in voluntary surrender to shelters is a change in housing. Breed and size restrictions impact numerous pet owners, and job loss may result in family members combining households, resulting in pets that may not get along and increased relinquishments [See 25].

In addition, the NACA [30] recommends that animal shelters suspend alteration policies and allow unspayed/unneutered animals to leave the shelter for adoptive or foster homes. While this move ensures fewer animals remain in shelters, there is the potential for a surge in unwanted births if the new guardians of these pets do not follow through with sterilizations. Because voluntary surgeries are currently suspended, Sonja Leuschen of the Orphan Kitten Club believes this will be a challenging time for shelters as April is often ‘kitten season’ [22]. Given that most shelters cannot care for young kittens due to disease transmission and need for hands-on care, euthanasia is often required [22]. Outside of new kittens and the inability for shelters to care for them, there is the issue of the transportation of animals across state lines [22]. Without a veterinary certificate (of which the services for are currently suspended) animals that would normally be transferred to a no-kill shelter are no longer able to, and euthanasia may rise even higher [22]. Fostering of animals continues to play an important role in mitigation of euthanasia, and in the ability to empty shelters and allow space in kennels to open up for new animals [22].

Finally, fears of disease transmission are leading owners to abandon or relinquish their dogs. Despite the fact that there is no evidence of dogs being COVID-19 carriers. In fact, IDEXX reference laboratory reports that they have seen zero cases of the coronavirus causing respiratory illness in humans [31]. Further testing also appears to be unable to verify whether the one reported case of a canine ‘testing positive’ for

COVID-19 antibodies was in fact an actual case or if the dog had simply been exposed to COVID-19 on contaminated surfaces [31]. Further testing showed no signs that the dog carried COVID-19 antibodies [31]. These unfounded fears may result in an increase in abandonment or relinquishment [31]. There have, however, been two U.S. cases of COVID-19 found in domestic cats [32]. In addition, one cat in Hong Kong and one in Belgium were exposed to the virus and showed clinical signs, but the AVMA [32] is unsure whether the samples were properly collected, or why other illnesses were not ruled out. The AVMA [32] and CDC [3] is recommending owners who fall ill restrict contact with all animals, as a precautionary measure.

## 5 Conclusion

While the current surge in placements of both adoptions and foster pets is encouraging, it is too soon to predict whether shelters will retain the lower number of animals related to the COVID-19 pandemic. Lower numbers of voluntary surrenders which are on hold due to the virus may surge as job loss, changes in housing and economic strife roll through the U.S. Shelter workers may face potential health risks from relinquished or seized pets who have been exposed to the virus. A shortage of personal protective equipment and unknown levels of zoonosis potential add to the risks faced by shelter personnel as the pandemic continues. Programs such as the Humane Society of the United States 'Pets for Life' program mentioned above and similar support of pet owners facing uncertain economic times will be vital to keeping the number of animals in shelters low. In addition, continued financial support of shelters by community members and local government may be key to continuing the phenomena of empty cages.

## 6 Competing Interests

The authors have no conflict of interest to declare.

## References

- [1] Why We're Turning to New Pets in This Pandemic - CNN Video. CNN. Cable News Network, 10 Apr. 2020, [www.cnn.com/videos/us/2020/04/08/covid-pandemic-pet-adoption-foster-orig-jg.cnn/video/playlists/covid-19-coronavirus-how-to-service/](http://www.cnn.com/videos/us/2020/04/08/covid-pandemic-pet-adoption-foster-orig-jg.cnn/video/playlists/covid-19-coronavirus-how-to-service/). Last accessed April 28, 2020
- [2] Oakes, C. The Call Has Been Answered: Animal Shelters across the U.S. Are Emptying amid Coronavirus Pandemic. NBCNews.com, NBCUniversal News Group, 19 Apr. 2020, [www.nbcnews.com/health/health-news/call-has-been-answered-animal-shelters-across-u-s-are-n1186351](http://www.nbcnews.com/health/health-news/call-has-been-answered-animal-shelters-across-u-s-are-n1186351). Last accessed April 28, 2020
- [3] Cases in U.S. Centers for Disease Control and Prevention, 26 Apr. 2020, [www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html](http://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html). Last accessed April 28, 2020
- [4] ASPCA. Pet Statistics. [www.aspc.org/animal-homelessness/shelter-intake-and-surrender/pet-statistics](http://www.aspc.org/animal-homelessness/shelter-intake-and-surrender/pet-statistics). Last accessed April 28, 2020
- [5] World Health Organization, 2020. WHO Timeline-COVID-19 Available at: <https://www.who.int/news-room/detail/08-04-2020-who-timeline---covid-19>. Last accessed April 27, 2020
- [6] Mervosh, S.; Lu, D. and Swales, V., 2020. See Which States and Cities Have Told Residents to Stay at Home. The New York Times Online. <https://www.nytimes.com/interactive/2020/us/coronavirus-stay-at-home-order.html>. Last accessed April 28, 2020
- [7] Miller, G. E. The U.S. Is the Most Overworked Nation in the World. *20somethingfinance.Com*, 13 Jan. 2020, [20somethingfinance.com/american-hours-worked-productivity-vacation/](http://20somethingfinance.com/american-hours-worked-productivity-vacation/). Last accessed April 28, 2020
- [8] Rubin, G.J. & Wessely, S. The psychological effects of quarantining a city. *The BMJ*. DOI: <https://doi.org/10.1136/bmj.m313>. Last accessed April 28, 2020
- [9] Barbisch, D., Koeing, K., & Shih, F. (2015). Is There a Case for Quarantine? Perspectives from SARS to Ebola. *Disaster Medicine and Public Health Preparedness*, 9(5), 547-553. Doi: [10.1017/dmp.2015.38](https://doi.org/10.1017/dmp.2015.38)
- [10] Ellis, E.G. (2020) Thanks to Sheltering in Place, Animal Shelters Are Empty. *Wired Online*. Available at: <https://www.wired.com/story/coronavirus-pet-adoption-boom/>. Last accessed April 28, 2020
- [11] Salman, M.D., New, Jr., J.G., Scarlett, J.M., Kass, P.H., Ruch-Gallie, R. & Hetts, S. (1998) Human and Animal Factors Related to Relinquishment of Dogs and Cats in 12 Selected Animal Shelters in the United States, *Journal of Applied Animal Welfare Science*, 1:3, 207-226, DOI: [10.1207/s15327604jaws0103\\_2](https://doi.org/10.1207/s15327604jaws0103_2)
- [12] Humane Society of the United States (2020). About Pets for Life. <https://www.animalsheltering.org/programs/pets-for-life>. Last accessed April 27, 2020

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- [13] Collins, L. (2020) Animal shelters are left EMPTY across the U.S. as thousands turn to fostering and adopting rescue dogs and cats during nation-wide lockdowns. Daily Mail Online. <https://www.dailymail.co.uk/news/article-8218539/Animal-shelters-left-thousands-families-turn-fostering-pets.html> Last accessed April 28, 2020
- [14] Whitney Boylston (Lake County Office of Animal Services, Director) in discussion with author, April 26, 2020.
- [15] Hiby, E.F., Rooney, N.J., Bradshaw, J.W.S. Behavioural and physiological responses of dogs entering re-homing kennels, *Physiology & Behavior*, Volume 89, Issue 3, 2006, Pages 385-391, ISSN 0031-9384, <https://doi.org/10.1016/j.physbeh.2006.07.012>
- [16] Pedersen, J. M. Florida County's Empty Kennel Video Sign of the Times for Animal Shelters amid Coronavirus Pandemic. *Orlandosentinel.com*, Orlando Sentinel, 16 Apr. 2020, [www.orlandosentinel.com/coronavirus/os-ne-coronavirus-animal-shelters-less-animals-20200416-dyu7uqe4bzc6ti5poiljrmvfaq-story.html](http://www.orlandosentinel.com/coronavirus/os-ne-coronavirus-animal-shelters-less-animals-20200416-dyu7uqe4bzc6ti5poiljrmvfaq-story.html) Last accessed April 28, 2020
- [17] Humane Society of the United States (2020). COVID-19 shelter kit. <https://www.animalsheltering.org/COVID19> Last accessed April 27, 2020
- [18] Kerman, N., Gran-Ruaz, S. & Lem, M. (2019) Pet ownership and homelessness: a scoping review, *Journal of Social Distress and Homelessness*, 28:2, 106-114, doi: 10.1080/10530789.2019.1650325
- [19] Herrald, M.M., et al. "Pet Ownership Predicts Adherence to Cardiovascular Rehabilitation1." *Journal of Applied Social Psychology*, vol. 32, no. 6, 31 July 2006, pp. 1107-1123., doi:10.1111/j.1559-1816.2002.tb01428.x.
- [20] National Animal Care & Control Association (NACA) (2020). General Statement on Animal Control Functions During COVID-19 Pandemic. <https://www.nacenet.org/wp-content/uploads/2020/03/1.General-Statement-on-Animal-Control-Functions-During-the-COVID-19-Pandemic.r.pdf> Last accessed April 28, 2020
- [21] COVID-19 Impact Data Summary (2020). Shelter Animals Count National Database. [https://www.shelteranimalscount.org/docs/default-source/dataresources/covid-19-data-update-report-march.pdf?sfvrsn=88dbfa76\\_2](https://www.shelteranimalscount.org/docs/default-source/dataresources/covid-19-data-update-report-march.pdf?sfvrsn=88dbfa76_2) Last accessed April 28, 2020
- [22] Whitten, S. Animal Rescues Are Going to Need More Help than Ever Once Coronavirus Restrictions Are Lifted. CNBC, 11 Apr. 2020, [www.cnn.com/2020/04/11/coronavirus-increased-pet-adoptions-now-rescuers-face-new-challenges.html](http://www.cnn.com/2020/04/11/coronavirus-increased-pet-adoptions-now-rescuers-face-new-challenges.html) Last accessed April 28, 2020
- [23] WITN. Onslow County Animal Services Seeing Increase in Pet Adoptions amid Coronavirus Pandemic. *WITN*, 23 Apr. 2020, [www.witn.com/content/news/Onslow-County-Animal-Services-seeing-increase-in-pet-adoptions-amid-Coronavirus-pandemic-569908141.html](http://www.witn.com/content/news/Onslow-County-Animal-Services-seeing-increase-in-pet-adoptions-amid-Coronavirus-pandemic-569908141.html) Last accessed April 28, 2020
- [24] "Pet Care." *ASPCA*, 2020, [www.aspc.org/pet-care](http://www.aspc.org/pet-care) Last accessed April 27, 2020
- [25] Weng, H.Y., & Hart, L.A. "Impact of the Economic Recession on Companion Animal Relinquishment, Adoption, and Euthanasia: A Chicago Animal Shelter's Experience." *Journal of Applied Animal Welfare Science*, vol. 15, no. 1, 2012, pp. 80-90., doi:10.1080/10888705.2012.624908.
- [26] Morris, G.D. & Steffler, J. (2011) Was pet relinquishment related to foreclosure?: A spatial research note from California during the height of foreclosure, *The Social Science Journal*, 48:4, 739-745, doi: 10.1016/j.soscij.2011.03.010
- [27] Fernandes, N. Economic Effects of Coronavirus Outbreak (COVID-19) on the World Economy (March 22, 2020). doi:<http://dx.doi.org/10.2139/ssrn.3557504>
- [28] Atkeson, A. "What Will Be the Economic Impact of COVID-19 in the US? Rough Estimates of Disease Scenarios." *NBER Program: Economic Fluctuations and Growth*, Mar. 2020. doi:10.3386/w26867.
- [29] American Veterinary Medical Association (AVMA). (2007) *U.S. Pet Ownership & Demographics Sourcebook* Schaumburg, IL: American Veterinary Medical Association. Available at: <https://www.avma.org/sites/default/files/resources/AVMA-Pet-Demographics-Executive-Summary.pdf> Last accessed April 27, 2020
- [30] National Animal Care & Control Association (2020). Statement on Releasing Unaltered Pets from Animal Shelters During the COVID-19 Pandemic. [www.nacenet.org/wp-content/uploads/2020/03/3.Releasing-Unaltered-Pets-from-Animal-Shelters-During-the-COVID-19-Pandemic.pdf](http://www.nacenet.org/wp-content/uploads/2020/03/3.Releasing-Unaltered-Pets-from-Animal-Shelters-During-the-COVID-19-Pandemic.pdf) Last accessed April 28, 2020
- [31] Coren, S. (2020) Unfounded Fears That Dogs Can Spread COVID-19 Can Cause Harm. *Psychology Today*. <https://www.psychologytoday.com/us/blog/canine-corner/202003/unfounded-fears-dogs-can-spread-covid-19-can-cause-harm> Last accessed April 28, 2020
- [32] American Veterinary Medical Association (AVMA). SARS-CoV-2 in animals. Available at:<https://www.avma.org/resources-tools/animal-health-and-welfare/covid-19/sars-cov-2-animals-including-pets> Last accessed April 27, 2020
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