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The Next Pandemic Might be a Petdemic

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A new scientific study shows that COVID-19 can be transmitted from cats to humans. Luckily, this channel of transmission seems extremely rare, at least thus far. But next time—and there will be a next time—we may not be so fortunate. This Article addresses this underappreciated risk of what I term a "petdemic"—a pandemic or epidemic that involves significant disease transmission between pets and humans. With nearly 70% of U.S. households owning pets, a petdemic could be catastrophic. One of our go-to responses for even perceived petdemics, honed over the last century, is to slaughter our pets. This pioneering Article proposes a way to break that cycle. Would existing legal restrictions curb the excess reactions of individuals and governments? Unfortunately, they would not. In the immediate aftermath of COVID-19, we have a chance to prepare for this problem. We must seize this opportunity to craft proactive legal and other policy solutions that emphasize creating options for pet owners to retain their animals, as well as removing knowledge gaps likely to characterize a novel infectious disease and potential bottlenecks exacerbated by legal restrictions or infrastructure shortfalls. The survival of our animals and our very humanity may depend on these endeavors.

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INTRODUCTION

Most human disease outbreaks—of epidemic or pandemic proportions—originated in nonhuman animals ("animals").[1] Rabies, H5N1, HIV, MERSA, and SARS1 have all been linked to various exotic or wild animals.[2] Even farmed animals, such as poultry and mink, have infected humans who live and work around them.[3] Zoonotic diseases, those that jump from animals to humans, are not uncommon and are expected to increase in frequency.[4] If our very own pets, our cats and dogs, threaten to infect us, the potential public health, social, economic, and political consequences of a pet-linked pandemic—a petdemic—would be enormous. This Article considers alternatives to the solution we have seen too often: the needless slaughter of huge numbers of our pets.

Such massacres have occurred before. History shows that whether we fear for our health or we are simply afraid, we frequently victimize our pets: whether it was 80,000 cats and dogs killed in New York City across a three-week period,[5] 400,000 slaughtered in London in just four days,[6] or less dramatic numbers dispatched when

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1. John Barrat, *What Causes Disease Outbreaks and How Can We Stop Them?*, SMITHSONIAN (Sept. 11, 2018), https://www.si.edu/stories/what-causes-disease-outbreaks-and-how-can-we-stop-them [https://perma.cc/C7Y7-FWB7].

2. David M. Morens & Anthony S. Fauci, *Emerging Pandemic Diseases: How We Got to COVID-19*, 182 CELL 1077, 1077 (2020). The origin of COVID-19, whether naturally occurring or man-made, has not been definitively established. *Compare* Jon Cohen, *Evidence Suggests Pandemic Came from Nature, Not a Lab, Panel Says*, SCIENCE (Oct. 10, 2022, 3:00 PM), https://www.science.org/content/article/evidence-suggests-pandemic-came-nature-not-lab-panel-says [https://perma.cc/KHH9-TNNU] (discussing report from the Proceedings of the National Academy of Sciences), *with* Katherine Eban & Jeff Kao, *COVID-19 Origins: Investigating a "Complex and Grave Situation" Inside a Wuhan Lab*, PROPUBLICA (Oct. 28, 2022, 12:45 PM), https://www.propublica.org/article/senate-report-covid-19-origin-wuhan-lab [https://perma.cc/6FHC-Z6GD] (discussing Senate minority interim report).

3. Samantha J. Lycett, Florian Duchatel & Paul Digard, *A Brief History of Bird Flu*, 374 PHIL. TRANSACTIONS ROYAL SOC'Y B § 4 (2019), https://royalsocietypublishing.org/doi/10.1098/rstb.2018.0257 [https://perma.cc/M69P-C5ZD].

4. Scott Neuman, *U.N. Predicts Rise in Diseases That Jump from Animals to Humans Due to Habitat Loss*, NPR (July 6, 2020, 11:55 PM) https://www.npr.org/sections/coronavirus-live-updates/2020/07/06/888077232/u-n-predicts-rise-in-diseases-that-jump-from-animals-to-humans [https://perma.cc/H4G5-AWSU].

5. John Dill Robertson, *Sanitary Instruction is Even More Important than Sanitary Legislation*, *in* 10 CHI. SCH. OF SANITARY INSTRUCTION BULL. 183, 184 (1916). "[A]ll told, there were upwards of 175,000 of them sacrificed." *Id.*

6. HILDA KEAN, THE GREAT CAT AND DOG MASSACRE: THE REAL STORY OF WORLD

Berkeley declared war on cats and aspired to become America's "first catless town."[7] The pool of executioners ranged from family members to volunteers to state enforcers.

The number of pets is immense. The United States, with a population of 330 million, had more than 160 million cats and dogs living in 67% of its households.[8] Those numbers have only increased as we have sought comfort, companionship, and indeed love from pets during the COVID-19 pandemic.[9] Pets are an essential part of our daily lives. We celebrate their birthdays and share their images on social media. More than half of us describe them as our best friends.[10] In fact, the single greatest cause of failure to evacuate during emergencies is our reluctance to leave them behind.[11] This seemingly unbreakable bond would be put to the test during a petdemic.

I define a "petdemic" as a pandemic or epidemic that involves significant disease transmission between companion animals (primarily cats and dogs) and humans.[12]

WAR TWO'S UNKNOWN TRAGEDY 47–48 (2017).

7. *Cats Doomed in This Town*, N. Y. TIMES, Jan. 26, 1913, at A11; *see also 72,000 Cats Killed in Paralysis Fear*, N. Y. TIMES, Jul. 26, 1916, at A5.

8. *Pet Industry Market Size, Trends & Ownership Statistics*, AM. PET PRODUCTS ASS'N, https://www.americanpetproducts.org/press_industrytrends.asp [https://perma.cc/57ZV-ESQL]. This article's focus is on pets—and cats and dogs in particular. As a practical matter, cats and dogs represent 75% of pets in the United States. *Id.* A focus on these, the most common pets, allows exploration of important issues (e.g., sharing personal spaces with owners (e.g., sharing beds) or with neighbors (e.g., hallways or elevators)) that would arise in a petdemic. Relative to livestock, for example, pets already occupy a superior position in society. As such, as a starting point, it makes sense to begin with them to explore what solicitude humans would be willing to extend to other species during a pandemic in which those animal species are profoundly implicated in threatening human health.

9. *See New ASPCA Survey Shows Overwhelming Majority of Dogs and Cats Acquired During the Pandemic Are Still in Their Homes*, AM. SOC'Y FOR THE PREVENTION OF CRUELTY TO ANIMALS (May 26, 2021), https://www.aspca.org/about-us/press-releases/new-aspca-survey-shows-overwhelming-majority-dogs-and-cats-acquired-during [https://perma.cc/G3LV-YQ2J]; *see also* Jeffery Ho, Sabir Hussain & Olivier Sparagano, *Did the COVID-19 Pandemic Spark a Public Interest in Pet Adoption?*, FRONTIERS IN VETERINARY SCI. (May 7, 2021), https://www.frontiersin.org/articles/10.3389/fvets.2021.647308/full [https://perma.cc/S397-QG6N].

10. Karin Brulliard, *Why Do We Love Pets? An Expert Explains.*, WASH. POST (Nov. 3, 2017, 8:00 AM), https://www.washingtonpost.com/news/animalia/wp/2017/11/03/pets-arent-wonder-drugs-heres-why-we-love-them-anyway/ [https://perma.cc/9UQH-UEWA].

11. *See* Sebastian E. Heath & Robert D. Linnabary, *Challenges of Managing Animals in Disasters in the U.S.*, 5 ANIMALS 173 (2015), https://www.mdpi.com/2076-2615/5/2/173/pdf [https://perma.cc/CVX3-S5XN].

12. *See* Hillary Greene, *The Coming Petdemic*, OZY (Dec. 22, 2020), https://www.ozy.com/news-and-politics/the-coming-petdemic/410462/ [https://perma.cc/9BFZ-TKY4] (in this op-ed I introduced the terminology "petdemic," a concept which this article more fully develops); *see also* Hillary Greene, *Our Pets Might Not be Able to Spread Coronavirus to People—But What if They Could?*, HARTFORD COURANT (May 11, 2020, 6:00 AM), https://www.courant.com/opinion/op-ed/hc-op-greene-coronavirus-pandemic-pets-0509-20200511-olnzaxvgfvfflfu355y26el5hi-story.html [https://perma.cc/72DB-32N5] (my earliest call for a preparedness plan). *See generally* KATHERINE C. GRIER, PETS IN AMERICA:

This is not the stuff of fantasy or science fiction; it is a frighteningly real possibility.[13] A year into the pandemic, research regarding COVID-19 found that humans are not only infecting but also causing harm to their pets with this dangerous virus.[14] A year after that, two incidents of likely hamster-to-human transmission occurred[15] and then, some months later, one suspected incident of cat-to-human transmission occurred.[16]And it is not just COVID-19—there is disturbing evidence that another newly discovered coronavirus can be transmitted from these animals to us.[17] A petdemic, which would involve *significant* transmission, appears to be in our future. We are not ready, and our lack of preparation poses a grave danger to ourselves and our animal companions.

The unfolding of a petdemic presents many uncertainties. This Article reviews our responses to similar threats in the past and details how the law shapes our options. It suggests that neither history nor the current law, without more, should give us confidence that we can prevent the killings of huge numbers of cats and dogs, including those we ostensibly love, during a petdemic. We must acknowledge the very real possibility that a failure to plan could result in the needless destruction of huge numbers of cats and dogs. The deadly outcomes of the past are not inevitable. This Article outlines more humane options for managing a petdemic.

Part I provides the background on zoonotic disease and reviews the history of animal slaughter in the face of health and social crises. Prior responses to perceived health threats from animals are extremely troubling and serve notice about how humans might react if our companion animals give rise to a petdemic. There is a veritable Noah's Ark of animals who have been infected by humans with COVID-19 (e.g., tigers, mink, dogs, cats, hamsters, deer). Of those, some animals (e.g., mink, hamsters, cats) are believed to have, in turn, infected humans. It is perhaps just a matter of time until dogs join the ranks of animals infecting humans.

Part II contemplates a petdemic scenario based on a hypothetical disease that has moderately high transmissibility and poses a high level of danger to humans to

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A HISTORY 6–8 (2006) (discussing the history of the term "pet" including more modern "discomfort" associated with its connotation of property).

13. *See* Greene, *The Coming Petdemic*, *supra* note 12 (Jonathan Runstadler, DVM, PhD, a professor specializing in infectious disease at the Tufts University Cummings School of Veterinary Medicine, recognizing that "a petdemic could occur in the future").

14. Veterinarians in the U.K. found a much larger prevalence of cardiac problems among cats and dogs whose owners were infected with the British variant of COVID-19 than those whose owners were not infected. *See generally* Luca Ferasin, Matthieu Fritz, Heidi Ferasin, Pierre Becquart, Sandrine Corbet, Meriadeg Ar Gouilh, Vincent Legros & Eric M. Leroy, *Infection with SARS-CoV-2 Variant B.1.1.7 Detected in a Group of Dogs and Cats with Suspected Myocarditis*, e944 VETRECORD 1 (2021).

15. *See* Hui-Ling Yen et al., *Transmission of SARS-CoV-2 Delta Variant (AY.127) from Pet Hamsters to Humans, Leading to Onward Human-to-Human Transmission: Case Study*, 399 LANCET 1070, 1072 (2022); *see also infra* Part I.A.6.A (discussing hamsters).

16. Thanit Sila et al., *Suspected Cat-to-Human Transmission of SARS-CoV-2, Thailand, July–September 2021*, 28 EMERGING INFECTIOUS DISEASES 1485, 1485 (2022).

17. *See* Anastasia N. Vlasova, Annika Diaz, Debasu Damtie, Leshan Xiu, Teck-Hock Toh, Jeffrey Soon-Yit Lee, Linda J. Saif & Gregory C. Gray, *Novel Canine Coronavirus Isolated from a Hospitalized Pneumonia Patient in East Malaysia*, CLINICAL INFECTIOUS DISEASES 446 (2021), https://doi.org/10.1093/cid/ciab456 [https://perma.cc/E897-AW4K].

explore how individual pet owners and governments might respond. Individuals would have to decide whether to keep (perhaps even to hide) their pets, to surrender them, or worse, euthanize them. If the past is prologue, then a petdemic could produce a mix of all three, including the death of millions of dogs and cats. These choices depend on available information and the constraints imposed by authorities.

Might legal restrictions curb the excess reactions by individuals and governments? My analysis leads to the opposite conclusion: rather than restricting owners' actions regarding treatment of their animals, the law empowers owners to treat animals as property, with life and death power over their fate. Similarly, governments have used their police powers to seize animals or at least restrict their movement when human health and safety are threatened. How will individuals decide what to do with their animals in a petdemic? Analysis of these decisions takes into account current sensibilities and individual situations and preferences. Part II also considers what measures governments might adopt.

Against this background, Part III offers a recommended course of action to protect both human and animal life. Given that a true petdemic has not yet been experienced, there are no direct precedents. Nonetheless, an analysis of the petdemic scenario allows me to offer a recommended course of action which society should undertake in advance. This agenda is built around an understanding of how human and animal health choices in a petdemic relate and the consequences of this relationship for human and animal lives. It focuses on setting priorities for generating and communicating information and on creating options including testing, segregation, vaccination, and developing natural immunity. These options are developed from the perspective of how they may shift individual and governmental decisions regarding treatment of animals in a petdemic. This treatment affects human health, but ultimately determines if animals live or die, not so much because of the disease itself, but because of how humans choose to react to the threat their companion animals may pose.

A few years before the COVID-19 pandemic, former Senator Joseph Lieberman, co-chair of the Bipartisan Commission on Biodefense, argued passionately for the Senate to pay attention to the dangers posed by companion animals despite the commission's focus on animal agriculture. "[Pets] are embedded into our lives and culture, but associated zoonotic disease risk is not well considered."[18] The commission report further noted that the default tool for "outbreak control" was the "highly unsatisfactory" practice of culling.[19] The report continued: "[o]ptions beyond culling, particularly those that consider animal welfare, must become core tenets of our response."[20]

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18. *Safeguarding American Agriculture in a Globalized World: Hearing Before the S. Comm. on Agric., Nutrition, and Forestry*, 115th Cong. 46 (2015) (statement of Joseph Lieberman, former Senator from Conn.); *see also* Greene, *The Coming Petdemic*, *supra* note 12 (quoting Jonathan Runstadler, "[w]hat we can do now is to take stock of our varied interactions with animals, including our pets, appreciate how important those interactions are to people's well-being, and prioritize understanding how viruses and microbes can spill over and spill back between humans and the animals we care for, causing disease.").

19. *Safeguarding American Agriculture*, *supra* note 18, at 114.

20. *Id.* at 110; JOSEPH I. LIEBERMAN, THOMAS J. RIDGE, DONNA E. SHALALA, THOMAS A. DASCHLE, JAMES C. GREENWOOD & KENNETH L. WAINSTEIN, DEFENSE OF ANIMAL

We must build on the sense of urgency from the COVID-19 pandemic and enlist key decision makers, ranging from scientists to policy makers and jurists to human and animal health care providers, to ensure that our approach is practical and compassionate. Our pets' lives, and ours, are at stake, as is our very humanity.

I. ANIMALS, DISEASE, AND OUR BLOODY PAST

Dogs and cats have long been scapegoated as carriers of dread diseases. This Part surveys numerous instances over the past century in which our animal companions were sacrificed in response to largely imagined threats. The animal death toll illustrates our willingness to kill our cats and dogs because of fear, or even doubt, regarding possible zoonotic disease. Just imagine what would happen if the threat our pets posed was both real and serious, if we actually faced a petdemic.

A. Killing Sprees

1. Smallpox

At the beginning of the twentieth century, smallpox[21] outbreaks still occurred despite the availability of vaccines.[22] These outbreaks were often accompanied by the unnecessary slaughter of pets. In Buffalo, New York, law enforcement personnel were shooting pets in large numbers:

> If the police of the Eighth Precinct do not develop into the best marksmen in the department, it won't be due to lack of opportunities . . . [t]he men will not attempt to do such fine work as shooting the germs themselves, but they will kill the carriers of the germs in the shapes of cats and dogs.[23]

Similarly, when "several cases" of smallpox arose in Wilkes-Barre, Pennsylvania, a nearby township commenced "the butchery of every dog and cat found loose on the streets of Plymouth."[24] "[S]everal doctors . . . believe[d]" these pets were "guilty of spreading the germs of the disease," thus sentencing these animals to an untimely—and unjust—"death penalty."[25] Not only stray, or seemingly stray, animals suffered.

AGRICULTURE 32, 36 (2017).

21. *Smallpox*, MAYO CLINIC, https://www.mayoclinic.org/diseases-conditions/smallpox/symptoms-causes/syc-20353027 [https://perma.cc/W9W8-4J74] (stating that smallpox is a contagious, disfiguring, and often deadly disease that has affected humans for thousands of years).

22. *See Four New Cases of Small-Pox; 1000 Vaccinated*, BUFF. EVENING NEWS, Dec. 2, 1901.

23. *Id.*

24. *Dogs and Cats of Pennsylvania Township Killed on Account of Smallpox*, N.Y. TIMES, Feb. 8, 1902, at A6.

25. *Shooting Truant Cats and Dogs in the Streets in Order to Save Human Beings from Smallpox Contagion*, N.Y. DAILY TRIBUNE, Feb. 16, 1902, at 5. While 100 volunteered, only about twenty who qualified as expert marksman were ultimately deployed. Many hundreds of animals were the expected targets—those in the portions of the county where the animals were "liable to get into or near quarantined houses." *Id.*

A decade later in Middletown, Connecticut, the authorities undertook the "wholesale slaughter of family cats" because a couple of members of a family had been stricken with smallpox.[26] While the humans were quarantined, their cat had not been similarly restricted.[27]

"Cats doomed in this town," blared the headline of a *New York Times* article which said:

> War to the death on all cats was declared here [Berkeley, California] today by the police department in the interest of the public health. A belief that cats are responsible for spreading smallpox caused the campaign against them. The order has gone forth that if it is possible to rid a town of cats, Berkeley will be the first catless town in the country. Extermination began to-day, and policemen armed with small rifles shot cats on sight without regard to pedigree or ownership.[28]

2. Polio

It was not only the authorities killing the animals. A few years later, during a polio outbreak in New York City, there were accounts of "rage-blind parents" killing their cats after the children of the family contracted polio.[29] Also known as infantile paralysis, polio resulted in death or paralysis "in a spectacle of horror that appeared to target children with particular viciousness."[30] Overall, 72,000 cats and 8,000 dogs were killed in a little over three weeks during that 1916 polio outbreak. Many people "alarmed at the spread of infantile paralysis turned their cats out of doors immediately, and some who had dogs did the same, which is probably the reason why there are so many adrift in the streets this [s]ummer."[31] During this time, the Society for the Prevention of Cruelty to Animals (SPCA) received 800 requests per day to take in "unwanted domestic pets, mostly cats."[32] All this despite a public statement by the health commissioner that "rats and mice carry the germs of infantile paralysis, but that there was no evidence to show that cats had ever been germ bearers."[33] The SPCA director also suggested that another reason pets had been "turned loose" was that "[w]hen people have to economize the first thing they decide to do without is the cat and out she goes."[34]

Despite the health commissioner's statement that cats had not been shown to carry the germs of infantile paralysis, the mass slaughter of cats in New York City was widely publicized, and it became a perverse example for other communities to

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26. *Kill Nine Cats to Prevent More Smallpox*, HARTFORD COURANT, Feb. 22, 1914, at 14.
27. *Id.*
28. *Cats Doomed in This Town*, *supra* note 7.
29. *See* JEFFREY KLUGER, SPLENDID SOLUTION: JONAS SALK AND THE CONQUEST OF POLIO 16 (2004).
30. Annalisa Merelli, *100 Years Ago, New York City Declared War Against Polio and Killed 72,000 Cats (and 8,000 Dogs)*, QUARTZ (Sept. 22, 2016), qz.com/787385/the-history-of-polio [https://perma.cc/Q556-U8RG].
31. *72,000 Cats Killed in Paralysis Fear*, N.Y. TIMES, July 26, 1916, at A5.
32. *Id.*
33. *Id.*
34. *Id.*

follow. Just a couple of months later, the *Bulletin of the Chicago School of Sanitary Instruction* endorsed the slaughter in New York City and suggested that "[i]n view of the uncertainties which surround all the means by which infantile paralysis is spread," Chicago parents with house pets should kill them before cold weather drives the "beasts indoors."[35] Elsewhere, Dr. R.H. Bishop, Jr., the Cleveland commissioner of health, recounted the events in New York City in his column, *Your Health*.[36] He noted that although animal lovers would be shocked by this campaign, most of the animals were killed at the owner's request, presumably because they considered "the lives of their own children of infinitely greater value in the face of an epidemic menace."[37]

A month later, in Kalamazoo, Michigan, the department of health ordered that "all tramp cats be collected up and killed" because they carry infantile paralysis germs.[38] The officials could not "allow the cats to run at large while the city is threatened with the dread plague."[39] Moreover, "[u]nlicensed dogs will receive the same harsh treatment."[40] The local newspaper treated this in an inappropriately light-hearted manner: "Starting Monday morning, a 'great big boogie man' is going out to hunt . . . ."[41] Although there was "no convincing evidence against cats as carriers of disease germs," the *Trenton Evening Times* still advocated that the city of Trenton hire men to "gather them in, either alive or dead."[42] Furthermore, the city of Passaic, New Jersey, passed an ordinance "authorizing the annihilation of vagrant pets."[43] John Kennell, a member of the Board of Health in Passaic, had been "preaching the destruction of stray cats since infantile paralysis has become prevalent."[44] Sometimes the slaughter of the animals was, comparatively speaking, restricted. In Quebec, Canada, after two cases of paralysis arose within families whose dogs took part in a dog exhibition, the community of Westmount ordered that "every cat or dog belonging to a family that has had the disease shall be destroyed at once."[45]

3. Spanish Flu

The Spanish flu pandemic, which is estimated to have led to fifty million deaths between 1918–1920,[46] has often been used as a point of reference when describing COVID-19. In 1918, the Spanish flu panic came to Phoenix, Arizona, which was a

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35. Robertson, *supra* note 5.

36. Dr. R.H. Bishop, Jr., *Pets and Their Perils*, CLEVELAND PLAIN DEALER, Sept. 19, 1916.

37. *Id.*

38. *Kiddies and Pets Must Separate to Avert Spread of Dread Baby Disease*, KALAMAZOO GAZETTE, Aug. 26, 1916.

39. *Id.*

40. *Id.*

41. *Id.*

42. *Warfare Against Cats*, TRENTON EVENING TIMES, Aug. 8, 1916.

43. *War on Cats Puts Passaic in a Hubbub*, N. Y. TRIB., July 21, 1916, at 6.

44. *Id.*

45. *Dogs as Paralysis 'Carriers'*, KANSAS CITY STAR, Oct. 20, 1916.

46. JOHN M. BARRY, THE GREAT INFLUENZA: THE STORY OF THE DEADLIEST PANDEMIC IN HISTORY 4 (2004).

community "touched . . . only lightly compared to elsewhere," historian John Barry relates.[47] Nonetheless, "rumors spread that dogs carried influenza. The police began killing all dogs on the street. And people began killing their own dogs, dogs they loved, and if they had not the heart to kill them themselves, they gave them to the police to be killed."[48] The local newspaper reported "Phoenix will soon be dogless."[49]

4. London During War

Massive disease outbreaks are not the only events that can lead to the slaughter of companion animals. Wars and even the anticipation of the associated hardships are another causal factor. In September 1939, while fighting was occurring in continental Europe, residents of London fixated on the consequences of future air attacks, including destruction caused by conventional bombs and the horrors that might come from the use of poisonous gases.[50] Some residents evacuated the city, some sent their children to the country, while the vast majority who remained made preparations.[51]

Residents with companion animals were unsure about the dangers of air attacks, and some expected to be called up shortly for active service.[52] They needed guidance. Unfortunately, the advice about pets was late in coming and contained mixed messages. The Home Office did not organize the National Air Raid Precautions Animals' Committee (NARPAC) until August 1939, and it primarily focused on farm animals.[53] When finally turning attention to companion animals, NARPAC urged "[t]hose who [were] staying at home should not have their animals destroyed. Animals are in no greater danger than human beings . . . ."[54] But another NARPAC message, publicized by the national media, included a suggestion to "send or take your household animals into the country in advance of an emergency" and ended by noting that if you have to leave at very short notice and "you cannot place them in the care of neighbours, it really is kindest to have them destroyed."[55]

Historian Hilda Kean describes how the residents of London responded to the September 3, 1939, declaration of war:

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47. *Id.* at 350.

48. *Id.*

49. *Id.*

50. CLARE CAMPBELL, BONZO'S WAR: ANIMALS UNDER FIRE 1939–1945 22, 26–27 (2013).

51. KEAN, *supra* note 6, at 2, 47 (the bombing of London began in September 1940).

52. It is difficult for those who had not experienced an air raid to accurately predict what would happen in one. "[T]he phantasy of air attack may well have been worse that the reality . . . ." RICHARD M. TITMUSS, PROBLEMS OF SOCIAL POLICY 345 (1950).

53. KEAN, *supra* note 6, at 44.

54. *Id.* at 45 (quoting WARTIME AIDS FOR ALL ANIMAL OWNERS, NARPAC 5 (1939)).

55. Alison Feeney-Hart, *The Little-Told Story of the Massive WWII Pet Cull*, BBC (Oct. 12, 2013), https://www.bbc.com/news/magazine-24478532 [https://perma.cc/6272-WHM5] (quoting AIR RAID PRECAUTIONS FOR ANIMALS, NAPRAC (1939)).

> [There was] "a sense of relief shot through with anxious expectation." . . . One solution to counter "isolationist individualism," particularly in London, was the creation of tasks to combat feelings of helplessness . . . . On the first weekend of war people in the London area did indeed "do things." These included . . . making blackout curtains, digging up flower beds to create vegetable patches—and killing the family pet . . . . While adhering to government advice about evacuating children and to the directive to black out light, people nevertheless ignored the advice of the government, veterinary surgeons, and animal charities about how to care for their companion animals on the outbreak of war.[56]

Over the course of four days, 400,000 dogs and cats living in London—an estimated one quarter of the total number of these animals in the city—were massacred at the behest of the owners.[57] That was more than three times the number of companion animals euthanized in London in an ordinary year[58] and more than six times the number of people killed by bombs on the Home Front during the entire war.[59]

The massacre elicited anguished reactions in Britain. A local broadcaster said, "To destroy a faithful friend when there is not need to do so, is yet another way of letting war creep into your home."[60] And the Duchess of Hamilton, who was heavily involved in rescue efforts, asked, "How can we explain such a thing to our foreign friends in this so-called animal-loving England?"[61]

Nonetheless, as Kean argued, such "events do demonstrate the utter disposability of companion animals in what became constructed as times of human crisis."[62] No government order required the animals to be killed, though false rumors circulated.[63] "The animal killing during the first week happened on an individual household basis. But individual deaths became part of a mass slaughter."[64]

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56. KEAN, *supra* note 6, at 47–48.

57. *Id.* "The figure of 400,000 was later corroborated both by the RSPCA and Brigadier Clabby, the author of the official history of the Royal Army Veterinary Corps. This conservative figure is lower than the figure of 750,000 given by the president of the RSPCA, Sir Robert Gower." *Id.* at 48.

58. *Id.*

59. *Id.*

60. Recording: Christopher Stone on "Animals: Protection and Treatment" (Nov. 19, 1939), *in* KEAN, *supra* note 6, at 50; *see also* Mitford Bruce, *Unknown Article*, TIMES, Nov. 1939, at 6, *reprinted in* KEAN, *supra* note 6, at 50 ("There is daily evidence that large numbers of pet dogs are still being destroyed for no better reason than that it is inconvenient to keep them alive—which, of course, is no reason at all . . . .").

61. NINA DOUGLAS, THE CHRONICLES OF FERNE 19 (LONDON: ANIMAL DEFENCE SOCIETY, 1951), *reprinted in* KEAN, *supra* note 6, at 51.

62. KEAN, *supra* note 6, at 5.

63. *Id.* at 47–48; *see also* CAMPBELL, *supra* note 50, at 46 (discussing rumors, including one regarding "compulsory . . . [surrender] of domestic animals" which was completely false). The NARPAC could not end the slaughter by issuing a press release. *See id.* at 46–47.

64. KEAN, *supra* note 6, at 65.

5. SARS

More recent outbreaks of dangerous diseases suggest that scientific knowledge may have tamped down, but not eliminated, overreactions to perceived health threats from companion animals that had no scientific basis. The 2003 pandemic of severe acute respiratory syndrome (SARS), a disease with a high case fatality rate of nearly 10%,[65] is another example of a threat that resulted in seizures and killings of pets even as experts, such as the World Health Organization, emphasized that culling was unnecessary.[66]

In China, where SARS first emerged and was most prevalent, some state media outlets as well as local government officials suggested a potential link between pets and SARS transmission.[67] Such concerns led "[v]igilantes and police [to kill] hundreds of cats and dogs in the most gruesome manner as fears gr[ew]" that these animals could be spreading SARS.[68] Additionally, the Beijing city government ordered "police to seize pets from homes where people had been infected with SARS."[69] "Some pet-owners have evacuated their cats and dogs, fearful that neighbours might seize and kill them. Others have asked vets to put down their pets humanely before a mob could catch them."[70] In Hong Kong it was also reported that owners were abandoning their pets, but that largely stopped after the Hong Kong health minister announced that there was no link between SARS transmission and pets.[71] At that time, the Beijing government had not offered a comparable announcement.[72]

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65. CTRS. FOR DISEASE CONTROL AND PREVENTION, *Revised U.S. Surveillance Case Definition for Severe Acute Respiratory Syndrome (SARS) and Update on SARS Cases—United States and Worldwide, December 2003*, 52 MORBIDITY & MORTALITY WKLY. REP. 1197, 1202–1206 (2003), https://www.cdc.gov/mmwr/PDF/wk/mm5249.pdf [https://perma.cc/JCF3-PM89] (discussing the 774 SARS-related deaths of which the vast majority occurred in Hong Kong and China with about 8000 cases were reported across twenty-nine countries); *see also* Lee Shiu Hung, *The SARS Epidemic in Hong Kong: What Lessons Have We Learned?*, 96 J. ROYAL SOC. MED. 374, 374–78 (2003), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC539564/ [https://perma.cc/B4BA-ZFTV].

66. Oliver August, *Fearful Chinese Slaughter Pets in SARS Hysteria*, TIMES (LONDON), (May 10, 2003, 1:00 AM), https://www.thetimes.co.uk/article/fearful-chinese-slaughter-pets-in-sars-hysteria-0k58j3z36lz [https://perma.cc/5U75-AJ4R] (WHO stated "there [was] no scientific evidence to suggest that pets have spread the virus").

67. Gady A. Epstein, *Amid SARS Epidemic, China Panics over Pets*, BALT. SUN, (May 6, 2003, 3:00 AM), https://www.baltimoresun.com/bal-te.china06may06-story.html [https://perma.cc/3KJJ-SBK5].

68. August, *supra* note 66 ("[P]ets have been strung up, buried alive, poisoned, thrown out of high-rise windows and beaten to death.").

69. *Patients' Pets Killed in SARS War*, THE STAR (May 1, 2003, 12:00 AM), https://www.thestar.com.my/news/regional/2003/05/01/patients-pets--killed-in-sars-war [https://perma.cc/NWV8-4TDT].

70. August, *supra* note 66.

71. Epstein, *supra* note 67.

72. *Id.*

6. COVID-19

A common question raised early in the COVID-19 outbreak in 2020, and which lingers even two years later, was whether this coronavirus could be spread from pets to humans. Early in the pandemic, there were scattered incidents in which local authorities initiated pet extermination campaigns. In Hongjiang (Hunan) and Zhejian, China, for example, officials put the public on notice that pets found in public areas would be killed.[73] Fearful individuals in other countries also acted out. In Lebanon and Egypt, dog welfare organizations noted increased abandonment of animals because of COVID-19 infection fears,[74] while in Australia vets received calls with "heartless inquiries for their dogs to put down because of fears that owners may get the dreaded virus from them."[75]

In the United States, the same tensions were apparent with both pet owners and those who did not own pets. During the earliest days of the COVID-19 pandemic, some owners feared getting COVID-19 from their dogs, so they surrendered, or tried to surrender, them to shelters.[76] At the time, some shelters were not accepting animals due to reduced staffing and a lack of volunteers.[77] Undeterred, some of these owners then called 911 to report aggressive animals, knowing that animal control would have to respond.[78] For example, in Habersham County, Georgia, the number of "aggressive" dogs doubled in a single week, though none of the dogs were deemed aggressive after a temperament test at the shelter.[79]

Nearly ten months into the pandemic, a resident asked her Manhattan condominium board for an exception to the no-pet policy for an emotional-support pet. The request was rejected. The board claimed that "because there is no definitive proof that dogs cannot spread coronavirus to humans, permitting one in the building

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73. Allen Kim, *Cats and Dogs Abandoned at the Start of the Coronavirus Outbreak are Now Starving or Being Killed*, CNN (Mar. 15, 2020, 6:33 AM), https://www.cnn.com/2020/03/15/asia/coronavirus-animals-pets-trnd/index.html [https://perma.cc/4AZK-GVCS].

74. Emily Lewis, *Pets Killed, Abandoned in Lebanon Due to False Link to Coronavirus*, AL ARABIYA NEWS, https://english.alarabiya.net/features/2020/03/31/Pets-killed-abandoned-in-Lebanon-due-to-false-link-to-coronavirus [https://perma.cc/9VTD-Y56X] (May 20, 2020, 10:59 AM).

75. Zauva C., *Dog Owners Want Their Pets Put Down for Fear of Contracting Coronavirus from Them*, SHARED (Mar. 19, 2020), https://buzz.shared.com/dog-owners-in-australia-want-their-pets-put-down-for-fear-of-covid-19-infection-from-them [https://perma.cc/NF9G-UNCM].

76. *See, e.g.*, *Cape Coral Shelter Takes Dog Abandoned Over Owner's Fears of Coronavirus*, WINK NEWS, https://www.winknews.com/2020/03/29/cape-coral-shelter-takes-dog-abandoned-over-owners-fears-of-coronavirus/ [https://perma.cc/459H-PB9B] (Mar. 29, 2020, 11:13 PM).

77. *See* Rebecca Lindstrom & Lindsey Basye, *Playful Puppies Deemed 'Dangerous Dogs' Due to COVID-19 Concerns*, ALIVE, https://www.11alive.com/article/news/health/coronavirus/dogs-turned-over-to-animal-control-amid-coronavirus/85-d29ba0e0-0c1d-4d03-81d1-988f901d9f17 [https://perma.cc/NJ2T-GVEC] (Mar. 30, 2020, 10:03 PM).

78. *Id.*

79. *Id.* (charges were brought when it could be shown that owners knowingly filed false police reports).

endangers the health of residents."[80] At the time of this November 2020 condo board decision, it was generally believed that cats and dogs did not spread the disease as either fomites or as infection vectors.[81] While it has been argued that this policy would not pass legal muster, it is quite telling that such a policy was even adopted.[82]

a. COVID-19 and Hamsters

Two years after the start of the pandemic, the mere correlation between having infected hamsters present with infected humans was sufficient to lead to a death sentence for the animals in Hong Kong. In January 2022, authorities in Hong Kong ordered the "disposal" of nearly 2000 assorted small pet mammals, primarily hamsters.[83] Owners of the animals also had to be tested.[84] The culling concerned animals purchased at select pet stores between December 2021 and January 2022, and it was sparked after three employees were diagnosed with the first untraceable Delta-variant infections in Hong Kong in three months.[85] Officials also suspended the sale and trafficking of small pet rodents for the same reason as a part of Hong Kong's zero-tolerance COVID-19 containment policies.[86] These policies rely on aggressive and immediate governmental responses in the form of lock-downs and testing, contact tracing, and other measures to quell even very minor COVID-19 outbreaks.[87]

Hong Kong officials apparently believed these imported hamsters were implicated in this outbreak. This "imported hamster theory" immediately followed Chinese authorities' attribution of a COVID-19 case of unknown origin to virus traces found on a package sent through the international mail.[88] "[T]he global science community [was] sceptical on the likelihood of COVID-19 spreading by international mail, at least at the frequency it is reported in China . . . ."[89]

In announcing these hamster-related measures, health authorities emphasized their concerns while also admitting that they had no evidence to suggest that the

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80. Ronda Kaysen, *Do Emotional-Support Pets Pose a Covid Risk in Apartment Buildings?*, N.Y. TIMES (Nov. 7, 2020), https://www.nytimes.com/2020/11/07/realestate/do-pets-pose-a-covid-risk.html [https://perma.cc/5J4M-M2JN].

81. *Id.*

82. *Id.*

83. Helen Davidson, *Hong Kong to Kill Thousands of Hamsters After COVID Found on 11*, GUARDIAN, https://www.theguardian.com/world/2022/jan/18/hong-kong-cull-thousands-hamsters-covid-pet-shop-virus-animals [https://perma.cc/943H-RHNX] (Jan. 19, 2022, 9:44 AM).

84. *Id.*

85. *Id.*

86. *Id.*; *see also* Jessie Yeung, *Hong Kong Plans to Cull 2,000 Hamsters over COVID Fears. Pet Owners are Outraged*, CNN (Jan. 21, 2022, 12:15 AM), https://www.cnn.com/2022/01/18/asia/hong-kong-covid-cull-hamsters-intl-hnk/index.html [https://perma.cc/5EYW-7UJV].

87. Amy Qin & Amy Chang Chien, *China Holds the Line on 'Zero Covid,' but Some Wonder for How Long*, N.Y. TIMES (Jan. 21, 2022), https://www.nytimes.com/2022/01/21/world/asia/china-zero-covid-policy.html [https://perma.cc/AT4Z-ZVK6].

88. Davidson, *supra* note 83.

89. *Id.*

animals in question could cause COVID-19 in humans.[90] A "top microbiologist" and health advisor nevertheless praised the actions as being "decisive," "prudent," and made out of an abundance of caution.[91] Hamster owners in Hong Kong immediately erupted in protest and expressed solidarity with affected citizens. Social media was flooded with footage and images of small children crying while watching the seizure of their pets, message boards were filled with offers to quarantine or re-home hamsters, and many offered to backdate or even forge pet shop receipts to spare specific creatures.[92]

Although authorities took a hard line and continued to insist on the surrender of identified animals, only a fraction of owners complied with the hamster mandate. Hong Kong's Agriculture, Fisheries and Conservation Department specifically stated that it would follow up and forward the names of non-compliant owners to the police.[93] Chief Executive Carrie Lam called the resistance "irrational" and said that the disposal of the animals would "minimise as soon as possible the potential risks of virus transmission."[94]

On January 28, ten days after the Hong Kong government announced the selective cull of the hamsters, a scientific working paper (one that had not yet been peer-reviewed) became publicly available that claimed "[b]oth genetic and epidemiological results strongly suggest that there were two independent hamster-to-human transmission[s] and that such events can lead to onward human transmission."[95] This working paper would ultimately be published with the same central conclusion of a "strong[] suggest[ion]" of hamster-to-human transmission.[96]

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90. *Id.* ("Hong Kong's health secretary, Sophia Chan, conceded there was *no evidence* domestic animals can pass the disease to humans, but authorities were acting out of caution.") (emphasis added).

91. *Fury over Hong Kong's Mass Cull of Hamsters and Small Pets*, FRANCE24 (Jan. 19, 2022), https://www.france24.com/en/live-news/20220119-fury-over-hong-kong-s-mass-cull-of-hamsters-and-small-pets [https://perma.cc/T22P-K2SS]. The WHO noted that "animals can reinfect humans," but data regarding this claim are not readily available. *Id.*

92. Helen Davidson, *Hongkongers Launch Hamster Rescue Mission After COVID Cull Declared*, GUARDIAN (Jan. 21, 2022), https://www.theguardian.com/world/2022/jan/21/hongkongers-launch-hamster-rescue-mission-after-covid-cull-declared [https://perma.cc/RL9H-M3F5]; *see also* Zen Soo, *2,000 Hamsters, Small Animals to be Killed in Hong Kong After Positive COVID Cases*, USA TODAY (Jan. 18, 2022, 3:54 PM), https://www.usatoday.com/story/news/world/2022/01/18/2000-hamsters-small-animals-hong-kong-covid/6568460001/ [https://perma.cc/DR9B-HQ9K].

93. Davidson, *supra* note 92.

94. *Id.* (quoting Carrie Lam). *See infra* footnotes 391–94 and accompanying text (further discussion of the Hong Kong government's response).

95. Hui-Ling Yen et al., *Transmission of SARS-CoV-2 (Variant Delta) from Pet Hamsters to Humans and Onward Human Propagation of the Adapted Strain: A Case Study* (Jan. 28, 2022) (preprint, not peer-reviewed), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4017393 [https://perma.cc/FX3U-PZC7].

96. *See* Hui-Ling Yen et al., *Transmission of SARS-CoV-2 Delta Variant (AY.127) from Pet Hamsters to Humans, Leading to Onward Human-to-Human Transmission: A Case Study*, 399 LANCET 1070 (2022).

b. COVID-19 and Mink

Though a vicious feedback loop in which humans infected animals and vice versa has not yet arisen with pets, it has occurred with COVID-19 and farmed mink who are grown for their fur. Decisions regarding these farm animals offer important lessons on governmental action under extreme urgency, incomplete information, and conflicting interests that are relevant to a likely decision process during a petdemic in which human health would be pitted against companion animals rather than against livestock.

COVID-19 infections involving the mink population entails zoonosis or zoonotic spillover (animals infecting humans), anthroponosis or spillback (humans infecting nonhuman animals), and reverse anthroponosis (humans infecting animals who then further infect humans). This latter feedback loop raises the prospect that nonhuman animals may become disease reservoirs that serve to continually reintroduce the disease to humans and/or become a source for mutations.[97] When the pandemic started, there was an intense search for a possible animal origin of the disease and a recognition that other nonhuman animals might get infected. Very early on scientists understood that the Mustelidae family (e.g., ferrets, mink) was susceptible to the disease, at least under laboratory conditions.[98] Mink researchers thought that mink might soon become infected. They did not have to wait long.

In late April to early May 2020, mink on a number of Danish mink farms tested positive for COVID-19.[99] On May 20, the Danish authorities announced that they believed that the farmed mink might have infected the humans working with them.[100] They also indicated that cats might have had a role in spreading the disease between farms. Nearly 25% of the cats on a farm with infected mink were themselves infected.[101] The high-density living conditions of relatively genetically homogenous mink on the farms created ideal conditions for spreading the virus.[102]

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97. *See* Ryan S. Miller, Matthew L. Farnsworth & Jennifer L. Malmberg, *Diseases at the Livestock–Wildlife Interface: Status, Challenges, and Opportunities in the United States*, 110 PREVENTIVE VETERINARY MED. 119, 121 (2013) (recognizing that the presence of a wildlife reservoir is an impediment to eradication of a zoonotic disease). *See infra* note 108 and accompanying text (discussing mutations).

98. *See* Jianzhong Shi et al., *Susceptibility of Ferrets, Cats, Dogs, and Other Domesticated Animals to SARS-Coronavirus 2*, 368 SCIENCE 1016 (2020).

99. Alice Tidey & Rachael Kennedy, *Coronavirus: A Mink May Have Transmitted COVID-19 to a Human, Says Dutch Government*, EURONEWS (May 20, 2020), https://www.euronews.com/2020/05/20/coronavirus-minks-test-positive-for-covid-19-at-two-dutch-farms [https://perma.cc/SCN4-46B9].

100. Zoë Schlanger, *The Mink Pandemic Is No Joke*, ATLANTIC (Dec. 23, 2020), https://www.theatlantic.com/health/archive/2020/12/minks-pandemic/617476/ [https://perma.cc/MFX2-L594].

101. Mick Krever & Rob Picheta, *A Mink May Have Infected a Human with Covid-19, Dutch Authorities Believe*, CNN (May 20, 2020, 7:19 AM), https://www.cnn.com/2020/05/20/europe/coronavirus-mink-netherlands-testing-intl/index.html [https://perma.cc/PLV2-9EP4].

102. Florence Fenollar, Oleg Mediannikov, Max Maurin, Christian Devaux, Philippe Colson, Anthony Levasseur, Pierre-Edouard Fournier & Didier Raoult, *Mink, SARS-CoV-2, and the Human-Animal Interface*, FRONTIERS IN MICROBIOLOGY, Apr. 1, 2021, at 1, 10.

Within a month, the Danish government ordered that "mink farms within five miles of a farm or herd that is confirmed or suspected to be infected with the coronavirus must be culled" in addition to the extermination of mink on the source farm.[103] All told, about one million were killed. The mink farmers received "compensat[ion] for the cost of losing their herd and other operating losses."[104]

This was a significant setback for Denmark, the world's largest producer of mink pelts.[105] But it was going to get worse. When there is "back-and-forth transmission" between species, it is "likely to induce more mutations . . . leading to novel strains that could be deadlier than original strains."[106] The concern was that "those novel strains w[ould] pose significant challenges for infection control by causing reinfections, re-emergent outbreaks, and rendering current vaccines less effective."[107] On November 2, 2020, preliminary research suggested that concerning mutations had been found.[108] The next day the assessment was sent to the government, and the day after that, Denmark's Social Democrat-led government ordered the country's *entire* population of farmed mink—up to seventeen million animals—destroyed.[109] The government also imposed movement restrictions that affected the more than 280,000 people in North Jutland—the site of eleven of the twelve human cases with the Cluster 5 mutation.[110]

Meanwhile, *Nature* reported in mid-November that "researchers who have reviewed the available data say these claims [about Cluster 5] are speculative."[111] Those researchers also said that "the mutations themselves aren't particularly concerning because there is little evidence that they allow the virus to spread more easily among people, make it more deadly or will jeopardize therapeutics and vaccines."[112] Other scientists cautioned against "over-interpret[ing] very preliminary data."[113] In particular, "the experimental work is too limited to draw any conclusions

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103. Kaelan Deese, *Danish Government Orders the Death of a Million Minks Due to COVID-19 Outbreak*, HILL (Oct. 13, 2020, 4:13 PM), https://thehill.com/policy/international/520856-danish-government-orders-death-of-a-million-minks-due-to-COVID-19 [https://perma.cc/P4WY-YRVA].

104. *Id.*

105. *See id.*

106. Shanshan He, Jie Han & Eric Lichtfouse, *Backward Transmission of COVID-19 from Humans to Animals May Propagate Reinfections and Induce Vaccine Failure*, 19 ENV'T CHEM. LETTERS 763, 764–65 (2021).

107. *Id.* at 765.

108. Alessio Perrone, *Denmark: More than 200 People Diagnosed with Mink-related Coronavirus*, INDEPENDENT (Nov. 6, 2020, 4:57 PM), https://www.independent.co.uk/news/world/europe/denmark-coronavirus-minsk-covid-b1637064.html [https://perma.cc/YQ68-JHFC].

109. *See* Deese, *supra* note 103.

110. *Denmark Tightens North Jutland Restrictions in Response to Coronavirus Mutation*, LOCAL (Nov. 4, 2020, 8:52 PM), https://www.thelocal.dk/20201105/denmark-tightens-north-jutland-restrictions-in-response-to-coronavirus-mutation [https://perma.cc/XPZ4-FJY9].

111. Smriti Mallapaty, *COVID Mink Analysis Shows Mutations are Not Dangerous—Yet*, NATURE (Nov. 13, 2020), https://www.nature.com/articles/d41586-020-03218-z [https://perma.cc/J2WS-CBER].

112. *Id.*

113. *Id.*

about its implications for therapies and vaccines."[114] Despite robust sequencing efforts, no evidence of the variant had been found since September 2020.[115] The Cluster 5 variant was probably a "'dead end' in people."[116]

The Danish government had to make a judgment call, and it made a risk-averse one. Danish Prime Minister Mette Frederiksen explained that the situation was "very, very serious and . . . could jeopardize efforts to develop a vaccine. We have a great responsibility towards our own population, but with the mutation that has now been found, we have an even greater responsibility for the rest of the world as well."[117] Meanwhile, a court determined that the government-ordered culling lacked a legal basis, which forced the government to negotiate a new law to achieve this end.[118] The legal fallout from the illegal action led to the resignation of the Danish Minister of Agriculture. Ultimately, the new legislation passed, and the mink population was eliminated.[119] To the government, the risk of allowing a mutation that could set back human vaccine efforts was too great to bear, and there was to be no wait. Mink were expendable, even at the cost to the Danish mink farming industry.

B. Observations

The history of individual and societal responses to perceived health threats from companion animals is extremely troubling. It serves as a warning about what could occur in a major disease outbreak that actually did implicate these animals in disease transmission to humans. Will we act differently in the face of an outbreak involving our pets? If governments are willing to cull farmed animals to save human lives, would they also be willing to cull our companion animals? What solicitude should we give to animals that can make us sick and possibly cause our death?

The historical case studies underscore the importance of accurate information regarding the health threat our companion animals actually pose. Particularly at the start of a novel disease outbreak, there may be a paucity of information about infection and transmissibility. As such, the desire for immediate action may lead both individuals and governments to make decisions under far from ideal informational circumstances and, even when needed information exists, dissemination may be limited. Deeper knowledge about infectious disease may help us avoid the exact mistakes of the past, but we may still fall prey to the patterns that led to these mistakes.

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114. *Id.*

115. *Id.* It is believed that those who worked on the farms "were probably exposed to a high viral dose." *Id.*

116. *Id.*

117. Perrone, *supra* note 108.

118. *Danish Parties Agree on Law to Complete Culling of Country's Minks*, LOCAL (Nov. 17, 2020, 5:17 PM), https://www.thelocal.dk/20201117/danish-parties-agree-on-law-to-complete-culling-of-countrys-mink [https://perma.cc/292C-37B2].

119. *See* Laurel Wamsley, *Danish Agriculture Minister Resigns Amid Criticism for Ordering Mink Cull*, NPR (Nov. 19, 2020, 2:32 PM), https://www.npr.org/sections/coronavirus-live-updates/2020/11/19/936687145/danish-agriculture-minister-resigns-amid-criticism-for-ordering-mink-cull [https://perma.cc/6KK4-YE22].

Moreover, the law, at least in the historical cases discussed, did not seem to curb the behavior of individuals and governments when it came to killing animals suspected of transmitting a dread disease. Owners often killed their own pets, and in most instances local or even national authorities sanctioned or organized the slaughter. In these cases, it is clear there were no guardrails to prevent owners from disposing of their pet "property" or to bar local authorities from killing unowned roaming animals, though the authorities in most cases appeared to stop short of seizing pets from the home. These observations raise an important question: does the law still pose so weak a constraint on such behavior? Science has progressed, but has the law?

Consider the body count. Time and time again, individuals and governments sacrificed animal lives in the nominal service of saving human lives. In most of the historical cases, decision makers appeared unwilling to pause long enough to determine whether their actions were actually justified. People acted out of fear, with limited information, or perhaps even against contrary information, and animals were killed.

Looking forward, the lesson is that a significant number of people may not treat their companion animals as if they were members of their family, despite claims to do just that. That was true in both the distant and the more recent past. Will it be different in the future? And, even if things are different, will they be different enough?

II. LAW, POLICY, AND CHOICE IN A PETDEMIC

Part I provided examples of lethal responses to fears that companion animals could infect humans with a dangerous disease. If a petdemic happened today, would we exhibit a similarly blatant disregard for animal life? The answer depends on the specific circumstances of the threat. Part II explores various scenarios showcasing key tensions that would influence individual and social choices regarding human and animal welfare. These conflicts would be heightened if there were high levels of transmission of the disease between animals and humans and if the disease were dangerous to humans.

Section II.A begins by introducing a hypothetical petdemic as the backdrop for discussion. The analysis then explores the information setting likely to be faced by decision makers during a novel disease outbreak (Section II.B) and examines the legal constraints on decision maker choice (Section II.C). With this background, Section II.D focuses on the pivotal question of whether the companion animals would be maintained in the home, surrendered to third parties, or otherwise dispatched, while accounting for varied preferences and circumstances of decision makers.

A. An Imagined Petdemic

Adopting for this analysis a narrow, human-oriented perspective, the primary factors of concern in a petdemic are the danger to humans of the disease and the transmissibility of the disease between animals and humans. Danger, the severity of the disease, means the risk to human health given infection. Transmissibility refers to the speed or ease with which the disease can spread from an infected animal to a

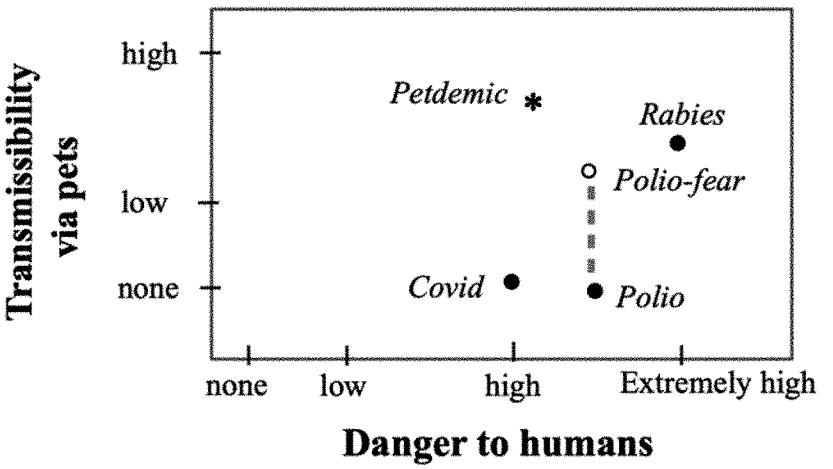
human (and human to animal) with a background assumption that the disease is also easily spread from human to human.

The central hypothetical for this article involves a disease with moderately high transmissibility that poses a high level of health risk to humans[120] and no meaningful health risk to the animals.[121] One can represent this combination at the starred location in Figure 1, which depicts transmissibility via pets and danger to human health on the vertical and horizontal axes, respectively. At the levels assumed, the resulting petdemic should give rise to real individual and societal concerns. Several variations of the hypothetical case will be considered.

120. A high level of danger was chosen to make the danger significant enough to worry owners, but not so high (i.e., extremely high) that the government would likely seize and destroy the animals, thereby removing owner agency regarding what happens to their pet. In epidemiology, the concepts of "high," "moderate," and "no" danger to humans, as well as "high," "moderate," and "low" transmissibility have been defined and studied extensively. *See, e.g.*, Jean Maguire van Seventer & Natasha S. Hochberg, *Principles of Infectious Diseases: Transmission, Diagnosis, Prevention, and Control*, 6 INT'L ENCYCLOPEDIA OF PUB. HEALTH 22 (2017).

121. Assuming no danger to animal health allows us to focus on the scenario where human health is the chief health risk. In practice, one might expect some long-term health effects of the disease on the companion animals, which would affect individual and social decisions. For example, if most infected animals die, then the policy reaction may take the form of extreme prevention of infection to animals or slaughter of the animals when infected animals pose high danger to humans.

Figure 1: Transmissibility via Pet and Danger to Humans for Disease *Without* Vaccines and Therapeutics



For perspective, it is useful to identify some familiar untreated animal disease threats on this figure. Rabies, which is transmissible by saliva (usually bites), and is lethal unless offset by vaccination and/or post-exposure prophylactics, is located in the upper right corner of the figure.[122] Polio, another dangerous threat to humans, is located in the bottom right corner because pets cannot transmit it to us. During the polio scares early in the twentieth century, many mistakenly feared that polio was transmitted via pets.[123] This unfounded polio-fear scenario is represented by the open dot that sits directly above the location for polio.[124] Finally, COVID-19 is located to the left of polio because it is less dangerous to humans, and the threat of transmission to humans by pets is thought to be trivial.[125] Over time, treatment options will mitigate the danger, moving the location of the threat to the left, though the locations also may change if the disease mutates.

While this figure focuses on transmissibility from animals to humans and danger to human health, these factors have multiple dimensions that would complicate both a graphical representation as well as exposition. For example, there are actually four different infection paths: animal to human, human to animal, human to human, and animal to animal. For purposes of the hypothetical, I assume that the same level of transmissibility characterizes all four pathways.[126] I also assume that the level of

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122. RABIES, CTRS. FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/rabies/index.html [https://perma.cc/3PGQ-DJPC] (May 4, 2022).

123. For further discussion on polio, see *supra* Part I.A.2.

124. In a petdemic characterized by effectively nonexistent transmissibility but where consequences are high, the primary concern would be a *perceived* petdemic, rather than an actual one. In those circumstances, interventions in the form of communication and education would be essential.

125. *See supra* note 15 and accompanying text; *see also supra* note 16 and accompanying text.

126. Assuming that transmissibility is equally high for all paths reduces the possible cases to consider. The analysis also assumes that transmission via fomite action is not an important

transmissibility applies to different potential transmission routes such as aerosol-borne or fecal-oral routes.[127] The hypothetical petdemic focuses on transmission pathways in which the animals themselves become infected and serve as disease vectors. However, transmission may also occur when an organism (animal or human) becomes infected through physical contact with an uninfected intermediary (whether an organism or an object) acting as a "fomite." In the case of animal-to-human transmission, for example, an animal's fur ("a furry doorknob") could become contaminated with a virus and the virus could then be transferred to a human who contacts the fur.[128]

During a petdemic, the health of the infected pets might also be at risk. As noted, for this hypothetical petdemic, the animals are assumed to overwhelmingly recover without any adverse health consequences. As such, the concern is not animals dying from the disease, but rather dying as the result of human decisions. While the assumption regarding recovery is not essential for this analysis, it more starkly reveals the essential dilemmas that the decision makers would face in a petdemic when their responses would depend on the levels of danger to human health and ease of transmissibility, as represented by a location in Figure 1.

B. Information Inputs to Individual and Social Choice

Very early in a novel disease outbreak, society rarely has all the information needed to inform the public and public policy. Critical understandings may remain uncertain, even as individuals and societies feel the need to react.

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risk. That is, uninfected pets will not transmit disease by being carriers of a virus or bacteria. The fomite concern is tough to control because it is hard to wash pets (all the time) or keep them from licking bad things. Fomite concerns can and have led to panicked reactions in the past.

127. Jing Lv, Jing Gao, Bo Wu, Meiling Yao, Yudong Yang, Tongjie Chai & Ning Li1, *Aerosol Transmission of Coronavirus and Influenza Virus of Animal Origin*, FRONTIERS IN VETERINARY SCI. (Apr. 13, 2021), https://www.frontiersin.org/articles/10.3389/fvets.2021.572012/full [https://perma.cc/THP3-Y3JB] (for more on aerosol-borne disease and how diseases pass through aerosol particles).

128. The smallpox and polio epidemics, *see supra* Part I, often involved fear that animals were acting as fomites for transmission of the viruses. Owners that fear their pets might spread the infection as a fomite might take harmful actions to disinfect their animals, much as some individuals during the COVID-19 pandemic misused disinfectants on themselves. Radhika Gharpure, et al., CTRS. FOR DISEASE CONTROL AND PREVENTION, *Knowledge and Practices Regarding Safe Household Cleaning and Disinfection for COVID-19 Prevention – United States, May 2020*, 69 MORBIDITY & MORTALITY WKLY. REP. 705, 706 (2020), https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6923e2-H.pdf [https://perma.cc/G77Z-MP8B] ("Thirty-nine percent [of respondents] reported intentionally engaging in at least one high-risk practice not recommended by CDC for prevention of SARS-CoV-2 transmission, including application of bleach to food items (e.g., fruits and vegetables) (19%); use of household cleaning and disinfectant products on hands or skin (18%); misting the body with a cleaning or disinfectant spray (10%); inhalation of vapors from household cleaners or disinfectants (6%); and drinking or gargling diluted bleach solutions, soapy water, and other cleaning and disinfectant solutions (4% each).").

These informational challenges are illustrated by the Danish mink culling described in Part I. Early on, scientists provided sophisticated insight into the genome of the COVID-19 virus and correctly identified this species as vulnerable to infection.[129] But, once the feared transmission (human-to-mink-to-human) was found, scientists did not reach consensus on the real-life human health significance of the associated mutation within the time frame the policy makers felt compelled to act. The Danish government chose the risk-averse path of culling the entire farmed mink population.[130] The culling, while informed by science, was not itself a scientific decision.

In a petdemic, decision makers would draw on scientific knowledge which would highlight particular threats. Like the mink episode, achieving a reasonably complete understanding of the dangers might take time that decision makers feel they lack. But there are important differences. In the mink case, direct transmission, in the first instance, would be limited to humans tending to the farmed animals, whereas in the hypothetical petdemic the threat of direct transmission would be much more pervasive. With the mink, the government was the primary decision maker, whereas in the hypothetical petdemic the most important decision makers likely would be the pet owners. This difference underscores the importance of recognizing how information is communicated and understood by different parties. Most importantly, the purely business-based logic that society brutally wields when dealing with animals as agricultural products would hopefully not apply to owner decisions regarding their pets. As decision makers, pet owners would likely be less well-informed than the government and their decisions would involve additional and more idiosyncratic factors such as the owner's attachment to the pet.

The remainder of this Section explores important aspects of information and decision making that are likely to characterize a petdemic arising from a novel disease outbreak. First, many critical decisions will be made with incomplete or disputed information. Second, information used in the decision-making process depends on the information sources that are trusted and used, and these will vary significantly from person to person.

Society's ability to react to novel disease outbreaks seems inadequate, sometimes woefully so.[131] One reason is that a substantial amount of decision-relevant information will emerge slowly because it is disease specific. That is, questions regarding transmissibility, severity, and the impact of existing treatments cannot be fully answered until after the disease manifests itself. While some of these questions can be resolved in the lab, other questions, such as the transmissibility of pet-to-human infection in real world conditions, take time to understand because such

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129. *See* Shi et al., *supra* note 98.

130. *See infra* Part I.A.6.b (discussing COVID-19 transmission on Danish mink farms).

131. *See, e.g.*, Bryan Walsh, *The World Is Not Ready for the Next Pandemic*, TIME (May 4, 2017), https://time.com/magazine/us/4766607/may-15th-2017-vol-189-no-18-u-s/ [https://perma.cc/7ZWP-S8EM]; Betsy McKay & Phred Dvorak, *A Deadly Coronavirus Was Inevitable. Why Was No One Ready?*, WALL ST. J. (Aug. 13, 2020), https://www.wsj.com/articles/a-deadly-coronavirus-was-inevitable-why-was-no-one-ready-for-covid-11597325213 [https://perma.cc/THG5-7JQ7]; *Safeguarding American Agriculture in a Globalized World: Hearing Before S. Comm. on Agric., Nutrition, and Forestry*, 115th Cong. 3–5 (2017).

transmissibility depends not only on physical and biological factors but also on the characteristics of human-pet interactions.

The COVID-19 pandemic illustrates the strength of science and its limitations in filling critical information gaps.[132] Science's ability to sequence the genomes and understand how viruses spread quickly focused attention on the role of ACE-2 receptors in facilitating transmission.[133] With regard to the possibility of spread from human to animal or animal to human, this specific knowledge narrowed the set of animals for which infection was possible.[134] In a petdemic, this knowledge could quickly identify which animal species are more prone to become disease vectors. What we did not know was whether animals could be infected under real-life conditions.

Generally, what we know depends in part on where we place our research dollars. Along these lines, it is much easier for those who fund research to justify supporting preparation for imminent threats relative to threats that seem theoretical or for threats that emerged previously, but which ultimately were not significant. As an example of the latter, journalists Betsy McKay and Phred Dvorak argued that scientific and public health research attention was directed away from coronaviruses such as COVID-19 towards influenza because of the world's experience with the SARS epidemic, which subsided relatively quickly.[135]

The foregoing discussion assumes an ideal world in which relevant information, once generated, is taken into account by all decision makers. Especially for individual owners, this is not always true in practice. The multitude of information sources of varying quality and the unfolding nature of much of the information suggest that individuals will have different levels of awareness of information in a petdemic. Furthermore, as we have seen in the COVID-19 pandemic, large fractions of the population distrust expert opinion even when it is close to consensus opinion.[136] Across the owner population, then, there is likely to be significant variation in whether and how relevant information will be used.

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132. The same information challenges affecting scientific information pertaining to a petdemic applies to informational inputs from the economics and business expert communities, as well as from other expert communities. Given the complexity of social and economic systems, disagreement about future impacts of various policy interventions can be expected.

133. *See, e.g.*, Stephany Beyerstedt, Expedito Barbosa Casaro & Érika Bevilaqua Rangel, *COVID-19: Angiotensin-Converting Enzyme 2 (ACE2) Expression and Tissue Susceptibility to SARS-CoV-2 Infection*, 40 EUR. J. MICROBIOLOGY & INFECTIOUS DISEASES 905 (2021).

134. *See generally Animals and COVID-19*, CTRS. FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/animals.html/ [https://perma.cc/8HE8-GE7Z] (July 5, 2022) (for more information on which animals can be infected with COVID-19, and which animals can then infect humans with COVID-19 once infected themselves).

135. McKay & Dvorak, *supra* note 131.

136. Craig Polasky, *COVID-19 Misinformation is Ubiquitous: 78% of the Public Believes or is Unsure About At Least One False Statement, and Nearly a Third Believe At Least Four of Eight False Statements Tested*, KAISER FAM. FOUND. (Nov. 8, 2021), https://www.kff.org/coronavirus-covid-19/press-release/covid-19-misinformation-is-ubiquitous-78-of-the-public-believes-or-is-unsure-about-at-least-one-false-statement-and-nearly-at-third-believe-at-least-four-of-eight-false-statements-tested/ [https://perma.cc/357L-5EWL].

Consider toxoplasmosis as an example of when popular beliefs about the transmissibility of a pet-borne infection are arguably exaggerated relative to scientific understanding. Toxoplasmosis,[137] an infection from the *toxoplasma gondii* parasite which can be transmitted through cat waste, may result in human health issues including birth defects or death of the offspring.[138] This concern has caused some pregnant women to be unduly hesitant when interacting with cats. While only a minority of *T. gondii* cases in the United States arise from direct exposure to cat waste, the belief that pregnant women should eliminate all contact persists.[139] Keeping pet cats inside, assigning litter box duties to another member of the household, or even changing the litter box daily effectively eliminates the transmission to any member of a family, pregnant or not.[140] Even though there is virtually no risk, the belief that there is may nonetheless lead pet owners to give up their cats during pregnancy out of an abundance of caution or an inability to segregate them.[141] This surrendering occurs, in part, owing to "uninformed doctors [who] continue to persuade pregnant women to get rid of their beloved cats."[142] The persistence of these beliefs illustrates the importance and difficulties of communicating the relevant implications of scientific understanding to individual decision makers.

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137. *See generally* Denise Flaim, *Pregnancy Peril from Cats is Exaggerated*, L.A. TIMES (Feb. 21, 2005, 12:00 AM), https://www.latimes.com/archives/la-xpm-2005-feb-21-he-cats21-story.html [https://perma.cc/U7SL-YB2K].

138. *See Toxoplasmosis: General FAQs*, CTRS. FOR DISEASE CONTROL, https://www.cdc.gov/parasites/toxoplasmosis/gen_info/faqs.html [https://perma.cc/TEA6-4W2R]. (Sept. 3, 2020) (everything from slightly swollen lymph nodes to damage to the brain or eyes). *See also* Karen Weintraub, *How Worried Should Cat Owners Be About Toxoplasmosis?*, N.Y. TIMES (June 8, 2017), https://www.nytimes.com/2017/06/08/well/family/how-worried-should-cat-owners-be-about-toxoplasmosis.html [https://perma.cc/J2QF-6ANU].

139. *See Toxoplasmosis: General FAQs*, *supra* note 138. Cats are far from the only source for toxoplasmosis. In 2005, it was estimated that between thirty-six to eighty percent of all *T. gondii* infections were a result of "eating undercooked lamb, beef or game" or "contact with soil." Flaim, *supra* note 137. Unfiltered water or unwashed fruits and vegetables can cause infection. Weintraub, *supra* note 138. In fact, roughly twenty percent of the American public has some amount of *T. gondii* in their bodies, but a majority of these people have sufficient strength in their immune systems to prevent life-altering effects or toxoplasmosis. *Id. But see* R.W. Gerhold & D.A. Jessup, *Zoonotic Diseases Associated with Free-Roaming Cats*, 60 ZOONOSES PUB. HEALTH 189 (2013) (arguing risk of infection from cat oocyts is greater than previously believed).

140. *Compare* Weintraub, *supra* note 138, *with* Marion Vittecoq, Kevin D. Lafferty, Eric Elguero, Jacques Brodeur, Michel Gauthier-Clerc, Dorothée Missé, Benjamin Roche & Frédéric Thomas, *Cat Ownership is Neither a Strong Predictor of* Toxoplasma gondii *Infection Nor a Risk Factor of Brain Cancer*, 8 BIOLOGY LETTERS 1042, 1042 (2012) ("Although cats are a necessary part of the life cycle of *T. gondii*, multiple studies have shown that cat ownership is not a strong predictor of risk of *T. gondii* infection," even though there could be some correlation), *and Toxoplasmosis: General FAQs*, *supra* note 138 ("Yes, you may keep your cat . . . if you are pregnant.").

141. *See Toxoplasmosis gondii*, ALLEY CAT RESCUE, http://www.saveacat.org/toxoplasmosis.html [https://perma.cc/Q9MR-7AAQ].

142. *Id.*

This Section underscored the difficult informational environment that decision makers would face in a petdemic. Before examining the decision calculus of owners and governments in light of this environment, I consider how such decisions would be shaped by the law.

C. Empowerment and Constraint: Law Relevant to Petdemic Responses

How much latitude does the law allow individuals in making decisions regarding their pets? What constrains governmental action? My analysis finds that existing law would operate unevenly, constraining some actions while enabling others.

Laws serving three primary purposes shape actions regarding our companion animals: establishing the rights of the owner regarding their animals; protecting animals against human threats; and protecting humans against animal threats. Laws that establish a companion animal's legal status as a special form of property further the first purpose. Laws that impose minimum humane standards for the treatment and care of companion animals support the second. Such laws include a heterogeneous group of anti-cruelty and anti-neglect laws. Finally, the state's exercise of police power to protect the health, safety, and welfare of its citizenry helps fulfill the third purpose. The third set includes, for example, restrictions intended to prevent both disease transmission from animals to humans and physical harm to humans posed by aggressive animals. The courts are very deferential to the state's use of police power. I now turn to the relevant law pertaining to these three purposes.

1. Human Ownership of Pets: Property and Property Plus

The relevant foundation for understanding the legal rights of owners is reflected in the usage of the term "owner" to describe the relationship between pet guardians and their companion animals.[143] Generally, animals are considered property under both common and statutory law.[144] In all United States jurisdictions, pets are considered the personal property of their owners.[145] For example, in one North Carolina case, a veterinary hospital mistakenly positioned a dog's feeding tube.[146] The owners successfully sued for malpractice that resulted in the dog's death.[147] The owner was reimbursed for the veterinary bills and awarded the replacement cost for

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143. *See generally* Susan J. Hankin, *Making Decisions About Our Animals' Health Care: Does it Matter Whether We Are Owners or Guardians?*, 2 STAN. J. ANIMAL L. & POL'Y 1, 5 (2009).

144. Kayla A. Bernays, Note, *We've Still Got Feelings: Re-Presenting Pets as Sentient Property*, 60 ARIZ. L. REV. 485, 486 (2018); *see also* Nicole R. Pallotta, *Chattel or Child: The Liminal Status of Companion Animals in Society and Law*, 8 SOC. SCIS. 158 (2019).

145. Bernays, *supra* note 144, at 486 (citing Susan J. Hankin, *Not a Living Room Sofa: Changing the Legal Status of Companion Animals*, 4 RUTGERS J.L. & PUB. POL'Y 314, 321 (2007)).

146. Shera v. N.C. State Univ. Veterinary Teaching Hosp., 723 S.E.2d 352, 353 (N.C. Ct. App. 2012).

147. *Id.*

a Jack Russell Terrier dog (approximately $2800).[148] The Court of Appeals of North Carolina affirmed. It expressed sympathy for the plight of the owners, but it stressed that the market value measure of damages applied in any case involving "negligent destruction of personal property, whether sentient or not."[149] Even for those states that treat animals as more than property, by recognizing a special relationship between owner and pets, that recognition generally reflects an appreciation of the *owner's* interest in the pets, rather than inherent rights of the animal.[150]

The overall treatment of pets under the law has improved over time. While there are many important and ambitious efforts to further enhance their station so as to formally recognize nonhuman animals as deserving of rights under the law, at present even our beloved pets are considered property under the law.[151] At this time, the threat posed by a petdemic would likely disfavor more expansive legal protections being conferred on animals during a time of crisis.

2. Minimum Humane Standards: Protecting Animals from Human Threats

Human animals, as owners, can buy and sell companion animals and have nearly complete authority over their pet's care. Because animal rights have not been recognized in U.S. law, the only limitation to the owner's all important property rights are the widespread, albeit highly variable, basic humane protections for animals in the form of anti-cruelty and anti-neglect laws.[152]

Sentience affords animals a modicum of protection embodied in animal anti-cruelty laws. For example, the relevant New York statute prohibits torture, unjustifiable injury or deprivation of "necessary sustenance" as a class A misdemeanor.[153] Courts have even permitted warrantless search and seizure of animals when the animals are in exigent conditions.[154] But no laws prohibit the surrender of healthy pets to animal shelters, even if unadopted animals will eventually be euthanized due to overcrowding.

If owners fear their pets may spread disease and circumstances make it impossible to surrender the animal to a third party, the pet might be abandoned. Courts have interpreted abandonment as cruelty.[155] However, the penalties associated with

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148. *Id.* at 354–55.

149. *Id.* at 357.

150. Bernays, *supra* note 144, at 490–91.

151. *See* STEVEN M. WISE, RATTLING THE CAGE: TOWARD LEGAL RIGHTS FOR ANIMALS (2000); NONHUMAN RIGHTS PROJECT, https://www.nonhumanrights.org [https://perma.cc/V6CC-YMBN] (a nonprofit focused on securing rights for nonhuman animals).

152. *See Laws that Protect Animals*, ANIMAL LEGAL DEF. FUND, https://aldf.org/article/laws-that-protect-animals/ [https://perma.cc/6W2A-XTR4].

153. N.Y. AGRIC. & MKTS. LAW § 353 (Consol. 2005).

154. Legitimate warrantless search and seizure may be justified with evidence of exigent circumstances presenting health and safety dangers. *See, e.g.*, King v. Montgomery Cnty., No. 3:17-cv-01116, 2019 WL 1640743, at *1 (M.D. Tenn. Apr. 16, 2019) (holding that exigent circumstances justified officer's warrantless search that led to subsequent seizure because conditions could be dangerous to humans and dogs). *But see* Theimer v. Orduno, No. EDCV 08-293-VAP (JCRx), 2009 WL 482329, at *2 (C.D. Cal. Feb. 25, 2009) (finding insufficient evidence to justify a warrantless search).

155. *See, e.g.*, Lior Jacob Strahilevitz, *The Right to Abandon*, 158 U. PA. L. REV. 355, 398

abandonment vary widely, and enforcement is difficult because abandonment suits require evidence that is rarely available.[156] Another form of abandonment involves allowing the pet to "escape" and potentially be lost or killed in a traffic accident. That, too, is hard to substantiate.

While extreme neglect and abuse are proscribed, does the law impose a duty of care if the animal becomes sick or injured? Veterinary care duties vary between states and are often ambiguous.[157] A handful of state statutes prohibit an owner's unnecessary failure to provide necessary veterinary care.[158] In other states, some duty of care has been extrapolated from the more general anti-cruelty language, yet this approach is far from universal.[159] Even in cases where owners have been found liable for inadequate care, courts often stress the owner's failure to seek veterinary advice with an animal in clear distress, rather than requiring them to pay for expensive treatment.[160] That is, the law allows an owner to pursue euthanasia rather than pay for a necessary medical procedure, although allowing the animal to suffer may be cruel treatment under the law.[161]

But suppose a veterinarian receives a request to euthanize a physically and mentally healthy pet because the owner is moving, the animal does not fit the owner's lifestyle, or the owner dislikes the animal's fur?[162] Can a veterinarian legally comply

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(2010).

156. In cases involving the intentional release of a pet in a location distant from home, a concerned third party has to observe abandonment, provide a means to identify the perpetrator, and report these observations to governmental authorities. Mary Randolph, *Animal Cruelty and Neglect*, NOLO, https://www.nolo.com/legal-encyclopedia/free-books/dog-book/chapter13-3.html [https://perma.cc/UA9G-9CDG]. Prior to the availability of embedded identification chip technology, identifying, presumably tagless, abandoned pets and connecting them to their owners was a nearly impossible task.

157. *See, e.g.*, Susan J. Hankin, *What is the Scope of the Duty to Provide Veterinary Care?*, 43 MD. BAR J. 18, 20 (2010).

158. *See* MD. CODE ANN., CRIM. LAW § 10-604 (West 2019); D.C. CODE ANN. §22-1001 (West 2008) (requiring "veterinary care" rather than "necessary veterinary care"); VA. CODE. ANN. §3.2-6570 (West 2019) (requiring "emergency veterinary treatment" rather than general veterinary treatment).

159. *See* People v. Arroyo, 777 N.Y.S.2d 836, 844–45 (N.Y. Crim. Ct. 2004). *Arroyo* listed Michigan, Texas, California, and Indiana as examples. *Id.* at 845. The court did note that in all the cases from different states recognizing an implicit duty, the animals were severely neglected and showed signs of malnourishment. *Id.*

160. *See* Baker v. Commonwealth, No. 151120, 2016 WL 6304567, at *1 (Va. Oct. 27, 2016) (involving a dog hit by a car, whose owner did not take the dog to a veterinarian for seven weeks, at which time the dog was euthanized); People v. Curcio, 874 N.Y.S.2d 723, 727 (N.Y. Crim. Ct. 2008) (where NY courts found "unjustifiable physical pain" implied duty for care, but noted owner has option to surrender pet to ASPCA if unable to afford treatment).

161. So-called "economic euthanasia" occurs when an "animal has a treatable condition, but the client cannot afford (or chooses not to spend the money on) the treatment and requests instead that the animal be humanely euthanized." Hankin, *supra* note 143, at 32.

162. Dominick Rathwell-Deault, Béatrice Godard, Diane Frank & Béatrice Doizé, *Conceptualization of Convenience Euthanasia as an Ethical Dilemma for Veterinarians in Quebec*, 58 CANADIAN VETERINARY J. 255, 258 (2017) (Veterinarians felt that "[o]wner expectations were becoming more and more superficial and unrealistic. These owners became easily frustrated because they had an illusionary vision of what their animal should be and do.

with an owner's so-called "convenience euthanasia" request? The answer is yes. Such requests are not uncommon, nor is it uncommon for veterinarians to accede. A 2018 survey of American veterinarians found that over 93% had received requests from owners to euthanize the owner's healthy pet; 22% said they would sometimes, often, or always comply with the request.[163] The American Veterinary Medical Association encourages veterinarians to engage owners in these situations in a deliberative process,[164] but the law sanctions the killing.[165] Property rights trump animal rights.

In summary, the law in each state navigates competing interests: enforcing minimal humane standards on the one hand, and the owner's authority over its animate property on the other. Perhaps it is not an overstatement to say that the law cares more about the mechanics of killing animals than the deaths.[166] During a petdemic it would be necessary to consider the consequences of such a heterogeneous patchwork of state laws.

Minimum humane standards would not meaningfully restrict the removal of a pet from the home during a petdemic. Sick animals would pose a health risk to humans, and even healthy animals could pose a probabilistic threat. During a petdemic, removal of pets from the home would become commonplace, whether through surrender to shelters or euthanasia. Even in the best of times the law cannot mandate a sense of moral obligation. In the worst of times, the thin protection afforded animal companions becomes all too apparent.

3. Police Powers: Protecting Humans Against Animal Threats

Finally, consider the state's authority under its police powers to override the property rights of pet owners to protect public welfare. Such actions allow greater restrictions on animal-human interaction and may even lead to animal slaughter in

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They then rejected their animal easily knowing it would be simple to find another one that perhaps met their expectations.").

163. Regarding inappropriate requests for euthanasia, 93% of veterinarians have received such requests, with 29% saying they receive inappropriate requests sometimes or often, though most said rarely. Nearly 22% indicated that they sometimes (11.48%), often (7.35%), or always (3.74%) complied with the requests. Lisa Moses, Monica J. Malowney & Jon Wesley Boyd, *Ethical Conflict and Moral Distress in Veterinary Practice: A Survey of North American Veterinarians*, 32 J. VETERINARY INTERNAL MED. 2115, 2117 (2018).

164. *AVMA Guidelines for the Euthanasia of Animals: 2020 Edition*, AM. VETERINARY MED. ASS'N (2020), https://www.avma.org/sites/default/files/2020-01/2020-Euthanasia-Final-1-17-20 .pdf [https://perma.cc/D5YL-DZ95].

165. *See* Alexandra Kleinfeldt, *Detailed Discussion of Animal Euthanasia*, ANIMAL LEGAL & HIST. CTR. (2017), https://www.animallaw.info/article/detailed-discussion-animal-euthanasia [https://perma.cc/69HU-TES3] ("Despite these discussions about euthanasia being morally and ethically right or wrong, in the majority of countries, including the United States, animals are considered personal property, and a[] euthanasia request for a healthy companion animal by its owner is lawful.").

166. Almost all states limit who can perform the requested euthanasia to licensed veterinarians or certified technicians. *Id.* These limitations along with the specification of permissible means of euthanasia are consistent with animals being treated as property subject to anti-cruelty concerns. *Id.*

the interest of protecting human health. Police action during disease outbreaks is particularly relevant. After briefly introducing the history of police powers, I analyze the role of police power in protecting human health from nonhuman animal threats.

Police powers are "an expression of civil authority"[167] that give state and local governments enormous latitude to enact legislation to protect welfare, health, and safety.[168] These powers are broad and lack a specific definition.[169] Traditional exercises include legislation concerning health and safety, public health, public morals, economic welfare, or the environment.[170] With this broad power to legislate, states can often limit individual freedoms to further general welfare.[171]

States have a long history of passing legislation in response to public health crises.[172] Generally, they have "broad discretion to determine what is harmful to the public health" and to protect the public health.[173] Moreover, such regulations may "compel treatment, prohibit or direct a particular conduct, or detain and isolate in a quasi-criminal nature."[174]

Courts have been extremely deferential and permissive toward the states in this context. *Jacobson v. Massachusetts*, a seminal Supreme Court case upholding the local board of health's requirement for vaccination, exemplifies this posture.[175] In challenges of this nature, courts tend to tolerate regulation that has a reasonable relation to a valid public health goal.[176] "Upon the principle of self-defense, of paramount necessity, a community has the right to protect itself against an epidemic of disease which threatens the safety of its members."[177]

The high level of deference is evident in cases which upheld state regulations or their applications pertaining even to theoretical threats. While it is not surprising that society prioritizes protecting humans at the expense of animals, it is disturbing that even in cases where the purported benefit is weak, sometimes vanishingly so, we pay little attention to reducing costs—even if that cost is animal lives. Under this lenient

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167. Jorge Galva, Christopher Atchison & Samuel Levey, *Public Health Strategy and the Police Powers of the State*, 120 PUB. HEALTH REPS. 20, 21 (2005).

168. *See* Santiago Legarre, *The Historical Background of the Police* Power, 9 U. PA. J. CONST. L. 745 (2007).

169. *See* James G. Hodge, Jr., *Implementing Modern Public Health Goals Through Government: An Examination of New Federalism and Public Health Law*, 14 J. CONTEMP. HEALTH L. & POL'Y 93, 100 (1997); *see also* 16A C.J.S. *Constitutional Law* § 702 (2022).

170. Legarre, *supra* note 168, at 745 (citing Barnes v. Glen Theatre, 501 U.S. 560, 569 (1991)).

171. *See* Michael K. Gusmano, Edward Alan Miller, Pamela Nadash & Elizabeth J. Simpson., *Partisanship in Initial State Responses to the COVID-19 Pandemic*, 12 WORLD MED. & HEALTH POL'Y 380 (2020).

172. The first case that validated state police power was in response to a potential yellow fever outbreak in Philadelphia shortly after the end of the Revolutionary War. Galva, *supra* note 167, at 21 (citing Smith v. Turner. 48 US 283 (1849)).

173. Commonwealth v. Harrelson, 14 S.W.3d 541, 548 (Ky. 2000).

174. Galva, *supra* note 167, at 21.

175. 197 U.S. 11 (1905).

176. *See* Armour v. City of Indianapolis, 566 U.S. 673 (2012) (for an example of a modern application of rational basis reasoning).

177. *Jacobson*, 197 U.S. at 27.

standard, state action with a mere rational basis will normally be upheld.[178] This Subsection explores a series of cases involving nominally wild animals (pet ferrets and raccoons), breed-specific legislation (pit bulls), and trespassing cats. Collectively they illustrate how little weight is accorded to animal welfare in police power cases.

a. "Wild" Animals

In *Raynor v. Maryland Department of Health and Mental Hygiene*, for instance, a Maryland court upheld a regulation giving the state the power to destroy and test the brain of "wild" animals that bite humans to allow the victim to learn if life-saving prophylaxis treatment for rabies is necessary.[179] *Raynor* involved a pet ferret who bit a girl at a slumber party.[180] The animal had been hand-reared and had "never lived outside and had no exposure to wild animals."[181] Ferrets as a species were classified as wild animals in the rabies regulation. Rather than examining whether this particular ferret posed a rabies threat, the court limited its attention to whether the regulation itself was valid[182] and ruled that it easily satisfied a rational basis review.[183] The destruction of the pet ferret was then justified for testing purposes according to the regulation, because the entire species of ferrets was deemed to be wild.[184]

This case also illustrates the difficulty in challenging a novel application of police power. In *Raynor*, by the time the court finished its review, it was clear that the ferret did not have rabies, yet the ferret was destroyed for testing purposes in accordance with the regulation.[185] The length of time for the review meant that the animal was killed with no possible benefit to the victim.[186] This mismatch in timing could happen on a grand scale in a petdemic when the legitimate question of whether the use of police power is justified would potentially delay its application with attendant consequences for human health or animal welfare.

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178. *See generally Armour*, 566 U.S. at 673 (2012).

179. 676 A.2d 978, 987 (Md. Ct. Spec. App. 1996).

180. *Id.* at 980–81.

181. *Id.* at 982.

182. Evidence provided by the plaintiff's experts included that "epidemiological evidence shows that no human has ever been reported to have ever contracted rabies from a ferret and that the number of reported rabid ferrets was statistically non-existent." *Id.* at 983.

183. *Id.* at 985 (stating that "the law will not be held void if there are any considerations relating to public welfare by which it can be supported").

184. *Id.* If the ferret was classified as a domestic animal, then it would only be subject to quarantine rather than destruction. *Id.* at 986.

185. *Id.* at 981. Brief in Opposition to Petition for Writ of Certiorari at 6, Raynor v. Maryland, 520 U.S. 1166 (1997) (No. 96–1234) (stating the CDC did not have an established quarantine period for ferrets).

186. Recognizing this exceeded traditional time frames for testing an animal's brain for rabies in an effort to avoid having to unnecessarily treat a human who has been exposed. The family also noted that the Maryland state veterinarian "testified that ferrets have never been known to transmit rabies to humans, and that the incidence of rabies in ferrets was statistically non-existent." Petition for Writ of Certiorari at 5, Raynor v. Maryland, 520 U.S. 1166 (1997) (No. 96–1234).

There was a similar outcome in *Bilida v. McCleod*, a case involving a pet raccoon, Mia, who was orphaned and subsequently adopted by the Bilida family in Rhode Island.[187] The animal was kept in a cage attached to the family's house.[188] Police stumbled upon the raccoon when on an unrelated call and were going to confiscate the animal because the owner lacked a proper license and she did not have a property interest.[189] But once the police learned that the owner hand-fed the raccoon, they concluded that the animal had to be destroyed and tested according to the state's rabies protocol.[190] This protocol was "adopted in response to a supposed epidemic of raccoon rabies."[191] It allowed for the euthanasia of the raccoon on the mere possibility of exposure via saliva through broken skin.[192] There was no alleged instance of feeding or handling Mia that would have resulted in such exposure.[193] The court was legally confident, if unenthusiastic, in its ruling that the raccoon should be euthanized: "It need hardly be said that this outcome is not an endorsement of the state's procedures for treatment of pet raccoons."[194] Not surprisingly, no rabies infection was found in the pet.[195] *Raynor* and *Bilida* demonstrate how the courts accept innocent casualties as necessary to combat an alleged harm.

b. Breed-Specific Legislation

Breed-specific legislation (BSL), specifically the banning of pit bulls, offers another example of societal willingness to ostensibly protect humans even when the evidentiary basis for the alleged harm is very weak. Such regulations target specific dog breeds and either make ownership illegal or impose other restrictions, such as requirements of insurance or muzzles when the targeted dogs are walking in public spaces.[196] Putting aside the broad social concern about dog bites, which can be addressed under more general dangerous dog laws, BSL is misguided because evidence suggests that the bully breed does not exhibit unusually dangerous behavior relative to other breeds.[197] Yet, because of perceived concerns relating to specific

187. 211 F.3d 166, 169 (1st Cir. 2000).

188. *Id.*

189. *Id.* at 169, 173 (holding that Bilidia had no property interest or the associated rights in a wild animal that she could not legally possess).

190. *Id.* at 169.

191. *Id.*

192. *Id.* at 169 n.2.

193. *Id.*

194. *Id.* at 175.

195. *Id.* at 169.

196. *See generally Position Statement on Breed-Specific Legislation*, AM. SOC'Y FOR THE PREVENTION OF CRUELTY TO ANIMALS (2022) [hereinafter ASPCA *Policy Statement*], https://www.aspca.org/about-us/aspca-policy-and-position-statements/position-statement-breed-specific-legislation [https://perma.cc/LDT2-WVUQ].

197. Based on the relatively common problem of dog bites, pit bulls ranked no higher than fifth among breeds most responsible for severe bites. Safia Gray Hussain, *Attacking the Dog-Bite Epidemic: Why Breed-Specific Legislation Won't Solve the Dangerous-Dog Dilemma*, 74 FORDHAM L. REV. 2847, 2869 (2006). However, if one focuses on the extremely unusual fatal dog attack statistics between 1981 and 1992, pit bulls were involved in about one-third of fatal dog attacks. *Id.* at 2851. Various temperament studies did not find pit bulls to have unusually

breeds, arguably stoked by publicity associated with rare but tragic events, many local communities have adopted BSL, resulting from what the American Bar Association calls "panic policy making."[198] For example, the origin of BSL restricting pit bull ownership stems from a highly publicized canine killing of an eleven-year-old boy in 1983. Two years later, more than thirty communities either passed or were considering BSL to restrict pit bull ownership.[199] This, despite the fact that, as Dr. Julie Gilchrist of the CDC observes, the incident rate of fatal pit bull attacks is "statistically insignificant."[200]

There is substantial heterogeneity in the treatment of BSL across jurisdictions. As of 2016, twenty-one states have banned or limited the ability of localities to enact BSL, with most indicating a preference for dangerous dog laws.[201] Nonetheless, BSLs have been upheld when challenged in numerous states.[202] BSL illustrates how relatively unfounded perceptions can lead to social action and new legislation. To the extent that these laws have survived judicial challenge, they also demonstrate the deference that courts give to the legislating bodies. Ultimately, BSL provides the public with a false sense of security because in operation they are ineffective, oversimplified, and under-inclusive.[203]

c. Trespassing Cats

It is not just the animals that have bitten or that we fear might bite us, but also those that may foul our yards and scratch our cars that have been the target of state police powers. For instance, the Akron City Council adopted an ordinance in 2002 that frequently amounted to a death penalty for trespassing cats.[204] This ordinance allowed animal-control officers and deputized residents (with city-supplied traps) to capture cats that wandered onto private property. Impounded cats were brought to the Summit County Animal Shelter. If a cat had identification, then efforts would be made to reach the cat's owner. Cats without identification would be euthanized after a waiting period of up to three days, if unclaimed.[205]

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aggressive temperaments. *See, e.g.*, Olivia Slater, *Does Every Dog Really Have Its Day: A Closer Look at the Inequity of Iowa's Breed-Specific Legislation*, 66 DRAKE L. REV. 975, 983–84 (2018); Ann L. Schiavone, *Barking Up the Wrong Tree: Regulating Fear, Not Risk*, 22 ANIMAL L. 9, 41–42 (2015).

198. ABA Tort Trial & Insurance Practice Section, Comm. on Disability Rights, Resolution (2012), https://www.ohioanimaladvocates.org/wp-content/uploads/2019/06/ABA-Resolution-Against-BSL-201208.pdf [https://perma.cc/Q52B-H7AK].

199. Schiavone, *supra* note 197, at 22.

200. Jamey Medlin, *Pit Bull Bans and the Human Factors Affecting Canine Behavior*, 56 DEPAUL L. REV. 1285, 1296 (2007).

201. *See* ASPCA *Policy Statement*, *supra* note 196.

202. *Breed-Specific Prohibited or Restricted Ordinances*, AM. VETERINARY MED. ASS'N (Mar. 2021), https://www.avma.org/advocacy/state-local-issues/breed-specific-prohibited-or-restricted-ordinances [https://perma.cc/38MK-CL92].

203. Sabrina DeFabritiis, *Fido's Fallacy*, 9 ALBANY GOV'T L. REV. 168, 175 (2016).

204. Akron, Ohio, Ordinance 332-2002 (June 2002) (amending AKRON, OHIO, MUN. CODE §§ 92.01, 92.13, 92.15).

205. *Id.*

Owners whose healthy cats were euthanized within twenty-four hours of being impounded challenged the ordinance.[206] They argued there was "insufficient cause and record" to demonstrate that an "emergency" designation was appropriate for this legislation.[207] The law was ultimately upheld on summary judgment by the Court of Appeals of Ohio.[208] The plaintiffs lost because the ordinance, passed by a unanimous council, claimed to be "necessary for the immediate preservation of the public peace, health, and safety . . . to abate the risks to health and safety posed by cats running at large."[209] Supreme Court of Ohio precedent holds that a municipality's declaration of an emergency is not reviewable by a court if the municipality states the reasons for its "immediate necessity."[210] In fact, the high court held, "[a] court does not have authority to review the issues of whether an emergency actually existed or the accuracy of the reasons given by [the] City Council where the emergency clause of the ordinance sufficiently states and defines the alleged emergency."[211]

Thus, the central question was whether this ordinance constituted a legitimate exercise of the state's police power. The standard by which measures undertaken for the health, safety, and welfare of the citizenry is extremely deferential.[212] To satisfy due process rights, the legislation must only bear "a rational relationship to its purpose."[213] The government is "presumed to be familiar with their community conditions and the needs of their citizens, and they can best formulate the appropriate legislation."[214] Furthermore, ordinances "must be sustained" unless they conflict with the state's general laws or either the Ohio or United States constitutions.[215] The challenging party bears "the heavy burden of negating every reasonable basis that might support the enactment of the ordinance."[216]

What evidence did the council marshal? The basis of this trap-and-euthanize policy was that about 400 complaints about cats were lodged each year with the city's Customer Service Division.[217] Two council members testified that they had received "numerous complaints about cats running at large,"[218] specifically that they "scratched cars, defecat[ed] in gardens . . . attack[ed] fenced-in dogs, and . . . us[ed] a child's sandbox as a litter box, causing the child to become ill."[219] Other complaints involved general claims regarding health issues. The city also offered more general "evidence of certain diseases that could be spread to people or domestic animals by

206. *Id.*

207. City of Akron *ex rel.* Christman-Resch v. City of Akron, No. CV-2003-08-4848, 2003 WL 25679048, at *16 (Ohio Ct. Com. Pl. 2003).

208. *See* City of Akron *ex rel.* Christman-Resch v. City of Akron, 825 N.E.2d 189 (Ohio Ct. App. 2005).

209. *City of Akron ex rel. Christman-Resch*, 2003 WL 25679048, at *5.

210. *Id.* at *18 (citing State *ex rel.* Webb v. Bliss, 789 N.E.2d 1102, 1105 (Ohio 2003)).

211. *Id.* at *18 (citing State *ex rel.* Waldick v. Williams, 658 N.E.2d 241, 244 (Ohio 1995)).

212. *See City of Akron ex rel. Christman-Resch*, 825 N.E.2d at 189.

213. *Id.* at 196.

214. City of Akron v. Tipton, 559 N.E.2d 1385, 1387 (Akron Mun. Ct. 1989)).

215. *City of Akron ex rel. Christman-Resch*, 2003 WL 25679048, at *20.

216. *City of Akron ex rel. Christman-Resch*, 825 N.E.2d at 196.

217. *Id.* at 194.

218. *Id.* at 195.

219. *Id.*

free-roaming cats," the most dangerous of which was rabies, and asserted that cats have a "high risk for contracting rabies."[220] The plaintiffs argued that many of these complaints were unfounded, that the extent of the problems was not known,[221] and "there is no evidence in the record that any stray cat has spread any disease to any human in the City of Akron, let alone that cats are responsible for any pervasive problem relating to health, safety[,] or welfare."[222] The plaintiffs' expert witness also provided general evidence against the proposition that feral cats represented a threat to human health.[223]

The Court of Appeals ruled in favor of the city on a motion for summary judgment prior to trial.[224] The plaintiffs did not show the absence of any rational basis.[225] That is because the plaintiffs could not assert that "free-roaming cats do not scratch cars, defecate in gardens, spray windows, and carry disease that may be spread to both humans and other animals."[226] Nor could plaintiffs show that "trapping and euthanization of cats do not help to alleviate these free-roaming-cat concerns."[227] After all, as the city had argued, dead cats cannot engage in these behaviors. In the end, the court wrote, "[t]he city need not adopt the perfect solution; it need only adopt one that is supported by a rational basis causally connected to the problem at hand."[228]

In sum, the court found that owned cats are property that can be seized under the police power, so long as it is "guided by concerns of public health and welfare."[229] The interference with the human owner's rights is only minimal and "not unduly oppressive," given that all the cat owner needs to do is "prevent his animal from trespassing upon another's property."[230] The laws did not violate the humans' constitutional rights, "even though some harmless or inoffensive animals might [be] destroyed."[231] There were no animal rights at issue, just human property rights vis-à-vis their animals. From the period just before the ordinance went into effect to seven months later, the number of cats placed in the county shelter rose from 400 to 3,500.[232]

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220. *Id.*

221. *See* Brief in Response to Defendant's Motion to Dismiss/Motion for Summary Judgment, City of Akron *ex rel.* Christman-Resch v. City of Akron, No. CV-2003-08-4848, 2003 WL 25679048, (Ohio Ct. Com. Pl. 2003), 2004 WL 5511661.

222. Brief of City of Akron *ex rel.* Deanne Christman-Resch, et al., Appellants, City of Akron *ex rel.* Christman-Resch v. City of Akron, 825 N.E.2d 189 (Ohio Ct. App. 2005) (No. 22140), 2004 WL 5496463 *10.

223. *City of Akron ex rel. Christman-Resch*, 825 N.E.2d at 195.

224. *Id.* at 192.

225. *Id.* at 196.

226. *Id.*

227. *Id.*

228. *Id.* at 197.

229. *Id.* at 199.

230. *Id.* at 196–97.

231. *Id.* at 197.

232. *Akron*, VOX FELINA (June 24, 2011), http://www.voxfelina.com/2011/06/akron/ [https://perma.cc/Y23P-FPRV] (citing M. Miller, *Summit Cattery Opens Next Month*, AKRON BEACON J. (May 6, 2002); M. Miller, *Shelter's New Web Site Goes to the Dogs*, AKRON BEACON J. (Dec. 2, 2002)).

The *Akron* case illustrates how the already substantial deference to government laws restricting human behavior in the interests of protecting human health and safety is stronger still when the burden falls on animals, even when that interest is the animals' lives. This, in turn, suggests that protection of animals in a petdemic would hinge on the strength of owners' interest in protecting their pet, rather than protecting the animal itself. Put more coarsely, it pits animals as health threats against animals as property. What is more, the strays do not even count as private property.

While the Akron cat-trespassing ordinance was technically passed on an emergency basis,[233] it is worth considering how the courts address policy powers under more compelling crisis scenarios such as COVID-19. Massive, quickly unfolding disease outbreaks trigger emergency legislation intended to address perceived problems before they worsen.[234] Such legislation commonly relies on government police powers, though emergencies do not create or enhance police powers,[235] nor do they "remove [all] constitutional [restraints]."[236] But crises do provide an opportunity to exercise such powers.[237] Courts have given greater latitude to the states in the early days of an emergency, when information is lacking and scientific consensus has not yet emerged. Thus, a court may uphold a regulation provisionally that can later be struck down.[238]

For example, *County of Butler v. Wolf* concerned the rapidly unfolding COVID-19 emergency. In that case, plaintiffs challenged a Pennsylvania county's restrictions on gatherings, closure of "non-life-sustaining" businesses, and a stay-at-home order.[239] The plaintiffs alleged various constitutional infirmities.[240] When examining the restrictions, the district court noted that "[a]t the dawn of an emergency—and the opening days of the COVID-19 outbreak plainly qualify—public officials may not be able to craft precisely tailored rules."[241] And, therefore, the courts may "tolerate very blunt rules."[242] However, an emergency does not give the state "carte blanche" to override the Constitution as long as the problem is present.[243] The court concluded that as more evidence becomes available and "[s]tates have time to craft policies in light of that evidence, courts should expect policies that more carefully account for constitutional rights."[244]

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233. *See id.*

234. *See, e.g.*, JOHN W. KINGDON, AGENDAS, ALTERNATIVES, AND PUBLIC POLICIES 173–76 (1984) (discussing "policy windows" during which policies on hold gain legislative traction).

235. *See, e.g.*, Home Bldg. & Loan Ass'n v. Blaisdell, 290 U.S. 398, 426 (1934).

236. *Id.*

237. *Id.* (holding that the validity of the law depends on the existence of an emergency).

238. *See* Wendy K. Mariner, George J. Annas & Leonard H. Glantz, Jacobson v. Massachusetts*: It's Not Your Great-Great-Grandfather's Public Health Law*, 95 AM. J. PUB. HEALTH 581, 586 (2005) (stating the validity of public health measures often depends on scientific factors and constitutional limits).

239. 486 F. Supp. 3d 883, 890 (W.D. Pa. 2020).

240. *Id.*

241. *Id.* at 898.

242. *Id.*

243. *Id.* (emphasis removed).

244. *Id.* (quoting Calvary Chapel Dayton Valley v. Sisolak, 140 S.Ct. 2603 (2020) (Alito, J., dissenting)). Ultimately, the district court struck down the restrictions. *Id.* at 918. The Third Circuit Court of Appeals granted a motion to stay parts of the *County of Butler* decision

d. Limitations on Police Powers

While wide-ranging in scope, police powers are limited by the Constitution.[245] Examples of these limitations include the Equal Protection Clause, Due Process Clause, Takings Clause, and First Amendment, among others.[246] In the late twentieth century, developments in jurisprudence resulted in some narrowing of public health police powers and a greater focus on individual liberties.[247] For instant purposes this means that the use of police power authority over animals could, in theory, be held unconstitutional owing to the encroachment upon the owner's constitutional rights.

The balancing of an owner's Fourth Amendment right against unreasonable search and seizure and the state's interests in justifying confiscation of a person's pets are addressed in *Maldonado v. Municipality of Barceloneta*.[248] This case concerned the seizure of more than fifty animals from a Barceloneta, Puerto Rico, housing development under a local ordinance that prohibited residents from owning pets.[249] The mayor, municipal staff, and staff from a company hired to collect the illegal pets in the housing developments went door-to-door to ask pet owners to surrender their animals.[250] Many people complied for fear of potential eviction, while other animals were seized outside the apartments themselves.[251] The animals the authorities collected were drugged, some were beaten, and all were crammed into a van.[252] Some were later found to have been thrown from a bridge.[253]

What is most relevant for instant purposes is that under the Fourth Amendment analysis, pets are considered personal effects and protected from unreasonable seizure.[254] Further, the killing of a person's pet by the government without the person's consent is also a seizure.[255] Such action, in this case the killing of a pet, was found to be constitutional if it is reasonable.[256] Even a warrantless seizure may be reasonable if the government has a compelling interest justifying it.[257] Note that "[t]he killing of a person's pet does not constitute a[n unreasonable] Fourth Amendment seizure if [the animal] poses an imminent danger such that the state's

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meaning these restrictions are still enforced as appeal is pending. *Id.* Other courts are more hesitant than the *County of Butler* court to declare COVID-19 regulations unconstitutional. *See, e.g*, Bimber's Delwood, Inc. v. James, 496 F. Supp. 3d 760 (W.D.N.Y. 2020) (upholding New York governor's executive orders restricting operation of bars and restaurants).

245. *See generally* Legarre, *supra* note 168.

246. *Id.*

247. Galva, *supra* note 167, at 21. Galva's article advances three reasons that restricted police powers: "(1) the advent of civil rights jurisprudence; (2) the rise of patient autonomy and the rapid expansion of state personal health services expenditures; and (3) federal encroachment on state authority." *Id.*

248. 682 F. Supp. 2d 109 (D.P.R. 2010).

249. *Id.* at 120–21.

250. *Id.*

251. *Id.* at 137.

252. *Id.* at 121.

253. *Id.*

254. *Id.* at 130.

255. *Id.*

256. *Id.*

257. *Id.* at 130–31.

interest in protecting life and property is implicated."[258] The extent of intrusion cannot outweigh that governmental interest.[259]

In this case, the defendants argued that the warrantless seizure was reasonable because the pets were deemed to be stray or dangerous.[260] The defendants also argued that some of the plaintiffs voluntarily surrendered their pets and, in the absence of coercion, there would be no Fourth Amendment violation.[261] Here, the defendants moved for summary judgment dismissing the plaintiffs' claims.[262] For those plaintiffs who actually lost a pet during this operation, the court held that there were genuine disputes of material facts and the case was not dismissed.[263] Because the tenants had a "protected property interest over their pets," the court determined that a "pre-deprivation hearing was required prior to removing and destroying any pets from the housing complexes."[264] And "[i]f a person relinquishes his property to an official due to coercion . . . that person does not forfeit his Fourth Amendment right over the property."[265] Consent given under threat of eviction would not be "freely given."[266]

The extent to which state interests have been deemed to outweigh an owner's property interest in their animals (farm animals and pets alike) is exemplified by the numerous campaigns to eradicate Exotic Newcastle Disease (END) in Southern California during the periods 1971–73, 2002–03, and most recently from 2018–19. The disease threatened the poultry industry rather than human health.[267] END is extremely transmissible through "[even] a speck of saliva carried on a feather" and feces, respiratory secretions, eggshells, and the like.[268] It has an extremely high mortality rate for unvaccinated chickens.[269] Furthermore, while having the greatest effect on chickens, 250 other bird species could be infected and act as agents for disease transmission.[270] While END poses no meaningful threat to human health,

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258. *Id.* (citing Brown v. Muhlenberg Twp., 269 F.3d 205, 210 (3d Cir. 2001)).

259. *Id.* at 131.

260. *Id.* at 152.

261. *Id.*

262. *Id.* at 121.

263. *Id.* at 130–41.

264. *Id.* at 128.

265. *Id.* at 131.

266. *Id.*

267. Exotic Newcastle Disease eradication programs had occurred earlier and were also run in a number of other states and countries. *See* J.W. Walker, B.R. Heron & M.A. Mixson, *Exotic Newcastle Disease Eradication Program in the United States*, 17 AVIAN DISEASES 486 (1973).

268. Tina Daunt & Bob Pool, *Disease Task Force Eyeing Pet Birds*, L.A. TIMES (Apr. 12, 2003, 12:00 AM), https://www.latimes.com/archives/la-xpm-2003-apr-12-me-birds12-story.html [https://perma.cc/T3LC-J5LA].

269. *See* Dennis A. Senne, *Avian Influenza in North and South America, 2002–2005*, 51 AVIAN DISEASES 167 (2007), https://web.archive.org/web/20170923220553id_/https://naldc.nal.usda.gov/naldc/download.xhtml?id=10453&content=PDF [https://perma.cc/U25H-SV7D].

270. *See* U.S. DEP'T OF AGRIC., ERADICATION OF EXOTIC NEWCASTLE DISEASE IN SOUTHERN CALIFORNIA 1971–74, at 2–4 (1978).

humans were implicated in the spread of the disease as unwitting carriers of contaminated agents.[271]

The 1971 outbreak was characterized as the "biggest animal health emergency in more than 40 years."[272] One which so threatened the nation's poultry industry that it resulted in the first declaration of a national animal disease emergency under the Talmadge-Aiken Act of 1962.[273] That law gave the federal government "authority to place sentinel birds [undiseased birds that were introduced into a flock and checked periodically for infection]; to enter, with a warrant, premises to make necessary inspections; and to require the disposal of birds or other products affected with or exposed to exotic Newcastle disease."[274] The 1971–73 eradication campaign involved depopulation, quarantine, and vaccination. The vaccination program involved house-to-house searches.[275] To maintain quarantine areas, officials set up roadside inspection stations where owners who refused to return their pet birds to their origin area watched as their birds were destroyed in "a plastic bag [with] . . . the open end put over a car's exhaust pipe."[276] Ultimately, twelve million birds were euthanized in Southern California in a program lasting about two years and employing almost 3200 people, including more than 400 military personnel.[277] About half of the $56 million (in 1973 dollars) expenses of the program were to indemnify owners for their losses.[278]

The 2002–03 eradication campaign proceeded in a similar way but without the vaccination program.[279] Seeing END as the "'hoof-and-mouth disease of birds' [in which] [t]he bottom line is you have to euthanize the few to protect the many,"[280] the program "placed wide swaths of Southern California under quarantine . . . . [Task force members went] door-to-door, searching for sick birds. If a bird is *suspected* of having the disease, it is killed immediately, in some cases in front of crying owners."[281] The task force also "enlisted hundreds of investigators, mail carriers, and talkative neighbors to help identify homes with birds" and "has [also] been trying to control the virus by killing seemingly healthy birds living within approximately half

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271. *Id.* at 48.

272. *Id.* at 1.

273. *Id.* at 60 n.17.

274. *Id.*

275. *Id.* at 38. A review of vaccination efforts was mixed as vaccinations did not make the birds immune to infection, though they did reduce mortality. It was also found that the vaccination efforts led to the spread of disease from human crews to animals being investigated and vaccinated. *Id.* at 11.

276. Media coverage of such actions led to a change in policy—pets were later destroyed away from the roadside. *Id.* at 36.

277. *Id.* at 2, 17, 62.

278. *Id.* at 2. A primary concern of the commercial interests with the eradication program was the size of the indemnity. Establishing value for laying hens was not particularly difficult, but it was harder to value various exotic birds that were pets. In one case the appraiser was told that a cockatoo to be destroyed could roller skate and should be valued at $2000. The appraiser asked for a performance before the bird was destroyed. *Id.* at 22.

279. *See* Daunt & Pool, *supra* note 268; *see also* U.S. DEP'T OF AGRIC., *supra* note 270, at 37.

280. Daunt & Pool, *supra* note 268 (quoting the task force leader).

281. *Id.* (emphasis added).

a mile of infected fowl."[282] A news report described an anguished pet owner's experience: "Carrying a *forced-entry warrant*, [task force members] pushed through her backyard gate and seized her pet rooster, four hens and two ducks. They placed the birds in a large cardboard barrel . . . [and killed them by filling] the barrel with carbon dioxide."[283] The justification was the presence of a nearby infected flock. In the 2018–19 campaign, authorities likened the situation to stopping a "wildfire," and potentially healthy flocks were euthanized because of their proximity to infected flocks.[284] The 2002–03 and 2018–19 programs euthanized 3.2 million and 1.2 million birds, respectively. The vast majority were chickens.[285]

In the END outbreaks, the government sought primarily to protect the U.S. poultry industry and the attendant property interests, which were primarily commercial operations with uninfected flocks. Protection of the poultry industry justified warrants to enter private property to search for and destroy birds owned for commercial purposes, as well as those that were pets. Some legal action was initiated against the government in each outbreak, but none succeeded in stopping the eradication efforts or in preventing resumption of those practices.[286]

While the legal basis for the seizure (and destruction) of private property appears to have not been challenged successfully,[287] the government needed to consider the political implications of the programs. Opposition came primarily from commercial owners of birds outside the poultry industry (e.g., sellers of pet birds or businesses involving game animals), as well as affected pet owners. The poultry industry, the most powerful and organized party involved, and which had the most to gain or lose, did not oppose the thrust of these programs, especially given the government indemnity programs and their experiences with previous outbreaks.

e. Applications to a Petdemic

State and local government legislation passed to protect public health and safety under police power authority receives strong judicial deference. As these cases illustrate, the rational basis review standard is permissive, and, when faced with the onset of events that the state characterizes as an "emergency," may become de facto

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282. *Id.*

283. *Id.* (emphasis added).

284. Dan Flynn, *California's Backyard Poultry Flocks Falling Dead from Highly Contagious Virus*, FOOD SAFETY NEWS (May 21, 2019), https://www.foodsafetynews.com/2019/05/californias-backyard-poultry-flocks-falling-dead-from-highly-contagious-virus/ [https://perma.cc/67SJ-48LD].

285. Jaclyn Cosgrove, *To Stop a Virus, California has Euthanized More Than 1.2 Million Birds. Is it Reckless or Necessary?*, L.A. TIMES (June 7, 2019, 5:00 AM), https://www.latimes.com/local/lanow/la-me-ln-virulent-newcastle-disease-outbreak-in-southern-california-20190607-story.html [https://perma.cc/W2AC-3EJT].

286. *See, e.g.*, Slocum v. United States, 515 F.2d 237 (5th Cir. 1975); Amended Petition for Writ of Mandate, Costner et al. v. California, No. BS O81649, (Apr. 4, 2003), https://www.upc-online.org/poultry_diseases/4303petition.htm [https://perma.cc/RT7W-3CQ4]. Some plaintiffs were able to get a preliminary injunction against halting the placement of sentinel birds in the initial California program, but this order was superseded after the federal emergency order came into effect. U.S. DEP'T OF AGRIC., *supra* note 270.

287. *See, e.g.*, Hand v. Jones, No. EDCV 20-0879-FLA, slip op. (C.D. Cal. Feb. 12, 2021).

more permissive.[288] Numerous cases offer disturbing examples of how little evidence is needed for some courts to uphold such legislation.[289]

In the hypothetical petdemic, the animal threat to human health would provide a substantial rational basis. The primary legal limitations on the use of police powers would derive from the owner's right to property. Such limitations would not apply to stray cats and dogs and, hence, legislation under police powers used to capture and kill those animals would probably be upheld if challenged. But under what conditions could police powers be used to seize owned animals from their homes?

The outbreaks of END were events in which extremely high transmissibility and health risk to chickens—therefore implicating the entire poultry industry—legally justified the seizure and destruction of the animals.[290] If these measures were upheld to save the poultry industry, then seizure of pets in a petdemic with high transmissibility and high danger to humans might also be legally justified. But would such legislation make sense politically? Here, the analogy between the END and the hypothetical petdemic situation is weaker. In the END situation, the pet bird owners were politically weak relative to the poultry industry, whereas in a petdemic the pet owners, which constitute well over half of the households in the United States, are potentially quite strong. The potential electoral repercussions associated with the extreme actions—doing nothing in the face of the animal threat or seizing and destroying pets—suggest that politicians would seek middle ground solutions such as banning pets from public areas (and imposing heavy fines or even seizures on those who do not comply).

But while such middle-ground actions may be more politically palatable, they could still have dire consequences for animal lives. Laws that raise the monetary or convenience costs of maintaining pets may affect the owner's pivotal keep-or-remove decision. Onerous restrictions on pet ownership might substantially increase pet deaths: voluntary owner euthanasia of pets, albeit on a substantially lesser scale, replaces state-mandated slaughter.

Review of the law leads to two conclusions. First, in a petdemic it is unlikely that existing laws would offer more than a weak second-order check on owner choices (e.g., euthanasia) in response to the threat posed by one's own pets.[291] Second, to the extent that the state would use police powers to respond to pressures to reduce health threats, courts would grant such exercise a very high level of deference. The case law shows that the state has the latitude to take aggressive action on a limited basis. The primary checks to use of police power would come from constitutional restrictions protecting individual property and whether such exercises of police power make political sense. The preceding analyses suggest that one should not expect the state to force an owner to protect the welfare of the owner's pet. If anything, the interests of the state would be skewed to protect human health, rather than animal welfare.

The influence of state action may also have effects outside the scope of the relevant mandate. Aggressive action by the state could encourage pet owners

288. *See supra* notes 234–244 and accompanying text.
289. *See supra* Part II.C.3.
290. *See supra* notes 267–286 and accompanying text.
291. *See supra* Section II.C.3 (surveying multiple real-word examples).

themselves to take more aggressive action. For example, an emergency mandate to capture and kill stray dogs and cats believed to spread disease may indirectly encourage pet owners who are fearful of the health threat their own pets pose to surrender the pets to shelters, even when they know that they are most likely consigning the pets to death.

D. Individual and Governmental Decisions

As discussed previously, an owner's treatment of their pets during a petdemic is unlikely to be meaningfully constrained by the law. Whether an animal lives or dies, then, essentially depends on the owner's decision whether to keep or remove the animal from their home. The calculus of that decision in the context of the hypothetical petdemic described in Section II.A is the focus of this Section. I argue that variations in an individual's personal circumstances, preferences, and beliefs would lead to owner decisions which, when aggregated, could lead to horrific slaughters similar to those recounted in Part I, but on a larger scale. The Section concludes by considering the choices governments face and why I think that actions by governments are more likely to exacerbate, rather than mitigate, the potential slaughter.

1. An Individual's Cost-Benefit Calculus

The decision whether to keep or remove a pet from the home would probably be the most consequential pet-related dilemma an owner faces during a petdemic. While owners may differ in how they make this decision, most would choose the option they perceive to have the higher net benefit. I employ a cost-benefit analysis framework as a model to explore the factors that influence the keep-or-remove decision. This analysis encompasses the valuation of intangibles such as health of the family and the owner's attachment to the pet and provides a disciplined way to understand the weighing of factors that an owner, consciously or unconsciously, would make in practice.[292] To varying degrees, a number of other factors may influence a particular individual's decision, but I suppress consideration of those other factors to maintain focus on the central tradeoff between health and affection. However, I will examine how behavioral factors that overlay the rational cost-benefit framework might influence the decision.

During a petdemic, the principal cost associated with keeping one's companion animal is subjecting the owner and the owner's household (henceforth, owner) to an additional health danger.[293] The principal benefit is the attachment and commitment

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292. A classic cost-benefit analysis in this case requires the decision maker to put a value on health and affection or at least to compare their values. While an individual will not likely make such a calculation directly, any decision implicitly makes such value comparisons. *See, e.g.*, EDWARD M. GRAMLICH, BENEFIT-COST ANALYSIS OF GOVERNMENT PROGRAMS 5 (1981) ("Benefit-cost analysis is really a framework for organizing thoughts, for listing all pros and cons, and for placing a value on each consideration." Even for considerations that are tough to value, it serves "a valuable purpose in focusing decisions on the critical elements.").

293. Owners may also consider the impacts on their neighbors and other non-family third parties. For instant purposes, the tradeoff assessment is more narrowly framed in terms of the

the owner has for the animal, which I will refer to as the owner's affection for the animal.[294] Removing the animal entails a benefit of reduced health danger but a cost of loss of the (affection) value of the pet.

There are important subsets of the population whose relationship with companion animals warrants particular attention. For example, there are more than 500,000 dogs who are "service animals" in the United States.[295] Because of their vital service to persons with disabilities, they are permitted almost anywhere the public is allowed.[296] While treatment of service animals is beyond the scope of this Article, their existence only serves to increase the importance of planning for a petdemic. Another segment of the population whose pet ownership deserves concerted attention, also beyond the scope of this article, is homeless persons. With the number of homeless persons with pets estimated to be between 6 and 24%, a significant number of pets fall into this category.[297] Their owners are usually intensely committed to them.[298] In fact, "[i]n surveys, homeless people report levels of attachment to their animals that may surpass those found among the domiciled public."[299]

a. Health Danger to Owners and Risk Aversion

Consider first what constitutes the health danger to the owner. To illustrate the cost associated with this danger, consider the danger purely in terms of death. Underlying this cost is the value the owner places on the outcome that a person within the family or outside the family dies, which would be different across individuals.[300] Using this individual value as a base, danger would rise with the probability of that outcome occurring, for example, the probability that the pet would get infected, the level of transmissibility of the disease from animal to human, and the underlying probability of death once a human is infected. Danger would also be a function of

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family unit or household.

294. Sebastian E. Heath, Alan M. Beck, Philip H. Kass & Larry T. Glickman, *Risk Factors for Pet Evacuation Failure After a Slow-Onset Disaster*, 218 J. AM. VETERINARY MED. ASS'N 1905, 1906 (2001) (describing "attachment" and "commitment" as the "[t]wo components of the human-animal bond"). The salutary effects of pet ownership also may extend to physical and psychological benefits to the owner. The value that an owner places on an animal's inherent right to life, independent of any benefit to humans, is also included here.

295. Mark Trainer, *Service Dogs Save Lives*, SHAREAMERICA (Sept. 30, 2016), https://share.america.gov/service-dogs-save-lives/ [https://perma.cc/WRR7-UFTC].

296. *ADA Requirements: Service Animals*, U.S. DEP'T OF JUST., https://www.ada.gov/service_animals_2010.htm [https://perma.cc/H8ZB-KMDD], (Feb. 24, 2020).

297. Harmony Rhoades, Hailey Winetrobe & Eric Rice,, *Pet Ownership among Homeless Youth: Associations with Mental Health, Service Utilization and Housing Status*, 46 CHILD PSYCHIATRY HUM. DEV. 237, 237 (2015).

298. *See generally* LESLIE IRVINE, MY DOG ALWAYS EATS FIRST: HOMELESS PEOPLE AND THEIR ANIMALS 5 (2013).

299. *Id.*

300. One might think that a person would put an infinite value on preserving their life, but everyday decisions in which people bear risks implicitly reveal this is not the case. For example, we choose not to spend money on expensive diagnostic tests regarding many health risks and chose to engage in risky activities such as driving when tired.

many different individual owner-specific factors such as the owner's genetic attributes, demographic characteristics, and living situation. An immuno-compromised owner is likely at higher risk of death and the health danger would be greater. This is a significant portion of the population, estimated to be about fifteen million people.[301] That number is only expected to rise, and it does not even account for any vulnerability that may attach to other populations such as the elderly.[302] Similarly, if the owner lives in a small apartment rather than a single-family house, there are fewer at-home options to meaningfully isolate sick animals and humans, so again the danger would be higher.[303] Many other situational factors could be important, including type of pet, household income and wealth, geographic location, and the extended family and friend network.

The hypothetical petdemic is assumed to involve moderately high levels of transmissibility and a significant probability of death given infection. To illustrate how an owner would evaluate the cost associated with keeping the pet in the household, suppose that the outcome set only consisted of no infection, infection with full recovery, infection with long-term effects, and death. With each of these possible outcomes, an owner would assign implicitly a value and a probability. The overall cost for keeping the pet could then be thought of as the sum of the value of each outcome multiplied by their respective probability of that outcome occurring, which I will call the baseline (or risk-neutral expected) health utility. But for most owners there will also be an additional cost involving an owner's risk aversion, the owner's distaste for the uncertainty of the outcomes itself. For the same baseline utility, highly risk-averse owners would bear an even greater cost than less risk-averse owners.

In the context of the decision to keep or remove the animal within this hypothetical, the net benefit to keeping the pet is much more uncertain than the net benefit to removing the pet because keeping the pet subjects the owner to many possible health outcomes, whereas removing the pet leads to one health outcome—the health risk from the pet is eliminated. Thus, holding everything other than the level of risk aversion constant, a highly risk-averse owner would more likely remove their animal than would a less risk-averse owner. As an example, even with a very small probability of infection causing death, an extremely risk-averse owner might still choose to remove the animal from the household. Risk aversion will negate factors in favor of the keep decision for those with a low affection value, but it could also lead those with moderately high affection to remove their pets as well, albeit reluctantly.

As we have seen in the historical case studies, the onset of an epidemic may be a time of great uncertainty and even panic when many individuals mistakenly believe

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301. *See* Larry Corey, *Immunocompromised People Are Vulnerable to COVID-19. We Owe Them Some Answers*, JOHNS HOPKINS UNIV. CORONAVIRUS RES. CTR. (June 30, 2021), https://coronavirus.jhu.edu/vaccines/blog/immunocompromised-people-are-vulnerable-to-covid-19-we-owe-them-some-answers [https://perma.cc/828E-LY7W] ("6.2 percent of adults ages 18-64" and "2.6 percent of children" are immunocompromised).

302. *See id.*

303. As one might expect, the rate of pet ownership is greater for those living in houses versus in apartments. *See* AM. VETERINARY MED. ASS'N, AVMA PET OWNERSHIP AND DEMOGRAPHICS SOURCEBOOK (2017–2018 ed. 2018).

some outcomes are possible which are not. Combined with high risk-aversion, these misperceptions could be deadly for companion animals. Alternatively, sometimes individuals may severely discount or ignore real possibilities and hence underestimate the health risks they face. In either case, addressing underlying uncertainty is an important policy intervention that can save human and animal lives. Furthermore, when uncertainty exists that is likely to be quickly resolved, strategies to persuade owners to adopt a "wait and see" attitude could also be valuable.

b. Affection for Pets

An owner's affection for the pet is the main offset to the health danger. It is a preference particular to each owner and amongst them the degree of affection varies radically. Statistics compiled in a 2017–18 survey by the American Veterinary Medical Association (AVMA) showed that 80% of pet owners in the United States consider pets as "family members," 17% as "pets or companions," and only 3% as "property."[304] Surveys asking questions of this type are generally biased towards answers that reflect a more favorable self-image.[305] Hence, the AVMA statistics likely overstate the percentage of owners that actually treat their pets as family and understate the percentage that treat their pets as property.

At the upper end of the affection scale are pet owners who would risk their lives to save their animals during natural disasters or who would continue to live with domestic abuse rather than leave their pets behind.[306] Those on the lower end of the affection scale are owners who view their pets more as property and who are more likely to think in financial terms by asking what is the expected remaining life of the pet given its current health (i.e., the discounted value of affection going forward) or what the relative advantage would be of keeping Fido, the current pet, versus getting rid of him and replacing him with Fido 2.0 once the petdemic subsides. In any case, a direct threat to the health of human family members versus the pet's creates a noisome quandary.

c. Outcomes

The differences among individual situations and preferences would likely be great enough that there would be a substantial fraction of owners who would choose to remove the pet from the home. Figure 2 depicts the keep-or-remove decision in terms of the level of perceived health threat posed by a pet in the home and the level of an owner's affection for the pet. Individual owners are identified in terms of a combination of the level of perceived health threat (given their situation) posed by living with a pet and the degree of affection they have for their pet. Thus, each owner would be located as a point in the two-dimensional space. The gray-black region represents combinations of health threat and degree of affection for which owners would choose to remove the pet while in the white region owners would keep the

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304. *Id.* at 316.

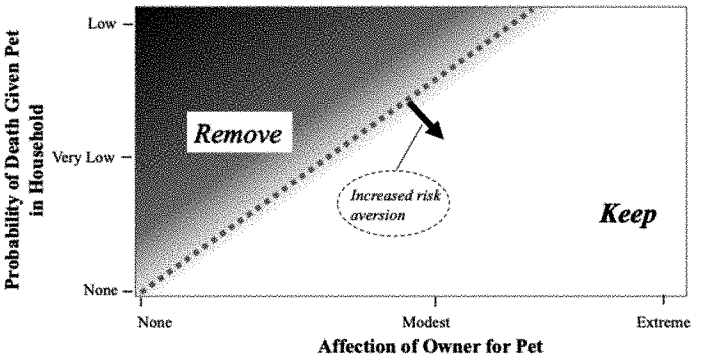
305. *See* ROBERT M. GROVES, FLOYD J. FOWLER, JR., MICK P. COUPER, JAMES M. LEPKOWSKI, ELEANOR SINGER & ROGER TOURANGEAU, SURVEY METHODOLOGY 168 (2d ed. 2009).

306. *See* Heath & Linnabary, *supra* note 11.

pet. As the level of affection increases, the level of perceived probability of death needed to cause an owner to remove the pet also increases. The dotted boundary represents combinations in which owners are indifferent between keeping or removing the pet. In Figure 2, the slope of the boundary is arbitrarily drawn to be linear, but generally it must be weakly upward sloping to reflect the tradeoff between the health threat and affection.

As the perceived health threat (risk of death given infection) increases, removal becomes more likely for a given level of affection. The perceived probability of death from a pet is a product of the probability that the pet will become infected, the probability that the pet will infect a family member, and the probability of death given infection. As discussed above, there are a number of factors that affect these components. Available testing for animal infection, for example, could decrease the chances that a pet will infect a family member. For any given individual, greater risk aversion would increase the size of the gray region and move it toward the lower right corner. This occurs because only the y-axis—the perceived health threat—involves probabilistic outcomes that can be avoided by removing the pet.

Figure 2: Decision to Keep or Remove Pet from Household



In the hypothetical petdemic, those with relatively low affection will probably choose to remove the animal from their home when any nontrivial (or perhaps even trivial) health threat is introduced (left side of Figure 2). In this part of the spectrum, increasing owner options are unlikely to save animal lives. In contrast, owners in the upper end of the affection spectrum (far right side of Figure 2) will keep an animal in their home no matter what the danger may be. For those people with the highest affection for their animals, increasing options is not about saving animal lives; it is about saving human lives. The greatest prospect for interventions that can save animal lives may be found in owners whose preferences would locate them in the light gray band just above the dotted line. Those owners would choose to remove their pets but with more options might keep them instead.

There is indirect evidence showing how some pet owners make difficult and varied cost-benefit tradeoffs. It is well-known that some owners choose euthanasia over paying for surgical procedures even if there is a high probability that an

operation would save the animal.[307] Other owners have risked their own life to save that of their pet during natural disasters. Moreover, in the face of economic downturns, data show an increase in animals surrendered to shelters.[308]

To this point, I have focused on a limited set of decision factors to highlight what I believe to be the essential tradeoffs that owners would face in a petdemic. I now expand this set to include a couple of behavioral factors that could affect (1) the underlying value that a decision maker attaches to costs and benefits of various outcomes (e.g., the value lost if the pet is destroyed) and (2) how the decision maker evaluates probabilities that determine the likelihood of the cost or benefit actually occurring (e.g., the probability that an infected person dies).

i. Underlying Value, Situational Framing, and Social Pressure

In a classic cost-benefit analysis, the values that a decision maker holds for various outcomes are often thought of as fixed, but behavioral research has shown that priming or framing of an outcome may affect relative valuations.[309] For example, if social media or conversations with neighbors cause pet owners to increase their focus on the threat of death, research suggests that pet owners will increase their focus on human health while deemphasizing the kindness they would show toward animals.[310] In the keep-or-remove decision, then, an increased focus on the threat of human death would be predicted to decrease affection, thereby increasing animal deaths.

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307. Patricia Wuest, *Study Looks at Veterinarian Attitudes Toward Euthanasia of Pets*, TODAY'S VETERINARY PRAC. (May 26, 2019), https://todaysveterinarypractice.com/study-looks-at-veterinarian-attitudes-toward-euthanasia-of-pets/ [https://perma.cc/MU4E-85KY]. Roughly one-quarter of veterinarians surveyed had received "inappropriate" requests to euthanize a pet. *See* Lisa Moses, Monica J. Malowney & Jon Wesley Boyd, *Ethical Conflict and Moral Distress in Veterinary Practice: A Survey of North American Veterinarians*, 32 J. VETERINARY INTERNAL MED. 2115, 2120 (2018). This same study found that roughly seventy-eight percent of U.S. veterinarians surveyed were either "sometimes" or "often" "distressed or anxious" about their role. *Id.*

308. For example, the number of animals taken in by shelters in Albuquerque, New Mexico increased 400% from 2007 to 2008 during the Great Recession. All Things Considered Podcast, *The Recession and Pets: Hard Times for Snoopy*, NPR (Apr. 6, 2009), https://www.npr.org/templates/story/story.php?storyId=102238430 [https://perma.cc/VXF3-XGJN]. This phenomenon was not limited to the United States; the number of dogs put up for adoption in the UK increased by 56% over the same time period. *See* Helen Pidd, *Dumped Pets Pay Price of Recession*, GUARDIAN (Apr. 27, 2009, 6:16 AM), https://www.theguardian.com/world/2009/apr/27/rspca-abandoned-animals-recession [https://perma.cc/J8LS-QA68].

309. Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 ECONOMETRICA 263, 286 (1979).

310. Some psychology research suggests that when humans are primed to think about death, they will be more likely to support killing animals. *See* Uri Lifshin, Jeff Greenberg, Colin A. Zestcott & Daniel Sullivan, *The Evil Animal: A Terror Management Theory Perspective on the Human Tendency to Kill Animals*, 43 PERSONALITY & SOC. PSYCH. BULL. 743, 743 (2017). The logic underlying the Terror Management Theory is that "humans unconsciously manage the potentially terrorizing awareness of mortality by denying their animal-like nature." *Id.*

Values for various outcomes may also change in response to changes in social pressure from the owner's social, religious, and professional communities. This occurs because the owner's "value" is not wholly determined by their direct preferences, but it is also determined by what others think of various outcomes that the owner is considering.[311] This social pressure might be directly felt through shaming or shunning of an individual who takes an action disfavored by the community.[312] One commonplace example of the impact of social pressure on outcomes is littering: some littering leads to more littering.[313]

In a petdemic, how might social pressure affect the keep-or-remove euthanasia decision? Consider the social pressure during normal times that might be exerted against individuals who are considering euthanizing their pets. Under the strain introduced by a petdemic, some members of the community may choose to euthanize their pets despite that pressure. But when they do so, the overall force of the community's pressure against euthanasia would likely decrease, leading more members to euthanize their pets while still further decreasing the force of social pressure. Presumably, the opposite might happen if members of a community become more entrenched in their views against euthanasia over time because almost everyone in the community kept their pets.[314]

ii. Weighing Small Probabilities

An analysis of the danger to human health requires determining not only a value for the outcome, but also the probability of that outcome. We have a good idea of what a 0.5 probability means in terms of a coin flip. But how well does a decision maker with limited experience with low probability events truly understand the objective meaning of a 0.005 probability? Research suggests that many people attach a higher probability to a low probability event than they should, especially when that probability is associated with a high harm event.[315] For example, many people avoided flying post-9/11 and drove instead, even though driving is much more dangerous.[316] The danger to human health in the hypothetical petdemic proposed would be a low-probability, high-harm event. Hence, one would expect at least some

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311. Hillary Greene & Dennis A. Yao, *Informing Dissent*, 16 LAW, CULTURE & HUMANITIES 200, 208 (2020).

312. The size of the effect is reduced if the action that is frowned upon is not observable. *See, e.g.*, Steven Tadelis, *The Power of Shame and the Rationality of Trust* (U.C. Berkeley Haas School of Bus., Rsch. Paper, Mar. 2, 2011).

313. Vivian Wagner, *Littering and Following the Crowd*, ATLANTIC (Aug. 1, 2014), https://www.theatlantic.com/health/archive/2014/08/littering-and-following-the-crowd/374913/ [https://perma.cc/3732-U7PY].

314. Social pressure can become a contagion when fueled by panic or hysteria. Arguably, such social factors played a role in the slaughter of pets in London in 1939. *See supra* Section I.A.4. Other critical factors impacting social pressure include government messaging whether conveyed explicitly or implicitly.

315. Colin F. Camerer & Howard Kunreuther, *Decision Processes for Low Probability Events: Policy Implications*, 8 J. POL'Y ANALYSIS & MGMT. 565, 578 (1989).

316. *See generally* Wolfgang Gaissmaier, *A Cognitive-Ecological Perspective on Risk Perception and Medical Decision Making*, 39 MED. DECISION MAKING 723 (2019).

portion of the owner population to assess the danger to be greater than it actually is. Such a bias could lead to more pet removals.[317]

These behavioral factors augment our understanding of the decision process one would expect to play out, whether explicitly or implicitly, in a petdemic.[318] An open question is just how much the stress of a petdemic would alter the relative importance of these or other behavioral factors on owner and governmental decision making.[319] Furthermore, many owners may make decisions about their companion animals after they become sick, which may also negatively affect the decision-making process.[320]

d. Aggregation of Individual Decisions

We may want to think that we will keep our pets at home in a petdemic, but a cold economic analysis suggests that, for many, such a belief is simply a comfortable fiction. There are many fair-weather pet guardians. The question is, how many? What can we know about the aggregate effect of individual keep-or-remove decisions? And then, what can be done to save the animals?

One could estimate the effect by extrapolating from regional epidemics involving pets. But, for instant purposes, the most relevant experience involves perceived rather than actual petdemics. Our experience with perceived petdemic events, however, plausibly suggests that a signficant fraction of pet owners in a true petdemic would make the remove decision.[321] An alternative approach to estimating the effects of a petdemic focuses on the number of pets that are likely to be removed from homes and then considers the capacity that our social infrastructure has for dealing with a surge in the number of animals placed into the system. The mismatch

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317. For some individuals, the opposite might happen. Rather than overreact, they may underreact, perhaps by denying a problem exists. *See, e.g.*, RICHARD S. TEDLOW, DENIAL: WHY BUSINESS LEADERS FAIL TO LOOK FACTS IN THE FACE—AND WHAT TO DO ABOUT IT (2010).

318. In addition, as discussed in Subsection B, one critical characteristic of a novel disease outbreak such as the hypothetical petdemic is the unfolding of information over time. Initial data might be incomplete, so in theory, one would hope that owners would reevaluate their decisions as understandings improve. But, in practice, people making a sequential series of choices often fail to revisit their initial decisions. *See, e.g.*, Richard H. Thaler, *Mental Accounting Matters*, *in* CHOICES, VALUES, AND FRAMES 241, 243 (Daniel Kahneman & Amos Tversky eds., 2000). For instance, during times of crisis, we tend to accept the first message we receive and, even when later more accurate information follows, we often compare it with the earlier messages. CTRS. FOR DISEASE CONTROL & PREVENTION, CRISIS & EMERGENCY RISK COMMUNICATION: PSYCHOLOGY OF A CRISIS 4 (2019).

319. *Stress and Decision-Making During the Pandemic*, AM. PSYCH. ASS'N (Oct. 26, 2021), https://www.apa.org/news/press/releases/stress/2021/october-decision-making [https://perma.cc/GTS8-Q6HK] (Harris Poll study found that 32% of adults surveyed "said sometimes they are so stressed about the coronavirus pandemic that they struggle to make basic decisions, such as what to what to wear or what to eat").

320. Andrew P. Smith, *Effects of the Common Cold on Mood, Psychomotor Performance, the Encoding of New Information, Speed of Working Memory and Semantic Processing*, 26 BRAIN, BEHAV., & IMMUNITY 1072, 1072 (2012) ("[T]hose with colds reported lower alertness, a more negative mood, and psychomotor slowing . . . [and] were also slower at encoding new information and slower on the verbal reasoning and semantic processing tasks.").

321. *See supra* Sections I.A.1–3, 5.

between the demand to surrender and shelter capacity is an indication of how many animal lives would be at risk.

First, I calculate a ballpark figure for the number of animals that would enter the shelter system if capacity was not a constraint. The AVMA survey suggests that about 3% of respondents admit to thinking of their pets as property and 17% think of them as companions but not family members.[322] Starting from these numbers, assume that in the hypothesized petdemic only 5% of pet owners attempt to surrender their pets to animal shelters. With 170 million pets in the United States, this means that about 8.5 million pets would be surrendered within a relatively short time frame.

Next, I estimate the capacity of shelters in the United States. Currently, animal shelters accept about 6.5 million animals per year,[323] but since they are also rehoming them or returning animals thought to be strays to their owners, the annual intake must be adjusted for the turnover of animals to determine the system capacity at a given time. This turnover can be estimated roughly from the average length of stay, which varies widely across shelters from one day to two months,[324] and the average capacity utilization rate. That rate is not readily apparent, but one could calculate total capacity based on different assumptions about the rate. With a 50% capacity utilization rate and an average length of stay of a month, the day-to-day capacity of all the shelters in the United States would be a little over one million animals.[325] A 25% rate and a 75% rate would give an estimate of 2.2 million and about 722,000 animals, respectively. Shelters would be overwhelmed by 8.5 million animals. Two other factors present in a petdemic would likely reduce capacity: facilities would likely reduce their population to avoid in-house disease outbreaks, and there would be a decrease in throughput from decreased adoptions. While this is merely a back-of-the-envelope calculation, it underscores the nature of the problem.

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322. Humane Soc'y of the U.S., *Pets by the Numbers*, HUMANEPRO, https://humanepro.org/page/pets-by-the-numbers [https://perma.cc/L744-NNDG]; *see also* AM. VETERINARY MED. ASS'N, AVMA PET OWNERSHIP AND DEMOGRAPHICS SOURCEBOOK 3 (2017–2018 ed. 2018).

323. Humane Soc'y of the U.S., *supra* note 322.

324. The average length of stay (LOS) for cats and dogs at animal shelters varies widely with no-kill shelters having longer LOS periods than traditional shelters. William P. Brown & Valerie L. Stephan, *The Influence of Degree of Socialization and Age on Length of Stay of Shelter Cats*, 24 J. APPLIED ANIMAL WELFARE SCI. 238 (2021) (average LOS for cats at thirty-one shelters in the study was fifty-five days); William P. Brown, Janelle P. Davidson & Marion E. Zuefle, *Effects of Phenotypic Characteristics on the Length of Stay of Dogs at Two No Kill Animal Shelters*, 16 J. APPLIED ANIMAL WELFARE SCI. 2, 14 (2013) (two studies of traditional shelters in the United States found LOS periods ranging from one to sixteen days and one study of no-kill shelters found a LOS of 34.6 days).

325. If U.S. shelters accepted 6.5 million animals a year and averaged a one-month stay for an animal, then the number of animals in all the U.S. shelters at a given time would be 6.5 million divided by twelve or about 541,667 animals. Then, supposing that shelters operated at a 50% utilization rate, total capacity would be 1.083 million animals. A decrease in the average LOS of an animal would decrease the total capacity estimate (e.g., a two-week LOS would decrease the estimated capacity to about 541,667 animals) as would an increase in the assumed capacity utilization (e.g., 75% utilization rate would lead to an estimated capacity of 722,222 animals).

The shelter system, buoyed by the "adopt don't shop" mantra, is a lifeline for countless pets. But even during nonpandemic times, the statistics regarding euthanasia in shelters are staggering, and the primary reason is overcrowding.[326]

> In the United States, about 6–8 million dogs and cats enter animal shelters every year, and 3–4 million of those animals are euthanized. In other words, about 50% of the total canines and felines that enter animal shelters are put to death annually. Moreover, 10–25% of the total euthanized population in the United States is explicitly euthanized because of shelter overcrowding each year.[327]

Without new options, there would be no place for the surge of millions of unwanted pets. Given this conservative estimate of pet removals combined with likely shelter capacity, millions of animals would likely be euthanized. What happens if the rate of surrender is 10% instead of 5% (whether motivated by inconvenience, fear, economic hardship, incapacity, or death—all distinct possibilities during a petdemic)?

This rough estimate suggests that individual human behavior in a petdemic is likely to reprise the slaughters of the past. We must do better, and we can if we better prepare. But action in a petdemic is not solely the result of individual decisions. What do we expect governments to do? I turn to this question next.

2. The Governmental Mandate to Protect Human Health

The review of the law in Section II.C revealed that the government has substantial legal authority to take actions against animals when human health is threatened. This power has been used to require the vaccination of animals, to restrict animals from being in certain locations, and even to slaughter animals. But that authority does not easily extend to the seizure of pets, which are protected as property under the Constitution. Hence, as a legal matter, governments have much greater latitude regarding health threats from animals if they are not deemed to be personal property. Thus, public policy is likely to differ between actions taken against cats and dogs that are strays versus those that are owned.

The parallel governmental decision to the keep-or-remove owner decision is whether to seize (and kill) the animals, take some lesser action, or to do nothing. Consider first what the government might do with respect to unowned cats and dogs. The potential threat is not small. The Humane Society of the United States estimates, for example, that there are between thirty and forty million feral and community cats in the United States.[328] In a petdemic, feral cats and dogs may be perceived as a

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326. *See* Alexandra Kleinfeldt, *Overview of Animal Euthanasia*, ANIMAL LEGAL & HIST. CTR. (2017), https://www.animallaw.info/article/overview-animal-euthanasia [https://perma.cc/WR4L-M8F2].

327. Janae Bradley & Suchithra Rajendran, *Increasing Adoption Rates at Animal Shelters: A Two-Phase Approach to Predict Length of Stay and Optimal Shelter Allocation*, BMC VETERINARY RSCH., Feb. 2021, at 1, 1.

328. The Humane Soc'y of the U.S., *supra* note 322. "[A]s many as 70% of cats entering some U.S. shelters continue to be euthanized." Daniel D. Spehar & Peter J. Wolf, *The Impact*

human health risk, either directly or through contact with pets. Such animals would be a potential target for government action,[329] and given the threat that feral animals would pose to pets, pet owners might support rather than oppose such action. As described previously, government seizure of owned pets would encounter Fourth Amendment obstacles, but unowned animals are a different matter entirely. The previously discussed Akron cat trespassing ordinance, which targeted feral cats on weak health-risk evidence, is a case in point.

While campaigns to seize unowned cats and dogs may pass a political cost-benefit test, such actions would be much less likely if pets were seized, even before factoring in the legal constraints. But given the urgent threat posed by cats and dogs in the hypothetical petdemic, there may be pressure for lesser actions (e.g., restrictions on the movement of animals).[330] These actions might raise the costs to an owner of keeping a pet which, in turn, might encourage additional owners to remove the pet from their home, leading to the animal's demise.

As a legal matter, the government is restricted in its ability to stop owners from removing the animals from their home.[331] As a political matter, governments have incentives to take actions to protect humans who can vote rather than animals who cannot. Thus, to the extent that the government acts, I would expect that officials will try to protect human health interests at the expense of animal welfare.

The following unfortunate situation underscores that point. In August 2021, the government of Bourke Shire in New South Wales, Australia, authorized the killing of fifteen dogs at a shelter in order to "prevent out-of-town residents from entering the county."[332] The five dogs in question, one of whom had a litter of ten puppies while there, had been in a shelter for much less than a month when they were

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of an Integrated Program of Return-to-Field and Targeted Trap-Neuter-Return on Feline Intake and Euthanasia at a Municipal Animal Shelter, ANIMALS, Apr. 2018, at 1, 2. This equates to more than one million cats being euthanized annually. *Id.*

329. *See, e.g.*, *supra* Sections I.A.1–3 (discussing "killing sprees" associated with smallpox, polio, and the Spanish flu that resulted in the slaughter of cats and dogs).

330. *See, e.g.*, State v. Peters, 534 So. 2d 760 (Fla. Dist. Ct. App. 1988). As an example, consider the restrictions some jurisdictions have placed on pit bulls, such as requiring their owners to carry insurance or post a surety bond for $300,000 to cover any injury or damage caused by the dog. *Id.* at 762. Additionally, pit bulls must be registered with the city and must be confined either indoors or within a locked pen. *Id.*

331. *See supra* Section II.C.2 (noting that humans, as owners, have largely unchecked authority over their animals). While cruelty and neglect laws limit owners' treatment of animals, owners can—and do—routinely surrender their animals for essentially any reason. *Id.*; *see also* M. D. Salman, John G. New, Jr., Janet M. Scarlett, Philip H. Kass, Rebecca Ruch-Gallie & Suzanne Hetts, *Human and Animal Factors Related to the Relinquishment of Dogs and Cats in 12 Selected Animal Shelters in the United States*, 1 J. APPLIED ANIMAL WELFARE SCI. 207, 224–26 (1998) (delineating seventy-one reasons for relinquishment derived from questionnaires completed by those surrendering animals to a representative cross section of shelters).

332. Gabriel Geiger, *Australian Government Shoots Rescue Puppies Because of COVID-19 Lockdown*, VICE (Aug. 23, 2021, 2:03 PM), https://www.vice.com/en/article/dyvjnz/australian-government-shoots-rescue-puppies-because-of-covid-19-lockdown [https://perma.cc/2YSA-M7YU].

killed.[333] Apparently, "[s]taff became concerned for the welfare of the dogs, due to overcrowding at the pound, and two of the dogs attacking one [an]other."[334]

The person who usually rehomed the dogs was unavailable.[335] Outsiders from a rescue organization associated with a different local government sought to bring the dogs to a neighboring shelter three hours away.[336] Yet they were not permitted to enter the town because of the COVID-19 restrictions. The government of Bourke Shire defended its actions, saying, "Coupled with council seeking to stop people from other communities entering Bourke, given the level of vulnerability of people in the community and that all regional New South Wales was under stay-at-home orders, the decision was made to euthanize the dogs."[337] Bourke Shire was known to have limited health services, and the Council also said that this decision was counter to the nearly universal rehoming of dogs in the county.[338] "The town [was] in a tenuous situation at the moment with C[OVID]," so the Council was "being very careful with people entering Bourke."[339]

This decision was met with immediate criticism. Various investigations were launched, which eventually concluded that the shelter's action was legal.[340] Critically, there was no evidence that the dogs themselves were disease vectors or had COVID. Instead, it was feared that rescuing the dogs would have led to the influx of one or more persons contravening local COVID-19 guidelines.[341] These actions are illustrative of the extreme measures sometimes taken by a government to eliminate animals in the name of human welfare.[342]

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333. *Id.*; Robyn Herron, *Dogs Euthanised in Bourke, with Rescuers Not Allowed in Due to COVID-19 Lockdown*, ABCNEWS, https://www.abc.net.au/news/2021-08-23/dogs-euthanised-in-bourke-over-covid-19-concerns/100399500 [https://perma.cc/ZX45-E4MB] (Aug. 23, 2021, 1:14 AM).

334. Herron, *supra* note 333.

335. *Id.*

336. Geiger, *supra* note 332.

337. Herron, *supra* note 333.

338. *Id.* For years prior to this incident, Bourke Shire had rehomed all shelter dogs and did not euthanize any healthy and nondangerous dog. *Id.*

339. Yan Zhuang, *A Local Government in Australia Killed Its Impounded Dogs over Coronavirus Fears*, N.Y. TIMES (Aug. 23, 2021), https://www.nytimes.com/2021/08/23/world/australia/covid-lockdown-dogs-killed.html [https://perma.cc/NSN8-CT9Y].

340. Angus Thompson, *NSW Council's Shooting of Rescue Dogs Legal, RSPCA Finds*, THE SYDNEY MORNING HERALD (Sept. 24, 2021, 1:15 PM), https://www.smh.com.au/national/nsw/nsw-council-s-shooting-of-rescue-dogs-legal-rspca-finds-20210924-p58uhd.html [https://perma.cc/L48A-T4F3]. The organization offered few details on the investigation or the decision-making process of the investigation. *Id.*

341. *Id.*

342. *See Our Place – Our Community*, REMPLAN, https://app.remplan.com.au/bourke/community/population/age?state=gZaVTr!YAawhw8bzS8yjOkIalPLZF8hvuzMjT8unu6uq1HZuJs1wZF8ym [https://perma.cc/YV8G-2F6F]. Data used is from 2021. *Id.*

III. RECOMMENDED COURSE OF ACTION

Humans have an enormous capacity to do the wrong thing. Even when experts warn us, we don't listen, much less prepare.[343] While many of these warnings are false alarms, we seem to suffer from "collective amnesia" even when the predictions come true.[344] In the "modern era" (i.e., the past century), our species has slaughtered countless pets under the belief, albeit mistaken, that they posed infection threats to us. Fast forward to today, and we see culling occurring on both a grand and smaller scale. Now look to the future. How will we respond to a pandemic when our pets could really be disease carriers?

Public health policy is a matter of tradeoffs. Choices made depend on available knowledge and options. What we know may well be incomplete, especially early on when there is a novel disease outbreak. Narrower and less-creative options are generated when decision makers feel under siege.[345] In a petdemic, we would need to avoid either/or situations in which human and animal interests are pitted against one another.

Part III recommends a course of action that will enable us to generate timely information and increase options. The agenda is organized around four priorities: information inputs; testing; segregation (quarantine, isolation, or other forms of separation); and immunity (vaccination or naturally acquired). The primary focus is on actions relating to transmission from an infected agent (e.g., animal) to an uninfected agent (e.g., human). If the primary transmission mechanism is that of fomite transmission in which an animal carries the virus or bacteria on its fur or paws but the animal is not infected, the testing and immunity recommendations would not be relevant.

A. Addressing Uncertain and Incomplete Information

Extreme urgency coupled with high uncertainty can be lethal.[346] But what should be done now to reduce the information problems we may face in a future petdemic?

The information acquisition recommendations focus on three action items: a simulated petdemic exercise to raise questions, identify opportunities and obstacles, and develop priorities; a comprehensive roadmap to help guide decision-making and associated communications strategies; and an inventory of relevant resources and

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343. *See supra* Section I.B.

344. Eric Lander, Opinion, *As Bad as Covid-19 Has Been, a Future Pandemic Could Be Even Worse—Unless We Act Now*, WASH. POST (Aug. 4, 2021, 6:16 PM), https://www.washingtonpost.com/opinions/2021/08/04/bad-covid-19-has-been-future-pandemic-could-be-worse-unless-we-act-now/ [https://perma.cc/K5Z4-23JJ]. "As public health emergencies recede, societies often quickly forget their experiences — and fail to prepare for future challenges. For pandemics, such a course would be disastrous." *Id.*

345. Threat framing has been shown to limit the options that a decision maker considers: we narrow our thinking, we are more reactive, and we are less creative. In effect, we have fewer mental resources to use and would have more difficulty finding ways to address perceived pet-related threats. Clark G. Gilbert, *Change in the Presence of Residual Fit: Can Competing Frames Coexist?*, 17 ORG. SCI. 150, 151–52 (2006).

346. *See supra* Section I.A.6.B (discussing mink).

plans for field data acquisition through animal surveillance programs. The first two actions help policy makers identify key categories of information that provide the basis for contingency planning, while the third action involves an early warning and diagnostic system to trigger planned responses.

1. Integrated Simulation Exercise

A tabletop exercise is a useful tool to simulate the potential spread of a petdemic outbreak under various assumptions regarding the disease, its transmissibility, and human and animal interactions. They often take the form of roundtables in which "academics, business leaders and government officials ma[ke] real-time decisions" regarding a simulated emergency.[347] Within the United States, for example, the Federal Emergency Management Agency has emphasized that conducting pre-event exercises addressed to simulated emergencies "should be considered an integral element of preparedness."[348] They specifically note the value of such exercises that bring together "[f]ederal, state, territor[ial], local, and tribal governments" and address "emergency management, communication, preparedness, planning, exercises, and other topics."[349]

Simulation exercises would help identify information that policy makers will need and would be conducted in much the same way as epidemic planning simulations run by think tanks and governmental organizations. Although these drills became popular in the 2000s as "[b]iosecurity and public-health specialists took their cue from war-game exercises used by the military," unfortunately, no petdemic scenario was envisioned.[350]

While the general concept of a simulation as a planning exercise is straightforward, its specific design is not. The design depends on the questions addressed and the underlying assumptions incorporated. Here, the design would incorporate the pet transmission mechanism into a general disease outbreak scenario. But more than that, the proposed simulation would address not only the human health consequences of a petdemic but also its impact on animal welfare. In particular, it would explore owner decisions to keep or remove pets from their home under varied conditions and the consequences for the number of pets that will be destroyed, not from succumbing to the disease, but as the direct result of owner choices.[351] Such a

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347. Amy Maxmen & Jeff Tollefson, *Two Decades of Pandemic War Games Failed to Account for Donald Trump*, NATURE (Aug. 4, 2020), https://www.nature.com/articles/d41586-020-02277-6 [https://perma.cc/NBF2-VUAC].

348. FED. EMERGENCY MGMT. AGENCY, U.S. DEP'T OF HOMELAND SEC., FEMA DAM SAFETY SERIES, FACT SHEET 3: BENEFITS OF PRE-EVENT EXERCISES AND TRAINING 2 (2018), https://www.fema.gov/sites/default/files/2020-08/fact-sheet-3_pre-event-exercizes-training.pdf [https://perma.cc/3MVU-7VJ7].

349. *Id.* at 1.

350. Maxmen & Tollefson, *supra* note 347. For example, none of the nine simulations conducted between 2000 and 2019 by organizations such as the World Economic Forum or the World Health Organization appear to have implicated pets. *Id.*

351. Owner decisions regarding pets are both behavioral and economic. *See supra* note 293 and accompanying text. Science-based information is one part of the overall equation. We also need an understanding of human behavioral responses and our ability to fashion policy in

study would also account for the ready availability of useful information, or its dearth, and the effect on individual and governmental actions. The resulting insights would enable society to prioritize the flow of information and to craft communication strategies.

In a simulation, questions and answers fit together as a system, underscoring why the information-generation agenda must be informed by both science and policy needs. The exercise would generate discussions among policy, science, and social science experts and underscore difficulties associated with cross-institution and cross-jurisdiction coordination.

2. General Information Reference for Communications

Decision makers facing a novel disease outbreak would also need help in formulating their communications strategies. A high-level response template would be invaluable in explaining in simple terms the key questions, offering a structured approach to answer those questions, and making sense of disease-specific information as it is created. Such a template would help to generate informed and balanced analyses as well as effective messaging.[352] Developing communications strategies is particularly important given the conflicting forces at play. For example, there is both the desire and the need to provide guidance as early as possible.[353] Yet, with novel disease outbreaks, reputable experts may disagree early on. This can have ripple effects because when buffeted by conditions of uncertainty and fear, we tend to accept information from familiar sources even if they do not have the requisite emergency-related expertise.[354] Layer upon that the fact that during times of crisis, we tend to accept the first message we receive and, even when later more accurate information follows, we often compare it with the earlier messages.[355] Unfortunately, these forces may collectively contribute to misinformation. Within a pandemic setting, one consequence could be the maligning, or stigmatization, of animals. As the CDC has observed, "[s]tigmatization is especially common in disease pandemics," and it may lead to the shunning of animals.[356] During the late 1990s, during the first avian influenza outbreak in Hong Kong and the first West Nile

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anticipation of those responses. Specifically, for a petdemic, more effort should be directed to gathering systematic evidence regarding how owners value pets, how they make decisions about them, and how fear may override normal reactions. Is there something special about a petdemic compared to a pandemic that does not implicate our animal companions? What is known? What are the key unknowns, and where and when can such information be generated? Do infections and transmission via pets pose singular problems, or are they an application of general knowledge regarding zoonotic disease initiation and spread?

352. *See* U.S. DEP'T OF AGRIC., NEWCASTLE DISEASE RESPONSE PLAN: THE RED BOOK (2014), https://www.aphis.usda.gov/animal_health/emergency_management/downloads/newcastle_response_plan.pdf [https://perma.cc/W6VZ-ZUFE].

353. Consider the communication strategy during World War II (WWII) in the United Kingdom in which guidance was not only delayed but also inconsistent. *See supra* text accompanying notes 53–54, 62.

354. CTRS. FOR DISEASE CONTROL & PREVENTION, CRISIS & EMERGENCY RISK COMMUNICATION: PSYCHOLOGY OF A CRISIS, *supra* note 318, at 3.

355. *Id.* at 4.

356. *Id.* at 10.

outbreak in New York City, some other nations banned the movement of animals "despite the absence of clear science calling for those measures."[357]

3. Resource Inventory, Obtaining Field Data, and Surveillance Programs

Petdemic planning as well as petdemic responses will improve if they are informed by an accurate understanding of the public and private resources that will be drawn on during a petdemic. Such a resource inventory should be conducted now and used to calibrate the simulation exercise. The inventory would include, for example, collection of statistics regarding animal shelter capacities by region, veterinary hospitals, veterinary offices, and so on. This information would be valuable regardless of the specific disease.

Other needed information will likely be disease specific. In terms of transmissibility, it is easy to determine whether a particular species can be infected under laboratory conditions.[358] This knowledge is often obtained very early to determine which species can be used in research to aid human health.[359] But if that species is vulnerable to infection, then one would also need to know whether it can infect humans and, if so, what is the mechanism and likelihood of transmission in real life conditions. A pet surveillance system should be readied and, at a minimum, activated to make these determinations once it became known from laboratory tests that pets could be infected. Such a system would involve testing pets (and their human companions), generating information that should be valuable for assessing the human as well as animal health threat.

Unfortunately, as veterinary virologist Alan Radford stated in August 2021, "[t]here is not a country on the planet that I'm aware of that has a national surveillance system for [general] cat and dog diseases. I think that's a blind spot."[360] This sentiment is consistent with an earlier *Scientific Reports* article which had observed shortly before the COVID-19 pandemic began that there is "a deficit in our understanding of the dynamics and burden of the full range of endemic/emerging diseases in companion animals and leaves these populations susceptible to the emergence of health threats."[361] Important advances, such as disease surveillance,

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357. *Id.*

358. *See* Shi et al., *supra* note 98, at 1017 (explaining the relative ease with which susceptibility to COVID-19 was determined early in the pandemic). *See also*, COMM. ON DOGS, NAT'L RSCH. COUNCIL, LABORATORY ANIMAL MANAGEMENT: DOGS 4–5 (1994), https://www.ncbi.nlm.nih.gov/books/NBK236591/ [https://perma.cc/43B9-Y26D] (discussing laboratory animal selection criteria with a focus on dogs).

359. COMM. ON DOGS, *supra* note 358.

360. Anthony King, *Tracking Animal Companion Disease*, THE SCIENTIST (Aug. 3, 2021), https://www.the-scientist.com/news-opinion/tracking-companion-animal-disease-69059 [https://perma.cc/N2UG-UX9F].

361. Alison C. Hale, Fernando Sánchez-Vizcaíno, Barry Rowlingson, Alan D. Radford, Emanuele Giorgi, Sarah J. O'Brien & Peter J. Diggle, *A Real-Time Spatio-Temporal Syndromic Surveillance System with Application to Small Companion Animals*, SCI. REPS., Nov. 2019, at 1, 1, https://www.nature.com/articles/s41598-019-53352-6 [https://perma.cc/BYX3-6F2A].

albeit still limited, exist in the United States and the United Kingdom.[362] Yet despite the rise in conversations about the interconnectedness of human and animal health, "the funding doesn't tend to reach the animal side."[363]

B. Testing of Animals

When a novel disease arises, we ask: Can I catch it? How can I catch it? Who can I infect and in what manner? But we also need to pose comparable questions with regard to our companion animals. If testing is not available for scientific, logistical, or economic reasons, animals may die unnecessarily.

As discussed, a high priority should be determining whether a particular animal is in fact infected and not merely whether the species is capable of sustaining an infection and in turn infecting humans. This information can inform the precautions that can be taken against transmission, facilitate contact tracing, and indicate whether medical treatment is needed.

1. Test Design

The gold standard for determining whether an animal (or a human) is infected is a polymerase chain reaction (PCR) test, which involves the examination of a specimen sample to look for genetic markers and to assess current infection with a microbial pathogen.[364] Such tests are highly accurate and can be produced within a month or even less.[365] The ease of administration depends in part upon the sampling methods. For example, the nasal swabs used in PCR tests for COVID-19 are not particularly convenient; moreover, they require laboratory evaluation. Rapid antigen tests also rely on a nasal swab but offer less accurate, albeit immediate results,[366] and

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362. *See id.* at 9.

363. King, *supra* note 360. The interconnectedness at issue refers to the

> One Health concept, which considers the interactions between humans, animals, and the environment, and recognizes that human health is closely related to animal and environmental health. It is in these interfaces that veterinarians can play a relevant role in the prevention and detection of new zoonoses and determine which ones deserve at least some consideration.

Roberta Torres de Melo, Daise Aparecedia Rossi, Guilherme Paz Monteiro & Heriberto Fernandez, *Veterinarians and One Health in the Fight Against Zoonoses Such as COVID-19*, FRONTIERS VETERINARY SCI., Oct. 2020, at 1, 1 (endnote omitted), https://www.frontiersin.org/articles/10.3389/fvets.2020.576262/full [https://perma.cc/7UWR-33T6].

364. *PCR Tests*, MEDLINEPLUS, https://medlineplus.gov/lab-tests/pcr-tests/.

365. *PCR Testing to Detect SARS-CoV-2 in Animals*, ZOETIS, https://www.zoetisus.com/misc/files/pdfs/dxtestingprotocol.pdf [https://perma.cc/3X6J-6NY5] (Apr. 2020).

366. Carrie MacMillan, *Which COVID-19 Test Should You Get?*, YALE MED., https://www.yalemedicine.org/news/which-covid-test-is-accurate#:~:text=Health%20care%20providers%20typically%20rely,for%20general%20screening%20and%20surveillance [https://perma.cc/EMM4-2GHY] (Jan. 20, 2022).

antibody tests assess only prior infection.[367] Both of them are considerably more difficult to develop than PCR tests.[368]

The difficulties with the basic tests just described, the scientific complexities and the relative ease or difficulty of development, apply equally to nonhuman and human animals.[369] But the regulatory steps for approval of animal diagnostic testing are less stringent than for human testing.[370] Also, in the absence of discernible symptoms, animal testing may play a key role because animals can neither self-monitor nor self-report their health status.

Unfortunately, all tests yield false positives and false negatives to varying degrees.[371] Given that reality and the attendant real-life consequences, understanding diagnostic accuracy is paramount.[372] Consider, for instance, the cost of a false positive test for a human compared with a false positive test for a pet. A person would be frightened, but the main consequence might be only inconvenient self-isolation. On the other hand, a false positive for some pets could be a death sentence if it would lead the owner to remove the pet from the home. Conversely, a negative test could save a pet's life if, for instance, based on symptoms alone an owner might have otherwise removed the pet from the home. Thus, because the animal tests will sometimes have life or death consequences, how tests are designed regarding the balance between false positives and false negatives transcends the standard use of tests to determine treatment and to protect the health of others. Here, we see the importance of accounting for behavioral and decision-making factors when assessing the appropriateness and design of tests.

Developing appropriate tests is only the first step. We need to understand the unique system-level challenges associated with the implementation of widespread animal testing.

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367. Jonathan J. Deeks et al., *Antibody Tests for Identification of Current and Past Infection with SARS-CoV-2 (Review)*, COCHRANE DATABASE OF SYSTEMATIC REVS., no. 6, 2020, at 1, 2.

368. Lindsey Dawson & Jennifer Kates, *Rapid Home Tests for COVID-19: Issues with Availability and Access in the U.S.*, KAISER FAM. FOUND. (Nov. 4, 2021), https://www.kff.org/report-section/rapid-home-tests-for-covid-19-issues-with-availability-and-access-in-the-u-s-issue-brief/ [https://perma.cc/WHW6-WAJY].

369. *Interim COVID-19 Domestic Animal Testing Guidance*, CORNELL UNIV. COLL. OF VETERINARY MED. (Mar. 31, 2020), https://www.vet.cornell.edu/animal-health-diagnostic-center/about/SARS-CoV-2 [https://perma.cc/GZ4T-WNHH].

370. Mohammed Hag-Ali, Abdul Salam AlShamsi, Linda Boeijen, Yasser Mahmmod, Rashid Manzoor, Harry Rutten, Marshal M. Mweu, Mohamed El-Tholoth & Abdullatif Alteraifi AlShamsi, *The Detection Dogs Test Is More Sensitive than Real-Time PCR in Screening for SARS-CoV-2*, COMMC'NS BIOLOGY (Jun. 3, 2021), https://www.nature.com/articles/s42003-021-02232-9 [https://perma.cc/47MM-YEND].

371. Ana-Maria Šimundić, *Measures of Diagnostic Accuracy: Basic Definitions*, 19 J. INT'L FED'N CLINICAL CHEM. & LAB'Y MED. 203, 204 (2008) (no tests have perfect "diagnostic accuracy").

372. Thomas R. Vetter, Patrick Schober & Edward J. Mascha, *Diagnostic Testing and Decision-Making: Beauty Is Not Just in the Eye of the Beholder*, 127 ANESTHESIA & ANALGESIA 1085, 1090 (2018), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6135476/ [https://perma.cc/3UBK-TSLA].

2. Implementation

The implementation of testing for animals could be more problematic than it is for humans, especially for respiratory diseases. Taking nasal swabs of animals with "teeth and claws" may require anesthesia, which could be dangerous for some animals, and for all of them would require skilled technicians and introduce additional financial and time costs.[373] Will there be enough veterinary technicians or veterinarians in the first place? As it is, there is a persistent substantial shortage of veterinarians in the United States and a decades-long reluctance of the field to meaningfully expand its veterinary schools.[374] If the forty percent of pet owners (that is roughly thirty-four million households) who do not currently access regular care were to seek such care, "the veterinary shortage will become even more strained and acute."[375]

Even if there were adequate numbers of staff available, would they be willing to place themselves at risk? Is there any reason to believe that workers in the veterinary field will be as willing as those in human medicine to accept the dangers? These are all empirical questions that point to possible bottlenecks in implementation. Arguably, ease of administration is immensely important, more so than with human testing. The best solutions would be accurate, easy-to-administer tests for animals. With planning, perhaps some bottlenecks can be avoided.

Two other concerns with animal testing need to be addressed: first, the cost to owners[376] and second, the possibility that animal tests will require resources that are in short supply because human needs would be prioritized. Animal tests can be expensive, running from $175 to $275 for individual COVID-19 PCRs, for example,[377] and "only 1.2 percent of American pets have [insurance] coverage. This means that only [a little more than 2 million] out of [185 million] American dogs and cats are insured."[378] Early on, payment was not a major issue for humans, however, since federal legislation required that most private insurance plans, Medicare, and Medicaid must fully cover the expenses associated with COVID-19 testing. Federal funds were also available to help the uninsured.[379] Even though there are important benefits to animal and human health deriving from animal testing, no mechanism is

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373. Greene, *The Coming Petdemic*, *supra* note 12.

374. MARK L. CUSHING, PET NATION: THE LOVE AFFAIR THAT CHANGED AMERICA 215 (2020).

375. *Id.* at 216–17.

376. *Summary List of Services and Fees*, UNIV. OF MO. VETERINARY MED. DIAGNOSTIC LAB'Y (July 1, 2021), http://vmdl.missouri.edu/wp-content/uploads/2021/07/VMDL-Fee-2021-2022.pdf [https://perma.cc/AL76-688B] (listing fees of pet serology tests, ranging from $4 to $57).

377. Lolita Lopez & Josh Underwood-Davis, *Some Pets Can Get Tested for Coronavirus—But Is It Necessary?*, KNBC (Apr. 22, 2020, 6:30 PM), https://www.nbclosangeles.com/news/local/some-pets-can-get-tested-for-coronavirus-but-is-it-necessary/2350673/ [https://perma.cc/93E4-GEN2].

378. CUSHING, *supra* note 374, at 230.

379. Nisha Kurani, Karen Pollitz, Dustin Cotliar, Giorlando Ramirez & Cynthia Cox, *COVID-19 Test Prices and Payment Policy*, PETERSON-KFF HEALTH SYS. TRACKER (Apr. 28, 2021), https://www.healthsystemtracker.org/brief/covid-19-test-prices-and-payment-policy/ [https://perma.cc/YW3M-V579].

presently in place for such funds to become available on short notice, even if the societal will exists to provide such funds. One possibility is to create a rainy-day fund through a small fee assessed on (mandatory) rabies vaccines. This could be used to support research on animal tests and to subsidize tests should they be needed. If we do nothing, and tests are too expensive or too scarce and pets are coughing, will some owners just remove them regardless of their ultimate fate?

3. Competition for Resources

Suppose animal tests may require materials, chemicals, or laboratory personnel that are also required for human testing, and they are in short supply. The problem is potentially significant. When one considers the number of companion animals and the potential need for ongoing testing, the demand could become staggering. Supply issues have emerged during the COVID-19 pandemic (e.g., nasal swabs)[380] and even with respect to common drugs used for both human and animal treatment during normal times (e.g., opioids).[381]

One need look no further than the testing of a handful of large cats, most from endangered species, at the Bronx Zoo early in the COVID-19 pandemic to understand how even a perceived sharing of resources might cause problems. An endangered Malayan tiger named Nadia developed actual symptoms in the form of coughing.[382] In response to the six tests for tigers at the zoo, Congressman Ritchie Torres tweeted, "A tiger at the Bronx Zoo has more access to testing than the people of the South Bronx . . . ."[383] Other politicians had similar reactions.[384] The zoo's response was telling. Officials there made it very clear that they used a different test than humans could have employed.[385] Along similar lines, the U.S. Department of

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380. *See, e.g.*, Olivia Carville, *America's Covid Swab Supply Depends on Two Cousins Who Hate Each Other*, BLOOMBERG BUSINESSWEEK (Mar. 18, 2021, 10:44 AM), https://www.bloomberg.com/news/features/2021-03-18/covid-test-swab-company-puritan-faces-family-feud [https://perma.cc/H6BY-6LAT].

381. *See infra* notes 395–96.

382. Katie Honan, *Tiger at Bronx Zoo Tests Positive for Coronavirus*, WALL ST. J. (Apr. 5, 2020, 7:34 PM), https://www.wsj.com/articles/tiger-at-bronx-zoo-believed-to-be-first-animal-to-exhibit-symptoms-of-covid-19-11586129678 [https://perma.cc/QZ6M-GJ7M]; *see also* Kate Knibbs, *The Real Reason Veterinarians Gave a Tiger a Covid-19 Test*, WIRED, https://www.wired.com/story/tiger-coronavirus-bronx-zoo/ [https://perma.cc/7ZPQ-BYQV] (Apr. 15, 2020, 4:30 PM).

383. Ritchie Torres (@RitchieTorres), TWITTER (Apr. 5, 2020, 8:41 PM), https://twitter.com/RitchieTorres/status/1246961289399853063?s=20&t=kgn1WVY5_iMkrTNs-URuzQ [https://perma.cc/S36Y-FMPN].

384. *E.g.*, Senator Brad Hoylman (@bradhoylman), TWITTER (Apr. 5, 2020, 5:19 PM), https://twitter.com/bradhoylman/status/1246910478485463041?s=20&t=NzV2VP16HzbeIPS6bQZkg [https://perma.cc/6MJD-GDSP]. Senator Hoylman, who represents Manhattan, tweeted, "A tiger in the Bronx gets a COVID-19 test, but there aren't nearly enough tests available for people in the five boroughs. This is ridiculous." *Id.*

385. GrrlScientist, *Bronx Zoo Tiger Did Not Get a Human Coronavirus Test*, FORBES (Apr. 7, 2020, 8:22 AM), https://www.forbes.com/sites/grrlscientist/2020/04/07/bronx-zoo-tiger-did-not-get-a-human-coronavirus-test/?sh=1b1a6cf77c8b [https://perma.cc/NU9S-4QDB] (According to Dr. Paul Calle, Bronx Zoo Chief Veterinarian, "[t]he COVID-19 testing that

Agriculture (USDA) stated that "there is no competition for testing [between nonhuman animals and humans]."[386] Those statements were nominally true insofar as they went because the tests used on the animals were not approved for humans, and therefore no human could have legally been tested with those kits.[387] But, at least in theory, the animal test could have been used for human testing, according to Dr. Leyi Wang, the veterinary virologist who developed the test in question.[388] So while in this instance, the use of tests on animals had no impact on humans, it also demonstrates how the manufacture or processing of a test for use with animals could have used resources (anything from swabs, to reagents, to laboratory equipment or technicians) that might have been used for human testing.[389] If the demand for animal testing had been significant, what would have happened? Cornell Veterinary Professor Edward Dubovi argued that, "Given the lack of test capacity in the US, it would have been irresponsible for a human lab to do [animal] testing (even if permitted under the extraordinary circumstances) as it would have replaced a human sample needed for a clinical assessment."[390]

Scarcity of testing resources was also raised during the extermination campaign against hamsters in Hong Kong.[391] After noting that neither being asymptomatic nor having a single negative test result ensures the hamsters had not been infected, the government said that testing to identify which animals were infected was not feasible.[392] But perhaps it was merely deemed unimportant as just one month later, the government announced plans to require three COVID-19 tests for each of its 7.4 million citizens in the space of a month—over 22.2 million tests.[393] Given the broadly held assessment that there is a "negligible" risk of contracting COVID-19 from pets and that only one of the 113 hamsters surrendered at the time of the policy being promulgated tested positive, how can the government condemn them to death

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was performed on our Malayan tiger Nadia was performed in a veterinary school laboratory and is not the same test as is used for people.")

386. *Id.* (quoting Ms. Lyndsay Cole, Assistant Director of Public Affairs with the USDA Animal and Plant Health Inspection Service).

387. *Id.*; *see also Policy for Coronavirus Disease-2019 Tests During the Public Health Emergency (Revised)*, F.D.A., https://www.fda.gov/media/135659/download [https://perma.cc/G397-9JMF] (Sept. 27, 2022).

388. *See* Knibbs, *supra* note 382.

389. GrrlScientist, *supra* note 385 (The USDA explicitly noted, "at this point, animal testing is very limited and requires approval from the state animal and public health authorities.").

390. *Id.*

391. *Press Releases: Hamster Samples Preliminarily Test Positive for COVID-19 Virus*, HONG KONG AGRIC., FISHERIES & CONSERVATION DEP'T (Jan. 19, 2022), https://www.info.gov.hk/gia/general/202201/19/P2022011900046p.htm [https://perma.cc/SQK3-HC24].

392. *Id.* Officials evidently tested some of the animals that were still at the pet shop and associated warehouse in question. Of the seventy-eight small mammals seized, eleven (all of which were hamsters) tested positive for COVID. *Id.*

393. Shirley Zhao & Dorothy Ma, *Hong Kong Orders Three Compulsory Citywide Covid Tests in March*, BLOOMBERG (Feb. 22, 2022), https://www.msn.com/en-us/money/other/hong-kong-to-compulsory-test-city-three-times-in-march-for-covid/ar-AAU9kL8?li=BBnb7Kz [https://perma.cc/A8SF-N9TQ].

without permitting owners to demonstrate the animals posed no threat?[394] It appears that scarcity-type arguments in the form of insufficient capacity might be deployed to shore up decisions to deny any resources to saving animals.

When COVID-19 first emerged in the U.S., the country was in for a shock when it became clear that the Strategic National Stockpile's (SNS) inventory (e.g., medical and personal protective equipment) was heavily depleted. The comparable institution for animals is the Veterinary National Stockpile (VNS), which concerns livestock during a disease outbreak. Unfortunately, as a practical matter, it is focused heavily on supporting culling.[395] A bipartisan study panel on biodefense lamented that in 2017 Congress appropriated on average $4 million per year to the VNS while the SNS received $575 million "to serve a similar role for human health."[396] It further noted that, "the magnitude of the difference is striking given that many of the costs for development and stockpiling are expected to be similar."[397] Former Senator Joseph Lieberman also testified that in addition to addressing the need surrounding agricultural animals, we must not ignore wildlife or companion animals.[398]

Especially during a pandemic, optimizing human health would take precedence whenever scarcity arises. But this occurs even in normal times. In 2018, Pfizer encountered various production problems that led to an opioid shortage. As with humans, opioids are vital for anesthesia and pain reduction for animals. Pfizer stopped providing opioids for veterinary use because it needed to "divert[] those drugs to fill orders from hospitals."[399] While it "regret[ted]" this decision, the company stated that it "won't resume sales for animal use until the shortage at hospitals and surgical facilities has been resolved, which is not expected before the second quarter of 2019."[400] This was yet another example of the subordination of animal to human interests.[401]

Just as advance planning would likely facilitate the timely dissemination of information, so too could it help reduce scarcity of resources. Recognition that human and animal testing draws on common materials or services that would likely be in short supply might help avert a crisis and reduce the destructive competition between us and our pets.

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394. Scott Simon, *Opinion: A Case for Hong Kong's Hamsters*, NPR (Jan. 29, 2022, 8:02 AM), https://www.npr.org/2022/01/29/1076606146/opinion-a-case-for-hong-kongs-hamsters [https://perma.cc/3XV6-Z3WL].

395. *See Safeguarding American Agriculture*, *supra* note 18.

396. *Id.* at 33.

397. *Id.*

398. *See id.* at 7–8.

399. *Pfizer Halts Sales of Injectable Opioids to Veterinarians as Shortages Persist*, PHARMASOURCES (Aug. 3, 2018), https://www.pharmasources.com/news/45186.html [https://perma.cc/7V6Y-HVQB].

400. *Id.*

401. *See also* Joe Henke, *Children's Cancer Treatment Drug Shortage Could Impact Your Pets*, KHOU 11 (Oct 17, 2019, 6:06 PM), https://www.khou.com/article/life/pets/vincristine-cancer-drug-shortage-pets/85-0153d7d4-4616-437f-9ac2-e19dd7734e5c [https://perma.cc/RM2B-UDAU] (offering the example of an oncology drug which, when in short supply, would be allocated to prioritize human over animal needs).

C. Reducing the Risk of Human Infection from Animals: Segregation

This section examines the role of segregating animals as an option to protect humans and animals alike. Separation could take many forms—animals could remain in the home or be relocated—with possibilities for the latter offered through informal arrangements, the marketplace, nongovernmental organizations, and perhaps the government itself.

Segregation may be a viable way to maintain relationships with our animals while diminishing health risks. Indeed, shelters and other organizations would themselves need sequestration options to reduce human-to-animal and animal-to-animal disease transmission. From an individual or governmental perspective, these actions would alter the cost-benefit calculus.

It is often said that every dog needs a job. Yet they don't actually need to go to work, school, or the store. On the other hand, your pet cannot be counted on to social distance voluntarily and needs to have restrictions imposed. These two factors impact the costs and value of various methods of segregation.

1. Inside the Home

During a petdemic, those maintaining their pets at home would likely pursue threat mitigation procedures. One method would be to reduce contact with outside-the-home people and animals, though this may not be feasible in all locations. If the disease in question were transmitted through feces rather than through airborne particles, the effectiveness of this approach may be further diminished, particularly for dogs relative to cats. Contact reduction may also result in substantial long-term costs to an animal's mental well-being—for example, puppies may develop long-term behavioral problems if they are not sufficiently socialized with people and other dogs.[402]

Reactive steps, such as quarantining (segregating those who have been exposed) and isolation (segregating those who are infected), will probably be vital. But adapting those practices for our animals requires forethought. Consider a cat or dog known to be infected with a zoonotic disease that requires isolation to prevent airborne transmission to humans or other animals. How would isolation be implemented? The methods would vary radically depending on the setting. A single-family house with a yard, for example, might allow owners to sequester a pet in a separate room or in a garage where airflow can be controlled. Some limited interaction with the pet would be needed for feeding and waste elimination, but it would be relatively easy to take a pet outside when necessary. This method would protect both the household and the neighbors.

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402. AM. VETERINARY MED. ASS'N, LITERATURE REVIEW ON THE WELFARE IMPLICATIONS OF SOCIALIZATION OF PUPPIES AND KITTENS (2015), https://www.avma.org/sites/default/files/resources/socialization_puppies_kittens.pdf [https://perma.cc/DP2Y-JGXY]; *see also* Hillary Greene, *This Seems Like a Great Time to Raise a Puppy—But Is It?*, HARTFORD COURANT (Mar. 28, 2020, 6:00 AM), https://www.courant.com/opinion/op-ed/hc-op-greene-homeschooling-puppies-0328-20200328-gdmhfgilnfgnhhrb2pi7l4ofhq-story.html [https://perma.cc/YGH2-9CXT] (analyzing the unique challenges presented by socializing a puppy during the important development window given COVID-19 isolation practices).

By contrast, a small apartment in a high-rise building would pose much greater challenges where neighbors live on the same hallway and use the same stairs and elevators. Protective equipment, ranging from special pods to kennel-sized containment systems, could be developed and used for isolation to help with airborne diseases. This equipment would be especially helpful in these small living spaces to protect the household. In addition, some animals might tolerate a mask that would decrease the threat of infection during necessary interactions with the owners and neighbors.[403] But when animals will not tolerate masks, concerns about neighbors may lead to reduced frequency of outside trips and tolerating elimination in the home. Depending on the consequences associated with infection, substantial (rather than total) elimination of the threat could be enough to allow the owner to remain the caretaker of the pet.

Implementation is more difficult because pre-existing animal-human interaction patterns and routines (e.g., petting, licking, sleeping in the bed) are difficult to break consistently. Furthermore, interventions such as complete segregation or even decreased attention may lead the animals to engage in undesirable activities such as barking, chewing, or inappropriate toileting. These behaviors may increase the "inconvenience" of having a pet in the home and become another reason for removing the pet from the home.

Rabbit Hemorrhagic Disease (RHD) is an example of the benefits and limitations of animal segregation. In contrast to this Article's hypothetical petdemic, RHD is highly contagious through contact and respiration. It has a mortality rate in rabbits of 90% to 100% when untreated, but humans are unaffected.[404] It can spread swiftly through "contact with contaminated caging, shavings, bowls, feedstuffs, and other fomites," and "can also be passively transported" by insects.[405] Clean living spaces, proper disinfecting measures, and indoor housing for the animals are three basic RHD prevention measures recognized as early as 2004.[406] However, even the most stringent measures cannot completely eliminate all RHD risks.[407] Some of these measures may be inconvenient, while others may be impractical or even impossible to implement in situations where pet owners have limited space, time, or abilities to completely cordon off their homes. Despite the risk RHD posed, not all owners were entirely compliant, partly due to the difficulty of adhering to the prescribed "rigorous

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403. Chris Jewers, *100 Years on, a New Pandemic . . . but Personal Safety Precautions Are STILL the Same: Photos from the 1918 Spanish Flu Show American Families Posing in Their Face Masks (and Even the Cats are Covered)*, DAILYMAIL.COM (Apr. 23, 2020, 6:59 AM), https://www.dailymail.co.uk/news/article-8248831/Photos-1918-Spanish-flu-families-posing-face-masks-cats-covered.html [https://perma.cc/5BCU-2VAZ] (photos of face masks on pets and humans alike in 1918 and 2020).

404. Katie Belz, *Rabbit Hemorrhagic Disease*, 13 SEMINARS AVIAN & EXOTIC PET MED. 100, 100 (2004).

405. *Id.*

406. Anthony Pilny, Susan Brown, Micah Kohles & Christie Taylor, *Biosecurity Measures to Reduce RHD Risk for Your Pet Rabbits*, HOUSE RABBIT SOC'Y (Oct. 18, 2021), https://rabbit.org/biosecurity-measures-to-reduce-rhd-risk-in-your-pet-rabbits/ [https://perma.cc/7QTT-X2KD].

407. *See id.*

biosecurity protocols."[408] This suggests that even if methods exist to mitigate severe health threats posed to pets, we should expect some owners will not adopt those methods, presumably because they are too inconvenient. Whereas if pets pose a threat to their owners, it seems likely that some will choose to surrender or euthanize their pet rather than be inconvenienced.

2. Outside the Home

Some owners would be able to comfortably care for their animals at home. But others could not, and still others would not want to. I now turn to the problem of where animals can be dispatched if the owners do not desire to keep them at home.

During a petdemic, numerous care options outside the home would be needed. For illustration, consider two likely scenarios. First, an owner may seek to remove an exposed or infected pet from the house for a set time period—for example, a few weeks. Second, an owner may want to permanently remove the pet. These needs could be addressed, in a nonlethal manner, through boarding or rehoming, respectively. Without those options, euthanasia becomes the default.

Consider, first, the boarding solution. There is the old standby of family and friends or businesses like kennels or veterinary offices. Under normal circumstances, it would at best, be joyful, and at worst, an inconvenience for family or friends to take in a pet for a limited period. But during a petdemic, there would be a health risk. Even these informal arrangements would benefit from planning, such as securing advance commitments from others to accept the animal if either the owner or pet became infected. As a policy matter, it is important to assess the extent to which we can rely on these informal, out-of-home solutions, but it seems unlikely that they would be adequate during a major disease outbreak given the risk imposed on third parties. This would particularly be the case if one assumes that during a disease outbreak that humans will be increasingly sick, incapacitated, or financially strapped.

Various boarding options could emerge from the private or government sectors. Existing kennels and other enterprises could take in pets and might even expand their facilities. New kennels could be established, though this may be a rather risky and expensive response to what could be a one-off event. Even if undertaken, timeliness could be an issue. One might also expect internet-facilitated "pet AirBnBs" to emerge to enlist individuals to board pets on a temporary basis. The government might save some animals by building and staffing temporary shelters. The challenges would be both political and logistical. Are we prepared to call in the Army Corps of Engineers to set up a temporary animal shelter in New York City's Central Park, especially when they might have their hands full elsewhere saving humans?[409] How would we do so in a manner that protects not only the animal's physical health but also their behavioral well-being?

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408. Lisa Wogan, *Domestic Vaccine for Lethal Rabbit Virus Available*, VIN NEWS SERV. (Oct. 15, 2021), https://news.vin.com/default.aspx?pid=210&Id=10524004 [https://perma.cc/7CY9-34KH].

409. The Army Corps of Engineers has set up temporary human shelters for past disease outbreaks and disasters. *See Temporary Housing and Critical Public Facilities*, U.S. ARMY CORPS ENG'RS, https://www.usace.army.mil/Missions/Emergency-Operations/National-Response-Framework/Temporary-Housing/ [https://perma.cc/H6UE-MYTT].

But rapid deployment of such solutions may be stymied by regulatory restrictions regarding standards of care and licensure, concerns by owners about the quality of care administered by strangers, and liability issues. Furthermore, keeping animals safe requires measures for handling and quartering, as well as maintaining safe distances. Then there is the important matter of cost. These problems can be overcome, but all pose severe challenges especially if the solution is needed immediately. Bear in mind that history suggests that killing often occurs early in disease outbreaks, when people are most afraid and feel a sense of urgency. Timely availability is key, but that certainly requires planning.

Apart from rehoming a pet to extended family and friends, rehoming is largely done through animal shelters and animal rescue services. During a petdemic, some owners would inevitably surrender their animals to shelters. The influx would soar, while adoptions would plummet. Our current sheltering options do not have the capacity to accommodate petdemic-level demand. Existing shelters would need to expand, and there would be increased reliance on stopgap rescue operations that depend on volunteers to foster pets in their homes.[410] The likely combination of the fear of infection reducing the number of shelter volunteers and the need to sequester infected animals (possibly in separate facilities) to protect healthy animals and shelter workers, would decrease effective shelter capacity. The same challenges would exist for rescue services that rely on fostering. If permanent adoption elsewhere were delayed, that would lengthen the stay in the foster home.

While individual shelters and rescue services would likely face capacity concerns, it is possible that some of these problems could be alleviated at the system level. For example, if the disease outbreaks rise and fall at different times for different locations, organizations might arrange transportation services to relocate healthy pets to shelters in distant locations where the levels of infection are low. This disease outbreak arbitrage could effectively increase the system capacity of existing shelters and save additional animal lives, although this is more likely to work for epidemics than for pandemics.

On net, a petdemic would likely create severe conditions of both increased inflow and reduced system capacity. A surge in demand and reduced capacity would lead shelters and rescue services to either refuse to accept additional animals and, in the case of shelters, increase euthanasia. When met with refusals, owners might have to choose between keeping the pet at home with risk of infection and euthanizing their pet.

D. Reducing the Risk of Animal Infection and Reinfection: Vaccines and Naturally Developed Immunity

In the previous Section, recommendations were made about protecting humans from infection by animals. This section examines vaccines to reduce animal infections and the act of intentional infection as a way to gain immunity.

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410. There is the possibility for a small paradoxical effect. There will likely be some subset of owners who will be more likely to surrender their animals if they can comfort themselves with the prospect that the surrendered animal will not necessarily be killed.

1. Vaccines

In a petdemic, vaccines for animals would save human lives by reducing the threat of infection from animals. Vaccines would also save animal lives directly, through the vaccine, and indirectly by lowering the number of animals that owners or the state would euthanize to remove the health threat. This Section briefly considers the regulatory processes that could promote or undermine animal vaccines.

Animal vaccines are typically approved at a faster rate than their human counterparts. A conventional timeline for a new veterinary vaccine ranges from three to six years, whereas human vaccines take about ten to twenty years to develop.[411] But as COVID-19 has demonstrated, that timeline can be radically reduced with sufficient will and resources.[412] Ordinarily, absent a pandemic, the cost of developing a new human vaccine is about $200 million to $500 million (including vaccines abandoned during development),[413] but an animal vaccine costs about 10% as much.[414]

One key difference between animal and human vaccine development is that animal vaccines can be developed a great deal faster because they are generally subject to less stringent regulatory and preclinical trial requirements.[415] Moreover, veterinary scientists can immediately perform research on the relevant target species, whereas scientists for a human vaccine must demonstrate safety and efficacy in animal and laboratory studies before obtaining approval for testing in humans.[416] Hence, veterinary scientists can bypass experimental infections, dose-response studies, and challenge inoculations in less relevant models.[417]

In veterinary research, it is permissible to test subjects with the experimental treatment or leave them unvaccinated, then directly expose them to the pathogen under experimental conditions.[418] The vaccinated and the unvaccinated groups can then be compared.[419] The earlier such challenge tests are conducted, the greater the risk. Though harsh, it will substantially expedite vaccine development. In fact,

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411. Michael James Francis, *A Veterinary Vaccine Development Process Map to Assist in the Development of New Vaccines*, 38 VACCINE 4512, 4515 (2020).

412. *See* U.S. GOV'T ACCOUNTABILITY OFF., GAO-20-583SP, SCIENCE & TECH SPOTLIGHT: COVID-19 VACCINE DEVELOPMENT (2021).

413. Irina Serdobova & Marie-Paule Kieny, *Assembling a Global Vaccine Development Pipeline for Infectious Diseases in the Developing World*, 96 AM. J. PUB. HEALTH 1554, 1555 (2006).

414. Thomas P. Monath, *Vaccines Against Diseases Transmitted from Animals to Humans: A One Health Paradigm*, 31 VACCINE 5321, 5334 (2013). The lower cost and shorter timelines for the development of animal vaccines "reflects the simpler path to regulatory approval, and is driven by the significantly lower market potential for these vaccines." *Id.*

415. Els N. T. Meeusen, John Walker, Andrew Peters, Paul-Pierre Pastoret & Gregers Jungersen, *Current Status of Veterinary Vaccines*, 20 CLINICAL MICROBIOLOGY REVS. 489, 490 (2007).

416. *Id.*

417. *Id.*

418. *See id.* at 495.

419. *Id.*

routine procedures for animals involve a series of challenge tests.[420] By contrast, because of ethical concerns, human challenge trials are not ordinarily allowed in vaccine development, especially for severe diseases with few available treatments, though exceptions are made as was ultimately the case with COVID-19.[421] It is also possible that if a new animal vaccine has the potential to indirectly save more human lives, then regulatory constraints might be further loosened.

The preceding discussion suggests that animal vaccines could, in theory, be available before human vaccines. But under the urgency of a petdemic, massive investment of resources on human vaccines could lead to human vaccines being developed first. Whether or not this occurs, knowledge derived from developing human vaccines could speed the development of animal vaccines. This occurs because developing vaccines across species is easier than creating an entirely new vaccine and because the development of human vaccines sometimes involves testing with animals that would be the target of animal vaccines.[422]

The value of human vaccines in the early stages of a petdemic depends on the speed of development relative to the petdemic's spread and the subsequent vaccination rate. For communities facing a petdemic before a human vaccine is developed, decisions of individuals and governments will be shaped by the information, segregation, and testing options discussed previously. These measures could function as bridges affording a modicum of safety until such a vaccine becomes available or until the community achieves herd immunity. But if the petdemic's geographic spread is very slow, it is theoretically possible that some communities may have access to vaccines before the petdemic arrives in their locale. For those fortunate areas, vaccines would be something closer to a first line of defense.

Animal vaccines could also play an important long-term role by potentially reducing the probability of harmful disease mutations by preventing pets from becoming reservoirs for the disease. The relative speed of animal vaccine development raises an intriguing possibility for the general governmental response to a petdemic. If animal transmission of disease to humans is a significant channel for infection spread, investment in animal vaccines could have a substantial payoff in saving human lives, while simultaneously saving animal lives that might otherwise be lost through the actions of fearful owners.[423] These advantages suggest that the government should invest in some prepetdemic efforts to shorten the development

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420. Matthew M. Erdman, Nancy E. Clough & Paul J. Hauer, *Review of Updated Regulations and Product License Categories for Veterinary Vaccines in the United States*, 257 J. AM. VETERINARY MED. ASS'N 1142, 1143 (2020).

421. Ewen Callaway, *Scientists Deliberately Gave People COVID–Here's What They Learnt*, NATURE (Feb. 2, 2022), https://www.nature.com/articles/d41586-022-00319-9 [https://perma.cc/338A-QFE5].

422. David Grimm, *Do We Need a COVID-19 Vaccine for Pets?*, SCIENCE (Dec. 18, 2020), https://www.sciencemag.org/news/2020/12/do-we-need-covid-19-vaccine-pets [https://perma.cc/2KHS-YTYQ] (Zoetis's mink vaccine could be rapidly adapted to dogs and cats, and "vaccines across species should be relatively straightforward.").

423. *See* Monath, *supra* note 414, at 5334 (raising the possibility of the use of animal vaccines to "reduce[] human disease prevalence").

time of animal vaccines, just as it would invest in efforts to shorten the development of human vaccines.

Vaccination adoption depends on whether vaccination is voluntary—the choice of the owner—or mandated by the government. Given the U.S. experience with COVID-19, one must acknowledge the broader controversy surrounding vaccines. It is possible that some pet owners would refuse to vaccinate their pets even if a vaccine were to become available.[424] Although, concerns about unknown, and perhaps even known, long-term effects of a vaccine on a pet are unlikely to loom as large as they do for human vaccines. Hence, owners may be much more willing to inoculate their pets than themselves. In addition, unless provided free of charge by the state, there would be financial concerns associated with the dissemination of the vaccine to animals, as there would be for any medical service, especially given the small number of owners who carry pet insurance. If voluntary vaccination does not result in sufficient adoption, governments could use their police powers to mandate vaccination, as was done for farm and pet birds in the 1970s exotic Newcastle disease outbreak.[425] Such mandates might, however, be resisted based on concerns such as encroachment on personal (property) rights and doubts about the science.

2. Natural Immunity

If an animal vaccine is not available, besides efforts to avoid infection, what else can be done? Another route that some owners might favor would be to intentionally infect their pets so that when the animal has recovered, the animal has immunity and presents less risk to the household. This approach has historical precedent with human diseases. Before the discovery of vaccines for many common childhood diseases (e.g., chicken pox) some parents engaged in the practice of so-called pox parties in which healthy children were exposed to infected children to encourage contraction of the disease.[426] Since the risk the disease poses is much greater as an adult than as a child, the parents reasoned that it is best to get their children sick now. In a petdemic, if the health risk to the animal is comparatively low and the risk to humans is comparatively high, might such an approach be embraced?

While intriguing, the analogy is imperfect. First, the purpose of the intentional infection with a pox party is to protect the child's future well-being, while with the animal the intentional infection is to induce immunity to protect humans. Second, the newly infected animal poses a health risk to the owners, whereas the infected

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424. Julie Halpert, *Vaccine Hesitancy Comes for Pet Parents*, N.Y. TIMES (Jan. 21, 2022), https://www.nytimes.com/2022/01/21/well/family/pet-animal-vaccines.html [https://perma.cc/J6JQ-5KJY] ("Some . . . owners have extended vaccine worries to their furry pals.").

425. *See supra* notes 272–278 and accompanying text.

426. Jon Johnson, *Why Do People Have Pox Parties?*, MED. NEWS TODAY, https://www.medicalnewstoday.com/articles/323728 [https://perma.cc/F4XA-XJYM] (Feb. 23, 2021). While such pox parties are rejected by the medical profession today, especially since the development of a vaccine in the 1990s, the thinking that led to that practice is exemplified by many publications from earlier decades. *See, e.g.*, Dorothy V. Whipple, *No Need to Fear Chicken Pox*, PARENTS' MAG. & FAM. HOME GUIDE, Apr. 1957, at 50 (The author is an MD who argues that it is "a good idea" for children to have chicken pox in childhood when it is a "nuisance" rather than later when it is "apt to run a more serious course in adults.").

children would presumably not pose a risk to their caretakers who presumably have immunity from the disease. Thus, assuming the humans are not immune, the presence of an animal that could infect family members also raises the need for isolation away from home. While infection and isolation could be arranged informally, many owners might find a third-party service an attractive way to achieve these ends. Third parties (whether sanctioned or prohibited) might offer this type of service in the form of an animal infection and recovery center in which uninfected pets would be delivered by their owners to become infected, be taken care of until recovered, and then be returned to the owners. The service, if not prohibited by law, would be similar to the boarding options discussed earlier.

Intentional infection of one's pet to protect the owner raises profound ethical issues and the scenario in which it should even be countenanced is highly specific, with the ultimate bottom line being more animals being saved. The approach might be considered, for example, if the disease does not threaten the life of animals or have long-term consequences, the risk to humans of the disease is very substantial, and the failure to intentionally infect would result in a greater number of animals being euthanized.[427] Another concern with infecting animals is that it potentially increases the number of animals that are infected, which increases the possibility of mutations. Further concerns include the animal's probability of reinfection and the length of protection from natural immunity.[428]

How quickly could such a business be implemented in practice? One problem is purely logistical: how quickly can an existing business (or even shelter) be reconfigured to meet this demand? A second problem is legal: to what degree do existing regulations at the local, state, and federal levels represent significant obstacles to the rapid implementation of such a business? Are certifications necessary? Is an infection and recovery center a specialized animal hospital? What about liability and liability insurance? The answers to the legal and regulatory questions may vary by location. *If* there is any scenario in which this controlled infection is better than not, then society should address these questions before a petdemic comes. If this option is categorically undesirable, then ways to dissuade its development would also benefit from forethought.

Rather than fearing infection, the infection and recovery center approach embraces it. Infection is bad, but recovery is good. There are implications of this approach for shelter management as well. Under the specific assumptions just related, one can imagine that this type of thinking could change management dynamics at traditional animal shelters. Animal shelters have traditionally been very concerned about the spread of disease within their populations. Such concerns would

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427. One can imagine scenarios where this approach could be abused, and, in any event, the risk associated with the approach depends on the certainty about the various parameters of the disease.

428. Animal infection and recovery centers would save human lives by reducing the risk of human infection for humans who would otherwise maintain their infection-susceptible pets in their household. The centers would save animal lives because some owners who would previously have surrendered their pets to possible death would be willing to pay for the option to get their pets back without the disease threat. If a pet could die from infection, this option might be completely unattractive for those with high affection levels, but for those that would otherwise have euthanized their pet, a small chance of death is better than certain death.

affect their criteria for accepting animals and their policies on permissible density, housing configurations, and regulation of interactions. But if the infections are predictably mild, then shelters might feel comfortable with less stringent protective measures for the animals, which, ironically, might enable the shelter to save more lives. In fact, if the volume of infected animals is high enough, some shelters could be designated as de facto recovery facilities. We have already seen this with feline immunodeficiency virus (FIV) and the conversion of some shelters to an FIV-positive facility.[429] This possible division of shelter functions and identification of staff willing to work in such facilities should also be explored in advance. The arrangement might even result in fewer animals being euthanized, and one can imagine that already recovered animals—assuming meaningful immunity—may be attractive to potential pet adopters.

The animal infection and recovery approach is just one example of an outside-of-the-box response that could help alleviate the difficult trade-offs pet owners face. One can imagine many other ideas that effectively allow already recovered humans to help medically high-risk or very risk-averse humans with their pets. Pet AirBnBs, discussed above, could be organized where individuals agree to foster pets for the duration of the petdemic. When the cat is already out of the bag in terms of actually being infected, animal isolation centers might also spring up to handle demand by owners to temporarily remove an infected animal from the household.

IV. CONCLUSION

With each epidemic or pandemic of the modern age, there has been growing appreciation of the increasing problem of zoonotic origins of disease. The problem of origin is grave and has received considerable study. But there is also a more serious and perilously underappreciated issue: animals who live with humans as pets could become primary channels for disease transmission.

This article has explored animal to human disease transmission in the context of what I call a petdemic, in which pets and humans can *meaningfully* infect each other with a dangerous disease. Fortunately, we have not yet experienced such an event. Will our luck continue to hold? If it doesn't, the prospect is frightening.

Would an actual threat lead us to repeat some of the pet slaughters of the past, which occurred merely in response to perceived threats? Our pets are exquisitely vulnerable. American law, which allows owners to euthanize their pets for convenience reasons, would not prevent owners from euthanizing their pets in response to a real danger. Nor can we rely on governments to protect animals if doing so meaningfully risks human health. This is not an endorsement of those positions, but merely recognizes the current reality. As a thought experiment, consider what would have happened at the start of the COVID-19 pandemic if our pets had been implicated as disease spreaders and there were few resources for protecting humans, much less animals. How high would the pet death toll have risen?

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429. *See, e.g.*, Annette L. Litster, *PAWS Chicago at the Forefront of Groundbreaking Shelter Medicine Study*, PAWS CHI. (Nov. 1, 2010), https://www.pawschicago.org/about-us/media-center/paws-in-the-media/news-item/showarticle/paws-chicago-at-the-forefront-of-groundbreaking-shelter-medicine-study [https://perma.cc/XSE9-Q66H].

Finally, the petdemic scenario raises a broader concern regarding the fundamental relationship between humans and animals. By raising the individual and societal stakes, a petdemic would lay bare the ambivalence humans have regarding their pets. If we plan now, we will have more options when the petdemic strikes, options that will permit us to ease the wrenching tradeoffs we would otherwise face and, which history suggests, would not be kind to animals. We owe this to ourselves and, most importantly, we owe it to our animal companions.