

Supporting Statement
Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2
OMB Control Number 0579-XXXX

Part A

A. Justification

1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.

This is a request for a new information collection request. APHIS is seeking approval for the use of these information collection activities in connection with the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2.

Under the Act of March 2, 1931 (7 U.S.C. 8351), the Secretary of Agriculture is authorized to conduct a program of wildlife services with respect to injurious animal species and take any action the Secretary considers necessary in conducting the program. Additionally, the Secretary of Agriculture is authorized to conduct activities to control nuisance mammals and birds (except for urban rodent control) and those mammals and bird species that are reservoirs for zoonotic disease. This authority has been delegated to the Animal and Plant Health Inspection Service (APHIS) Wildlife Services (WS). Two responsibilities of the Deputy Administrator of WS are to assist Federal, State, local, and foreign agencies and individuals regarding wildlife damage and control and conduct research to develop wildlife damage management methods (7 CFR 371.6).

The spillover and sustained transmission of SARS-CoV-2 (SCV2) among animal populations has raised significant questions regarding the potential establishment of disease reservoirs among wildlife species. SCV2 infection has been observed in white-tailed deer (WTD) populations across much of the US, suggesting that deer may serve as a vector and potential reservoir for the disease. While experts suggest human-to-deer transmission is likely, the activities or factors that facilitate transmission have yet to be identified.

Experts suggest that human behaviors likely contribute to the direct and indirect transmission pathways between humans and WTD. Previous research highlights direct contact (feeding or touching) or aerosol transmission (interacting in close proximity) as likely routes of spillover. However, indirect transmission through fomites (use of attractants, leaving out feed for wildlife, trash/refuse) or environmental contamination (waste, septic or wastewater overflow) cannot be dismissed.

Little research has been done to explore the nuances of human-deer interactions relevant to SCV2 transmission. Understanding the perceptions, attitudes, and behaviors of community groups relevant to SCV2 spillover and spillback is a pivotal aspect of managing and mitigating current and future threats. While previous research has explored human dimensions aspects

related to deer management, it is often done so in the context of rural communities or through the lens of consumptive use, such as hunting. Further exploration of human-deer interactions among a larger diversity of stakeholders and within the specific context of disease management is needed.

For this study, APHIS has established a cooperative agreement with the University of Minnesota to administer quantitative surveys in 5 states (Minnesota, Pennsylvania, New York, Illinois, and Tennessee). The survey will collect data concerning the values, beliefs, attitudes, and behaviors associated with humans' interactions with WTD. The key knowledge gaps addressed with this quantitative data include the types and frequencies of human-WTD interactions that occur across multiple settings, and the role that cognitive factors, such as perceptions, beliefs, and attitudes, play in influencing behaviors and intentions relevant to human-deer interactions. In addition, this study will evaluate the extent to which human-to-WTD SCV2 transmission events may be reduced by providing information to communities about SCV2 in WTD populations and transmission risks.

Identifying and quantifying differences in cognitions and behaviors relevant to human-deer interactions in various settings will improve risk assessments for wildlife managers to identify optimal control points.

This submission is a request for approval to initiate the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2. As part of their cooperative agreement with APHIS, the University of Minnesota would like to conduct a survey of members of the public in 5 states (Minnesota, Pennsylvania, New York, Illinois, and Tennessee) that would measure the way humans think about and interact with WTD across multiple settings and determine individuals' likely response to different management interventions and awareness of risk and prevention strategies. Each of the states was selected based on 5 criteria:

- These are states where targeted WTD blood surveillance data is being collected that will supplement the survey data collected by this study to build hypotheses about human-WTD transmission outbreaks;
- These states have diverse landscapes to help generate an understanding of a broad range of human-deer interactions across urban, suburban, and rural settings;
- University partners in these states have personnel with experience and subject matter expertise with the human dimensions of WTD;
- University partners in these states have a strong relationship with their state agencies and local federal agency partners; and
- University partners in these states are recognized institutions which will boost response rates to the survey.

The information collected from these states is critical to understand how human cognitions and behaviors, human-WTD interactions, and ecological context contribute to SCV2 infection dynamics in WTD populations. It is anticipated that, among other things, results of the study may improve risk assessments for wildlife managers to identify optimal control points. In addition, the results of this study may be used to compare human attitudes and behavior to SCV2 outbreaks based on collected genetic material.

The University of Minnesota will solicit study participation from community members in areas relevant to SCV2 dynamics within community/site boundaries established in each of 5 states. Data will be collected via online and paper surveys. This survey is voluntary.

The goal of the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2 is to measure key cognitive, social, and behavioral factors related to human-deer SCV2 transmission dynamics and inform future management strategies and surveillance practices. The data collection will support the following objectives:

1. Determine the predictive relationship between (a) human values, attitudes, and beliefs and (b) human behaviors at the human-WTD interface.
2. Identify human behaviors and land-use characteristics that may lead to spillover or spillback of SCV2 from humans to WTD.
3. Determine the likely response of individuals to different management interventions.
4. Improve risk assessment and forecasting capabilities of SCV2 hotspots in WTD.

The information collected through the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2 will be analyzed and organized into descriptive/statistical reports. All data and metadata collected under this study and used in peer-reviewed publications will be made publicly accessible in a data repository per the US Department of Agriculture (USDA) Departmental Regulation 1020-006. Additionally, results will be shared internally within the APHIS WS as well as externally through open access or subscription-based journals.

The University of Minnesota requests this information collection request be approved for 3 years.

2. Indicate how, by whom, how frequently, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.

Data collected, analyzed, and interpreted from the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2 will be disseminated to a variety of constituents, including the APHIS WS and open access or subscription-based journals. Additionally, all data and metadata collected and used in peer-reviewed publications will be made publicly accessible in a data repository per the USDA Departmental Regulation 1020-006.

The University of Minnesota will use the data collected to:

- Quantify the relative risk of ecological and socio-ecological factors in spillover and persistence of SCV2 in WTD.
- Identify human behaviors that pose the highest risk of spillover-spillback and potential management points.

- Make recommendations for improving surveillance design for risk-based surveillance and rapid detection of disease emergence (new strains and SCV2 geographic hotspots and WTD population reservoirs).
- Develop a methodology for quantifying risk of SCV2 emergence across individual, population, and landscape scales, and for integrating data across these scales to provide a more comprehensive risk assessment and surveillance design application.
- Make recommendations on intervention strategies that can be used by management agencies to reduce the risk of transmission among humans, WTD, and other animals.

Interactions with Deer Questionnaire; 7 U.S.C. 8351, 7 U.S.C. 8353, and 7 CFR 371.6; Individual or Household

The Interactions with Deer Questionnaire (Appendix D) is a survey that community members will complete online or on paper. Data will be collected online via Qualtrics or on a paper survey mailed to respondents.

The potential respondent universe for the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2 are community members whose primary residence is within the states of Minnesota, Pennsylvania, New York, Illinois, and Tennessee. Households will be sampled using a multi-stage cluster sampling approach. The study sites will be chosen to represent a gradient of population density, land type, and spatial location across white-tailed deer range in each state. Doing so will allow us to cover households in the state that live in close proximity to WTD populations, as well as open-space or natural areas. Site boundaries will also be informed by natural features, county lines, human features, and other factors deemed relevant.

Within each site boundary, all census tracts included in the boundary will be identified. The number of single-family residences located in each census block and the proportion of the total number of single-family homes located in each census block will be calculated. A proportional number of households per each census block that is numerically representative of the proportion of residences located in the entire study site will be randomly sampled. A total of up to 12,000 housing units will be randomly sampled across each of the 5 study sites.

Contact information for community members, including names and mailing addresses, will be obtained from a third-party data provider. Researchers at each site will verify the addresses after receiving the mailing lists.

For the first round of community member contact, a personalized cover letter (Appendix A) will be sent to each household. The letter will explain that the survey, the goals, and contain a QR code to allow individuals to complete an online version of the survey. Approximately 1 week after the initial contact letters are sent to the respondent pool, a packet containing a paper version of the survey (Appendix D) will be sent to potential respondents that have not yet responded to the online version of the survey. The packet will include a personalized cover letter, a paper copy of the questionnaire, and a paid-postage envelope to return the questionnaire. Approximately 1 week after 2nd round envelopes are sent to the respondent pool, a packet containing a paper version of the survey will be sent to potential respondents that have not yet responded to the

online or paper version of the survey. The packet will include a personalized cover letter, a paper copy of the questionnaire, and a self-addressed paid-postage envelope to return the questionnaire. All participating community members will receive the same questionnaire. A shortened nonresponse follow-up questionnaire (Appendix E) will be mailed to potential respondents that have not yet responded to any version of the survey.

In addition to the survey mailing, survey responses will be elicited using in-person contact at study sites (Appendix G), including visitor centers, nature centers, trail heads, or other central locations. Enumerators will use iPads or similar equipment that are preloaded with the online survey.

3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g. permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also describe any consideration of using information technology to reduce burden.

APHIS makes every effort to comply with E-Government Act, 2002 (E-Gov) and to provide for alternative submission of information collections.

The survey (Appendix D) will be administered online via Qualtrics or on a paper survey mailed, with a self-addressed paid-postage envelope, to up to 60,000 potential respondents. A 25% response rate (10% electronic; 15% paper) is expected with a total of 15,000 responses. The goal is to obtain up to 3,000 completed responses from community members from each state included in the study (Minnesota, Pennsylvania, New York, Illinois, and Tennessee). The URL for the survey has not yet been created.

4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purpose(s) described in item 2 above.

Every effort has been made to avoid duplication. There is similar data collected, however, those do not meet the agency's need. APHIS solely administers the Animal and Plant Health Inspection Service (APHIS) Wildlife Services (WS) to assist Federal, State, local, and foreign agencies and individuals regarding wildlife damage and control and conduct research to develop wildlife damage management methods (7 CFR 371.6) to ensure integrity. The information required for data collection is not currently reported to any other agency on a regular basis in a standardized form.

Literature searches for existing data relevant to the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2 have been performed. Available data were reviewed and compiled from all known sources. Sources reviewed were produced from a terms search of peer-reviewed publications and the Google Database Search. Previous research has highlighted the important role that cognitive factors, such as perceptions, beliefs, and attitudes, play in influencing behaviors and intentions relevant to human-deer interactions (Haus

et al., 2017; Stinchcomb et al., 2022; Whittaker et al., 2006). In relation to disease management, much of the human dimensions literature has explored how factors such as risk perceptions (Vaske & Miller, 2018; Smith et al., 2023; Rubino et al., 2023), institutional trust (Schroeder et al., 2021; Smith et al., 2021), and identity (Schroeder et al., 2022) influence constituent behaviors relevant to the disease. This research has mostly been conducted in the context of chronic wasting disease (CWD), a non-zoonotic neurodegenerative disease found in deer. There is a notable lack of empirical work investigating cognitive factors and their relationship with disease management among more urban/suburban communities or the non-hunting public. Furthermore, unlike CWD, SARS-CoV-2 has been shown to both spillover and spillback between human and wildlife populations, which may complicate disease management in the future (Kuchipudi et al., 2022). This study will build on and expand the scope of existing research by investigating the human dimensions of wildlife disease among understudied constituencies and in a different disease context.

5. If the collection of information impacts small businesses or other small entities, describe the methods used to minimize burden.

Information collection requests will not involve small businesses or other small entities.

6. Describe the consequence to federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.

This is a one-time, voluntary information collection request. While experts have made significant strides into understanding the disease dynamics within human populations, there is a noticeable lack of empirical research related to human-deer interactions relevant to the disease, especially among non-consumptive and non-rural constituencies. This study will use a quantitative survey of key constituents to identify key cognitive, social, and behavioral factors relevant to human-deer interactions. This information will provide states with critical data to inform future disease surveillance, mitigation strategies, and policies aimed at curtailing SCV2 transmission between humans and WTD. This information will be useful for informing future disease surveillance and management efforts by providing in-depth analysis of the social and cognitive drivers of human-deer interactions.

7. Explain any special circumstances that require the collection to be conducted in a manner inconsistent with the general information collection guidelines in 5 CFR 1320.5

- **requiring respondents to report information to the agency more often than quarterly;**
- **requiring respondents to prepare a written response to a collection of information in fewer than 30 days after receipt of it;**

- requiring respondents to submit more than an original and two copies of any document;
- requiring respondents to retain records, other than health, medical, government contract, grant-in-aid, or tax records for more than 3 years;
- in connection with a statistical survey, that is not designed to produce valid and reliable results that can be generalized to the universe of study;
- requiring the use of a statistical data classification that has not been reviewed and approved by OMB;
- that includes a pledge of confidentiality that is not supported by authority established in statute or regulation, that is not supported by disclosure and data security policies that are consistent with the pledge, or which unnecessarily impedes sharing of data with other agencies for compatible confidential use; or
- requiring respondents to submit proprietary trade secret, or other confidential information unless the agency can demonstrate that it has instituted procedures to protect the information's confidentiality to the extent permitted by law.

No special circumstances exist that would require this collection to be conducted in a manner inconsistent with the general information collection guidelines in 5 CFR 1320.5.

8. Describe efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and recordkeeping, disclosure, or reporting form, and on the data elements to be recorded, disclosed, or reported. If applicable, provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, soliciting comments on the information collection prior to submission to OMB.

The following people were consulted during the planning and coordination of the study regarding the Interactions with Deer Questionnaire:

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 Professor of Natural Resources Policy and Human Dimensions
 University of Tennessee Knoxville
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These 4 experts provided suggestions for certain word changes and additional questions that may be included in the Interactions with Deer Questionnaire. The University of Minnesota applied the suggestions that best fit the goals and objectives of the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2.

Additionally, a USDA National Agricultural Statistics Service (NASS) review was requested for this information collection request on August 19, 2024. A review by Brent Chittenden (512-501-3255) was received on August 28, 2024, and consisted of 2 remarks (Appendix F). The remarks noted that the proposed methods to maximize response rates seemed justified, and did not require corrections to the proposed sampling universe and sampling methodology.

APHIS published in the Federal Register on November 29, 2024 (89 FR 94702), a 60-day public comment notice for this information collection request. We received 2 comments. One comment did not provide feedback toward the purpose or methods of the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2. The other comment expressed support for the study and suggested a clear articulation of “the specific benefits of the study” to demonstrate the study’s value to the public. Based on this suggestion, the study’s supporting statements were reviewed and it was determined that no further changes were needed to the scope or process of the proposed activities to more clearly define the study’s purpose and benefits.

9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.

APHIS will provide no direct payments or gifts to respondents. The University of Minnesota will give respondents \$20 as a token of appreciation upon completion of the questionnaire. Incentive is provided to a) encourage a higher participation rate, and b) accelerate recruitment as the information collection is time-sensitive due to the budget restrictions and short timeline of the study. Additionally, incentive will decrease the overall cost of implementing the survey by reducing the number of respondents who must be reached to get sufficient participation. Past studies have demonstrated that monetary incentive increases response rates in survey research with minimal impact on data quality or bias (Hall et al., 2019; Stanley et al., 2020). All standard procedures for incentives will follow the guidelines of the University of Minnesota research

ethics committee/Institutional Review Board (IRB). When respondents are invited to take the survey, they will be informed what their incentive will be via the personalized cover letter.

10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.

No additional assurance of confidentiality is provided with this information collection. Any and all information obtained in this collection shall not be disclosed except in accordance with 5 U.S.C. 552a, Privacy Act of 1974.

Information collected for the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2 by the University of Minnesota will not be protected by the Confidential Information Protection and Statistical Efficiency Act (CIPSEA). However, the University of Minnesota will protect the privacy of the information collected through the means and processes below. The information acquired from the respondents will be used for statistical purposes only.

The University of Minnesota will not collect any PII. All forms, data, and questionnaires will refer to the respondent by an alpha-numeric code. A link between the respondent and an alpha-numeric code will be maintained separately until the conclusion of data collection. All completed survey data, which will contain no PII, will be stored securely by the University of Minnesota. The University of Minnesota will manage the responses from the respondents. APHIS will not have access to the respondent information, such as names or email addresses, or the sampling list for the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2. These lists are privately held, and APHIS will not have access to them, nor will APHIS have a legal right to obtain or distribute them.

At the conclusion of data collection, entry, and validation, the link between the respondent and alpha-numeric code will be destroyed. Analysis performed by the University of Minnesota will be performed on secure University of Minnesota systems.

The University of Minnesota will release study results based on summary estimates and results from statistical analyses to protect the privacy of individual respondents. All data and metadata collected and used in peer-reviewed publications will be made available to the public per the USDA Departmental Regulation 1020-006. While every effort will be made to ensure respondent privacy, it is possible that information could be released as required by a Freedom of Information Act (FOIA) request. However, names, addresses, and personal information will not be linked with any survey information provided in response to such a request, because APHIS will not have any PII associated with the respondents.

11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be

given to persons from whom the information is requested, and any steps to be taken to obtain their consent.

Institutional Review Board (IRB) Approval

The Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2 has been developed in accordance with Federal, State, and local guidelines to ensure that the rights and privacy of respondents are protected and maintained. IRB approval will be obtained from the University of Minnesota. Respondents will be provided a phone number and email for the principal investigator should they have any questions or concerns about the study or their rights as a respondent.

Sensitive Questions

In general, none of the questions asked in the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2 are of a sensitive nature. However, questions will include some basic demographic information (e.g., age), which respondents may prefer not to answer (Appendix D). To avoid fear of disclosure of potentially sensitive information, like age, respondents will be informed of the applicable privacy safeguards. In addition, respondents are not required to answer these questions to submit a completed questionnaire.

12. Provide estimates of the hour burden of the collection of information. Indicate the number of respondents, frequency of response, annual hour burden, and an explanation of how the burden was estimated.

- **Indicate the number of respondents, frequency of response, annual hour burden, and an explanation of how the burden was estimated. If this request for approval covers more than one form, provide separate hour burden estimates for each form and aggregate the hour burdens in item 13 of OMB form 83-I.**

See APHIS 71. APHIS estimates there will be a total of 7,868 hours of burden to complete the Study of Human Behavior and Attitudes Linked to Human-Deer Transmission of SARS-CoV-2. The respondents include members of the public whose primary residence is in the state of Minnesota, Pennsylvania, New York, Illinois, or Tennessee.

- **Provide estimates of annualized cost to respondents for the hour burdens for collections of information, identifying and using the correct wage rate categories.**

The estimated annualized cost to respondents is \$353,842, computed by multiplying the estimated average hourly wage (\$31.48) by the total number of burden hours (7,868), and then multiplying the product (\$247,685) by 1.4286 to capture benefit costs. The wage for respondents was obtained from https://www.bls.gov/oes/current/oes_nat.htm#00-0000. According to DOL BLS news release [USD-24-0485](#) (released March 2024), employee benefits account for 30 percent of employee costs, and wages account for the remaining 70 percent. Total costs can be calculated as a function of wages using a multiplier of 1.4286.

13. Provide estimates of the total annual cost burden to respondents or recordkeepers resulting from the collection of information. (Do not include the cost of any hour burden in items 12 and 14). The cost estimates should be split into two components: (a) a total capital and start-up cost component (annualized over its expected useful life); and (b) a total operation and maintenance and purchase of services component.

There are no capital/start-up costs or ongoing operations and maintenance costs for respondents or record keepers associated with this information collection.

14. Provide estimates of annualized cost to the Federal government. Provide a description of the method used to estimate cost and any other expense that would not have been incurred without this collection of information.

See APHIS 79. The estimated cost to the Federal Government is \$945,689.

15. Explain the reasons for any program changes or adjustments reported in items 13 or 14 of the OMB Form 83-I.

APHIS is seeking approval of a new information collection request to include 60,000 estimated respondents, 7,868 burden hours and 105,000 estimated total responses added to the OMB burden inventory.

16. For collections of information whose results are planned to be published, outline plans for tabulation and publication.

Information from this survey will be summarized immediately following the collection, editing, and validation of the data. Data will be stored as CVS and/or Excel files, and statistical calculations will be performed, e.g., descriptive statistics, significance testing, correlations, and regression analysis. Confirmatory factor analysis will be conducted on proposed latent constructs and structural equation modeling will be used to analyze relationships between constructs (Bowen and Guo, 2011; Brown and Moore, 2012). R software will be used to analyze the data.

These analyses will be published in one or more articles in peer-reviewed journals. Additionally, all data collected in this study and used in peer-revised publications will be made available to the public per the USDA Departmental Regulation 1020-006.

Table 1: Project Timetable

Activity	Time Scheduled
IRB approval obtained	1-45 days after OMB approval
Mailed invitations sent to respondents	1-45 days after OMB approval
Online data collection	1-15 days after OMB approval
Online data collection (in-person elicitation)	1-60 days after OMB approval
Paper data collection	15-60 days after OMB approval

Activity	Time Scheduled
Complete survey collection	15-60 days after OMB approval
Validation	60-70 days after OMB approval
Data analysis	70-160 days after OMB approval
Peer-review manuscripts	160-365 days after OMB approval

17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

The OMB approval expiration date will be displayed on the cover letter and electronic questionnaire.

18. Explain each exception to the certification statement identified in the “Certification for Paperwork Reduction Act.”

APHIS is able to certify compliance with all provisions in the Paperwork Reduction Act.

References:

- Bowen, N. K., & Guo, S. (2011). *Structural equation modeling*. Oxford University Press.
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- Haus, J. M., Eyler, T. B., Duda, M. D., & Bowman, J. L. (2017). Hunter perceptions toward chronic wasting disease: Implications for harvest and management. *Wildlife Society Bulletin*, 41(2), 294-300.
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- Rubino, E. C., & Serenari, C. (2023). Comparing stakeholder risk perceptions and behaviours related to chronic wasting disease in free-range and captive deer. *International Journal of Global Environmental Issues*, 22(4), 435-449.

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- Stanley, M., Roycroft, J., Amaya, A., Dever, J. A., & Srivastav, A. (2020). The effectiveness of incentives on completion rates, data quality, and nonresponse bias in a probability-based internet panel survey. *Field methods*, 32(2), 159-179.
- Stinchcomb, T. R., Ma, Z., & Nyssa, Z. (2022). Complex human-deer interactions challenge conventional management approaches: the need to consider power, trust, and emotion. *Ecology and society*, 27(1).
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