

COMMUNITY CASE REPORT

# Comparison of the Number of Dog Adoptions in a Pilot Program That Restored Limited Visitor Access to Kennels: A Community Case Report

Michael Loizos Mavrovouniotis

OC Shelter Partners

## Abstract

In the 2020–2022 pandemic period, the Orange County (California) animal shelter used an appointment-based adoption system in which visitors did not have access to the kennels. In a 2023 pilot program, visitors were allowed to view some large dogs in their kennels for a limited portion of the shelter's hours of operation. More adoptions than expected were observed during viewing hours compared to other days and times during the pilot period. Compared to the same calendar period in the preceding year, kennel viewing periods showed an 82% increase in adoptions while appointment-only periods showed only a 4% increase. A higher proportion of large dogs were adopted from the viewable kennels than from the general inventory of large dogs. This was not a randomized controlled study, and these estimates are based solely on retrospective comparisons. It is not known how these increased adoption levels scale if access is available to more kennels or for a substantial portion of the hours of operation.

**Keywords:** *animal shelter; animal adoption; dog adoption; kennel; kennel access; kennel viewing; shelter visitor; adoption appointment*

Received: 24 February 2024

Revised: 17 April 2024

Accepted: 1 May 2024

Published: 20 August 2024

## Correspondence

Michael Loizos Mavrovouniotis  
OC Shelter Partners,  
i250 806 East Avenida Palizada  
San Clemente, CA 92673  
Email: mlmavro@yahoo.com

## Reviewers

Tennille Lamon  
Robin Chadwin

## Supplementary material

Supplementary material for this article can be accessed here.

During the COVID-19 pandemic (2020–2022), many animal shelters modified their operations, limiting visitor access to kennels. As the pandemic abated, there was considerable variation in the timing and extent of return to normal operations. Large changes in intakes and adoptions during and after the pandemic<sup>a</sup> also impacted shelter policies. Some shelters retained significant components of kennel restrictions or other pandemic-era procedures into 2024. Reduction of kennel access has also occurred outside the pandemic context.<sup>b</sup> Whether prospective adopters should be permitted to visit a shelter's kennel areas and, more specifically, whether viewing dogs in their kennels impacts adoptions remain, therefore, relevant questions.

Many effects on adoption have been studied<sup>1–7</sup> but visitor access to kennels has not attracted the attention of researchers. A comprehensive review<sup>1</sup> carried out in 2017 (prior to the COVID restrictions) makes no reference to

studies of whether visitor access to kennels affects adoptions. Prior to the pandemic, this was not a pressing issue.

Comparing a given shelter's pre-pandemic adoption numbers (when there was more access to kennels) to the in-pandemic adoptions (when there were appointment requirements or otherwise limited access) would face difficult confounding factors: As supply and demand were significantly influenced by the pandemic, there is no clear way to isolate the effect of the adoption system itself.

A comparison across shelters, for a fixed time period, is equally problematic. While there have always been different models in use in different shelters, these are usually a reflection of community resources and preferences. Consequently, a cross-sectional comparison would face community-related confounding factors.

This report uses data from a pilot study at a large government-run shelter, to show changes in adoption numbers when an appointment-based system restores some access to kennels. We hypothesize that more adoptions occur when visitors can view dogs in their kennels. We further hypothesize that viewable dogs are adopted at higher rates than other dogs in the same size category.

<sup>a</sup> Shelter Animals Count 2023 report, <https://www.shelteranimalscount.org/wp-content/uploads/2024/01/Full-Year-2023-Report.pdf>

<sup>b</sup> News report on the Humane Association of Warren County: <https://www.wdtn.com/animals/local-shelter-responds-to-critics-over-new-adoption-process/>

Table 1. Shelter statistics for live outcomes.

	2019	2020	2021	2022	2023
Adoption	2,890	1,577	1,298	1,912	2,428
Returned to Owner (RTO)	2,098	1,315	1,303	1,477	1,359
Transferred to another agency	478	462	576	606	855
<b>Total live outcomes</b>	<b>5,466</b>	<b>3,354</b>	<b>3,177</b>	<b>3,995</b>	<b>4,642</b>

## Background

Orange County Animal Care (OCAC) is a large, local government-run animal shelter located in Tustin, California. The shelter's dog live-outcome statistics for the years 2019–2023 are shown in Table 1. Its complete published statistical reports for these years are provided in Supplementary Material. Prior years are not comparable, because the shelter relocated its facility in 2018.

Prior to the pandemic, the shelter allowed visitors access to all adoptable animals in the kennels during all its hours of operation (daily, 11 am – 5 pm, i.e. 42 h/week). From March 2020 to July 2023 the shelter entirely suspended visitor access to the kennel buildings and deployed an appointment-based adoption system. Prospective adopters made an appointment and preselected dogs to visit from web photos and basic demographics (sex, age, weight, color, breed, intake date, and intake city). Visitors were escorted to supervised visits with the dogs they selected and received additional dog suggestions from staff.

In this shelter (across the periods under consideration) dogs are adopted on a first-come, first-served basis. Adopters can have the dog they choose, subject only to a narrow set of pre-stated constraints for some dogs (namely the presence of other dogs or children in the household). Dogs are usually adopted at the time of the in-person visit and leave the shelter immediately. The paperwork and any last-minute tasks (microchipping) take place in parallel. Adult adoptable dogs usually undergo spay/neuter in advance, but there are occasional tentative adoptions pending a spay/neuter or other procedure.

Post-pandemic, as other shelters allowed visitors back to the kennel areas, OCAC maintained its appointment-based system. At various points, the shelter made modifications to how appointments could be made, the duration of visits, and the maximum number of animals that a visiting household could see (sequentially) in one appointment. However, visitors could not walk through the kennel area to see adoptable dogs.

An Orange County Grand Jury report<sup>8</sup> challenged this adoption procedure. In response to this report, the shelter implemented a pilot program that made a portion (less than a quarter) of the kennel areas viewable for a total of 5 h per week. This program was intended to collect data to compare the appointment-based system that was in force during the pandemic to the pre-pandemic system of viewable kennels. This study uses data retrospectively obtained from the

shelter to analyze the change in dog adoption rates during periods when some kennels were viewable by the public.

## Methods

The pilot program was put into operation on July 19, 2023 in parallel to the appointment system (which continued its operation as before). The pilot program was originally intended to last for 4 months but was terminated on November 8 because of a nearby major accident. (A large abandoned military hangar was destroyed in a fire.) While November 8 was technically within the pilot program period, we will treat November 7 as the final day of the pilot program, because of the severe impact of the accident on all shelter operations.

On pilot days (Wednesdays and Saturdays) a portion of the kennels was viewable to the public from 2 pm to 4:30 pm. The pilot program entailed no operational changes (and was, for all practical purposes, inactive) the rest of the week. Once prospective adopters walked through the viewable areas, they proceeded to supervised visits carried out similarly to the appointment-based system. While kennel access ended at 4:30 pm, the visitation and adoption process could continue until closing (5 pm). There were 32 pilot days with afternoon kennel access within the 112-day period (July 19 – November 7, 2023) of the program.

Only 37 dog kennels were made viewable, typically housing 35–38 ready-to-adopt dogs. The number of dogs in these kennels ranged from a low of 33 (with some kennels not occupied) to a high of 40 (when dogs shared kennels). We use 37 as the average. The viewable area only housed large dogs. In our analysis, 'large' dogs encompass the size designations LARGE and X-LRG from the shelter's Chameleon<sup>c</sup> database. (The other size categories are MED, SMALL, TOY, and PUPPY.) These size categories were assigned at intake (by staff).

The total inventory of dogs available for adoption varied, and the shelter did not maintain a table of inventory counts.<sup>8</sup> We obtained counts in contemporaneous downloads from the shelter's website listing adoptable animals. These downloads were not made daily, but we have adoptable inventory counts for 75 days (within the pilot period's 112-day duration) presented in Supplementary Material. These downloads showed an average inventory of 195 dogs.

<sup>c</sup> Chameleon is one of the common database choices for animal shelters: <https://chameleonbeach.com/Products/Chameleon>

Table 2. Aggregate numbers of dog adoptions by time of day for (non-)pilot days, July 19 – November 7, 2023.

Time Slot	Non-Pilot Days (MTuThFSu)	Pilot Days (WeSa)	Total (All days of the week)
Midday (11 am – 2 pm)	227	124	351
Afternoon (2 pm – 5 pm)	227	178	405
Total	454	302	756
<b>Afternoon as percent of total</b>	<b>50%</b>	<b>59%</b>	

The difference in the percent of adoptions that occurred in the afternoon window is 9% (CI: 1.5% – 16.4%), statistically significant ( $\chi^2 = 5.5, P = 0.019$ ).

The inventory consisted predominantly of large dogs. We will use the rough estimate of 160 (82% of 195) as the average number of large dogs. Data for August 11 showed 166 dogs, of whom 135 (81%) were large. On October 6, there were 214, of whom 178 (83%) large. On October 19, there were 212, of whom 184 (87%) large. While our information on the adoptable inventory of large dogs is sparse, our estimate is sufficient because, as we will show, the results are insensitive to this number.

Viewable dogs were large (in the sense of kennel allocation) and ready-to-adopt, but unknown factors may have affected dog kennel assignment. Bias or selection may be involved, but they were likely constrained by shortages in kennel staffing and documented limitations in behavior evaluation.<sup>8</sup> What is clearly known is the difference in the public's experience of the process of selecting a dog to visit. With viewable kennels, the public saw the dogs themselves, while in the appointment system the public saw only web photos.

The shelter provided data from its Chameleon database on all adoptions that occurred in the 112 days of the pilot period. It also provided additional outcome data for the entire 2022–2023 period. Because this longer data set included outcomes that were not adoptions, we narrowed it to entries with outcome\_type ADOPTION and excluded outcome\_subtype of EXCHANGE or RESCUE. We verified that this was consistent with the shelter's pilot-period dataset and thus corresponded to the shelter's own conventions and interpretation of its database. The tables of data from Chameleon are given in Supplementary Material.

The relevant fields for each adoption were: Outcome\_date, outcome\_time, outcome\_subtype, animal\_id, and animal\_type. While animal size was not included in the pilot-period data provided by the shelter, it was present in the remaining 2022–2023 tables of outcomes. It was extracted from these other tables and added to the pilot-period data. Aside from the Chameleon data, the shelter manually tracked and reported the number of adoptions occurring from viewable kennels by date. This dataset is provided in Supplementary Material.

This study is an observational analysis of the data. We compare the number of dog adoptions during kennel

viewing hours to: 1) the same hours on other days of the week; and 2) the same hours and calendar period in the preceding year. We further examine the rate at which viewable dogs were adopted relative to the total adoptable dog inventory in the same size category. Hypotheses are tested via two-sided chi-square tests, at the 0.05 significance level. The language R (version 4.3.3 for MacOS)<sup>9</sup> was used for the statistical tests.

## Results

A total of 801 dog adoptions occurred during the 112 days of the pilot period. We separated adoptions by outcome time into four intervals: <11 am, 11 am – 2 pm, 2 pm – 5 pm (the period of kennel access on pilot days), after 5 pm. We found 28 outcome times prior to 11 am (of which 9 on Wednesdays or Saturdays). Since the shelter did not open until 11 am, these outcome times involve adoptions that occurred on some prior day but could not be completed, because of the need for spay/neuter or other procedure. They are disregarded because we cannot determine the correct day and time of adoption. Also, 17 adoptions showed an outcome time after 5 pm (of which 6 on Wednesdays or Saturdays). These were likely caused by a short delay in the paperwork past the nominal closing time, but they may also include pickups following spay/neuter. For simplicity, we exclude these from the analysis, as their impact on our metrics is small. (Our focus is on differences between time windows, and, within the limitations of the dataset we have, it was not possible to account for every single adoption.)

The results are expressed as aggregate (not daily) numbers for the duration of the pilot program. On non-pilot days an equal number of dog adoptions (227) occurred in the midday (11 am – 2 pm) as in the afternoon (2 pm – 5 pm) time window (Table 2). Thus, 50% of the adoptions are in the afternoon. On pilot days there were 124 in the midday (appointment-only) interval but 178 adoptions in the afternoon (kennel viewing); that is, 59% are in the kennel viewing hours. We test the hypothesis that the percentage of afternoon adoptions differs between non-pilot days (50%) and pilot days (59%). The difference of 9% (CI: 1.5% – 16.4%) is statistically significant ( $\chi^2 = 5.5, P = 0.019$ ).

Table 3. Aggregate numbers of dog adoptions in narrower time windows, July 19 – November 7, 2023

Time Slot	Non-Pilot Days (MTuThFSu)	Pilot Days (WeSa)	Total (All days of the week)
11:30 am – 1:30 pm	159	86	245
2:30 pm – 4:30 pm	145	131	276
Total	304	217	521
<b>Afternoon as percent of total</b>	<b>48%</b>	<b>60%</b>	

The difference in the percent of adoptions that occurred in the afternoon window is 13% (CI: 4% – 22%), statistically significant ( $\chi^2 = 7.7, P = 0.0056$ ).

Table 4. Aggregate dog adoptions, July 19 – November 7, 2022, distributed as in Table 2

Time Slot	MTuThFSu	WeSa	Total
Midday (11 am – 2 pm)	230	115	345
Afternoon (2 pm – 5 pm)	213	98	311
Total	443	213	656
<b>Afternoon as percent of total</b>	<b>48%</b>	<b>46%</b>	

Without the pilot program, the difference in the percent of adoptions that occurred in the afternoon window is -2% (CI -11% to 6%). That is in the opposite direction than in 2023, and not statistically significant ( $\chi^2 = 0.2, P = 0.7$ ).

To ensure robustness relative to the exact time of adoption, we repeated the above test for narrower time windows, namely 11:30 am – 1:30 pm (midday) versus 2:30 pm – 4:30 pm (afternoon), with data shown in Table 3. This eliminated adoptions logged in the first and last half hours of operation, as well as adoptions at the boundary of the two time windows of interest. (In effect, we treated these boundary periods as unknown adoption times and excluded them.) The resulting comparison is a test of robustness to uncertainties in adoption time. The percentage of afternoon adoptions is 48% on non-pilot days and 60% on pilot days. The difference, 13% (CI: 4% – 22%), is statistically significant ( $\chi^2 = 7.7, P = 0.0056$ ).

We examined 2022 data for a calendar period identical to the pilot study, that is, July 19, 2022 – November 7, 2022, processed into three-hour windows in exactly the same fashion as the 2023 data. (To be consistent with 2023, we removed 22 adoptions with outcome time before 11 am, and 12 with outcome time after 5 pm.) The calendar period is exactly 16 weeks minus one Monday holiday, and therefore contains the same distribution of days of the week in 2022 as in 2023. Table 4 shows 2022 data (and corresponds to Table 2). In 2022, the percent of afternoon adoptions is 46% for Wednesday plus Saturday and 48% for the remaining days of the week. Without the pilot program, in 2022 the difference goes in the opposite direction than in 2023. It is -2% (CI -11% to 6%), not statistically significant ( $\chi^2 = 0.2, P = 0.7$ ). This means that the pilot-program 2023 pattern was not observed in 2022 when only the appointment system was in operation.

Our interest in 2022 is primarily for a year-to-year comparison over identical calendar periods (Table 5). We

compare the fraction of all adoptions that occur during the kennel viewing windows in 2023 (Wednesday and Saturday afternoon) to the corresponding slot in 2022. In 2023, 24% (178 out of 756) of adoptions occurred in these windows, while in 2022, only 15% (98 out of 656) did. The difference of 9% (CI: 4% – 13%) is statistically significant ( $\chi^2 = 16, P < 0.0001$ ). It appears, therefore, that the kennel viewing periods entail a significantly higher number of adoptions. In Supplementary Material, we provide a more detailed table of adoption counts for the two corresponding (2022 and 2023) calendar periods by time window and day of the week.

Finally, we consider whether adopters of large dogs show a preference for viewable dogs. On average, there were 160 large dogs available in the inventory, of whom 37 (23%) were in viewable kennels (Table 6). In the null hypothesis, the public selects randomly and 23% of adoptions of large dogs would involve viewable dogs. We test the alternative hypothesis that the actual percent of adoptions that involved viewable dogs deviates from this 23% reference point. There were 54 large dog adoptions during viewing hours (Wednesday and Saturday afternoons). Over the course of the pilot program, 45 of these adoptions were viewable dogs. That means that viewable dogs account for 83% of adoptions (CI: 72% – 93%) rather than 23%, and this result is statistically significant ( $\chi^2 = 110, P < 10^{-15}$ ).

## Discussion

This was not a randomized, prospective trial. The shelter didn't designate in advance what data it would collect, nor did it specify what criteria or metrics it would use to assess kennel viewing relative to the appointment-based system.

Table 5. Aggregate numbers of dog adoptions for the years 2022 and 2023 (July 19 – November 7)

Time Slot	2022	2023	Percent change
WeSa 2 pm – 5 pm	98	178	82%
Remaining days and times	558	578	4%
Total	656	756	15%
<b>WeSa 2 pm – 5 pm as percent of total</b>	<b>15%</b>	<b>24%</b>	

The difference in the percent of adoptions that occurred in the WeSa afternoon window is 9% (CI: 4% – 13%), statistically significant ( $\chi^2 = 16, P < 0.0001$ ).

Table 6. Adoptions of large dogs over 32 sessions of visitor access to kennels

Viewability	Total adoptions	Adoptions per session	Avg number of available dogs	Probability of adoption per session
Viewable	45	1.4	37	3.8%
All	54	1.7	160	1.1%
<b>Percent viewable</b>	<b>83%</b>		<b>23%</b>	

Viewable dogs account for 83% of adoptions (CI: 72% – 93%), with 23% being the null hypothesis. The result is statistically significant ( $\chi^2 = 110, P < 10^{-15}$ ).

Retrospectively, the results indicate that more adoptions occurred when kennels were accessible to visitors, and visitors showed a strong preference for adopting viewable dogs.

The public preference for viewable dogs can be quantified in other ways: For each of the 32 afternoon sessions of kennel access, a large dog in a viewable kennel had a 3.8% probability of adoption, while a large dog from the entire inventory had only a 1.1% probability of adoption. It is easier for an adopter to form a tentative bond with the dog in a face-to-face encounter than by viewing a web photo. The results accord with studies<sup>1,4</sup> that show the importance of emotional factors in animal adoption.

Given that the dog kennel assignments were not randomized, there are confounding factors, but the effect is so strong that it would take a great deal of interference to invalidate it. It is not plausible that, in a high-volume shelter with kennel staff shortages and evaluation limitations,<sup>8</sup> the requisite level of bias could occur. An average of 23% (37 out of 160) of large dogs were viewable, but they account for 83% of large dog adoptions (45/54). As a thought experiment, on supposition of bias, we can try discounting 30 adoptions (so that 45/54 becomes 15/24). The resulting percentage of adoptions of viewable dogs would then be 65% (CI: 43% – 83%) and would still be statistically significant ( $\chi^2 = 21, P < 10^{-5}$ ). In contrast to any undetermined biases, the difference in the public's experience of the process of selecting a dog to visit was palpable. With viewable kennels, the public saw the dogs themselves, while in the appointment system the public saw only web photos.

The remaining comparisons, and thus the bulk of our evidence, are not subject to biases in assigning dogs to viewable kennels, because we compared adoptions across the entire inventory of adoptable dogs. In 2023, on

non-pilot days there were equal numbers of adoptions in the afternoon and midday time windows, but on pilot days there were 44% more adoptions in the afternoon (viewing) than the midday (non-viewing) window. This effect includes a spillover into dog adoptions from the entire inventory (viewable and non-viewable). A visitor drawn to the shelter by the fact that kennels are viewable may have asked about different dogs (e.g. other age, breed, or size) and ended up with an adoption. A visitor may have received staff recommendations after an initial unsuccessful session with one of the viewable dogs. A visitor whose intention to adopt was not firm enough to make an appointment may have ambled in and warmed up to the idea by the exposure to the viewable dogs. A visitor, faced first-hand with the reality of dogs in kennels and in need of homes, may have been motivated by compassion. But in all these scenarios, the visitor had to start by engaging with adoptable dogs, and that appears to have been more effective with a visit to the kennels than with web photos and basic demographic data.

The most compelling comparison is between 2023 and the identical period in 2022 (Table 5). There were 100 additional adoptions in 2023, signifying a 15% increase over 2022. This is not surprising, because Table 1 shows a corresponding increase in annual live outcome counts by 16%. But, remarkably, 80 out of the 100 additional adoptions occurred during kennel viewing sessions. Kennel viewing hours accounted for only 14% of the hours of operation (conservatively counting the full 2 pm – 5 pm period, even though kennel viewing ends at 4:30 pm) and produced only 15% percent of adoptions in 2022, before the pilot program. But the results for these two afternoons a week jumped to 24% of adoptions in 2023, in the process producing 80% of the adoption increase between the 2 years (for the July 19 to November 7 period, with

the filtering already described). Stated another way, Wednesday and Saturday afternoon adoptions, jumped by 82% (from 98 to 178) while adoptions for the rest of the week moved by a meager 4% (from 558 to 578). We cannot postulate any reasonable confounding factor that can account for this.

Though it is difficult to establish how many adoptions are a net addition rather than time- (and day-) shifting of adoptions that might have occurred anyway, visitors expressed a preference by coming and adopting when kennels are viewable. It is reasonable to conclude that satisfying this adopter preference helped bring in more visitors and generated more adoptions.

The main strength of the pilot program is that it did not follow some abrupt external event. It was, rather, the culmination of local agency interactions and deliberations. Thus, the timing of the implementation of the pilot program can be considered random. This made its data particularly useful.

The main limitation of the pilot program is the absence of a randomized design, making observations potentially subject to unknown confounding factors. However, in aggregate, the comparisons of adoption numbers among days, across years, or viewable to non-viewable dogs generated a substantial web of evidence.

Another limitation is that there was no power analysis and no planning around data collection. Additional hours and viewable kennels (ideally randomized), along with careful tracking of all time events surrounding each adoption (and each visitor) would have generated better information.

It should be recognized that thorough planning and implementation require knowhow and resources that are seldom available to high-volume shelters. A compromise between rigor and practicality must be reached. In this pilot program, allowing access to one kennel area at a time, but selecting that area randomly on each day could have combined easy implementation and more useful data.

Community members can help the shelter avoid mistakes. A shelter could generate a draft plan, allow input from the community (including community members with statistical expertise that they could offer pro bono), and only then finalize the pilot program design.

Our analysis cannot predict how the benefits of viewable kennels scale with the number of days and hours of visitor access. For hybrid systems that combine kennel access with appointment-based operations, further research is needed to determine how much benefit is realized at different levels of access and to potentially devise optimal allocation of visiting hours and staff resources.

## Conclusion

The pilot program in OCAC entailed partial access to the kennels. During time periods when visitors could

view dogs in their kennels there was a higher number of adoptions. During kennel access, viewable dogs achieved a disproportionately high fraction of adoptions. A comparison to the same period in the preceding year bolsters the conclusion that the pilot program was the reason for the observed higher numbers of adoptions.

The data from this pilot program lends support to the conventional mode of operation that allows access to animals, aiming to encourage adoptions. Our results urge skepticism towards operational changes that would limit kennel viewing or access.

In light of limited resources in many animal shelters, the procedures that determine how shelters receive visitors and mediate adoptions merit further study.

## Acknowledgments

The author thanks OC Animal Care center for providing the data it collected from the pilot program. The author influenced neither the design of the program nor the data collected.

## Conflict of interest and funding

The author declares no potential conflicts of interest.

## References

1. Protopopova A, Gunter L. Adoption and relinquishment interventions at the animal shelter: a review. *Anim Welf*. 2017;26(1):35–48. doi: 10.7120/09627286.26.1.035
2. Fantuzzi JM, Miller KA, Weiss E. Factors relevant to adoption of cats in an animal shelter. *J Appl Anim Welf Sci*. 2010;13(2):174–179. doi: 10.1080/10888700903583467
3. Bradley J, Rajendran S. Increasing adoption rates at animal shelters: a two-phase approach to predict length of stay and optimal shelter allocation. *BMC Vet Res*. 2021;17(1). doi: 10.1186/s12917-020-02728-2
4. Luescher AU, Tyson Medlock R. The effects of training and environmental alterations on adoption success of shelter dogs. *Appl Anim Behav Sci*. 2009;117(1–2):63–68. doi: 10.1016/j.applanim.2008.11.001
5. Gourkow N. 2001. Factors affecting the welfare and adoption rate of cats in an animal shelter. Master's Thesis. University of British Columbia, British Columbia, Canada.
6. DeLeeuw JL. Animal shelter dogs: factors predicting adoption versus euthanasia. Dissertation. Wichita State University; 2010. <http://hdl.handle.net/10057/3647>. Accessed February 22, 2024.
7. Lepper M, Kass PH, Hart LA. Prediction of adoption versus euthanasia among dogs and cats in a California animal shelter. *J Appl Anim Welf Sci*. 2002;5(1):29–42. doi: 10.1207/s15327604jaws0501\_3
8. Orange County Grand Jury. Gimme Shelter and a Pound of Advice; The State of Animal Welfare Overseen by the County of Orange. OC Grand Jury, California, June 2023. This reference is also provided as Supplementary Material.
9. R Core Team. R: a language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing; 2024. <https://www.R-project.org/>.