

Companion Animal Demographics in the United States: A Historical Perspective

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CHAPTER

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Introduction

There are a variety of welfare concerns relating to companion dogs and cats in the United States but one of the more pervasive is the “pet homelessness,” “pet overpopulation,” or “pet surplus” problem. These widely used terms may discomfit some in the animal shelter community. Some of the terms can be misleading in that their use implies that the problem—however it is couched—could be solved simply by reducing the number of available dogs and cats. In addition the term *surplus* specifically implies a property function—that companion dogs and cats are inherently expendable whenever they fall outside of a stable human-animal relationship. A detailed examination of the population issue will reveal that it is not merely a case of the indiscriminate breeding of dogs and cats, but also a complex problem with both sociological and biological elements that has no simple solution.

Modern American society recognizes the crucial role of data and information in evaluating and effectively addressing societal problems.

Americans are bombarded with information on the economy, public health, social and psychological attitude trends, and other matters that are considered important. For example, no self-respecting politician would think of launching a political campaign or initiative without some sense of what the public might be worrying about. Addressing pet population issues should be no different. Data are needed in order to define the nature and scope of the dog and cat demographic challenge. Data can help people to understand the impact of “pet homelessness” on companion animals; to identify some of the characteristics of both successful and failed human-animal relationships; and to develop sound, effective, and long-lasting solutions that will strengthen humans’ relationships with companion animals and enhance companion animals’ welfare.

Given the need for reliable data, what is known now about trends concerning the companion animal population and the shelters that help address the “homelessness” problem?

National Dog and Cat Demographic Data

Base-line Population Data

The United States has never had a national system in place to collect, store and analyze data relating to pet care-giving. Although detailed demographic data on the human population are gathered by the U.S. Census Bureau, no similar database exists for companion dogs and cats. Our society routinely refers to household pets as “members of the family” but the census process does not accept that data on pets should be collected. Several attempts by animal industries and interest groups to gain approval for the inclusion of questions on pets on the U.S. Census have thus far been unsuccessful. One of us (A.N.R.) attempted to do this in the mid-1980s but, despite the support of numerous

Table 1
Pet Population Estimates

Total U.S. Household Dog and Cat Populations (millions)				
	1987	1991	1996	2001
Dogs	52.4	52.5	52.9	61.6
Cats	54.6	57.0	59.1	68.9

Percent of Households with Dogs and Cats (mean number/household)				
	1987	1991	1996	2001
Dogs	38.2(1.51)	36.5(1.52)	31.6(1.69)	36.1(1.6)
Cats	30.5(2.04)	30.9(1.95)	27.3(2.19)	31.6(2.1)

Source: AVMA Survey 1997, 2002

academics, animal industries, and animal advocates, did not succeed.

Nonetheless relatively accurate data are available on the number of household dogs and cats in the United States now and historically. These data are collected primarily by veterinary organizations (e.g., the American Veterinary Medical Association, or AVMA, and the American Animal Hospital Association) and pet industry organizations (e.g., the American Pet Products Manufacturers Association, or APPMA, and the Pet Food Institute)—groups whose work depends on having reliable and current data on dog and cat populations. The APPMA has conducted national surveys on pet populations every other year since 1988. The AVMA has published data from national surveys in 1983, 1988, 1992, 1997, and 2002.

Two basic approaches have been used to gather data on dog and cat populations. The first uses surveys of sample populations drawn from an already established panel of U.S. households. Both the APPMA and the AVMA use this method. The panels are recruited on the understanding that the participants will complete periodic mail surveys. (Response rates typically are high—around 70 percent.) A sample of households is drawn from the panels so as to make them representative of the U.S. popu-

lation. To be included in such a panel, a person must have resided at the current address for a year or more. Therefore these panels cannot represent the more transient elements of the United States.

The second approach uses telephones and random digit dial technology to sample the population. This method under-samples households at the lower end of the economic pyramid because they are less likely to have telephones.

Thus both approaches have limitations and appear to produce differences in estimates of the national dog and cat population. As demonstrated by Patronek and Rowan (1995), the household panel approach produces estimates that are approximately twenty percent higher than those obtained from telephone surveys. In Massachusetts telephone surveys conducted by both the Massachusetts Society for the Prevention of Cruelty to Animals (MSPCA) (C. Luke, personal communication with A.N.R., n.d. 1991) and Manning and Rowan (1992) in the same time frame produced estimates of state pet populations that were substantially lower than those obtained using data collected by the AVMA in 1991. In Indiana Patronek found similar disparities between data he collected using telephone sampling and the AVMA esti-

mates of Indiana pet populations.

The latest data published by the AVMA indicate that in 2001 Americans shared their households with 61.6 million dogs and 68.9 million cats. An examination of Table 1 illustrates that, on a national level, the owned dog population remained relatively stable between 1987 and 1996 (although the rate of care-giving fluctuated quite widely), while the owned cat population increased from 54.6 to 59.1 million (AVMA 1997, 2002).

While the AVMA population estimates may be on the high side, the fact that the same technique has been used for all four AVMA surveys should mean that the trends are accurate. Thus between 1996 and 2001 the total population numbers increased substantially for both dogs (8.7 million increase) and cats (9.8 million increase) (AVMA 2002). The substantial jump in population estimate in 2001 is the result of a jump in the percentage of households with either dogs or cats. It is not clear why the AVMA surveys show a downward trend in 1996. The APPMA surveys show no such dip (APPMA 2002).

Another factor to keep in mind is that the number of households in the United States increases steadily. Thus the dog population remained stable between 1987 and 1996 even though the rate of care-giving (household

Table 2
Percent of
Households
with Animals

Year	Dogs	Cats
1988	37	30
1990	38	33
1992	38	32
1994	36	30
1996	37	32
1998	39	32
2000	39	34

Source: APPMA Survey 2002

percentage) dropped from 38.2 to 31.6 percent. See Table 2 for changes recorded by the APPMA in rates of dog and cat households in the United States. The fluctuations from one year to the next may be due mostly to random statistical variation in the survey.

The estimated 130.5 million dogs and cats in American households drawn from the AVMA 2001 survey reside in approximately 53 percent of the approximately 100 million households (58.3 percent of households contain a pet of any sort) (AVMA 2002). Thus more than half the households in this country include an animal companion. The average household with pets has the characteristics indicated in Table 3. In general dog sterilization rates are lower than those of cats because of the reluctance of dog care-givers (used in place of "owner") to have their male dogs neutered. The same reluctance is not observed among care-givers who have male cats. The fact that fewer cat care-givers report taking their animals to the veterinarian in the previous year is consistent with the observation that cats tend to require lower levels of involvement and cat care-givers generally are somewhat less attached to their cats

than dog care-givers are to their dogs.

Attachment levels were measured by a research group in Kentucky using the Lexington Attachment to Pets Scale, or LAPS (Johnson, Garrity, and Stallones 1992). The researchers used a twenty-three-item scale (e.g., My pet understands me, I enjoy showing other people pictures of my pet) to obtain relative scores of attachment. The scores indicating level of attachment were based on the interviewer's rating. The proportions of the population identified as being very or somewhat attached are what one might intuitively expect (Table 4). This scale has not been put into practical use, but there is no apparent reason it could not be explored as part of a questionnaire used by shelters to assess the suitability of a prospective animal adopter. The candidates could be administered the LAPS assessment regarding their previous or a current favorite pet and then scored to see how attached they were (or are).

It should be noted that, in studying the Miller-Rada "commitment to pets" scale, Staats et al. (1996) demonstrated that "attachment" is different from "commitment." It is possible that the Miller-Rada instrument for measuring commitment might prove to be a better approach

to assessing the suitability of potential adopters. However the characteristics of the Miller-Rada "commitment instrument" have not been established for a national probability sample. At present any suggestions regarding potential connections between attachment, commitment, and animal relinquishment are pure speculation.

Regional and Life Stage Differences in Pet Care-giving

The national pet population surveys also indicate that there are regional differences in pet care-giving. This is an important factor when addressing welfare concerns relating to pet care-giving. The 2001 AVMA survey revealed significant differences in the percentage of households providing for pets around the country. Table 5a shows the highest rates of pet care-giving in the Mountain Pacific and West South Central regions of the United States, and the lowest rates in the Middle Atlantic, South Atlantic, and New England regions (AVMA 2002).

In fact, as seen in Table 5b, state to state differences in dog and cat care-giving rates can vary by a factor of two from highest to lowest (AVMA 2002).

Table 3
Characteristics of Animal
Care-giving Households and
Their Pets in the United States

	Dogs	Cats
Time household has included pets	18 yrs.	18 yrs.
Average age of "main" pet	6.6 yrs	6.4 yrs
Animal(s) kept indoors during the day	43%	54%
Households did not visit vet in past year	9%	27%
Pets sterilized	70%	82%
Average annual veterinary expenses	\$196	\$104

Source: APPMA 2002

Table 4
Levels of Attachment to Companion Animals in the Household

	Percent of Care-givers	Average LAPS Score
Very attached	50.0	54.9
Somewhat attached	35.7	44.8
Not very attached	12.4	32.6
Not at all attached	1.9	26.2

Average LAPS Score for Demographic Categories

Category	Average LAPS Score
Household size = 1	52.8
Household size = 5+	43.5
Never married/sep./div.	52.0
Married	45.7
Female	50.0
Male	45.1
White	47.6
African American	53.8
Household income under \$30k	51.5
Household income over \$50k	43.2
Household education: less than high school	53.0
Household education: college graduate	44.2
Favorite pet is dog	49.2
Favorite pet is cat	45.1

Source: Johnson, Garrity, and Stallones 1992

Thus use of national survey data to assess care-giving of regional or state pet populations can lead to significant over-estimates or under-estimates. Local studies of pet care-giving also indicate significant urban to suburban differences. Unpublished data from Massachusetts revealed differences in pet care-giving rates between Boston, an urban center, and Wellesley, an affluent suburb within

commuting distance of Boston. The rate of dog care-giving was 25.4 percent in Boston compared with 37 percent in Wellesley; the rate of cat care-giving was 37.8 percent in Boston compared with 26 percent in Wellesley (Rowan and Williams 1987). Pet care-giving rates generally are significantly lower in dense urban complexes than they are in suburban communities. National surveys of pet

Table 5a
Pet Care-Giving by Region

Region	Pet Care-giving Households (percent)
Mountain	61.9
Pacific	60.6
West South Central	60.5
East South Central	56.7
East North Central	55.2
New England	54.1
South Atlantic	53.8
Middle Atlantic	50.2

Source: AVMA Survey 2002

populations usually do not focus on differences among urban, suburban, and rural communities; thus they overlook significant causes of error in estimates of pet populations.

These differences in pet care-giving around the country mean that a "one size fits all" approach will not be sufficient to resolve the pet population crisis, and that it is crucial for regions and communities to initiate and maintain their own data collection efforts in order to have reliable and accurate information with which to serve the pet care-givers in their jurisdictions. Communities can use the available national data as a guide to direct their own data collection efforts. They should be cautious, however, about relying on rote formulae derived from national data to estimate their own dog and cat populations. Using the APPMA (2002) survey data, it has been suggested that one can calculate the number of dogs in a community. The technique is to multiply the number of occupied households (derived from the census data) by 0.39 (the percentage of households nationally containing dogs) and then multiplying by 1.7 (the average number of dogs in each household). However this will overestimate dog populations in a Northeastern urban community and underestimate dog populations in a

Table 5b
Pet Care-giving by Species in Selected States (percent of households)

State	Dog Care-giving	State	Cat Care-giving
MA	21.4	LA	26.1
NY	26.1	MI	26.1
NJ	26.2	MD	26.5
CT	28.4	IL	28.0
MT	46.6	MT	44.6
ID	48.1	WY	44.6
OK	48.5	OR	45.2
WV	50.3	ME	46.3

Source: AVMA Survey 2002

Table 6
Varying Rates of Pet Care-Giving by Life Stage

Life Stage Category	Percent with Pets
Young singles	50.2
Young couples	72.5
Young parents	64.1
Middle singles	44.4
Middle parents	74.8
Older parents	69.0
Working older couple	58.9
Retired older couple	39.8
Older singles	29.7

Source: AVMA 2002

rural part of the Southeast or Southwest. Nonetheless such formulae are useful first approximations of the number of dogs and cats in a particular community.

Animal care-giving rates also vary dramatically according to the "life

stage" of the household (see Table 6). It is generally known that families with children between the ages of five and seventeen have the highest rates of pet care-giving (almost four out of five have pets). However, as indicated by Table 4, these families are less attached to their pets (just as there is less time to devote to each family member the more there are). As can be seen from Table 6, singles households are less likely to have pets (about 20 percent lower rate than that of families), and pet care-giving declines with age. No known studies assess relinquishment rates by life stage of the care-giver.

Acquisition of Pets

Pet care-givers acquire dogs and cats from a variety of sources. These sources are believed to play an integral role in pet population problems. According to the APPMA National Pet Owners Survey, pets in 1998 were acquired as indicated in Table 7 (APPMA 2000, 2002). Use of those sources marked with an asterisk indicates that some forethought and planning usually went into the acquisition of the pet. The total percentage of dogs acquired from such sources is 74 (or about 48 percent of the identified

sources); the total percentage of cats acquired from these sources is 38 (or about 29 percent of the identified sources). This indicates that cats are more likely to be acquired on a whim.

Other surveys have shown similar differences between the sources of dogs and cats. Nassar, Mosier, and Williams (1984) found that in Las Vegas cats (24.5 percent) were much more likely to be acquired from the stray population than dogs (8 percent), but only 9 percent of cats were purchased compared with 26 percent of dogs. In Massachusetts 71 percent of pet care-givers had planned to acquire their dogs, going to such sources as breeders (33 percent), shelters (16 percent), and pet stores (7 percent) (MSPCA 1996).

Feral/Stray Dogs and Cats

No discussion of the nation's dog and cat populations is complete without an estimate of the feral/stray population. In the past two decades, it appears that the number of stray and feral dogs has fallen to a very low level (with the possible exception of some communities in dense urban, very rural, and Native American areas). The same is not true of cats. This population is not easy to define because household cats may join and leave the perceived "stray" population. The Humane Society of the United States (HSUS) 1999 "Statement on Free-Roaming Cats" notes,

Cats elude simple categorizations. Free-roaming cats are often referred to as either stray or feral, but these designations do not reflect the many types of outdoor cats. Free-roaming cats can be owned cats who are allowed to roam; owned cats who have become lost; previously owned cats who have been abandoned and no longer *have* a home; quasi-owned cats who roam freely and are fed by several residents in an area but "owned" by none of them; and so-called working cats who serve as "mousers." Almost every community also has feral,

Table 7
Sources from Which Dogs and Cats Were Acquired

Source (percent)	Dogs	Cats
Friend/relative	34	40
Breeder*	29	4
Newspaper/private party*	20	11
Stray	18	32
Animal shelter*	17	18
Puppy/kitten from own pet	16	12
Pet store*	8	5
Gift	7	2
"Other"	5	5
Veterinarian	1	4
TOTAL	155	133

Respondents could name more than one source. Therefore the percentage totals amount to more than 100.

*Some forethought and planning usually went into the acquisition of the pet.

Source: APPMA 2002

unsocialized cats who may be one or more generations removed from a home environment and who may subsist in a colony of similar cats living on the fringes of human existence. Because cats exhibit varying degrees of sociability, even an animal care and control professional may not immediately be able to tell the difference between a feral cat and a frightened indoor-only cat who has escaped and become lost.

In a national survey of pet caregivers commissioned by The HSUS, respondents were asked if they fed stray cats and, if so, how many they fed (Anonymous 1993). It was possible to extrapolate that pet care-givers fed about 32.7 million cats (assuming no cats were fed by more than one household). However The HSUS questioned these "cat-feeder" results and exhorted caution in using the data to establish a national estimate of stray and feral cats (G. Handy, personal

communication, n.d. 2003). Nonetheless one of the authors (A.N.R) has used the survey to estimate the American feral/stray cat population at roughly 30–40 million (or about 60–70 percent less than the number of cats being cared for in households). Some support for this estimate comes from two regional surveys in California that have produced similar percentages for the stray/feral cat population (Anonymous 1995, 1996).

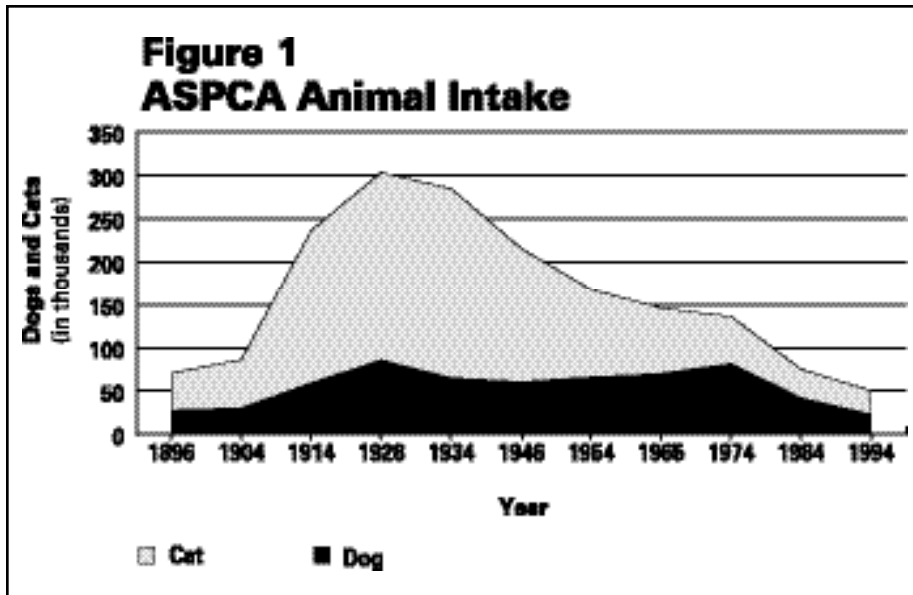
Animal Shelter Demographics: A Historical Perspective

In the United States a network of animal shelters exists to address and manage pet population control. One of the primary functions of U.S. animal shelters is to attempt to find new homes for dogs and cats who, for a variety of reasons, have made the

transition from owned animal to homeless animal. Because the number of animals entering shelters currently exceeds available home placements, many pet population management policies allow euthanasia of animals who cannot be placed in an acceptable home. Animals who are killed include healthy, adoptable animals, as well as animals deemed unadoptable due to illness, age, aberrant behavior, or some other characteristic. Recent attention has focused on collecting data on "animal shelter demographics," including data that describes the animals populating shelters and that tracks trends in the movement of animals into and out of shelters.

The 1960s and 1970s: Experiential Policy

The early 1970s is considered by many to be a defining period for changes in the American approach to pet population issues. In 1974 a survey of U.S. mayors ranked animal-related issues as the number one complaint received by their offices (Bancroft 1974). During the 1970s attention to and awareness of what were perceived as growing pet population concerns led to development of a new approach that was to shape the course of pet population policy well into the 1990s. Called LES (Legislation, Education, and Sterilization), it was a three-pronged approach designed to reduce the numbers of animals that shelters were handling and subsequently to reduce the need for euthanasia as a population control method. LES was launched by Phyllis Wright of The HSUS with the catchy tag phrase "less born, less killed, and less cruelty." LES's major projects included establishment of sterilization programs, mandating adequate licensing fees, and educating the community via humane education programs, the media, and veterinarians. The HSUS also called for and helped organize two national conferences of interested parties (e.g., the



AVMA, the American Kennel Club, and other animal-related groups) in 1974 and 1976 to address the pet population crisis (Rowan and Williams 1987).

The rationale for the LES approach was based largely on anecdotal reports from animal shelters around the country. Few shelters were keeping any data on the numbers of animals handled, on those returned-to-care-givers (RTC), or on those adopted and euthanized. No regional or national organizations focused on data collection for homeless pets. From the limited data available, it was estimated that in 1973 approximately 20 percent of the dog and cat population in households was being euthanized in shelters (Rowan and Williams 1987). Since then some data has been published on the experiences of the ASPCA in New York City from 1896 to 1994, when it gave up animal control for New York City (Zawistowski et al. 1998). Figure 1 shows the trends in animal intake over this 98-year period. What is readily apparent is that, even in 1973 when the alarm was raised about too many dogs and cats and not enough homes, the situation was much improved over the 1920s and 1930s. Up until 1950 the ASPCA was euthanizing 95 percent or more of the animals brought into the

shelter. It should also be noted that the shelter intake numbers were falling at a time when the population of New York City was growing (from 5.63 million in 1928 to 8 million in 1954, where it has remained).

It is not clear why alarms were raised about unwanted and stray dogs and cats in the early 1970s (cf. Djerassi, Israel, and Jochle 1973), although it may be that Djerassi, known as the inventor of the birth control pill, was looking for possible new markets for his invention. However, his article led to others in which the focus was not on cats (the ASPCA data indicates that cats formed the bulk of the animal intake) but on the stray dog population. The stray dogs were portrayed as presenting a public health and safety risk as well as welfare issues for the dogs themselves (Marx and Furculow 1969; Beck 1973; Feldman 1974). Schneider and Vaida (1975), in their surveys of dog and cat populations in California, argued that cats should not be overlooked.

Animal protection groups began pushing the concept of companion animal surgical sterilization as a pet population control method. Initially the veterinary community was resistant and suggested that the development of contraceptive drugs might be

a more viable solution (Anonymous 1978; Rowan and Williams 1987). Despite the lack of support from organized veterinary medicine, the Department of Animal Regulation in the City of Los Angeles set up a municipal spay-neuter clinic and a differential licensing system—in which it cost more to license intact dogs than neutered ones—in 1970. This clinic evoked a storm of protest from the veterinary community, but within ten years the proportion of licensed dogs in Los Angeles who were sterilized rose from 10 percent to 51 percent. The municipal clinic was doing far too few sterilizations to account for such a large change. There had to have been a change of behavior among the private veterinary practices. Over this same period, the number of animals taken in by the city's Department of Animal Regulation fell from about 140,000 a year, to about 85,000 a year (Rowan and Williams 1987).

Reliable and consistent data are crucial for an evaluation of the success of any proposed pet population program. Early data collection focused solely on determining how many animals were being killed as part of pet population control, without considering other aspects of shelter demographics, such as number of animals handled, the number returned to the caregiver, and the number adopted. In 1973 The HSUS commissioned a national survey of animal shelters. Although the response rate was low, the survey provided a baseline estimate of 13.5 million dogs and cats euthanized annually. A follow-up survey in 1982 suggested that the total number of euthanasias had declined to an estimated range of 7.6 million to 10 million, despite an overall increase in the owned pet population from an estimated 60 million in 1973 to an estimated 90 million in 1983 (Rowan and Williams 1987). Thus there had been not only a fall in absolute shelter euthanasia numbers but also an even greater fall in the relative numbers.

Table 8 provides additional evidence that shelter animal intakes declined substantially in the 1970s. These data come from a large county-wide program run by a humane society under a county contract in California (Savesky 2001). Basically the data show that animal intakes plunged in the 1970s, stayed more or less the same from 1980 to 1990, and then began falling again.

While the evidence cited above demonstrates that shelter intakes and euthanasias moved in the right direction (i.e., down) from World War II to the present, the prevailing view in the shelter community through the 1980s and even into part of the 1990s was that of wrestling with an intractable problem. Part of the problem was again a lack of solid data and the generation of inaccurate estimates of shelter intakes and euthanasias. In the 1980s some surveys estimated that as many as 20 million animals were being euthanized in shelters annually (Rowan and Williams 1987). These surveys continued to be quoted well into the 1990s. The result was that both humane society workers and the public continued to assess progress on pet population issues based on these old statistics, giving a “doom and gloom” outlook to the situation, when in fact a retrospective examination of euthanasia trends indicates that euthanasias appeared to be decreasing over time.

Reliable Estimates from Regional Data

Djerassi, Israel, and Jochle (1973) noted that the lack of comprehensive, high quality data was the biggest roadblock to efficient and effective program development and commented that this deficiency was a universal weakness, common even among those countries that had long established a sophisticated human census. The lack of a standardized list of animal shelters contributes significantly to the challenges that continue to be faced by researchers doing shelter

surveys (Rowan 1992a). There have been two significant problems in developing reliable estimates of shelter animal numbers. First, there was and still is no reliable public list of shelters in the United States. Second, many shelters either do not keep appropriate program data or are very reluctant to release them for fear that the data will be used to criticize their organizations. An additional challenge is posed by the fact that the term *shelter* encompasses a wide range of entities, from an animal control facility that serves several towns and handles thousands of animals per year to the private citizen who rescues a few strays a year.

With the increasing utilization of computers and the growing awareness of the value of shelter demographic data, more individual shelters had begun collecting and storing data by the 1990s. A recognition that euthanasia data alone was of limited value led to the collection of statistics on the number of animals entering shelters, as well as the disposition of the animals (e.g., adoption, RTC, euthanasia, death). The availability of some regional data enabled an analysis of regional shelter trends and estimates of the national picture. This analysis revealed that, just as there were regional differences in pet care-giving trends, there were regional differences in shelter animal populations.

Rowan examined regional data from New Jersey, Washington State, and Massachusetts and, by extrapolation, determined that, of approximately 110 million owned dogs and cats in the United States, an estimated 5 million–6 million, or 5 percent of the owned population, were euthanized. This was a much more conservative estimate than the range of 11.75 million–19.54 million found in AHA's 1990 survey (Rowan 1992a). Others then produced numbers similar to Rowan's extrapolation, based on a broader range of state data (e.g., Arkow 1994).

More recently The HSUS has been developing a list of shelters in which,

to be identified as a shelter, the organization must possess a building that houses animals and has its own postal address. Beginning with a list of about 6,000 organizations, The HSUS removed duplicates and non-sheltered organizations, leaving approximately 3,500 entities. An unpublished 1999 HSUS survey of this group produced a 20 percent response rate and the following data. The duplicate and “address unknown” returns indicated that the accurate total of shelters was about 2,800–2,900. Of the respondents that identified their status, 38.2 percent were municipal entities, 43.6 percent were private entities with some form of municipal contract, and 18.2 percent were private entities with no municipal contract. In terms of size, 45.2 percent had annual budgets of \$250,000 or less, 22.9 percent had budgets between \$250,001 and \$500,000, 16.6 percent had budgets between \$500,001 and \$1,000,000, and 15.4 percent had budgets exceeding \$1 million. These data agree closely with those reported by Wenstrup and Dowidchuk (1999) in their smaller sample of shelters. Finally the shelters in The HSUS survey reported a mean of fourteen full-time (median: six) and five part-time (median: three) employees.

As Rowan (1992a) noted, the larger shelters handle a disproportionately large percentage of the animals. Thus in New Jersey, where the average shelter is small and town-based, 30 percent of the shelters handled 82 percent of the shelter animals. In Washington State, where the shelters are typically larger and county-based, 30 percent of the shelters handled 63 percent of the animals. Therefore if data were collected from the largest 50–60 percent of shelters (or approximately 1,500 entities), it is reasonably certain that these shelters would account for at least 90 percent of the animals handled annually.

Table 8
The Animal Intake/Disposition Experience
of One Large California Shelter

Year	Dogs	Cats	Total	RTC/ADOP	Euth.
1970	23,500	22,600	49,100	9,130	37,025
1971	26,425	20,785	46,210	7,095	39,935
1972	18,265	14,212	32,477	7,650	24,917
1973	20,034	14,920	34,954	9,278	25,676
1974	17,131	10,890	28,021	9,989	18,032
1975	15,019	10,052	25,071	9,552	15,519
1976	12,530	8,528	21,058	7,250	13,808
1977	11,199	8,001	19,200	6,770	12,430
1978	9,949	6,899	16,148	5,073	11,775
1979	8,969	6,055	15,054	5,870	9,154
1980	7,603	6,628	14,231	5,580	8,651
1981	8,235	6,888	15,123	5,634	9,489
1982	8,301	7,833	16,144	5,789	10,345
1983	8,199	6,729	14,928	4,922	10,006
1984	8,360	6,639	14,999	5,041	9,958
1985	8,477	7,014	15,491	5,522	9,969
1986	8,141	8,010	16,151	6,099	10,052
1987	7,165	8,710	15,875	5,962	9,913
1988	7,171	8,916	16,087	6,199	9,888
1989	6,843	9,021	15,864	6,274	9,590
1990	5,866	9,211	15,077	6,088	9,009
1991	5,224	9,442	14,666	6,042	8,624
1992	5,226	9,702	14,928	6,176	8,752
1993	5,116	8,257	13,373	5,902	7,471
1994	4,723	7,312	12,035	5,797	6,238
1995	4,894	6,963	11,857	5,544	6,313
1996	4,925	6,499	11,424	5,624	5,800
1997	4,934	5,866	10,800	5,470	5,330

Source: Savesky 2001

Table 9a
Trends in New Jersey Dog Shelter Intakes and Euthanasia

Year	Impounded	Returned to Care-giver	Adopted	Euth.	Dead on Arrival	Euth. Rate (percent)
1984	95,813	14,372	19,360	47,703	7,000	53.7
1985	80,071	13,067	17,605	40,757	7,455	56.1
1986	75,784	12,604	20,365	37,115	7,669	54.5
1987	81,876	13,717	22,597	40,400	7,051	54.0
1988	72,887	12,560	21,917	34,175	6,110	51.2
1989	73,974	12,422	21,350	33,408	5,552	48.8
1990	66,870	12,426	21,273	28,937	5,126	46.9
1991	60,901	11,914	21,210	22,379	4,940	40.0
1992	56,760	13,290	20,030	20,131	3,641	37.9
1993	55,480	12,765	18,924	18,502	3,739	35.8
1994	52,092	13,375	19,372	15,188	3,426	31.2
1995	48,954	12,565	17,951	14,880	3,021	32.4
1996	52,791	13,178	17,489	17,429	2,993	35.0
1997	50,779	13,991	19,328	15,294	2,902	31.9

Note: The euthanasia rate is calculated by dividing the total euthanized by the total impounded less those who are dead on arrival.

Source: Data collated and provided by G. Patronek, from annual reports from C. Campbell (New Jersey Health Department) in 1998.

Tables 9a, 9b, and 9c provide data from New Jersey on dog and cat entries into the state shelters, and on outcomes. (These data were compiled by Dr. Gary Patronek of Tufts University from materials provided in 1998 by Colin Campbell of New Jersey.) New Jersey had established a program in 1984 to support low-cost sterilization of pets in needy households, but the program also required all shelters to register with the state health department and provide baseline data on animal acquisition and disposition. As the tables indicate, euthanasia rates declined from 1984 to 1997, although rates for cats remained higher than those for dogs (primarily because the RTC rate is so much lower for cats than for dogs). There are approximately 7.8 million people living in about 3 million households

in New Jersey. Pet surveys indicate that these households probably include more than one million dogs and cats. Thus New Jersey shelters impound less than 2.5 percent of the dog population per annum (euthanizing less than 0.75 percent) and 3 percent of the cat population (euthanizing less than 1.5 percent). A comparison of these rates with the national shelter euthanasia rates of 20 percent or more in the early 1970s makes apparent how much progress has been made in dealing with pet homelessness!

Population Dynamics

The next advance during the 1970s in utilizing data to define and address the pet population crisis involved treating the transfer of owned ani-

mals to animal shelters not as an isolated event but as one piece of a dynamic process that is composed of many elements. The concept of a pet population model began as an estimate of animal populations from the readily available human population data (Schneider and Vaida 1975, Nassar and Mosier 1980), and subsequently was developed into a population model that could be utilized to estimate pet (or dog) populations in any community (Nassar, Mosier, and Williams 1984; Patronek and Rowan 1995). The models essentially track the source and number of animals entering the owned pet population in a defined area; what percentage of them enter the shelter system; and the population's final disposition. The population dynamics model is an important development in our under-

Table 9b
Trends in New Jersey Cat Shelter Intakes and Euthanasia

Year	Impounded	Returned to Care-giver	Adopted	Euth.	Dead on Arrival	Euth. Rate (percent)
1984	62,747	2,042	11,951	34,863	7,000	62.5
1985	53,788	765	13,292	32,365	7,044	69.2
1986	57,998	1,021	15,728	35,198	7,813	70.1
1987	72,243	1,153	17,690	45,506	8,509	71.4
1988	72,887	993	18,668	42,820	7,347	65.3
1989	75,380	1,190	18,658	45,432	7,542	67.0
1990	74,491	1,117	28,826	44,225	8,524	67.0
1991	70,515	1,446	18,582	39,102	7,462	62.0
1992	67,891	1,524	18,064	41,569	6,392	67.6
1993	63,424	1,517	18,087	34,756	7,381	62.0
1994	66,802	2,133	21,005	36,419	7,256	61.2
1995	64,974	1,202	20,361	33,359	5,831	56.4
1996	66,181	1,411	20,529	35,873	2,993	56.8
1997	60,172	1,394	20,990	31,597	5,389	57.7

Note: The euthanasia rate is calculated by dividing the total euthanized by the total impounded less those who are dead on arrival.

Source: Data collated and provided by G. Patronek, from annual reports from C. Campbell (New Jersey Health Department) in 1998.

standing of the pet population. Challenges to implementing the model include continued lack of standardized data in most communities and a lack of data on stray populations, especially in regard to cats.

The National Council on Pet Population Study and Policy

In 1993 the National Council on Pet Population Study and Policy (NCPSP) was established as a coalition of interest groups with the goal of gathering and analyzing reliable data in order to characterize the number, origin, and disposition of owned dogs and cats in the United States and to make recommendations on program and policy development to address the pet population crisis (Zawistowski

et al. 1998). NCPSP's main mission was to be a driving force in centralizing and standardizing data collection for animal shelters.

The group initiated its shelter survey in 1994. It sent surveys to the 4,700 known sheltering agencies and requested a variety of data, including the number of dogs and cats handled, returned to their caregiver, adopted, and euthanized. The survey was repeated three more times. Unfortunately it experienced a relatively low response rate (approximately 23 percent, or 1,100 shelters and other organizations) and a limited overlap of respondents (Zawistowski et al. 1998). (Reportedly only 396 shelters responded in all four surveys, M. Armstrong, personal communication, n.d. 2003.) The authors of this chapter believe that municipal shelters were

over-represented: in two of the surveys, these shelters accounted for 53 and 46 percent of the sample respectively.

Overall the surveys reported that 63 percent of animals being handled by the participating shelters were euthanized (71 percent of cats and 56 percent of dogs). Moreover dogs were returned to their caregivers at significantly higher rates than cats (16 percent versus 2 percent), while adoption rates were approximately 25 percent for both species (Zawistowski et al. 1998). These findings were similar to those of other studies.

After the 1996 shelter survey, the NCPSP focused its efforts on implementing a regional shelter relinquishment study, a research project designed to explore pet and household characteristics of cases where

**Table 9c
Trends in
New Jersey
Euthanasia Rates**

Year	Impounded	Euth. Rate (%)
1984	158,560	57.1
1985	133,859	61.3
1986	133,782	61.1
1987	154,119	62.0
1988	145,774	58.2
1989	149,354	57.9
1990	141,361	57.3
1991	131,416	51.7
1992	124,651	53.8
1993	118,904	49.4
1994	118,894	47.7
1995	113,928	45.9
1996	118,972	47.2
1997	110,951	45.7

Source: Data collated and provided by G. Patronek, from annual reports from C. Campbell (New Jersey Health Department) in 1998.

animals are relinquished. The survey, which involved four regions of the United States and twelve shelters, resulted in a database of thousands of animals (Salman et al. 1998). It is the most ambitious and extensive survey of the pet population crisis to date. This research effort reflected an increasing shift away from focusing on collecting shelter population data to a concentration on determining the characteristics of animals in shelters; the characteristics of their previous households; and the circumstances leading to their transition to the shelter.

Several studies have characterized the shelter animal population in terms of age, breed, and sterilization status. In a study conducted at a Pennsylvania shelter, 72.5 percent of dogs were one year of age or older and 59 percent of incoming dogs

were mixed breed (Patronek, Glickman, and Moyer 1995). Results from the NCPPSP's regional shelter study showed that most dogs and cats surrendered to shelters were between five months and three years of age. Sixty-eight percent of dogs and 93 percent of cats were mixed breed (Salman et al. 1998). In the same study, animals relinquished by their care-givers were more likely to be intact, younger, and mixed breed (New et al. 2000). Another study of 186 shelters found that only 13 percent of animals entering shelters were puppies and kittens, apparently confirming the anecdotes that puppies are become rarer in the shelter population (Wenstrup and Dowidchuk 1999). However few shelters from the Southeast, the Southwest, and the Midwest, where puppies are still common, participated in this survey.

Numerous studies have defined shelter populations in terms of animals surrendered by their care-givers versus animals arriving at the shelters as strays and have identified variations in these populations by region as well as species. One survey found that approximately 54 percent of the shelter population was stray and approximately 42 percent was surrendered, with no significant differences between cats and dogs (Wenstrup and Dowidchuk 1999). In contrast unpublished data from Massachusetts indicated that 73 percent of dogs were surrendered and 27 percent were stray, while 42 percent of cats were surrendered and 58 percent were stray (Clancy, Birkholz, and Luke 1996). Such differences from one region to another reflect the changing ecology of stray animals. Many communities, particularly in the Northeast, report a minimal or non-existent stray dog population, while the majority of the country is grappling with the remaining stray and feral cat population (Patronek 1998).

Clancy, Birkholz, and Luke found that, of 143,456 dogs and cats admitted to Massachusetts shelters in

1995, 36 percent were adopted, 34 percent were euthanized, and 20 percent were returned to their care-givers (1996). In addition a recent review of shelter demographic data reportedly collected from every "major" (major not defined) shelter in the country calculated a national euthanasia estimate of 4.4 million, the lowest estimate ever recorded. According to this review, which included an examination of trends over time, the euthanasia or disposal of animals in shelters likely peaked at approximately 23.4 million in 1970; by 1992 the number had dropped to an estimated 5.7 million. (The ASPCA data provided in Figure 1 indicate that shelter euthanasia may have peaked fifty years earlier. However there were far fewer shelters in the 1930s–1950s, so each shelter may have had to handle a larger number of stray and homeless animals.) Estimates for 1999 and 2000 were 4.5 million and 4.6 million, respectively. The 2001 evaluation concluded that the lowest rate of shelter euthanasia was in the Northeast and the highest in the South, with significant decreases in euthanasia rates occurring in the Midwest and the Sunbelt (Clifton 2002).

Two studies have confirmed that a sizable proportion of pet care-givers bring their pets to animal shelters to be euthanized. Data from a Pennsylvania shelter indicate that 17.2 percent of care-giver-relinquished animals were brought to the shelter for immediate euthanasia (Patronek, Glickman, and Moyer 1995). The regional shelter survey (Kass et al. 2001) found similar results: of 4,000 animals surrendered, 24 percent of dogs and 17 percent of cats were surrendered for immediate euthanasia. The primary reasons care-givers gave for requesting this service included old age, serious illness, and serious behavior problems. The median length of care-giving of these animals was ten years (Kass et al. 2001). This illustrates a function of the animal

Table 10a
Risk factors for Dog Relinquishment: Indiana (odds ratios)

Characteristic	OR	Characteristic	OR
Purchased or adopted	1	Two or more visits per year	1
Received as gift	0.6	One visit per year	2.6
Free from previous care-giver	3.0	Less than one visit per year	6.2
		No veterinary visits	40.4
Source: private (cost > \$100)	1	Relinquishment age > 5 years	1
Source: private (cost: \$31–\$100)	3.6	Relinquishment age 3–5 years	4.1
Source: private (cost < \$31)	5.0	Relinquishment age 0.5–3 years	9.7
Source: unknown	1.0	Relinquishment age < 0.5 years	18.3
Source: pet store	0.75	Acquisition age < 0.5 years	1
Source: born in home	4.0	Acquisition age 0.5–1 year	1.5
Source: stray	3	Acquisition age: 1–2 years	2.8
Source: shelter	6.1	Acquisition age > 4 years	2.1

Source: Patronek et al. 1996a

shelter that has been overlooked—that of potentially providing a euthanasia outlet and support for grieving pet care-givers. It also demonstrates that not all animals handled by shelters are potential candidates for adoption and adds another dimension to our understanding of the pet population situation.

Risk Factors for Relinquishment

Several studies have increased our understanding of some of the characteristics of care-giver relinquishment and have identified potential risk factors for relinquishment of pets to animal shelters. It is no surprise that there are differences for dogs and cats. The first good study of this issue—a case-control study in a community in Indiana—compared two groups of pet care-givers: those who had surrendered a pet to an animal shelter and those representing a random sample of pet care-givers in the

community who had not surrendered an animal. Tables 10a and 10b outline the major risk factors for cats and dogs that were identified in this study (Patronek et al. 1996a, 1996b).

The study authors used a measurement called an Odds Ratio (OR) to assess what factors might make a dog or cat more likely to be relinquished by a care-giver. In developing an OR, a researcher identifies a factor (such as not visiting a veterinarian in the previous year) and then compares the group of animals who have that characteristic with a group who have a related but different characteristic (e.g., visiting a veterinarian once a year). Usually an odds ratio of greater than 2 is considered a significant difference. As Table 10a shows, the data collected by Patronek et al (1996a) refute at least one cherished belief (that dogs received as gifts or from pet stores are more likely to be given up) and confirm a number of others (that age is an important factor in relinquishment of dogs). The shelter

community needs to be concerned that dogs acquired from their facilities are more likely to be relinquished and should emphasize the importance of pet care-givers establishing strong relationships with a veterinarian (their “other family doctor”).

The OR data for cats is less interesting. Having a veterinarian is important but not so major a factor as it is for dogs, and shelter cats are not more likely to be relinquished than cats obtained from other sources. The relinquishment age data are very similar for dogs and cats.

These data are consistent with both previous and later studies that found that surrendered dogs were obtained most frequently from family or friends at no charge (Arkow and Dow 1984; Salman et al. 1998).

The NCPPSP’s Regional Shelter Survey identified the top ten reasons for relinquishment based on 3,772 interviews of care-givers who surrendered a pet to the participating shelters. While these studies found many

Table 10b
Risk Factors for Cat Relinquishment: Indiana (odds ratios)

Characteristic	OR	Characteristic	OR
Purchased or adopted	1	Two or more veterinary visits per year	1
Received as gift	0.7	One veterinary visit per year	0.6
Free from previous care-giver	2.0	Less than one veterinary visit per year	0.9
		No veterinary visits	3.1
Source: private breeder or care-giver	1	Relinquishment age > 5 yrs	1
Source: pet store	1.2	Relinquishment age 3–5 years	4.3
Source: born in home	0.9	Relinquishment age 0.5–3 years	7.3
Source: stray	0.6	Relinquishment age < 0.5 years	14.2
Source: shelter	0.7		

Source: Patronek et al. 1996b

similarities between dogs and cats, there are a few differences (Table 11). The most common reasons for relinquishment include animal-centered issues, such as behavior and pet illness, as well as care-giver-centered issues, such as landlord issues and personal problems (Salman et al. 1998).

In the regional shelter survey, moving was the primary reason for surrender of dogs and the number three reason for surrender of cats. Most care-givers in this category were in the 25–39 age range and had lived with their pets for less than two years, perhaps suggesting that attachment or bonding factors may play a role in these surrenders. Additionally 40.8 percent of care-givers in this category noted that they were unable to find suitable new housing that would accommodate their pets, suggesting that working with landlords and housing authorities may be a helpful long-term strategy for care-givers in this group. Some relinquishers acknowledged that other factors may have played a role in their decision to surrender their pets when moving, such as behavior issues (New et al. 1999).

The study also grouped the 71 distinct reasons for relinquishment into

three classes: health/personal issues (relating to the care-giver), behavioral (relating to the pet), and housing. Health/personal issues represented the leading class of surrender for cats and the third most significant class for dogs (after behavioral and housing, respectively). The top three reasons for surrender in the health/personal issues category for cats were a family member's allergy to cats, care-giver personal problems, and a new baby in the house. An examination of the same category for dogs revealed that lack of time, care-giver personal problems, and allergies were the most common (Scarlett et al. 1999).

The regional shelter survey revealed that many care-givers surveyed gave several different reasons for surrender, indicating that deciding to surrender a pet is a complex, multifaceted process. Indeed an ethnographic study of care-givers who had relinquished their pets found that a combination of challenges in the pet care-giver relationship combined with lifestyle pressures ultimately led to the relinquishment of the pet. In most cases the care-giver had accepted responsibility for the animal because otherwise he or she

would have been taken to the shelter or abandoned. In other words the people started off as reluctant care-givers. These care-givers then tolerated the situation with the new animal for a varying period of time (up to a year) and put off relinquishment of the pet because such an action was perceived as a negative one that was likely to result in euthanasia. One other important finding of this study was that most of the relinquishers had other animals that were not being surrendered! This speaks to the importance of developing early intervention strategies that identify and support "at-risk" pet relationships (DiGiacomo, Arluke, and Patronek 1998).

Shelters and Data Collection and Analysis

Clearly there was a call for more attention to pet population and animal shelter demographics in the 1990s, but it is unclear what impact this has had in terms of changing policies and procedures of animal shelters. The focus of animal shelters

has always been, and continues to be, direct animal care, and accomplishments relating to saving animals' lives and promoting adoption continue to be the emphasis of direct mail campaigns and other fundraising efforts. Most shelters are short-staffed and operate under stressful conditions and with limited budgets. Under such circumstances it is understandable that they may have difficulty recognizing the value of numbers and statistics, especially when immediate problems are clamoring (literally) for attention.

A relatively small proportion of the animal sheltering community attends organized educational events regularly. Few subscribe to the academic journals in which much of this data is published. However *Animal People* regularly reports on shelter animal handling (Clifton 2002), *Animal Sheltering* Magazine now includes more data in its pages, and the NCPPSP website (which includes copies of NCPPSP studies) enjoys a healthy traffic. Therefore it is likely that the latest data is reaching a greater, but still small, proportion of the animal sheltering community. A decreasing number of facilities lack basic computer technology that would facilitate the collection of data. Recent attempts at increasing organization awareness of the importance of data collection have focused on identifying what data shelters need to collect. Future efforts need to provide guidance regarding data analysis (Wenstrup and Dowidchuk 1999). Shelters that do perform analysis should be encouraged to publish their data, so that the information is available to other shelters and can serve as a model (Patronek and Zawistowski 2002).

To make it easier for shelters to develop data management protocols, several software packages for animal shelters have come on the market, including Chameleon and PetWhere. Some packages are offered free of charge to shelters. Generally such software allows for the collection of basic admission and disposition data and also allows the databases to be

Table 11
Top Ten Reasons Nationally
for Pet Relinquishment

Dogs	Cats
Moving	Too many in house
Landlord issues	Allergies
Cost of pet maintenance	Moving
No time for pet	Cost of pet maintenance
Inadequate facilities	Landlord issues
Too many pets at home	No homes for littermates
Pet illness	House soiling
Personal problems	Personal problems
Biting	Inadequate facilities
No homes for littermates	Doesn't get along with other pets

Source: Kass et al. 2001

adapted to meet a shelter's specific needs. (The ASPCA has taken over responsibility for PetWhere and will continue to distribute it free of charge.)

In addition a trend toward collaboration in the sheltering community began to develop in the 1980s. This trend has increased awareness of the relevance of data collection and the issue of facilitating data sharing. Collaboration is occurring among shelters within a community area (e.g., the Washington, D.C., Denver, and San Francisco regions), and between shelters and other animal protection organizations, educational institutions, corporations, and the business sector. An increasing number of foundations and grant programs are funding companion animal welfare projects. Many of these foundations are requiring relevant, reliable, and consistent data in order to evaluate grant applicants and assess the success of funded projects (personal communication, N. DiGiacomo, n.d. 2002). Maddie's Fund, a well-endowed foundation, was founded in 1999 specifically to fund collaborative projects that seek to "guarantee loving homes

for healthy shelter dogs and cats across the country," and to "save the sick and injured pets in animal shelters" (Maddie's Fund 2002). Lastly donors are increasingly asking for statistical data, in addition to information regarding an organization's mission and programs, in order to make donation decisions.

While sterilization programs have remained a priority for many shelter organizations, the late 1990s saw a shift in organizational approach and program development. Due in part to the new data on care-giver relinquishment and behavior issues (and probably in part to the declining number of animals entering shelters, which potentially frees up resources for new initiatives), more shelters have devoted time and money to developing behavior programs. These programs range from largely informal approaches, in which potential adopters are educated about behavior issues and receive some training on site, to ambitious, structured programs targeted to current pet care-givers as well as the shelter dog population. Structured programs include behavior help lines, formal classes, and the

work of on-staff trainers and behaviorists. The HSUS established the Pets for Life National Training Center in collaboration with Denver Dumb Friends League in 1999 to provide education and training for shelter personnel in companion animal behavior. This project is part of a broader HSUS campaign focusing on developing new ways to strengthen pet care-giver relationships.

Future Directions

New data on pet populations are beginning to move U.S. pet population policies in new directions. Nonetheless some significant deficits continue to slow progress. These include the failure to standardize and broaden data collection on such basic questions as how many animal shelters there are in the United States and how many animals are euthanized each year.

Brestrup (1997) and Fennell (1999) have challenged some of the prevailing views about pet population policies. Fennell, for example, approaches the issue from the perspective of a free market and suggests that discounting the consumer aspects of pet care-giving may be shortsighted. She observes that new perspective may be gained by examining the application of the laws of supply and demand, and the economic and cultural forces that govern the "production" and destruction of owned dogs and cats. Fennell argues a market model would shift the focus from placing blame on prodigal pet care-givers to a focus on the characteristics and roots of consumer choice regarding pets. Moreover research into what pet care-givers want may ultimately give animal shelters the tools they need to shift consumer demand in their direction. Fennell notes that the market for puppies and kittens, as represented by the pet store and breeding industries, is relatively orderly, well developed, easily accessible, and well understood by

the public, despite the significant companion animal welfare concerns sometimes associated with these businesses. In contrast she argues that, from the public's perspective, the business of "re-homing" animals has been poorly organized, often inaccessible, and not well understood.

Many shelters are beginning to acknowledge the importance of marketing techniques by redesigning their facilities—both the physical plant and their policies and procedures—to make their organizations more "user-friendly" and appealing to the public. There is growing recognition that shelter animals must be presented in the best possible light in order to attract a greater pool of potential adopters. A recent study that examined predictors of adoption versus euthanasia outcomes reinforces this view: age, sex, coat color, and reason for surrender were important predictors for adoption. Dogs with brindle or black coats were least likely to be adopted, while cats with white, color point, or gray coats were more likely to be adopted than their brown or black counterparts (Lepper, Kass, and Hart 2002). One policy application of these data would be the development of creative means to bring positive attention to animals such as the brown and black cats who otherwise may be passed over.

New Research Directions

A largely overlooked area of investigation in pet population and shelter demographics is post-adoption follow-up. This investigation would be the logical next phase in long-term resolution of the pet population crisis. Little published data exists on failed adoption rates, including animals who are returned to the shelter as well as those who end up in other homes or shelters; on the duration of the adoptive relationship; on the short-term and long-term challenges for the adopter; and on the evaluation of effective support services. In addition there is very little information on

the effectiveness of adoption prescreening systems. Do some adopter prescreens produce better outcomes (fewer failed adoptions) than others? As shelters continue to debate the practicality, usefulness, and ethics of various adoption protocols, it would appear that only sound data will serve to provide solid answers (Patronek and Zawistowski 2002).

Adoptions now take place in a variety of venues. "Virtual shelters," in which potential adopters can learn about available animals, are commonplace, and *Petfinder.com* is one of the 2,000 most-visited websites in the world. A recent study evaluated adoption success at three locations: a traditional animal shelter setting, an off-site adoption site at a pet store (PETsMART), and a special event "adoptathon." Satisfaction and retention were found to be associated with the pet's personality, behavior, and compatibility with the new household. The level of satisfaction with the adoption experience was not related to adoption setting. The survey identified some significant and troubling potential challenges to adoption follow-up: a full 58 percent of adopters could not be reached two weeks after adoption, and 6 percent of adopters declined to provide any information (Neidhart and Boyd 2002). The low success of the follow-up may have been related to the fact that the adoption centers were not traditional, well-established shelters. Anecdotal reports claim that well-established shelters (e.g., those in Marin County, California) have a much better rate of reaching and gaining the cooperation of adopters in post-adoption surveys.

A deeper understanding is needed concerning the decisions leading to adoption and euthanasia in the shelter, and the potential effect these decisions have on both shelter operations and shelter employees. As euthanasia rates continue to fall, a paradoxical result may be that the stressful effect of euthanasia on the employee and the organization (cf. Arluke and Sanders 1996, Arluke, in this volume) increases. It might seem

likely that, as the number of euthanasias in a shelter falls (see Tables 9a, 9b, and 9c), the related stress might also decline. However as euthanasia becomes less routine, it is also possible that the opposite might happen. Arluke (this volume) provides hints that this might be the case. The HSUS as of 2003 was supporting a euthanasia study through Bowling Green University and providing "Compassion Fatigue" workshops that included the use of a survey instrument to measure both burnout and compassion fatigue. Initial results indicated that both compassion fatigue and burnout rates are very high among shelter employees (R. Roop, personal communication, n.d. 2002). As debate about euthanasia in shelters, and about the meaning of the terms *adoptable* and *non-adoptable*, continues, Americans desperately need some actual data to determine how best to proceed.

It also is necessary to go one step further in exploring regional and species differences. While regional differences have been identified and acknowledged, these data have not been utilized to discover the general criteria or patterns underlying the differences (Wenstrup and Dowidchuk 2001). Such information would enable researchers to get at the root causes of the pet population crisis. The questions to ask are: Why do these differences exist? What do they mean? What societal, cultural, and educational forces drive pet caregiver choices? In order to discover the answers to these questions, humane societies will need to broaden their point of reference. Past research has demonstrated consistently that animal shelters are not the most common source of pet dogs and cats—and are not the only care-giver option for pet relinquishment (Patronek and Zawistowski 2002). Prospective, long-term studies of representative pet care-giving populations, as well as a more visible role for animal shelters in the community, will enable shelters to become more common choices of potential care-givers and to provide

increasingly professional advice and support for pet care-givers in the community.

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Literature Cited

- American Pet Products Manufacturers Association, Inc (APPMA). 2000. *1999–2000 APPMA national pet owners survey*. Greenwich, Conn.: APPMA.
- . 2002. *2001–2002 APPMA national pet owners survey*. Greenwich, Conn.: APPMA.
- American Veterinary Medical Association (AVMA). 1997. *U.S. pet ownership and demographics sourcebook*. Schaumburg, Ill.: Center for Information Management, AVMA.
- . 2002. *U.S. pet ownership and demographics sourcebook*. Schaumburg, Ill.: Center for Information Management, AVMA.
- Anonymous. 1978. Pet population control and ovariohysterectomy clinics: Reaffirmation of 1973 statement. *Journal of the American Veterinary Medical Association* 173(11): 1408.
- . 1993. Pet owner survey. *Anthrozoös* 6(3): 203–204.
- . 1995. Animal demographics of Santa Clara County (California). *Anthrozoös* 8(3): 178–179.
- . 1996. Stray and feral cats. *Anthrozoös* 9(2/3): 117–119.
- Arkow, P.S. 1994. A new look at pet overpopulation. *Anthrozoös* 7(4): 202–205.
- Arkow, P.S., and S.J. Dow. 1984. The ties that do not bind: A study of the human-animal bonds that fail. In *The pet connection*, ed. R.K. Anderson, B.L. Hart, and L.A. Hart, 348–354. Minneapolis: CENSHARE, University of Minnesota.
- Arluke, A. 2003. The no-kill controversy: Manifest and latent sources of tension. In *The state of the animals II: 2003*, ed. D.J. Salem and

- A.N. Rowan, 67–83. Washington, D.C.: Humane Society Press.
- Arluke, A., and C. Sanders. 1996. *Regarding animals*. Philadelphia: Temple University Press.
- Bancroft, R.L. 1974. America's mayors and councilmen: Their problems and frustrations. *Nations Cities* 12(Apr): 14–16.
- Beck, A.M. 1973. *The ecology of stray dogs: A study of free-ranging urban animals*. Baltimore: York Press.
- Brestrup, C. 1997. *Disposable animals: Ending the tragedy of throw-away pets*. Leander, Tex.: Camino Bay Books.
- Clancy, E.A., E. Birkholz, and C.J. Luke. 1996. Comprehensive models of dog and cat population flows in Massachusetts. Unpublished master's thesis. Tufts University School of Veterinary Medicine.
- Clifton, M. 2002. Latest U.S. data shows shelter killing down to 4.4 million a year. *Animal People* (Sept.) 14.
- DiGiacomo, N., A. Arluke, and G. Patronek. 1998. Surrendering pets to shelters: The relinquisher's perspective. *Anthrozoös* 11(1): 41–51.
- Djerassi, C., A. Israel, and W. Jochle. 1973. Planned parenthood for pets? *Bulletin of the Atomic Scientists* (Jan): 10–19.
- Feldman, B.M. 1974. The problem of urban dogs. *Science* 185: 931.
- Fennell, L.A. 1999. Beyond overpopulation: A comment on Zawistowski et al. and Salman et al. *Journal of Applied Animal Welfare Science* 2(3): 217–228.
- Humane Society of the United States (HSUS). 1999. Statement on free-roaming cats. Washington, D.C.: HSUS.
- Johnson, T.P., T.F. Garrity, and L. Stal-lones. 1992. Psychometric evaluation of the Lexington Attachment to Pets Scale (LAPS). *Anthrozoös* 5(3): 160–175.
- Kass, P.H., J.C. New Jr., J.M. Scarlett, and M.D. Salman. 2001. Understanding animal companion surplus in the U.S.: Relinquishment of nonadoptables to animal shelters for euthanasia. *Journal of Applied*

- Animal Welfare Science* 4(4): 237–248.
- Lepper, M., P.H. Kass, and L.A. Hart. 2002. Prediction of adoption vs. euthanasia among dogs and cats in a California animal shelter. *Journal of Applied Animal Welfare Science* 5(1): 29–42.
- Maddie's Fund. 2002. <http://www.maddies.org>.
- Manning, A.M., and A.N. Rowan. 1992. Companion animal demographics and sterilization status: Results from a survey in four Massachusetts towns. *Anthrozoös* 5: 192–201.
- Marx, M.B., and M.L. Furculow. 1969. What is the dog population? A review of surveys in the U.S. *Archives of Environmental Health* 19: 217–219.
- Massachusetts Society for the Prevention of Cruelty to Animals (MSPCA). 1996. *Companion animal populations in Massachusetts*. A survey conducted for the MSPCA by Dorr Research Corporation. October.
- Nassar, R., and J.E. Mosier. 1980. Canine population dynamics: A study of the Manhattan, Kansas, canine population. *American Journal of Veterinary Research* 41: 1798–1803.
- Nassar, R., J.E. Mosier, and L.W. Williams. 1984. Study of the feline and canine populations in the greater Las Vegas area. *American Journal of Veterinary Research* 45: 282–287.
- Neidhart, L., and R. Boyd. 2002. Companion animal adoption study. *Journal of Applied Animal Welfare Science* 5(3): 175–192.
- New, Jr., J.C., M.D. Salman, J.M. Scarlett, P.H. Kass, J.A. Vaughn, S. Scherr, and W.J. Kelch. 1999. Moving: Characteristics of dogs and cats and those relinquishing them to 12 U.S. animal shelters. *Journal of Applied Animal Welfare Science* 2(2): 83–96.
- New Jr., J.C., M.D. Salman, M. King, J.M. Scarlett, P.H. Kass, and J.M. Hutchison. 2000. Shelter relinquishment: Characteristics of shelter-relinquished animals and their owners compared with animals and their owners in U.S. pet-owning households. *Journal of Applied Animal Welfare Science* 3(3): 179–201.
- Patronek, G.J. 1998. Free-roaming and feral cats—Their impact on wildlife and human beings. *Journal of the American Veterinary Medical Association* 212(2): 218–226.
- Patronek, G.J., and A.N. Rowan. 1995. Determining dog and cat numbers and population dynamics. *Anthrozoös* 8(4): 199–205.
- Patronek, G.J., and S. Zawistowski. 2002. The value of data. *Journal of Applied Animal Welfare Science* 5(3): 171–174.
- Patronek, G.J., L.T. Glickman, and M.R. Moyer. 1995. Population dynamics and the risk of euthanasia for dogs in an animal shelter. *Anthrozoös* 8(1): 31–43.
- Patronek, G.J., L.T. Glickman, A.M. Beck, G.P. McCabe, and C. Ecker. 1996a. Risk factors for relinquishment of dogs to an animal shelter. *Journal of the American Veterinary Medical Association* 209(3): 572–581.
- . 1996b. Risk factors for relinquishment of cats to an animal shelter. *Journal of the American Veterinary Medical Association* 209(3): 582–588.
- Rowan, A.N. 1992a. Shelters and pet overpopulation: A statistical black hole. *Anthrozoös* 5(3): 140–143.
- . 1992b. Companion animal demographics and unwanted animals in the U.S. *Anthrozoös* 5(4): 222–225.
- Rowan, A.N., and J. Williams. 1987. The success of companion animal management programs: A review. *Anthrozoös* 1(2): 110–122.
- Salman, M.D., J.G. New, Jr., J.M. Scarlett, P.H. Kass, R. Ruch-Gallie, and S. Hetts. 1998. Human and animal factors related to the relinquishment of dogs and cats in 12 selected animal shelters in the U.S. *Journal of Applied Animal Welfare Science* 1(3): 207–226.
- Salman, M.D., J. Hutchison, R. Ruch-Gallie, L. Kogan, J.C. New, Jr., P.H. Kass, and J.M. Scarlett. 2000. Behavioral reasons for relinquishment of dogs and cats to 12 shelters. *Journal of Applied Animal Welfare Science* 3(2): 93–106.
- Savesky, K. 2001. *HSU case study: The Coastal SPCA*. Washington, D.C.: HSUS.
- Scarlett, J.M., M.D. Salman, J.G. New, Jr., and P.H. Kass. 1999. Reasons for relinquishment of companion animals in U.S. animal shelters: Selected health and personal issues. *Journal of Applied Animal Welfare Science* 2(1): 41–57.
- Schneider, R., and M.L. Vaida. 1975. Survey of canine and feline populations: Alameda and Contra Costa counties, California, 1970. *Journal of the American Veterinary Medical Association* 166: 481–486.
- Staats, S., D. Miller, M.J. Carnot, K. Rada, and J. Turnes. 1996. The Miller-Rada commitment to pets scale. *Anthrozoös* 9(2/3): 88–94.
- Wenstrup, J., and A. Dowidchuk. 1999. Pet overpopulation: Data and measurement issues in shelters. *Journal of Applied Animal Welfare Science* 2(4): 303–319.
- Zawistowski, S., J. Morris, M.D. Salman, and R. Ruch-Gallie. 1998. Population dynamics, overpopulation, and the welfare of companion animals: New insights on old and new data. *Journal of Applied Animal Welfare Science* 1(3): 193–206.