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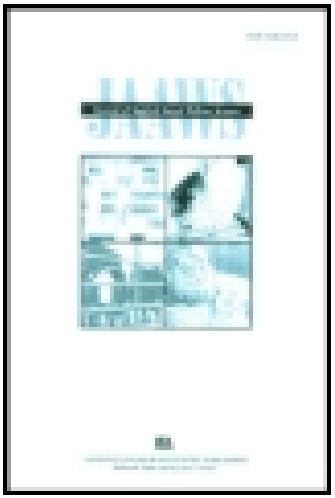

Journal of Applied Animal Welfare Science

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/haaw20

Pet Overpopulation: Data and Measurement issues in Shelters

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Published online: 04 Jun 2010.

To cite this article: John Wenstrup & Alexis Dowidchuk (1999) Pet Overpopulation: Data and Measurement issues in Shelters, Journal of Applied Animal Welfare Science, 2:4, 303-319, DOI: 10.1207/s15327604jaws0204_5

To link to this article: http://dx.doi.org/10.1207/s15327604jaws0204_5

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JOURNAL OF APPLIED ANIMAL WELFARE SCIENCE, 2(4), 303–319
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Pet Overpopulation: Data and Measurement Issues in Shelters

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Data collection and analysis within animal shelters are critical to developing effective programs that reduce the number of dogs and cats euthanized each year. However, current data collection efforts are insufficient to identify the magnitude, dynamics, or root causes of euthanasia in animal shelters across the United States. The purpose of this study was to examine potential solutions to the underlying root causes of pet overpopulation, with 2 elements. The first, more explicit goal was to establish a baseline of shelter data, policies, and viewpoints through a detailed survey of 186 shelters, 12 site visits, and numerous interviews. The findings suggest large variation in local issues faced by shelters, as well as a nearly universal focus on sterilization as a solution. The greater objective, however, was to use this information as an impetus to improve the process by which shelters amalgamate information and effectively use it to target the most pressing needs within their communities. We believe the essential step is to provide shelters with an analytical tool that would yield informational benefits exceeding the cost of data collection. Such an improvement would have a positive spillover effect on researchers, donors, and others attempting to collect standardized, geographically scalable data. This article presents an overview of the survey findings, as well as a prototype of a tool to help improve data amalgamation and analysis efforts within shelters.

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Few would argue that collecting appropriate, timely, and accurate data within and across animal shelters is unimportant. Thus far, however, both national and local data collection efforts have met with limited success. At the national level, various animal welfare groups present widely varying estimates of the magnitude of pet overpopulation and euthanasia (American Humane Society, 1992; Arkow & Clifton, 1993; Humane Society of the United States, 1998). The National Council on Pet Population Study and Policy (NCPPSP) has attempted a coordinated effort to collect comprehensive data at the national level (Zawistowski, Morris, Salman, & Ruch-Gallie, 1998), but this has proven to be a lengthy and costly process, requiring years to yield even a modicum of data. At the local level, limited shelter resources, poor or incomplete record keeping, and uncertainty about which data is most pertinent result in few shelters collecting detailed information. Many report that their data collection efforts end at cataloguing the number of animals entering and exiting their facility. At best, only a fraction of these shelters share the information with other organizations.

Researchers, donors, and shelters all suffer as a result of the existing process. Researchers seek access to thorough, accurate, and comparable data from shelters, yet often work with only a subset of moderately reliable information and have limited evidence to make broad recommendations across shelters. In addition, donors find it difficult to track the impact of their contributions and the effectiveness of various programs and organizations. Consequently, many funding decisions are currently made with only limited data. Finally, shelters often lack proper data to create tailored programs to address the most pressing problems in their community. In many cases, time and money are likely misallocated to less important programs, directly affecting the amount of euthanizing performed each year.

The benefits of improving the current data collection process could be quite substantial. First, appropriate information could be used to develop targeted programs to combat overpopulation within a particular community. For instance, recognition of a sharp rise in the number of stray cats or excess kitten litters in a community may suggest the initiation, expansion, or revamping of spay and neuter or Trap, Test, Vaccinate, Alter, and Release programs. Alternatively, an influx of young adult dogs into area shelters may indicate a need for behavior training programs or owner education programs addressing the transition from puppy to adult. Second, information could be employed to track the effectiveness of programs, compare seasonal trends, and alert the shelter to fundamental changes in underlying cat and dog population dynamics. Finally, the data could be shared in shelters across a community (or the nation, for that matter) to help understand the overall problem rather than merely the experiences of a lone shelter, which may be driven more by mission, policies, size, effectiveness, or affiliation than by underlying problems.

So, is there a solution that can address the needs of all constituents (researchers, shelters, and donors) and capture the benefits from improved data collection and

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analysis? This study first presents data from a broad-based survey of shelters, then focuses on what an effective data collection solution might look like. This article also suggests how such a solution might be employed across the shelter population to highlight the most pressing problems, direct resources to those areas, and more quickly end euthanasia.

PURPOSE

This study has two related purposes: to present data and to suggest changes to the current process of collecting such data. Using the tools of economic and business analysis, we originally set out to gather information to support an analysis of pet overpopulation. However, it soon became clear that appropriate data was largely lacking. Therefore, we not only collected data, but also developed a set of suggestions to improve the existing process. The end goal is to provide a means for shelters and other stakeholders to access data needed to formulate targeted programs to address and end overpopulation.

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METHOD

The study consisted of five major elements completed over a 3-month period during the Summer of 1998. The work included the following:

1. Shelter surveys—A detailed, four-page survey was sent to more than 800 shelters and animal control facilities, addressing shelter statistics, policies and procedures, and budgets and economics. More than 200 shelters (24%) responded to the survey, and 186 replies were completed and included in the data analysis.
2. Site visits—We visited 12 shelters (large and small, private and public) in five states. The visits included thorough facilities tours and interviews with directors and other employees at each shelter. The visits were used to develop case studies, including essential issues faced by the shelter, unique or highly successful programs and policies, and chronicles of successes and failures for each organization.
3. Personal interviews—Telephone and face-to-face interviews were conducted with numerous shelter managers, pet overpopulation researchers, and other parties who expressed interest in the study. The interviews provided qualitative support for the survey.
4. Secondary research—The study was supported by a thorough review of journal articles and information from a host of national and regional animal welfare organizations, as well as postings from the Veterinary Information Network.
5. Model development—We developed a prototype of a Microsoft® Excel–based software tool that links input data to a series of analyses, offering scalable data transfer, analytical tools, and scenario-testing capability.

A copy of the survey form, survey results, lists of interviewed and surveyed shelters, and a model overview may be found in the research section of http://www.doggievillage.com.

OVERVIEW OF SURVEY RESULTS AND IMPLICATIONS

Survey Scope

The survey focused on animal populations within shelters (including entering, capacity, and exiting statistics), shelter economics, and the viewpoints of shelter personnel. The survey did not address underlying pet population dynamics on a national level (Patronek & Glickman, 1994; Zawistowski et al., 1998) or owner relinquishment of pets (DiGiacomo, Arluke, & Patronek, 1998; Salman et al., 1998) in any detail.

Survey Sample

The survey data includes 186 shelters and animal control agencies from 42 states. The composition of the sample differs to some extent from that of many previous shelter studies, as it includes predominantly private organizations (79% of total) and smaller shelters (72% with annual budgets less than $500,000), as shown in Tables 1 and 2.

TABLE 1
Survey Profile

Shelter Sample Profile	
Number of respondents	186
States represented	42
Percent accepting strays	94
Total animals handled	764,879
Dogs handled	386,992
Cats handled	377,887
Organization Type	*Percent*
Private	79
Government	17
Other or Hybrid	4

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TABLE 2
Shelter Size

Organization Budget Size	*Amount*
Mean	$515,729
Median	$250,000
Organization Budget Distribution	*Percent*
>2M	5
1M–2M	7
500K–1M	16
250K–500K	21
100K–250K	26
50K–100K	13
25K–50K	7
<25K	5

Note. M = million dollars. K = thousand dollars.

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Animals Entering Shelter

The 186 shelters in the sample reported over 760,000 animals entering their facilities over the past year (an average of more than 4,100 per shelter), with details provided in Table 3. As is consistent with other studies (Zawistowski et al., 1998), most shelter animal traffic comprised healthy adult pets (78% of total traffic in this study, with 54% stray and 24% relinquished by owners). The relatively small portion of puppies and kittens reported entering shelters (13% of total animals handled) is a credit to sterilization efforts and supports suggestions that shelter population demographics have changed considerably over the past decades (Olson & Moulton, 1993).

TABLE 3
Breakdown of Animals Entering Shelter (Percent)

Circumstance	*Dogs*	*Cats*	*Total*
Stray	53	55	54
Total owner relinquished	43	41	42
Adult (first time at shelter)	*22*	*21*	*21*
Adult (returned to shelter)	*3*	*2*	*3*
Puppies or kittens	*13*	*14*	*13*
Sick or injured	*5*	*4*	*4*
Other	2	1	2
No answer	2	3	3
Total	51	49	100

In the sample, however, incoming animal demographics vary dramatically by shelter, implying high variance in localized problems, root causes, and efficacy of shelter activity to date. For instance, the average age of animals euthanized ranged from 6 months in one shelter to 6 years in another. As a result, any blanket policy or program recommendations may be of limited relevance to an increasingly large portion of shelters and, if followed, could result in a dramatic misallocation of funding to programs with less potential for a major impact. In many cases, sterilization programs may no longer be the most important levers for shelters in communities where nearly all animals entering shelters are owner-relinquished adults. A reduction in the number of healthy adult animals entering such shelters may require focus on efforts outside of sterilization programs, such as a more thorough understanding of owner behavior, owner education, and animal behavior-modification programs (Patronek & Rowan, 1995).

As an example, one interviewed shelter found that most of the animals it received were adult dogs relinquished for behavioral reasons, and a large percentage of animals adopted from its facility were later returned to the shelter. In response, the organization made behavioral modification its first priority for both the public (to reduce the number of dogs relinquished for behavioral reasons) and its shelter dogs (to reduce return rates). Local level differences such as these often can be addressed adequately only if they are measured, analyzed, and understood within an individual shelter or community.

The surveyed shelters reported that shelter personnel (Table 4) considered 39% of the animals entering their facilities to be nonadoptable. Although most shelters (69%) listed behavior or health as the primary driver of nonadoptability, nearly 75% admitted they do not have clearly defined criteria for determining nonadoptability (Table 5). Moreover, it is not clear whether such data is actively tracked or retroactively estimated in each of the shelters. Definitions, especially concerning nonadoptability, have been at the forefront of the no-kill debate and currently plague many cross-shelter coordination efforts and private–public partnerships. Regardless of one's stance, however, efforts to eradicate euthanasia must eventually confront the 39% of entering animals categorized as nonadoptable. Reducing euthanasia among these animals will likely demand new, innovative programs such as behavioral modification, socialization, rehabilitation, and other efforts, as well as a radical rethinking of the role of shelters.

TABLE 4
Classification of Animals Entering Shelter (Percent)

Classification	*Dogs*	*Cats*	*Total*
Adoptable	64	57	61
Non-adoptable	36	43	39

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TABLE 5
Percentage of Shelters Listing Item as Number One Driver of Nonadoptability

Item	*Dogs*	*Cats*	*Total*
Behavior	40	41	41
Health	26	31	28
Age	2	3	2
Breed	1	0	1
Other	3	4	3
No criteria	28	22	24

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Shelter Capacity

Surveyed shelters reported capacity for only 2.6% of the animals entering their facilities in the past year: 19,998 spots for the annual 764,879 animals handled. Thus, the average animal remains in a shelter for only 9.5 days before exiting through euthanasia, redemption, or adoption. Such data reinforces the often-stated fact that shelters are in a race against time, suggesting they frequently must become de facto experts at traditional logistics functions such as space allocation, inventory planning, tracking of demand peaks, and mapping of population trends. The payoff to improved efficiency may be large, especially through efforts such as capacity-shifting or peak demand offloads, in which area shelters transfer excess animals to other nearby shelters with available space. One interviewed shelter is establishing such a system and plans to link seven area shelters through a shared web site tracking available space at each facility. Despite potential political issues, such space-sharing efforts could dramatically increase the capacity use across shelters in a community and extend the amount of time an animal has before euthanasia becomes necessary.

Exiting Shelter

The majority of the animals (59% or 451,279) entering the 186 survey shelters were euthanized in the past year (Table 6). Shelters cited insufficient space as driving 34% of decisions to euthanize, but most of the animals were euthanized for other reasons, such as behavior (24%) and health (22%; Table 7). Shelters claimed that 48% of the euthanized animals were unadoptable (Table 8), again highlighting the issue of adoptability definitions across shelters. Consistent with other studies, cats were much more likely to be euthanized than dogs (65% vs. 52%), though the ratio is lower than in some studies in which twice as many cats

TABLE 6
Fate of Animals Entering Shelter (Percent)

Fate	*Dogs*	*Cats*	*Total*
Euthanized	52	65	59
Adopted	32	29	31
Redeemed	13	3	8
Other	3	3	3

TABLE 7
Drivers of Euthanasia (Percent)

Drivers	*Dogs*	*Cats*	*Total*
Insufficient space	35	32	34
Behavior	23	25	24
Health	24	20	22
Age	7	8	7
Breed	2	0	1
Other or No response	10	14	12

TABLE 8
Adoptable Status of Animals Eventually Euthanized (Percent)

Status	*Dogs*	*Cats*	*Total*
Adoptable	48	55	52
Unadoptable	52	45	48

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are euthanized as dogs (Arkow, 1993; Patronek, Glickman, Beck, McCabe, & Ecker, 1996a, 1996b). The dramatically different dynamics associated with cat and dog populations again points to the importance of measuring and understanding problems at the shelter level to develop appropriate programs for each shelter's specific situation.

Although not explored in detail in this study, regional differences in the composition and disposition of shelter animals have received only limited attention to date. Despite the importance, few stakeholders could claim detailed knowledge around the distribution and concentration of euthanasia in various geographies. Further understanding is necessary to ensure that funding from nonlocal donors can be allocated to areas that can best use additional resources to reduce euthanasia. Just as the Nature Conservancy aims to create a nationwide priority list of threatened habitats, so the animal welfare movement needs to know exactly which areas need the most help and where dollars can save the most lives.

Economics

The survey included shelter budget data to gauge the magnitude and distribution of spending in the United States. The 186 surveyed shelters spent a total of $132.7 million in the past year (with a mean budget of $500,857 and a median budget of $250,000), which represents an average cost per animal handled of an astounding $176. Even using a conservative estimate of 7.7 million total animals handled annually in U.S. shelters (Arkow, 1993; American Veterinary Medical Association, 1997) and ignoring nonsheltering organizations, the data implies annual spending of approximately $1.4 billion in shelters and animal control facilities in the United States. Some estimates show that shelters handle 16 to 27 million animals annually (American Humane Association, 1992). Other researchers have consistently discounted the high-end figures (Arkow, 1993).

Using a more aggressive estimate of animals handled, such as the low end of the American Humane Association estimate (16 million per year), approximately $2.8 billion is spent annually. The proper harnessing of such resources and allocation to the programs and activities that best address the underlying root causes of the problem is essential. However, few mechanisms exist today to inform such decisions, and data, if it exists at all, is often fragmented and difficult to get.

Shelter Perspectives and Policies

Considerable debate exists within the animal welfare community about the efficacy of various programs and policies that have been advocated and implemented by shelters. Many of these programs fall into categories related to the 1970's "LES is more" (Legislate, Educate, Sterilize) campaign that has been the leading mantra in many animal welfare circles for nearly 20 years (DiGiacomo et al., 1998).

To help frame the issue, this study captured the viewpoints of 186 shelters on various popular programs. In the survey, shelter managers were first asked to describe the type of program most important in combating overpopulation generally. Second, managers were asked to define the program that had been most effective in their own shelter to date. Overwhelmingly, shelters described sterilization as the most important and most effective program (Table 9). More than 80% claimed that mandatory sterilization, low-cost sterilization, or a spay or neuter clinic were the most important programs to address overpopulation, with nearly 70% claiming these programs have been the most successful in their shelters. The message is clearly widespread among shelters, as 88% claimed that they mandate sterilization, 60% offered sterilization services, and 29% offered sterilization services free or as part of the normal adoption fee.

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TABLE 9
Shelter Perspective on Importance and Efficacy of Programs (Percent)

Program	*Most Important*	*Most Effective*
Mandatory sterilization	48	44
Education	33	18
Low cost sterilization	25	18
Differential licensing	10	3
Spay or neuter clinic	8	6
Breeding permits	7	0
Publicity	5	5

Note. Numbers do not add up to 100% as some shelters listed more than one program as "most important," and others stated none had been effective.

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Although the previously reported small percentage of kittens and puppies among animals entering shelters (13%) is a testimony to the success of sterilization programs, it also opens new questions about the appropriate level of ongoing investment in sterilization programs across shelters. If most of the animals who enter a particular shelter are no longer puppies and kittens, sterilization may do little to decrease shelter populations of the future. Nonetheless, when asked to determine how they would spend an incremental $1 million in income, shelters reported they would allocate 44% to subsidizing sterilization efforts (Table 10). This single-mindedness in proposed solutions should trigger pause in light of changing shelter animal demographics.

The issue of program effectiveness is even more clouded because many shelters (and researchers) very likely have only limited means to determine effectiveness, especially given the extreme variance in data measurement and analysis among shelters. As shelter animal demographics continue to change, shelters should be encouraged to analyze their incoming animal populations and look for signs of a diminished impact from spay and neuter programs in their community. Migration

TABLE 10
Shelter Allocation of $1 Million Incremental Income

Program	*Allocation ($)*
Subsidized sterilization	440,690
Owner education	164,939
Increase space	142,623
Advertise issues	97,607
Coordination efforts[a]	93,298
Advertise Shelter	65,445

[a]With veterinarians and animal control services.

to new programs and priorities will require a massive change in mindset and program direction for many shelters, as well as significant investment of time and money in understanding the new drivers of remaining overpopulation problems. The only way to ensure the $1.4 to $2.8 billion spent annually (or at least the discretionary portion of the spending) can be put to use effectively is to understand and target the root causes of the remaining problem.

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DISCUSSION: THE MEASUREMENT PROBLEM

Survey results such as those presented here can be both enlightening and frustrating. They can be enlightening to the extent that they suggest general trends and highlight essential issues at the aggregated level. However, they can be frustrating because they tend to mask local variation in problems and are often not directly actionable at the individual shelter level. Nonetheless, much public information today is dependent on either national studies or local analysis (Johnson, 1993) that yields valuable insights but often cannot be compared easily across geographies. Clearly, improvements in data collection, analysis, and aggregation could be of considerable value to shelters, researchers, donors, and other constituents. However, at least three major barriers to a comprehensive data collection process are currently in place.

First, many shelters have neither the resources nor the proper tools to collect, track, and analyze basic overpopulation data, let alone more detailed information. The problem has been magnified by an increase in the number and depth of data requests. For instance, many foundations and other donors are placing increasing importance on data collection and outcome assessment. Many have even migrated toward a venture capital model, as explicated in *Harvard Business Review* (Letts, Ryan, & Grossman, 1997) and pioneered by the Roberts Foundation. In such a model, donors would use detailed data to allocate funding to organizations that promise the highest value (often measured in a social return on investment) and actively track the performance of their portfolio of investments. Shelters will face an increased burden to provide such data. Evidence of such a migration already exists in the animal welfare world, as Rich Avanzino, president of the $200 million Maddie's Fund, states in describing his organization:

> The foundation is a creative resource to go into communities to fund creative ideas, much like a venture capitalist invests in innovative companies. The payback, instead of improvements in stock portfolio, will be improvements in the number of adoptable lives saved ("A Man and His Money," 1998, p. 1/Z1).

Second, the traditional process of data collection across shelters is time-consuming, expensive, and ultimately anachronistic. Both researchers (who mail surveys, tabu-

late responses, and input data) and shelters (who must fit data into various formats to satisfy requests) suffer. Many previous efforts have focused on attempting to define what data shelters should collect. These efforts have largely ignored what shelters do with the data once they get it. Focus on this latter step is essential to provide a process for standardization, convince shelters of the value of data collection, and encourage shelters to continue to collect the data in the first place. As a result of the inefficiency of this process, researchers and others have limited access to standardized and scalable data from a subset of shelters.

Third, the process by which insights from the amalgamated data are funneled back to those that can best use them—the shelters—is inefficient at best. Consequently, some interviewed shelters claimed the cost of participating in research studies often exceeds the value. For instance, one shelter reported, "we complete *at most* one survey each month, since we know we probably will not receive anything meaningful in return for our efforts." Several interviewed shelters noted that in many cases survey results were either not relevant or detailed enough to suggest action. Many claimed most of the value to them would be in a more thorough understanding of localized root causes. Such analysis would allow individual shelters to design targeted programs to reduce more effectively the number of animals killed in their communities. We believe a new vision for data collection efforts is necessary, and must satisfy four conditions to overcome the aforementioned barriers:

1. Superior value to the shelter—Any solution should provide greater benefits to shelters than the associated costs of participating. Current efforts, with limited actionable comments, leave limited incentive for active involvement.
2. Localized analysis—Data and analysis must be valuable at the local level so that differences in root causes can be highlighted and explored and shelters can act on findings with programs that best address overpopulation in their community.
3. Standardization of data—Standardized data would allow researchers, donors, and other shelters to quickly and easily compare and analyze essential statistics, share information, and speak the same language. Confidentiality concerns can be addressed easily using shelter ID codes or some other mechanism.
4. Scalability—The ultimate goal would allow all shelters (private and public) within a community, county, or even across states to share data and work together to target and solve the most pressing local problems. This solution should allow for such groups (and others) to share and analyze data from the local level, as well as compare it to the region, state, nation, or other shelters facing similar issues.

SHELTER ROOT CAUSE ANALYSIS TOOL

We believe the best way to satisfy the data collection goals is to place an analytical tool in the hands of shelters. This study developed a prototype of a

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Microsoft® Excel–based software tool that would allow shelters to amalgamate, analyze, and scenario-test data to help inform decisions at the local level. The tool is loosely based on Interactive Strategic Modeling®, a form of analysis popularized by Mercer Management Consulting and used by numerous Fortune 500 firms for strategic planning and decision analysis.

Tool Mechanics

The model includes linked analyses of the drivers of euthanasia within a shelter, animals handled by the shelter, and underlying animal population in a given geography. From the user's perspective, the tool itself is simple: A list of inputs compiled by a shelter or a researcher (Figure 1) automatically populates a root cause analysis tree (Figure 2) and produces output reports and graphical analyses (Figure 3). Inputs can be adjusted to test various scenarios and the outputs used to highlight essential advantage areas for further exploration.

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Level One: Euthanasia Rate

What Happens to Animals in Shelter?	Dogs	Cats
#Animals Adopted	5,403	3,900
#Animals Redeemed by Owner	878	201
#Animals Kept at Shelter	120	160
#Animals Other	148	128
#Animals Euthanized-Shelter Decision	1,254	1,432
#Animals Euthanized-Insufficient Space	2,506	3,613
#Total Animals Handled	10,309	9,434
Other Data	**Dogs**	**Cats**
#Put to Sleep-Owner Request	180	210
#Put to Sleep-Behavior	800	580
#Put to Sleep-Health	250	600
#Put to Sleep-Age	24	42
#Total Customer Traffic	105,000	105,000
# Customers Applying for Adoption	17,998	17,998
# Customers Approved for Adoption	12,800	12,800
# Customer Who Adopt	3,700	2,800

① Shelter Inputs Data

Level Two: Total Animals Handled

How Did Animals Get to Shelter?	Dogs	Cats
#Stray/Abandoned/Lost	4,800	5,166
#Owner Relinquished	5,389	4,198
#Other	120	70
Total Animals Handled	10,309	9,434

FIGURE 1 Sample inputs.

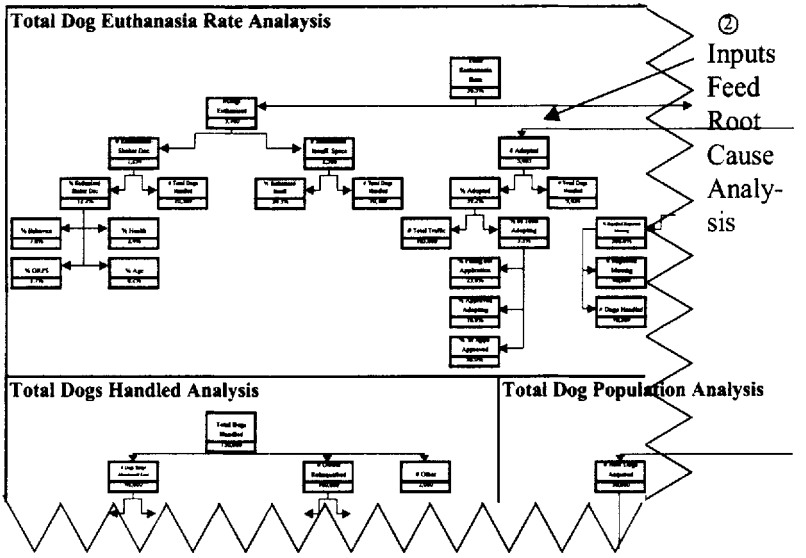
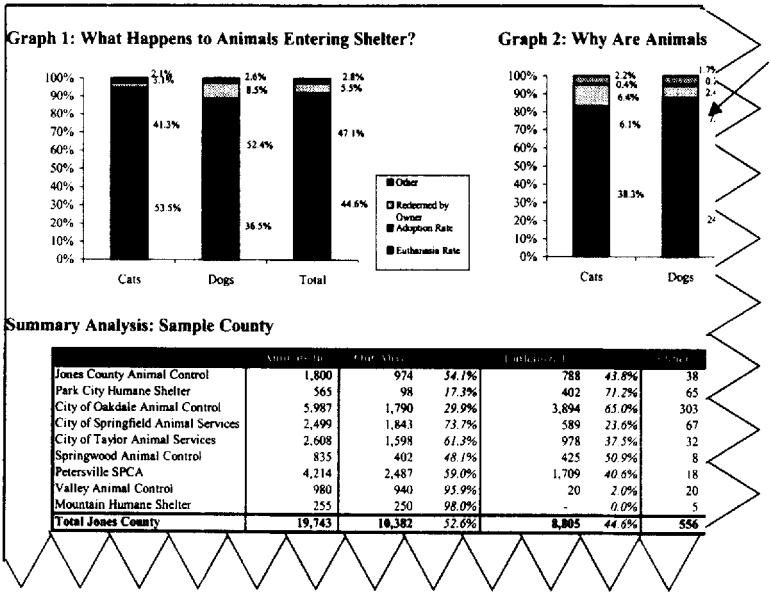


FIGURE 2 Root cause analysis.



Jones County Animal Control	1,800	974	*54.1%*	788	*43.8%*	38
Park City Humane Shelter	565	98	*17.3%*	402	*71.2%*	65
City of Oakdale Animal Control	5,987	1,790	*29.9%*	3,894	*65.0%*	303
City of Springfield Animal Services	2,499	1,843	*73.7%*	589	*23.6%*	67
City of Taylor Animal Services	2,608	1,598	*61.3%*	978	*37.5%*	32
Springwood Animal Control	835	402	*48.1%*	425	*50.9%*	8
Petersville SPCA	4,214	2,487	*59.0%*	1,709	*40.6%*	18
Valley Animal Control	980	940	*95.9%*	20	*2.0%*	20
Mountain Humane Shelter	255	250	*98.0%*	-	*0.0%*	5
Total Jones County	**19,743**	**10,382**	*52.6%*	**8,805**	*44.6%*	**556**

FIGURE 3 Sample output reports and analysis.

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Vision for Using the Tool

We envision such a tool as the centerpiece of a web-based data collection and analysis process of the future, implemented in two steps. The first step would be focused on building analytical ability within shelters. With such a tool, shelters would be able not only to analyze data within their organization and local community but also to test the potential impact of items such as policy changes (advertising to increase human traffic) and expansion plans (a new spay and neuter clinic) on euthanasia rates. Organizations could also form collaborative efforts among all local shelters, rescue groups, and government agencies to share information and target the most pressing problems within their community. Such a program is currently being implemented in a community served by seven shelters, all of whom have agreed to input standardized data to ensure an accurate picture of the community's overpopulation issues.

The second step would focus on amalgamating this data to inform decisions across shelters and geographies, as shelters could easily share standardized data. Eventually, shelters could even upload their amalgamated data to a pet overpopulation web site at the click of a button. The assembled, standardized responses would offer additional benefits to all stakeholders.

For example, researchers could have immediate and constant access to searchable and scalable data (e.g., "What happened to the cat shelter population between 1999 and 2001 in Missouri?"). Foundations and other donors could target funds to the specific areas that most need support, more effectively reducing the amount of euthanizing performed each year. Finally, shelters could compare their data to that of area shelters, their state, or the nation, and even find other organizations facing similar issues. Eventually, shelters could be segmented based on similarities in localized root causes (regardless of geography) and could contact each other to discuss how they are addressing their specific problems, dramatically improving knowledge transfer and coordination among shelters. If achieved, specific programs could be created to target each shelter type and could be replicated across geographic boundaries, increasing the effectiveness of resource allocation and reducing euthanasia rates more quickly and efficiently.

The advantages of this tool over traditional data collection analysis efforts could be immense. Among the benefits are the following:

1. Broader shelter participation—Shelters would have incentives to complete and update data, as they would receive immediate, localized, and fully relevant analysis.
2. Full geographic scalability—Data can be analyzed at the local, regional, or national level to better inform program development and allocate spending.
3. Standardized electronic format—Shelters can complete and transfer (and researchers can examine) information in a consistent format through Internet or software databases.

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4. Shelter coordination encouragement—The resulting data and ideas can be easily shared either within a locale (to ensure local resources are best employed across programs) or among those with similar root cause profiles in disparate locations.
5. Performance tracking improvement—Donors and foundations could use the model to inform capital allocation decisions and track funding and calculate a social return on capital across a portfolio of funded organizations.
6. Linkage to existing efforts and systems—The tool could be used as an effective front-end data collection engine for long-term population studies such as that of the NCPPSP or as a root cause analysis addition to existing software such as PetWare®.
7. Lower cost—The solution is relatively inexpensive, because disk or Internet software distribution and data amalgamation can be considerably less expensive than mailing and data input associated with traditional survey methodologies.

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Issues and Barriers

Several real, but manageable, barriers to effective employment of such a model likely exist. The largest of these obstacles, however, is likely overcoming shelters' resistance to data collection and privacy concerns; encouraging distribution and usage of the model, along with education of shelter personnel; integration with existing data collection efforts; and the cost of further development and trials for a fully viable software tool.

Next Steps

Further coordination, testing, and development of the tool with shelters, researchers, and others is essential to ensure that all stakeholders can reap value from the effort and that it can fit into ongoing complementary efforts by other organizations. Interested parties are invited to examine the structure of the prototype tool, as well as the complete results of the survey, in more detail at http://www.doggievillage.com. We look to a day when the animal welfare community has a clear and prioritized view of where and why most animals are still euthanized. With data in hand, donors could target money to those specific communities, researchers could develop tailored approaches to the specific underlying problems, shelters from across the country could share their insights, and local shelters could collaborate with other organizations in the community to ensure that euthanasia is brought to an end.

ACKNOWLEDGMENTS

Research for this article was supported by Geraldine R. Dodge Foundation's Frontiers in Veterinary Medicine Summer Research Program, the Bernice Barbour Foundation, the Kenneth A. Scott Charitable Trust, the Marilyn M. Simpson Charitable Trust, the Humane Society of the United States, and the Massachusetts Society for the Prevention of Cruelty to Animals.

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