

# Selecting a Spay/Neuter Program for Animal Control in the City of Charlotte

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*The City of Charlotte, NC, in attempting to determine the best kind of program for reducing its increasing populations of unwanted dogs and cats, examined a full range of possible options for limiting these populations. Five measures for population control were considered: spay/neuter surgery, euthanasia, physical restraint, mechanical contraception, and chemical contraception. It was concluded that a spay/neuter program that incorporated educational and legislative components would be the most effective means of large-scale population control, although other methods like euthanasia would still have to be used. Based on a survey of a number of cities with spay/neuter programs in place, it was found that a municipally run clinic for such surgery, with no excluding criteria related to income of clients, offered the best hope for limiting the future numbers of stray and unwanted animals.*

## Zusammenfassung

Die Stadt Charlotte, NC, machte den Versuch, das beste Programm zu bestimmen, um die ansteigende Zahl von unerwünschten Hunden und Katzen zu verringern. Dabei untersuchte die Stadt ein ganzes Spektrum von Möglichkeiten, um das Anwachsen dieser Populationen einzuschränken. Fünf Massnahmen zur Kontrolle der Populationen wurden in Betracht gezogen: Kastration/Sterilisierung durch chirurgischen Eingriff, Euthanasie, physische Beschränkung, mechanische Empfängnisverhütung und Empfängnisverhütung durch chemische Mittel. Man kam zum Schluss, dass ein Kastrations/Sterilisierungs-Programm, das erzieherische und legale Komponenten enthielt, das wirksamste Mittel für eine grossangelegte Populationkontrolle wäre, obwohl auch andere Methoden wie Euthanasie weiterhin in Anwendung gebracht werden müssten. Auf Grund einer Untersuchung in mehreren Städten, wo ein Kastrations/Sterilisierungs-Programm lief, wurde festgestellt, dass eine städtische geführte Klinik für solche Operationen, ohne irgendwelche ausschliessende Kriterien bezüglich des Einkommens ihrer Klienten, die beste Gewähr dafür böte, in Zukunft das Anwachsen von streunenden und unerwünschten Tieren zu verhindern.

## Introduction

Animal control has only recently been accepted as a job or function for which a municipality would be responsible. The major purpose of animal control is the reduction of growth of the ani-

mal population: dogs and cats are highly prolific. Both reach sexual maturity very quickly, usually at 6 to 8 months of age. Their gestation period is extremely short (58 to 65 days) and their offspring are

born in large numbers (litters of 3 to 10). These factors mean that a dog is nearly 15 times as prolific as a human, and a cat 30 to 45 times as prolific. Even under controlled conditions, for example, a single female dog and her progeny can be responsible for increasing the animal population by over 4,400 within 7 years. At the current cost of \$26 for every animal handled by the City Animal Shelter, the impact of these factors on the future cost of animal control activities in the City of Charlotte could be economically overwhelming. Therefore, city officials were compelled to develop a comprehensive and cost-effective program for dealing with surplus animal populations.

### *Available Options for Control*

Five measures are currently available for controlling the animal population: (1) spay/neuter surgery; (2) euthanasia; (3) physical restraint; (4) mechanical contraceptives; and (5) chemical contraceptives. Each of these options has its distinctive attractions and weaknesses, as detailed below.

#### *1. Spay/Neuter Surgery*

Probably the most feasible and effective solution to the animal overpopulation problem is a program that includes *public education* and *legislation* that encourages the pet owner to control the animal or have it surgically altered, and *low-cost spay/neuter sterilization*. In most cases, the purpose of education and legislation is to increase the number of sterilizations performed. Most pet owners who choose to have their pet spayed or neutered base their decision on the following benefits of sterilizations discussed in a brochure distributed by the Veterinary Medical Association of Tennessee.

*The most effective and permanent method of preventing pregnancy is surgical sterilization (neutering). In female dogs and cats, the uterus*

*and ovaries are removed (spaying). In males, the testicles are removed (castration). Sterilization effectively eliminates the capability to reproduce and thus prevents overpopulation, but it also produces a variety of other benefits to pet and owner alike.*

*Castration in the cat produces some profound changes in habits and attitude. Early castration reduces roaming, howling and fighting, so common in the uncastrated male. The habit of male cats of marking their territory with urine by spraying house and furnishings is eliminated by early castration. Even in male cats where these vices are firmly established, castration has been shown to reduce fighting and urine spraying by 53% and 78%, respectively. Elimination of fighting greatly reduces the occurrence of abscesses, a common disease of tomcats. The neutered male cat becomes a better, healthier pet.*

*Neutering the female cat eliminates the frequently recurring estrous cycles with the associated howling and desire to roam. It eliminates the owner's responsibility for finding homes for two litters of kittens a year. Common disease problems such as infections of the uterus (pyometra) are eliminated, and the risk of mammary cancer is reduced to 1/7 that in unspayed cats. As with the male cat, neutering improves the health of the cat as well as eliminating some of the inconveniences to the owner.*

*Castration in the dog appears to reduce the tendency to roam, though this is not as clear-cut as is the case in the cat. The roaming of young male dogs appears to account for their being hit by cars twice as often as are females. Castration eliminates the hazard of testicular tumors and*

greatly reduces the occurrence of prostatic problems and perianal tumors.

*Neutering the female dog eliminates the inconvenience of the semi-annual estrous (heat) cycle with its associated bloody vaginal discharge and yard full of agitated and aggressive male dogs. It eliminates the possibility of pregnancy and prevents the occurrence of false pregnancy, an annoyance to owners which occurs to some degree in 20% to 50% of dogs following estrous. The possibility of infection of the uterus, a common and severe disease in the bitch, is eliminated. The most significant health benefit to early neutering in the bitch is the marked reduction in mammary cancer. Of all the cancers of the bitch, 1/2 are mammary cancers. Bitches which are neutered before the first estrous cycle face only 1% of the risk of mammary cancer faced by their unspayed counterparts. If neutering is delayed until after the first estrous cycle, that risk is still only 8% of that which unspayed bitches face.*

Although these changes in habits and lifespan are desirable objectives to the pet owner, education and legislation are also necessary to convince the pet owner that the most important objective of sterilization is the reduction in the overpopulation problem. The dog population has increased 38 percent in the last decade (based on an estimate of one dog for every six persons and a 38 percent increase in the human population). This estimate is supported by the fact that the number of dogs processed by the City Shelter has increased almost 30 percent. The important figure for animal control purposes is the number of dogs capable of breeding, and projections indicate that this figure could be over 40,000 by 1990.

A program involving spay/neuter surgery could have an impact on the projected population in two areas. First, public education and low-cost surgery would reduce the number of "owned dogs" capable of breeding. Second, legislation that required sterilization of dogs adopted from the shelter would reduce the number of "Adopted/Reclaimed from Shelter" dogs that are capable of breeding.

However, neither education nor legislation is sufficiently effective to persuade the pet owner to spay or neuter his or her animals unless the cost of sterilization is relatively low. The average costs of the operation in Charlotte (as of October 1980) were \$62 and \$52 for female and male dogs, respectively. Thus, a \$10 to \$15 discount on the license fee for neutered animals will take 4 to 6 years to recover. By itself, this is probably not a sufficient incentive to encourage owners to opt for sterilization of their animals.

## 2. Euthanasia

Euthanasia is necessary because animal shelters seldom have an alternative due to the cost and space constraints under which they operate. Animal shelters must also euthanize to avoid contributing to the overpopulation problem. Although it would appear to be more humane to keep the animal until it is adopted, the adoption of fertile animals from shelters merely contributes to the overpopulation problem, since the animals are thereby given the opportunity of producing offspring, the majority of which will end up at a shelter.

Euthanasia is currently the only tool used in response to the overpopulation problem in the City of Charlotte. The emphasis in any euthanasia program is on ensuring that the most humane procedures are used and that those performing the task are capable and compassionate. Two years ago the City of Charlotte's Animal Shelter switched from an engine that produced carbon monoxide (CO) for

the euthanizing chamber to bottled CO. In addition, the Animal Shelter began to use T-61 solution in 1978 to euthanize sick and injured animals and puppies and kittens. These two recommended methods ensure that euthanasia will be quick and painless for the animals, but they do cost more than the old method. In fiscal year 1979-1980, it costs \$.41 per animal to euthanize by these modern techniques. The cost in the first 2 months of the 1980-1981 fiscal year has increased to over \$.45 per animal. The percentage of the total City of Charlotte budget that is expended on Animal Control activities has increased from 0.3 percent in 1970 to 0.6 percent in 1980.

Although the cost of control is very high, the City of Charlotte is at least attempting to "control" stray animals, as required by the animal control ordinance. Little has been done, however, to reduce the problem. None of the established programs, or projects, has been able to reduce the problem of stray, uninoculated animals. Since 1969, when the City of Charlotte began to keep records on the number of dogs processed through the City Shelter, the number of dogs picked up has increased 30 percent. The number of dogs sold or reclaimed has decreased 31 percent due to closer scrutiny of adoption applicants. As shown in Table 1, the result of more dogs being picked up while fewer are sold or reclaimed is an increased need for euthanasia.

The most impressive change is the 285 percent increase in the cost of performing animal control tasks. Much of this has occurred in the past 4 years due to increases in the level of service to citizens and to improvements in conditions, food, medical care and euthanasia methods for animals processed through the Animal Shelter. Of greater impact on the question of spay/neuter, however, is the relationship of the number of dogs processed to the number euthanized. Even though there has been a 75 percent increase in the number of dogs euthan-

ized, there has been no reduction in the number of stray dogs picked up or the number donated. This is even more significant when combined with the reduction of dogs returned to the community (i.e., fewer are adopted). Even though fewer dogs are being adopted and more dogs are being euthanized—thus reducing in two ways the number in the animal population—the number of dogs picked up increases. At the current rate of increase, the number of dogs processed by the shelter in 1992 will be approximately 16,000.

Animals are also being removed from the population as a result of death from disease, accidents, and old age. An increasingly large number are being removed as a result of automobile accidents and cruelty. As shown in Table 2, the numbers of dead animals removed from city streets by the Sanitation Division has increased 30 percent in the past 4 years.

All this reflects not only a continued rise in the animal population but also a continued increase in the cost of handling each dog. This escalation in the cost per dog is due to the decrease in revenue obtained from the sale of adopted dogs, as well as the increase in operating costs.

Euthanasia provides only an arithmetic solution to the problem of animal overpopulation: each animal euthanized reduces the population by only one animal. Euthanasia would only be effective if animals reproduced at the rate of one for one, i.e., if each female dog produced only one puppy to replace her in the animal community. In reality, however, a dog or cat reproduces at a geometric rate. Even under conditions where breeding constraints are involved, a female dog and her progeny can be responsible for increasing the animal population by 72 in 7 years.

If the City of Charlotte wished to apply euthanasia to the *maximum* extent, it could discontinue the sale of dogs for adoption purposes. All dogs

TABLE 1 Dogs Processed by City Shelter, 1970-1981

Year	Budget	No. of Dogs		
		Picked Up	Adopted/ Reclaimed	Euthanized
1970	\$131,001	9,390	4,765	4,625
1971	143,824	9,272	4,709	4,563
1972	155,419	8,964	4,301	4,663
1973	172,489	9,337	4,307	5,030
1974	177,581	10,579	5,079	5,500
1975	224,927	12,089	5,049	6,540
1976	267,019	12,591	5,578	7,013
1977	271,895	12,208	5,567	6,641
1978	299,169	14,171	5,705	8,466
1979	329,343	12,160	5,092	7,068
1980	413,651	12,058	4,433	7,625
1981	503,797	12,200	3,300	8,082
% Change from 1970-1980	+ 285%	+ 30%	- 31%	+ 75%

that were not reclaimed by owners within 72 hours would be euthanized. Note, however, that only about 2 percent of dogs are reclaimed by their owners. So a program of this sort would be no different in terms of its impact on the breeding population of dogs than a mandatory spay/neuter program that was limited to adopted dogs.

### 3. Physical Restraint

Research has been conducted in recent years to find alternatives to the expensive surgical altering of animals. The cheapest method for avoiding expensive surgery is the physical restraint of both male and female animals at all times and complete separation at the time of estrus. Physical restraint is especially important for female animals during es-

trus. Although physical restraint is a simple and cheap method of population control, too few people restrain animals on their property, even though it is required by law. Last year, over 5,700 dogs were picked up in violation of the leash law; more than 9,000 animals were hit and killed by automobiles.

### 4. Mechanical Contraceptives

Mechanical contraceptives, such as intrauterine devices and chemical implantations in the skin, have not been sufficiently researched and tested to ensure the safety of the animal and acceptability to the animal owner. In addition, the cost is nearly as high as surgical sterilization and results are not nearly as reliable.

### 5. Chemical Contraceptives

Chemical contraceptives may eventually become the best solution to the animal control problem, but are currently unreliable. The types of chemical contraceptives currently available rely on daily intake by the animal, administered by the owner. So this method is neither practical nor dependable because of the human factor. The cost of these chemicals is also high enough to reduce their attractiveness to pet owners. Further research is necessary to provide a contraceptive that is safe, easily administered, and inexpensive. Surgical sterilization still remains the most convenient and guaranteed method of population control.

### Loss of Manpower for Ordinance Enforcement Tasks

There is another cost factor involved in animal control that is more difficult to quantify: The control of stray, unwanted dogs involves manpower that could be occupied in enforcing other aspects of the ordinance. Increased enforcement of license requirements, for example, would result in an immediate large increase in revenue and, in the long run, would increase the number of animals licensed from 52 percent to about 80 percent. Currently, almost 45 percent of the field officer's time is directly involved in the control of stray,

unwanted dogs. Less than 5 percent is devoted to enforcing the inoculation and licensing requirements. If more time were available, the officers would not have to canvass for offenders, but could use the recently implemented computer system to identify offenders directly. The current automated Animal Control System provides reports on persons who have declared ownership of a dog for tax purposes but do not have a valid dog license. The amount of revenue that would have been derived using the 1980 report to identify offenders would have exceeded \$100,000, based on the current \$10 fine for not having a license. This stricter enforcement would minimize the number of offenders and increase the percentage of the dog population that is inoculated and licensed.

The cost of controlling the animal population can, therefore, be viewed in two ways. *First, there is the direct cost of processing animals through the Animal Shelter.* The cost per dog is higher for euthanized dogs than for adopted dogs. As more dogs are processed, however, the demand for euthanasia increases. The increased use of euthanasia to control the problem has not resulted in a decrease in the dog population. It is, therefore, a spiraling problem that could reach unmanageable proportions. *Second, there is the indirect cost of the loss of opportunity to enforce the ordinance*

**TABLE 2 Number of Animals Killed by Automobiles Since 1977**

Fiscal Year	No. of Dead Animals Picked Up
1977	8,049
1978	8,403
1979	8,516
1980	9,732

**TABLE 3** Surveyed Cities with Effective Ratios

Location	Population	No. of Surgeries per Year	Ratio (Animals Altered/ Human Population)	Year of Estimation	Results
Pittsburgh, PA	459,000	1,497	1:306	1966	26% Reduction in 12 years
Colorado Springs, CO	180,000	2,323	1:77	1976	10% Reduction in 3 years
San Mateo, CA	78,000	4,082	1:19	1973	36% Reduction in 4 years
Ann Arbor, MI	104,000	4,200	1:24	1975	35% Reduction in 4 years
Los Angeles, CA	2,727,000	8,299	1:320	1971	39% Reduction in 9 years
Palo Alto, CA	56,000	3,650	1:15	1972	50% Reduction in 7 years

and thus better achieve the overall goal of the animal control program. Making good use of this opportunity would also result in a temporary increase in the amount of revenue generated by the Animal Shelter.

### *Evaluation of Spay/Neuter Clinics and Programs*

To obtain sufficient data on spay/neuter services for evaluating the best type for the City of Charlotte, the Operations Department developed a questionnaire and forwarded it to 89 randomly chosen municipalities and humane societies. Although 49 of the questionnaires were filled out and returned, only 30 contained enough information to be included in the evaluation process. The response was sufficient, however, for general comparative purposes and for determining the most effective types of spay/neuter services. Insufficient information, though, prevented determination of the degree of impact of such individual factors as differential licensing upon spay/neuter services.

The four types of spay/neuter services reported in the survey can be grouped into two basic categories:

- *Clinic*: A facility operated by one agency—usually a humane society or a municipality—for the sole purpose of performing spay/neuter surgery. No other veterinary services are provided.

- *Program*: Any other type of cooperative arrangement involving more than one agency. Most of the cooperative programs involve either (1) a municipally funded program in conjunction with local veterinarians or (2) a humane society-funded program in conjunction with local veterinarians.

In the following sections, a general description is provided on the four basic types reported on the survey.

#### *1. Spay/Neuter Program Involving Municipality and Veterinarians*

The following five respondents to the survey have established spay/neuter programs operated by the municipality in conjunction with local veterinarians.

- Long Beach, California
- Baltimore, Maryland
- Denver, Colorado
- Wichita, Kansas
- Alamance County, North Carolina

Four of the programs provide spay/neuter surgery only for animals adopted from the shelter. The new owner pays less for the spay/neutering than would be paid if the animal were obtained from a pet shop, breeder, or other source. The response from Denver, Colorado, indicates that its program is not effective because only welfare recipients qualify. Only one dog may be accepted per family although, in many cases, the family owns more than one dog.

Programs in this category provided the least amount of information. Usually more than one veterinarian was involved in the program, and none maintained records on the surgeries performed as a result of the program. None of the six programs involved any operational costs, since the spay/neuter surgery was performed at a veterinarian's clinic. Based on the comments provided by the respondents, none of the programs incorporated an adequate degree of public education, which may account, to some degree, for the lack of success of these programs.

The program in Long Beach, California, involves differential licensing as an inducement to pet owners to have their animals altered.

## 2. Spay/Neuter Programs Involving Humane Societies and Local Veterinarians

Six survey respondents reported the establishments of spay/neuter programs operated by a humane society in conjunction with local veterinarians.

- Baton Rouge, Louisiana
- Milwaukee, Wisconsin
- Kansas City, Missouri
- Honolulu, Hawaii
- Reading, Pennsylvania
- Santa Cruz County, California

Three of the programs involve the sale

of certificates, which are used at local veterinary clinics for payment. The certificates cost less than the fees normally charged by the veterinarians. Two programs involve low-cost spay/neuter for persons qualifying on the basis of income. Three programs involve mandatory spay/neuter for animals adopted from the shelter. One program contains an additional incentive for the animal owner, whereby impoundment charges are waived if the owner has the animal altered within a specified time.

Honolulu, Hawaii, has the most successful program, based on the number of animals altered per citizen. The municipality pays 12 percent of the total cost of the program. Surgical fees for the surgery are shared by the veterinarian (33 percent), owner (33 percent), humane society (16 percent), and the municipality (17 percent). The program is supposedly based on the financial need of the owner as determined by the humane society. The veterinarians are dissatisfied, according to the survey response, because the criteria for financial need is not sufficiently stringent. The municipality is currently considering "following the methods which have been put into operation by the British Columbia SPCA; specifically, differential licensing for dogs, construction of a spay/neuter clinic, tattooing of all dogs, [and] involving a city/county ordinance which would require the identification of all cats."

## 3. Spay/Neuter Clinic Operated by Humane Society

Eleven of the operations reported in the survey consisted of spay/neuter clinic(s) operated by a humane society.

- Calverton, New York
- Burkes County, Pennsylvania
- Salt Lake City, Utah
- Annapolis, Maryland
- Anchorage, Alaska
- New Orleans, Louisiana
- Birmingham, Alabama
- Marlton, New Jersey

- Atlanta, Georgia
- New York, New York
- Sacramento, California

Many of the respondents provided information on the number of spay/neuter surgeries performed per year. This information was used to calculate the ratio of the number of animals altered to the human population. Many of the clinics have a small ratio (*i.e.*, are performing a large number of spay/neuter surgeries each year in relation to the human population). Some of these have been in operation long enough to have had a significant impact on the animal population and animal control activities. Yet, none of these respondents provided any information on this issue.

Some of the clinics reported problems due to lack of response and apathy from pet owners. The clinic in New York reported a 33 percent no-show rate. This could be another indication of the importance of an adequate, comprehensive public education program. Some of the clinics provided free surgery for animals adopted from the shelter and low-cost surgery for residents with limited incomes. All but three of the clinics were self-supporting. Two of these three fail to cover their operational costs because spay/neuter surgery is provided free to pet owners who adopt animals from the shelter operated by the humane society. The other clinic fails to meet its operational costs because it does not collect in advance and, therefore, never receives many payments.

The clinics reporting the best rate of animals altered to population are in localities with 100,001 and 250,000 individuals in the population. They also report good public response to the clinic as a result of their public education program.

#### 4. Spay/Neuter Clinic Operated by Municipality

The municipalities that operate a spay/neuter clinic provided the most in-

formation on their operations.

- Pinellas County, Florida
- Palo Alto, California
- Santa Clara County, California
- Grand Rapids, Michigan
- Las Vegas, Nevada
- San Mateo, California
- Los Angeles, California

These are also the most successful in terms of ratio of animals altered per citizen and impact on animal population. All clinics that kept data on their operational costs were self-supporting. It should also be noted that they charged the lowest fees and had lower operating costs per animal than the clinics operated by humane societies. None of the clinics was restricted to owners with low incomes; all residents could have one or more animals altered.

Two of the respondents, Santa Clara County and Los Angeles used differential licensing to encourage pet owners to have their animals altered. Residents of Santa Clara County pay 50 percent less for a license for a spayed or neutered dog. None of the respondents reported any problems with their clinics.

### Comparison of Programs and Clinics

There are certain variables that affect the impact of a spay/neuter program or clinic.

#### 1. Differential Licensing

Economic pressures are usually the most significant determining factor for a successful spay/neuter operation. Many cities provide an incentive to pet owners in the form of differential licensing. Owners with spayed or neutered animals are charged a small license fee, while their counterparts with unspayed or unneutered animals must pay a larger fee. The difference varies from \$10 to \$20 in the cities that have adopted such a policy. Proof of the surgery is required of the owner, who usually obtains it from the attending veterinarian.

The prospect of accumulative savings sometimes induces people to have their pets sterilized. Most cities, however, have combined the differential licensing plan with a *low-cost spay/neuter service*. By incorporating a differential licensing plan in the spay/neuter concept, a fair, low-cost alternative is offered. To be effective, the differential license savings must be significant. A \$5 savings is of limited motivational value; however, a \$20 annual savings to owners of spayed or neutered animals may also represent an unfair cost to owners of unspayed/unneutered animals, unless low-cost spay/neuter surgery is available.

## 2. *Mandatory Spay/Neuter*

Each time an unaltered animal is sold by the City Shelter and returned to the animal community, the organization that is responsible for animal control is contributing to the overpopulation problem and thereby increasing its own workload and dilemma. The animals that are being euthanized today could be the offspring of a female dog sold by the City Shelter years ago. Each year, the City Shelter picks up or receives approximately 20 percent of the estimated dog population. It is estimated that 11,700 to 12,740 dogs will be handled in this fiscal year. At the current rate of expenditures it will cost \$25 to \$28 to handle each animal this year and \$75 to \$80 each by 1990. Using the conservative estimate that 72 animals will return to the shelter during the next 10 years as a result of the adoption of one female dog, the City of Charlotte could ultimately spend over \$4,000 on animal control activities in return for the \$10 gained from the sale of that female dog.

The only method that can stop this additional exacerbation of the problem is the *mandatory requirement that all animals, male and female, be neutered or spayed when adopted*. This alone, however, will not significantly reduce potential costs or the animal population, but

it will eliminate the City Shelter's contribution to the problem.

## 3. *Tattooing—the Ability to Identify an Owner Would Benefit Animal Control*

One of the major problems of animal control concerns stray dogs. Approximately 40 percent of the dogs brought into the Animal Shelter are strays. Less than 10 percent of these stray animals have traceable identification on them; therefore, it is impossible to establish positive ownership for 90 percent of stray dogs. Since it is generally the irresponsible owner who allows pets to run loose, it is also the irresponsible owner who is never identified or forced to assume responsibility for the animal. It is necessary to identify this owner, not only for the welfare of the animal, but also for the benefit that can accrue to the municipality in terms of revenue and management control. The best method of positive identification is tattooing the animal.

If mandatory spay/neuter is incorporated into an Animal Control program, tattooing can be added easily as a secondary program. While under anesthesia for surgery, a dog can be simply and painlessly tattooed with a permanent and unique number which can be used to identify the owner.

Tattooing is very desirable for the following reasons:

- It provides permanent identification of the dog, which should potentially minimize theft and loss.
- It provides identification of the legal owner of animal.
- It allows identification of repeat leash law violators.
- It maximizes usage of shelter facilities by returning a larger percentage of animals to their owners. (It should be noted that modification of the current animal ordinance would be required to allow citing of owners in the absence of contact with the shelter.)
- It reduces the number of dogs eu-

thanized by returning more of these dogs to their owners.

- It holds irresponsible pet owners proportionately accountable for the added financial burden placed on the community.

#### 4. Ratio of Animals Altered to Population

One major factor affecting the success of a spay/neuter clinic or program is the number of animals altered per year in proportion to the population. Table 3 contains information on programs or clinics that reported a positive impact or reduction in the animal population. Although the ratio refers to the human population and the number of animal surgeries, this formula was used as a basis for comparison purposes only. There is approximately one dog for every six persons. This is, therefore, a fairly constant factor that can be used for determining the number of spay/neuter surgeries that need to be performed to reduce the animal population growth rate.

Since no program or clinic has been in operation long enough or performed enough surgeries per year to report zero growth in the animal population, it is difficult to identify the minimum number of surgeries that should be performed per year to make a program maximally cost-effective and manageable.

#### 5. Restrictions on Income and Financial Need

Six survey respondents reported that their program included low-income or financial need qualifications. Only one program, in Annapolis, Maryland, performed enough surgeries to be an effective program. The program in Annapolis also included mandatory spay/neuter of all animals adopted from the shelter. Based on the survey responses concerning the problem and lack of success with low-income restrictions, the program in Annapolis, Maryland, appears to be successful *in spite of* the restriction on income, rather than because of it. In gene-

ral, limiting clients based on income criteria is a factor that would handicap a program or clinic.

#### Conclusion

Stray and unwanted animals create a costly control problem that continues to escalate at an enormous rate. Yet, of all the elements that contribute to the cost of animal control activities, the stray and unwanted animals problem is the one that can be most effectively reduced. The answer is the increased sterilization of the animals that are capable of breeding and creating the overpopulation, resulting in stray and unwanted animals. Although sterilization is available today, not enough pet owners choose to have their animals spayed or neutered because of the cost of the surgery and the lack of education regarding the results of animal overpopulation. Information obtained from a survey of cities that have spay/neuter clinics or programs indicates that a municipally run spay/neuter clinic is an effective means of reducing the growth of the animal population, because it provides low-cost surgery, combined with education programs and legislation, that encourages pet owners to have their animals sterilized.

A municipally run clinic would reduce future operating costs, based on its reduction in the growth of the animal population, and would also provide other indirect benefits. Animal Control personnel would have more time to enforce the Animal Ordinance, which would result in an increase in the percentage of the animal population being licensed. This would also produce additional revenue and reduce the number of violations of lease and licensing ordinances. Such a clinic must provide low-cost spay/neuter surgery to all residents and must also support the veterinary needs of the City Animal Shelter.

In some cities, development of a municipally run spay/neuter clinic has

been opposed by local veterinarians, who consider it to be an infringement on the rights of the public sector of their profession. Although education programs sponsored by the Animal Control Division to promote responsible pet ownership would indirectly increase the demand for veterinary services, it is not known to what extent this would offset income lost from those pet owners who would choose to obtain low-cost spay/neuter surgery from a veterinary clinic.

None of the surveyed cities that have successfully developed their own clinic reported any adverse impact on local veterinarians attributable to the clinic.

Even if a municipal clinic were to adversely effect income for local veterinarians, the need for reduction in growth of the animal population and the escalating costs of animal control activities warrant the involvement of local government.

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## Protection of Animals and Animal Experimentation: A Survey of Scientific Experts

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*This article summarizes information from a survey of biomedical scientists, specifically pharmacologists and toxicologists, on the use of laboratory animals and the potential for replacing their use with alternative methods for the development and evaluation of pharmaceutical substances. The majority of those surveyed felt that the alternatives could supplement or complement animal tests, but not replace the tests altogether. However, most favored the use of nonsentient material in safety tests.*