Current state of spay/neuter programs in United States and effect on overall animal numbers

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Abstract

Surgically altering (spaying/ovariohysterectomy and neutering/orchidectomy) of companion dogs and cats is a culturally enforced phenomenon in the United States. This is unusual, almost unique to our culture and represents the largest experiment of long term health consequences of a surgical procedure ever performed. Over the past 5 decades, spaying and neutering pets has become a normal, expected part of responsible pet ownership. Veterinarians have achieved remarkable market penetration of this technique with an estimated 80% of cats and 69% of dogs altered.[1] Spay/neuter programs - defined as intentional, formalized efforts to have large numbers of dogs and cats altered – have historically been shelter-based and performed on institutionally owned animals, but there is a shift underway towards organizations providing these services to privately owned animals in under-resourced communities. These programs have unquestionably had an impact on dog populations, although evidence in cats is less compelling. Limitations of existing population estimates for dogs and cats are substantial. Nonetheless, impacts are directionally consistent and indicate reductions in unwanted dogs and cats in the US. While this is positive, there have also been some unexpected negative consequences of widespread spay/neuter programs, including impacts on availability of adoptable animals available through rescue groups and shelters, as well as impacts on proportions of breeds available in certain geographic regions and cities.

Keywords: Spaying, neutering, ovariohysterectomy, canine population, shelter

Introduction and history

Surgical removal of organs required for reproduction has been done since the earliest days of animal domestication. However, large scale surgical interventions as a means of population control is a relatively new approach and there is some evidence that it may not be effective in all species and in all environments.

In the US, widespread surgical neutering of male and female companion animals has been occurring for the past 50 years. The first high volume, low cost spay and neuter clinic opened in Los Angeles in 1969, although individual veterinary practices have offered the service for much longer, with modern techniques becoming prevalent in the 1930s. In fact, the overwhelming majority of surgical neutering happens at the ~ 26,000 private practices in the US, almost all of which offer spaying and neutering as a routine service. This presentation will focus, however, on the role of large-scale spaying and neutering programs in overall control of dog and cat populations.

An interesting aspect is the degree to which individual veterinarians or organized veterinary groups resist establishment of low cost spay/neuter facilities. They argue that low cost clinics, especially those with tax exempt status, unfairly capture revenue that would otherwise go to private veterinary practices. This has not been shown to be the case and in fact most spay/neuter clinics encourage their clients to follow up with established veterinarians when they can afford to. Today, most mainstream veterinary practice consultants encourage private veterinarians to collaborate with local spay/neuter facilities, benefitting from the stream of new clients and not having to perform a surgery that generally has low profit margins for clients who would otherwise choose low cost options.

Another factor relevant to this discussion is that the past 50 years also corresponds to an extraordinary rise in the strength and recognition of the human-animal bond. The role of companion animals in society has dramatically changed over this interval, moving rapidly from the backyard to the bedroom and ultimately to the bed. Driving this trend are numerous societal factors, such as scattering of the nuclear family, greater wealth in general, greater societal acceptance of pets in more places and several key technologies that have made pet ownership easier and safer – specifically 1) safe, convenient flea and tick medication, 2) easily stored and prepared food for pets, and 3) safe vaccines for most communicable diseases.

This trend does not appear to be slowing. Nationally, 56.8% of households own a dog or a cat. This is 15% greater than the 41.1% of US households that have children under the age of 18, which means there are 19 million more households with pets than with children. Pets are a huge business, with US spending estimated at $72.1B in 2018 ($30B on food, $15B on supplies/over the counter pharmaceuticals, $17B spent on veterinary care, $6B on services and $2B on live animal purchases).[2] Importantly, 85% of dog owners and 76% of cat owners consider their pets to be family members, which drive many behaviors like humanization (e.g. clothing for pets), indulgence in toys and movement towards purchasing premium food.

Spay/neuter programs today

Most organized spay and neuter programs are paid for in whole or in part by philanthropy or municipal governments. Over the past decade, due to lower intake volumes at shelters and the perceived remaining areas of need, many programs have moved away from being exclusively offered to institution-owned animals and towards being offered to members of the public. Not without controversy, both fully and partially subsidized procedures are offered in most communities and often the price paid by the client is determined on a sliding scale relative to their income. This change in targeted animal populations is based on the recognition that whereas most communities have ready access to veterinary services, there are many communities that do not, and these communities are where the largest remaining need appears to be. In many ways, this can be seen as a victory for the animal welfare community, since people who can afford to spay or neuter their animals do so.

It is expected (and increasingly demanded by statute) that pets adopted from agencies will either be spayed or neutered at the time of adoption, or that the promise to spay or neuter them in the near future be a condition of adoption (usually in the case of very young or ill animals). Since 28% of dogs and 31% of cats are obtained through rescue groups or shelters, this guarantees a large number of animals are altered every year.

Because costs associated with spay/neuter programs come from a wide array of sources (local, regional or national philanthropies, municipal governments, special projects within an organization and even individual volunteer teams) and that most shelters incorporate costs of their internal programs into operating costs, the total amount spent on programs is impossible to accurately ascertain. However, the 2 largest animal welfare charities, PetSmart Charities and the Petco Foundation, spend a combined $20 million per year on these programs, so it is not unreasonable to assume that the actual number being spent by all charities and municipalities exceeds $200 million. It is also clear that even with such a high level of investment, the vast majority of spay/neuter surgeries are not performed as part of these programs, but rather they are performed at private veterinary clinics. It is, however, logical to argue that free or low cost programs and clinics: 1) disproportionally impact families that would otherwise not be able to spay or neuter their animals due to economic limitations; and 2) contribute to the general culture of spaying and neutering being an expected part of pet ownership.

This cultural expectation is very real. There are hundreds of social cues that remind people that spaying and neutering pets is normal and expected. In veterinary medicine, we have expounded the health benefits for decades, and whereas positive impacts for population health are (probably) clear, those for individual health are more questionable. There is no doubt that a dog cannot develop uterine cancer without a uterus, but that same argument could be made about any number of nonvital organs. Furthermore, this is a unique cultural phenomenon in the world. For example, in Sweden only 3% of dogs are sterilized[3] and it is illegal to do so without a medical reason. But there the cultural pressure is much lower and the responsibilities associated with pet ownership very different. After all, Bob Barker (and later Drew Carey) have been signing off the "Price Is Right" game show with the signature phrase "…help control the pet population, have your animals spayed and neutered" since 1981.[4] While only a single example, it is representative of the overall cultural expectations that pet owners face in the US.

How many dogs and cats are there?

According to the American Veterinary Medical Association (AVMA), there were ~ 77 million dogs and 58 million cats in the US in 2016. These numbers that are in sharp contrast to the American Pet Products Association (APPA) estimates of 89.7 million dogs and 94.2 million cats, although they are the 2 most widely cited sources. Both estimates are based on surveys, and inherently over-represent populations that can participate (i.e. own a computer and/or phone, are willing to participate and reachable), although the AVMA survey is much larger – 50,000 completed questionnaires compared to about 2500 for APPA – so we will generally rely on the AVMA numbers. The trend is that there has been a steady increase in the number of pets in the US since the survey began in 1991.

Determining the number of animals that enter US shelters is also a challenging task. Estimates vary widely, from 6.5 million animals according to the American Society for the Prevention of Cruelty to Animals (ASPCA)[5] to 2.7 million animals according to the most definitive web-based data collection site, Shelters Animals Count.[6] Even with that relatively large discrepancy, the number of animals entering shelters over the past several decades has been on a steady and dramatic decline, which can be at least partially attributed to spay/neuter programs.

Rowan and Kartel performed a thorough review of both shelter intake and euthanasia data from the 1970s to the present.[7] While earlier data are not nearly as robust as current data, trends are clearly positive, both in an absolute sense and relative to human population. In 1973, the Humane Society of the United States (HSUS) estimated that 13.5 million animals were euthanized in the US. In 2019, that number is ~ 1.3 million, a decrease of 90%. This is even more dramatic when it is recognized that municipal and private shelters are often the euthanasia-center-of-last-resort for parts of the population who cannot access private veterinarians, and therefore there is a portion of those 1.3 million animals for which euthanasia is the most appropriate and humane option. For dogs, we have reached a point where there are not enough adoptable animals in some regions and some groups are having to stretch the definition of an "adoptable" animal in order to meet demand. While these supply discrepancies are solvable through transport programs – bringing animals from areas with too many adoptable animals to areas that have too few – in the short term, the issue could have dramatic consequences in the future supply of dogs if not addressed soon.

How much of that decline in animals going into shelters is due to spaying and neutering programs is a matter of debate. While it is logical to conclude that having fewer intact animals should result in fewer animals entering shelters and fewer animals being euthanized, there are confounding factors that should not be ignored. The first is that the fecundity of dogs and cats means that a small number of intact adults can produce large numbers of offspring, potentially enough to make up for those spayed and neutered. A second factor is the "No Kill" movement, which has become a driving force in the animal welfare community.

The No Kill movement began in the early 1970s in San Francisco by Richard Avenzino when he led the San Francisco Society for the Prevention of Cruelty to Animals (SPCA). It has since been propagated and driven by others, most notably Nathan Winograd and the Best Friends Animal Society, although as a philosophy and catch phrase it enjoys broad support. At its essence, it is a series of programs and incentives to make individual shelters (or by extension, communities, states, and regions) release 90% of the animals that enter the shelters alive, presumably into loving homes. This emphasis on a single metric – the Live Release Rate (LRR) – has undoubtedly driven many organizations to be better managed and saved millions of lives. But there have also been unintended consequences that have confounded understanding of how many animals enter shelters and therefore how spay/neuter programs have impacted dog and cat populations.

People who are attracted to animal welfare want to maximize the number of animals' lives saved, and thanks to social media and political campaigns calling those organizations that do not meet the 90% LRR threshold "Kill Shelters" or "High Kill Shelters", groups are highly motivated to achieve "No Kill" status. Unfortunately, this can result in less than ideal management techniques. For instance, some organizations now limit animals that they accept to only those they feel can be adopted. If a group wants 100% LRR, they can achieve it readily if they only accept highly adoptable puppies. It is likely not

helping the unwanted dog population significantly, but they will have very impressive statistics. Other techniques include making it difficult to relinquish animals, forcing unadoptable animals to other groups by not taking on municipal contracts, or partnering with other groups to remove difficult animals, thereby transferring the problem around the community. This makes understanding the exact impact of spay/neuter programs on the homeless animal population even more difficult, because these incentives lead some to misrepresent or ignore a portion of the animals in the general population.

The last point to be made in regard to the impact of spay/neuter programs on the dog population concerns overrepresentation of some breeds. Blocky-headed, square-jawed dogs – labeled with various names including Pit Bulls, Bully Breeds or Bully crosses – comprise ~ 6% of the general US dog population, but between 45 and 90% of shelter populations, albeit with strong regional differences. Similar proportions exist for Chihuahua and Chihuahua-mixes, although the logistical challenges associated with too many Chihuahuas are very different than those with too many Pit Bulls. The point is not about the relative merits or challenges with these breeds, it is that clearly there are too many of these animals having too many unwanted litters, despite targeted programs being in place for decades, including breed-specific bans in certain communities and various breed-specific spay/neuter programs. It appears that numbers in certain areas are worse than ever and represent a problem with ready access to minimum veterinary care, including spaying and neutering services.

That is the story with dogs – spaying and neutering encouraged as a cultural norm, adoption being an acceptable (often preferable) way to acquire a dog, readily accessible surgical offerings with some major exceptions and some interesting impacts on breed selection – all of which have created the current situation of declining numbers of animals being relinquished to shelters, with a concomitant reduction in euthanasia, albeit with remaining challenges.

What about cats?

The situation with cats is less clear. In most areas of the country, there is still an abundance of cats in shelters and whereas numbers in some areas have declined, there are some disturbing trends that indicate that the problem is still as large, but because of several factors – the No Kill movement being a significant one – the community is just not counting those cats as unwanted. There are millions of dollars being spent for Trap Neuter Release programs (where community-owned cats are trapped, surgically altered and then released to where they were originally sourced) without conclusive evidence that they are effective in all situations. Obviously, cats that are altered can't reproduce, but because: 1) cats are highly fecund when environmental conditions are right; 2) it is rare for the individual animals in colonies of cats to be stable over time; and 3) not all cats in a colony can be captured and altered, there is an argument that removing some individuals, even a majority of the individuals, from the breeding pool does not appreciably alter the population of that ecosystem of cats over time. This is not to imply that Trap Neuter Release programs are not effective solutions for some issues related to community-owned cats, but the evidence is not there that it is an effective sole method of population control.

Conclusion

Spaying and neutering programs have been used for population control and responsible pet ownership for close to 80 years in the US, with an upsurge in their popularity during the past 4 or 5 decades. For dogs, these programs have had an effect on limiting the overall population in both direct and indirect ways. Directly, there are millions of animals that have been altered in these programs. The overall number is likely a small fraction of the number of privately- owned animals surgically sterilized by veterinarians in private practice, but the cultural expectation that all pets should be spayed or neutered unless they are going to be responsibly bred has some basis and reinforcement in these programs.

Getting an accurate picture of population impacts of these programs with robust data is difficult if not impossible. Verifiable numbers simply do not exist, but extrapolations are possible and impact trends are clear. There are fewer animals coming into shelters than ever before and spay/neuter programs have had a role in that, although there are some confounding factors. Lastly, cat populations, while declining in some areas of the country, are much slower to move than dogs and overall trends are much less clear.

Conflict of interest

The author has no business relationship with any of the manufacturers or corporations referenced in the manuscript. The author is the former president of PetSmart Charities and Morris Animal Foundation, both of which actively support organized spay and neuter programs.

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