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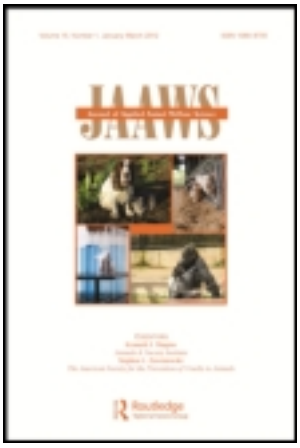

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Community Partnering as a Tool for Improving Live Release Rate in Animal Shelters in the United States

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Community Partnering as a Tool for Improving Live Release Rate in Animal Shelters in the United States

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Collaboration among all shelters and nonhuman animal welfare groups within a community along with the transparent, shared reporting of uniform data have been promoted as effective ways to increase the number of animals' lives saved. This article summarizes the shelter intakes, outcomes, and live release rate (LRR) from 6 geographically diverse communities participating in the American Society for the Prevention of Cruelty to Animals Partnership program for 5 years (2007–2011). This program is both a grant program and a coaching program that works to focus the community partners on a data-driven goal using standardized definitions and metrics. There was improvement in LRR in all communities over time regardless of intake numbers, human population, or mix of dogs/puppies and cats/kittens entering shelters. Averaged across all communities over the 5-year period, there was an overall improvement in LRR of 62%. Within individual communities, the degree of improvement ranged from 18% to 96%. This improvement in LRR was accomplished through a wide variety of programs in each community based on resources and interests during the time period.

Keywords: *animal shelter, live release rate, dog, cat*

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For nearly half a century, the nonhuman animal welfare community has struggled with the problem of companion animal overpopulation, and a variety of strategies have been proposed to address this issue (Animal Welfare Forum, 1993; Moulton, Wright, & Rindy, 1991; Neidhart & Boyd, 2002; Rowan & Williams, 1987). However, there has been negligible evaluation of program effectiveness (Rowan, 1992; Wenstrup & Dowidchuk, 1999; Zawistowski, Morris, Salman, & Ruch-Gallie, 1998). Wenstrup and Dowidchuk (1999) found that the root causes of overpopulation, programs offered, and shelter effectiveness varied across different communities, suggesting that programs should be applied to individual community needs and be based on effective use of appropriate data.

Complete and accurate data are essential to assess the decrease in risk of intake and increase in live release and to ensure that community needs are met (Rowan, 1992; Rowan & Williams, 1987; Wenstrup & Dowidchuk, 1999; Zawistowski et al., 1998). Two of the key indicators of a community's performance with respect to saving animals' lives are shelter intakes and euthanasia, both of which should decrease as shelter goals are met. Survey-based estimates of intake and euthanasia have varied widely (Humane Society of the United States, 2009; Nasser, Talboy, & Moulton, 1992; Zawistowski et al., 1998), so it is difficult to know what to conclude about the magnitude of either national numbers or regional trends (Rowan, 1992; Rowan & Williams, 1987; Wenstrup & Dowidchuk, 1999; Zawistowski et al., 1998) other than both statistics appear to be decreasing. Reasons are numerous and varied for this lack of precision. They include historically low response rates to surveys (Clancy & Rowan, 2003; Zawistowski et al., 1998), no mechanism to control response bias (Rowan, 1992), and no accurate count of the number of animal shelters in the United States (Rowan, 1992).

Limited resources, poor record keeping, and a lack of recognition of the importance of accurate data for saving lives have resulted in suboptimal data collection and reporting in the field. Because local animal shelters are independent entities not connected to any national umbrella organization, there is no mechanism to mandate data collection across all organizations that would facilitate regional or national reporting (Rowan, 1992; Zawistowski et al., 1998). It is only within the past 10 to 20 years that software specific to shelter operations has been available to computerize record keeping. In addition, most shelters have limited resources, including budgetary limitations, which may preclude the purchase of computers and software or the ability to provide crucial staff training necessary for uniformity and accuracy in data entry. Even when computers are used, the different hardware and software platforms may not communicate with each other and may use different variables, different methods for categorizing variables, and different definitions for the same variables (e.g., intake and disposition). Thus, different data collection systems may summarize and describe shelter populations in entirely different ways. Finally, lack of participation of qualified scientists to guide data collection and reporting may be a barrier to

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maximizing use of data when it has been collected. All of these factors have, in many areas, significantly hampered accurate estimations of shelter population trends and made it difficult to measure the efficacy of programs in saving the lives of animals.

In an effort to remedy the lack of uniform data collection and reporting, leaders in the animal welfare field met in 2004 in an attempt to bring together the wide variety of organizations involved with pet population issues. The aim was to develop a system that would provide animal welfare organizations with guidance on how to collect consistent data that would result in comparable statistics from different organizations. The result was the Asilomar Accords (2004). Although it is difficult to ascertain what proportion of shelters/communities have implemented the Asilomar data collection guidelines, more than 65 coalitions in the United States are participating (Asilomar Accords, 2011).

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Uniform data collection and reporting are only two factors required for optimizing the lifesaving potential of shelter and rescue programs. Collaboration among all of the diverse entities (not-for-profit shelters, municipal animal control shelters, and nonsheltered community-based rescue groups) that typically work within any community setting is also essential to obtain an accurate picture of homeless animal numbers and outcomes. One of the first and most successful cooperative programs began in San Francisco in 1994. The two major companion animal welfare organizations in that city (San Francisco SPCA and San Francisco Department of Animal Care and Control) established a partnership with the goal of increasing the live release rate (LRR) within the city's shelters. LRR was calculated by all live outcomes (adoption, transfers, and return to caregivers) divided by all live intakes. LRR focuses the organizations on both increasing live outcomes and decreasing intake as ways to reach the goal of lowering shelter euthanasia. The groups modified their policies and structure to best support the goal and the LRR increased quickly over time (E. Sayres, personal communication, October 26, 2012). Due to its success, models similar to the San Francisco model have been supported by Maddie's Fund through a substantial grant program that requires data collection, reporting, and monitoring within a community as well as formal cooperation among stakeholders (Maddie's Fund, 2002). This program has clear data-driven goals that help the community partners collaborate on a goal. For example, in Florida, Dane County's LRR improved from 72% to 80% in 3 years, and in Mobile, Alabama, LRR increased from 32% to 57% over 7 years (Maddie's Fund, 2002).

More recently, the American Society for the Prevention of Cruelty to Animals (ASPCA) Partnership has also supported this community cooperation model through an intensive partnering program called ASPCA Partnership. This program is both a grant program and a coaching program. Community partners are trained on data collection and analysis as well as programs and processes to increase LRR, decrease intake, and improve community engagement. This model

also works to focus the community partners on a data-driven goal. The program has been active for more than 6 years with new communities joining each year. This article summarizes the intake, outcomes, and LRR from six geographically diverse ASPCA Partnership communities in which animal shelters and rescue groups chose to collaborate and share data in an effort to increase the number of lives saved. We analyzed the relationship between shelter intakes and outcomes, including LRR, for dogs, cats, puppies, and kittens. We did this over time (2007–2011) and across communities to evaluate the effectiveness of the ASPCA Partnership model.

MATERIALS AND METHODS

Partnership

To be considered as an ASPCA Partnership community, each city or county must include enough participating organizations to make up at least 80% of the total shelter intake for that defined area. We determined the percentage by querying intake numbers from other animal sheltering organizations within the defined area. The six ASPCA Partnership communities studied in this article were the first six to have accumulated at least 5 years of partnership data (listed in Table 1). The ASPCA Partnership goal for each of the communities was to work toward increasing LRR (live releases/intake; see Table 2 for a detailed definition) for the community's shelter animals. The selection of the communities has been modified over time with the six in this article coming to the ASPCA Partnership through existing relationships with the ASPCA Partnership or an application process. All of the partnerships include municipal animal control either through city contract with the Humane Society or as a brick-and-mortar location. Partner organizations shared statistics and could transfer animals to each other, but those animals would only be counted as intake once. However, animals transferred to nonpartner organizations that guarantee adoption would be considered a live release, and those outcomes would be incorporated into statistics such as LRR.

Interventions

Each partner community was encouraged to initiate intervention programs that were best suited to the community's needs, as identified from shelter statistics, and were within the scope of shelters' resources. The ASPCA Partnership provided advice and support on how to identify programs most likely to be of success, but it also encouraged experimenting with novel approaches. The common theme across all communities was the shared goal of collaboration and increasing LRR.

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TABLE 1
Communities Participating in ASPCA Partnership Program and Reporting Data for 2007 to 2011

Community (Date Started Partnership)	*Reporting Partner Organizations*	*Approximate Human Population (in 1,000s) in 2010*
Austin–Travis County, TX (January 2007)	Austin Humane Society;[a] Austin Animal Services;[b] Town Lake Animal Center;[b] Animal Trustees of Austin;[c] emanciPet[c]	1,024
Buncombe County, NC (July 2008)	Asheville Humane Society;[a] Humane Alliance[c]	238
Charleston County, SC (April 2008)	Charleston Animal Society;[b] Pet Helpers[a,c]	350
Cleveland, OH (July 2008)	Cleveland Animal Protective League;[a] Cleveland Division of Animal Control Services[b]	397
Spokane County, WA (August 2007)	Spokane Humane Society;[a] SpokAnimal C.A.R.E.;[a] Spokane County Regional Animal Protection Services;[b] Pet Savers[c]	471
Tampa–Hillsborough County, FL (May 2007)	Humane Society of Tampa Bay;[a] Hillsborough County Animal Services[b]	1,229

[a]Nonprofit sheltering organization (may hold animal control contract). [b]Municipal animal control. [c]Spay/neuter group.

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Monitoring/Reporting

All of the data reported here were from active partnership communities. Definitions for variables used by partner communities are listed in Table 2. Communities were required to submit a full calendar year of baseline data prior to partnership. Monthly data were required to be submitted during the partnership as well as 5 years of data postpartnership. Each community was assigned a liaison as well as a data expert to guide the groups within the community toward programs and processes likely to increase LRR.

When the ASPCA Partnership began, data from each partner were originally submitted online into a survey tool that was then placed into a spreadsheet on a monthly basis. In 2010, the process was moved to an online database into which data were submitted monthly by each partner. ASPCA Partnership shelter data experts were assigned to communities and trained the partners on data entry, definitions, and other procedures. Data were reviewed monthly by ASPCA Partnership staff to check for data anomalies and entry errors. Any potential errors or anomalies were investigated with the partner organization until

TABLE 2
Definitions of Data Collected, Indicator Variables, and Derived Variables From Communities Participating in the ASPCA Partnership Program

Dogs	Canines over 6 months of age.
Puppies	Canines up to and including 6 months of age.
Cats	Felines over 6 months of age.
Kittens	Felines up to and including 6 months of age.
Total intake	The total number of animals entering partner facilities except transfers between reporting partners (excluded to avoid double counting). Also excluded were animals returned within 30 days of being adopted.
Intake–nonpartners	This number includes animals entering partner facilities because they are surrendered, stray, in protective custody, or transferred in from agencies that are not reporting partners. It does not include animals who are dead upon arrival.
Intake–partners	Live animals entering agency from agencies or organizations that are reporting partners.
Live release rate (LRR)	This expresses, as a percentage of intake, the number of animals who left the agency alive (returned to owner, adopted, or transferred to another agency that guarantees adoption of accepted animals). Animals transferred between reporting partners or adopted and returned within 30 days are excluded from this calculation.
Total live release	The total number of animals returned to owner, adopted, or transferred outside the reporting partner organizations to adoption facilities that guarantee adoption of the transferred animals. Not included in this number are animals adopted but returned within 30 days.
Return to owner (RTO)	The number of lost or strayed animals who are successfully reunited with their owners.
Adoption	This number includes final adoptions only. It does not include animals placed in foster care or animals returned within 30 days of adoption.
Transfers–partners	This number includes animals sent to other agencies or organizations that are reporting partners in that community.
Transfer–nonpartners	This number includes animals who are sent to agencies or organizations that are not reporting partners in that community.
Euthanasia–owner requested	This is a narrow category that should only include animals who were brought to the facility specifically for a low-cost euthanasia option. Animals relinquished for adoption who are deemed "unadoptable" to the facility at the time of intake should not be included here.
Euthanasia–all other	The number of animals euthanized for all reasons except owner-requested euthanasia.

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they were resolved. Reports showing data from individual organizations and the community as a whole were distributed on a monthly basis to the partners in each community. On a quarterly basis, partners were sent trend analyses that noted areas of success and animal groups at high risk for euthanasia such as adult cats during seasons when kittens are more likely to be born.

Statistical Analysis

Data were maintained in an electronic spreadsheet and imported into a statistical software package (SPSS 20.0). Imported data were validated by checking summary statistics against the original spreadsheets. Because some shelters were not able to separate out puppies and kittens in their data entry procedures at the time of enrollment into the program, there was a transition period for achieving separation of puppies and kittens from adult animals in the data for some individual shelters. For this study, in order to make comparisons and track trends using the most uniform data set possible (e.g., separation of juveniles from adults and data for a complete calendar year), data are reported for six communities (Austin-Travis County, TX; Buncombe County, NC; Charleston County, SC; Cleveland, OH; Spokane, WA; Tampa-Hillsborough County, FL) and for the 5-year period from 2007 to 2011. Descriptive statistics for shelter intake and outcomes were generated and compared for dogs versus puppies and cats versus kittens over time and across communities. Percentage change (degree of improvement) in LRR was calculated as the absolute difference between LRR in 2007 and LRR in 2011 divided by the LRR in 2007. The approximate human population for the area served by each group of partners was obtained from the U.S. Census (2010). The linear association between continuous variables was assessed using Pearson's correlation coefficient (r).

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RESULTS

Improvement in LRR

Overall, across all six communities, LRR improved from 2007 to 2011, and up until 2010 it improved at a roughly similar rate for both canines and felines (Figure 1). After 2010, there was a substantial increase in the LRR for cats. The LRR across all communities in 2011 was 65%, compared with 41% in 2007, indicating an overall improvement in LRR of 62% over 5 years (Table 3). There were differences in the degrees of improvement by community during this period, ranging from 18% in Cleveland to 96% in Austin.

The average LRR for all felines across the six communities at baseline (2007) was considerably less (31%) than the average for all canines (52%). However, the degree of improvement in LRR for all felines, averaged over each community in 2011, was greater (111%) than it was for canines (40%; Table 3). The LRR for canines also showed a much smaller range (19%–62%) of improvement than cats (5%–205%) with four communities (Austin, Buncombe, Charleston, and Tampa) achieving >100% improvement in LRR for cats (Table 3).

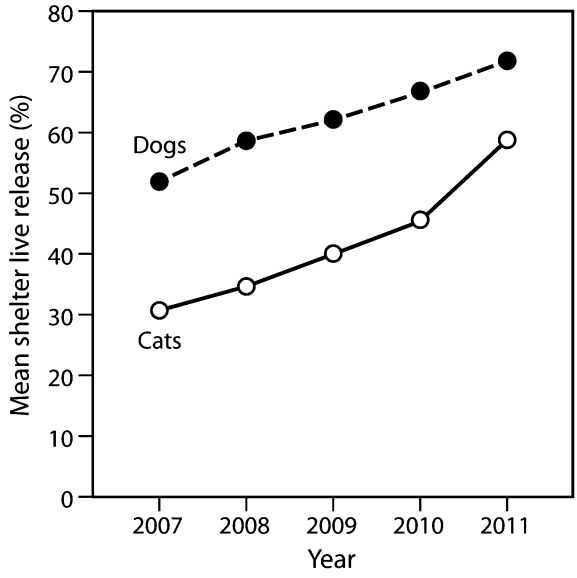

FIGURE 1 Community-wide shelter live release rate from 2007 to 2011 for all dogs and all cats in six communities participating in the ASPCA Partnership program.

TABLE 3
Live Release Rates for Canines and Felines in 2007 Versus 2011 in Six Communities Participating in the ASPCA Partnership Program

	Austin	*Cleveland*	*Buncombe*	*Charleston*	*Tampa*	*Spokane*	*Row Average*
			Total canine and feline LRR (%)				
2007	46	51	35	38	25	52	41
2011	90	60	63	66	44	68	65
% change	96	18	80	74	76	31	62
			Canine LRR (%)				
2007	56	48	52	50	37	67	52
2011	89	63	68	69	60	80	72
% change	59	31	31	38	62	19	40
			Feline LRR (%)				
2007	36	55	19	26	13	37	31
2011	90	58	58	63	28	55	59
% change	150	5	205	142	115	49	111

Note. LRR = live release rate.

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Intake and LRR

When trying to understand what may account for the marked differences in LRR among the six communities, it was logical to examine intake numbers. When changes in combined canine and feline intake and degree of improvement in overall LRR from 2007 to 2011 were examined, some communities showed marked decreases in intake and others showed a modest decrease from 2007 to 2011 for either canines or felines (Figure 2). Intake by species is further broken down by adult (dogs or cats) and juvenile (puppies and kittens) animals in Figure 3.

The approximate human population served in each of the six communities significantly correlated with total shelter intake for all canines ($r = 0.98$, $p < .001$) and all felines ($r = 0.82$, $p = .047$), but it did not correlate with total LRR for either canines or felines in 2011. In order to further examine what may account for the large range in differences in LRR and degree of improvement across the six communities, combined canine and feline intakes per 1,000 people for each community at baseline (2007) were plotted against percentage improvement in LRR from 2007 to 2011. There was a strong negative linear relationship between the percentage improvement in LRR by 2011 and total intakes per capita at baseline (2007; $r = -0.83$, $p = .042$) with the greatest degree of improvement by 2011 observed in the communities with the lowest initial per capita intake rate at baseline (Figure 4). By contrast, there was essentially no relationship between total number (as opposed to per capita measures) of shelter intakes at baseline and degree of improvement in LRR by 2011 ($r = 0.25$, $p = .64$). However, it should be noted that per capita intake estimates are at best very approximate because there was no way to precisely determine the actual human population served for any given group of shelters using the available data.

Outcomes and Live Release

The relationships among specific live outcomes (adoption, transfer to nonpartner shelters, and return to owner) for all felines and all canines are shown in Figure 5. The slopes of the lines in each panel provide an indication of how individual outcomes changed in relation to each other over time. Patterns varied dramatically across each community with respect to magnitude of different outcomes, rate of change over time, and how those factors varied with improvement in LRR. In most communities, however, the outcome that clearly was the most elastic was adoptions. Very little change in return to owner (RTO) was seen in any community or species with the possible exception of canines in Cleveland. The only outcome category that was significantly correlated with approximate human population was canine adoption ($r = 0.96$, $p = .002$).

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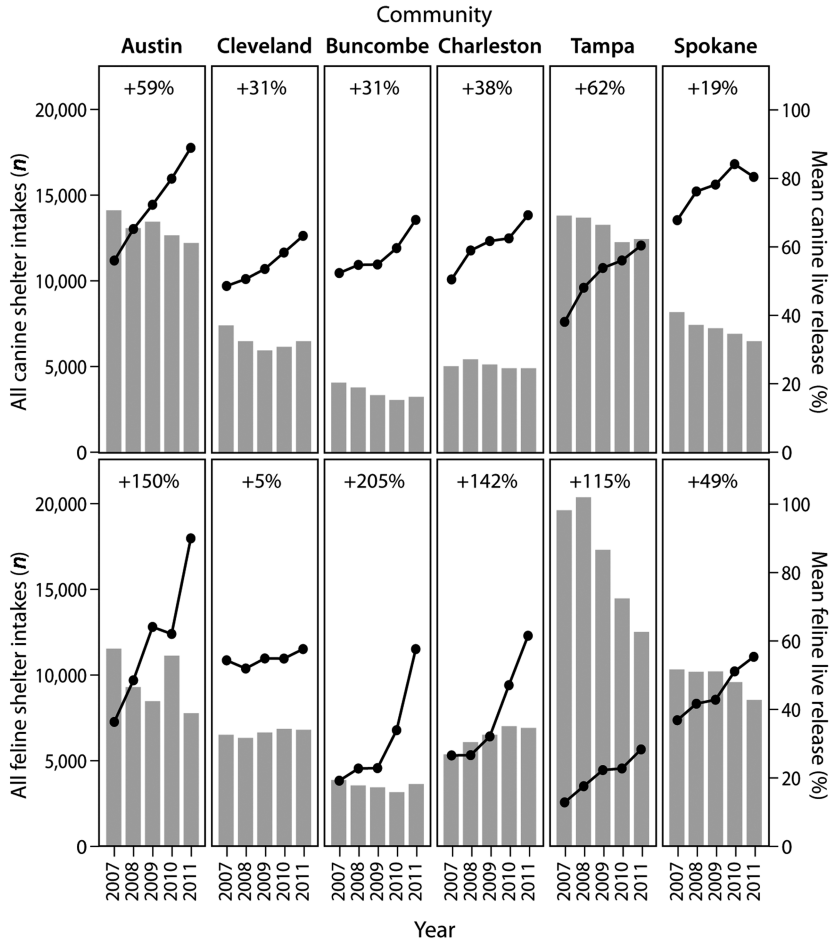

FIGURE 2 Increase in community-wide shelter live release for dogs (top) and cats (bottom) from 2007 to 2011 versus annual shelter intakes for six communities participating in the ASPCA Partnership program. Hollow bars = intake numbers; solid line = live release %; + percentage values indicate percentage improvement in live release from 2007 to 2011.

DISCUSSION

Promoting community collaboration to reach a clearly defined, data-driven goal in these ASPCA Partnership communities resulted in improvement in LRR for each one. This improvement occurred despite large differences in total intake, human population served, or the mix of dogs and cats and kittens and puppies.

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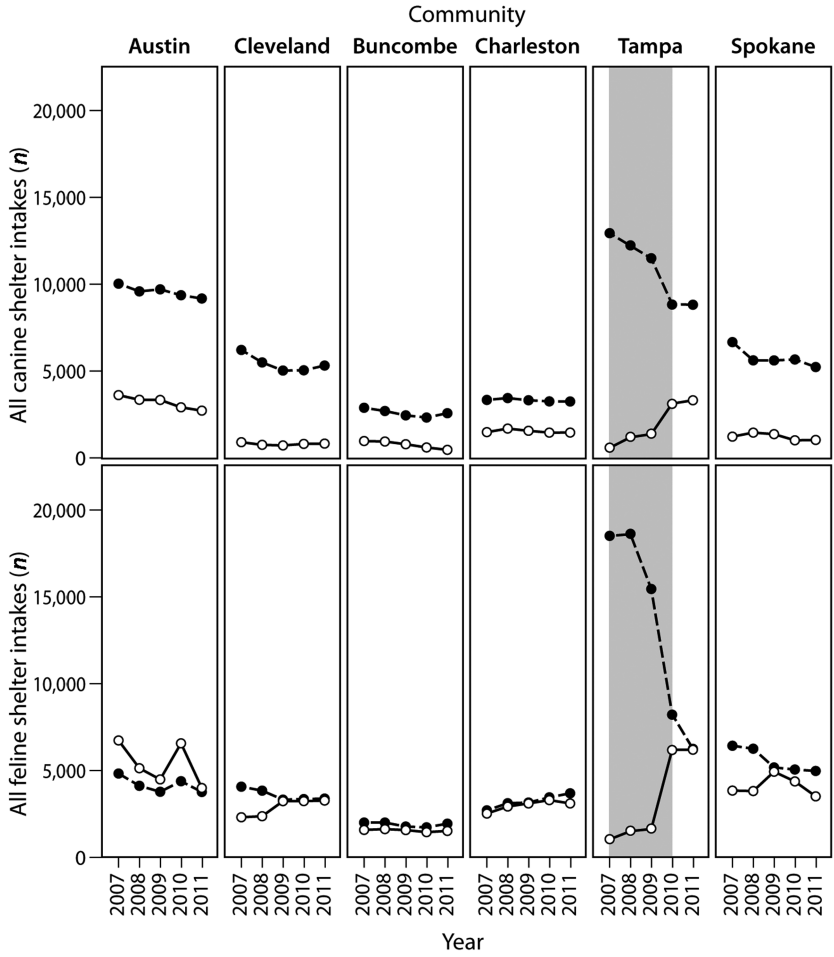

FIGURE 3 Change in community-wide shelter intakes for dogs and puppies (top) and cats and kittens (bottom) from 2007 to 2011 for six communities participating in the ASPCA Partnership program. Note that in Tampa, juvenile animals were not completely separated in the database until 2010 (gray bar). Black circles = adults; white circles = juveniles.

This improvement in LRR was accomplished through different mechanisms and programs in each community based on resources and interests. The communities in this study range in geographic location, human population size, and number of partnering organizations, suggesting that the findings reported here have broad application.

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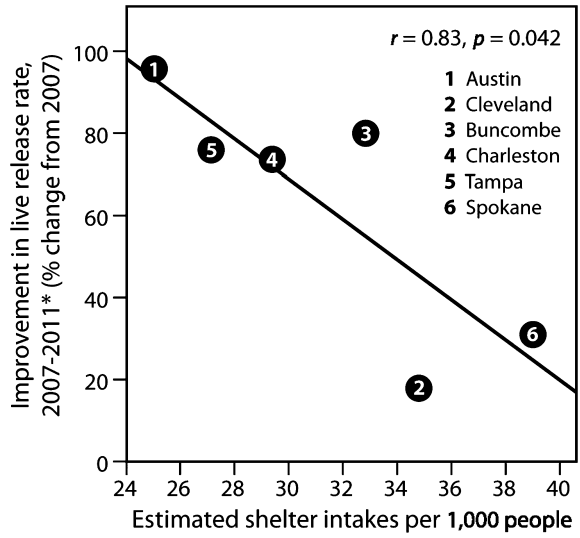

FIGURE 4 Percentage improvement in community-wide shelter live release decreased as estimated annual shelter per capita intakes increased for six communities participating in the ASPCA Partnership program from 2007 to 2011. Per capita intakes are based upon approximate human population served by shelters in each participating community. LRR = live release rate. *Improvement is the percentage increase in LRR from 2007 to 2011 in each community.

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This data set differs from many shelter data sets in that it is community-wide data, includes at least 80% of the shelter intake across the entire community, and the data were regularly validated through a systematic process to limit the likelihood of data being miscoded or otherwise incorrectly entered. Although the methods for how to achieve an increased LRR might differ between communities, the data collection, data analysis, partnership agreements, and act of setting goals were consistent across communities.

Several things are important to mention about these data. First, there were marked differences across communities in the relationship between total canine intakes and total feline intakes with some communities having roughly comparable canine and feline intakes and others having very different numbers of canines versus felines entering the shelter system. Second, with the exception of Tampa, cat and kitten intakes were nearly identical within each community over the 5-year period. Canine intakes, by contrast, showed a consistently lower intake for puppies in each community compared with adult dogs except for Tampa, where the lack of separation of adults and puppies made this comparison inapplicable. Tampa did not systematically separate adults from juveniles until January 2010,

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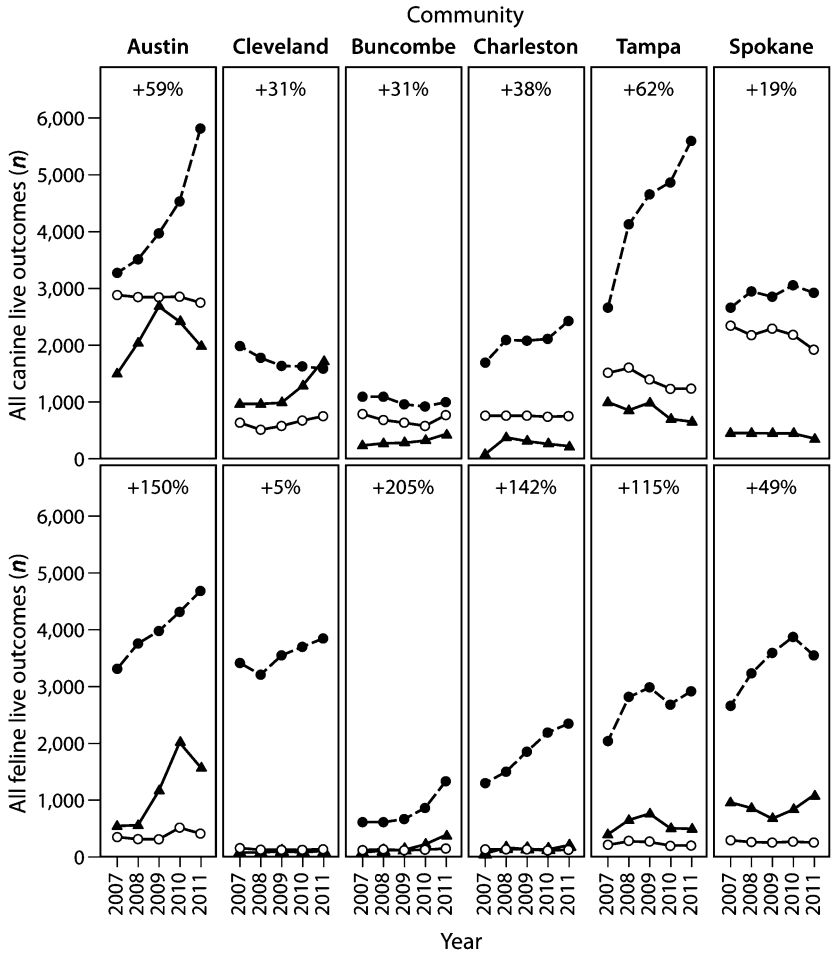

FIGURE 5 Type of live outcome by year for all canines and all felines entering shelters in six communities participating in the ASPCA Partnership program from 2007 to 2011. Black circles = adoption; white circles = return to owner; triangles = transfer to nonpartner organization; + percentage values indicate percentage improvement in live release from 2007 to 2011.

which explains the large difference in counts between adults and juveniles in Figure 3. Also of note, Tampa Animal Control experienced substantial budget cuts in 2009, which led to a cutback on hours for accepting owner-surrendered pets and to discontinuing the pickup of free-roaming cats by animal control and likely contributed to the decrease in intake. These changes likely influenced

intake in Figures 2 and 3 and thus may have influenced outcomes due to lower intake.

The increase in LRR was greater for felines than for canines. There may be multiple drivers for this trend. Many shelters had traditionally focused more programs and processes on canines, leaving greater opportunity for improvement in LRR for cats. Further, there may be a ceiling effect in play as the LRR for cats started lower than dogs, thereby allowing more opportunity for greater gains.

The variety of programming implemented in the communities was quite large—high-volume, high-quality spay/neuter services, adoption promotions, new fund-raising strategies, community engagement, and support for free-roaming cats are some examples. Although different communities each used a different mix of programs and may have changed programs over time, the driving connection between all communities was the focus on community partnership and a shared goal to improve LRR. These results support the conclusion that there are many different potential combinations of programs that are likely to result in improving LRR and that a collaborative focus on improving LRR can be a productive, overarching community goal that will allow each organization the flexibility it needs to be successful.

Although it is impossible to pinpoint causation between any one program and the increase in LRR, it is of interest that the upward trend in overall LRR for cats starting in 2010 correlates with the time in which the ASPCA Partnership began heavily promoting fee-waived adult cat adoptions for community partners. Fee-waived adoptions for cats had been shown to increase adoptions at the Wisconsin Humane Society (WHS; V. Wellens, past CEO of WHS, personal communication, November 2005), but many shelters were concerned that waiving the adoption fee would decrease the attachment or bond to the cat and result in more returns to the shelter. Research found the bond unchanged between those who paid an adoption fee and those who had the fee waived (Weiss & Gramann, 2009). These data helped encourage ASPCA Partnership communities to conduct fee-waived events.

A program focused on the live release of free-roaming, semisocialized cats entering the shelter system in Charleston and Spokane is likely to impact future statistics. Charleston began a trap-neuter-return (TNR) program late in 2010 in which healthy, free-roaming cats were captured, sterilized, and then released back to the area of capture. This program takes cats who were previously almost guaranteed to be euthanized and provides a live release outcome. Spokane promoted TNR through education and sponsored regular spay/neuter clinics to decrease intake. They also developed an alternative placement program to farms and barns to improve LRR for poorly socialized or otherwise unadoptable cats.

Of the three categories that make up the outcome of live release, adoptions had a disproportionate influence on total LRR (Figure 5). Of the options for increasing LRR, adoption was the most plastic and easily modified program,

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including fee-waived promotions, implementation of the ASPCA Meet Your Match program (ASPCA, 2007), modifying or limiting application of policies that are a barrier to adoption (e.g., requirement for a fenced yard for dogs and landlord approval prior to adoption), and using innovative marketing promotions (such as "certified preowned cats"). However, there was a tendency for reported adoptions to be negatively influenced by transfer to nonpartner organizations (Figure 5) for several of the communities.

This may simply reflect that partner and nonpartner organizations were all adopting to the same potential pool of new owners within a community or that more easily adoptable animals were transferred to nonpartners. The data suggest that the important statistic to monitor is overall LRR. Indeed, this trend taken to its logical conclusion could suggest that in a successful community program, individual shelter adoption numbers could actually decrease somewhat as the larger, better resourced organizations become the place where the animals who are more difficult to adopt are rehabilitated over time and animals who are easier to place are adopted through other channels.

There was little improvement in RTOs for canines or felines even though many of the communities had goals and implemented programming to address RTO. There are a number of possible explanations. Recent national research has indicated that a substantial proportion of presumed "lost pets" in a shelter are actually abandoned because the numbers of pets getting lost from the home were much less frequent than could account for the numbers of homeless dogs and cats in shelters (Weiss, Slater, & Lord, 2012). This would result in a ceiling on the possible improvement of RTO and diminishing returns for some shelters attempting to improve RTO.

It is also possible that because RTOs of dogs and sometimes cats are often the responsibility of municipal animal control (which make up only one component of any community's partner organizations), there are fewer resources to leverage for improving RTOs. Also, RTOs are influenced by pet licensing laws, fees, enforcement, and other legally prescribed procedures within a community. Even over a 5-year period, these may be less amenable to modification because they typically require legislative action that is beyond the direct control of the organizations involved. Therefore, achieving substantial improvements in RTO may require a more long-term perspective.

The strong correlation between per capita intakes and improvement in LRR (Figure 4) highlights the possibility that those communities whose unwanted pet population is under better control have greater capacity to focus on programs that will result in improvement in their LRRs. These results suggest that communities that have higher intake are essentially starting behind communities that already have lower per capita intake and will likely take longer to catch up to similar LRRs. Nevertheless, for either type of community, similar rates of improvement appear possible. This would support the importance of decreasing intake in

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responsible ways, such as programs to increase the number of animals in the community who are sterilized, which would result in a lower population of unwanted or stray animals. Decreasing intake would allow for more resources to be invested in each animal and potentially increase the possibility for live release of the animal.

We can only speculate on the causes of the lower intakes in some communities. It would seem that factors outside the shelter walls, such as accessible spay/neuter, safety net programs to keep pets in homes, better public awareness of the issues, and a longer and stronger animal welfare presence in the community by sheltering organizations, could all be responsible for lower shelter intake. Unfortunately, there was insufficient accounting of spay/neuter surgeries and/or insufficient expansion of spay/neuter programs in the target communities to reliably explore whether changes in intake were associated with implementation of those programs.

When reviewing the LRR of felines (as in Figure 2), the small degree of improvement in LRR over 5 years for felines in Cleveland may be explained. Cats are not provided state support through animal control budgets in Ohio, and the responsibility for support of all owner-relinquished cats and stray cats falls on nonprofit organizations. Of greatest note here is the increased LRR of cats in the other five communities where animal control resources are also devoted to helping cats, and both the government organizations and the nonprofit organizations can pool resources to work together to save more feline lives.

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Limitations

Despite the large amount of data collected within individual communities, only six individual communities provided data, so extensive formal statistical comparisons among communities were impractical due to low statistical power ($n = 6$). For a small portion of the data set, there was some overlap between truly stray and truly owned cats, making those numbers somewhat less precise. For example, local ordinances in some communities consider a cat owned if someone has fed the cat for some number of days. Most communities did not have agreed-upon definitions for these various categories at the start of the partnership.

Another limitation is that per capita measures of variables such as intake and adoption must be regarded as approximate, rough indicators of trends rather than absolute numbers. This is because it was not possible to determine whether the geographic area served by shelter partners completely overlaps with the census area for which human population numbers are reported. Also, there is no way to tell if the shelters received any animals from people residing outside the geographic limits of the census area. This can be done more precisely using Geographic Information Systems mapping technology, but that would require

geocoding individual locations for every shelter intake and adoption (Patronek, 2010).

Traditionally, many shelters have not separated puppies from adult dogs or kittens from adult cats in their record keeping. This was true in two of the communities (Cleveland and Tampa) during part of the time of this report (Figure 2). This graph also illustrates the importance of understanding how the data are collected and coded when reviewing shelter data patterns.

CONCLUSION

All six communities participating in a structured, collaborative program requiring uniform collection and sharing of data to reach a data-driven goal were able to improve LRR over the 5 years of this study. Focused grant support and the organized planning process encouraged by participation also provided communities with the opportunity to experiment with new programs and procedures and to adjust their strategies based on results. For many organizations, this level of flexibility was new, liberating, and energizing. Despite the great diversity in approaches, resources, and the size and location of the communities, the one unifying factor in the path to success was the commitment among organizations to work together to achieve change. The results from these diverse communities demonstrate how with sufficient support and guidance, organizations within communities can rally around the shared goal of improving data collection, monitoring, and reporting as a tool for fostering collaboration and innovation to substantially increase community-wide LRRs from shelters.

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