International Comparison of Animal Shelter Oversight, Policies, and Results

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Introduction

Animal shelters are a public concern because people are interested in animals and their welfare. At the community level, many members of the public have companion animals, such as dogs and cats, as pets. Individuals within a community come into contact with animal shelters to adopt a pet, surrender a pet, bring in a stray animal they found, use low cost spay/neuter services and pet food pantries, or to donate or volunteer. In all of these situations, the quality of the animal shelter is key, and this study aimed to help improve shelter practices and performance.

Some animal shelters collect metrics such as intake and output. These databases generally include save rate (percentage of animals leaving the shelter alive), intake data (sources of incoming animals, such as owner surrendered, stray, seized by animal control personnel, or transferred from another shelter), and outflow data (destination of outgoing animals, such as adoption, transfer to a rescue group, returned to owner, or euthanasia). The book *Every Nose Counts: Using Metrics in Animal Shelters* reviews these metrics in depth and explains the importance of collecting and analyzing shelter data (Scarlett et al., 2017). The authors explain how collecting data over time can lead to improvements in shelters such as better management of populations, improvements in adoption rates, and assessing whether shelter capacity relates to disease management. Our study seeks to expand upon this idea to help to improve animal shelters and make suggestions.

Several studies have investigated the relationships between economic measures, social factors, and the Animal Protection Index (API) from World Animal Protection. Some have assessed up to fifty countries while others focused on one country. Holst and Martens (2016) looked at how Civic Activism Index, GDP per capita, total number of animal protection organizations and Polity Score (a measure of democracy) predicted the API score (Holst & Martens, 2016). They found that polity score and number of animal protection organizations predicted API score: as number of animal organizations and Polity score increased so did API. Another relevant article written by Richardson (2019) compared HDI and GDP per capita to analyze animal welfare in a few different countries (Richardson, 2019). The author found that HDI and GDP did not predict API score. Sandøe et al. (2019) provided a complete analysis of Danish shelters from 2004 to 2017 and they looked at shelter metrics and improvements made over time (Sandøe et al., 2019). They found that there was a slight decline in intake and euthanasia rates in dogs, although there was an increase in cat intake and euthanasia rates over the period of the study. Another similar study compared animal shelter trends within the United States over time (Rowan & Kartal, 2018). The authors found that the intake of dogs into shelters and the euthanasia rates have declined over time.

For the countries assessed in the Animal Protection Index (API) from World Animal Protection, this study sought to identify which countries had a national or organizational (e.g., SPCA) database for animal shelter metrics. We then compared countries with and without a database with respect to GDP per capita, PPP, Human Development Index (a measure of development; HDI), and overall API rating. Based on the review of previous literature, we hypothesized that countries with a shelter database would have higher HDI, GDP per capita, PPP, and overall API rating.

Methods and Materials

Countries chosen and why

The Animal Protection Index (available for 2014 and 2020) assesses animal welfare issues using ten different indicators in four different categories/goals for a total of 50 countries. In the 2014 version, these 50 countries were selected using the UN Food and Agriculture Organization Statistical Yearbook for World and Agriculture 2012 for being the top 50 producers of beef, sheep, pork, eggs, and milk; the same countries were assessed in 2020. The 50 countries were grouped into Africa, Americas, Asia, Europe, and Oceania (which includes Australia and New Zealand). The website scoring system used scores of A (best score) through G (worst score) to rank each country according to the 10 indicators; we used the 2020 rankings. Each of the 10 indicators is split into any relevant legislation, next an analysis of the legislation strength is assessed, and finally there are policy and legal recommendations for each country. The main goals of the site are to support the following: 1) recognition of sentience in animals and prevention of animal suffering; 2) development of animal welfare legislation and policy; 3) creation of government bodies that support animal welfare; and 4) adherence to international animal welfare standards. Indicators 1 and 2 fall under goal number one, and include formal recognition of animal sentience and laws protecting animals from suffering either by cruelty or failure to act. Indicators 3 through 8 fall under the second goal, and include analysis of laws applying to farm animals, animals in captivity, companion animals, animals used for drought and recreation, animals in scientific research, and wild animals. The 9th indicator applies to goal number 3, and includes whether the government is accountable for improving animal protection at a high level and will provide resources for this. The 10th indicator falls under goal number four, this is that the government has incorporated into legislation principles on animal welfare put forth by the World Organization for Animal Health.

Animal Shelter Databases

For each country we searched for databases with animal shelter statistics. The databases could be either national (e.g., Shelter Animals Count for the U.S.) or from organizations within a country (e.g., Dog's Trust, the largest dog rescue charity in the UK; in 2019, they cared for more than 14,000 dogs).

We used two different methods to search for databases: conducting online searches and contacting organizations listed on the API site under "Establishment of supportive government bodies." For the first method, we conducted Google searches using the terms "*country name* animal shelter national data" and "*country name* animal shelter statistics." Using this method, we were found databases that we were already aware of such as those of the US, Canada, Australia, and UK. Next, we used the API Protecting companion animals indicator and started off by going down the list with the best scores first to see if these countries had good government accountability and what organizations were in charge of animal welfare. We then searched their websites and contacted them. We used grades from Protecting companion animals (API) and found no grades of A, so we searched countries with grades of B and also looked on the API site under "Establishment of supportive government bodies" to find which agencies might have shelter statistics. From there we went down the list in decreasing companion animal grades until we got to F. Throughout this process, we contacted government agencies listed on the API site as in charge of companion animal welfare, individual shelters, as well as academics who have

published on shelters and shelter animals. Government organization examples are the Italian Ministry of Health, South Korean Ministry of Agriculture, Food and Rural Affairs, and the German Federal Ministry of Food and Agriculture. Shelter examples of who we contacted are Pakistan Animal Welfare Society, La Spa (French SPCA), and the KSPCA (Kenya). We also contacted an individual academic: Peter Sandøe, University of Copenhagen, Denmark. To the furthest extent possible we tried to obtain data for 2019 (to avoid issues associated with the pandemic), but this was not always possible (Denmark: 2017; Germany: 2016).

HDI, GDP per capita, PPP, and Animal Protection Index

For each country, we also recorded HDI, GDP per capita, PPP, and the Animal Protection Index overall rating. According to the UN Human Development Report 2020, "Human Development Index (HDI): A composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living." (UNDP, 2020). This measure is used in this research to evaluate the development of the 50 chosen countries. We also use GDP per capita, PPP (current international $) to measure economies. The definition according to the World Bank:

> This indicator provides per capita values for gross domestic product (GDP) expressed in current international dollars converted by purchasing power parity (PPP) conversion factor. GDP is the sum of gross value added by all resident producers in the country plus any product taxes and minus any subsidies not included in the value of the products. conversion factor is a spatial price deflator and currency converter that controls for price level differences between countries. Total population is a mid-year population based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. (*GDP per Capita, PPP (Current International $) | Data*, n.d.).

In addition to HDI and GDP, we recorded the overall rating from the Animal Protection Index (described above). We assigned numbers to the ratings, ranging from 1 (a rating of G; the lowest rating) to 7 (a rating of A; the highest rating).

Statistical analysis

We classified each country as database present or absent and compared HDI, GDP per capita, PPP, and the Animal Protection Index overall rating between countries with and without a shelter database using t-tests (software JMP Pro, version 15.0.0). We also present descriptive statistics (mean $\pm$ *SD*, range).

Results

Of the 50 countries in the API, no country received an overall grade of A. The number (and %) of countries with each grade were as follows: six grades of B (12%); nine grades of C (18%); sixteen grades of D (32%), including the U.S.; ten grades of E (20%); seven grades of F (14%); and two grades of G (4 %).

We could not find contact information for either a single government agency overseeing animal welfare or an animal welfare organization for 20 countries (40.0%); a majority of these countries had grades from D-G for Protecting Companion Animals (13/20; 65.0%). For the remaining 30 countries, we found a national or organizational database by online searches or existing contacts for six countries (Canada; U.S.; UK; Japan; Australia; Spain). We contacted government bodies and/or animal welfare organizations for the remaining 24 countries (sometimes more than one government body or animal welfare organization per country; range, 1-30: 15/24, 62.5%, did not reply; we received a reply from at least one government body or animal welfare organization for 9/24, 37.5%). From these 9 replies, we received shelter data from four additional countries (Iran; Switzerland; Denmark; Germany), resulting in data from ten countries total. The remaining five countries could not provide data (reasons given: Kenya, paper copies only; South Africa, looting; New Zealand, reorganizing; Austria and Sweden, not available).

Table 1 provides information on the 10 databases found during our searches. We recorded relevant API scores, type of database, sources of data, year represented by data, number of years the database existed, and number of shelters contributing to the database. Not all ten countries with a database had high ratings for the overall API rating (e.g., only three B ratings) or for Protecting companion animals (e.g., only two B ratings). Additionally we found extensive variation in the number of years each database existed (from three months in Iran to more than 46 years in Japan) and in the number of shelters contributing to the database (from one in Iran to more than 2,000 in the U.S.). The fact that we have any information from Iran reflects the interest and dedication of one individual running an animal shelter there.

Table 1 – Shelter Databases

Country	Type of Database	Overall API grade	Grade for Protecting Companion Animals	Source of Data	Number of Months (year)	Years data collected to date	Number of Shelters included in source
Canada	National	D	D	Humane Canada	12 (2019)	2003-present	125
U.S.A.	National	D	F	Shelter Animals Count	12 (2019)	2016-present	>2,000
U.K.	Organization	B	B	Dog's Trust	12 (2019)	2009-present	21
Australia	Organization	D	D	RSPCA	12 (2019)	1999-present	8 main centers
Japan	National	E	D	Animal Welfare Management Administration Office	12 (2019)	1974-present	N/A
Switzerland	Organization	B	B	Swiss Animal Protection	12 (2019)	2011-present	~60
Spain	Organization	C	D	Affinity Foundation	12 (2019)	2013-present	N/A
Denmark	Organization	B	C	Danish Center for Companion	12 (2017)	2004-2017	37

				Animal Welfare, University of Copenhagen			
Germany	Organization	C	C	German Animal Welfare Organization	12 (2016)	2016	526
Iran	Organization	G	G	Vafa Shelter	3 (2019)	2019	1

Table 2 includes descriptive statistics for the Human Development Index, GDP per capita, PPP, and the Animal Protection Index for countries with and without shelter databases. Note that there are only nine countries with databases included because Iran could only provide three months of data. Countries with a shelter database had higher values for HDI, GDP, per capita, PP, and overall API rating when compared with countries without a shelter database (HDI, t=8.49; df=44.45; P<0.0001; GDP, t=7.81; df=17.73; P<0.0001; API, t=2.80; df=13.49; P<0.02).

Table 2 – Descriptive statistics: Mean $\pm$ *SD* (range)

Variables	Countries without a shelter database (n = 41)	Countries with a shelter database (n = 9)[1]
Human Development Index	0.75 $\pm$ 0.13 (0.39 - 0.94)	0.93 $\pm$ 0.02 (0.90-0.96)
GDP, per capita, PPP	21,167 $\pm$ 16,085 (1,277 – 59,469)	54,487 $\pm$ 10,353 (42,185 – 73,114)
Animal Protection Index[2]	3.61 $\pm$ 1.30 (1 - 6)	4.78 $\pm$ 1.09 (3 - 6)

[1] Database contained at least one year of shelter records

[2] Overall ratings possible ranged from G (score of 1; lowest rating) to A (score of 7; highest rating); no country received an A rating

Table 3 represents the metrics collected by the nine databases with at least one year of data; length of stay is time from intake to adoption. Whereas all ten databases included total intake of dogs, nine provided outcomes, and seven included sources of dogs. Databases typically did not include length of stay, number neutered, or reason for euthanasia.

Table 3 – Metrics included in the nine databases with at least one year of shelter records

Country	Total intake	Outcomes	Sources	Length of stay	Number neutered	Euthanasia reason
Canada	Y	Y	Y	Y	N	N
U.S.A.	Y	Y	Y	N	N	N
U.K.	Y	Y	Y	N	Y	N
Australia	Y	Y	N	N	N	Y
Japan	Y	Y	Y	N	N	N
Switzerland	Y	Y	N	N	N	N
Spain	Y	Y	N	Y	N	N
Denmark	Y	Y	Y	N	N	N
Germany	Y	N	Y	N	N	N

Discussion and Conclusions

Our research looked for the presence or absence of animal shelter databases for the 50 countries on the API site. Our findings indicated that some countries maintain national databases whereas others have organizational databases. In total, we found ten databases, three national and seven from organizations. Among databases we found substantial variation in API ratings, number of years each database existed, and number of shelters included in the database. Also interesting, was that although the U.S. database had the largest number of contributing shelters, the country received a grade of F for Protecting companion animals. This grade reflects the fact that the Animal Welfare Act does not apply to small breeding operations, pet stores, or to dogs in either shelters or homes.

For the nine countries with at least one year of data (Iran excluded), we found that countries with a database had higher values for the Human Development Index (HDI), GDP per capita, PPP, and API than countries without a database; differences were more pronounced for HDI and GDP than for overall API rating. Holst and Martens (2016) did not find that GDP per capita predicted API ranking, but they did find that both polity score and number of animal protection organizations predicted API score (Holst & Martens, 2016). Richardson (2019) found that neither HDI nor GDP per capita were correlated with API scores.

After collecting numerical data from all ten databases, we discovered there was variation in the metrics collected by each country. Every country collected data on total intake of dogs into their shelters, indicating that this is a common and important metric for shelters to collect. Almost all of the databases recorded dog outcomes (Germany was an exception), which is also significant and indicates the importance of this metric. The majority of the shelters recorded the source of the animals coming into the shelters (another rescue, stray, owner surrender, or elsewhere). This could also be another important metric to help keep track of shelter animals. On the other hand, only a few countries collected data on length of stay, number of animals neutered, and reasons for euthanasia. In summary, international comparisons of shelter metrics are likely only possible for total intake and total outcomes, and even these comparisons are difficult because of the small number of databases.

Limitations of the present study derive from the small number of databases found (ten), despite extensive effort. The small number of databases makes it challenging to make quantitative international comparisons. Additionally, the years for which we obtained data differed somewhat: most data were collected for the year 2019 apart from Germany (2016) and Denmark (2017). Germany only had data available for 2016 because their data was from a survey sent out during that time period. Denmark's data were collected from shelters from 2004 to 2017 for the research article Sandøe et al. (2019), but after contacting the author, he thought data from 2019 would be very similar to the 2017 data.

In conclusion, this study found that relatively few countries of the 50 examined maintain a shelter database, and databases were more typically organizational than national in nature. Additionally, databases varied widely in number of contributing shelters, length of time in existence, and metrics provided. Those countries with a shelter database have higher values for

GDP per capita, PPP and HDI, and overall API rating than countries without a shelter database. These findings suggest that if the GDP per capita, PPP and HDI of countries were to improve, animal welfare and the shelters within these countries would likely improve as more resources become available. Based on the results of this study, we suggest that animal shelters and shelter databases work to standardize metrics to allow broad international comparisons. Future studies could possibly expand on this research by collecting enough samples from even more countries by contacting specific shelters instead of searching for national databases. Although exploratory in nature, these data are believed to be the first to examine whether presence of a shelter database is linked to degree of development, economic measures, and an international animal protection rating. We encourage ongoing interest and support for more research on this topic.

Leadership Statement

This research experience was eye opening to me as I learned about other countries practices and policies related to animal welfare. This topic is important to me because I would like to become a vet and have been involved in dog showing for a little while now. Animal welfare, especially companion animal welfare, is important to me and I would like to be able to become educated in these different views so that in the future I can help to educate people on humane practices and put the welfare of the animal as a priority. I want to be able to use this experience to grow to appreciate different opinions and learn to form my own. Having a background in dogs and their welfare pushes my continued interest in this topic and desire to use what I learn to become a leader and teacher. This opportunity pushed me in my ability to solve problems, grow in my patience, work with other people, and create a project from nothing. It helped me grow in my independence and to persevere through the thick and thin of research. This summer helped me become more flexible as a leader because I had to adapt as the project changed when certain data were not available. In addition to all of this, the research helped me learn to appreciate the opportunities and circumstances I am a part of, no matter how big or small they are; this is an important concept for leadership as well. I also grew in my ability to acknowledge and respect different cultural beliefs through my research this summer. Overall, I was able to grow as a leader this summer through the opportunities Laidlaw research gave me.

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