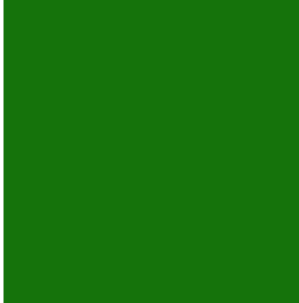
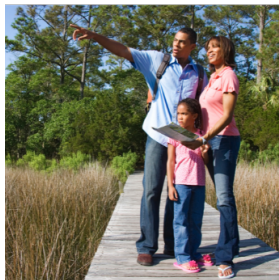


National and Regional Results of the **Wildlife Viewer Survey**

Enhancing Relevancy and Engaging Support from a Broader Constituency

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EXECUTIVE SUMMARY

Background

Wildlife viewing (closely observing, photographing, or feeding wildlife, maintaining plantings or natural areas for the benefit of wildlife, or taking trips to park or other natural areas to feed, photograph, or observe wildlife) is one of the fastest growing wildlife-related recreation activities in the United States (US Fish and Wildlife Service, 2018). As participation in wildlife viewing continues to grow, so do questions about the characteristics of wildlife viewers and their perceptions of state agencies. Historically, state fish and wildlife agencies (state agencies) have depended on hunters and anglers to fund the agencies' conservation efforts, through a system known as the North American Model of Conservation (Organ et al. 2012). In this system, state agencies rely heavily on operational funds derived from excise taxes imposed on certain sporting equipment and receipts from licenses and permits purchased by hunters, anglers, and trappers. In recent years, surveys show a plateau or decline in participation in hunting and angling, while participation in wildlife viewing continues to rapidly grow (US DOI et al. 2016). Yet, many viewers do not contribute directly to supporting the state agencies responsible for ensuring the sustainability of resources on which their recreation activities depend. As the number of viewers continues to rise, it is increasingly important that state agencies understand who these wildlife viewers in the United States are and their perspectives and expectations. Wildlife viewers have the potential to significantly aid state agencies in achieving their conservation goals (AFWA & WMI, 2019), through financial contributions as well as a range of conservation activities. This study represents one key step in achieving goals outlined in the Fish and Wildlife Relevancy Roadmap (AFWA & WMI, 2019) by providing state agencies with information and tools to connect with a broader audience of wildlife viewers.

Methods

To understand wildlife viewers, we collaborated with the Association of Fish and Wildlife Agencies' (AFWA) Wildlife Viewing and Nature Tourism Working Group (WVNTWG) to conduct a multi-state survey of wildlife viewers in summer 2021. Specifically, we created the Multi-State Steering and Executive Committees, which consisted of members of the WVNTG who worked closely with us throughout the duration of this project. We contracted with Qualtrics to conduct an online panel survey of wildlife viewers across the U.S. Survey participants were then compensated by Qualtrics for their participation in the study. All survey respondents were U.S. residents, over the age of 18 years old, who reported participating in wildlife viewing (defined as closely observing, photographing, or feeding wildlife, maintaining plantings or habitat for the benefit of wildlife, or taking trips to parks or other natural areas with the purpose of observing, feeding, or photographing wildlife) in the past 5 years. Because the goal of this Wildlife Viewer Survey was to better understand wildlife viewers, we did not survey non-viewers.

Survey Sampling and Administration

The survey questionnaire was informed by the Multi-State Steering and Executive Committees, findings from a variety of surveys, including the Virginia Wildlife Recreation Study Report (Grooms et al. 2020), the 2016 National Survey of Fish and Wildlife-Related Recreation, and surveys conducted by the North American Waterfowl Management Plan Human Dimensions Working Group (NAWMP). Respondents answered questions about their wildlife viewing behaviors, identities, preferences, other outdoor recreation, conservation behaviors, and experience with their state agencies. We sampled from August 6 - September 17, 2021, and received 4,030 complete responses; about 1,000 from each of the four AFWA regions (West, Midwest, Northeast, and Southeast).

To ensure high-quality responses, we incorporated numerous attention check questions and time limits in this survey. We set demographic quotas for survey respondents based on findings from the National Survey, in an effort to achieve a survey sample that is representative of the wildlife viewing population across the U.S. in terms of age, education level, and gender.

Analysis

In this report, we analyzed survey responses at two scales: national and regional. First, all questions were analyzed at a national scale that included all responses from each of the four AFWA regions, weighted based on the total population of wildlife viewers in each of the four regions, as estimated by the 2016 National Survey of Hunting, Fishing, and Wildlife-Associated Recreation (Appendix C). Additionally, for the majority of questions, we analyzed responses at an AFWA regional scale with an unweighted dataset. This dataset was split into four separate groups based on respondents' region. Analysis generally consisted of chi-square or analysis of variance (ANOVA) tests conducted in the Statistical Package for Social Science.

For select questions, we also conducted comparisons between “consumptive viewers” (those who participated in hunting and/or angling in the past five years) and “nonconsumptive viewers” (those who did not participate in these other recreation activities).

Findings

In the following section, we review findings at the national level, which consisted of weighted responses from all four regions. Overall, we found little variation in responses across regions.

Wildlife viewing behaviors

Wildlife viewers most commonly participated in wildlife viewing by feeding wild birds, visiting parks and natural areas with the purpose of viewing wildlife, or photographing wildlife. They were most interested in viewing birds and land mammals. In a typical year, over half viewed in state-managed and locally-managed areas. Compared to a typical year, during the first year of the COVID-19 pandemic, viewers spent more days participating in around-the-home viewing (defined as within one mile of their home) and fewer days participating in wildlife viewing away-from-home. About one-third of wildlife viewers stopped viewing during the first year of the COVID-19 pandemic, while a quarter were recruited or reactivated as wildlife viewers, using the “R3” terminology from the Outdoor Recreation Adoption Model (Byrne & Dunfree, 2018). A little over half of the survey respondents reported viewing for 30 days or fewer per year. In terms of expertise as a wildlife viewer, the majority of wildlife viewers self-identified as beginner, novice, or intermediate level viewers rather than advanced or expert. Over one-third of viewers reported having participated in wildlife viewing for 20% or more of their lives. Family and friends, as opposed to mentors or peers, were the most commonly reported type of social support that influenced viewer participation.

Wildlife viewer demographics

All quotas for survey sampling were met regarding age, gender, and educational attainment. The majority of survey respondents (over 80%) identified as White and non-Hispanic. Notably, we found that Black, Indigenous, and wildlife viewers of color identified less strongly as wildlife viewers than their White counterparts, yet they reported wildlife viewing as a more important part of their lives, on average. White and multiracial respondents most strongly identified as wildlife viewers. Consistent with broader demographic trends of Qualtrics panel participants, our survey respondents generally reported lower income than the U.S. population as a whole. Approximately 30% of viewers surveyed lived in a major city; another 20% reported living in a rural area and the remaining 50% reported living in a smaller city or suburban area.

Conservation behaviors

We surveyed respondents about their likelihood to participate in a variety of conservation behaviors independently and in collaboration with their state agencies. Wildlife viewers most often reported being likely to clean up trash or litter (55% reported *very* or *extremely likely* to do so), participate in civic engagement (24% *very* or *extremely likely*), or purchase environmentally friendly products in collaboration with their state agencies (24% *very* or *extremely likely*). The least often reported being likely to collect data on wildlife or habitat to contribute to science or management (24% reported *very* or *extremely likely*) or inform or teach others about wildlife conservation (23% reported *very* or *extremely likely*).

Wildlife viewer barriers

We surveyed viewers about a variety of topics which limited their participation in wildlife viewing. More than half of viewers reported that distance to viewing locations, financial costs associated with wildlife viewing, and lack of free time *at least somewhat* limited their participation in wildlife viewing.

Approximately 40% of viewers identified as experiencing *somewhat to a great deal of* accessibility challenges when participating in wildlife viewing. Accessibility challenges were defined as, “[t]he difficulties someone experiences interacting with the physical or social environment when engaging in a meaningful activity such as birding. These may be the result of mobility challenges, blindness or low vision, intellectual or developmental disabilities (including Autism), mental illness, being Deaf or Hard of Hearing or other health concerns” (Birdability, 2021).

Relationships with agencies

We also explored viewers’ experience with state agencies, financial contributions to benefit agencies, future financial contributions likelihood, and perceptions of their state agencies. Consumptive viewers had greater levels of familiarity, likelihood to contribute financially to, and experience with state agencies than nonconsumptive viewers. Consumptive viewers also had slightly higher levels of trust in state agencies than nonconsumptive viewers. In the analysis phase, we further divided financial contribution mechanisms into “nonvoluntary” (items such as fees, licenses, and required stamps) and “voluntary” (items such as donations, products, and voluntarily purchased habitat stamps). Viewers reported higher past contribution and future likelihood of utilizing nonvoluntary than voluntary items. Both consumptive and nonconsumptive viewers were most likely to financially contribute to their state agency through the purchase of fishing licenses. Additionally, wildlife viewers were also most likely to increase their contributions to their state agency if they knew their funds would be used for habitat conservation, conservation of rare and vulnerable species, wildlife research, education or outreach, opportunities or resources for wildlife viewing, conservation of preferred viewing species, or were matched by an external source.

About 60% of all wildlife viewers utilized at least one program or service from their state agency within the past 5 years, most commonly information about wildlife in their state or wildlife viewing opportunities. To support them in their viewing, respondents reported state agencies can provide viewers with more information about wildlife in their states, how to view wildlife, and viewing locations. Wildlife viewers prefer their state agencies to share information with them via the agency’s website, printed materials, email updates, or Facebook.

Recommendations

In February 2022 at the Wildlife Viewing and Nature Tourism (WVNT) Academy we held a co-production workshop with 90+ participants from 24 state agencies in which we presented preliminary survey findings and facilitated discussion in full- and small-group conversations. The following five recommendations were developed from workshop notes taken by the research team and reflections submitted directly by participants:

1. Respond to demand for agencies to develop programs and engage viewers through providing increased information about where, how, and what wildlife to view, and additional programs and support for wildlife viewers.
2. Broaden constituency of agencies through supporting viewing experiences of underserved groups including Black, Indigenous, and wildlife viewers of Color, and/or disabled wildlife viewers through increased representation and connection with these groups.
3. Develop opportunities for viewers to financially support their state agencies. Agencies can target new programming and opportunities for nonconsumptive viewers to help increase relevancy of agencies to viewers.
4. Support agencies in implementing results through continued collaboration with the WVNT Working Group, conference attendance, internal human dimensions staff, and a community of practice to support states through peer interactions and guidance from Virginia Tech researchers.
5. Conduct additional research to fill information gaps about wildlife viewing through agencies and academics collaborating on future research. In particular, use the existing dataset to identify how and where to engage with urban wildlife viewers.

The following report details the methodology, findings, and recommendations from national and regional-level analysis of data from the Wildlife Viewer Survey. Accompanying Appendices contain the survey instrument, more information on the methods, and supplemental results tables to complement the figures in the report.

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BACKGROUND

Introduction

Across the United States, state fish and wildlife agencies (hereafter, state agencies) are key players in the conservation of wildlife and their habitats (AFWA 2017). State agencies have legal authority and responsibility to steward wildlife resources as a public trust, in the interest of all current and future members of the public (Organ et al. 2012). To that end, the 50 state agencies manage public lands and waterways, provide technical support for conservation on private lands, conduct wildlife research and monitoring, and govern wildlife harvests and wildlife-associated recreation, among other activities (AFWA 2017; Organ et al. 2012). Since their inception, the work of many state agencies has been largely funded through the sale of hunting and fishing licenses, boating and shooting permits, and taxes on recreation equipment under a user-pay, user-benefit model (Organ et al. 2012). However, a shifting user-base and cultural conditions call for re-examining and possibly revising this model. In particular, declines or stagnation in hunting and angling among an increasingly urbanized population have made it clear that the sustainability of state agencies and their contributions to wildlife conservation is contingent on expanding and diversifying the financial and political support provided by the public (AFWA & WMI 2019). Specifically, agencies face the challenge of maintaining their current supporters while increasing their relevance to and engagement with new and broader constituencies (AFWA & WMI 2019). These broader constituencies include people in diverse demographic, social, and geographic groups. In addition, this includes recreationists who are invested in wildlife and the outdoors, but may have values, interests, and behaviors that differ from those of the hunting and angling communities that have traditionally been the target audience for agencies (AFWA & WMI 2019). Central among these nontraditional recreation groups are people who participate in wildlife viewing, one of the fastest growing outdoor recreation activities in the United States.

Wildlife viewing

Wildlife viewing is a broad category of wildlife-associated recreation that includes intentionally observing, photographing, or feeding wildlife, improving or maintaining wildlife habitat, and visiting parks and natural areas for the primary purpose of wildlife viewing (US DOI et al. 2016). From 2011 to 2016, the number of U.S. adults participating in wildlife viewing increased by 14.3 million, or an increase in participation in wildlife viewing to over one-third of the adult population (US DOI et al. 2016). Viewers spend nearly \$76 billion on their viewing activities annually, including \$170 million in access fees for public lands (US DOI et al. 2016). Birdwatchers and other viewers also directly contribute funds to wildlife and habitat conservation (Fulton et al. 2017). A study in New York State found that people who bird (including those who both hunt and bird) are more likely than non-recreationists and hunters to

donate to conservation (Cooper et al. 2015). They are also more likely to participate in pro-environmental behaviors such as conducting habitat enhancement, joining environmental groups, and supporting conservation policy (Cooper et al. 2015). Similar patterns have been seen in Virginia, where recreationists who identify as birders or other viewers (alone or in addition to identifying as hunters and anglers) engage in a range of conservation activities more often than those who only hunt or fish (Grooms et al. 2020). Additionally, wildlife viewing is a means of connecting people to nature and garnering general support for wildlife conservation (Kellert et al. 2017).

Wildlife viewers are thus a critical constituency for state fish and wildlife agencies, especially given stable or declining rates of participation in hunting and angling over the past decade (US DOI et al. 2016) and the ongoing need to generate broader support for agency efforts. However, viewers' direct support of wildlife agencies is currently limited. In part, this limited support is due to a lack of dedicated funding streams for wildlife viewers that would parallel the licenses, permits, and excise taxes that connect hunters and anglers to state agencies (Organ et al. 2012). In most cases regarding wildlife viewers, funding to state agencies is via voluntary contribution mechanisms and not mandated. Limited financial support from viewers may also be due to their perceptions that agencies serve them less than hunters and anglers (Grooms et al. 2019). Additionally, birders and other viewers tend to have lower levels of trust in state and federal agencies, relative to other entities (Fulton et al. 2017), and compared to hunters and anglers (Grooms et al. 2020).

While wildlife viewers undoubtedly benefit from the work of state agencies through activities such as habitat management and research, as well as established wildlife viewing programs that serve viewers directly, agency relationships with this emerging constituency are still relatively new. The Fish and Wildlife Relevancy Roadmap (hereafter, Relevancy Roadmap) developed by the Association of Fish and Wildlife Agencies (AFWA) and Wildlife Management Institute (WMI) in 2019 identified limited capacity to understand and plan for engagement with new groups as key barriers in the ability of agencies to broaden their public support and serve diverse constituencies (AFWA and WMI 2019). The Relevancy Roadmap articulates a need for "increase[d] acquisition and application of social science information" to address these barriers with "science that is as robust and comprehensive as the ecological information relied upon in the past" (AFWA & WMI 2019, p. 11). Indeed, important insights about wildlife viewer behaviors and their relationships with agencies have emerged from social science surveys at both state (e.g., Cooper et al. 2015; Grooms et al. 2020) and national levels (e.g., Fulton et al. 2017; NAWMP 2021; US DOI et al. 2016). (For a review of the current literature on wildlife viewing, see Sinkular et al. (2021).) Nonetheless, key knowledge gaps remain about the activities, experiences, perceptions, needs, and preferences of wildlife viewers across the

country—critical information for agencies to become more inclusive of and relevant to wildlife viewers, fulfill their missions and public trust directives, and sustainably advance fish and wildlife conservation for generations to come.

Project background

Motivated by national and state-level demographic changes, shifts in wildlife values, and new patterns in public participation in wildlife-associated recreation, the Virginia Department of Wildlife Resources (VA DWR) initiated and funded a mixed-method social science study that explored the recreation and conservation behaviors of wildlife recreationists in Virginia, as well as their experiences with and preferences for engagement with the agency. The study was conducted by researchers at Virginia Tech from 2018-2021 and directly informed a participatory planning process that resulted in a strategic plan for deepening engagement between wildlife viewers and VA DWR (Grooms et al. 2021; VA DWR 2021). Encouraged by this work, members of the Association of Fish and Wildlife Agencies' (AFWA) Education, Outreach & Diversity (EOD) Committee - Wildlife Viewing and Nature Tourism (WVNT) Working Group collaborated with the research team at Virginia Tech to submit a Multistate Conservation Grant Program (MSCGP) proposal for a large-scale survey of wildlife viewers that could inform the work of state fish and wildlife agencies throughout the nation.

MSCGP awards are cooperatively administered by AFWA and the US Fish and Wildlife Service (USFWS) and funded by the Wildlife and Sport Fish Restoration Program (WSFR) to address agency needs that are beyond the scope or capacity of individual states to address (AFWA 2019). A 2021 Multistate Conservation Grant Program (MSCGP) grant was awarded to the AFWA' EOD Committee WVNT Working Group and Virginia Tech to address barriers to the relevancy and inclusivity of state agencies for wildlife viewers. The project included a synthesis of current literature on the behaviors, interests, experiences, and preferences of wildlife viewers (Sinkular et al. 2021); a national-scale online survey ($n = 4,030$) that built upon previous research to deepen understanding of wildlife viewers across all four AFWA (West, Midwest, Northeast, and Southeast) regions; and recommendations for improved engagement between state fish and wildlife agencies and wildlife viewers, co-produced by the research team and staff from fish and wildlife agencies across the country.

A six-member Executive Committee and a 16-member Steering Committee were established to guide implementation of the project by the Virginia Tech team. The Executive Committee, which included the Chair of the WVNT Working Group and other MSCGP proposal co-authors from five state agencies, provided big-picture, strategic guidance for the project and was also responsible for final decisions on a number of fine-scale details in survey design and administration. The Steering Committee, which included human dimensions, wildlife viewing,

and nongame wildlife staff from 11 additional state agencies, participated in routine project meetings, liaised with others in their agencies related to the project, and provided feedback to ensure that the survey would be relevant to wildlife viewers and produce data that meet the needs of state agencies.

About this report

This report presents national and regional-level analysis of data from the Wildlife Viewer Survey. It concludes with evidence-based communications and engagement strategies that agencies can implement to increase both their relevance to wildlife viewers and the participation of wildlife viewers in activities that support agencies' conservation goals. The results and recommendations contained in this report contribute to multiple components of AFWA's Strategic Plan by identifying opportunities to enhance the relevancy of state fish and wildlife agencies to wildlife viewers, particularly those viewers who are not already engaged in hunting and angling; avenues for building partnerships with viewers to support implementation of state conservation plans; and potential strategies for engaging viewers in conservation funding mechanisms.

METHODS

Survey instrument

Building upon other national and state-specific survey efforts of wildlife recreationists, and based on input from the Steering Committee, we developed a survey instrument consisting of closed-ended questions about wildlife viewers' recreation and conservation behaviors and relationships with their state wildlife agencies (see Appendix A for full survey instrument).

Survey questions covered wildlife viewers':

- Duration, location, and frequency of participation in wildlife viewing
- Participation in other forms of outdoor recreation
- Level of specialization as a wildlife viewer
- Travel- and equipment-related expenditures for wildlife viewing
- Barriers to and social support for participating in wildlife viewing
- Likelihood of participating in conservation behaviors
- Pattern of participation in wildlife viewing during the COVID-19 pandemic
- Familiarity with, perceptions of, and trust in state wildlife agencies
- Experience and satisfaction with agency programs and services
- Past financial contributions to state wildlife agencies
- Likelihood to support agencies financially and through conservation behaviors in the future
- Preferred forms of viewing support and communications from agencies
- Demographic characteristics

We shared an initial draft of the survey with members of the Steering Committee, who were then responsible for discussing the survey with other staff in their agencies, collecting input, and reporting on that feedback to the Virginia Tech team. After making adjustments for clarity, brevity, relevance, and accuracy, we programmed a revised draft of the survey into Qualtrics, an online survey platform for designing and administering surveys. The web-based survey was pilot tested with a convenience sample of 35 wildlife viewers and also reviewed by colleagues with experience in wildlife recreation and survey methodology. After additional revisions, a second pilot test was conducted with 101 wildlife viewers recruited through a Qualtrics panel (see the following section for more information on survey panels). Final survey modifications were discussed with and approved by the Executive Committee.

To aid in respondent recall, survey questions about behaviors are usually asked with reference to a distinct period of time (e.g., the past year) (Vaske 2019, Chapter 4). Due to the impact of the COVID-19 pandemic during the survey administration period and the desire to provide state agencies with information from a less unusual time, we instead asked respondents to reflect on

“a typical year,” which we defined in the survey instrument as “a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.”

Survey sampling and administration

We administered the survey online from August 6 - September 27, 2021. All potential survey respondents were identified and recruited through a survey panel administered by Qualtrics, and participants completed the online survey through the Qualtrics platform. When conducted with appropriate methodological decisions, panel surveys have been shown to be a valuable tool to conduct online social science research (Wardropper et al. 2021). A panel survey is a form of internet survey that consists of sampling respondents from an online group, or panel, and usually provides a small form of compensation. Attention checks, or quality assurance items (Czeisler et al., 2020), and time limits based on a fraction of the median completion time from pilot samples (Miller et al., 2020) are two tools utilized to increase the quality of responses gathered in panel research.

The survey was administered to separate samples in each of the four AFWA regions (i.e., West, Midwest, Northeast, and Southeast; Figure 1), with a goal of 1,000 respondents from each region, in order to allow for robust inferences at national and regional scales. We assigned states that are included in multiple AFWA regions to a single one in order to create four discrete regions that were comprised of contiguous states and as similar as possible in size, in terms of the number of wildlife viewers in the region based on the 2016 National Survey of Hunting, Fishing, and Wildlife-Associated Recreation (hereafter, National Survey of Wildlife Recreation) (US DOI et al. 2016).

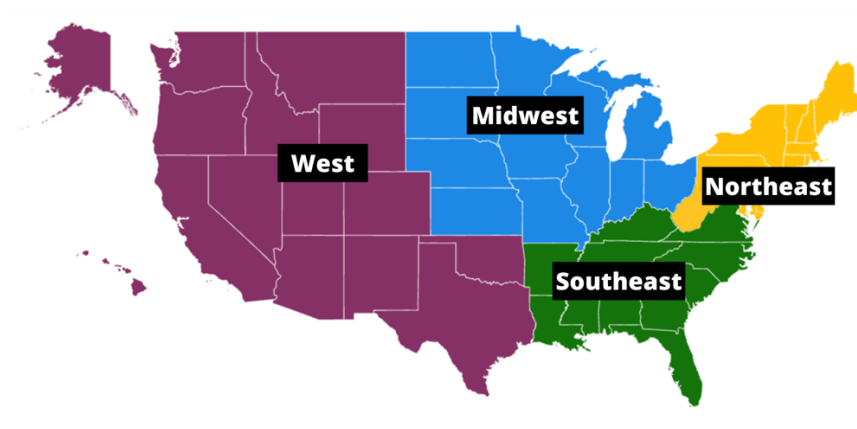


Figure 1. Sampling map

Map of the United States showing the four AFWA regions used for survey sampling

Eligibility

Respondents were asked to indicate consent to participate in the study at the very beginning of the online survey instrument. Initial survey questions then screened for participant eligibility to participate in the study based on their 1) involvement in wildlife viewing; 2) state of residence; and 3) demographic characteristics such as age, gender, and education level.

Only individuals who had participated in some form of wildlife viewing in the past five years were able to complete the survey. This study did not examine traits of non-wildlife viewers. The survey provided a definition of both “wildlife” and “wildlife viewing” to ensure inclusion of a broad range of people who participate in various forms of wildlife viewing and exclusion of those who only observe wildlife incidentally during other outdoor activities. The following definitions were adapted from the National Survey of Wildlife Recreation (US DOI et al. 2016):

For this survey, **wildlife** refers to all animals, such as birds, fish, insects, mammals, amphibians, and reptiles, that are living in natural environments, including in urban and semi-urban places. Wildlife does not include animals living in artificial or captive environments, such as aquariums, zoos, or museums, or domestic animals such as farm animals or pets.

Wildlife viewing refers to intentionally observing, photographing, or feeding wildlife; improving or maintaining wildlife habitat; or visiting parks and natural areas for the primary purpose of wildlife viewing. Wildlife viewing does not include simply noticing wildlife while doing something else, such as gardening, exercising, hunting, fishing, or intentionally scouting for game.

In order to prevent states with larger populations of wildlife viewers from being disproportionately represented in their respective regional samples, we limited the proportion of respondents who could reside in the three (in one case, four) states in each region with the largest numbers of wildlife viewers according to the National Survey of Wildlife Recreation. Specifically, the proportion of respondents in the regional sample from those states could be no more than 25% above the expected proportion of wildlife viewers from those states. For example, in the West Region, California, Texas, and Washington are home to the largest numbers of wildlife viewers, comprising 31%, 21%, and 12% of viewers, respectively, in the region (US DOI et al. 2016). We limited California viewers to no more than 39% of the sample ($31\% + 0.25 * 31\%$), Texas viewers to 26% of the sample, and Washington viewers to 12% of the sample (See Appendix B).

Participant eligibility was also determined by three broad demographic quotas set to ensure a representative sample of wildlife viewers, while also ensuring we would be able to meet targets for the number of respondents. We set quotas for respondent gender, age, and education based on national-level results of the National Survey of Wildlife Recreation (US DOI et al. 2016). The same quotas were applied to all four regional samples. Following the gender distribution of wildlife viewers in the National Survey of Wildlife Recreation, we required that each regional sample consist of 59% men and 41% women. For the age quota, we defined three broad categories by combining the smaller categories used in the National Survey of Wildlife Recreation (US DOI et al. 2016). We required that 22% of respondents be between 18 and 34 years old, 33% be between 35 and 54 years old, and 45% be 55 years old or older. Unlike the National Survey of Wildlife Recreation, we did not survey individuals under 18 years of age. Finally, while the National Survey of Wildlife Recreation classified respondent educational attainment in terms of the number of years of education (e.g., “11 years or less”, “12 years”, and “1 to 3 years of college”), we set quotas based on degree attainment, consistent with Qualtrics’ standard survey methodology for panels, as well as other surveys of wildlife viewers (Patton 2021). We required 39% of respondents in each regional sample to have a high school diploma or less education, 23% to have completed some college, including completion of a technical or associate degree, and 38% to have completed a bachelor’s or graduate degree.

Data quality

We implemented a number of measures to maximize the quality of the data generated through the Qualtrics panel, including attention checks and a minimum completion time (following best practices for using survey panels, as described in Wardropper et al. 2021). The survey instrument contained two different kinds of attention checks. First, there were five sets of statements in the survey that were worded as opposites of each other (e.g., “Wildlife viewing has a central role in my life” and “Wildlife viewing is not an important part of my life.”). Inconsistent responses to these statements indicated that a respondent may be taking the survey without being thoughtful. For a second kind of attention check, we identified combinations of responses that suggested the respondent was providing bad data (e.g., if a respondent indicated that they participate in “photographing or taking pictures of wildlife” in one question and in a later question responded that they are “not interested in observing, photographing, or feeding wildlife”). Respondents who failed any two attention checks in the survey were eliminated from the final sample (see Appendix B for a full list of attention checks). Finally, we also established a minimum survey completion time in order to remove respondents from the sample that completed the survey so quickly that their responses were unlikely to have been genuine. The minimum completion time was set at 6.35 minutes (or 381 seconds),

which was the longest survey duration for the fastest quintile of the 101 respondents in the Qualtrics pilot test.

Data analysis

In this report, we generally present response frequencies for each survey question from wildlife viewers within each AFWA region, as well as frequencies from an aggregated, weighted national sample of wildlife viewers. To generate a national-level sample, we combined data from all four AFWA regions and weighted responses to reflect the geographic distribution of wildlife viewers across the country. Weights were determined for responses from each region based on estimates of the number of wildlife viewers in each state from the National Survey of Wildlife Recreation (US DOI et al. 2016) (see Appendix C for more information on the calculation of weights for the national sample).

We used SPSS to produce descriptive statistics for survey questions and to conduct inferential statistical tests (i.e., t-test, Chi-square, or ANOVA) to explore differences among wildlife viewers across the four study regions. Results from these tests are described in the Results section and are also included in Appendix D. Additional information about the methods used in data analysis, as well as the theoretical frameworks that guided the design and analysis of individual survey questions, is included in the following sections.

Analyzing consumptive and nonconsumptive wildlife viewers

Historically, state agencies were built on a user-pay approach, where recreators funded the agency through permit and license fees. In turn, the agency would manage fish and wildlife habitat for the benefit of their users (Organ et al., 2014). This approach, called the North American Model of Conservation, led to closer relationships between hunters and anglers and state agencies. Over recent decades, the decline or plateau of participation in consumptive recreationists (US DOI et al 2016) has led to increased emphasis on planning for other forms of recreation (Hinrichs et al., 2020; Larson et al., 2014). To better understand some aspects of wildlife viewers' relationships with state agencies and behaviors, we further divided them into nonconsumptive ($n = 2,176$) and consumptive ($n = 1,851$). Consumptive wildlife viewers were defined as those who participated in either (or both) hunting and angling as additional forms of outdoor recreation during the past five years. Our research in Virginia found that birders-viewers were less familiar with their state agency than other recreation types (Grooms et al. 2021), indicating that consumptive recreationists (hunters and anglers) had higher familiarity and potentially experience with their state agency.

RESULTS

Survey response

The survey was initiated by 17,281 panel participants and completed by 4,030 wildlife viewers. A total of 13,251 potential participants were considered ineligible because they either did not finish the survey, did not consent to participate in the study, were under 18 years of age, had not participated in any of the included forms of wildlife viewing in the past five years, failed two attention checks, or completed the survey too quickly. The three demographic quotas that were set (see Methods) were achieved in each region and reflected in the national sample.

Survey quota: Age

We asked respondents to indicate their birth year, with options ranging from 1920 to “After 2003” (i.e., most recent age eligible). Respondents who indicated they were born in 2003 were then asked a follow-up question, “Are you 18 years of age?”, in order to account for those who had not yet turned 18 at the time of survey completion.

Consistent with the quota, across all regions, 22% (all reported are from the national level sample, unless otherwise noted) of respondents were between the ages of 18-34, 33% were between the ages of 35-54, and 45% of respondents were over the age of 55 (Figure 2). A one-way ANOVA indicated no statistically significant differences in the mean age of respondents across regions ($M = 55.89$, $SD = 18.39$, $F = 1.00$, $df = 3$, $p = .39$; Figure 2; Table 1).

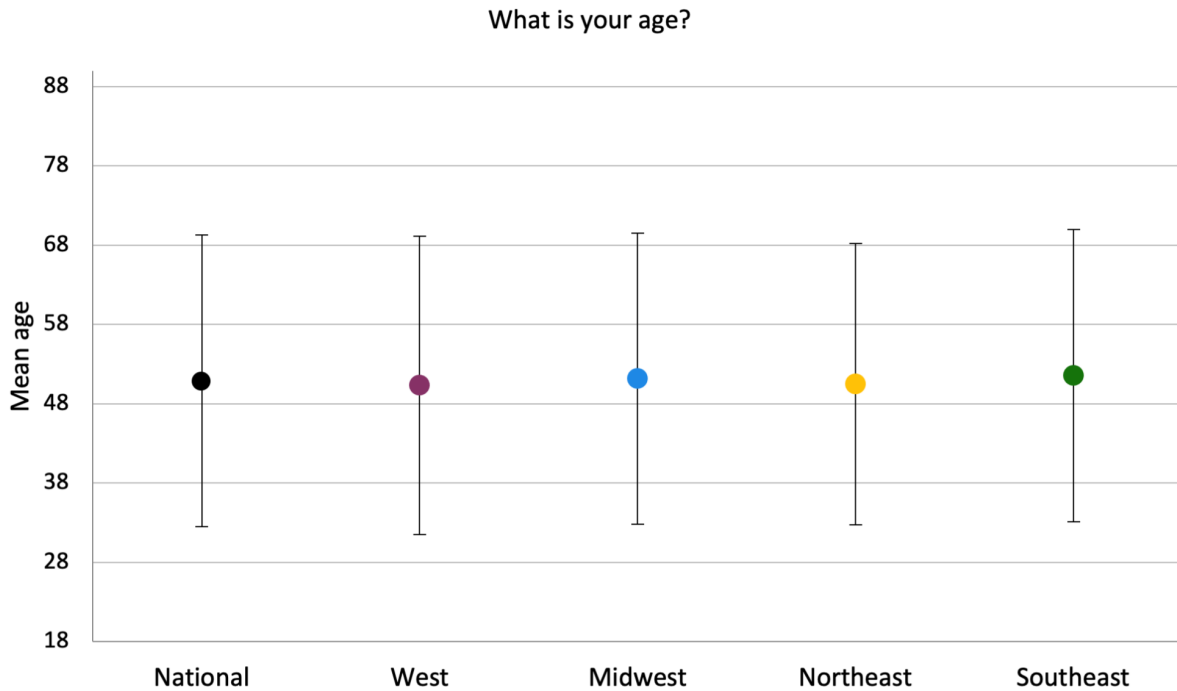


Figure 2. Respondent age

Mean age of wildlife viewers nationally and across all four AFWA regions. Points represent the mean age of wildlife viewers with color corresponding to the national or regional sample of each group. Error bars indicate one standard deviation. A one-way ANOVA indicated no statistically significant differences in the mean age of respondents across regions (Table 1).

Survey quota: Gender

We provided respondents with five gender inclusive response options, as suggested by Speil et al. (2019). These options included “man,” “woman,” “non-binary,” “prefer to not disclose,” and “prefer to self-describe” accompanied by an open textbox. As described in the Methods, a quota was set only for two gender options (man and woman); other genders were not calculated in the gender quotas but were included in the sample of respondents.

Consistent with the quota, across all regions, approximately 59% of respondents were men and approximately 41% of respondents were women (Figure 3). Less than 1% of respondents selected other response options: 0.7% identified as non-binary and 0.1% preferred to self-describe their gender using terms such as “transgender man” and “gender fluid.” Respondents that preferred not to disclose their gender identity ($n = 8$) were not included in analysis. A Chi-square test indicated no statistically significant differences in the gender identity of respondents across regions ($\chi^2 = 14.53, df = 3, p = .27$; Table 2; Figure 3).

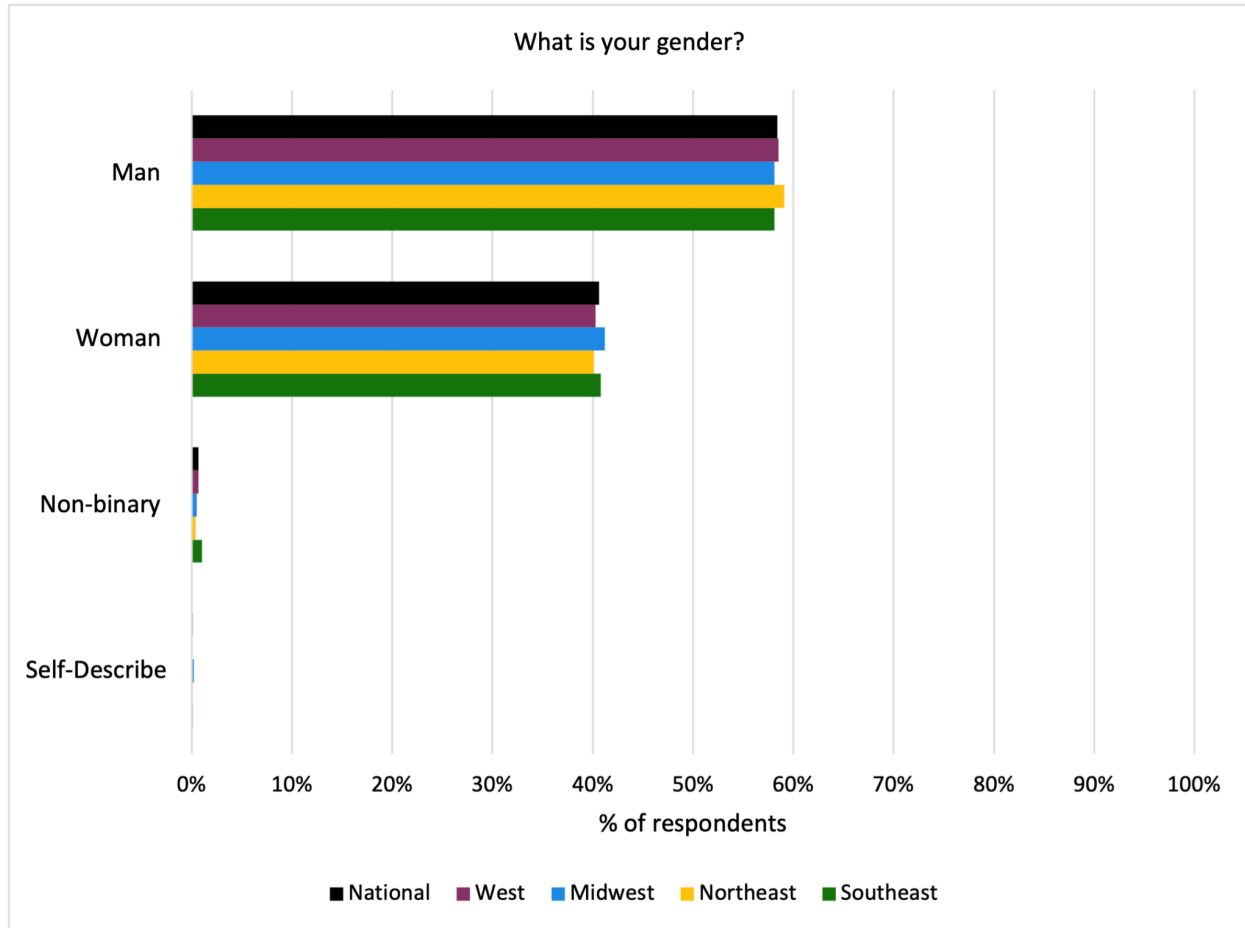


Figure 3. Respondent gender

The gender that wildlife viewers identified as nationally and in all four AFWA regions. A Chi-square test indicated no statistically significant differences in the gender of survey respondents across regions (Table 2). Quotas were set for this question across all regions.

Survey quota: Education

Although the quota included three categories for educational attainment, the survey included five response options in order to gain more specific information from respondents. We collapsed these categories for the calculation of the quota. Consistent with the quota, 39% of respondents had received a high school diploma, equivalent, or less education (Figure 4). In addition, 14% of respondents had completed some college and 9% had achieved an associate’s or technical degree. Finally, 24% of respondents held a bachelor’s degree, and less than 15% of respondents held advanced degrees (Figure 4). A Chi-Square test indicated no statistically significant differences in the education level of respondents across regions ($\chi^2 = 6.68, df = 3, p = .88$; Table 3; Figure 4).

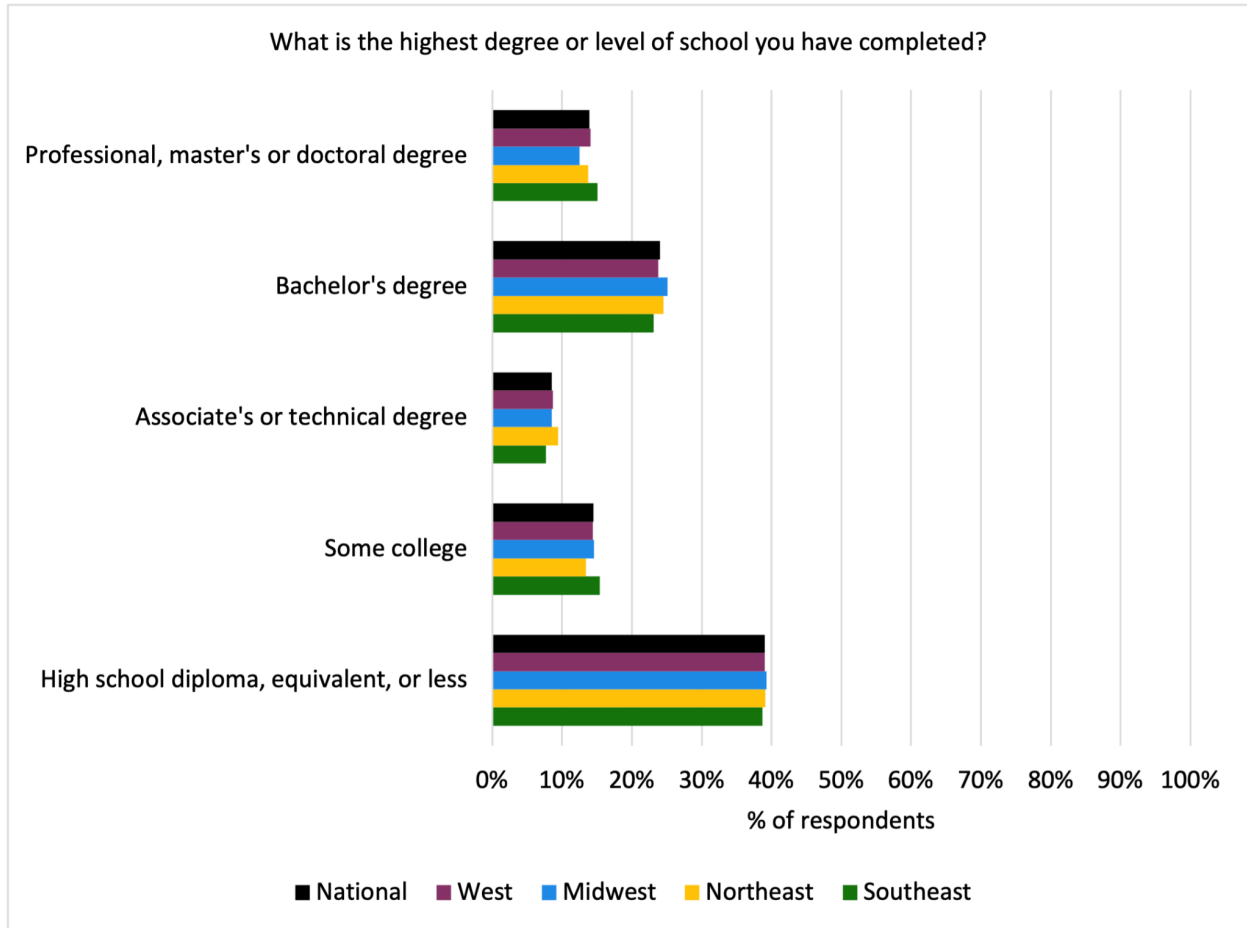


Figure 4. Respondent education

The highest level of education completed by wildlife viewers nationally and in all four AFWA regions. A Chi-square test indicated no statistically significant differences in the level of education completed by survey respondents across regions (Table 3).

Demographics

Race and ethnicity

We provided respondents with a list of eight race or ethnicity options and asked them to select all categories that applied to them. These options were consistent with recommendations from the United States Census Bureau, which suggests asking a single question that includes race and ethnicity in order to ease respondent burden (Matthews et al. 2015). No quota was set for race and ethnicity, and we expected results to skew heavily toward White (Rutter et al. 2021, US DOI et al. 2016).

While the national sample was primarily White and non-Hispanic (81%), respondents were also Black or African American (8%), Hispanic, Latino, or Spanish (6%), Asian (2%), and American Indian or Alaska Native (2%), which is hereafter referred to as “Native American” in this report. Since less than 1% of respondents identified as “Middle Eastern or North African” and “Native Hawaiian or other Pacific Islander,” we included these respondents in the “Some other race or ethnicity” category for analysis, totaling 2%. In addition, 5% of respondents identified as more than one listed race or ethnicity. A Chi-square test indicated a number of statistically significant differences in the ethnoracial identities of survey respondents across regions. Respondents from the Southeast more commonly identified as Black or African American ($\chi^2 = 35.52$, $df = 3$, $p < .001$; Table 4; Figure 5) than in other regions. Respondents from the West more commonly identified as Native American ($\chi^2 = 18.71$, $df = 3$, $p < .001$; Table 4; Figure 5) and as Hispanic or Latino ($\chi^2 = 36.62$, $df = 3$, $p < .001$; Table 4; Figure 5) than in other regions, while respondents from the West and Northeast more commonly identified as Asian ($\chi^2 = 15.99$, $df = 3$, $p < .001$; Table 4; Figure 5) more than the Midwest and Southeast. Finally, more respondents from the Midwest and Northeast identified as White than in other regions ($\chi^2 = 21.77$, $df = 3$, $p < .001$; Table 4; Figure 5).

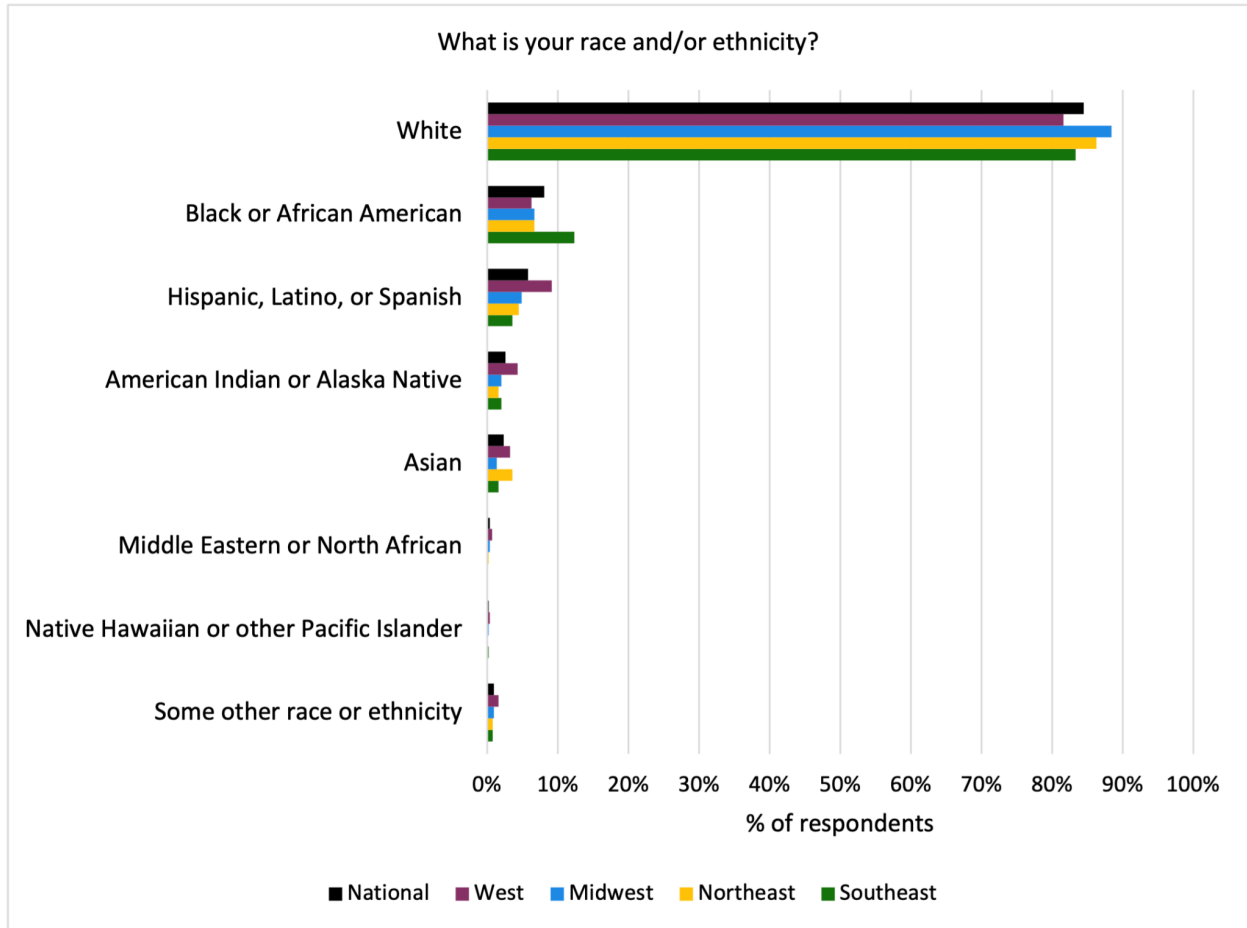


Figure 5. Respondent ethnoraical identity

Ethnoraical identity of wildlife viewers nationally and in all four AFWA regions. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect their ethnoraical identity. Due to low sample size, respondents that identified as “Middle Eastern or North African” and “Native Hawaiian or other Pacific Islander”, were included in the “Some other race or ethnicity” category for analysis. A Chi-square test indicated statistically significant differences in American Indian or Alaskan Native, Asian, Black or African American, Hispanic, Latino or Spanish, and White ethnoraical identities of survey respondents across regions (Table 4).

Household income

The survey asked respondents to select their total household income from six categories ranging from “Less than \$24,999” to “\$125,000 or more,” with each category increasing by \$25,500. In order to ease respondent burden, these options were reduced from the 10 categories presented in the National Survey of Wildlife Recreation, which ranged from “less than \$20,000” to “\$150,000 or more” (US DOI et al. 2016). A seventh option, listed as “prefer to not answer,” was also included and was selected by 4% of respondents. This group of responses was excluded from the following analysis.

Total household income of our survey respondents was lower than that of respondents in the National Survey of Wildlife Recreation; only 32% of respondents who chose to disclose their income in the National Survey of Wildlife Recreation reported a total household income of \$49,999 or less, while 37% reported an income of \$100,000 or higher (US DOI et al. 2016). In contrast, 49% of our respondents at the national level reported their total household income as \$49,999 or less and 21% of survey respondents reported a total household income of \$100,000 or more. This discrepancy in income between our survey and the National Survey conducted by USDOI et al. (2016) holds true for panel characteristics with Qualtrics: approximately 45% of all our survey entrants (including those who are not viewers or were otherwise ineligible) reported under \$50,000 total household income (T. Soule, personal communication, March 30, 2022). Chi-square tests revealed no statistically significant differences in income level across regions ($\chi^2 = 4.23$, $df = 3$, $p = .27$; Table 5; Figure 6).

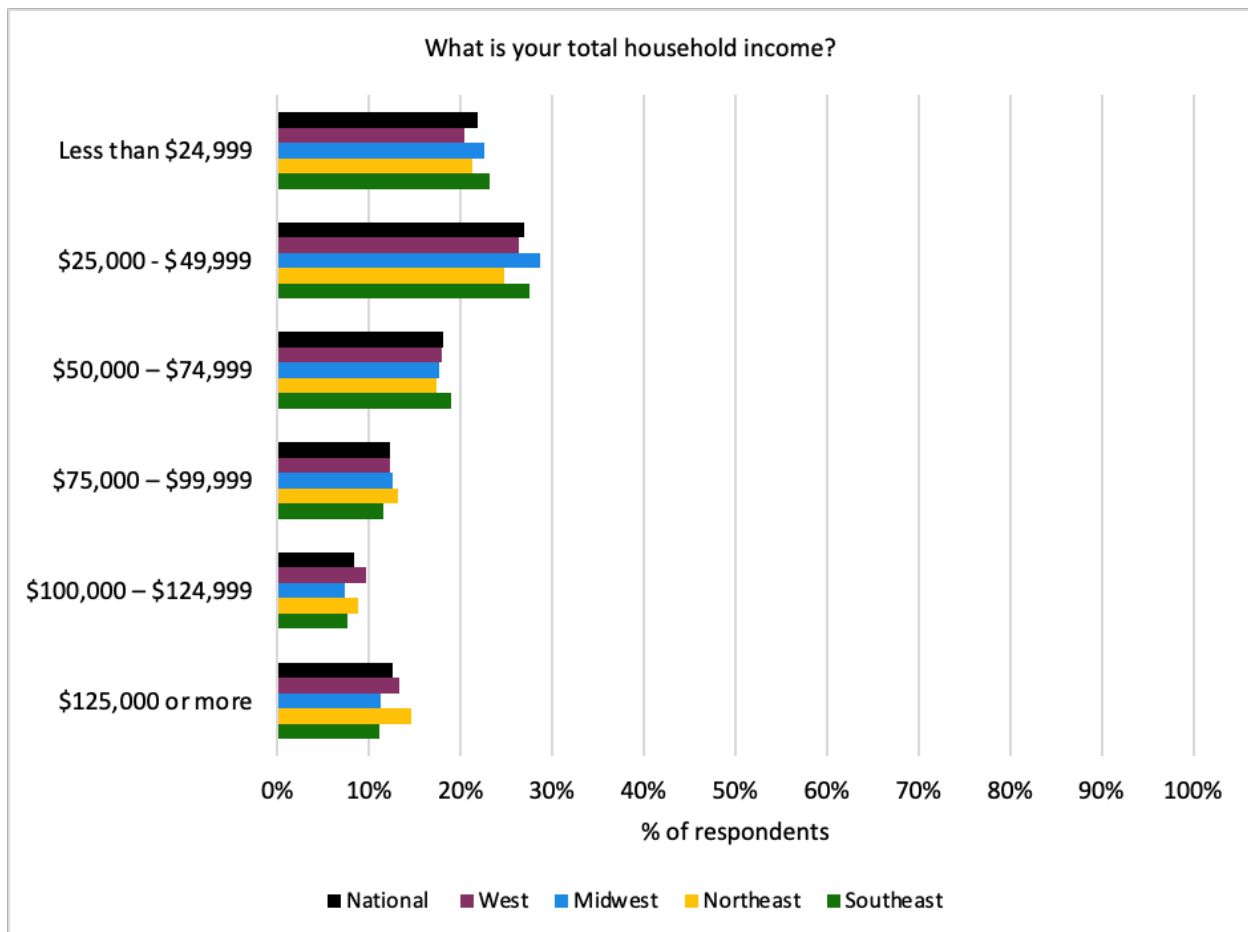


Figure 6. Respondent income

The total household income reported by wildlife viewers nationally and in all four AFWA regions. Each bar represents the percentage of respondents within each income range. A one-way ANOVA indicated statistically significant differences in the total household incomes of survey respondents across regions (Table 5).

Residential location

We asked survey respondents to indicate the size of the area in which they currently live, including “Rural area (less than 2,500 people),” “Small town (2,500 - 9,999 people),” “Small city (10,000 - 49,999 people),” or “Urban area (50,000 or more people).” These residential classifications are consistent with the definitions used by the U.S. Census (2010).

Our sample was more rural than the National Survey of Wildlife Recreation, in which 93% of respondents lived in “Metropolitan Statistical Areas” with populations of 50,000 or more; only 37% of our respondents reported living in an area with a population of 50,000 or more (US DOI et al. 2016). These findings aligned with general response patterns within the Qualtrics panel. Within the Qualtrics panel, approximately 41% of panelists self-reported living in an urban area, “densely populated, city or large town”, while 19% reported living in a rural area, “sparsely populated, small town or village” (T. Soule, personal communication, March 30, 2022).

A Chi-Square test indicated statistically significant differences in the self-reported classification of residential area across regions ($\chi^2 = 104.70$, $df = 3$, $p < .001$; Table 6; Figure 7). Respondents living in the West Region were more likely to reside in an urban area than respondents from all other regions (Table 6; Figure 7). Additionally, those living in the Southeast Region were more likely to reside in rural areas than in other regions, and those living in the Northeast Region were more likely to reside in small towns than in other regions (Table 6; Figure 7).

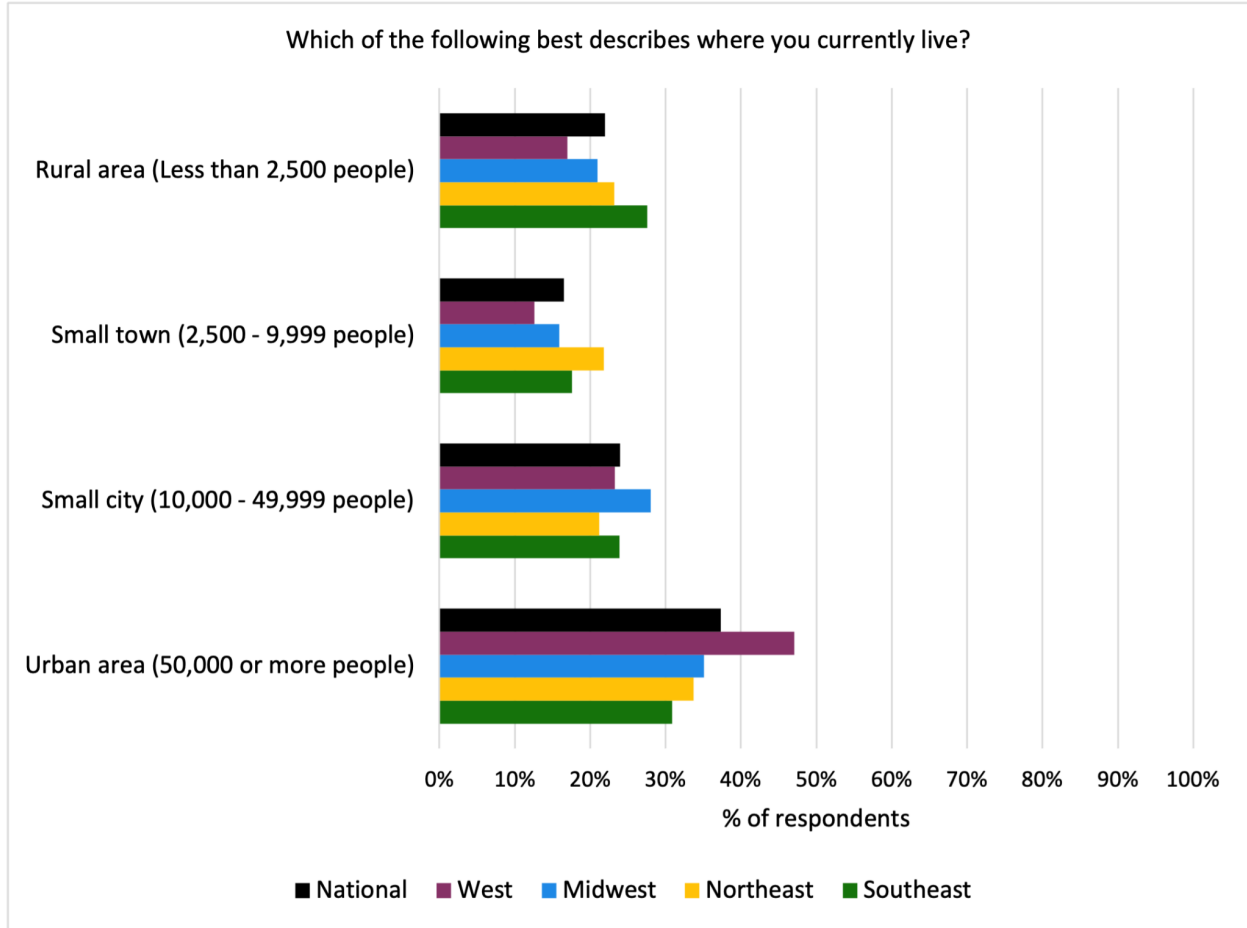


Figure 7. Respondent residential size

The size of the area in which wildlife viewers nationally and in all four AFWA regions reported currently living. Each bar represents the percentage of respondents within each reported residential area. A Chi-Square test indicated statistically significant differences in the self-reported classification of residential area across regions (Table 6).

Wildlife viewing behaviors

Forms of wildlife viewing

As described in the methods, the National Survey of Wildlife Recreation defines wildlife viewing as “closely observing, feeding, and photographing wildlife, visiting parks and natural areas because of wildlife, and maintaining plantings and natural areas around the home for the benefit of wildlife” (US DOI et al. 2016). Under this definition, wildlife viewing must occur as an intentional objective of the recreational activity. The survey noted: “Wildlife viewing does not include simply noticing wildlife while doing something else, such as gardening, exercising, hunting, or fishing, or intentionally scouting for game.” Incidental viewing, or observing wildlife while doing other recreational activities, is not considered wildlife viewing under this definition and was thus excluded from this survey effort.

We presented respondents with a list of seven wildlife viewing activities adapted from the National Survey of Wildlife Recreation and asked them to select all activities they participate in during a typical year (i.e., a recent year that was not impacted by unusual circumstances like the COVID-19 pandemic). The sum of percentages exceeds 100 because 76% of respondents selected more than one activity (Figure 8). Consistent with findings from the National Survey of Wildlife Recreation, the most popular wildlife viewing activity among all respondents was feeding wild birds (56%) (US DOI et al. 2016). It is important to note that, in this survey question, we deviated from the National Survey of Wildlife Recreation and chose not to further stratify wildlife viewing behavior from “around the home” and “away from home” to ease respondent burden. The second most popular wildlife viewing behavior nationally was visiting parks and natural areas to observe, photograph, or feed wildlife (51%). Wildlife viewers least often reported participating in feeding other wildlife (33%) or maintaining natural areas for the benefit of wildlife (31%). Chi-square tests indicated only one statistically significant difference in wildlife viewing activities across regions; for feeding wild birds, respondents in the West were less likely to participate in this activity than those in the Northeast and Midwest regions ($\chi^2 = 14.98$, $df = 3$, $p = .002$; Table 7; Figure 8).

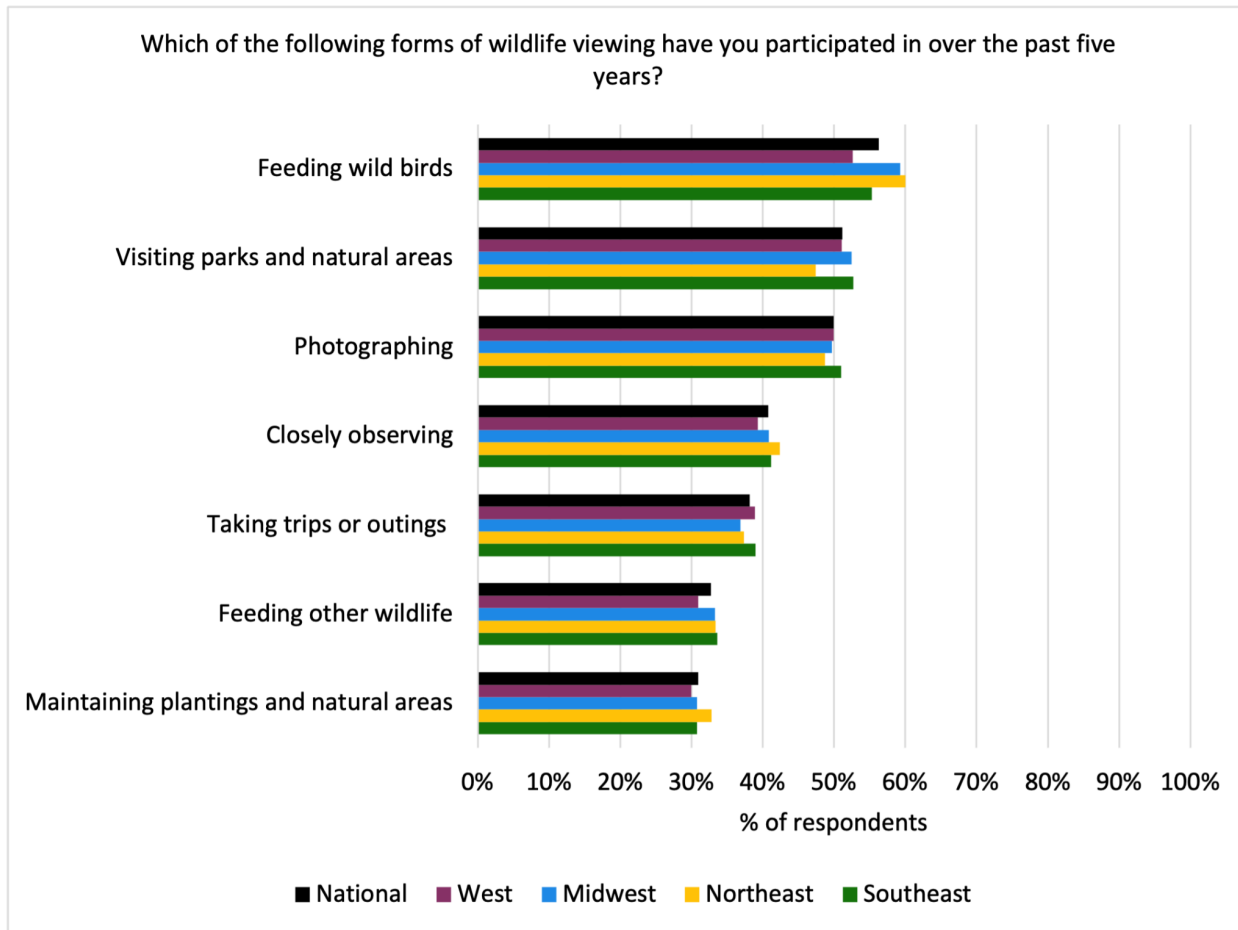


Figure 8. Forms of wildlife viewing

Forms of wildlife viewing that respondents reported participating in over the past five years. Each bar represents the percentage of respondents within each reported behavior. Note that individual categories sum to more than 100% because respondents were able to select more than one option. A chi-square test comparing results across regions revealed statistically significant differences for only one option, feeding wild birds (Table 7), which respondents from the West participated in the least.

Types of wildlife viewed

Birds, land mammals, and large mammals are typically the most popular types of wildlife viewed (USDOI et al. 2016, Grooms et al. 2019). Viewing reptiles and amphibians, also known as “herping,” represents a passionate group of wildlife viewers (Quinn, 2021). Our survey asked wildlife viewers to indicate all the types of wildlife they liked to view (which included observing, photographing, or feeding). The list of eight types of wildlife to view was adapted from the Virginia Wildlife Recreation Survey (Grooms et al. 2019) and the National Survey of Wildlife Recreation (DOI et al. 2016) recreation activities (Figure 9).

Birds (79%) were the most popular type of wildlife to view across all four regions, followed by land mammals (68%) (Figure 9). Wildlife viewers reported moderate interest in viewing marine

mammals (41%), reptiles (35%) and fish (34%). The least popular wildlife to view was amphibians, with 27% of respondents selecting this response option.

Chi-square tests indicated several statistically significant differences in wildlife type viewing preferences across regions. Viewing marine mammals was significantly more of interest in the Southeast and least of interest in the Midwest ($\chi^2 = 22.27$, $df = 3$, $p < .001$; Table 8; Figure 9). Viewers in the West preferred to view birds less than other regions ($\chi^2 = 9.83$, $df = 3$, $p = .02$; Table 8; Figure 9), but it was still the most popular type of wildlife to view for all regions. Finally, respondents from the Midwest were more interested in viewing land mammals than respondents from other regions ($\chi^2 = 11.89$, $df = 3$, $p = .01$; Table 8; Figure 9).

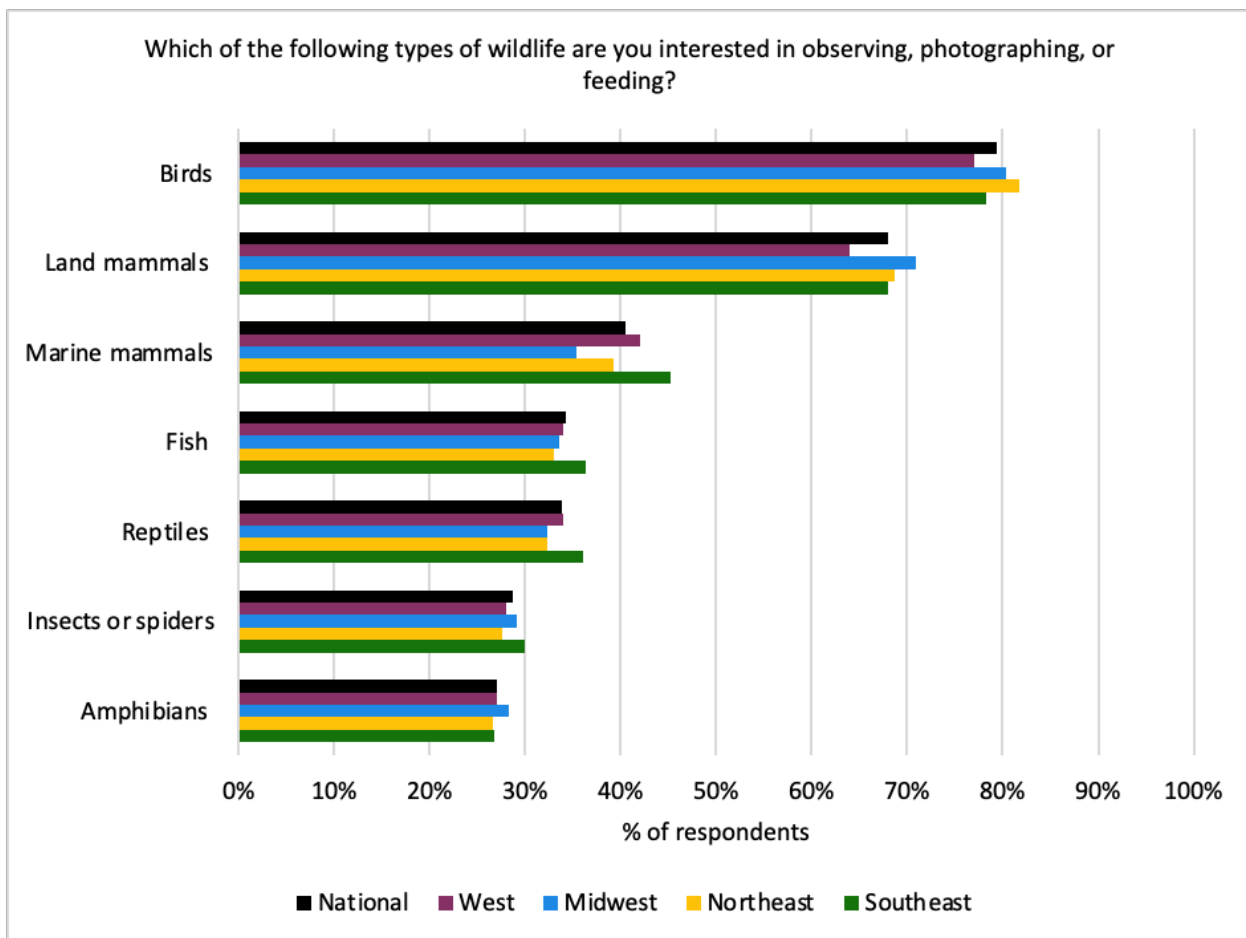


Figure 9. Types of wildlife

Types of wildlife that respondents reported interest in observing, photographing or feeding. Each bar represents the percentage of respondents within each type of wildlife from the national and regional levels. Note that individual categories sum to more than 100% because respondents were able to select more than one option. A chi-square test comparing results across regions revealed statistically significant differences for birds, land mammals, marine mammals, and other wildlife (Table 8).

Recreational specialization of wildlife viewers

To further characterize viewers' participation in wildlife viewing, we examined their specialization. Across diverse forms of outdoor recreation, specialization refers to a continuum of intensity in an individual's interest and involvement in a given activity (Scott & Shafer 2001). The best approach to measuring specialization is an area of active research and debate among scholars, but there is consensus that specialization is multidimensional, and as such, it is generally measured through multiple questions in survey research, rather than a single item (Needham et al. 2009). Specialization is consistently discussed and measured through three dimensions, often referred to as affective, behavioral, and cognitive (outlined in more detail below; Needham et al. 2009). We developed a series of survey questions to evaluate each of these dimensions of specialization, drawing on concepts and items from a previous survey of eBird participants conducted by the North American Waterfowl Management Plan (NAWMP) Human Dimensions Working Group (Harshaw et al. 2021) and a survey of anglers conducted by Needham et al. (2009). We present results for these dimensions separately below, as recommended by Lee and Scott (2004), in order to retain insights into each dimension.

Affective specialization

Following Harshaw et al. (2021) and Needham et al. (2009), we assessed the affective dimension of viewers' specialization through the concept of centrality, which reflects how important wildlife viewing is in an individual's life. Respondents were asked to indicate their extent of agreement, on a scale from 1 *strongly disagree* to 5 *strongly agree*, with three statements: 1) "A lot of my life is organized around wildlife viewing," 2) "Wildlife viewing has a central role in my life," and 3) "Being a wildlife viewer is an important part of who I am." On the national level, 54% of respondents indicated they *somewhat agree* or *strongly agree* with the first identity statement. Next, 41% of respondents indicated *somewhat agree* or *strongly agree* with the statement "Wildlife viewing has a central role in my life." Finally, only 31% of respondents indicated *somewhat agree* or *strongly agree* with the statement "Being a wildlife viewer is an important part of who I am." There were no statistically significant differences in any of these three items across regions (Tables 53 - 57).

Responses to these three statements on the centrality of wildlife viewing to an individual's life comprised a reliable scale (Cronbach's $\alpha = .86$), so we combined these variables by calculating the mean response to these items for an overall centrality measure (Table 9; Figure 10). The mean level of centrality was between 3.17 and 3.22 across the four AFWA regions, indicating that on average respondents selected neither disagree nor agree, with no statistically significant differences across regions (Table 9; Figure 10). There was no statistically significant difference in the centrality measure across regions ($F = 0.541$, $df = 3$, $p = 0.65$).

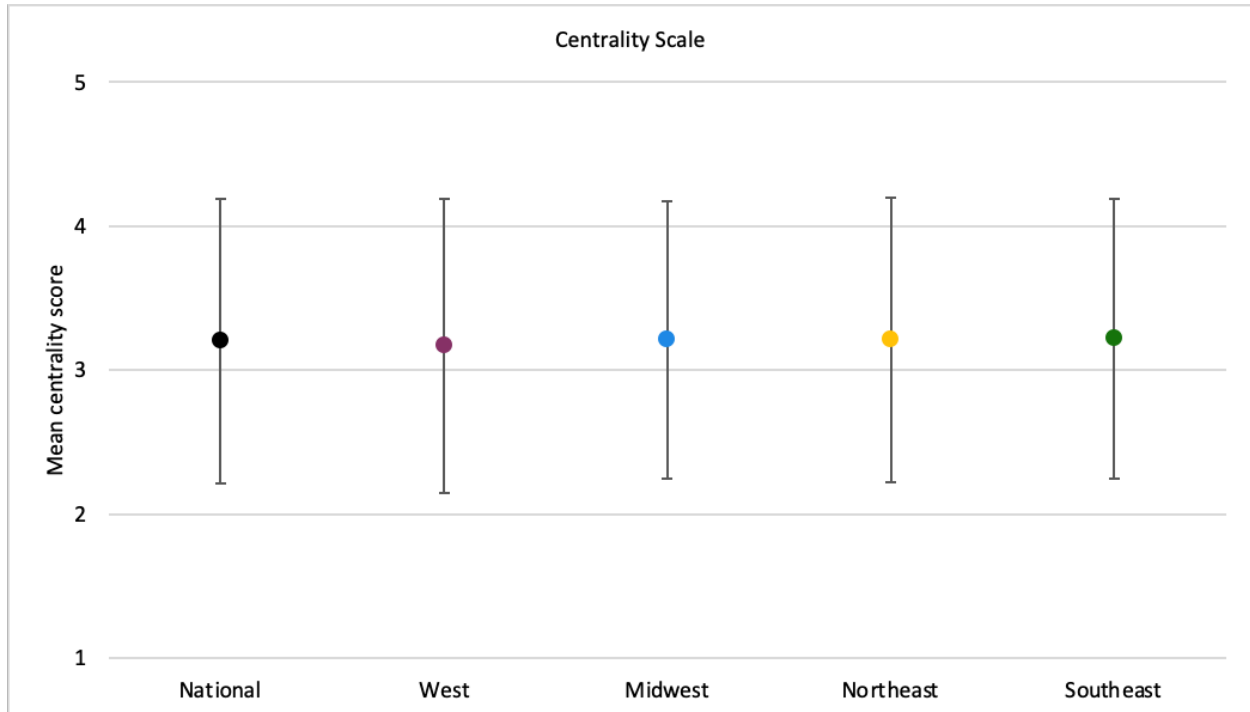


Figure 10. Centrality of wildlife viewing

The mean measure of centrality of wildlife viewing for respondents in each region and nationally. Points show the mean centrality measure for each sample, calculated as the mean of respondents' extent of agreement with three statements about the importance of wildlife viewing in their lives on a scale of 1 *strongly disagree* to 5 *strongly agree*. Bars show the standard deviation in the centrality scale within the region. A two-way ANOVA indicated no significant differences in mean centrality across regions (Table 9).

Behavioral specialization

We measured the behavioral dimension of specialization through respondents' use of specialized equipment for wildlife viewing and the duration of their experience in wildlife viewing. Nationally, 57% of wildlife viewers reported owning specialized equipment, such as binoculars, cameras, mobile apps, spotting scopes, field guides, or specialized clothing, or having rented or borrowed this kind of specialized equipment for wildlife viewing some time in the past five years (Figure 11; Table 10). There were no statistically significant differences across regions in owning equipment ($\chi^2 = 0.87$, $df = 3$, $p = .84$; Table 10).

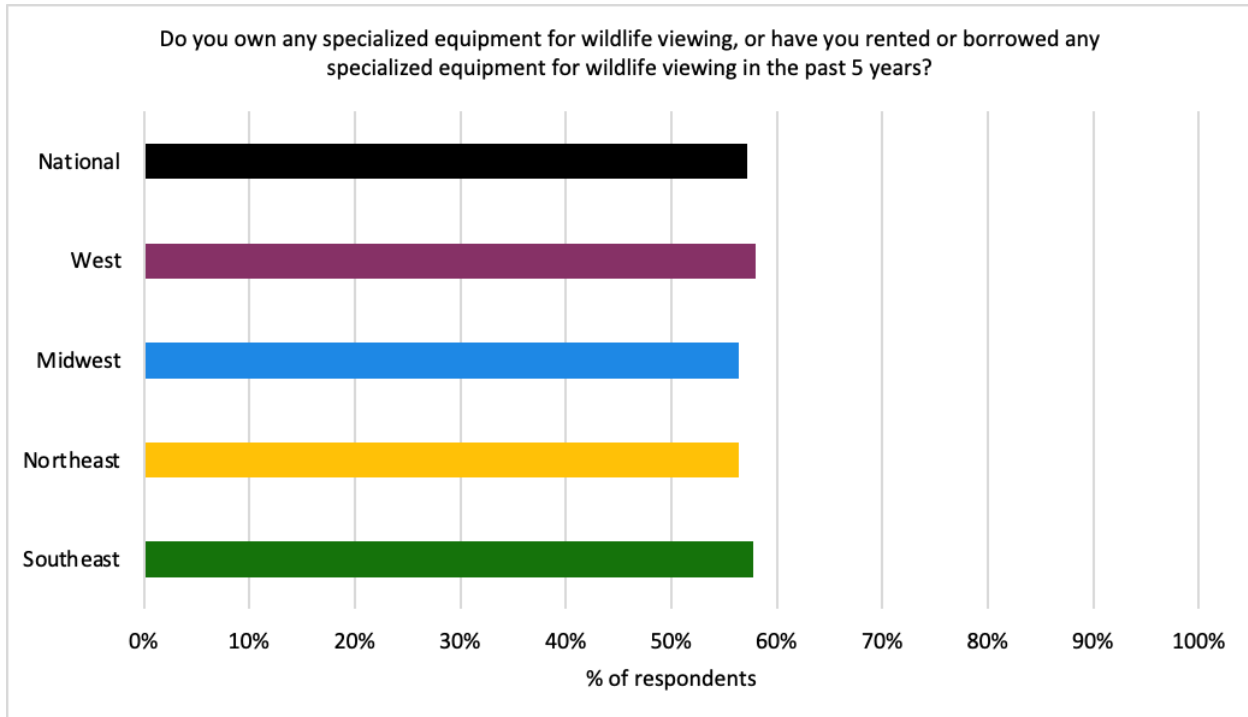


Figure 11. Owning, renting, or borrowing specialized equipment for wildlife viewing

Percent of wildlife viewers in each region and nationally who reported owning, renting, or borrowing specialized equipment for wildlife viewing in the past 5 years. Each bar represents the percentage of respondents within each skill level from the national and regional levels. Chi-square tests indicated no significant differences in the use of specialized equipment across regions (Table 10).

As another measure of behavioral specialization, we also asked survey respondents to indicate how many years they had been participating in wildlife viewing and provided response options in five-year categories. This question was not presented to respondents who indicated in a previous question that they had started viewing during the COVID-19 pandemic, in an effort to minimize respondent burden. As the COVID-19 pandemic began about 18 months before the survey was administered, we added the 283 wildlife viewers who reported that they started viewing during the pandemic to the 1-5 years category. About half of all respondents from each region reported having less than 10 years of experience with wildlife viewing. About 10% of viewers across all regions and the national sample had more than 50 years of wildlife viewing experience (Table 11). As a supplemental measure of specialization, we calculated the percent of life during which wildlife viewers had participated in wildlife viewing by creating five-equally sized categories (1-20%, 21-40%, 41-60%, 61-80%, and 81%-100% of life). The majority of wildlife viewers had participated in the activity for less than half their life: 38% reported viewing for one-fifth of their life or less, while 20% reported viewing for one to two-fifths of their life (Figure 12). Only 10% of respondents had participated in wildlife viewing for close to their whole life. A chi-square test revealed no statistically significant differences across regions ($\chi^2 = 16.08$, $df = 3$, $p = .19$; Table 12; Figure 12).

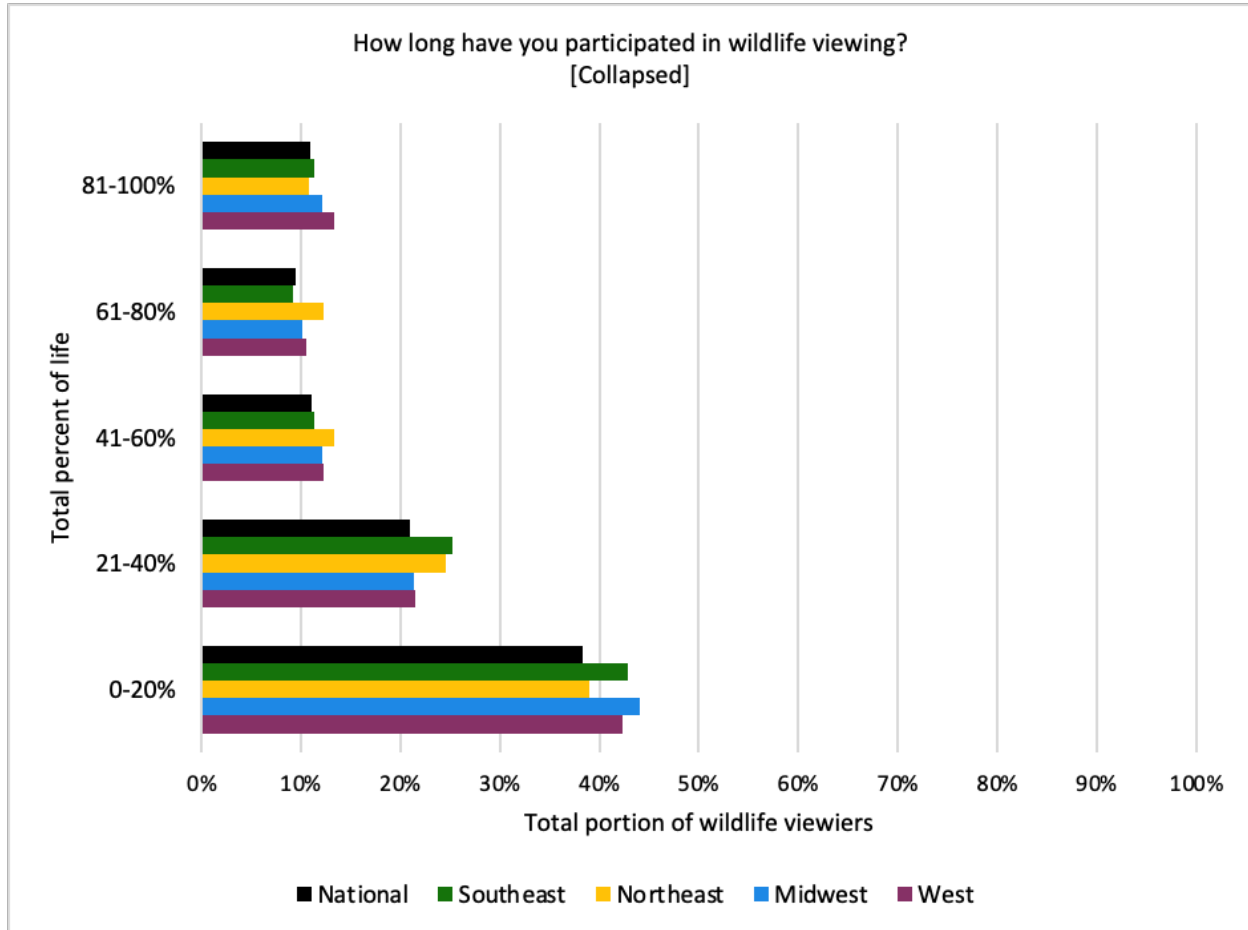


Figure 12. Estimated percentage of life spent viewing

The estimated percentage of life during which wildlife viewers had participated in wildlife viewing in five categories (1-20%, 21-40%, 41-60%, 61-80%, and 81-100% of life) for the national level and all four regions. A chi-square test indicated no significant difference in this measure of experience as a percentage of life spent viewing when comparing consumptive and nonconsumptive viewers (Table 12).

Cognitive specialization

Due to the number of diverse activities and variety of types of wildlife that are included under the umbrella of wildlife viewing, we used a single, broad item to measure the cognitive dimension of specialization through viewers' self-rated level of expertise, from *beginner* to *expert* (Maple et al. 2009). Nationally, about 60% of respondents considered themselves *beginner* or *novice* wildlife viewers (Figure 13). About 30% of viewers in each region rated their skill level as intermediate. Less than 9% of respondents across all levels considered themselves to be advanced, and less than 3% considered themselves to be expert wildlife viewers. A Chi-square test indicated no significant differences in self-rated skill level across regions ($\chi^2 = 15.44$, $df = 3$, $p = .22$; Table 13; Figure 13).

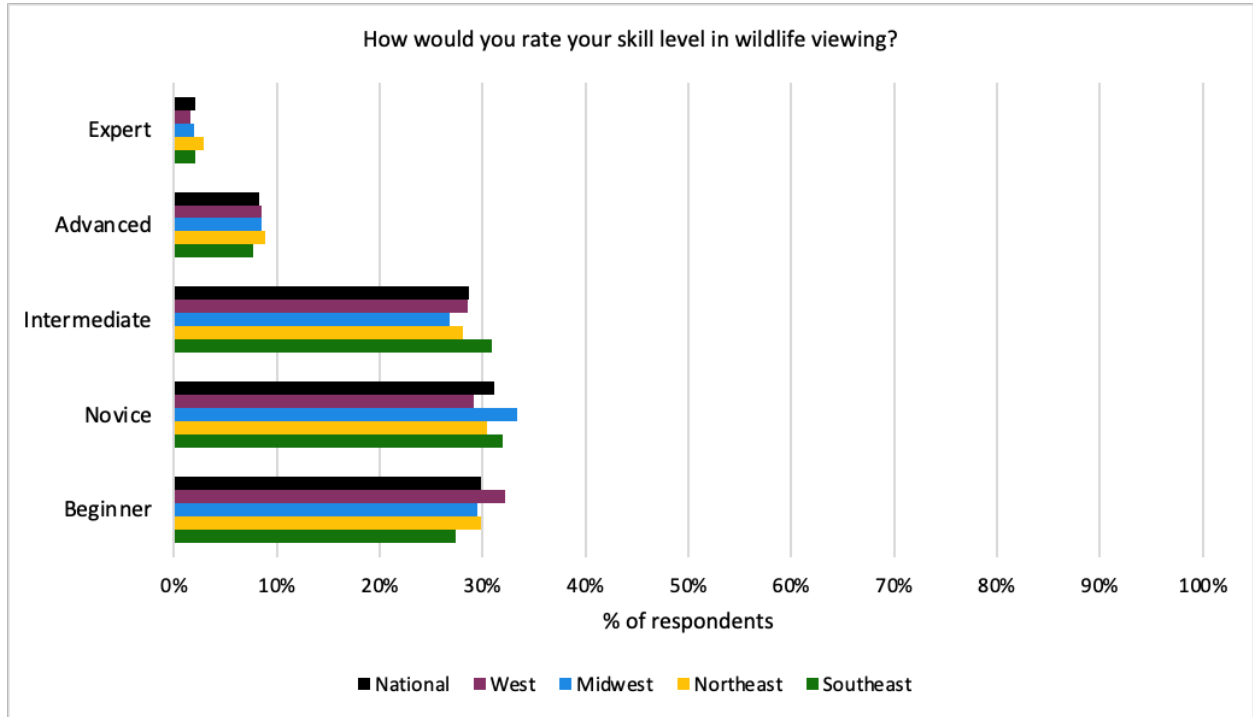


Figure 13. Respondents’ self-rated wildlife viewing skill level

Respondents’ self-rated level of skill in wildlife viewing for nationwide and the four AFWA regions. A chi-squared test revealed no statistically significant difference in skill level when compared across all four regions (Table 13).

Time spent wildlife viewing

In this section of the survey, wildlife viewers estimated the number of days they spent wildlife viewing during a “typical year” and the “first year of the COVID-19 pandemic” (March 2020 - February 2021). Respondents also reported the number of days that they anticipated wildlife viewing in the upcoming year. Wildlife viewers who indicated they were recruited (meaning they began participating in wildlife viewing for the first time) during the pandemic were not asked to report the number of days they spent viewing during a typical year, as the first year of the COVID-19 pandemic was assumed to be their only year participating in wildlife viewing. They also reported how many days they anticipated viewing during the upcoming years (the next 12 months from the date of survey completion). For each time period, we specified three locations, following the National Survey of Wildlife Recreation’s (US DOI et al 2016) definition of “around the home” (“within one mile of home”) and “away from home” (“at least one mile away from home”). We further stratified “away from home” in two locations: “more than one mile away from your home, but within your state” and “outside of your state or outside of the United States.” We were interested in this nuance to better understand the impact of the COVID-19 pandemic on travel that occurred for wildlife viewing (Hocohaka et al. 2021). For all time periods and locations, we provided respondents with seven equally-sized categories of 30 days, with a single option for “0 days” and “211 or more days,” so that this variable could be treated as continuous for analysis. We opted for equally-sized categories instead of per-week estimates to account for some seasonal changes associated with wildlife viewing.

We first reviewed days viewed during a typical year ($n = 3,724$, due to the omission of this question from recruited viewers). Nearly all respondents, 94%, reported participating in wildlife viewing around the home for at least “1-30 days” or higher in a typical year (Figures 14, 17, 20, 23, 26). About 20% of these respondents reported wildlife viewing around the home for “211 or more days,” which approximates to 17 days a month or more. Similar to around the home, a large portion (86%) of wildlife viewers reported participating in wildlife viewing away from home for at least “1-30 days” or higher during a typical year. Specifically, 44% participated in wildlife viewing away from home for “1-30 days.” Approximately 18% of wildlife viewers reported viewing away from home for “31-60 days,” or roughly 3-5 days per month. Of all three wildlife viewing locations, wildlife viewers were less apt to participate in wildlife viewing outside of their state or country. Just over half of respondents (58%) participated in wildlife viewing outside their state or country for “1-30 days” or higher (Figure 14). There were no statistically significant differences in days spent wildlife viewing during a typical year across all four regions (Tables 13, 14, 15).

Next, we reviewed days viewing during the first year of the pandemic (Figures 15, 18, 21, 24, 27) reported by all survey respondents, including recruited viewers. Overall, total participation

in wildlife viewing declined in all three locations when compared to a typical year. The portion of respondents who participated in wildlife viewing around the home for at least “1-30 days” or higher decreased slightly from 94% to 83%. Similarly, away from home wildlife viewing for at least “1-30 days” or higher also decreased slightly from 87% to 74%. The most dramatic decrease occurred in wildlife viewing outside of state or country: from 58% in a typical year to 41% reporting viewing outside their state or country for “1-30 days” or higher in the first year of the pandemic. Chi-square tests revealed statistically significant differences across regions in days spent wildlife viewing around the home during the first year of the COVID-19 pandemic ($\chi^2 = 40.38$, $df = 24$, $p = .64$; Table 17; Figures 15, 18, 21, 24, 27). There were no statistically significant differences across regions for wildlife viewing away from home or outside of state or country.

Finally, we asked respondents about days they anticipate viewing in the three locations during the next year (Figures 16, 18, 22, 25, 28). Viewing increased in all three locations when compared to the first year of the pandemic and was closer to values reported during a typical year. We found a 10% increase in around the home viewing during the upcoming year, 92% of respondents anticipated spending at least “1-30 days” viewing. Viewing away from home increased by about 10% from the first year of the pandemic: 85% of respondents anticipated spending at least “1-30 days” viewing away from home. We noticed a slight increase in anticipated participation outside of state or country, with 55% of respondents reporting they anticipated spending at least “1-30 days” viewing outside of their state or country, an increase from 41%. There were no statistically significant differences across regions in anticipated days viewing in the upcoming year (Tables 20, 21, 22; Figures 16, 19, 22, 25, 28).

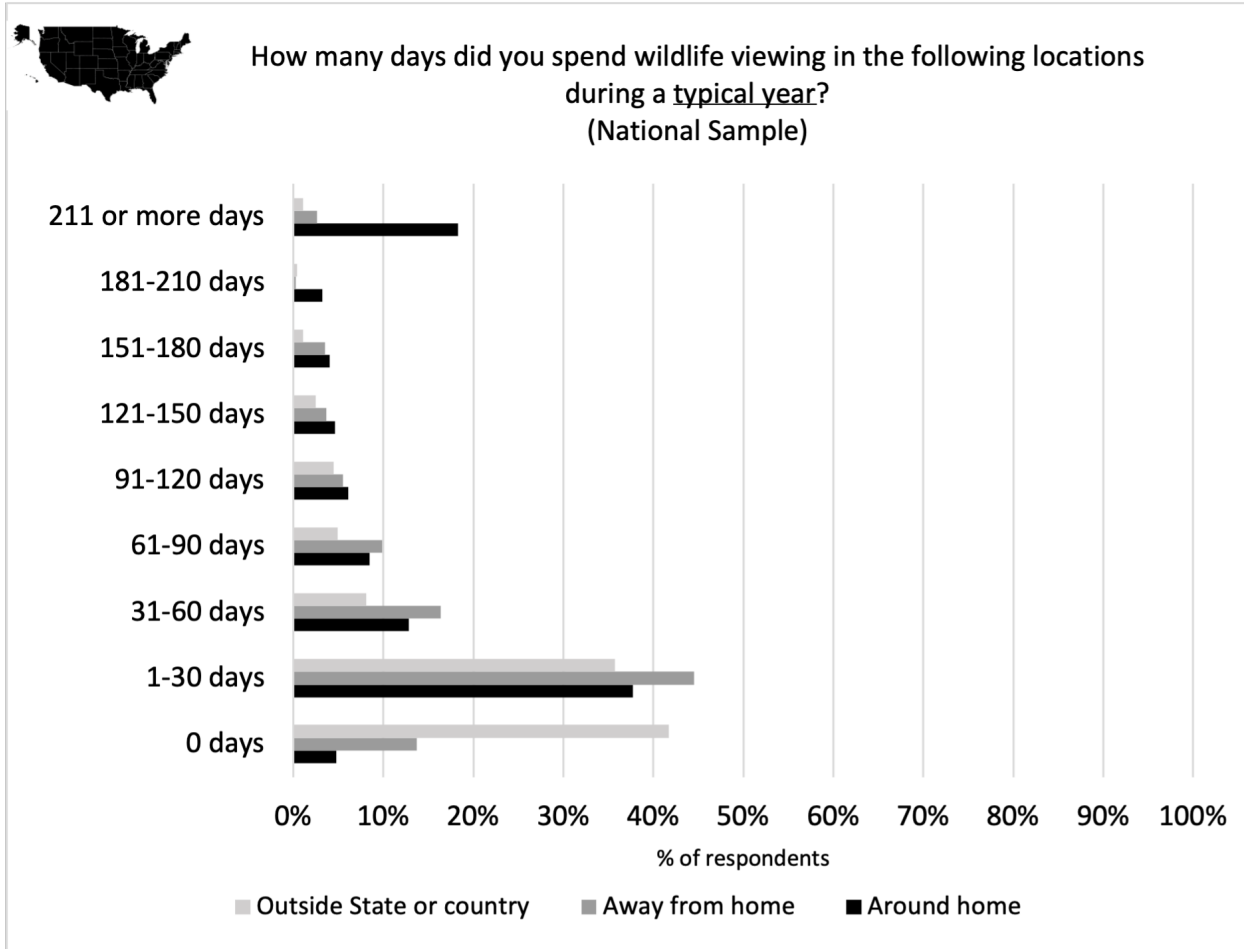


Figure 14. Days spent viewing in a typical year, nationwide

Days wildlife viewers reported spending wildlife viewing in three locations during a typical year. Typical year response omits wildlife viewers who began participating in wildlife viewing during the pandemic, as they did not yet view in a typical year. The darkest bars represent viewing around home, the middle gray represent days viewing away from home but in state, and the lightest gray bars are days viewing outside of state or country (Tables 14, 15, 16).



How many days did you spend wildlife viewing in the following locations during the first year of the pandemic?
the first year of the pandemic?
 (National Sample)

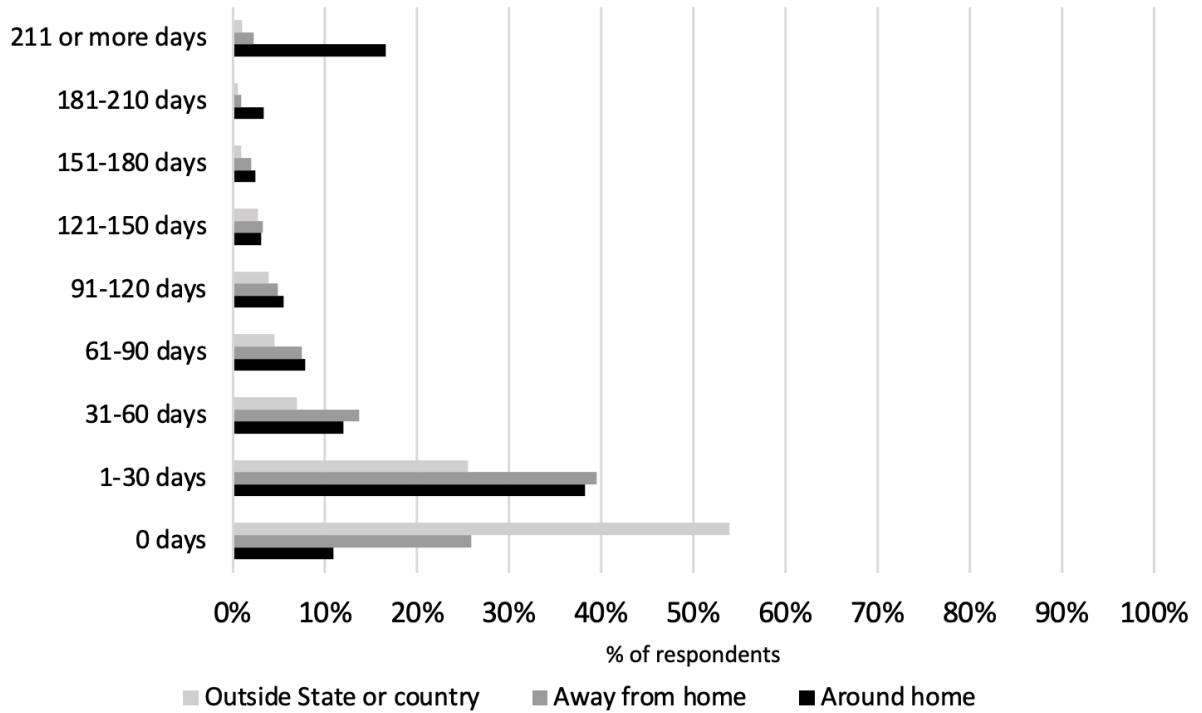


Figure 15. Days spent viewing in during the first year of the COVID-19 pandemic, nationwide

Days wildlife viewers reported spending wildlife viewing in three locations during the first year of the pandemic. The darkest bars represent viewing around home, the middle gray represent days viewing away from home but in state, and the lightest gray bars are days viewing outside of state or country (Tables 17, 18, 19).

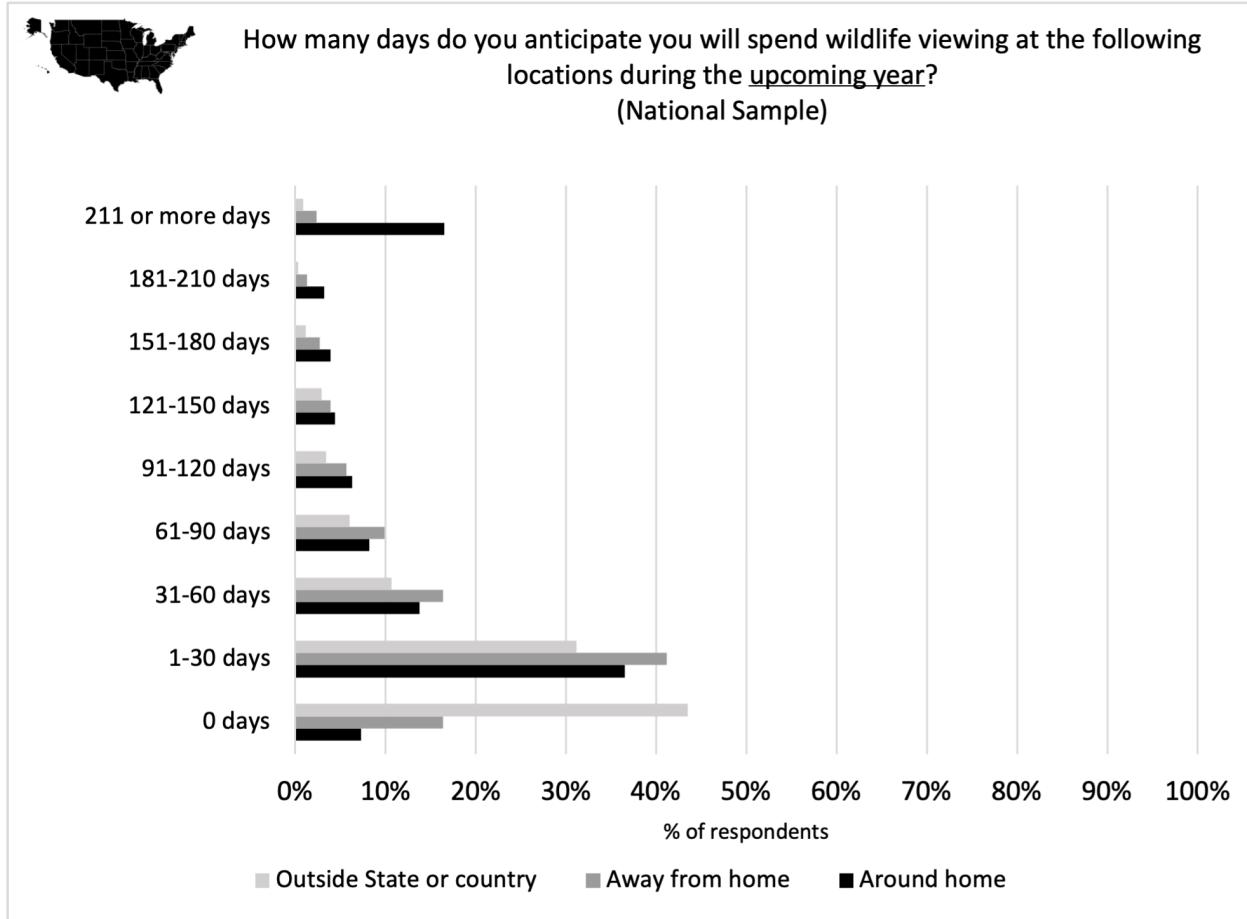


Figure 16. Days anticipated viewing in upcoming year, nationwide

Days wildlife viewers reported being likely to spend wildlife viewing in three locations during the upcoming year. The darkest bars represent viewing around home, the middle gray represent days viewing away from home but in state, and the lightest gray bars are days viewing outside of state or country (Tables 20, 21, 22).

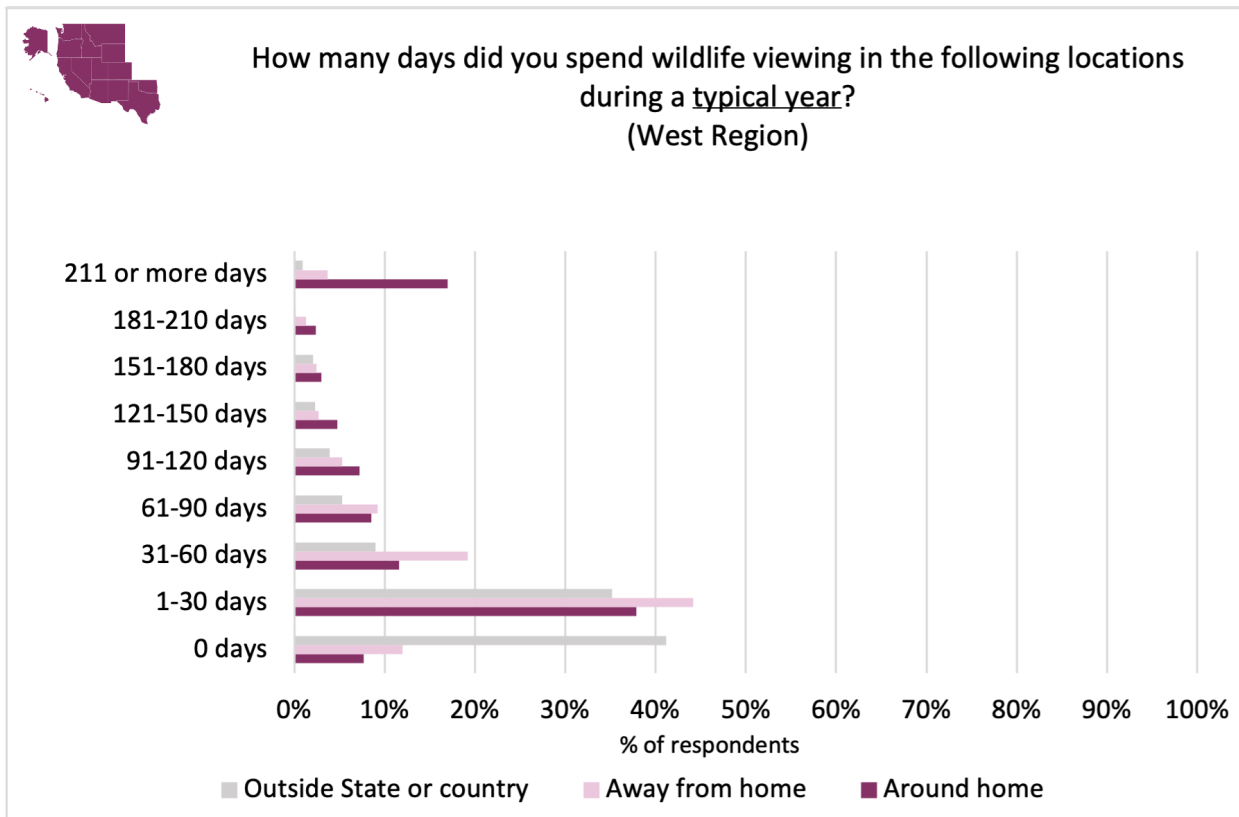


Figure 17. Days spent viewing in a typical year, West

Days wildlife viewers reported spending wildlife viewing in three locations during a typical year. Typical year response omits wildlife viewers who began participating in wildlife viewing during the pandemic, as they did not yet view in a typical year. The darkest bars represent viewing around home, the pale pink represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests revealed no statistically significant differences (Tables 14, 15, 16) across regions.

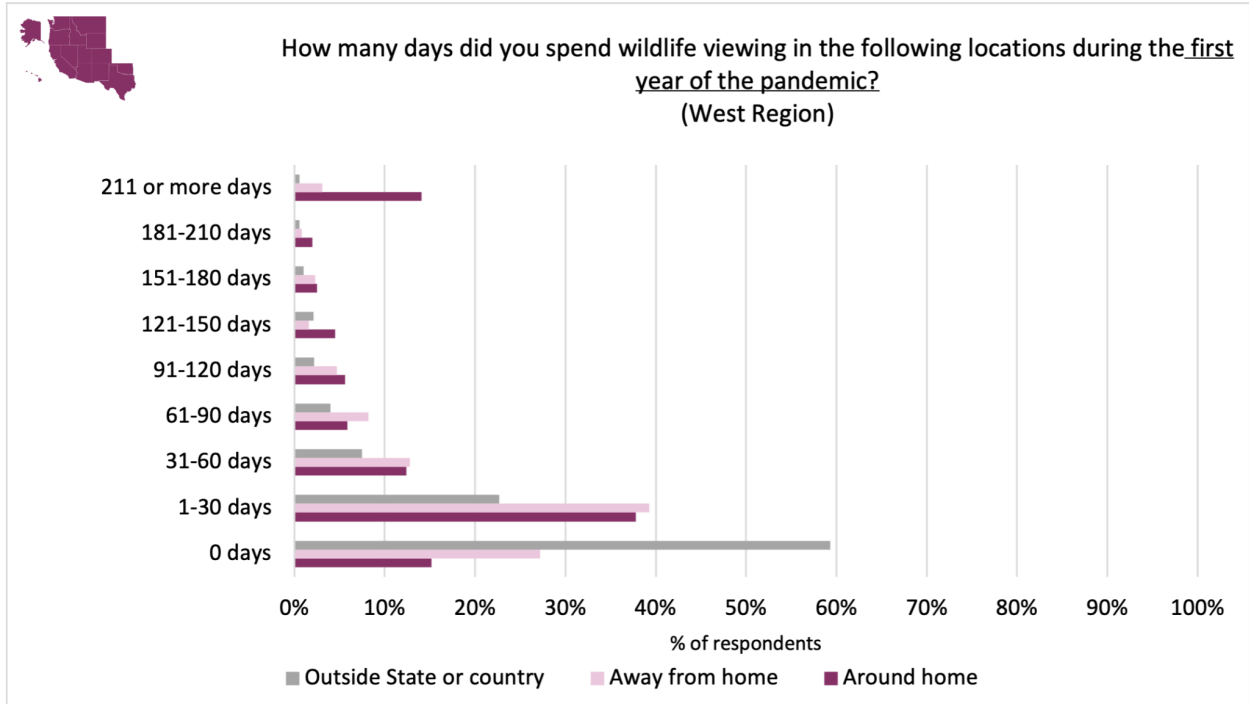


Figure 18. Days spent viewing in during the first year of the COVID-19 pandemic, West

Days wildlife viewers reported spending wildlife viewing in three locations during the first year of the pandemic. The darkest bars represent viewing around home, the pale pink represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests only revealed statistically significant differences around the home across regions, but not away from home or outside of state or country (Tables 17, 18, 19).

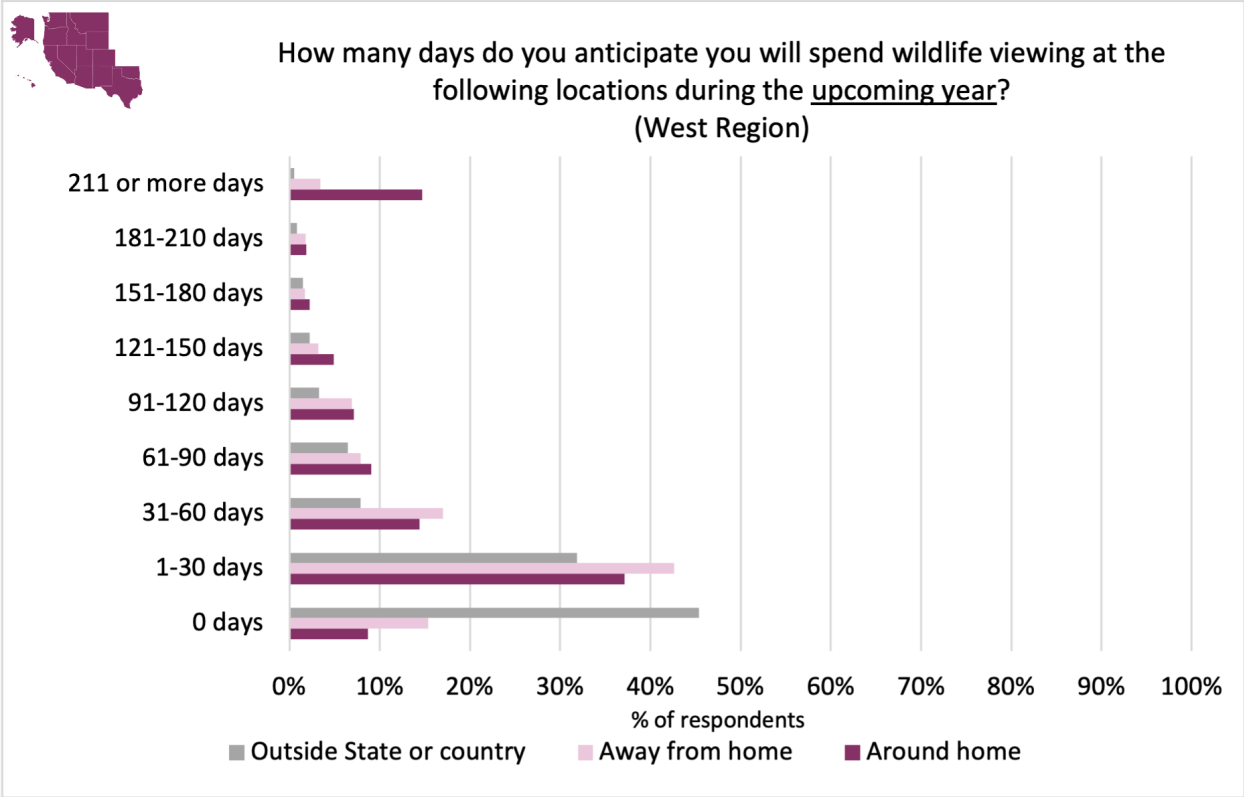


Figure 19. Days anticipated viewing in upcoming year, west

Days wildlife viewers reported being likely to spend wildlife viewing in three locations during the upcoming year. The darkest bars represent viewing around home, the pale pink represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests revealed no statistically significant differences across regions (Tables 20, 21, 22).

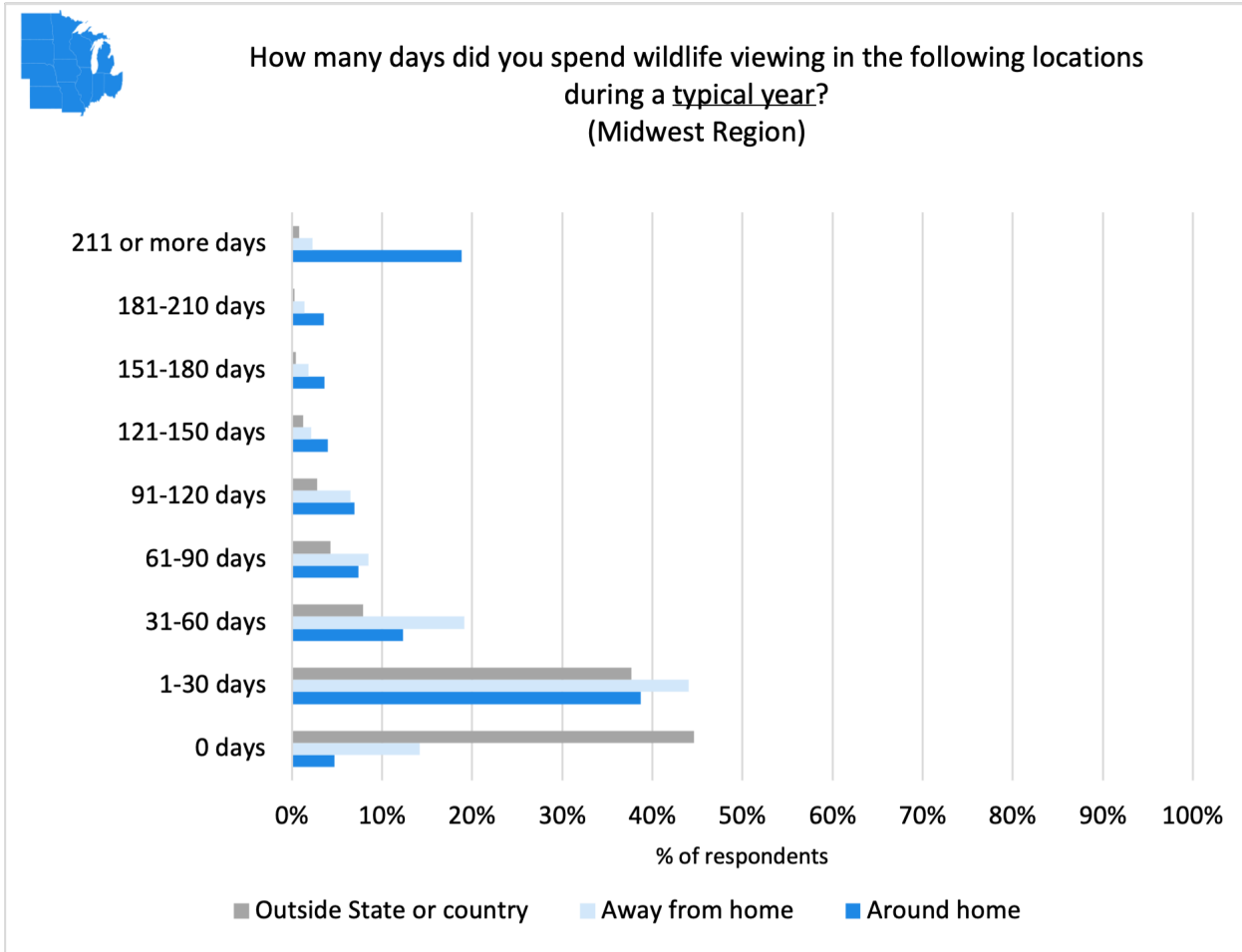


Figure 20. Days spent viewing in a typical year, Midwest

Days wildlife viewers reported spending wildlife viewing in three locations during a typical year. Typical year response omits wildlife viewers who began participating in wildlife viewing during the pandemic, as they did not yet view in a typical year. The darkest bars represent viewing around home, the pale blue represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests revealed no statistically significant differences (Tables 14, 15, 16) across regions.

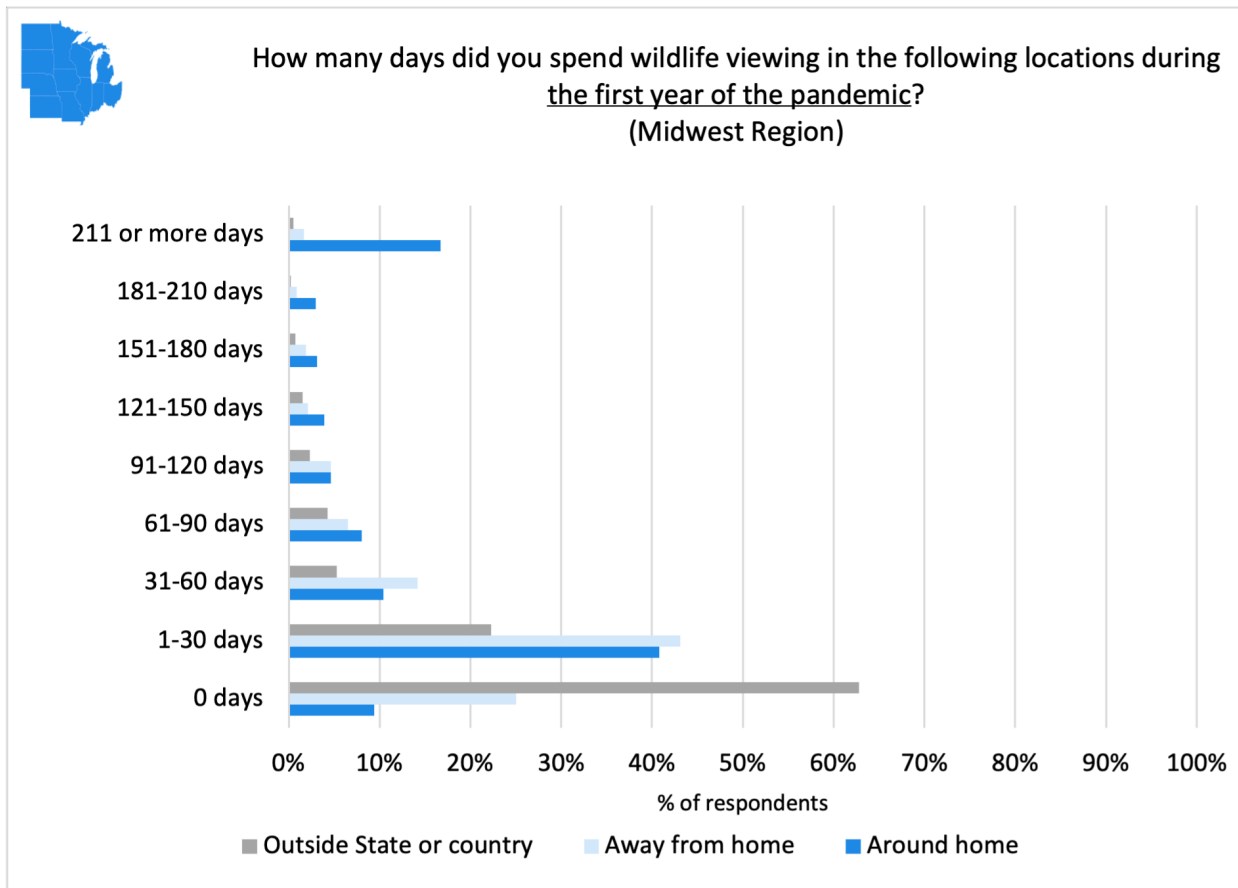


Figure 21. Days spent viewing in during the first year of the COVID-19 pandemic, Midwest

Days wildlife viewers reported spending wildlife viewing in three locations during the first year of the pandemic. The darkest bars represent viewing around home, the pale blue represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests only revealed statistically significant differences around the home across regions, but not away from home or outside of state or country (Tables 17, 18, 19).

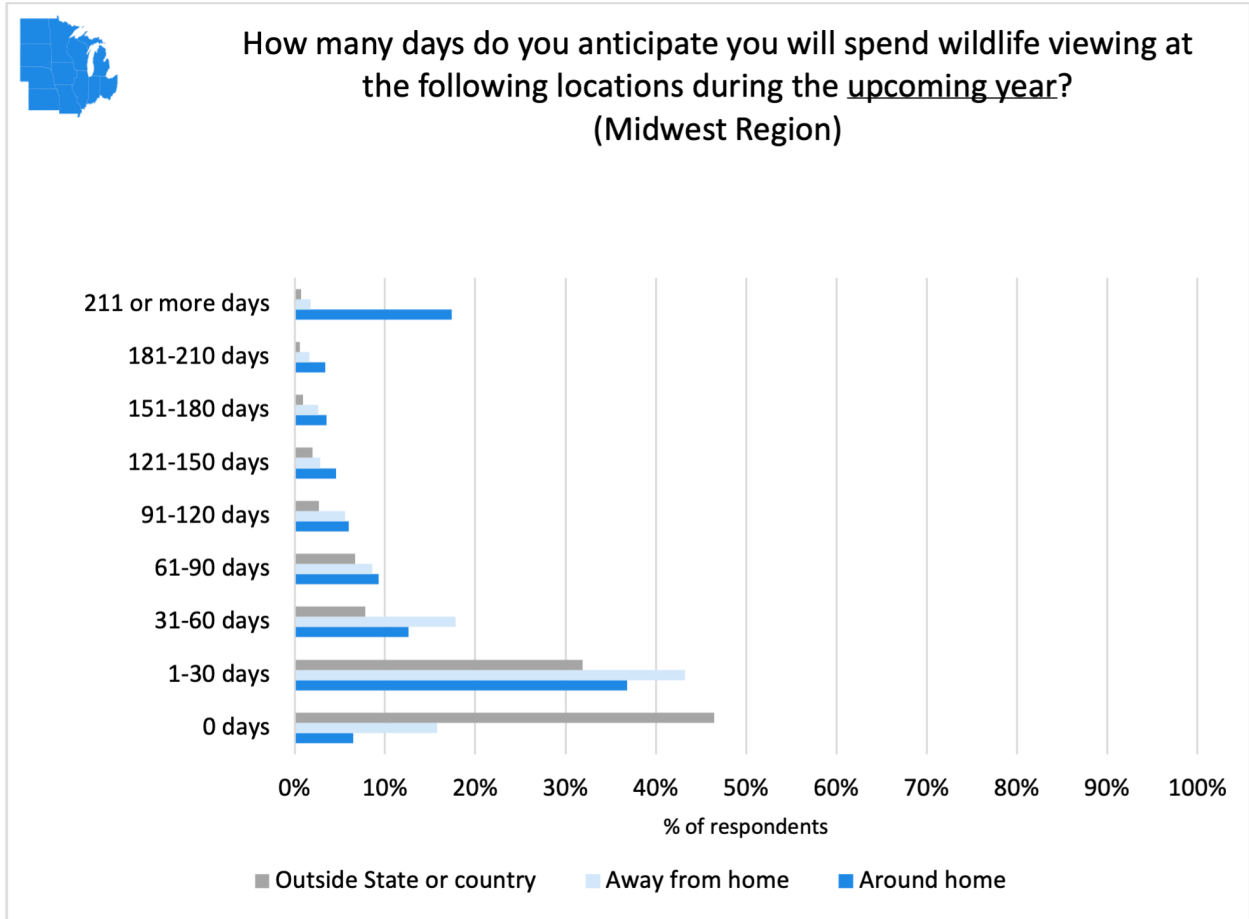


Figure 22. Days anticipated viewing in upcoming year, Midwest

Days wildlife viewers reported being likely to spend wildlife viewing in three locations during the upcoming year. The darkest bars represent viewing around home, the pale blue represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests revealed no statistically significant differences across regions (Tables 20, 21, 22).

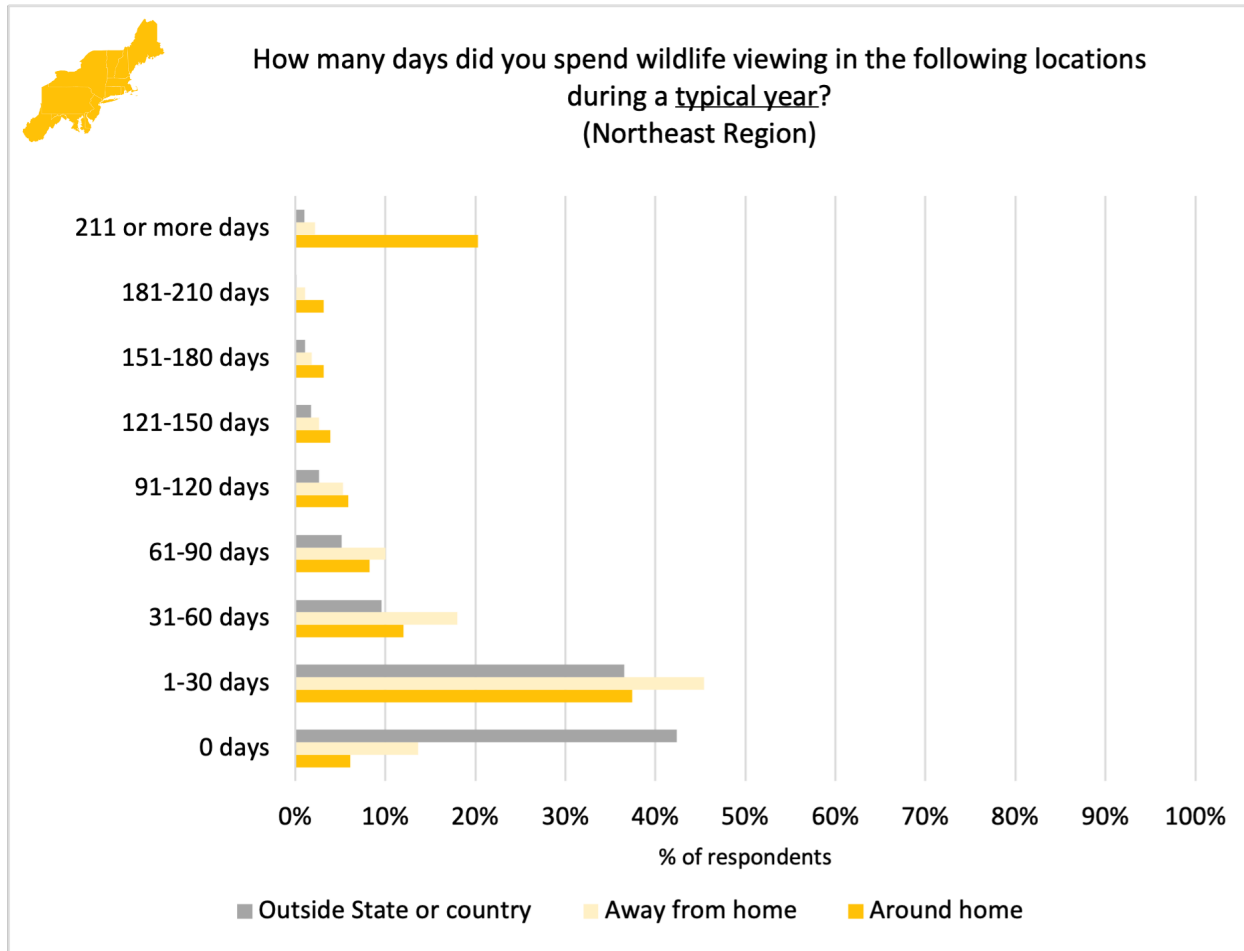


Figure 23. Days spent viewing in a typical year, Northeast

Days wildlife viewers reported spending wildlife viewing in three locations during a typical year. Typical year response omits wildlife viewers who began participating in wildlife viewing during the pandemic, as they did not yet view in a typical year. The darkest bars represent viewing around home, the pale yellow represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests revealed no statistically significant differences (Tables 14, 15, 16) across regions.

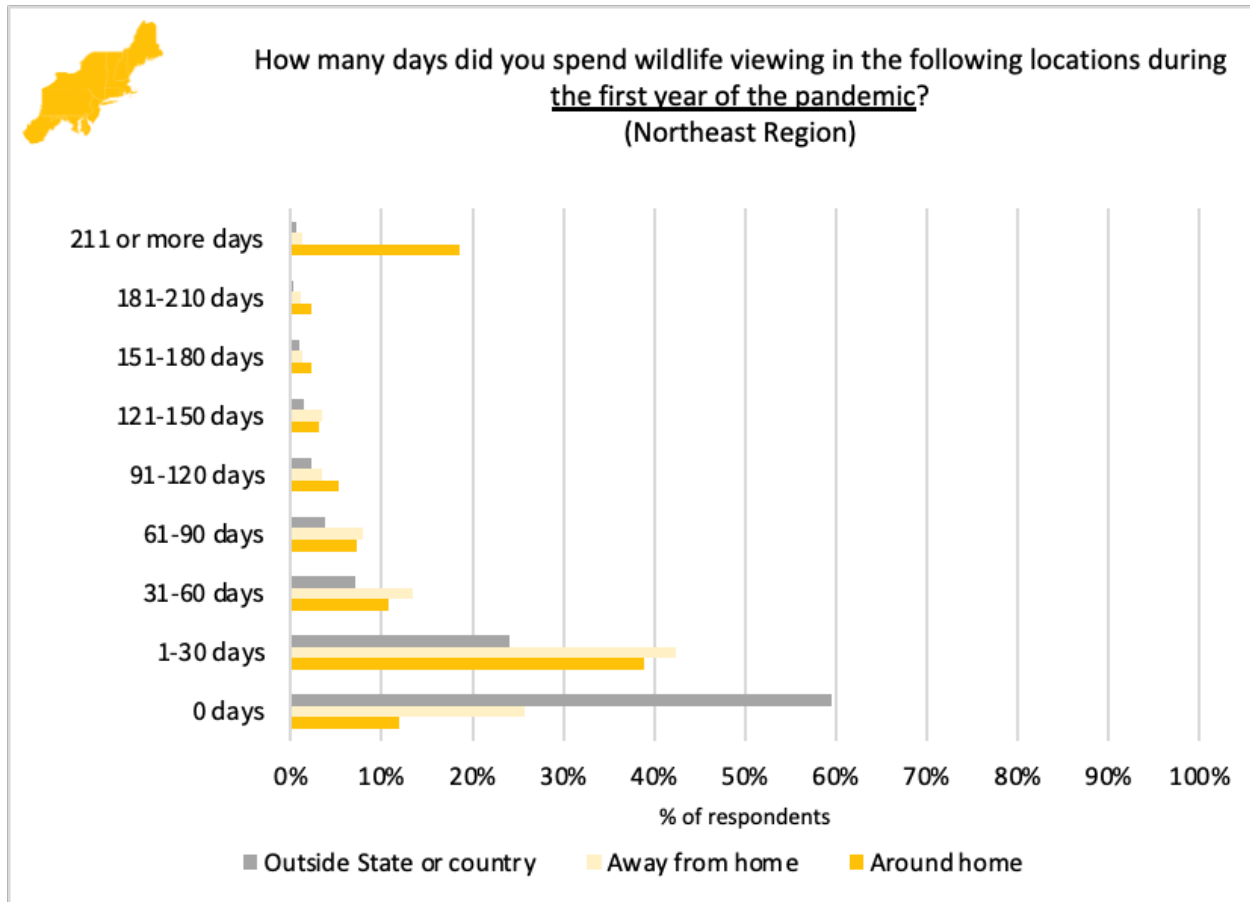


Figure 24. Days spent viewing in during the first year of the COVID-19 pandemic, Northeast

Days wildlife viewers reported spending wildlife viewing in three locations during the first year of the pandemic. The darkest bars represent viewing around home, the pale yellow represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests only revealed statistically significant differences around the home across regions, but not away from home or outside of state or country (Tables 17, 18, 19).

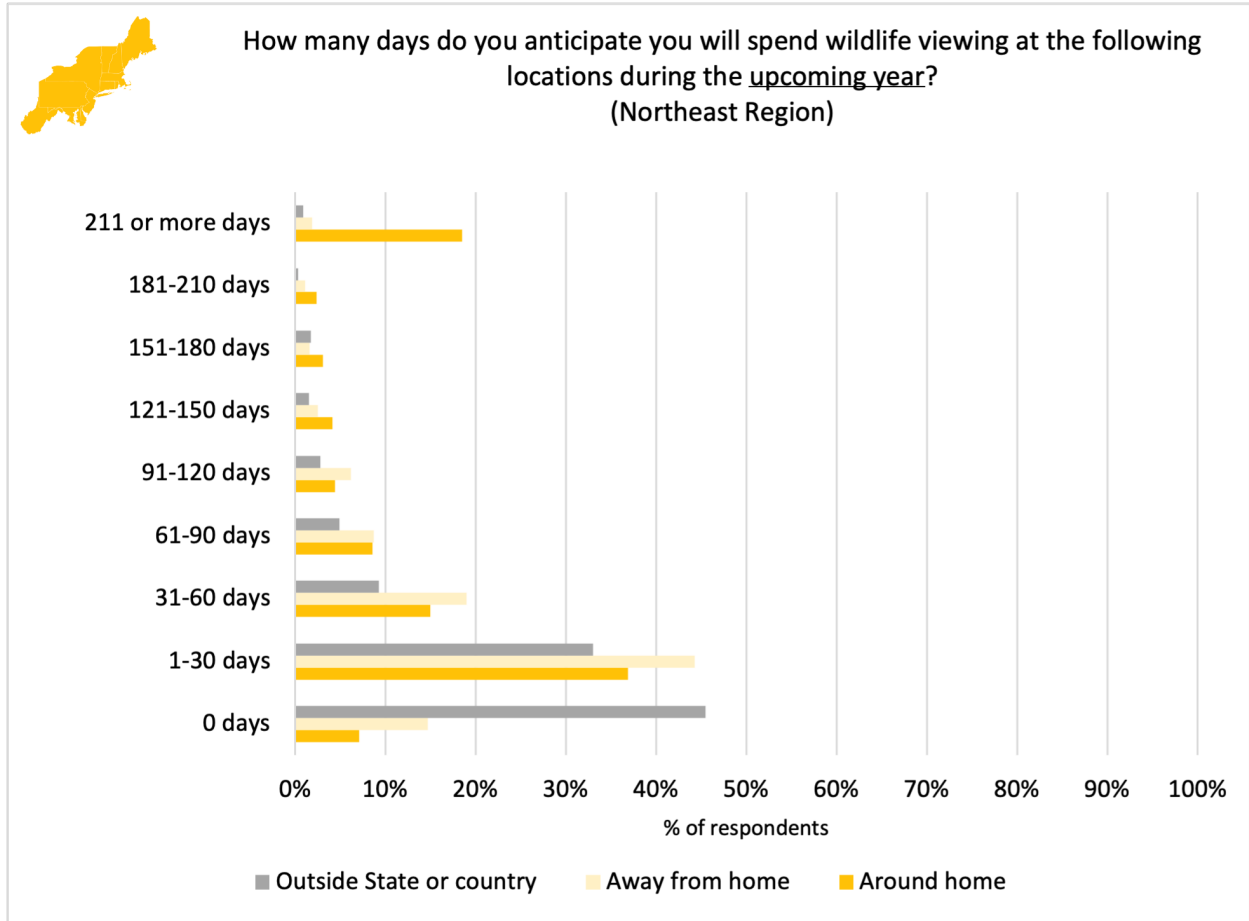


Figure 25. Days anticipated viewing in upcoming year, Northeast

Days wildlife viewers reported being likely to spend wildlife viewing in three locations during the upcoming year. The darkest bars represent viewing around home, the pale yellow represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests revealed no statistically significant differences across regions (Tables 20, 21, 22).

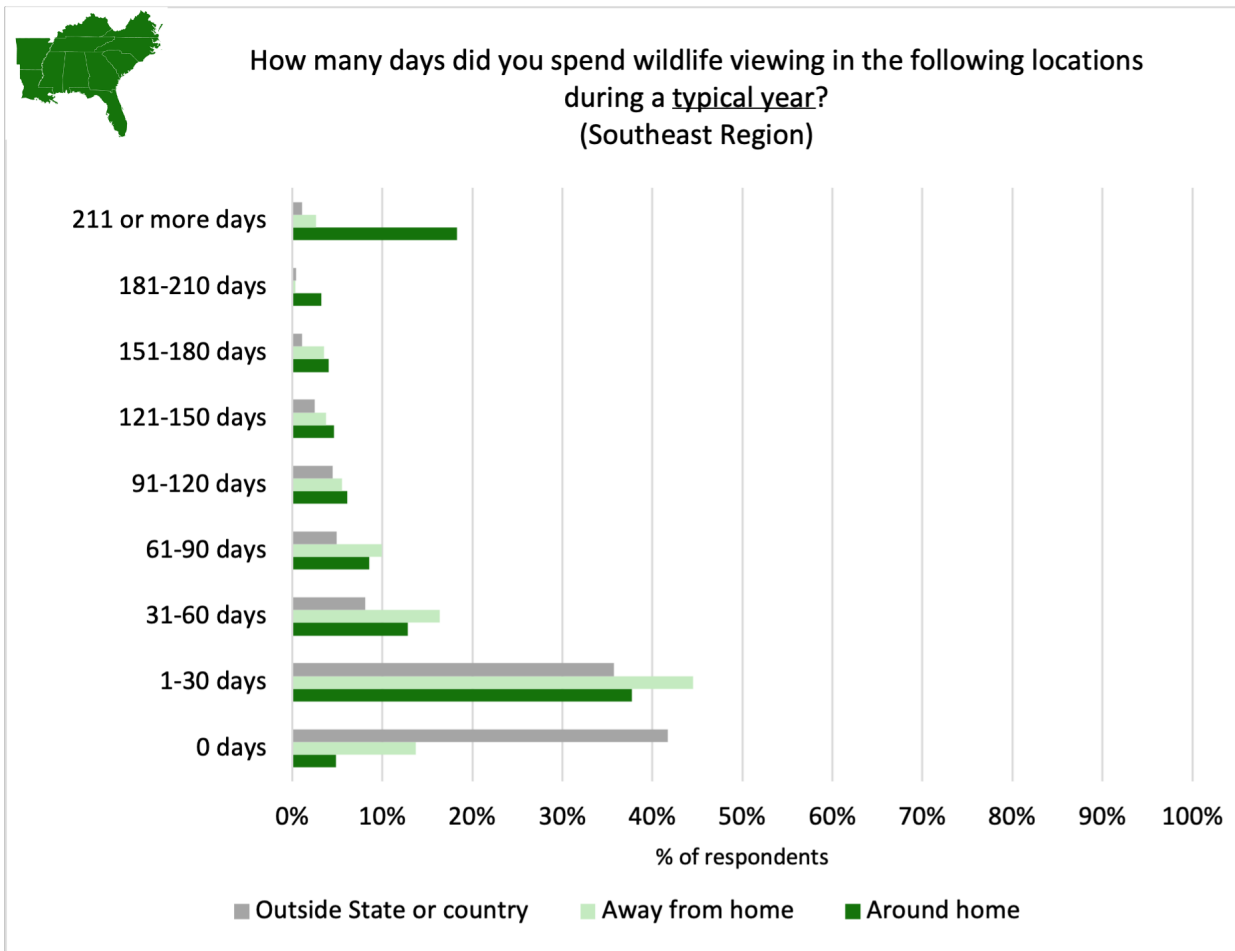


Figure 26. Days spent viewing in a typical year, Southeast

Days wildlife viewers reported spending wildlife viewing in three locations during a typical year. Typical year response omits wildlife viewers who began participating in wildlife viewing during the pandemic, as they did not yet view in a typical year. The darkest bars represent viewing around home, the pale green represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests revealed no statistically significant differences (Tables 14, 15, 16) across regions.

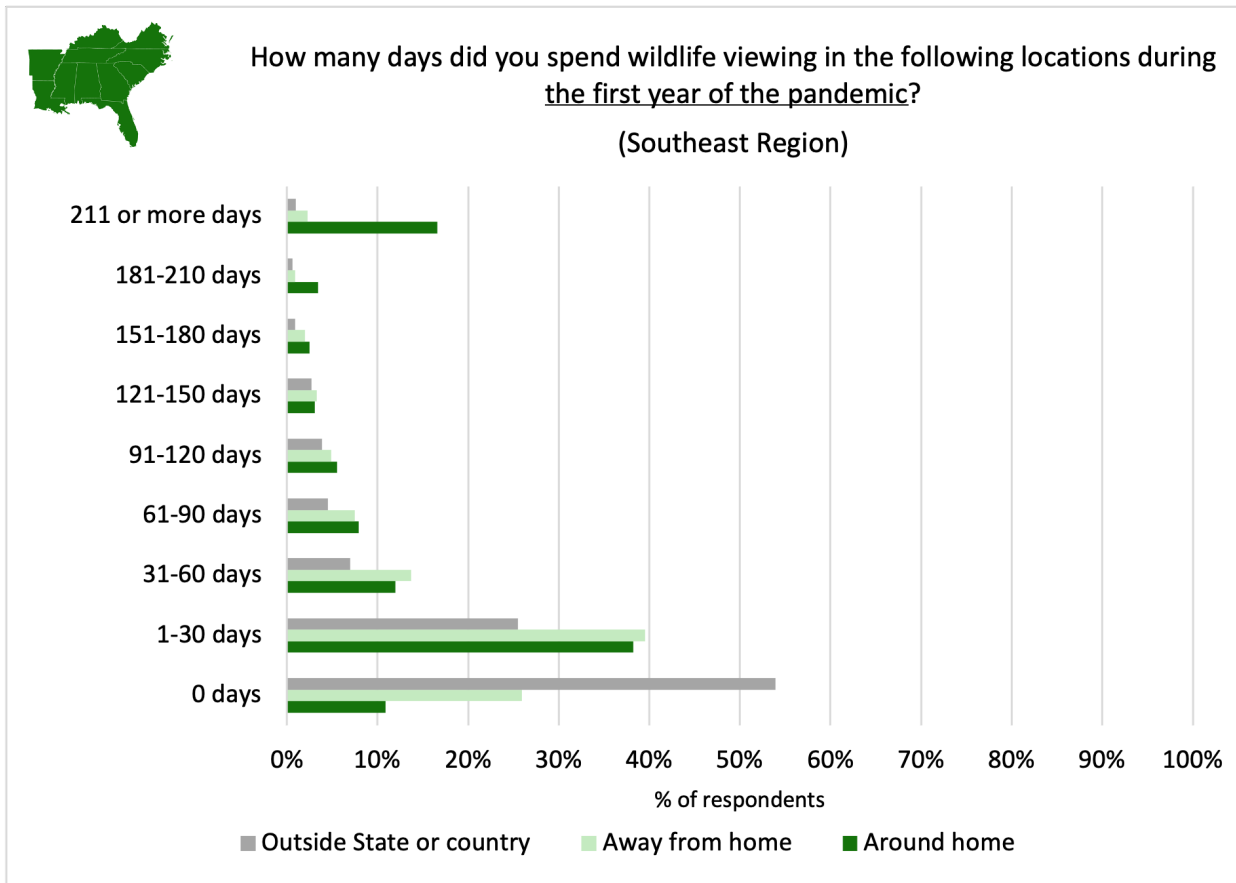


Figure 27. Days spent viewing in during the first year of the COVID-19 pandemic, Southeast

Days wildlife viewers reported spending wildlife viewing in three locations during the first year of the pandemic. The darkest bars represent viewing around home, the pale green represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests only revealed statistically significant differences around the home across regions, but not away from home or outside of state or country (Tables 17, 18, 19).

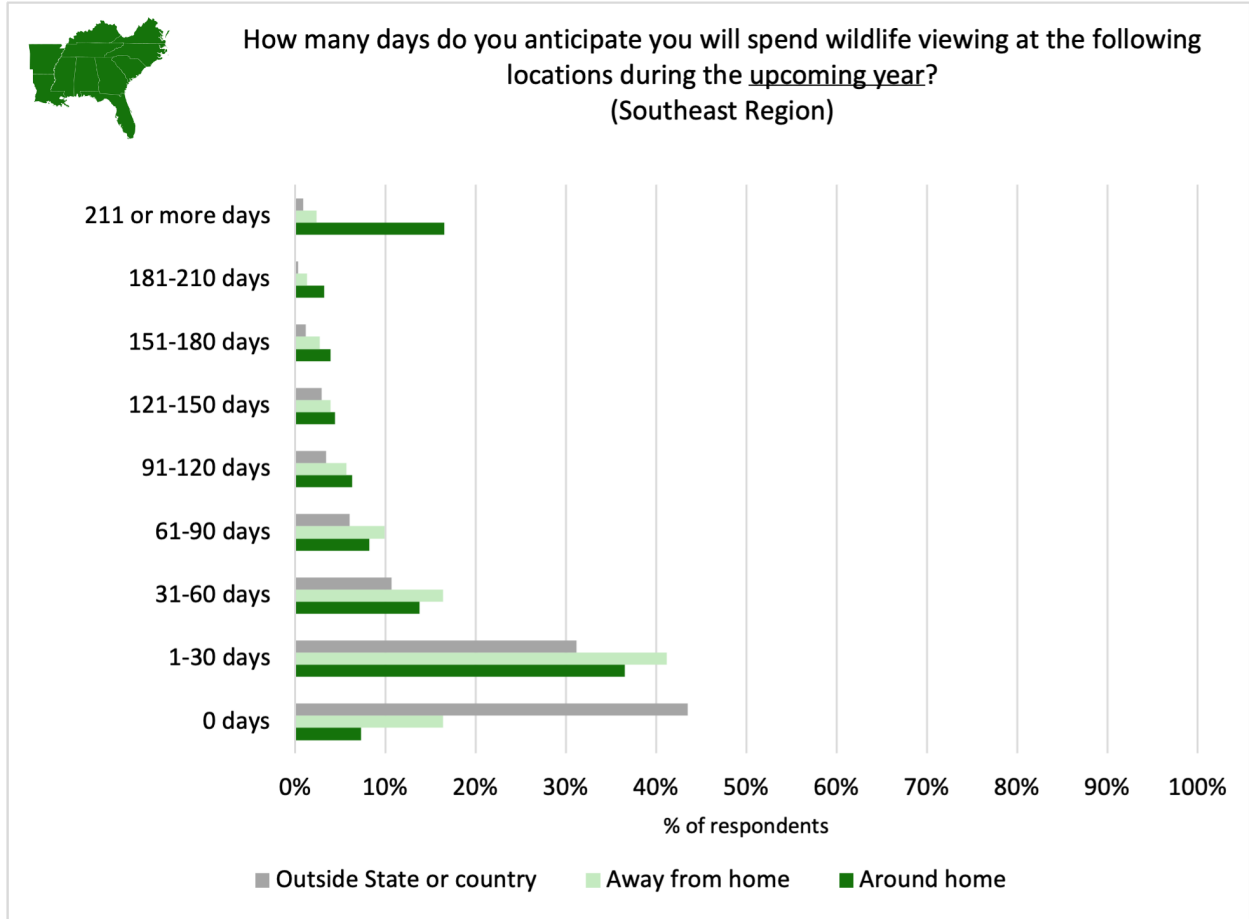


Figure 28. Days anticipated viewing in upcoming year, Southeast

Days wildlife viewers reported being likely to spend wildlife viewing in three locations during the upcoming year. The darkest bars represent viewing around home, the pale green represent days viewing away from home but in state, and the gray bars are days viewing outside of state or country. Chi-square tests revealed no statistically significant differences across regions (Tables 20, 21, 22).

Wildlife viewing location

In addition to understanding around the home, away from home, and out of state viewing, we further examined the characteristics of land upon which respondents participate in wildlife viewing. In addition to state-managed lands (Grooms et al. 2021), wildlife viewing takes place from privately-owned land (Bensen 2001) to federally-owned land (Abrams et al. 2020), with vastly different managerial implications for each setting. In this section, we asked respondents “Which locations do you participate in wildlife viewing in [your state] during a typical year?” This question was adapted from the Virginia Wildlife Recreation Survey (Grooms et al. 2019) to include options more applicable to the regional setting. A list of seven locations was provided, featuring a mix of public, private, and tribal lands. The seventh option was “I am unsure who owns or manages the areas where I participate in wildlife viewing” (n = 264). Finally, a mutually exclusive option (meaning if selected, the survey would not let respondents select another item) of “I do not participate in wildlife viewing in any of the above locations” (n = 49) was also provided.

Almost 75% of respondents reported viewing in more than one location. For all regions, respondents most commonly (over 70%) reported wildlife viewing at their own home or property. State-managed (52%) and locally-managed (51%) areas were nearly tied for second place. The least common location for wildlife viewing was tribal lands (7%).

While the general patterns were the same, chi-square tests indicated several statistically significant regional variations in the percent of viewers participating at various locations. Respondents from the West were less likely than in the other regions to view around their own home or property ($\chi^2 = 17.44$, $df = 3$, $p < .001$; Figure 29) or on property of friends or family ($\chi^2 = 10.37$, $df = 3$, $p = .02$; Table 23; Figure 29). Conversely, respondents from the West were more likely to participate in wildlife viewing on federally managed areas ($\chi^2 = 18.72$, $df = 3$, $p < .001$; Table 23; Figure 29) and tribal lands ($\chi^2 = 11.85$, $df = 3$, $p = .002$; Table 23; Figure 29) than respondents in other regions. Finally, respondents from the West and Midwest were more likely to report viewing on locally managed areas than those from the Northeast and Southeast ($\chi^2 = 7.99$, $df = 3$, $p = .05$; Table 23; Figure 29).

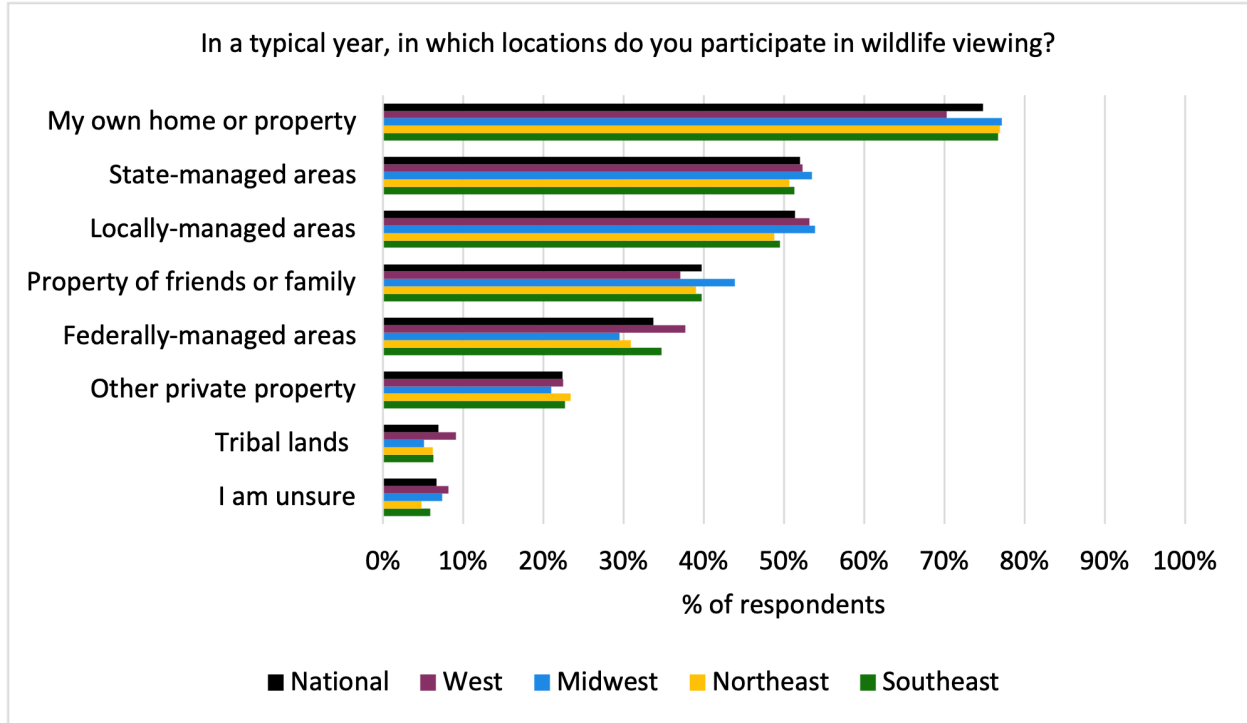


Figure 29. Wildlife viewing locations

Locations wildlife viewers nationally and across all four AFWA regions reported participating in wildlife viewing in a typical year. Note that individual categories sum to more than 100% because respondents were able to select more than one option. A Chi-square test across regions revealed a number of statistically significant differences for my own home or property, locally managed areas, property of friends or family, federally-managed areas, tribal lands, and lands which viewers were unsure of their ownership (Table 23).

Wildlife viewing related expenditures

Wildlife viewing-related expenditures generate significant economic activity; for example, the National Survey of Wildlife Recreation valued wildlife viewing-related expenditures at \$75.9 billion in 2016. The National Survey of Wildlife Recreation assessed wildlife viewers' trip-related expenses (food and lodging, transportation, and other trip costs), equipment expenditures (wildlife-watching equipment, auxiliary equipment, and special equipment) and total other expenses (land leasing and owning, plantings, membership dues and contributions, magazines, books, and DVDs) (US DOI et al. 2016). To ease respondent burden and because this was not a primary purpose of this survey, we collapsed the National Survey of Wildlife Recreation expenditure categories into two: trip-related costs and all other wildlife viewing expenses and equipment, providing respondents with a drop-down box consisting of nine equal-sized options informed by the expected range in the National Survey of Wildlife Recreation. After we piloted our survey with \$100 increments, we adjusted \$50 increments from \$1-500 as well as \$0 and \$500 or more.

Over half of our survey respondents reported spending \$100 or less on wildlife viewing trip-related costs annually. About a quarter (23%) of respondents at the national level reported spending \$0 on trip-related costs annually. This value was much higher in the Northeast, where 28% of respondents indicated spending \$0 on trip-related costs annually. A fifth (20%) of respondents from the national level reported spending \$1-\$50 on wildlife viewing trip-related costs in a typical year. Only 7% of respondents reported spending \$501 or more on trip-related costs annually. A chi-square test revealed a statistically significant difference in trip-related costs across regions ($\chi^2 = 57.12$, $df = 33$, $p = .06$; Table 24; Figure 30). Respondents in the Southeast and West were likely to report higher trip-related spending than those in the Midwest and Northeast. Respondents from the Northeast were most likely to report no trip-related costs.

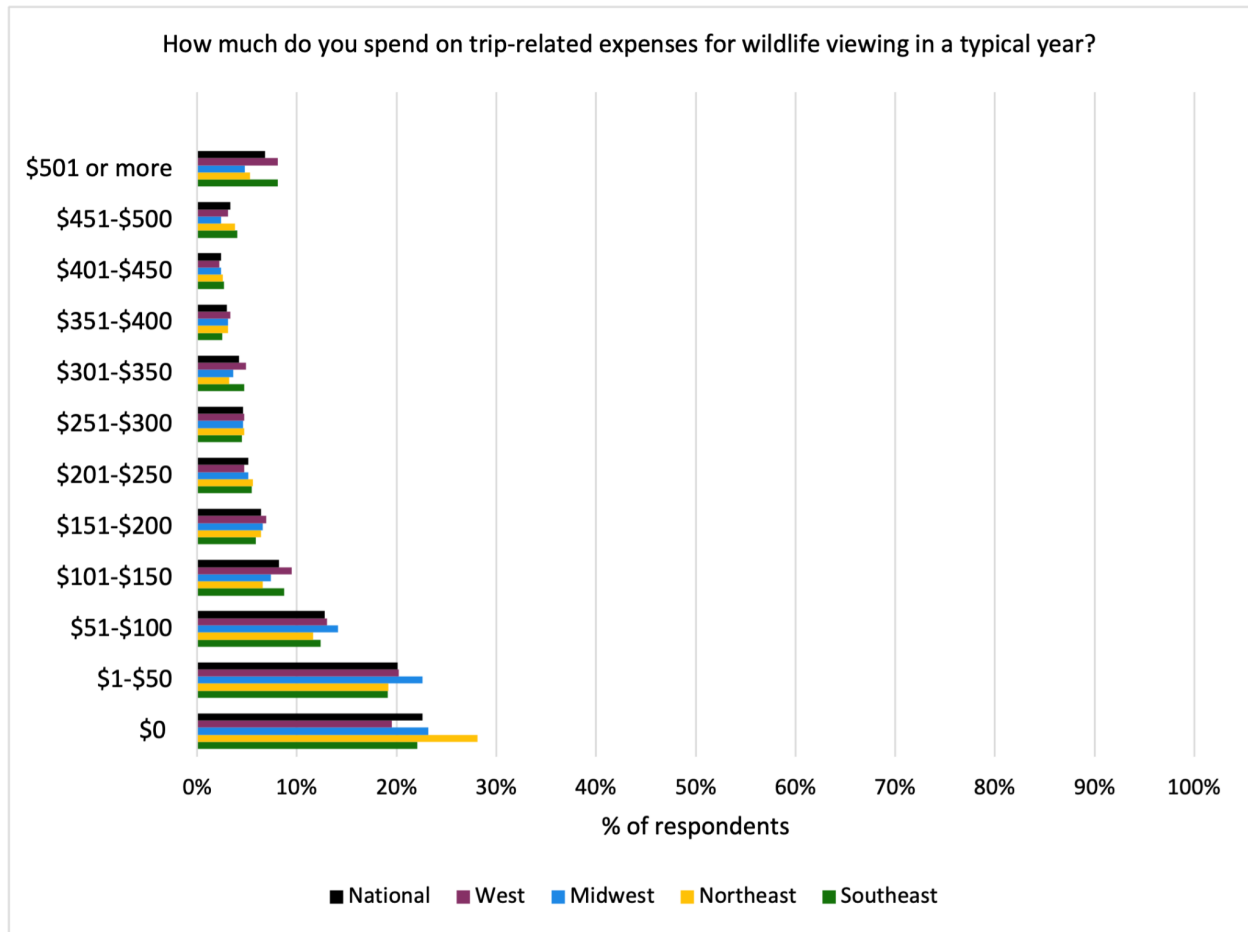


Figure 30. Trip-related wildlife viewing expenditures

Trip-related expenditures for wildlife viewing in a typical year reported by survey respondents. A chi-square test indicated wildlife viewing trip-related expenditures varied significantly when comparing across regions (Table 24).

We also asked wildlife viewers about their other wildlife viewing-related costs, such as binoculars, hiking or boating equipment for viewing; field guides, bird feeders or bird foods; or membership dues for wildlife viewing organizations. As with trip-related costs, over half of respondents (54%) indicated spending \$100 or less on other wildlife viewing-related expenses. About a fifth of respondents reported spending \$0 annually (19%), with slightly more spending \$1-50 in a typical year (22%). Only 6% of respondents reported spending \$501 or more during a typical year. A chi-square test indicated no statistically significant differences across regions for other wildlife viewing-related expenses and equipment ($\chi^2 = 41.98$, $df = 33$, $p = .13$; Table 25; Figure 31).

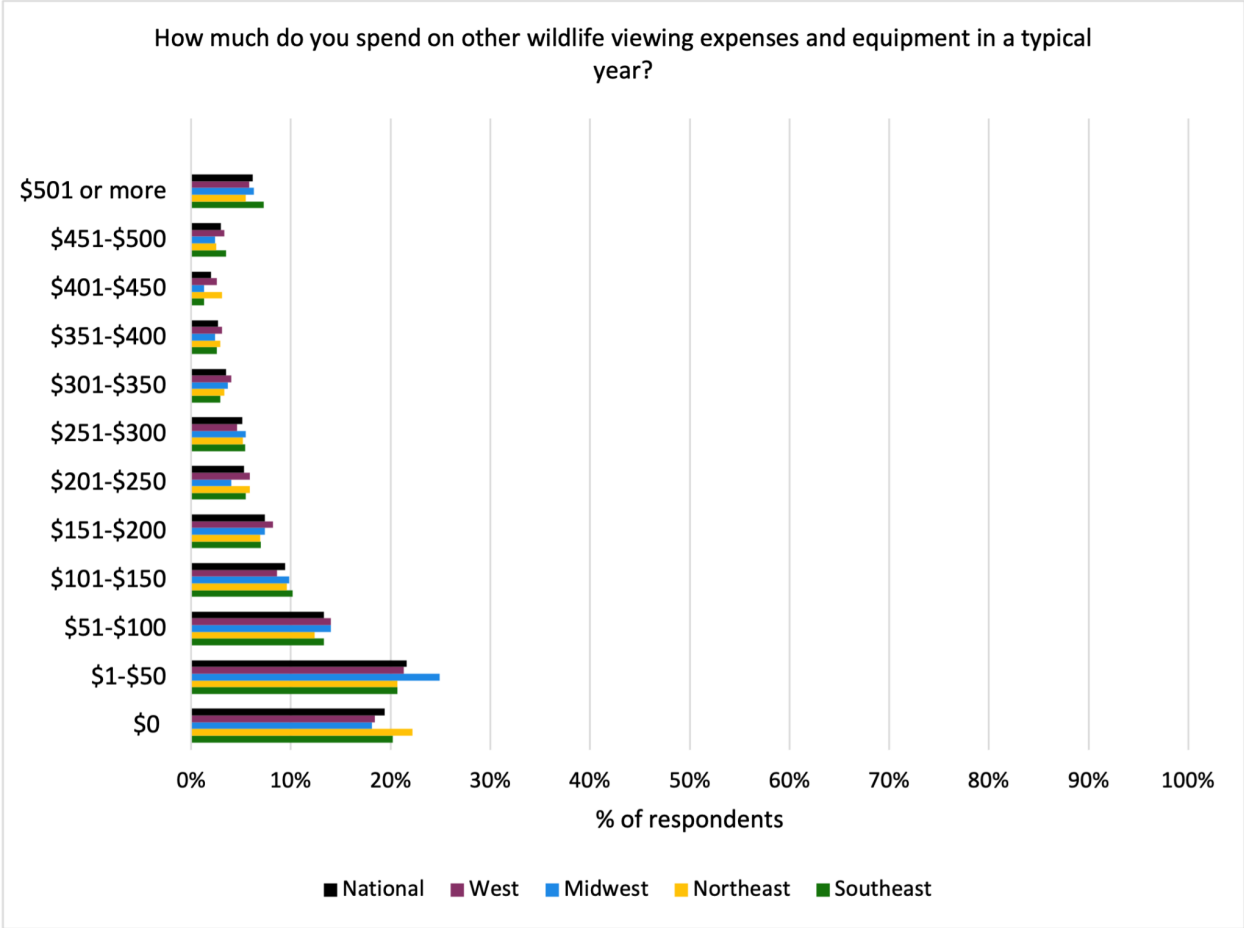


Figure 31. Other wildlife viewing-related expenditures
 Other expenditures and equipment for wildlife viewing in a typical year reported by survey respondents. A chi-square test indicated wildlife viewing trip-related expenditures did not vary significantly when comparing across regions (Table 25).

Other outdoor recreation

Both academic research and agency programming often characterize wildlife recreation activities and recreationists by so-called “consumptive” and “nonconsumptive” definitions, based on their use of and impact on wildlife (Vaske and Roemer 2013, Tremblay 2001). Within this definition, consumptive activities, such as hunting, fishing, and trapping, generally result in the harvest or active removal of species from their habitat, while nonconsumptive activities, such as hiking, birdwatching, and other forms of wildlife viewing, do not (Duffus and Deardon, 1990). However, the assignment of recreational activities into these categories is not clear-cut, as activities traditionally deemed nonconsumptive can also result in substantial negative impacts on wildlife, including mortality (Green 2000). Furthermore, recent research has demonstrated that many wildlife recreationists participate in multiple forms of outdoor recreation that may include both consumptive and nonconsumptive uses of wildlife (Cooper et al. 2018; Grooms et al. 2019). In order to explore this overlap in recreation participation among wildlife viewers, we asked respondents to indicate which other form(s) of outdoor recreational activity, out of a list of 17, they participate in during a typical year besides wildlife viewing. The list of other outdoor recreation activities used in the survey was adapted from the Virginia Wildlife Recreation Survey (Grooms et al. 2019).

Nationally, 74% of respondents indicated participation in at least one other outdoor recreation activity beyond wildlife viewing. For consumptive forms of outdoor recreation, 46% of wildlife viewers participated in at least one activity: hunting (4%), angling (29%), or both (13%) (Table 26). Overall, the most popular form of outdoor recreation for wildlife viewers was running, walking, or jogging (49%; Figure 32). Over 40% reported participating in camping and over 35% participated in swimming and hiking or backpacking (Figure 32).

Chi-square tests indicated statistically significant differences across regions for multiple forms of outdoor recreation outside of respondents’ participation in wildlife viewing: camping was most popular in the West, ($\chi^2 = 14.62$, $df = 3$, $p = .02$; Table 27; Figure 32), fishing was least popular in the Northeast ($\chi^2 = 20.39$, $df = 3$, $p < .001$; Table 27; Figure 32), horseback riding ($\chi^2 = 9.42$, $df = 3$, $p = .02$; Table 27; Figure 32), hunting ($\chi^2 = 10.45$, $df = 3$, $p = .01$; Table 27; Figure 32), swimming was most popular in the Southeast, ($\chi^2 = 19.89$, $df = 3$, $p < 0.001$; Table 27; Figure 32), motorized boating was most popular in the Midwest ($\chi^2 = 18.33$, $df = 3$, $p < .001$; Table 27; Figure 32), and winter sports which was least popular in the Southeast ($\chi^2 = 20.49$, $df = 3$, $p < .001$; Table 27; Figure 32).

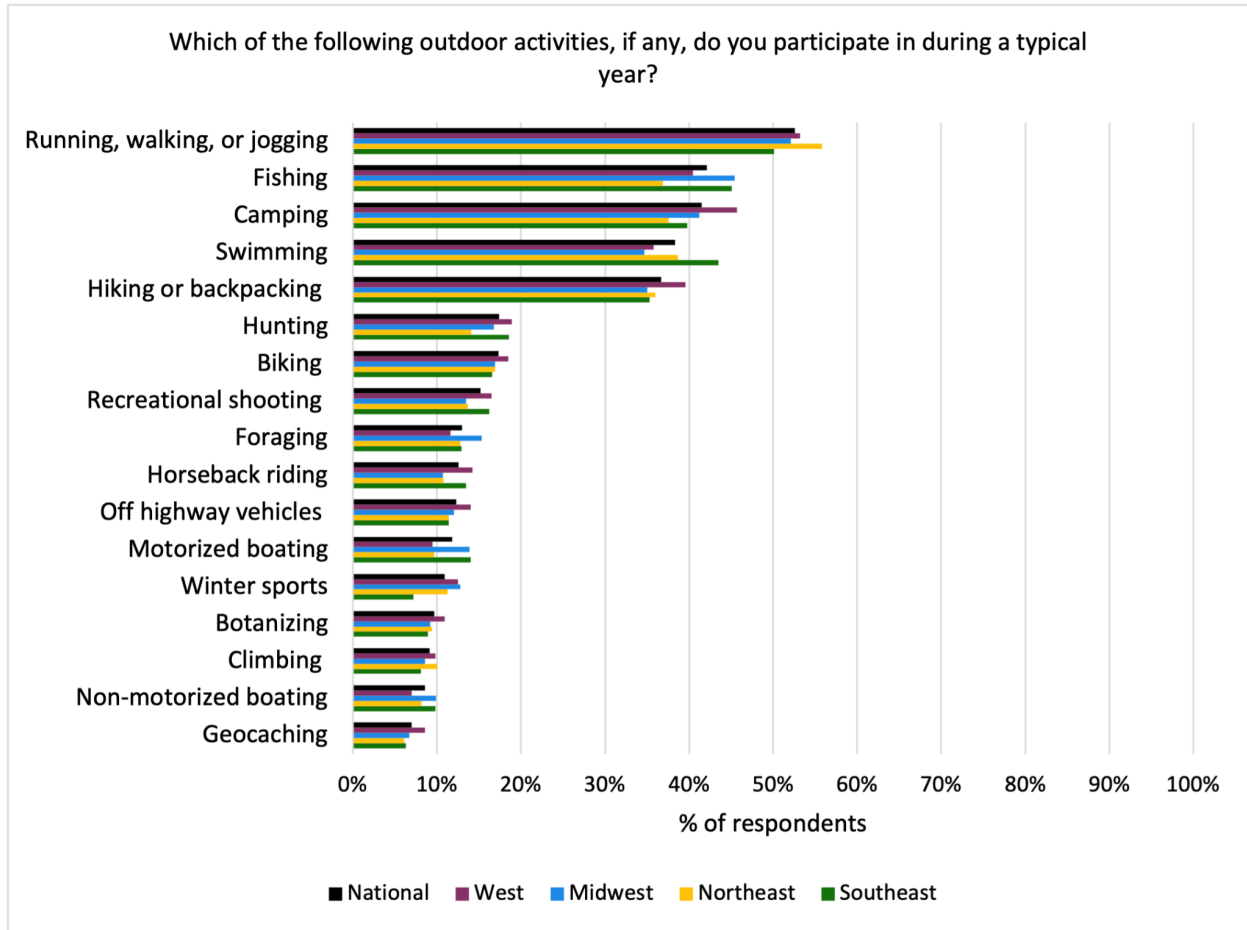


Figure 32. Other outdoor recreation activities

Outdoor activities that wildlife viewers nationally and across all four AFWA regions report participating in during a typical year. Note that individual categories sum to more than 100% because respondents were able to select more than one option. A Chi-Square test across regions revealed a number of statistically significant differences in camping, fishing, horseback riding, hunting, swimming, motorized boating, and winter sports (Table 27).

Conservation behaviors with and without state agencies

We asked respondents to indicate how likely they would be to participate in seven different conservation behaviors within the next five years, if they had the opportunity to do so. These conservation behaviors were adapted from survey items used by Larson et al. (2015) and were selected to represent each of the four pro-environmental behavior domains identified in that study. Larson et al. (2015) described the four behavior domains as: 1) conservation lifestyle, which includes private, household activities with environmental benefits, such as recycling and green consumerism, 2) land stewardship, which involves interaction with local ecosystems to create, manage, or monitor wildlife habitat, 3) social environmentalism, which refers to activities that center on social interaction, such as communicating with or teaching others about the environment or environmental actions, and 4) environmental citizenship, which refers to financial or political contributions to environmental causes through donations, voting, and other forms of advocacy.

Across all regions and nationally, wildlife viewers most often reported being likely to clean up trash or litter, with over half of respondents selecting that they were *very likely* or *extremely likely* to participate in this conservation behavior (Figures 33, 35, 37, 39, 41). Nationally, respondents least often reported being *very likely* or *extremely likely* to collect data on wildlife or habitat to contribute to science or management (24%), or to inform or teach others about wildlife conservation (23%); about a third of respondents were *not at all likely* to participate in these two conservation behaviors in the next five years (Tables 28 - 34).

We also asked respondents to indicate how likely they would be to participate in these same seven conservation behaviors with or in support of their state fish and wildlife agency within the next five years, if they had the opportunity to do so. Response patterns for this question were consistent with the likelihood of wildlife viewers to conduct these activities independent of their state agencies. However, a paired samples t-test showed four conservation behaviors which differed significantly between the two survey questions; wildlife viewers were significantly less likely to say they would purchase products that benefit wildlife or whose proceeds support conservation (difference in $M = -0.80$, $t = -4.82$, $df = 3,958$, $p < .001$), to enhance wildlife habitat (difference in $M = -0.05$, $t = -3.25$, $df = 3,970$, $p = 0.01$), and to clean up trash or litter with or in support of their state agency (difference in $M = -0.49$, $t = -3.28$, $df = 3,927$, $p = .01$). Conversely, wildlife viewers were significantly more likely to say they would collect data on wildlife or habitat to contribute to science or management with or in support of their state agency (difference in $M = 0.60$, $t = -3.96$, $df = 3,962$, $p < .001$).

To identify differences across regions, we ran a chi-square test on the percentages and found no statistically significant differences (Tables 28 - 41, Figures 33 - 41).

National and Regional Results of the Wildlife Viewer Survey



How likely would you be to participate in each of the following conservation activities in the next 5 years, if you had the opportunity to do so?
(National Sample)

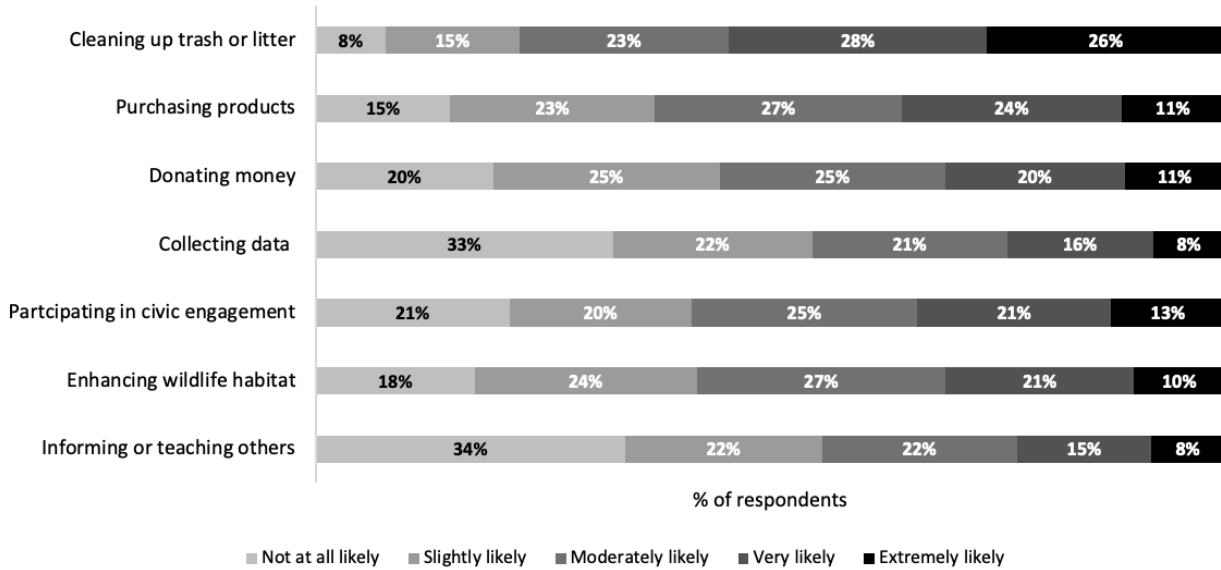


Figure 33. Likelihood of participating in conservation behaviors, national sample

Wildlife viewers’ indicated likelihood of participating in different conservation behaviors at the national level in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of gray lightens with decreasing likelihood of participation (Tables 30 - 36).



How likely would you be to participate in each of the following conservation activities with or in support of your state agency in the next 5 years, if you had the opportunity to do so?
(National Sample)

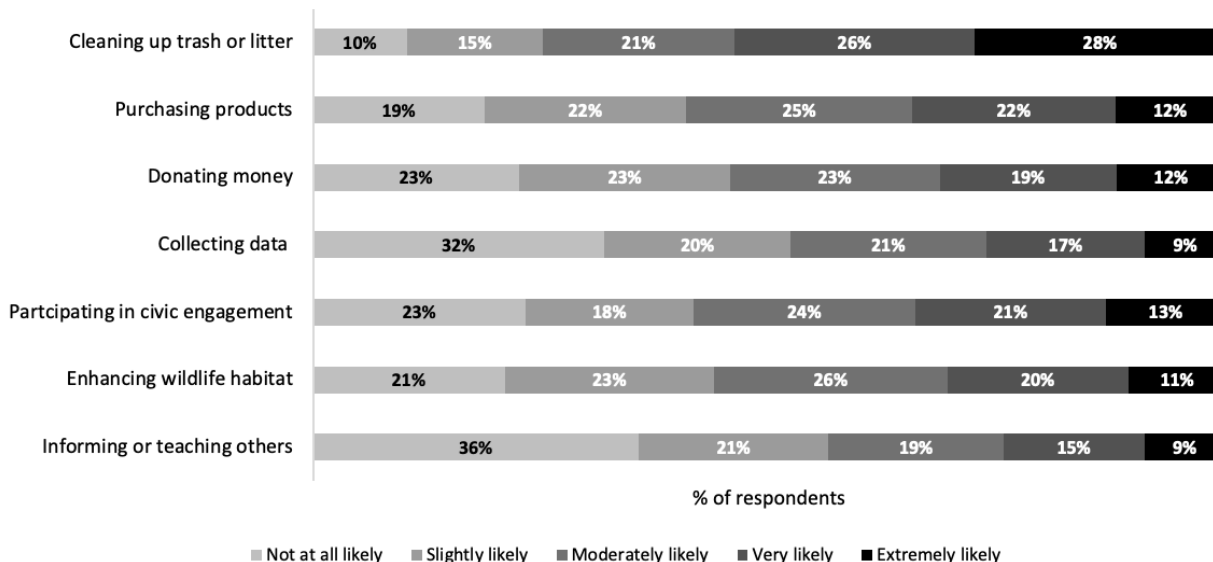


Figure 34. Likelihood of participating in conservation behaviors with or in support of agency, nationwide

Wildlife viewers’ indicated likelihood of participating in different conservation behaviors at the national level in support of their state agencies in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of gray lightens with decreasing likelihood of participation (Tables 37 - 41).

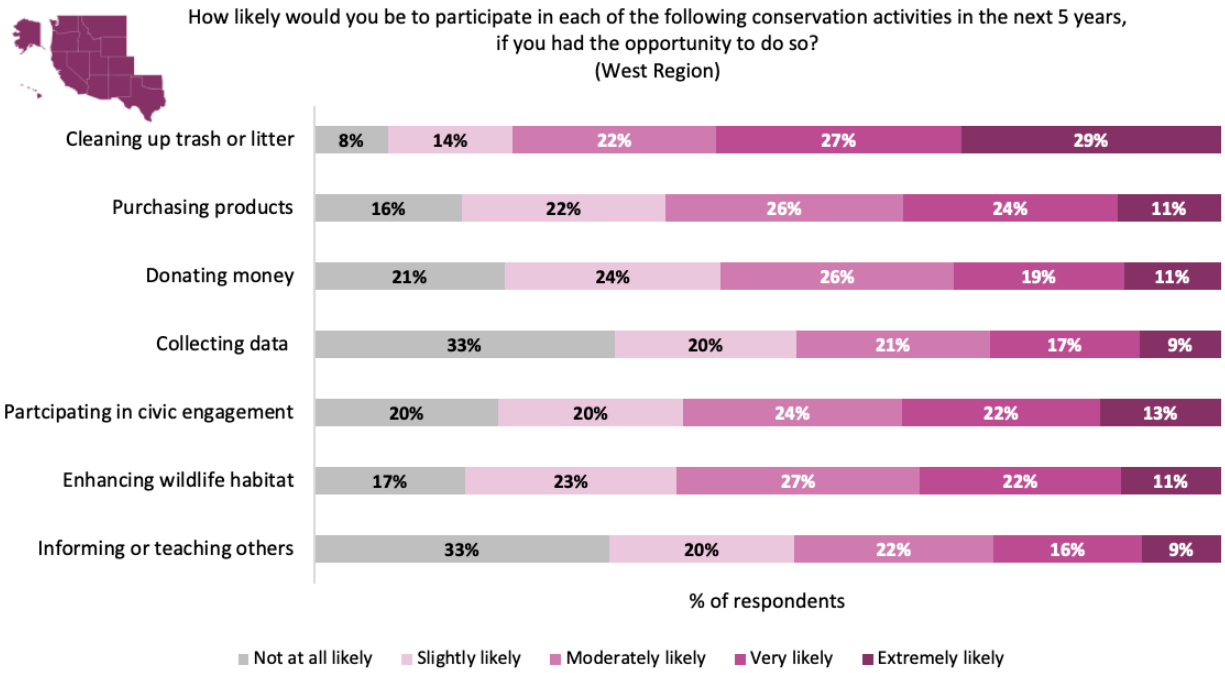


Figure 35. Likelihood of participating in conservation behaviors, West

Wildlife viewers' indicated likelihood of participating in different conservation behaviors in the West region in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of pink lightens with decreasing likelihood of participation (Tables 30 - 36).

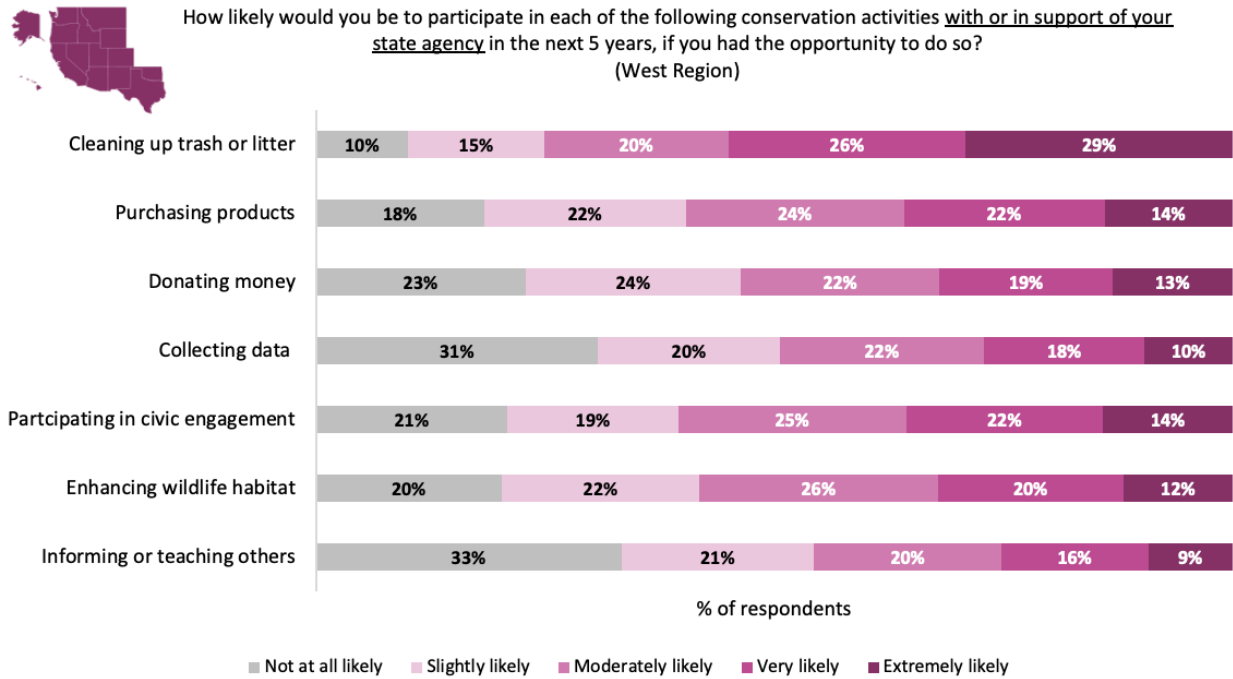


Figure 36. Likelihood of participating in conservation behaviors with or in support of agency, West

Wildlife viewers’ indicated likelihood of participating in different conservation behaviors in support of their state agency in the West region in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of pink lightens with decreasing likelihood of participation (Tables 37 - 41).

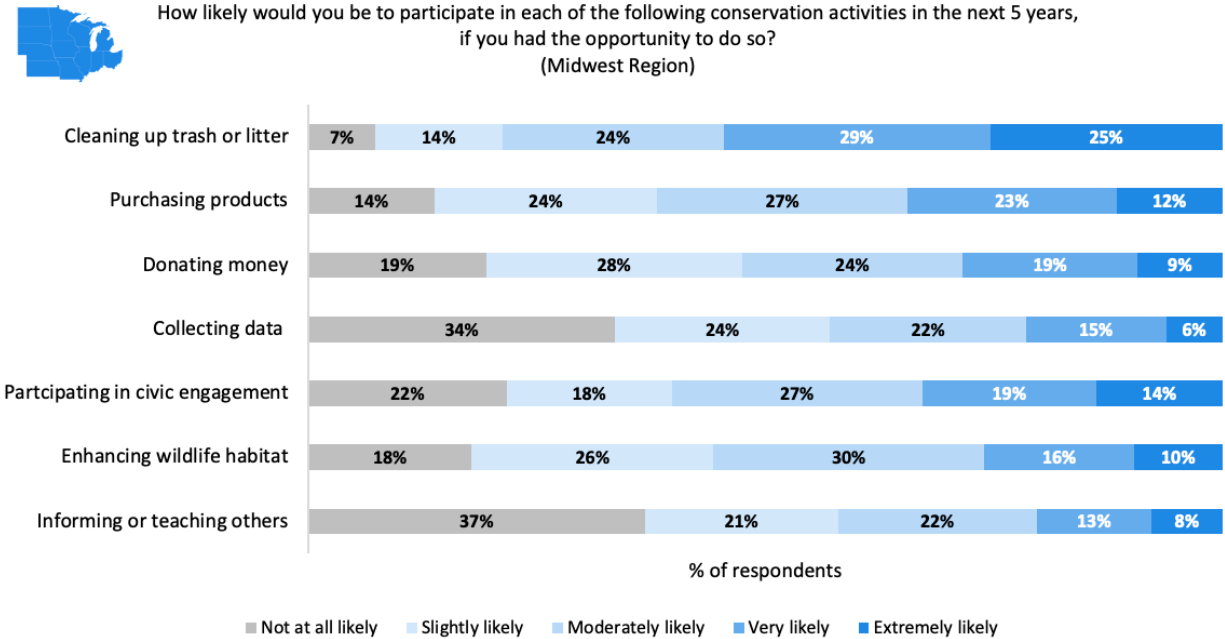


Figure 37. Likelihood of participating in conservation behaviors, Midwest

Wildlife viewers' indicated likelihood of participating in different conservation behaviors in the Midwest region in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of blue lightens with decreasing likelihood of participation (Tables 30 - 36).

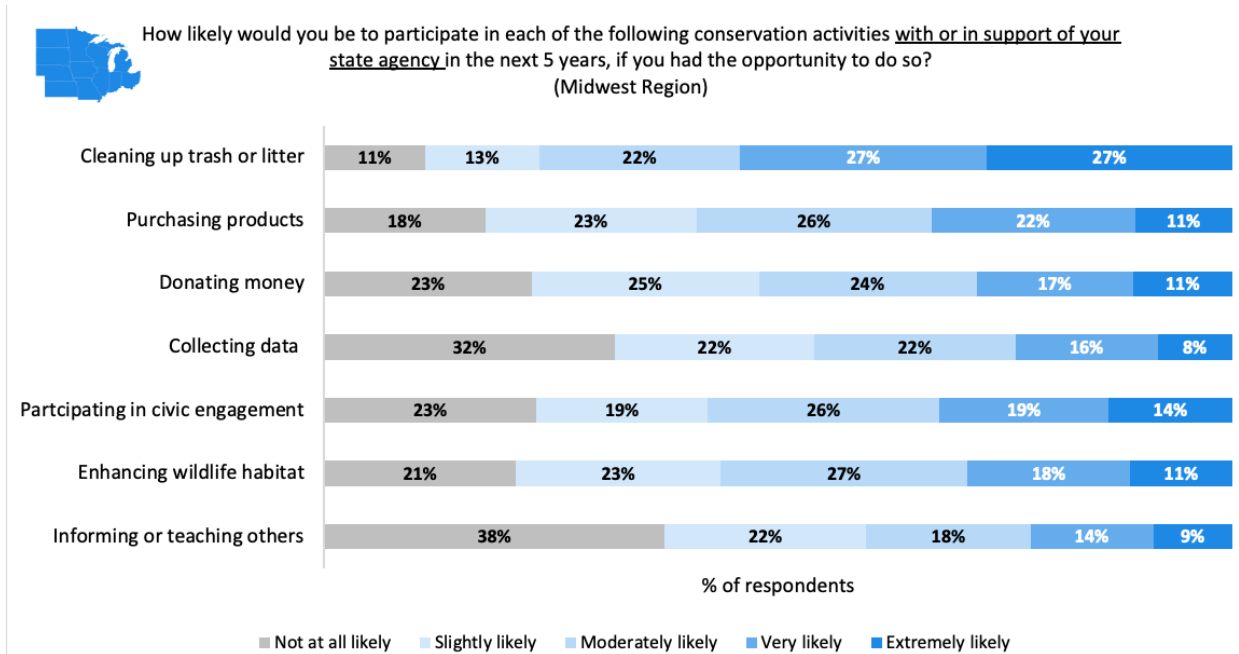


Figure 38. Likelihood of participating in conservation behaviors with or in support of agency, Midwest Wildlife viewers’ indicated likelihood of participating in different conservation behaviors in support of their state agency in the Midwest region in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of blue lightens with decreasing likelihood of participation (Tables 37 - 41).



How likely would you be to participate in each of the following conservation activities in the next 5 years, if you had the opportunity to do so? (Northeast Region)

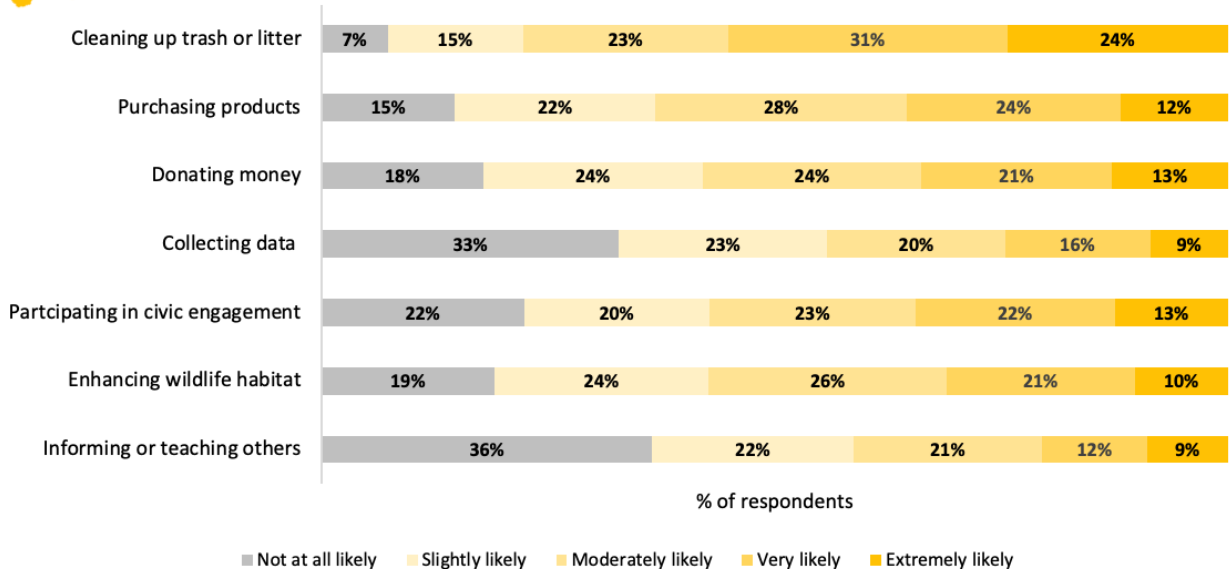


Figure 39. Likelihood of participating in conservation behaviors, Northeast

Wildlife viewers’ indicated likelihood of participating in different conservation behaviors in the Northeast region in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of yellow lightens with decreasing likelihood of participation (Tables 30 - 36).

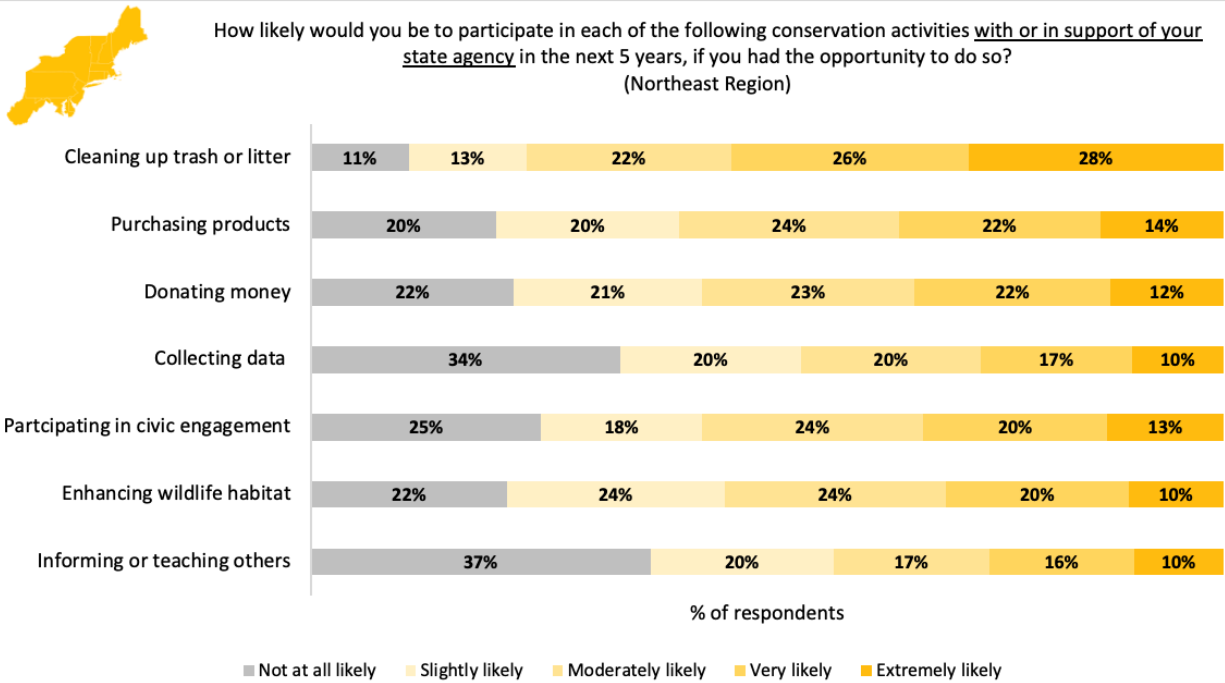


Figure 40. Likelihood of participating in conservation behaviors with or in support of agency, Northeast Wildlife viewers’ indicated likelihood of participating in different conservation behaviors in support of their state agency in the Northeast region in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of yellow lightens with decreasing likelihood of participation (Tables 37 - 41).



How likely would you be to participate in each of the following conservation activities in the next 5 years, if you had the opportunity to do so? (Southeast Region)

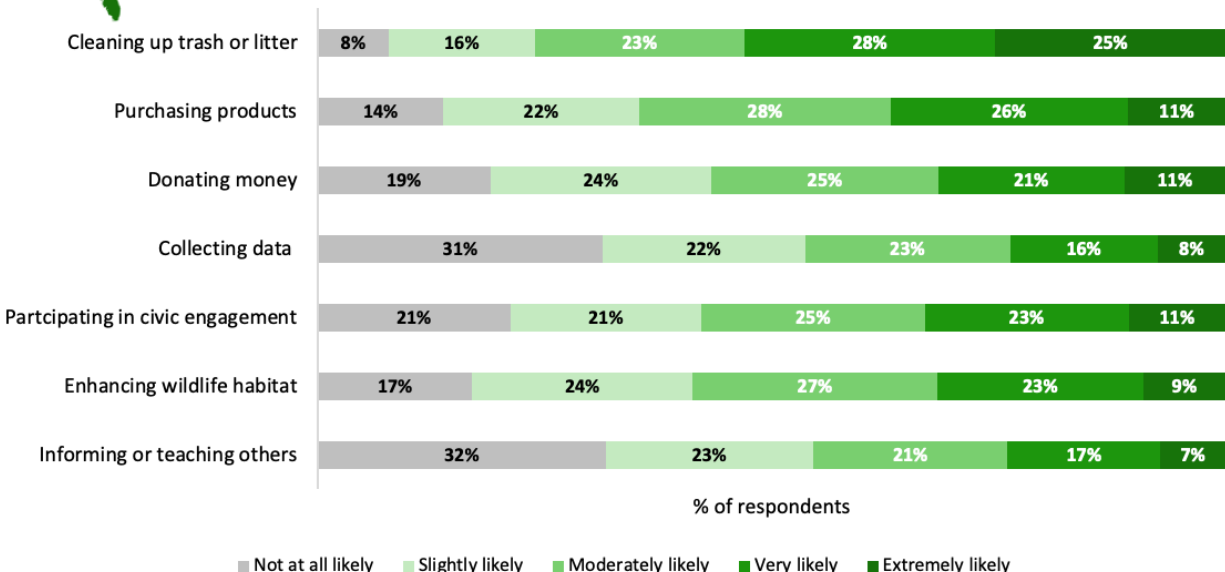


Figure 41. Likelihood of participating in conservation behaviors, Southeast

Wildlife viewers’ indicated likelihood of participating in different conservation behaviors in the Southeast region in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of green lightens with decreasing likelihood of participation (Tables 30 - 36).



How likely would you be to participate in each of the following conservation activities with or in support of your state agency in the next 5 years, if you had the opportunity to do so?
(Southeast Region)

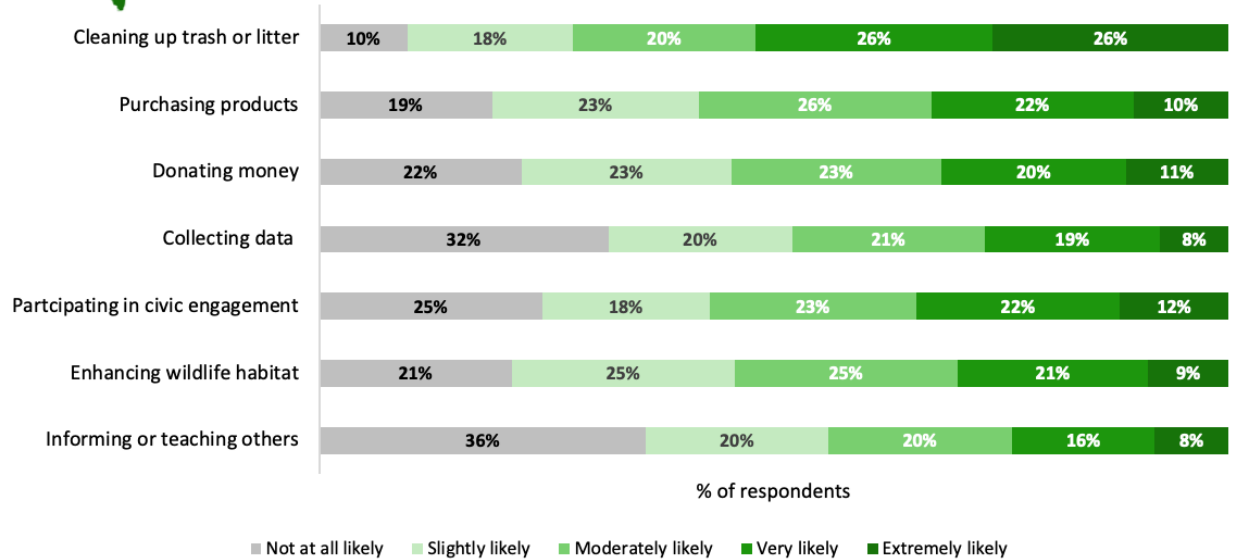


Figure 42. Likelihood of participating in conservation behaviors with or in support of agency, Southeast

Wildlife viewers' indicated likelihood of participating in different conservation behaviors in support of their state agency in the Southeast region in the next 5 years. Blocks represent the percentage of respondents who fell into each of the five categories. The darkest boxes represent the viewers most likely to participate in the activities. The shade of green lightens with decreasing likelihood of participation (Tables 37 - 41).

Barriers to wildlife viewing

Wildlife viewers may experience barriers to participation including time, lack of financial or transportation resources, or not knowing where to view wildlife (NAWMP 2021, Grooms et al. 2019, US DOI et al. 2016). To understand barriers to participation in wildlife viewing, we provided respondents with a list of 14 items and asked them to indicate the extent to which each of the barriers limited their participation in wildlife viewing, with response options ranging from *not at all* to *a great deal*. We adapted the list from the National Survey of Birdwatchers with input from our multi-state Steering Committee (NAWMP 2021).

We found that distance to viewing locations was the largest barrier indicated by respondents in all regions, with 57% of respondents indicating that distance limited participation in wildlife viewing *somewhat, quite a bit, or a great deal*. This was followed by financial cost (51% limited *somewhat, quite a bit, or a great deal*) and a lack of free time (50% limited *somewhat, quite a bit, or a great deal*). The barrier that limited participation least was transportation, with 39% of respondents indicating that it did not limit their participation at all. Chi-square tests indicated one statistically significant difference across regions for the barriers to participation explored in this survey, crowds ($\chi^2 = 22.01, df = 12, p = .037$; Tables 42 - 55; Figure 43 - 47).

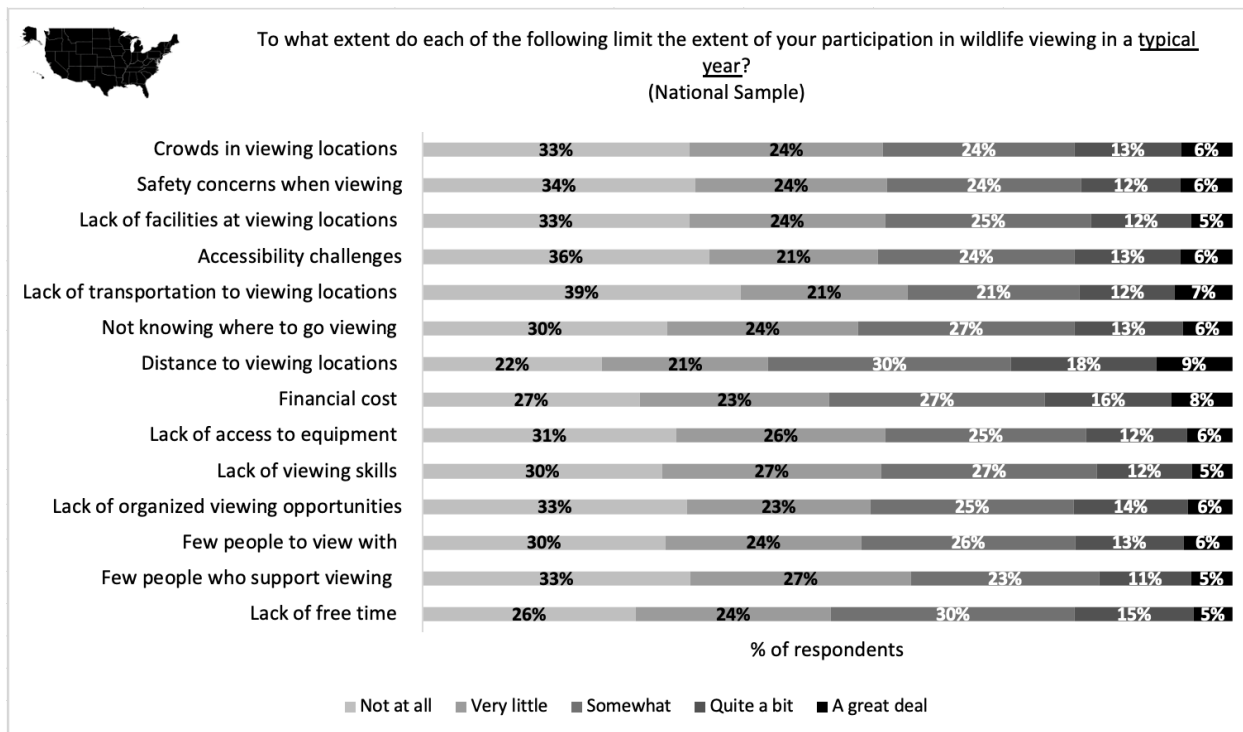


Figure 43. Barriers to wildlife viewing, Nationwide

Wildlife viewers' indicated barriers to wildlife viewing at the national level. Blocks represent the percentage of respondents who fell into each of the five categories. The lightest gray boxes represent the viewers that indicated an item as being not at all a barrier to their participation (Tables 42 - 55).

National and Regional Results of the Wildlife Viewer Survey

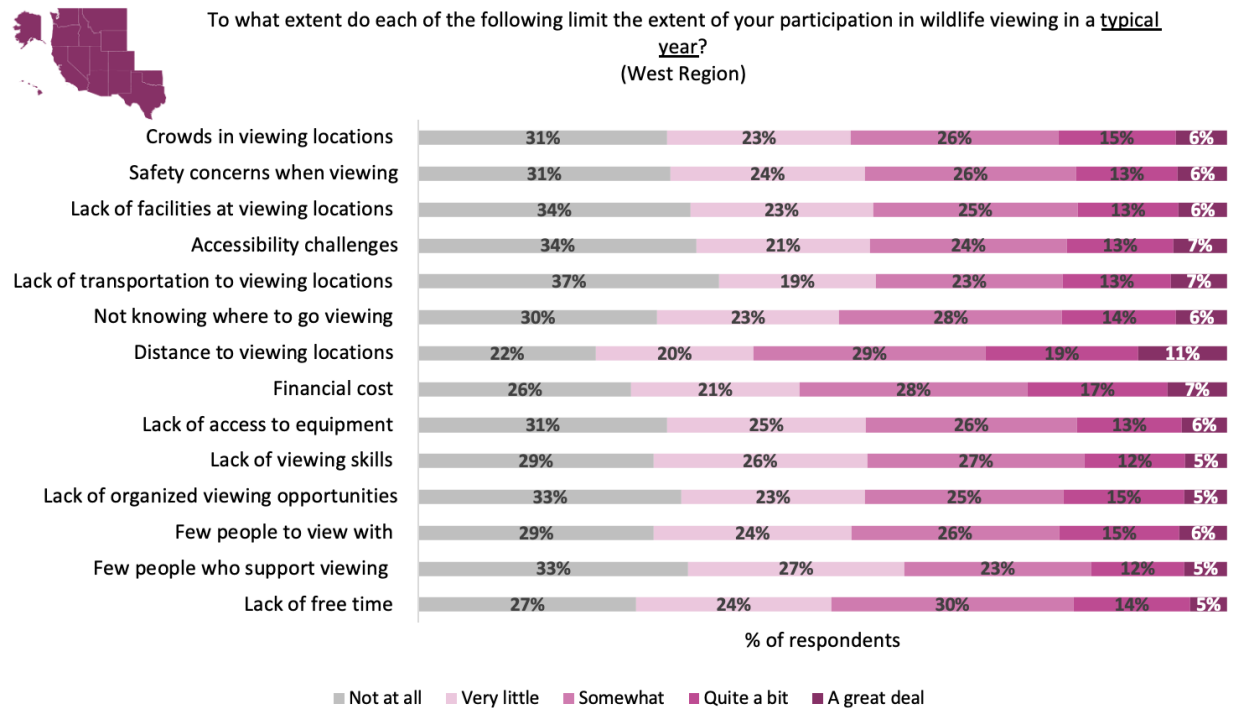


Figure 44. Barriers to wildlife viewing, West

Wildlife viewers' indicated barriers to wildlife viewing in the West. Blocks represent the percentage of respondents who fell into each of the five categories. The gray boxes represent the viewers that indicated an item as being not at all a barrier to their participation (Tables 42 - 55).

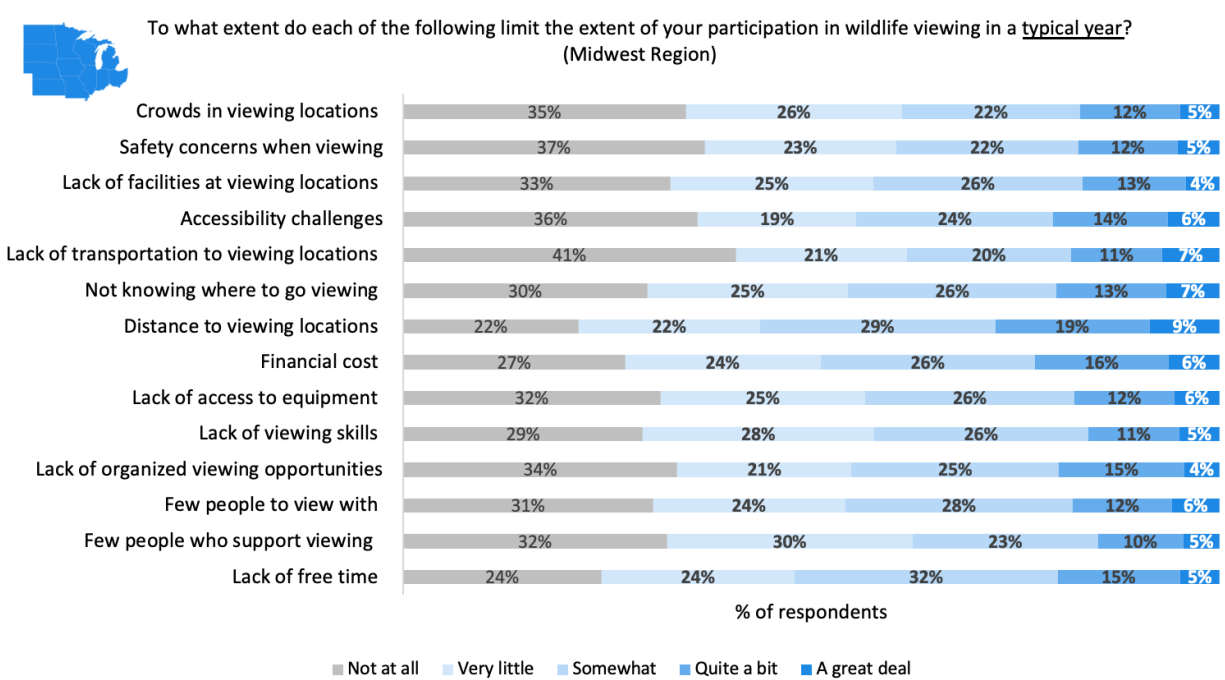


Figure 45. Barriers to wildlife viewing, Midwest

Wildlife viewers' indicated barriers to wildlife viewing in the Midwest region sample. Blocks represent the percentage of respondents who fell into each of the five categories. The lightest gray boxes represent the viewers that indicated an item as being not at all a barrier to their participation (Tables 42 - 55).



To what extent do each of the following limit the extent of your participation in wildlife viewing in a typical year?
(Northeast Region)

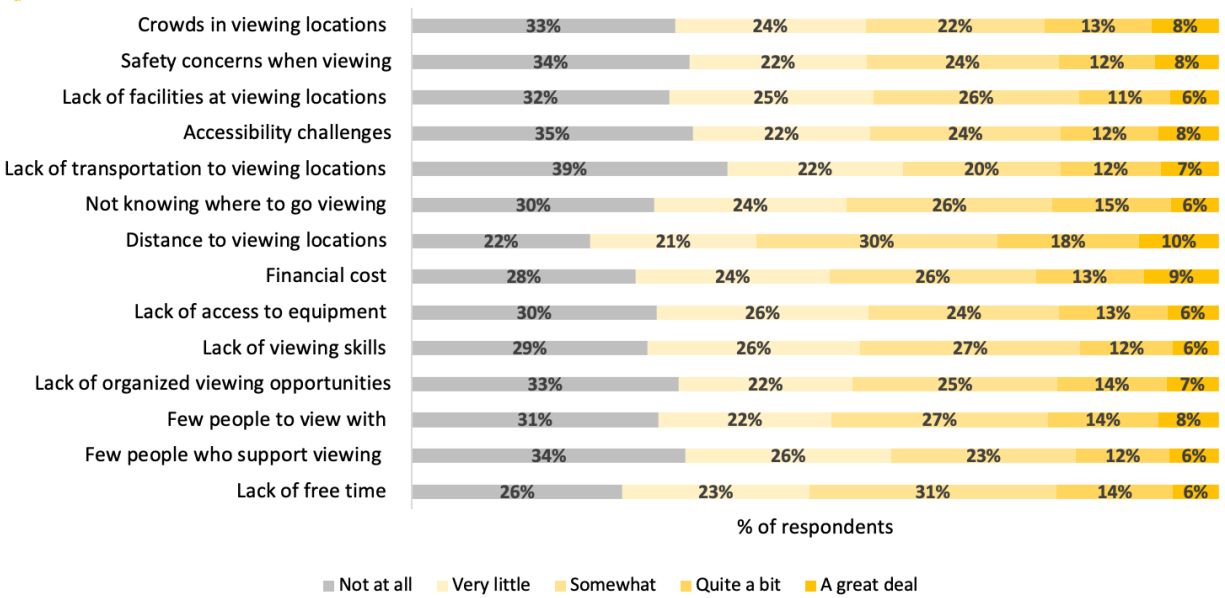


Figure 46. Barriers to wildlife viewing, Northeast

Wildlife viewers' indicated barriers to wildlife viewing in the Northeast region sample. Blocks represent the percentage of respondents who fell into each of the five categories. The gray boxes represent the viewers that indicated an item as being not at all a barrier to their participation (Tables 42 - 55)



To what extent do each of the following limit the extent of your participation in wildlife viewing in a typical year?
(Southeast Region)

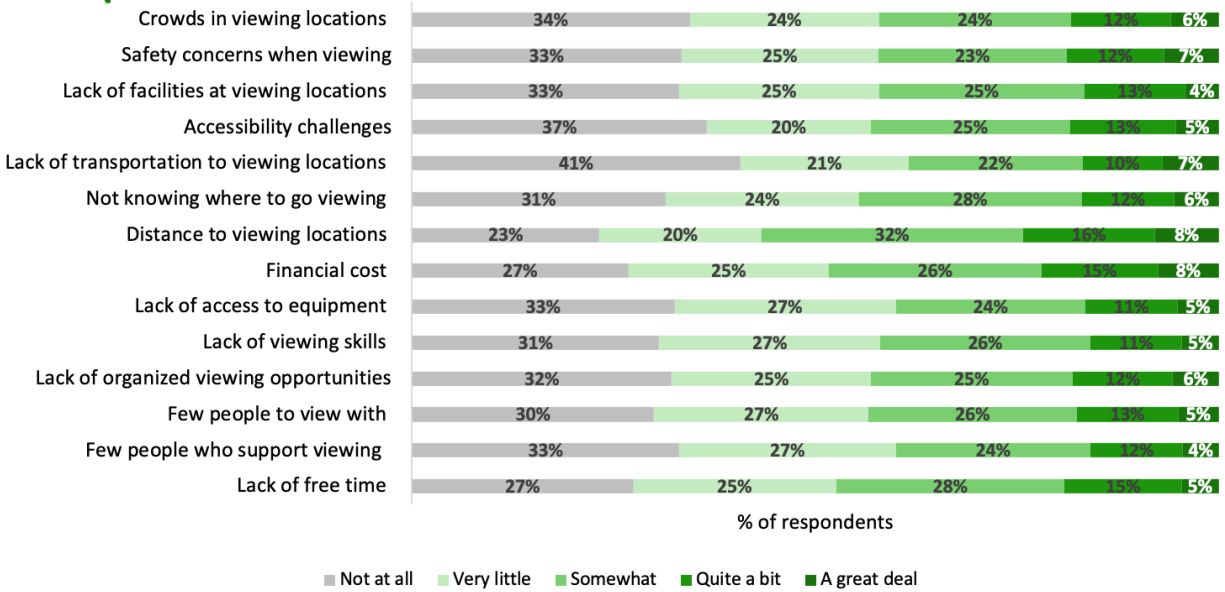


Figure 47. Barriers to wildlife viewing, Southeast

Wildlife viewers' indicated barriers to wildlife viewing in the Southeast region sample. Blocks represent the percentage of respondents who fell into each of the five categories. The gray boxes represent the viewers that indicated an item as being not at all a barrier to their participation (Tables 42 - 55).

Groups that encourage participation in wildlife viewing

Social support, or the resources either perceived or provided, by friends, family, mentors, peers, etc. (Gottlieb & Bergen 2010), is linked to sustained higher levels of participation in outdoor recreation. For example, birders who have a friend or relative who bird spend more time birding and have more birding knowledge than those who do not (Schoffman et al. 2015; Rutter et al. 2021). To further understand mechanisms of social support for wildlife viewing, we asked our respondents to what extent family, friends, peers, and mentors encourage their participation. Respondents at the national level indicated that family provided the most encouragement, with 70% indicating that family members encouraged their wildlife viewing *somewhat, quite a bit, or a great deal*. This is followed by friends at 60%, peers at 48%, and mentors at 41%. Mentors least frequently provided encouragement to wildlife viewers, with 44% of respondents indicating that mentors were not a source of encouragement at all. Chi-square tests indicated no statistically significant differences for extent of social support across regions (Tables 56 - 59; Figure 48 - 52).

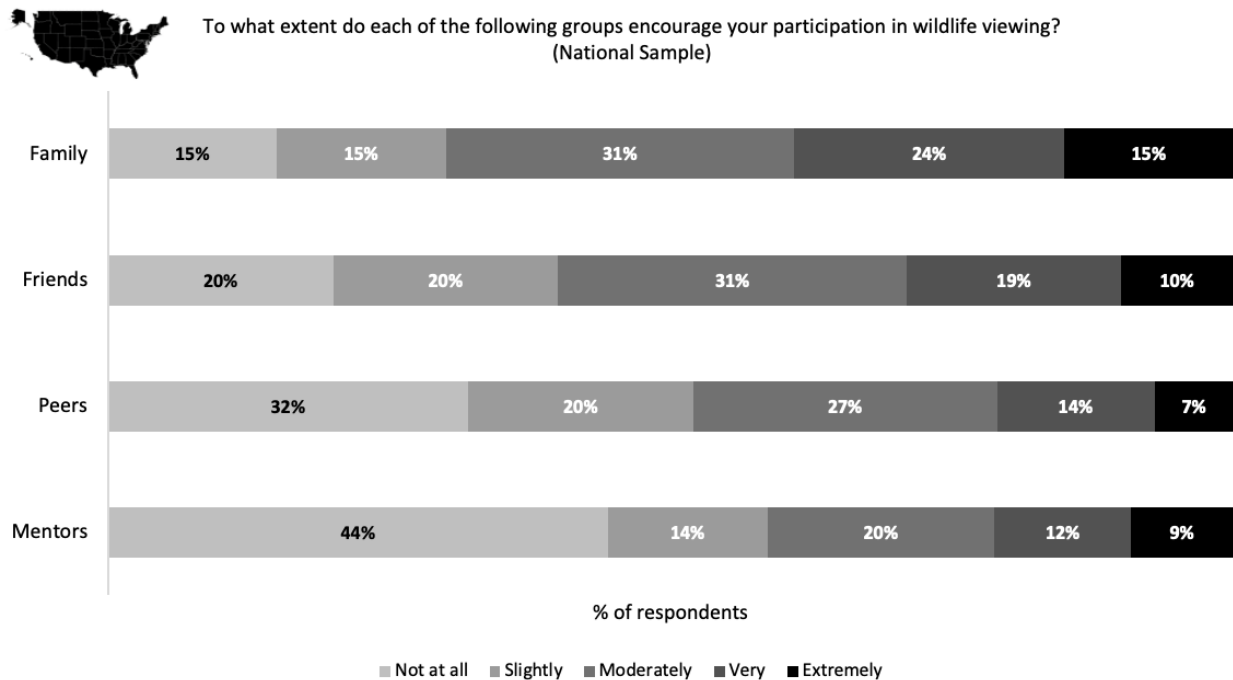


Figure 48. Social support for viewing, Nationwide

The degree to which survey respondents in the national sample feel encouraged to participate in wildlife viewing by four groups of people: family, friends, peers and mentors. Blocks represent the percentage of respondents who fell into each of the five categories. The lightest shade of gray represents viewers that indicated the least amount of social support.



To what extent do each of the following groups encourage your participation in wildlife viewing?
(West Region)

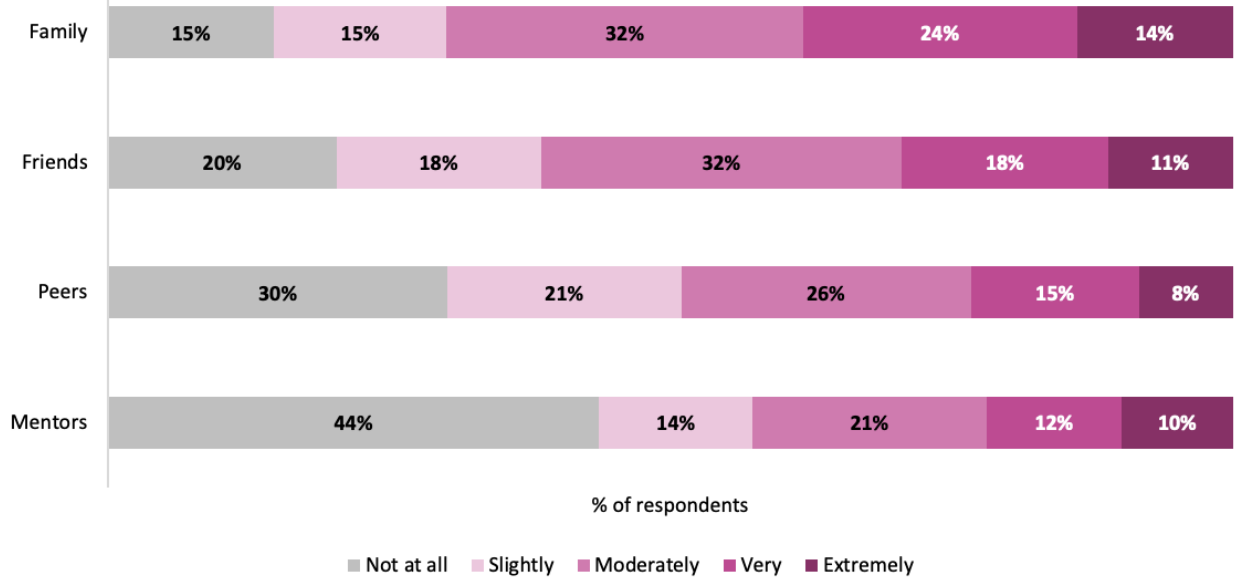


Figure 49. Social support for viewing, West

The degree to which survey respondents in the West region sample feel encouraged to participate in wildlife viewing by four groups of people: family, friends, peers and mentors. Blocks represent the percentage of respondents who fell into each of the five categories. The gray represents viewers that indicated the least amount of social support.

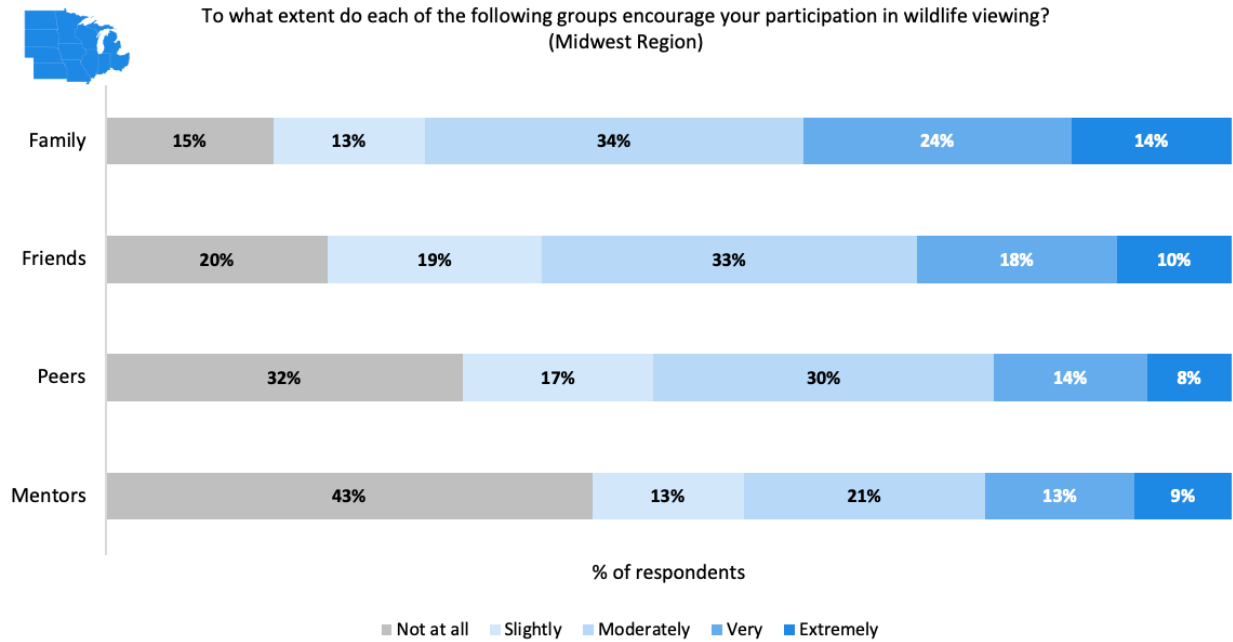


Figure 50. Social support for viewing, Midwest

The degree to which survey respondents in the Midwest region sample feel encouraged to participate in wildlife viewing by four groups of people: family, friends, peers and mentors. Blocks represent the percentage of respondents who fell into each of the five categories. The gray represents viewers that indicated the least amount of social support.



To what extent do each of the following groups encourage your participation in wildlife viewing?
(Northeast Region)

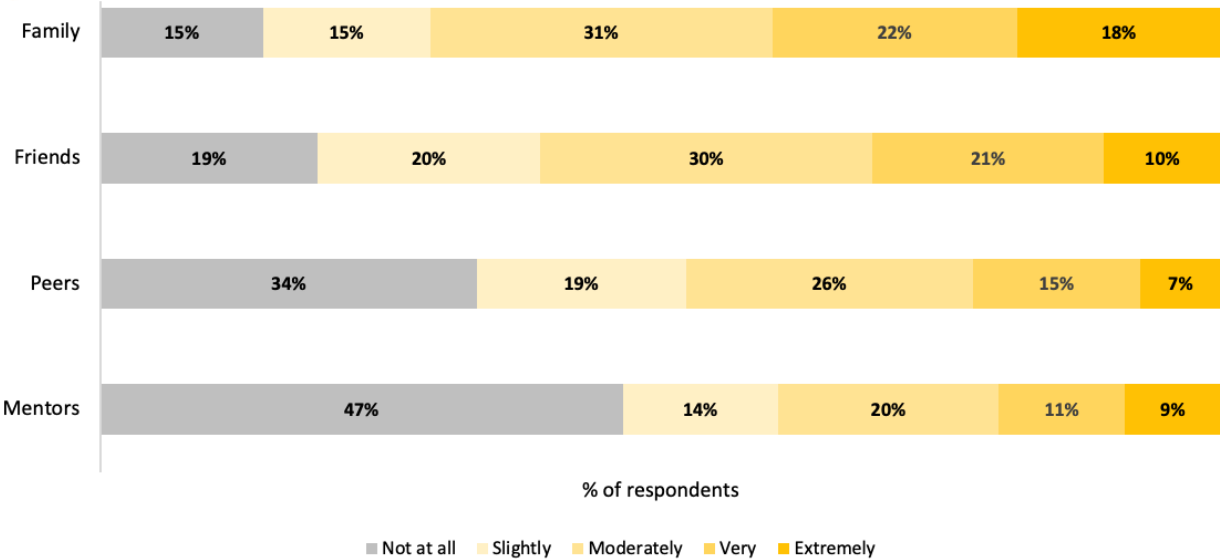


Figure 51. Social support for viewing, Northeast

The degree to which survey respondents in the Northeast region sample feel encouraged to participate in wildlife viewing by four groups of people: family, friends, peers and mentors. Blocks represent the percentage of respondents who fell into each of the five categories. The gray represents viewers that indicated the least amount of social support.



To what extent do each of the following groups encourage your participation in wildlife viewing?
(Southeast Region)

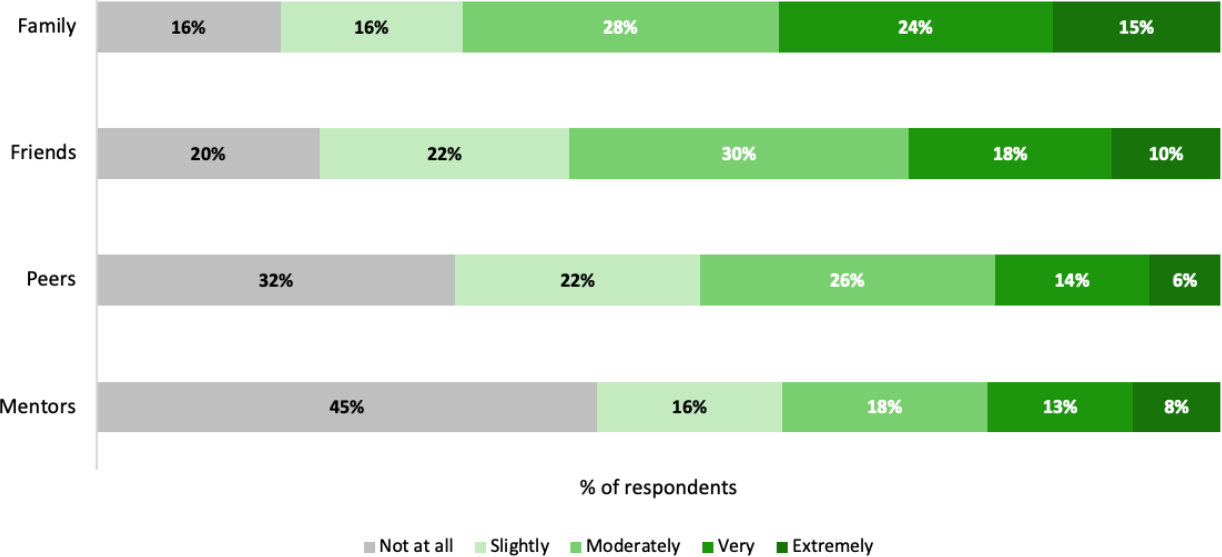


Figure 52. Social support for viewing, Southeast

The degree to which survey respondents in the Southeast region sample feel encouraged to participate in wildlife viewing by four groups of people: family, friends, peers and mentors. Blocks represent the percentage of respondents who fell into each of the five categories. The gray represents viewers that indicated the least amount of social support.

Identity and importance of wildlife viewing

Identity can be broadly defined as how we understand ourselves and how we hope to be understood by others (Williams 2002). In this context, identity as a wildlife viewer is both the integration of wildlife viewing into one's life and one's sense of self (Shamir 1988), or more simply, the level to which one identifies themselves as a wildlife viewer and how important or central wildlife viewing is to one's life.

Identity as a birder has been strongly tied to commitment to birding (Rutter et al. 2021), so we sought to understand both identity as a wildlife viewer and how important viewing is to respondents. We asked respondents to indicate their extent of agreement, ranging from *strongly disagree* to *strongly agree*, with the following statements: "I think of myself as a wildlife viewer," "Being a wildlife viewer is an important part of who I am," "Wildlife viewing has a central role in my life," "A lot of my life is organized around wildlife viewing," "I feel welcome among wildlife viewers," and "I teach or mentor others in wildlife viewing."

While all survey respondents participated in wildlife viewing, their identity as a wildlife viewer may vary due to a variety of factors: for example, their dedication to the activity. Respondents at the national level indicated strong identification as a wildlife viewer, with 71% of respondents either *somewhat* or *strongly agreeing* with the statement, "I think of myself as a wildlife viewer." Over half of respondents (54%) agreed that being a wildlife viewer is an important part of who they are, while only 41% agreed that wildlife viewing plays a central role in their lives and 30% agreed that their lives are organized around viewing. A majority of respondents (60%) felt welcome among other viewers, but only 27% of viewers reported teaching or mentoring others. Chi-square tests revealed only one statistically significant difference for identity and importance of wildlife viewing across regions with the statement "Being a wildlife viewer is an important part of who I am" ($\chi^2 = 22.63$, $df = 12$, $p = .03$; Tables 60 - 65; Figures 54 - 57).

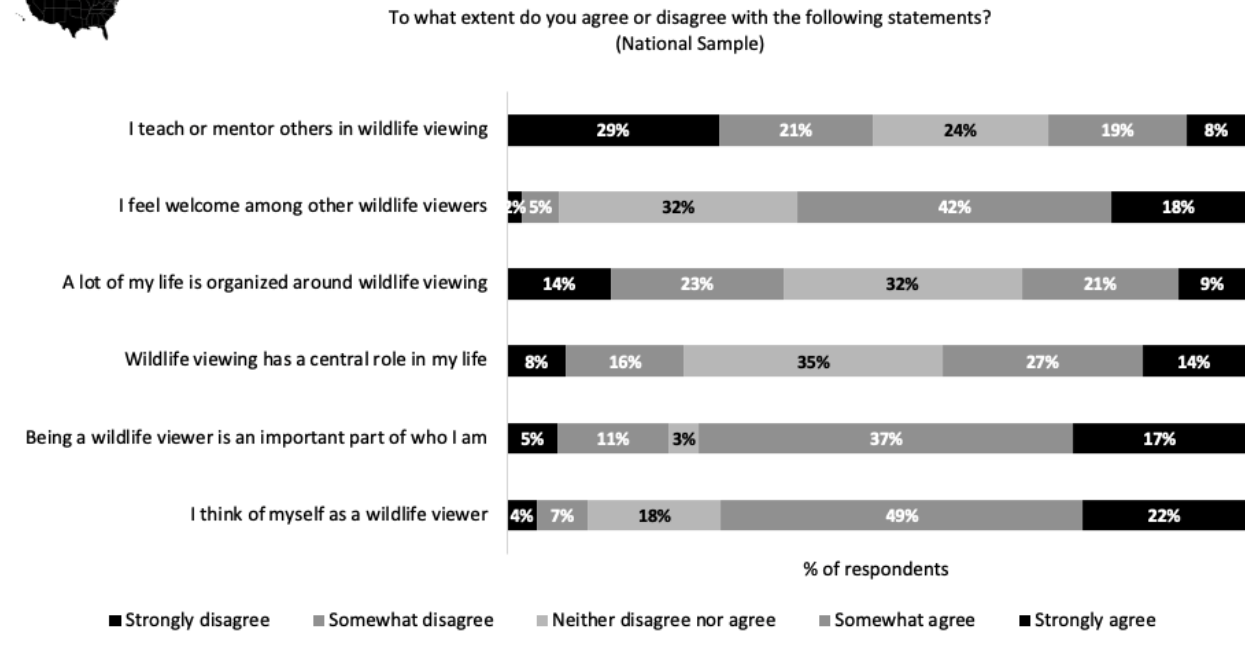


Figure 53. Wildlife viewing identity, Nationwide

Wildlife viewers’ agreement with statements concerning identity and importance in the national sample. Blocks represent the percentage of respondents who fell into each of the five categories. The lightest gray box represents “neither disagree nor agree.”



To what extent do you agree or disagree with the following statements?
(West Region)

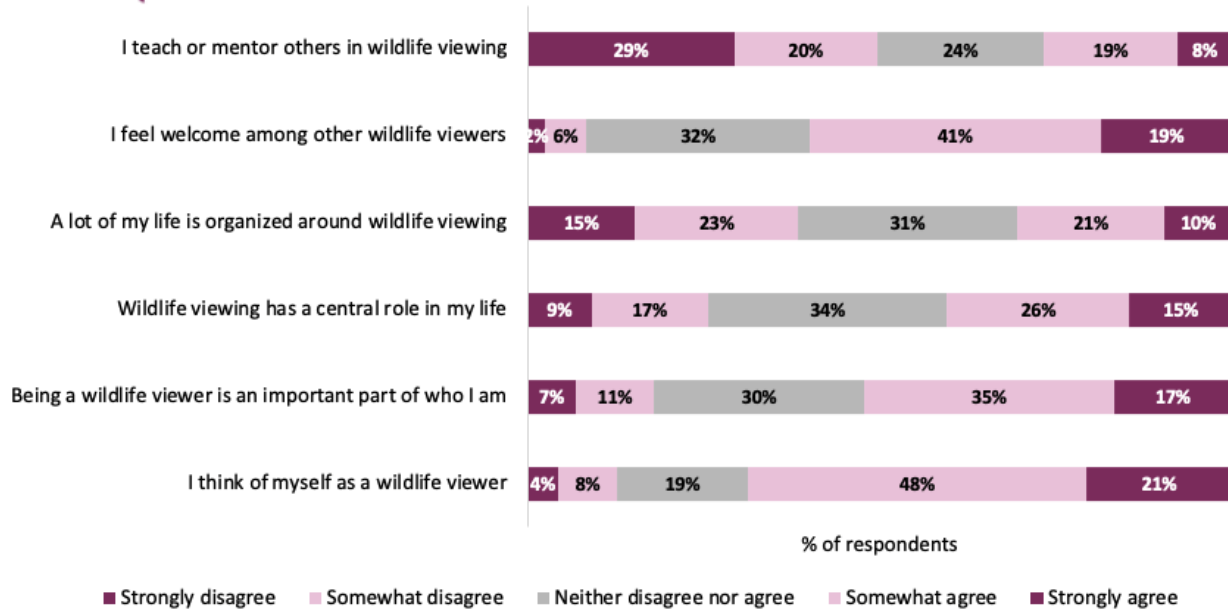


Figure 54. Wildlife viewing identity, West

Wildlife viewers’ agreement with statements concerning identity and importance in the West region sample. Blocks represent the percentage of respondents who fell into each of the five categories. The gray box represents “neither disagree nor agree.”

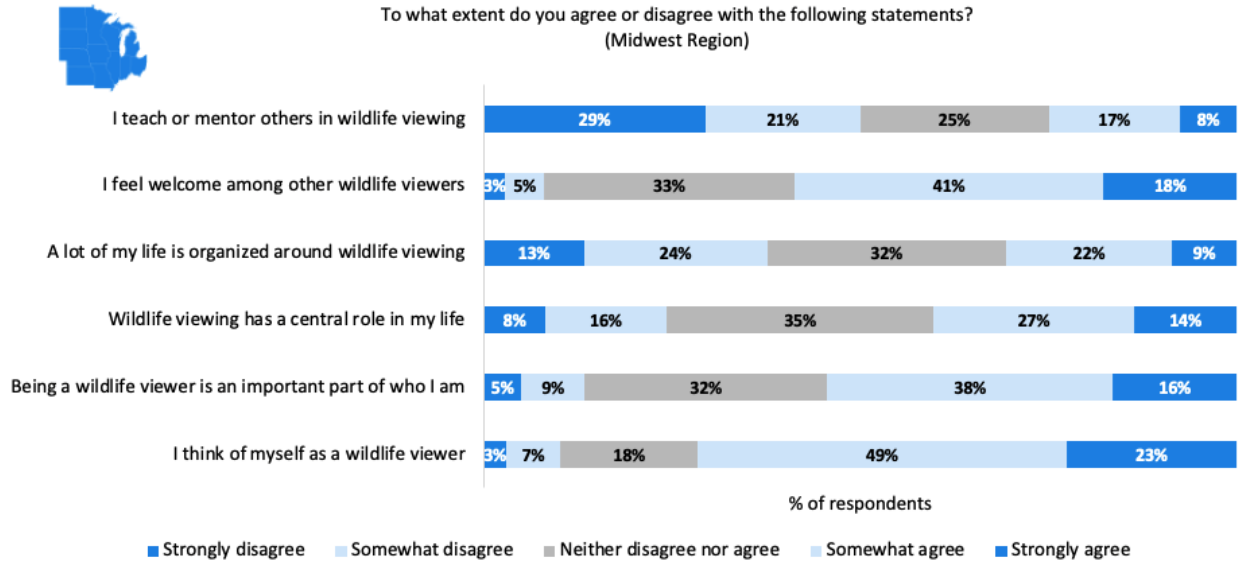


Figure 55. Wildlife viewing identity, Midwest

Wildlife viewers’ agreement with statements concerning identity and importance in the Midwest region sample. Blocks represent the percentage of respondents who fell into each of the five categories. The gray box represents “neither disagree nor agree.”

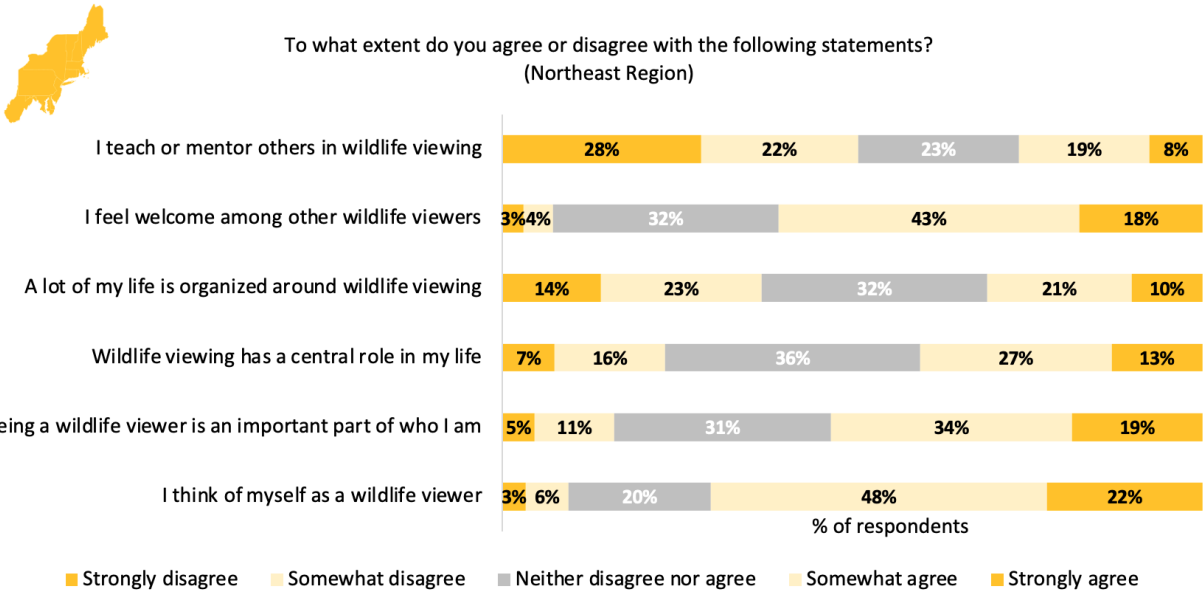


Figure 56. Wildlife viewing identity, Northeast

Wildlife viewers’ agreement with statements concerning identity and importance in the Northeast region sample. Blocks represent the percentage of respondents who fell into each of the five categories. The gray box represents “neither disagree nor agree.”

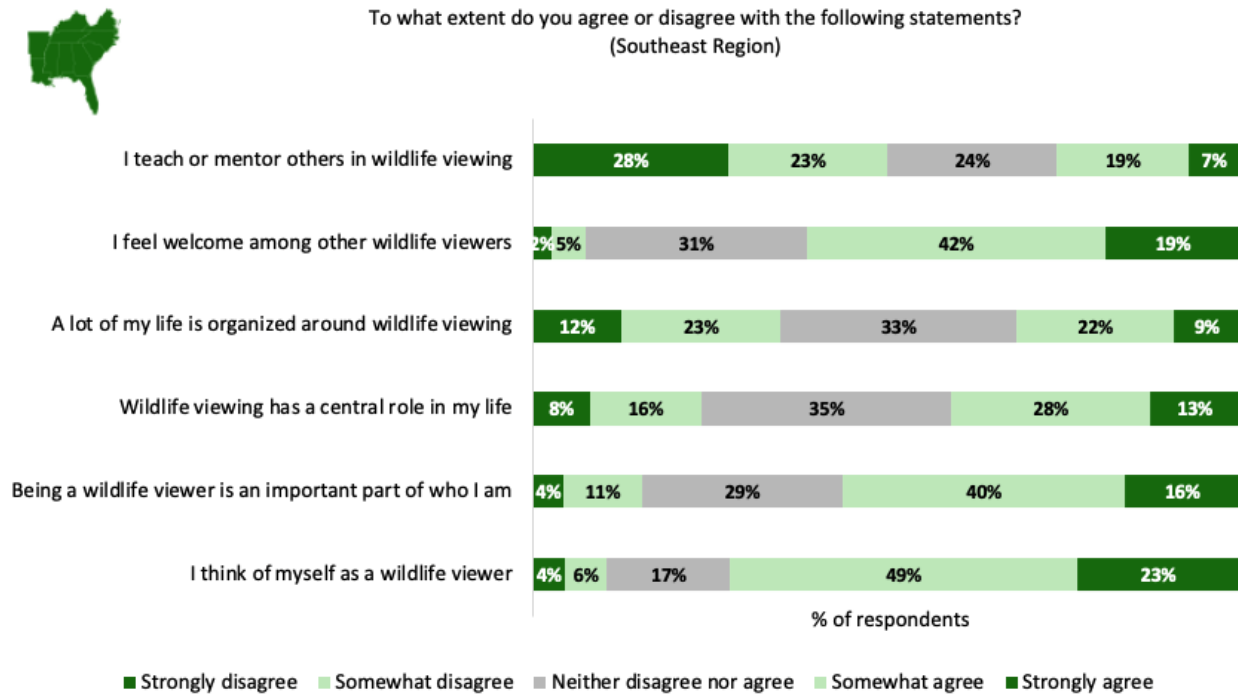


Figure 57. Wildlife viewing identity, Southeast

Wildlife viewers’ agreement with statements concerning identity and importance in the Southeast region sample. Blocks represent the percentage of respondents who fell into each of the five categories. The gray box represents “neither disagree nor agree.”

BIPOC identity and importance of wildlife viewing

The question about identity also sought to understand the viewing behaviors of Black, Indigenous, and people of color (hereafter, BIPOC). For our analysis, we examined ethnoracial groups in line with the U.S. Census recommendations (Jones, 2017) and created an additional category, “multiracial,” for respondents who identified as more than one race or ethnicity. Multiracial includes those who identify as White in addition to other categories. We also collapsed “American Indian or Alaskan Native,” “Middle Eastern or North African,” and “Native Hawaiian or other Pacific Islander” into the “Some other race or ethnicity” category, due to small sample size in each of these ethnoracial categories. Due to limitations in sample size, we examined these ethnoracial data at the national level only.

The first statement, “I think of myself as a wildlife viewer,” was examined singularly and the remaining statements were collapsed into a scale that represents how important wildlife viewing is to respondents. We found that respondents in four ethnoracial groups differed in their identity as a wildlife viewer ($\chi^2 = 27.79, df = 16, p = .03$). A majority of White respondents,

73%, somewhat or strongly agreed with the statement “I think of myself as a wildlife viewer” (Table 66; Figure 58), whereas 62% of Black or African American respondents (Table 66; Figure 58), 60% of Hispanic, Latino, or Spanish (Table 66; Figure 58) and 56% of Asian respondents agreed (Table 66; Figure 58).

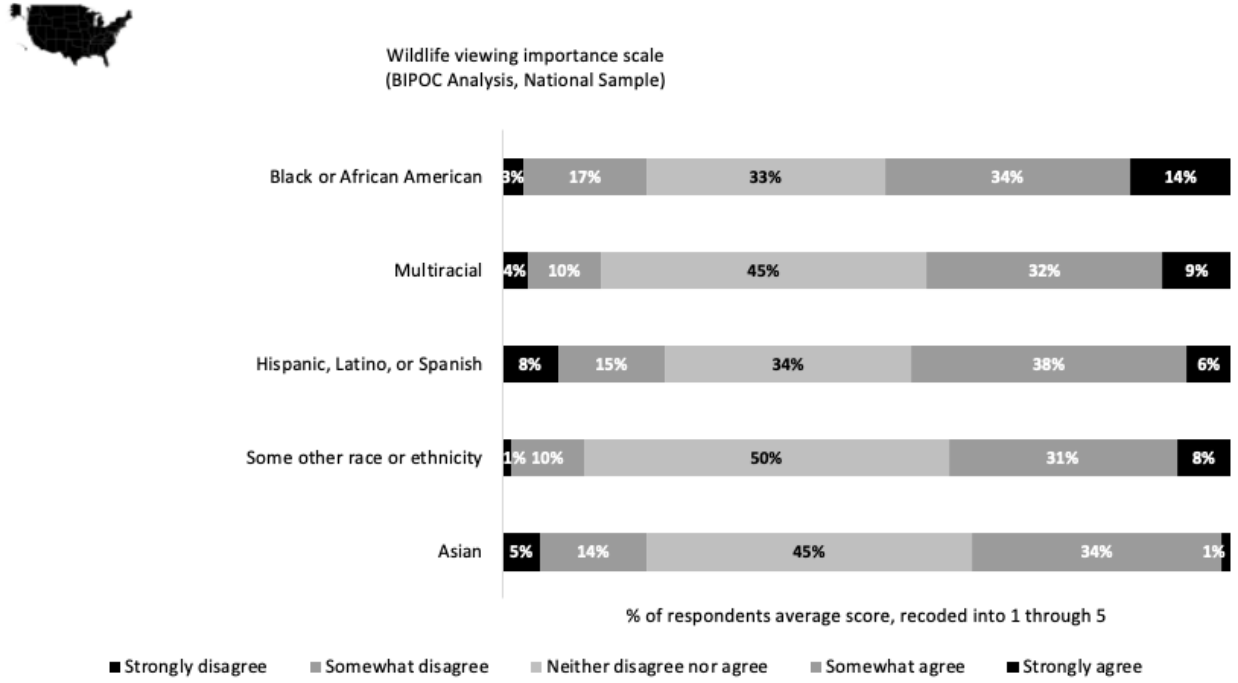


Figure 58. Identity as wildlife viewer, BIPOC

Wildlife viewers’ agreement with the statement “I think of myself as a wildlife viewer” in the National sample examined within ethnoracial groups. Due to a small sample size in the categories, “American Indian or Alaskan Native,” “Middle Eastern or North African,” and “Native Hawaiian or other Pacific Islander,” these categories are represented as “Some other race or ethnicity”. Blocks represent the percentage of respondents who fell into each of the five categories. The lightest gray box represents “neither disagree nor agree.”

When considering the relative importance of wildlife viewing to the lives of our respondents, White, Black or African American, and Hispanic, Latino, or Spanish respondents significantly differed from other racial groups ($\chi^2 = 37.06$, $df = 16$, $p = .002$) (Table 67; Figure 59). Only 33% of White viewers indicated they *somewhat or strongly agreed* with the statements, compared to 48% of Black or African American viewers and 44% of Hispanic, Latino, or Spanish viewers indicating that they *somewhat or strongly agreed* with the statements.

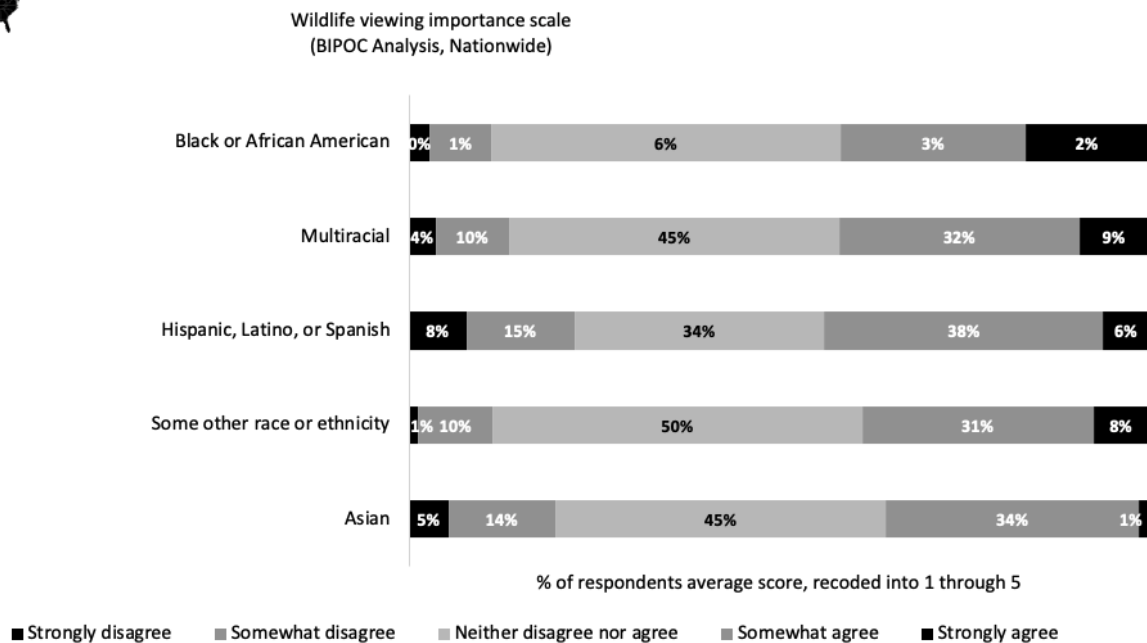


Figure 59. Wildlife viewer scale, BIPOC

Wildlife viewing importance scale examined by respondent race and ethnicity. Scores were calculated based on an average of responses to the statements “Being a wildlife viewer is an important part of who I am,” “Wildlife viewing has a central role in my life,” “A lot of my life is organized around wildlife viewing,” “I feel welcome among other wildlife viewers” and “I teach or mentor other wildlife viewers.” The lightest gray bars represent “Neither disagree nor agree” (Table 67).

Accessibility and wildlife viewing

According to the Centers for Disease Control and Prevention (CDC), 26% of American adults experience some type of disability (CDC 2020). Historically, surveys and planning efforts for wildlife viewing have largely overlooked the needs and concerns of wildlife viewers with disabilities, beyond achieving Americans with Disabilities Act compliance. In this survey, we explored accessibility challenges experienced by wildlife viewers.

We asked respondents about the extent to which they or people they view with experience accessibility challenges related to wildlife viewing. We used a definition of the term “accessibility challenges” developed by Birdability (Rose and McGregor, 2021), a non-profit organization dedicated to improving accessibility for birders with disabilities. It read “... the difficulties someone experiences in interacting with or while using the physical or social environment while trying to engage in a meaningful activity (such as wildlife viewing). This may be a result of a mobility challenge, blindness or low vision, intellectual or developmental disabilities (including Autism), mental illness, being Deaf or Hard of Hearing, or other health concerns.”

In our survey, 39% of wildlife viewers reported experiencing accessibility challenges *somewhat, quite a bit, or a great deal* (Figure 60). Chi-square tests indicated a statistically significant difference occurred across regions ($\chi^2 = 23.98$, $df = 3$, $p = .02$; Table 68; Figures 61 - 64). Respondents from the Northeast reported experiencing no accessibility challenges with the highest frequency (42%; Figure 63), while respondents from the West reported experiencing no accessibility challenges with the lowest frequency (37%; Table 68; Figure 61).

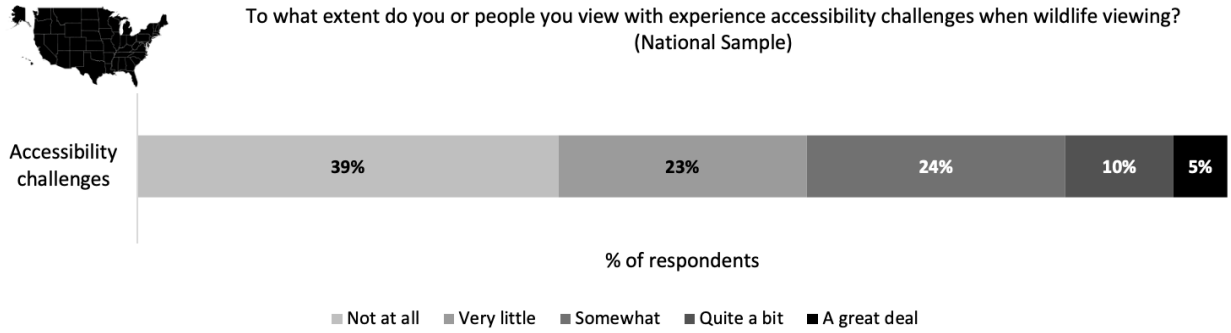


Figure 60. Accessibility challenges, Nationwide

Wildlife viewers’ extent to which they experience accessibility challenges at the national level. Blocks represent the percentage of respondents who fell into each of the five categories. Light gray box represents “Not at all” and the black box represents “A great deal” (Table 68).

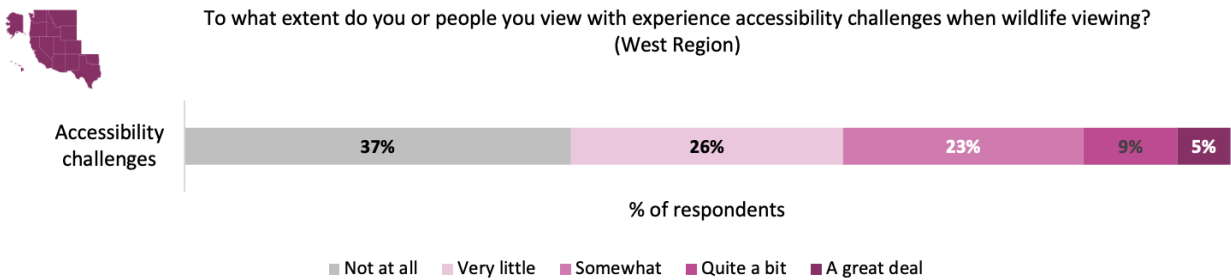


Figure 61. Accessibility challenges, West

Wildlife viewers’ extent to which they experience accessibility challenges in the West. Blocks represent the percentage of respondents who fell into each of the five categories. Light gray box represents “Not at all” and the darkest box represents “A great deal” (Table 68).

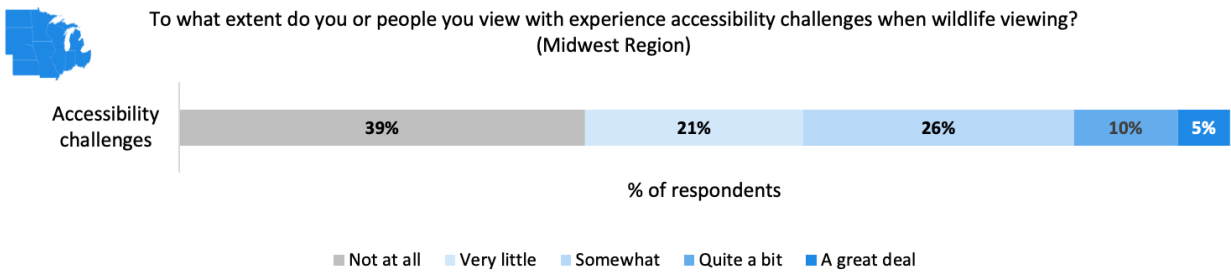


Figure 62. Accessibility challenges, Midwest

Wildlife viewers’ extent to which they experience accessibility challenges in the Midwest. Blocks represent the percentage of respondents who fell into each of the five categories. Light gray box represents “Not at all” and the darkest box represents “A great deal” (Table 68).



To what extent do you or people you view with experience accessibility challenges when wildlife viewing?
(Northeast Region)

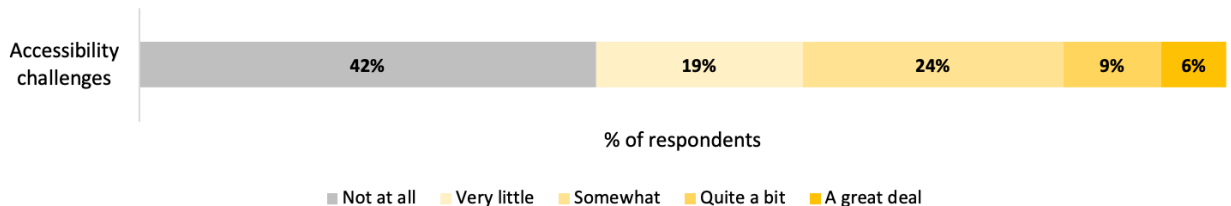


Figure 63. Accessibility challenges, Northeast

Wildlife viewers’ extent to which they experience accessibility challenges in the Northeast. Blocks represent the percentage of respondents who fell into each of the five categories. Light gray box represents “Not at all” and the darkest box represents “A great deal” (Table 68).



To what extent do you or people you view with experience accessibility challenges when wildlife viewing?
(Southeast Region)

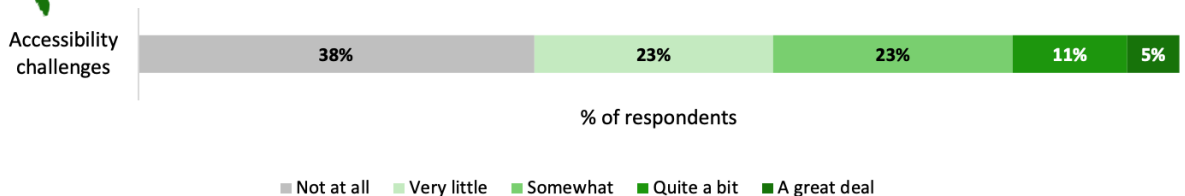


Figure 64. Accessibility challenges, Southeast

Wildlife viewers’ extent to which they experience accessibility challenges in the Southeast. Blocks represent the percentage of respondents who fell into each of the five categories. Light gray box represents “Not at all” and the darkest box represents “A great deal” (Table 68).

Familiarity

An individual’s familiarity with an organization may serve as an indicator of likelihood to contribute financially as well as a metric of the relationship the individual has with that organization (Katz, 2017). As state fish and wildlife agencies endeavor to increase their engagement with a broader constituency (AFWA, 2016), familiarity may serve as an important metric in measuring viewers’ relationships with agencies and likelihood to provide financial support (Katz, 2018; Grooms 2021).

To examine familiarity, we asked wildlife viewers to indicate their level of familiarity with their state fish and wildlife agency, with five unipolar options ranging from *not at all familiar* to *extremely familiar*. A sixth option, reading “I don’t have an opinion,” was selected by 16% of respondents nationally. Wildlife viewers in the Northeast were most commonly *not at all familiar* with their state agencies ($\chi^2 = 49.75, df = 12, p <.001$; Table 69; Figure 70).

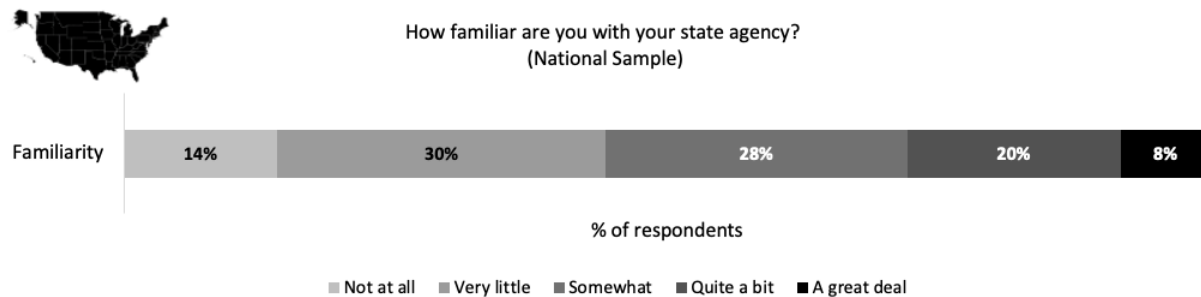


Figure 65. Familiarity with state agency, Nationwide

Wildlife viewers’ indicated familiarity with their state agency in the National Sample. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents “Not at all” and the shade of gray darkens with increasing levels of familiarity.

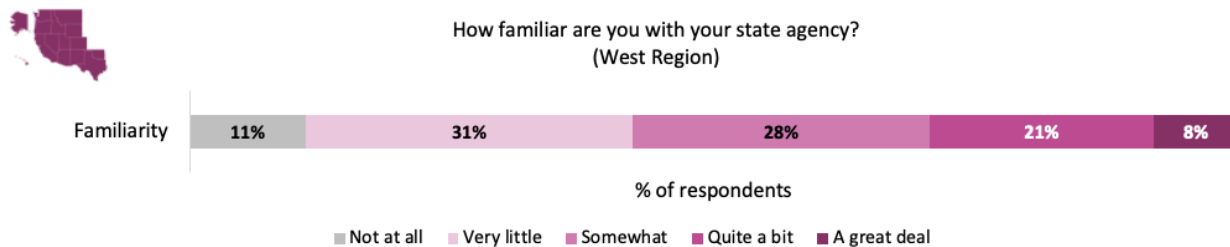


Figure 66. Familiarity with state agency, West

Wildlife viewers’ indicated familiarity with their state agency in the West. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents “Not at all” and the shade of pink darkens with increasing levels of familiarity.

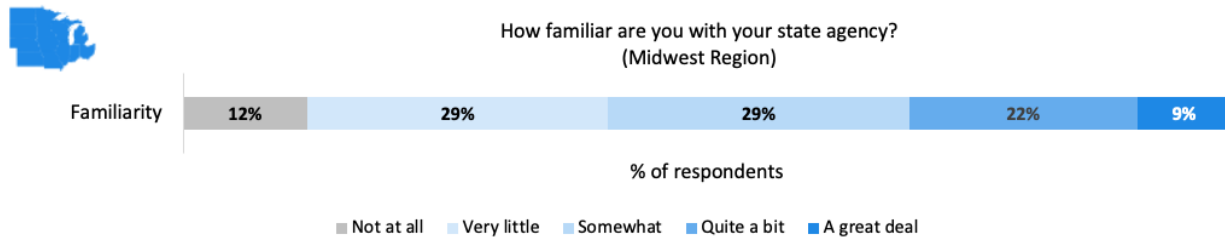


Figure 67. Familiarity with state agency, Midwest

Wildlife viewers' indicated familiarity with their state agency in the Midwest. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents "Not at all" and the shade of blue darkens with increasing levels of familiarity.

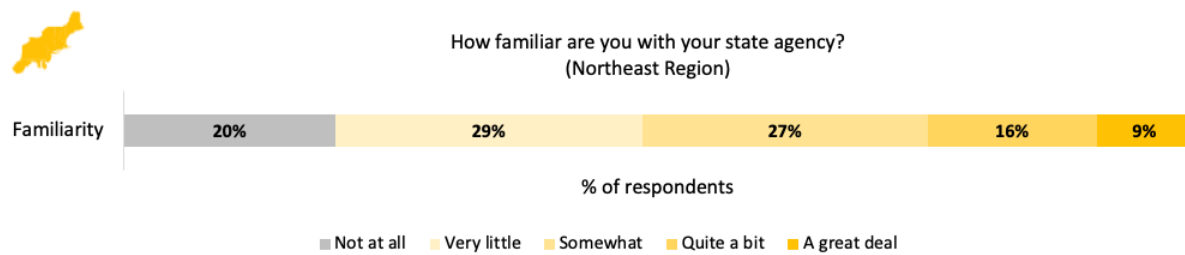


Figure 68. Familiarity with state agency, Northeast

Wildlife viewers' indicated familiarity with their state agency in the Northeast. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents "Not at all" and the shade of yellow darkens with increasing levels of familiarity.

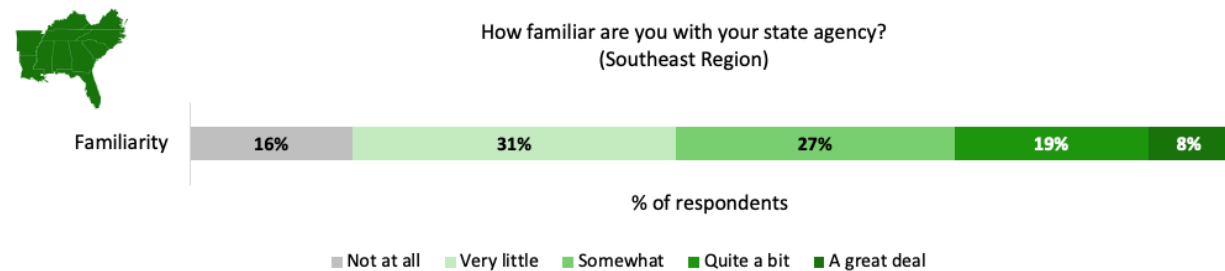


Figure 69. Familiarity with state agency, Southeast

Wildlife viewers' indicated familiarity with their state agency in the Southeast. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents "Not at all" and the shade of green darkens with increasing levels of familiarity.

Consumptive viewers such as hunters and anglers may have more interaction with state fish and wildlife agencies due to permitting and license regulations (Grooms 2021); thus, we tested the difference in familiarity between consumptive and nonconsumptive viewers. We found that

consumptive wildlife viewers were significantly ($\chi^2 = 339.93.75, df = 4, p <.001$; Table 70, Figures 70 - 71) more familiar than nonconsumptive viewers.

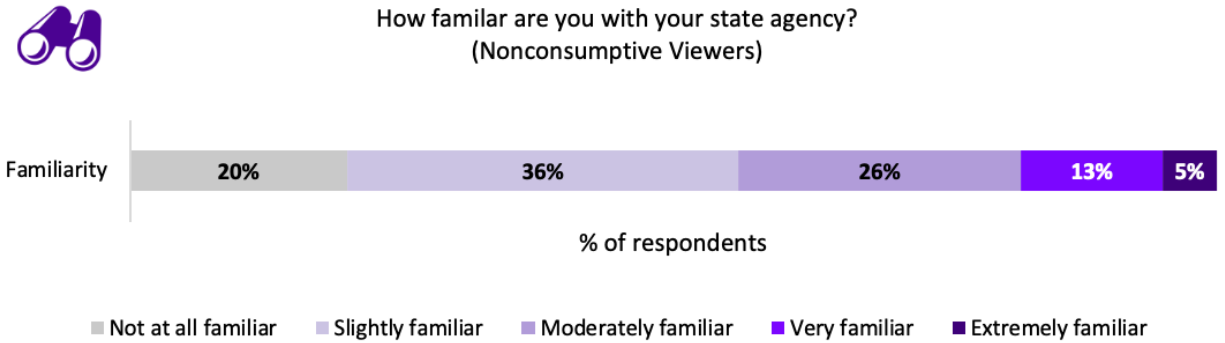


Figure 70. Familiarity with state agency, Nonconsumptive

Nonconsumptive wildlife viewers’ indicated familiarity with their state agency. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents “Not at all” and the shade of purple darkens with increasing levels of familiarity (Table 70).

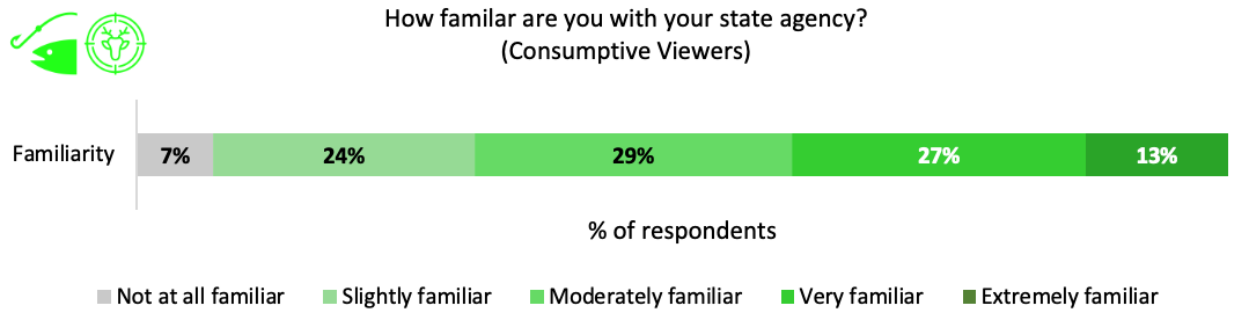


Figure 71. Familiarity with state agency, Consumptive

Consumptive wildlife viewers’ indicated familiarity with their state agency. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents “Not at all” and the shade of green darkens with increasing levels of familiarity (Table 70).

Perception of state agency prioritization of programs and services for wildlife viewing

We further evaluated respondents' perceptions of state agencies by examining how wildlife viewers perceive the level of prioritization state agencies place on programs and services that support wildlife viewing. We provided respondents with a five-point bipolar scale ranging from 1 (*far too low*) to 5 (*far too high*), with *about right* as the middle third option and a sixth option of "I don't have an opinion," which 16% ($n = 635$) of respondents from the national level selected and were then recoded as missing.

The majority of respondents (64% of the national sample) reported the level of prioritization was *about right*. Roughly a quarter of respondents (26% of the national sample) reported the level of prioritization was *too low* or *far too low*, indicating interest in seeing additional efforts from state agencies to support wildlife viewing. There was no statistically significant difference in reported perception of prioritization across regions ($\chi^2 = 15.265, df = 12 p = .22$; Table 71; Figure 73 - 76).

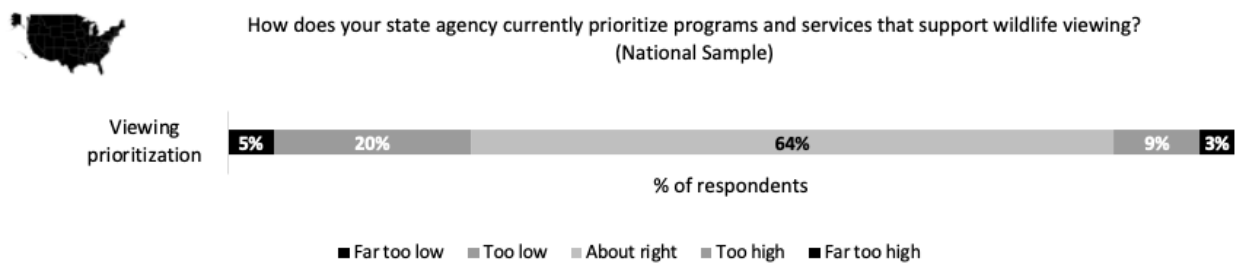


Figure 72. Perception of prioritization for viewing, Nationwide

Wildlife viewers' perception of their state agency's prioritization of programs and services for wildlife viewing in the nationwide sample. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "About right" (Table 71).

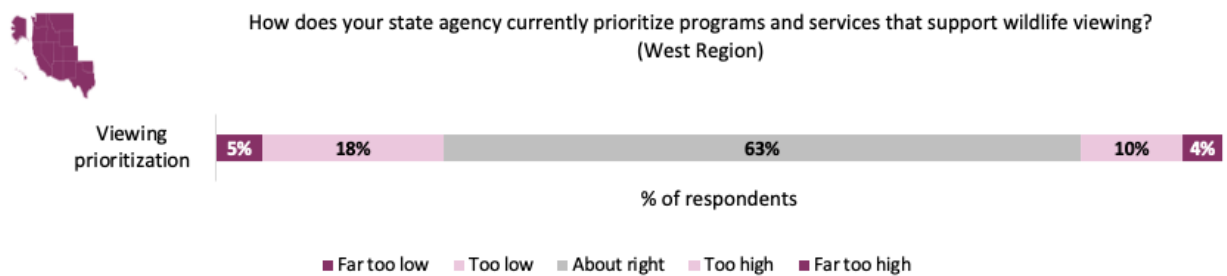


Figure 73. Perception of prioritization for viewing, West

Wildlife viewers' perception of their state agency's prioritization of programs and services for wildlife viewing in the West. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "About right" (Table 71).

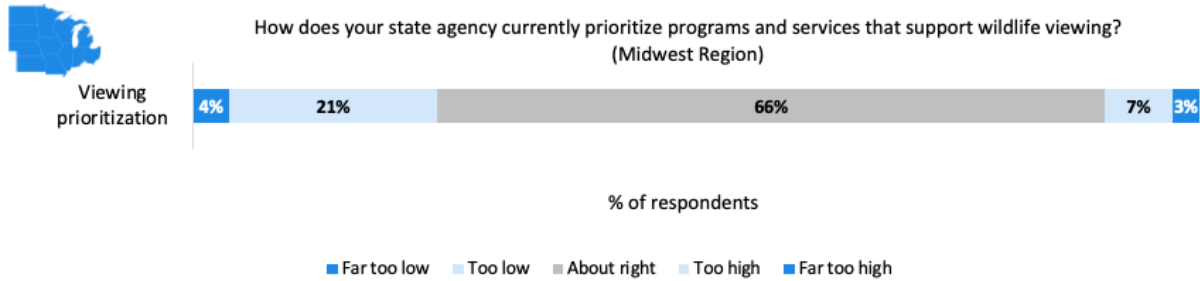


Figure 74. Perception of prioritization for viewing, Midwest

Wildlife viewers' perception of their state agency's prioritization of programs and services for wildlife viewing in the Midwest. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "About right" (Table 71).

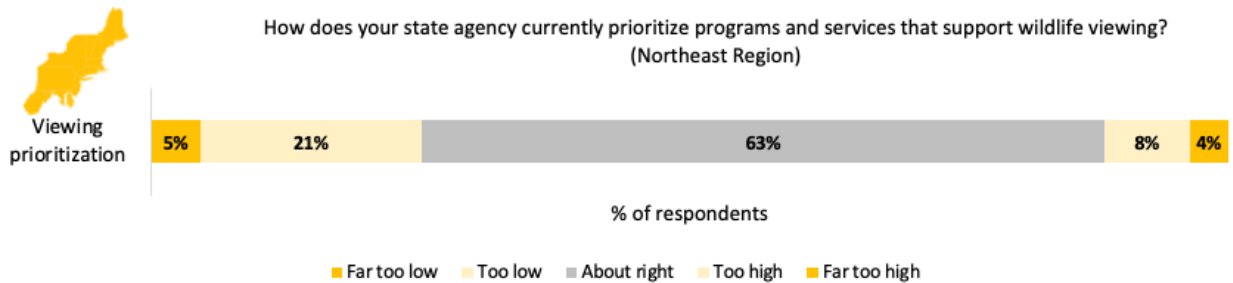


Figure 75. Perception of prioritization for viewing, Northeast

Wildlife viewers' perception of their state agency's prioritization of programs and services for wildlife viewing in the Northeast. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "About right" (Table 71).

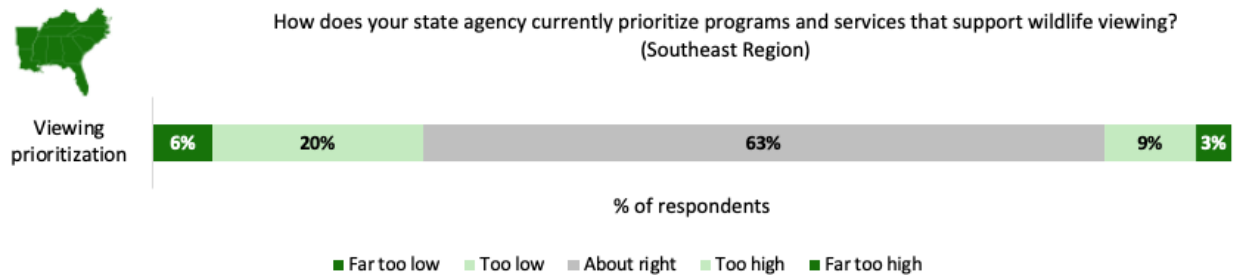


Figure 76. Perception of prioritization for viewing, Southeast

Wildlife viewers' perception of their state agency's prioritization of programs and services for wildlife viewing in the West. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "About right" (Table 71).

As with familiarity, we also examined results of prioritization with respect to nonconsumptive and consumptive viewers. Previous research in Virginia, found differences between birder-viewers and hunter-anglers when comparing prioritization of programs and services that

support wildlife viewing (Grooms et al. 2021). They also found that the majority of both consumptive and nonconsumptive viewers felt that the agency was giving about the right prioritization on programs and services that support wildlife viewers, followed by about a quarter who thought that it wasn't enough. In this national survey, we found a statistically significant difference when comparing prioritization of nonconsumptive and consumptive viewers ($\chi^2 = 18.005, df = 12 p < .001$; Table 72 Figures 77, 78). More consumptive viewers than nonconsumptive viewers thought that the agency placed *about the right* or higher amount of prioritization on programs and services that support wildlife viewing.

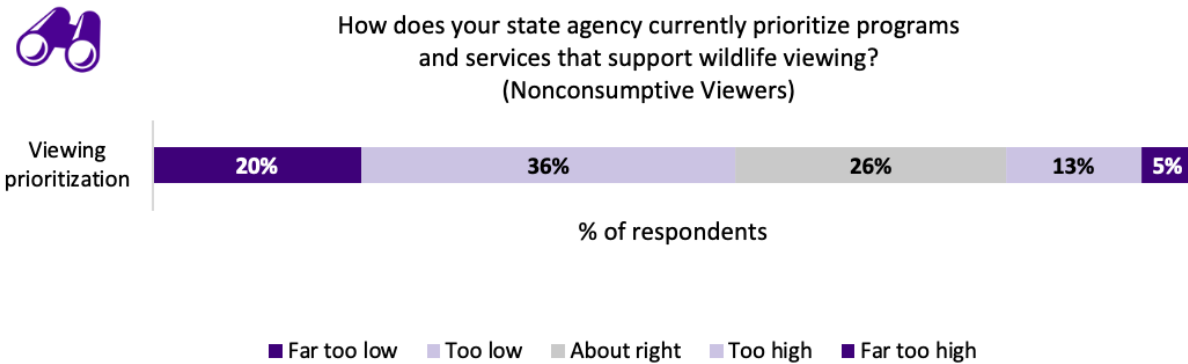


Figure 77. Perception of prioritization for viewing, Nonconsumptive

Nonconsumptive wildlife viewers' perception of their state agency's prioritization of programs and services for wildlife viewing. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "About right" (Table 72).

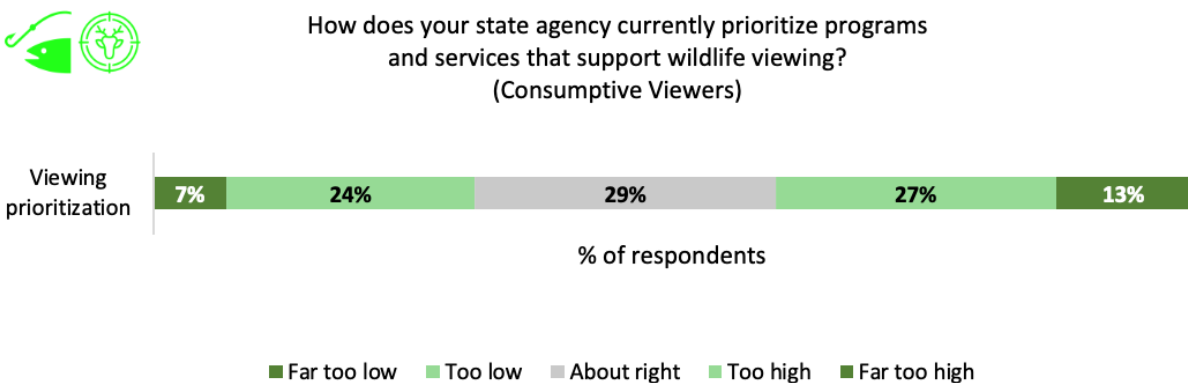


Figure 78. Perception of prioritization for viewing, Consumptive

Consumptive wildlife viewers' perception of their state agency's prioritization of programs and services for wildlife viewing. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "About right" (Table 72).

Experiences with state agency programs and services

We further explored wildlife viewer experiences with their state agencies by asking which state agency programs and services, out of a list of 11, they had engaged with in the past five years. A 12th option, “I have not used or engaged in any of these agency programs and services in the last five years,” was provided. At the national level, 41% of respondents reported no experience with agency programs and services. These respondents were not excluded from the following analysis.

While 59% of wildlife viewers utilized at least one program or service, no single item was reportedly used by more than one-third of wildlife viewers. Only 39% of respondents reported using or participating in two or more state agency programs and services. Across all regions, wildlife viewers most commonly utilized information about wildlife in the state (30%) and information about wildlife viewing opportunities in the state (23%) (Table 73; Figure 79). About a fifth of respondents reported using state agency lands (21%) or nature, education, and visitor centers (19%). Respondents were least likely to have participated in wildlife festivals or viewing competitions sponsored by the state agency (8%) or to have utilized conservation law enforcement (7%) (Table 73; Figure 79).

Chi-square tests indicated several statistically significant differences across regions (Table 73; Figure 79): use of agency land ($\chi^2 = 32.92$, $df = 3$, $p < .001$; Table 73; Figure 79), use of visitor centers ($\chi^2 = 8.38$, $df = 3$, $p = .04$; Table 73; Figure 79), and use of live stream cameras ($\chi^2 = 32.9$, $df = 3$, $p < .001$; Table 73; Figure 79). Viewers in the West and Midwest reported higher use of agency land than in other regions, while viewers in the Midwest and Northeast reported higher use of livestream wildlife cameras than in other regions. Viewers in the Midwest reported slightly higher use of visitor centers than in other regions, especially the Southeast in which the lowest proportion of viewers reported use of centers.

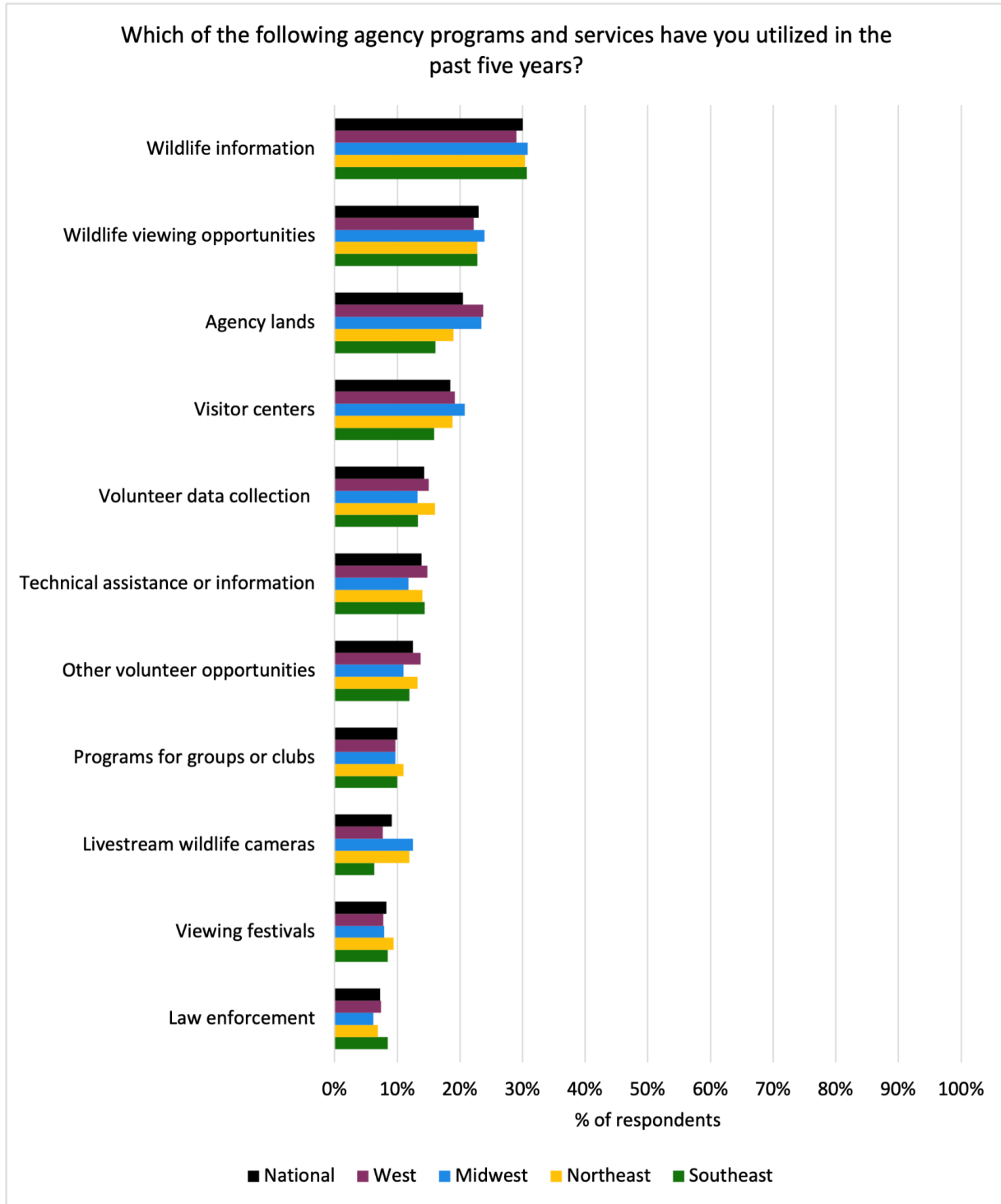


Figure 79. Experiences with state agency programs and services

State agency programs and services utilized by wildlife viewers nationally and in all four AFWA regions. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect which programs and services they utilized. A Chi-Square test comparing results across regions revealed statistically significant differences for the utilization of agency lands, visitor or education centers, and livestream wildlife cameras (Table 73).

Programs and services for children and youth

A follow-up question asked wildlife viewers if children or youth in their household had engaged in any agency programming, such as school-based programs, camps, or youth and family events. Respondents were provided with three options: “Yes, children or youth in my household have engaged in some of these programs,” “No, children or youth in my household have not engaged in any of these programs,” and “Not applicable.” Over half (55%) of respondents reported the question was not applicable. Approximately half of all respondents who had youth or children in their household reported them engaging in agency programs and services and half reported they had not engaged in programming. There were no statistically significant differences across regions ($\chi^2 = 6.45, df = 4 p = .38$; Table 74; Figures 81 - 84).

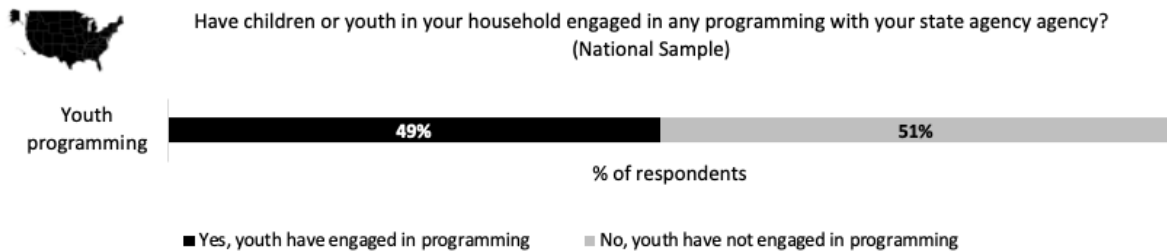


Figure 80. Experiences with programs and services for youth, Nationwide

Wildlife viewers’ children or youths’ reported engagement in state agency programming, Nationwide. The gray box represents respondents who reported having children or youth in their household but did not participate in any programming (Table 74).

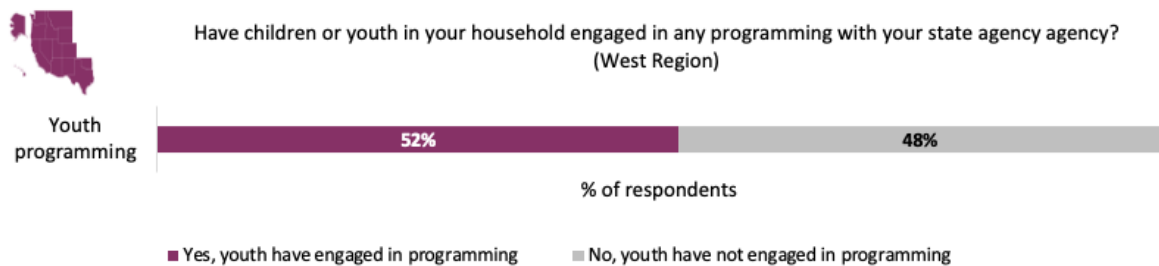


Figure 81. Experiences with programs and services for youth, West

Wildlife viewers’ children or youths’ reported engagement in state agency programming in the West. The gray box represents respondents who reported having children or youth in their household but did not participate in any programming (Table 74).

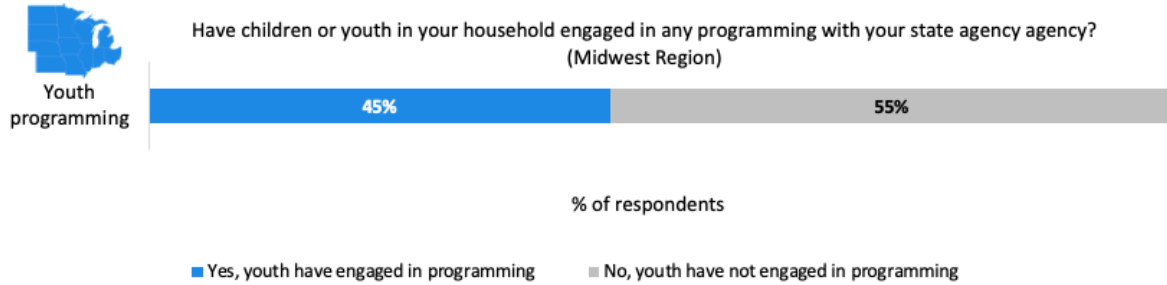


Figure 82. Experiences with programs and services for youth, Midwest

Wildlife viewers’ children or youths’ reported engagement in state agency programming in the Midwest. The gray box represents respondents who reported having children or youth in their household but did not participate in any programming (Table 74).

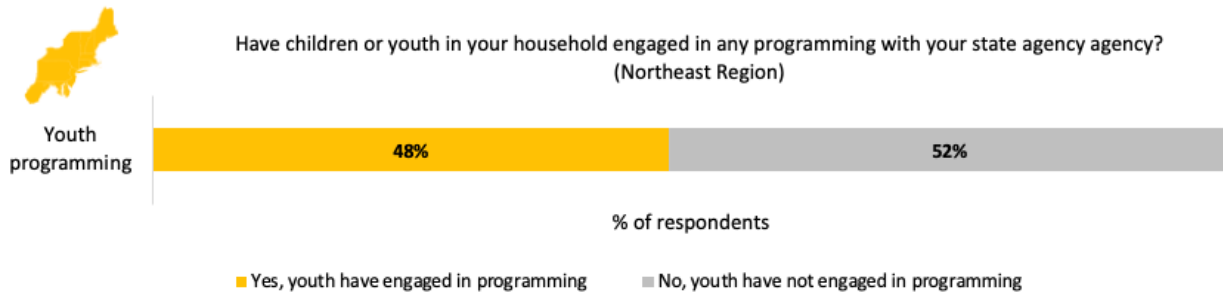


Figure 83. Experiences with programs and services for youth, Northeast

Wildlife viewers’ children or youths’ reported engagement in state agency programming in the Northeast. The gray box represents respondents who reported having children or youth in their household but did not participate in any programming (Table 74).

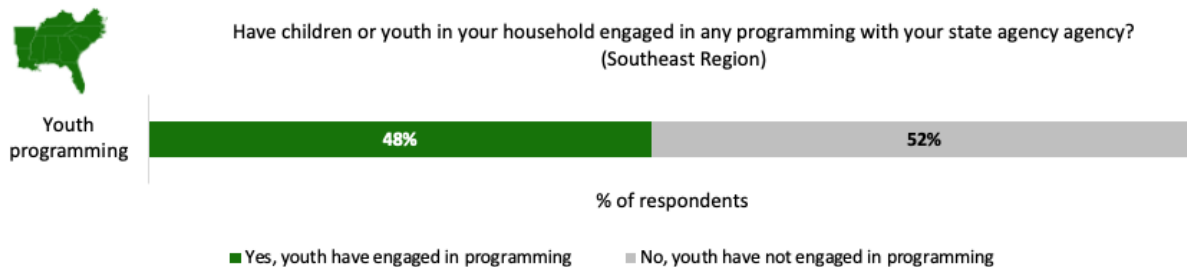


Figure 84. Experiences with programs and services for youth, Southeast

Wildlife viewers’ children or youths’ reported engagement in state agency programming in the Southeast. The gray box represents respondents who reported having children or youth in their household but did not participate in any programming (Table 74).

State agency programs and services satisfaction

Respondents who had participated in agency programs and services were then provided with a list of the programs and services they had participated in and asked to select which programs they were satisfied with. If respondents had not engaged with any programs or services, they were skipped from a question evaluating their satisfaction with agency programs and services. We calculated satisfaction by dividing the total number of respondents who indicated their satisfaction by the total number of respondents who participated in that agency program or service. Respondents who had not participated in a specific agency program or service were recoded as missing values and excluded from total calculations.

Approximately 75% of respondents reported satisfaction with agency visitor centers, information about wildlife in the state, agency lands, volunteer data collection opportunities, and live stream wildlife cameras. Visitors were least satisfied with programs for groups or clubs (59%) and technical assistance or information about maintaining plantings in the state (57%). Over 50% satisfaction or higher was reported with all listed programs and services. There were no statistically significant differences in program satisfaction across all regions (Figure 85, Table 75).

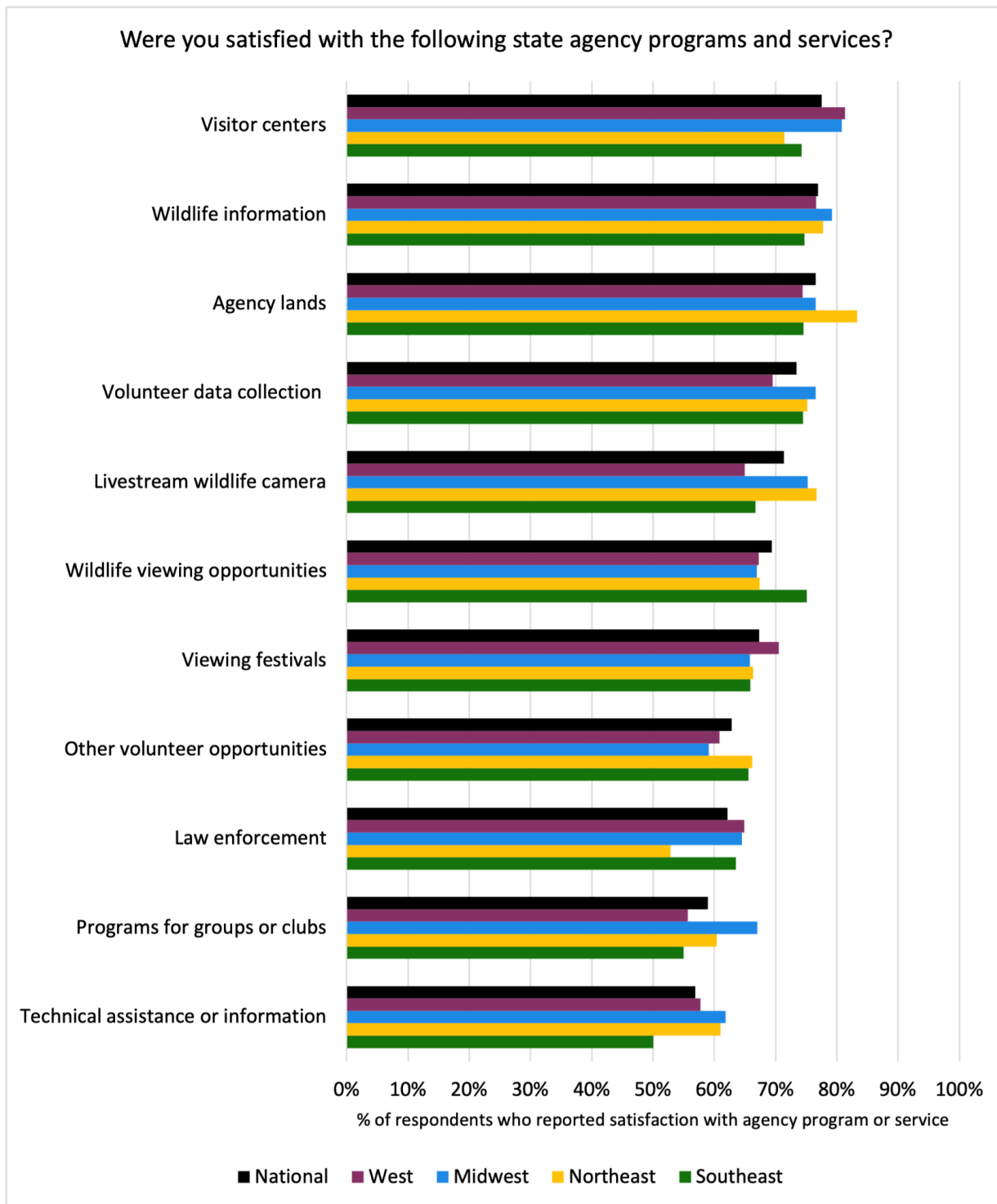


Figure 85. State agency program and services satisfaction

Satisfaction with state agency programs and services utilized by wildlife viewers nationally and in all four AFWA regions. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect which programs and services they utilized. A Chi-Square test comparing results across regions revealed no statistically significant differences across regions.

Trust

Trust is defined as the willingness to “accept vulnerability to the actions to the trusted party,” meaning an individual expects an entity to fulfill a task or action (Gefen 2001). Past research indicates that Americans are more trusting of their state fish and wildlife agencies than local and federal governments (Manfredo et al. 2018), and birders specifically are twice as trusting of state fish and wildlife agencies and federal wildlife and land management agencies than elected officials (NAWMP 2021).

To measure trust, we first asked wildlife viewers to indicate their trust in 1) their state agency as an entity and 2) the staff at their state agency. For trust in the state agency as an entity and state agency staff, we measured trust on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Overall, wildlife viewers indicated high trust in state agencies and state agency staff. Approximately 69% of respondents indicated they *somewhat* or *strongly* agreed with the statement “I trust [insert state agency].” Similarly, 68% of respondents indicated they *somewhat* or *strongly* agreed with the statement “I trust [insert state agency] staff.” There were no statistically significant differences across regions for levels of trust in state agencies ($\chi^2 = 10.40$, $df = 12$ $p = .58$; Table 86; Figures 87 - 90) or state agency staff ($\chi^2 = 9.20$, $df = 12$ $p = .68$; Table 85; Figures 87 - 90) across regions.

Then we measured three aspects of trust according to Gefen (2001): benevolence, capability, and integrity. In our survey, we included 14 items asking wildlife viewers to indicate “the extent to which they agreed with the following statements.” Three of these items were reverse-coded attention checks and removed from analysis. Two of those items were simple statements about the state agencies. The remaining nine items were dedicated to each of the three components of the Gefen Trust Framework. Scales for each of the items were then computed as averages from each of the three items, with a final “Gefen Trust Score” computed as the average of all nine items (Cronbach’s $\alpha = .90$) (Figure 91). A test of the mean Gefen Score across regions revealed no statistically significant differences ($F = 0.58$, $df = 3$, $p = .63$; Table 87; Figure 91).

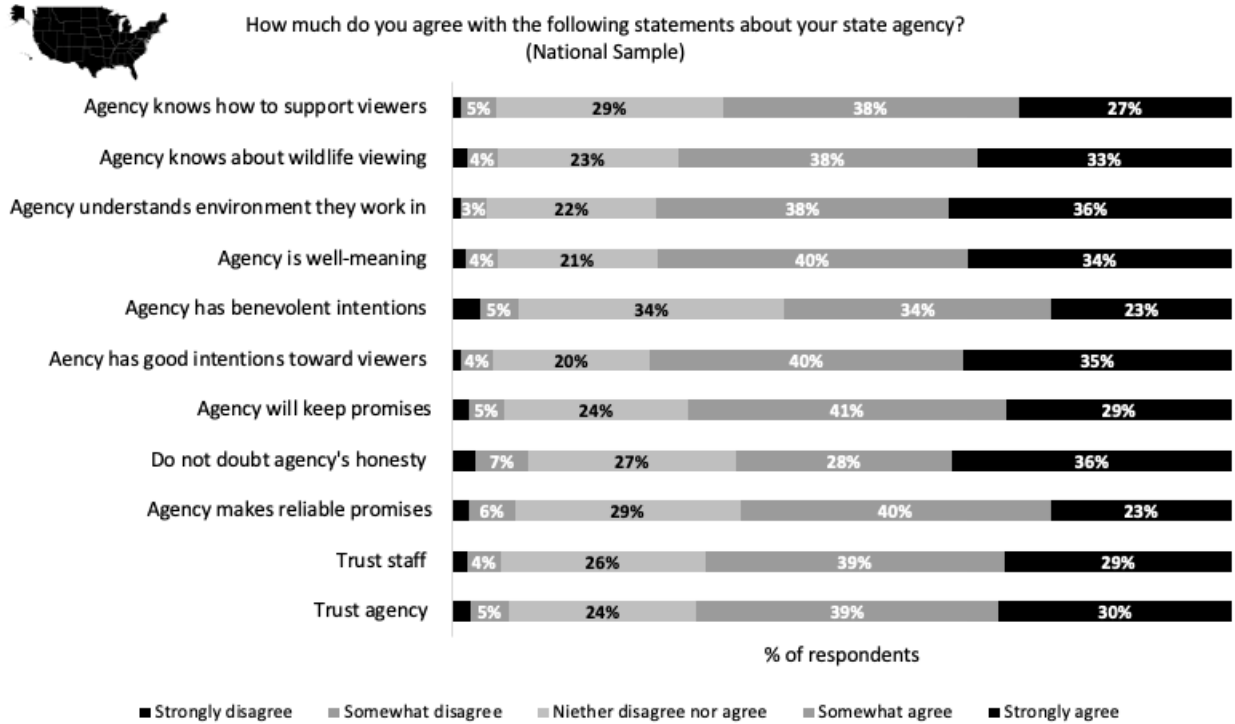


Figure 86. Trust in state agency, Nationwide

Wildlife viewers' agreement with statements about their trust in their state agency, nationwide. The first nine statements represent components of the Gefen Trust Score and the final two items represent overall trust in their state agency staff and agency as an entity. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "Neither disagree nor disagree" (Tables 76 - 86).

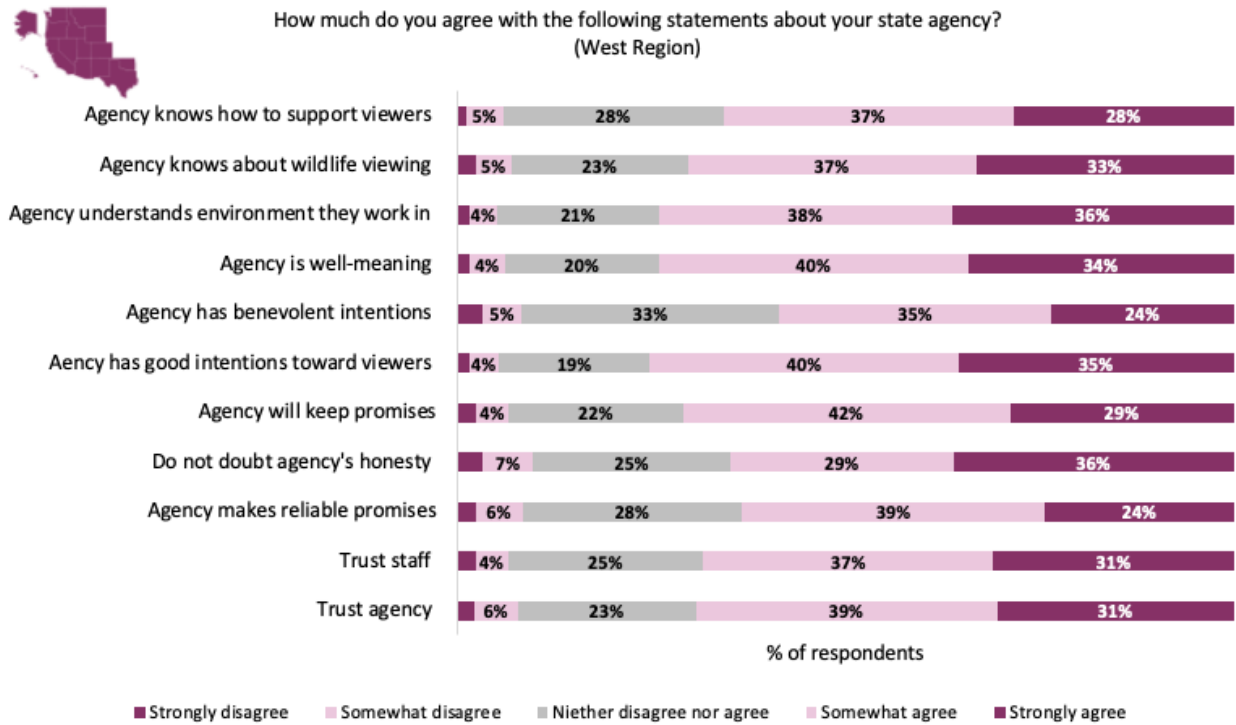


Figure 87. Trust in state agency, West

Wildlife viewers' agreement with statements about their trust in their state agency in the West. The first nine statements represent components of the Gefen Trust Score and the final two items represent overall trust in their state agency staff and agency as an entity. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "Neither disagree nor agree" (Tables 76 - 86).



How much do you agree with the following statements about your state agency?
(Midwest Region)

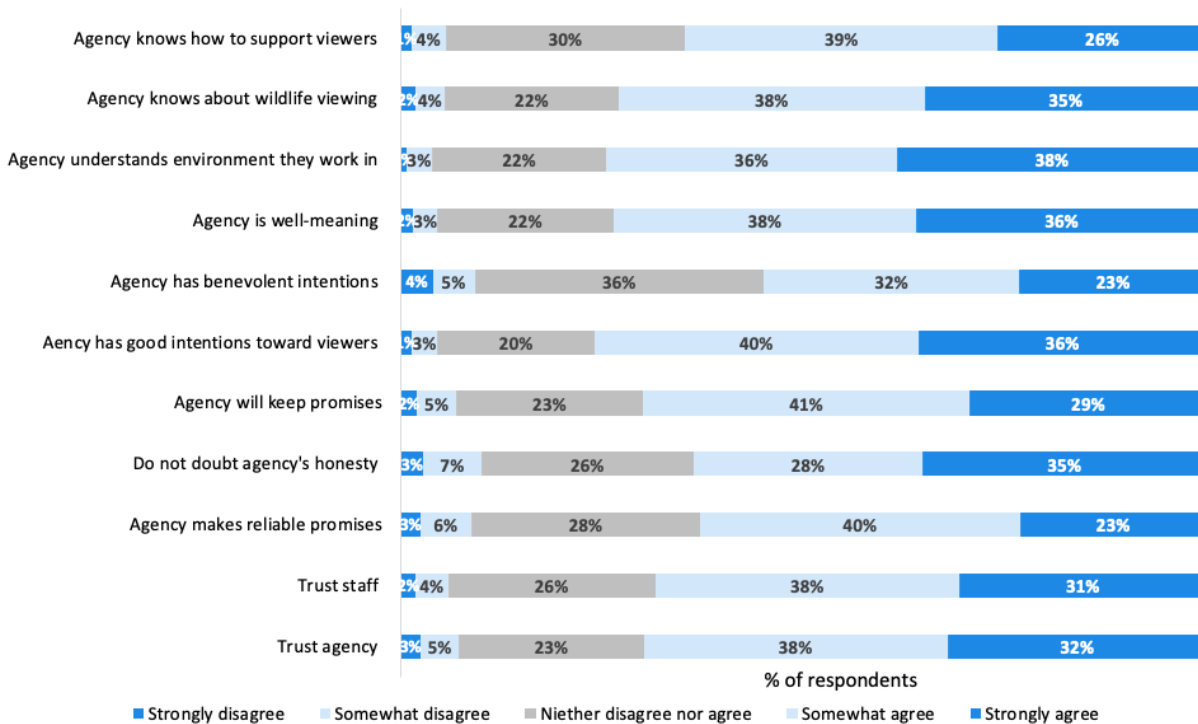


Figure 88. Trust in state agency, Midwest

Wildlife viewers' agreement with statements about their trust in their state agency in the Midwest. The first nine statements represent components of the Gefen Trust Score and the final two items represent overall trust in their state agency staff and agency as an entity. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was “Neither disagree nor agree” (Tables 76 - 86).

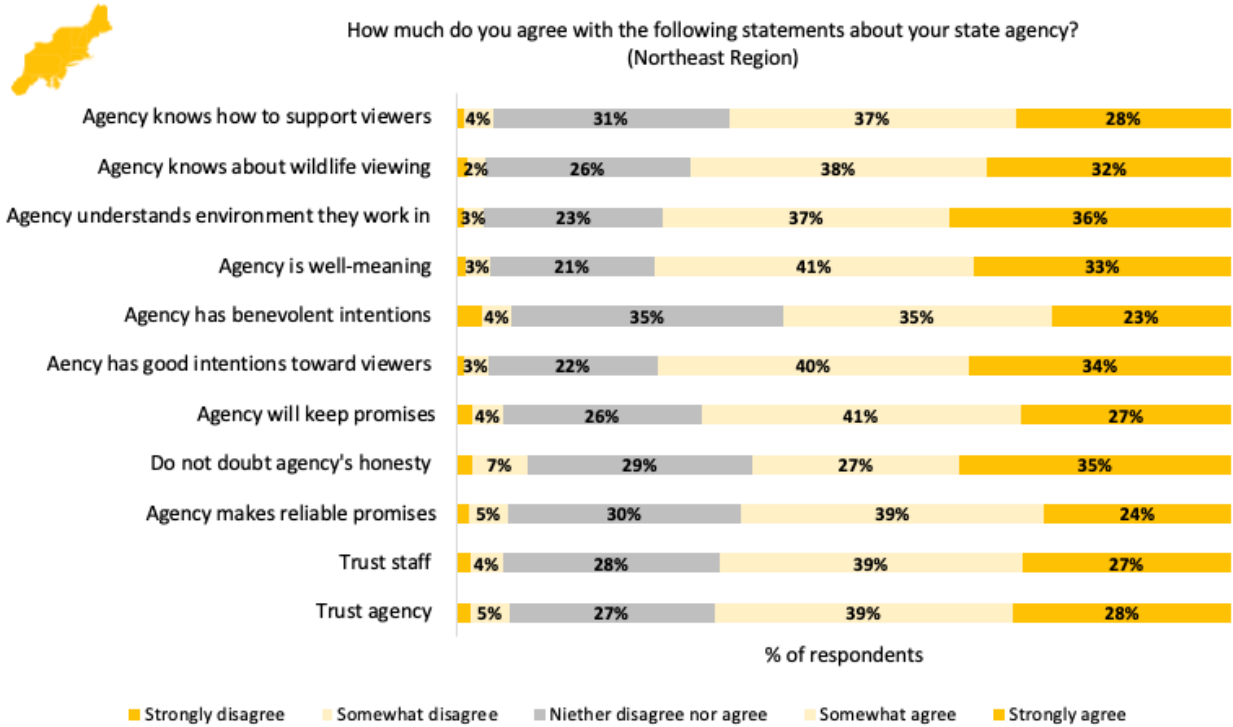


Figure 89. Trust in state agency, Northeast

Wildlife viewers' agreement with statements about their trust in their state agency in the Northeast. The first nine statements represent components of the Gefen Trust Score and the final two items represent overall trust in their state agency staff and agency as an entity. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "Neither disagree nor agree."

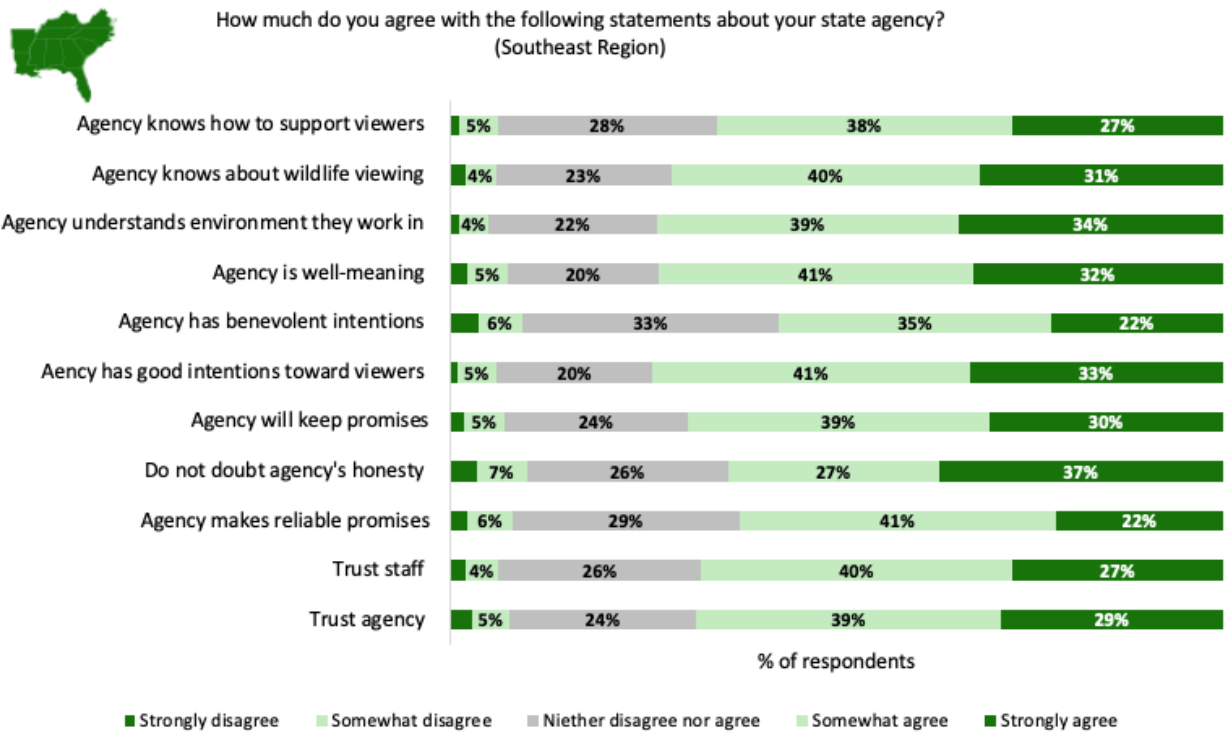


Figure 90. Trust in state agency, Southeast

Wildlife viewers' agreement with statements about their trust in their state agency in the Southeast. The first nine statements represent components of the Gefen Trust Score and the final two items represent overall trust in their state agency staff and agency as an entity. Blocks represent the percentage of respondents who fell into each of the five categories. The light gray box represents viewers who thought prioritization of programs and services for wildlife viewers was "Neither disagree nor agree" (Tables 76 - 86).

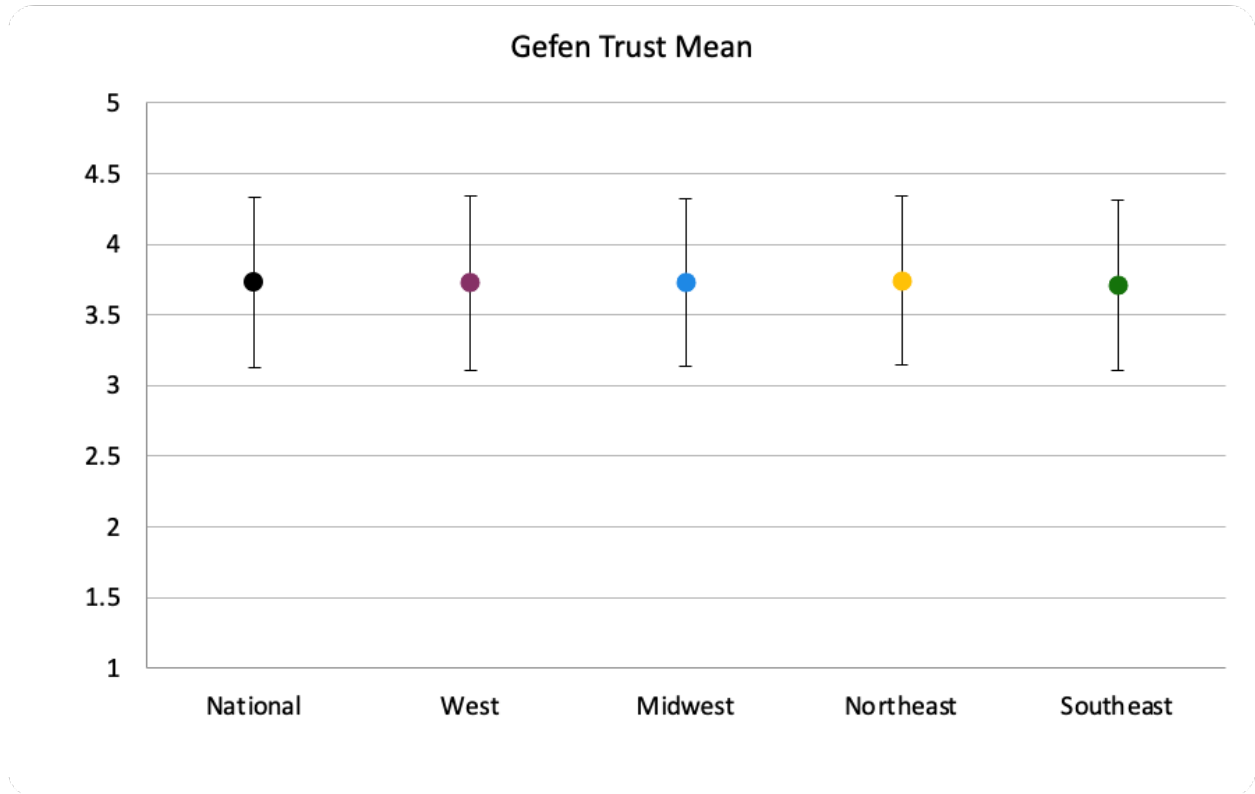


Figure 91. Gefen Trust Mean

The mean measure of wildlife viewers nationally and in all four AFWA regions' perception of their state agency's Gefen Trust Score. Points indicate the mean integrity measure for each sample, calculated as the mean of respondents' extent of agreement with three statements on the integrity of their state agencies on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Error bars indicate one standard deviation (Table 87).

Past purchases and contributions

State agencies are closely tied to their constituency for funding to support programming and conservation (Grooms et al. 2021). Historically, state agencies relied heavily on hunters and anglers to support these efforts, through the North American Model of Conservation (Price Tack et al. 2015). As participation in wildlife viewing continues to grow, it is important to understand mechanisms viewers use to financially support state agencies, as they may be different from the traditional hunter and angler constituency. In this section of the survey, we asked viewers how they had financially contributed to their state fish and wildlife agencies through a variety of expenditures or purchases. The literature shows that wildlife viewers are both conservationists (Cooper et al. 2015) and interested in supporting their state agencies financially; however, few funding avenues exist for wildlife viewers to contribute directly to state agencies (Grooms et al. 2021).

We developed a list of 13 purchases or contributions items and asked wildlife viewers to select all of the transactions that they made in the last five years. Specified items from this list that were not available to residents in their states were hidden in the survey from respondents living in those 15 states. These hidden options were reflected in the national dataset as unselected responses. A 14th, mutually exclusive option – “I have not made any of these purchases or contributions” – was also provided, which 33% of respondents selected (Table 89). For analysis purposes, we further split the contributions into voluntary (contributions which are not required to participate in an activity) and nonvoluntary (contributions required in order to receive access to an area or activity) (Grooms et al. 2021). Understanding preferences towards voluntary and nonvoluntary funding mechanisms may aid state agencies in developing targeted strategies for increasing contributions from wildlife viewers.

First, we examined what nonvoluntary mechanisms wildlife viewers utilized. The most commonly reported contribution mechanism was the purchase of a fishing (38%) or hunting (21%) license. The third most commonly utilized nonvoluntary contribution was a land access fee (20%). Wildlife viewers were least likely to have contributed through the purchase of a “habitat or conservation stamp, required” (i.e., stamp purchased in concert with being in compliance for access permits or other items) (14%) or program fee (10%) (Table 88; Figure 92).

A Chi-square test revealed some statistically significant differences when comparing across regions. Respondents in the West were most likely to purchase a hunting license ($\chi^2 = 9.45$, $df = 3$, $p = .02$; Table 88; Figure 92) and a fishing license ($\chi^2 = 23.23$, $df = 3$, $p < .001$; Table 88; Figure 92). Respondents in the Southeast were most likely to contribute via land access fees ($\chi^2 = 51.11$, $df = 3$, $p < .001$; Table 88; Figure 92).

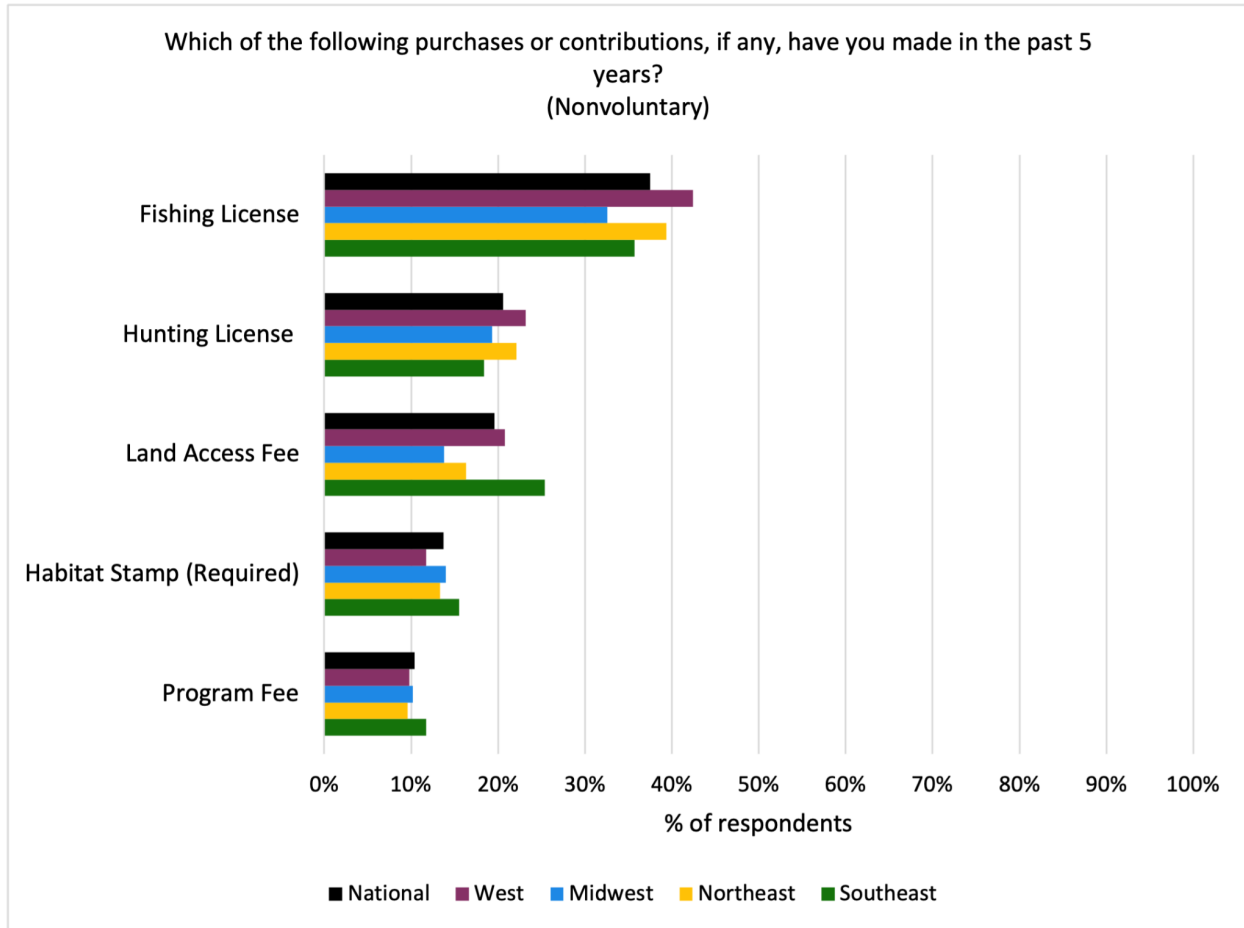


Figure 92. Past purchases and contributions, nonvoluntary

Nonvoluntary purchases or contributions made towards a state agency in the past five years by wildlife viewers nationally and in all four AFWA regions. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect their contributions. A Chi-square test revealed statistically significant differences when comparing across regions for the purchase of a hunting license, fishing license, and land access fee (Table 88).

Next, we examined voluntary mechanisms of contributions. Wildlife viewers were much less likely to have contributed to their agencies via voluntary mechanisms. For example, only 12% of wildlife viewers reported contributing through the most common voluntary mechanisms, which were tangible products, direct donations, or conservation license plates. This is only slightly higher than the least popular nonvoluntary mechanism of contribution, program fee (10%). Wildlife viewers least commonly reported contributing to their state agencies through land donations, such as conservation easements (8%) and virtual products (7%) (Table 89; Figure 93).

A Chi-square test revealed some statistically significant differences across regions. Wildlife viewers in the Northeast were least likely to contribute to their agencies via a direct donation

($\chi^2 = 18.73$, $df = 3$, $p < .001$; Table 89; Figure 93) and lottery tickets ($\chi^2 = 71.61$, $df = 3$, $p < .001$; Table 89; Figure 93). Respondents from the Midwest were most likely to have contributed through virtual products ($\chi^2 = 9.69$, $df = 3$, $p = .02$; Table 89; Figure 93). Finally, conservation license plates were least popular with respondents in the West ($\chi^2 = 9.38$, $df = 3$, $p = .03$; Table 89; Figure 93).

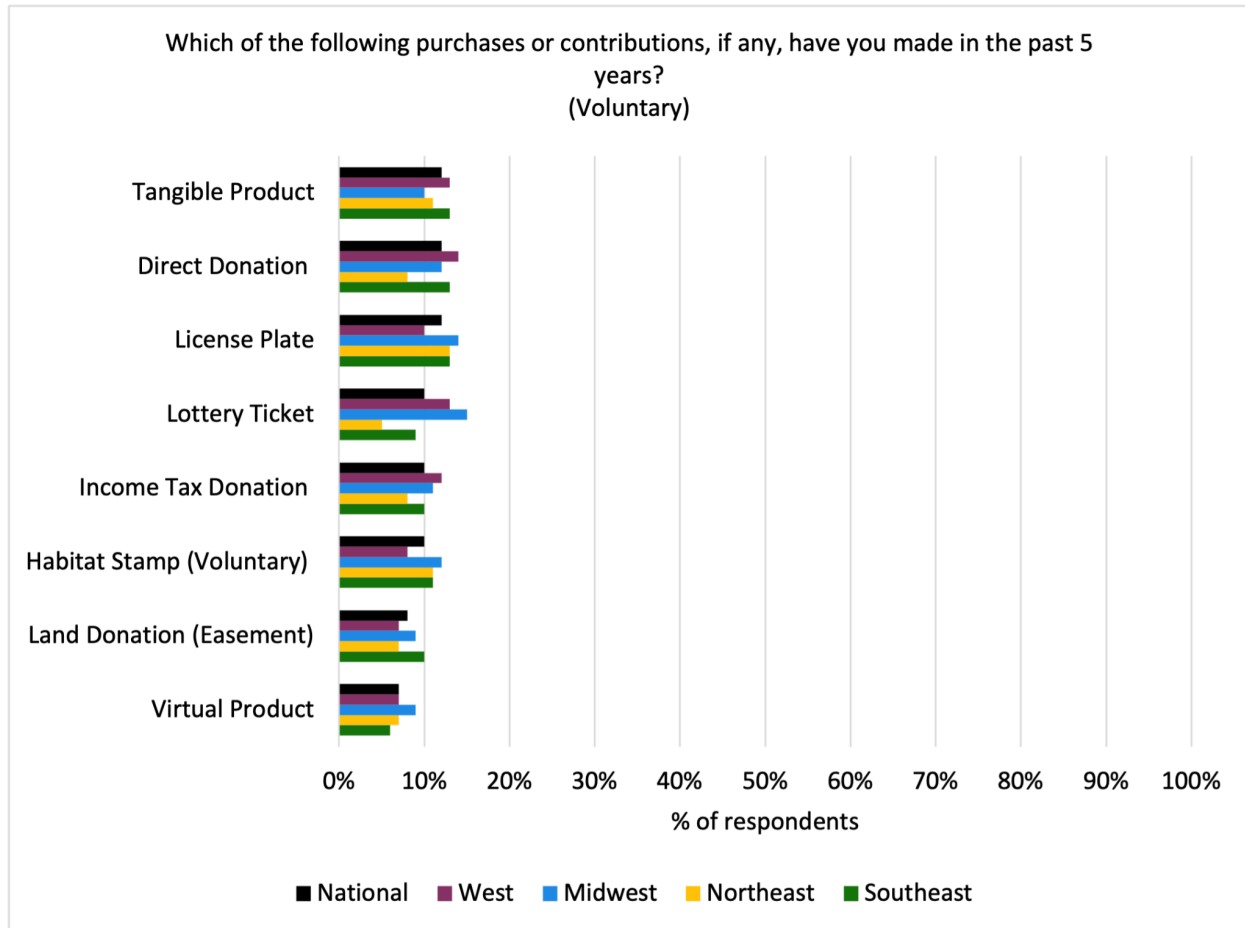


Figure 93. Past purchases and contributions, voluntary

Voluntary purchases or contributions made towards a state agency in the past 5 years by wildlife viewers nationally and in all four AFWA regions. Note that respondents were able to select more than one option to reflect their contributions. A Chi-square test revealed statistically significant differences when comparing across regions including direct donations, purchasing a lottery ticket, and virtual products (Table 89).

Overall, respondents from the Midwest were most likely to have contributed financially to their state agencies for any financial mechanism; about three-quarters of Midwestern wildlife viewers reported contributing to their state agencies through at least one item ($\chi^2 = 18.00$, $df = 3$, $p < .001$; Table 89; Figures 92 - 93). When comparing both voluntary and nonvoluntary mechanisms, nonvoluntary was more common with wildlife viewers than voluntary. In all

nonvoluntary mechanisms, frequency of consumptive utilization was at least twice that of nonconsumptive viewers.

Next, we compared past financial contributions between nonconsumptive and consumptive viewers. We found statistically significant differences for every single purchase or contribution, with consumptive viewers indicating they were significantly more likely to purchase any item in comparison to nonconsumptive viewers (Table 90 - 91; Figures 94 - 95). Again, nonvoluntary mechanisms were more common with both nonconsumptive and consumptive viewers than voluntary contribution mechanisms.

Both consumptive (63%) and nonconsumptive (16%) viewers were most likely to have contributed via a fishing license. The second most commonly utilized contribution mechanism by consumptive viewers was a hunting license (35%) followed by land access fees (27%). Second and third place was switched for nonconsumptive viewers: land access fees (14%) followed by hunting licenses (9%). Both consumptive (15%) and nonconsumptive (6%) viewers were least likely to have contributed via a program fee (Table 90; Figure 94).

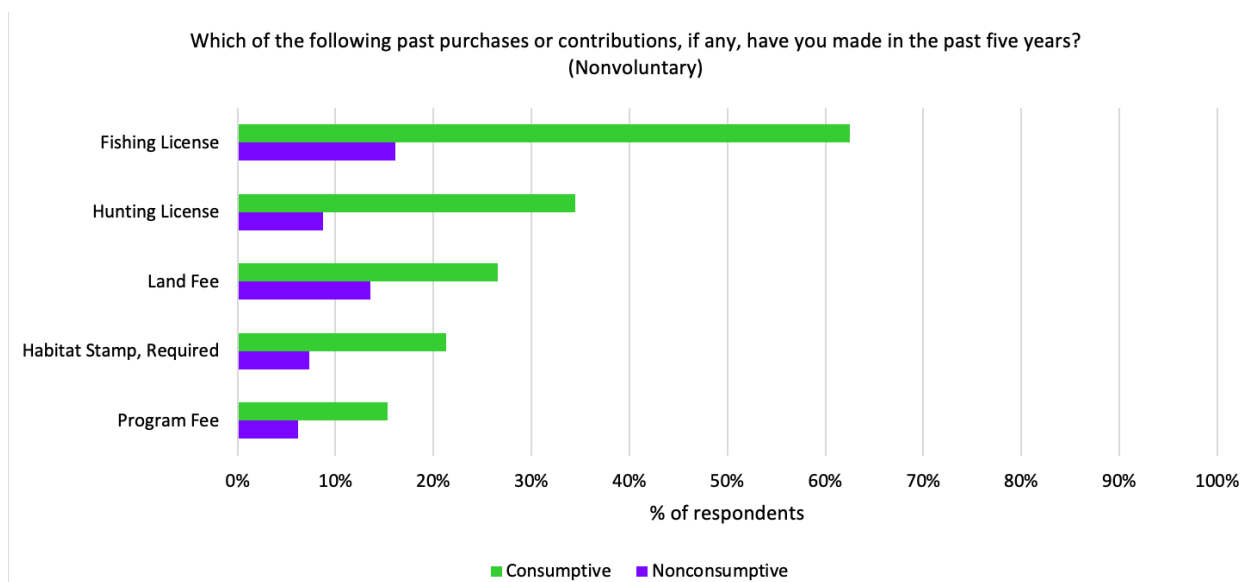


Figure 94. Past purchases and contributions, nonvoluntary, nonconsumptive and consumptive

A comparison of nonvoluntary purchases or contributions made towards a state agency in the past five years between nonconsumptive and consumptive viewers. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect their contributions. A Chi-square test revealed statistically significant differences for all nonvoluntary contributions, including fishing and hunting licenses, land access free, habitat stamps (required) and program fee (Table 90).

As with the regional comparison, consumptive and nonconsumptive wildlife viewers indicated contributing via nonvoluntary mechanisms far more than voluntary. Consumptive viewers most commonly reported contributing through conservation license plates (17%) and a direct donation, followed by voluntary habitat stamp (14%) and tangible products (15%). Nonconsumptive viewers most commonly reported contributing via the purchase of tangible products (9%) followed by conservation license plates (8%) and a general donation (8%). Both consumptive and nonconsumptive viewers least frequently reported contributing through the purchase of virtual products (consumptive = 11%; nonconsumptive = 4%; Table 91; Figure 95).

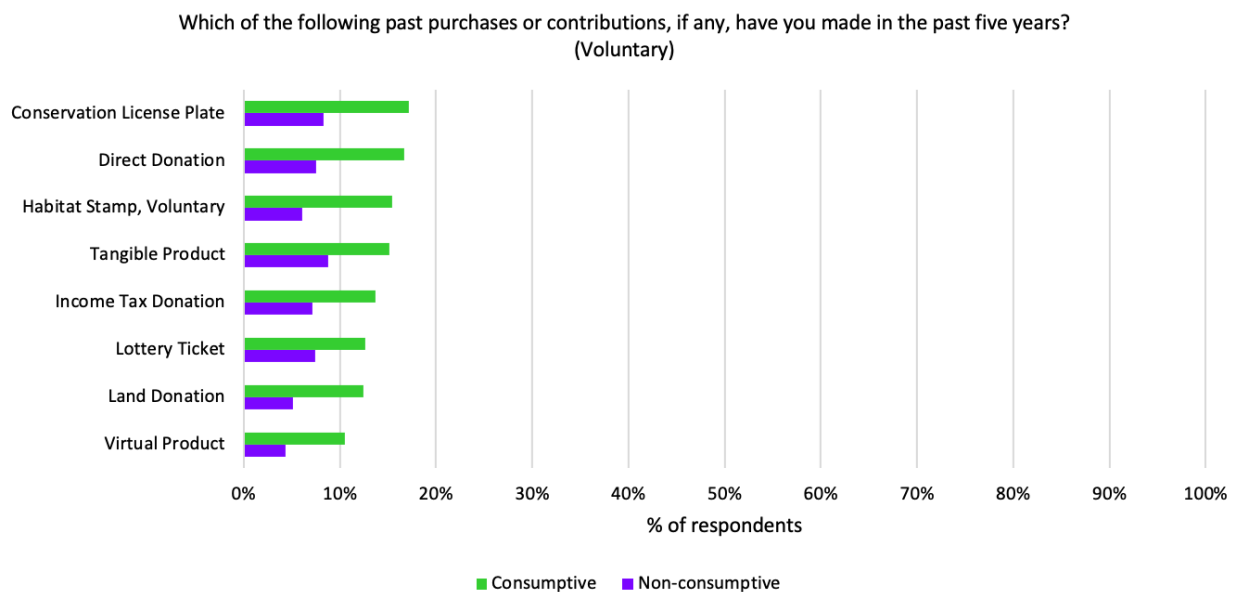


Figure 95. Past purchases and contributions, voluntary, nonconsumptive and consumptive

A comparison of voluntary purchases or contributions made towards a state agency in the past five years between nonconsumptive and consumptive viewers. Note that respondents were able to select more than one option to reflect their contributions. A Chi-Square test revealed a number of statistically significant differences between nonconsumptive and consumptive viewers’ voluntary purchases, including conservation license plate, direct donation, habitat stamp (voluntary), tangible products, income tax donations, lottery tickets, land donation, and virtual products (Table 91).

Lifetime hunting and fishing licenses

If respondents indicated that they purchased a hunting or fishing license, display logic was used to ask this group the question “Have you purchased a lifetime hunting or fishing license?” Of the respondents who indicated purchasing a hunting or fishing license ($n = 1,763$), 39% indicated purchasing a lifetime hunting or fishing license. A Chi-square test indicated statistically significant differences across regions ($\chi^2 = 16.55$, $df = 3$, $p < .001$; Table 92; Figure

96) Respondents in the Northeast were more likely to report holding a lifetime hunting or fishing license than those in the Midwest.

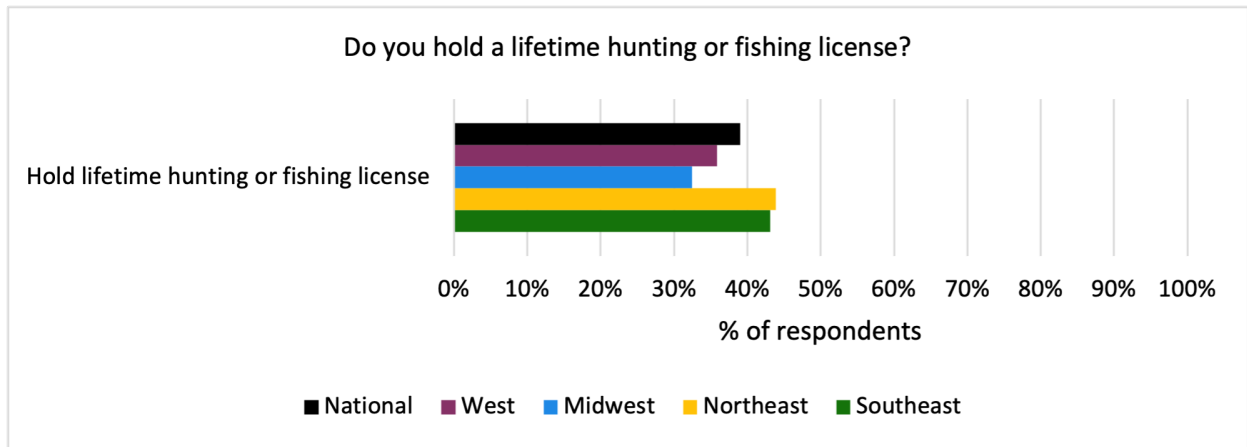


Figure 96. Lifetime hunting or fishing license

Wildlife viewers who indicated purchasing a hunting or fishing license that hold a lifetime license compared nationally and between all four AFWA regions. A Chi-square test indicated statistically significant differences across regions (Table 92).

Future purchases and contributions

Next, we assessed the likelihood of respondents making any of the following purchases or expenditures in the upcoming five years. The question was similar to the previous item about past purchases, providing a list of 13 contributions of expenditures, with the modification of a unipolar scale from 1 (*not at all likely*) to 5 (*extremely likely*). Eight of the purchases or contributions were classified as voluntary (conservation or habitat stamp independent of a license, conservation license plate, income tax donation, land donation/conservation easement, direct donation, lottery ticket, virtual products, tangible products) and the remaining five as nonvoluntary (hunting license, fishing license, habitat stamp, lands access fee, program or event fee). We analyzed these results across regions and consumptive-non consumptive.

Overall, wildlife viewers expressed greater interest in nonvoluntary items. They were most interested in a fishing license and a lands access pass, with 55% of respondents at the regional level indicating they were *moderately, very, or extremely likely* to contribute via these two methods (Figure 98). Almost half of all wildlife viewers at the national level, 47% were *moderately, very, or extremely likely* to contribute via a fee for a program or event (Figure 98). Chi-square tests revealed a number of statistically significant differences when comparing across regions, including a fishing license, conservation or habitat stamp, and fee for a program or event. (Tables 93 - 105; Figures 99 - 103).

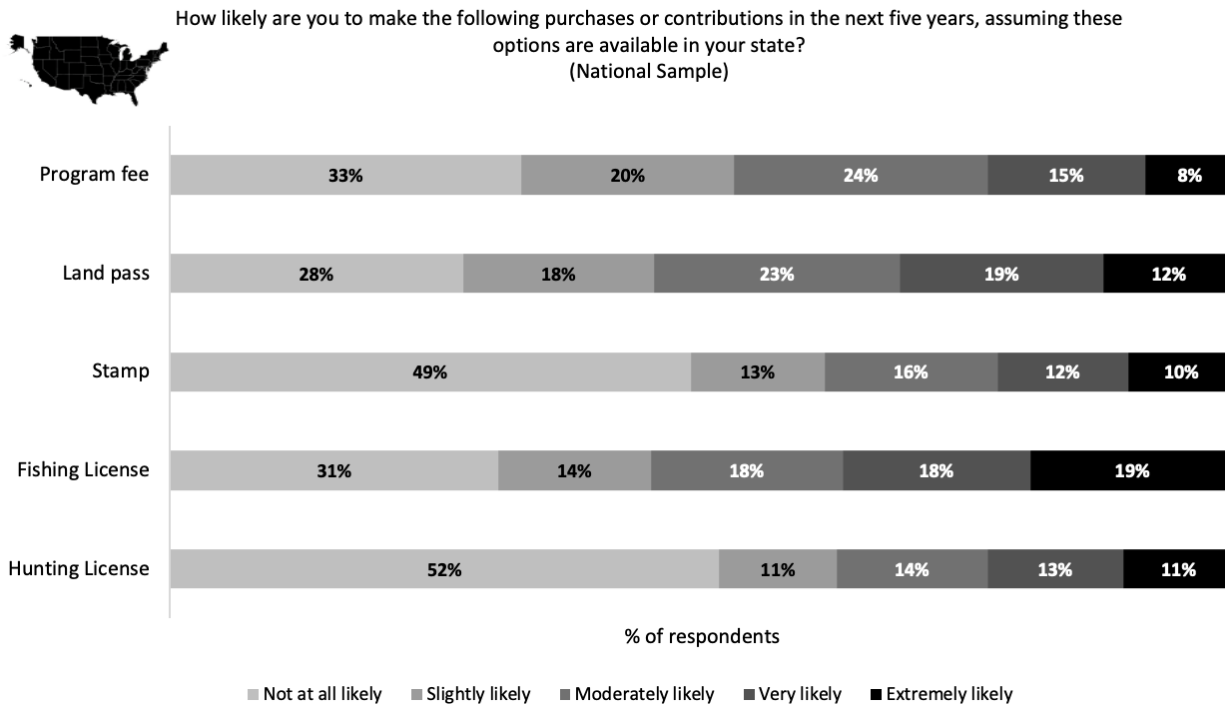


Figure 98. Likelihood of future nonvoluntary contributions, Nationwide

Wildlife viewers’ reported likelihood of making nonvoluntary purchases or contributions at the nationwide level in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the blocks darkens with increasing likelihood to purchase or contribute to their state agencies via nonvoluntary funding mechanisms (Tables 93 - 97).

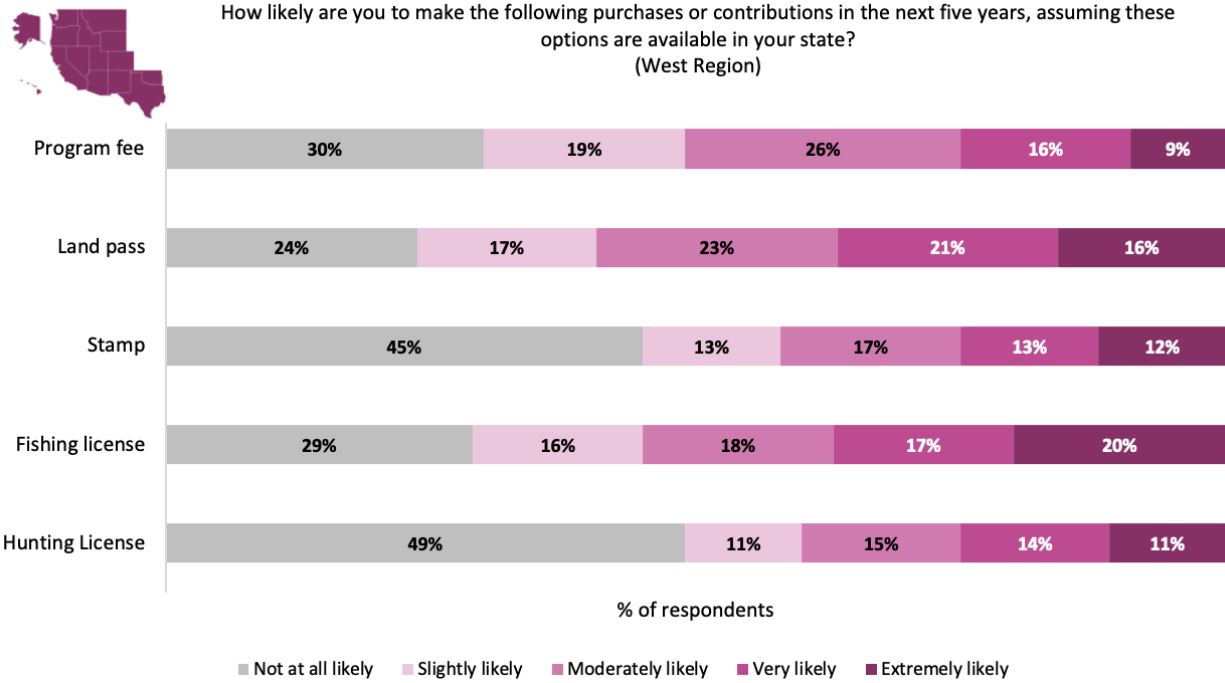


Figure 99. Likelihood of future nonvoluntary contributions, West

Wildlife viewers’ reported likelihood of making nonvoluntary purchases or contributions in the West in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the blocks darkens with increasing likelihood to purchase or contribute to their state agencies via nonvoluntary funding mechanisms (Tables 93 - 97).

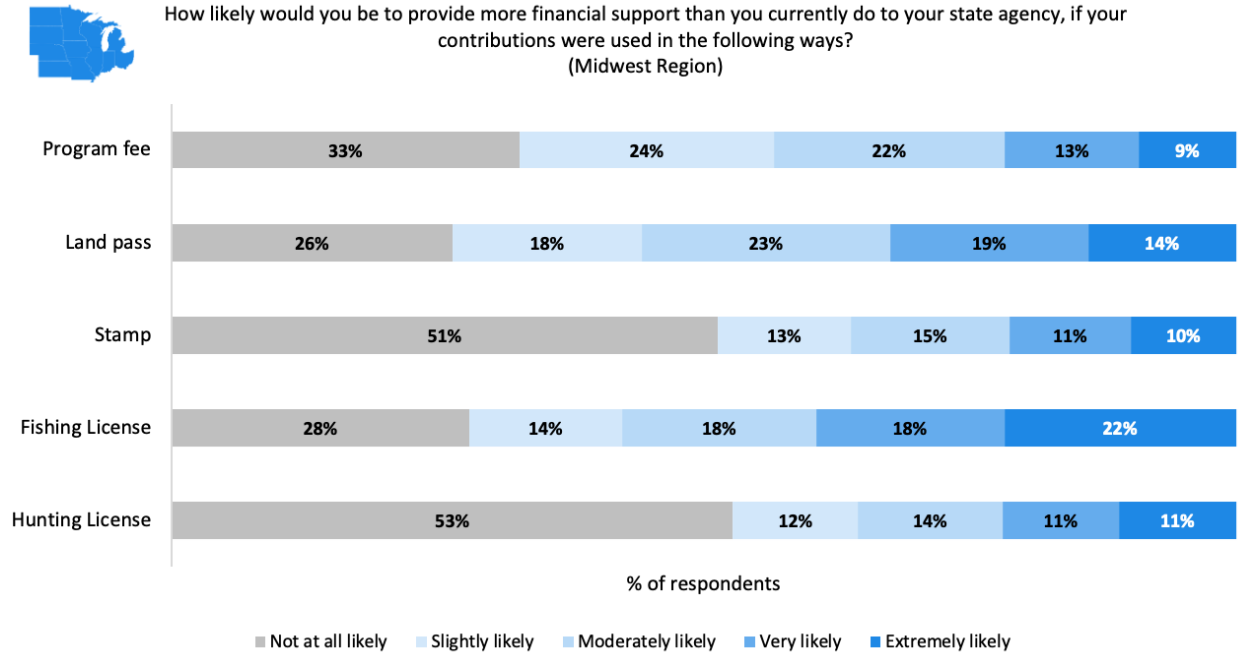


Figure 100. Likelihood of future nonvoluntary contributions, Midwest

Wildlife viewers’ reported likelihood of making nonvoluntary purchases or contributions in the Midwest in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the blocks darkens with increasing likelihood to purchase or contribute to their state agencies via nonvoluntary funding mechanisms (Tables 93 - 97).

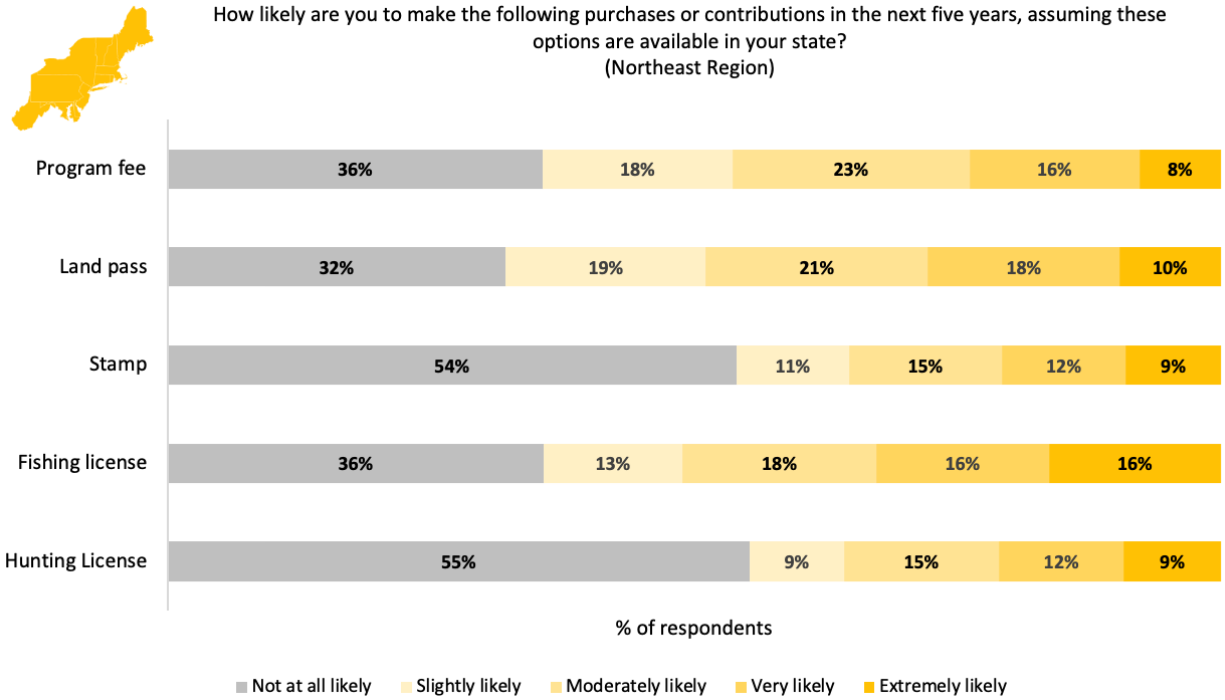


Figure 101. Likelihood of future nonvoluntary contributions, Northeast

Wildlife viewers’ reported likelihood of making nonvoluntary purchases or contributions in the Northeast in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the blocks darkens with increasing likelihood to purchase or contribute to their state agencies via nonvoluntary funding mechanisms (Tables 93 - 97).

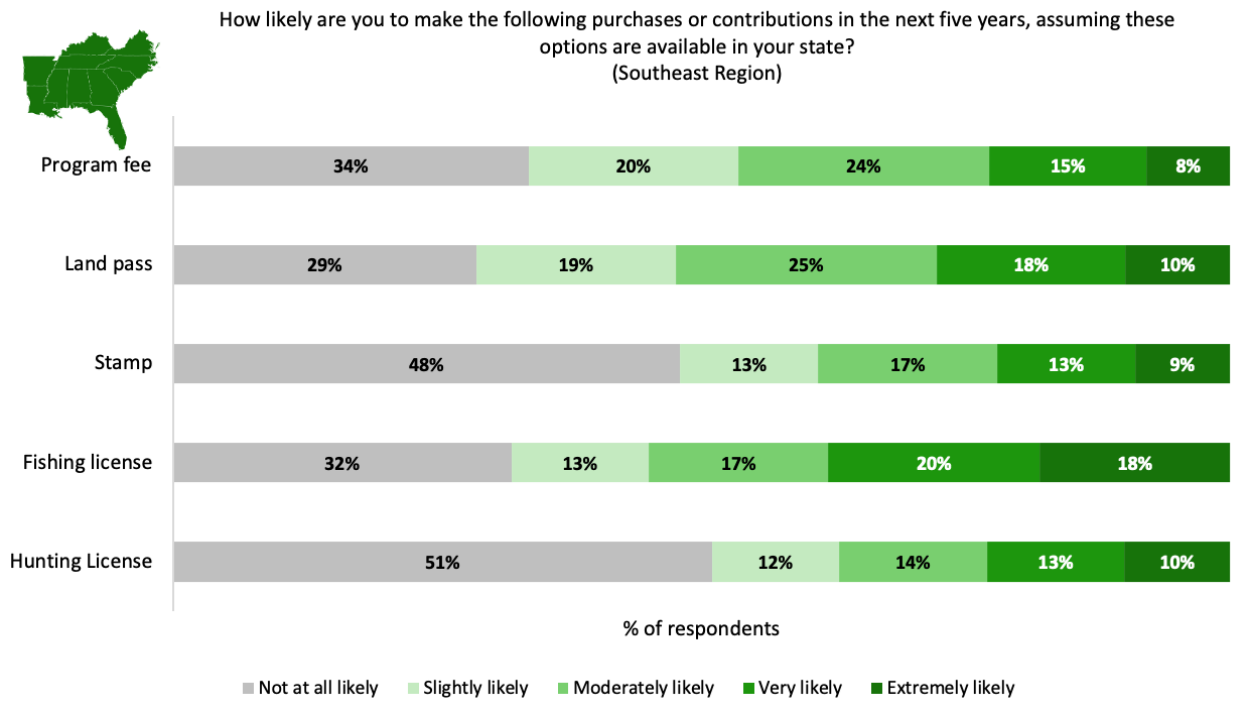


Figure 102. Likelihood of future nonvoluntary contributions, Southeast

Wildlife viewers’ reported likelihood of making nonvoluntary purchases or contributions in the Southeast in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the blocks darkens with increasing likelihood to purchase or contribute to their state agencies via nonvoluntary funding mechanisms (Tables 93 - 97).

When reviewing voluntary mechanisms, respondents from the national sample were most likely to contribute through the purchase of tangible products, with 52% of respondents indicating they were *moderately, very, or extremely likely* to contribute via this method. Respondents also indicated high interest in contributing via a lottery ticket, with 50% of respondents indicating they were *moderately, very, or extremely likely* to contribute via this method. Nationwide, respondents were least interested in contributing via a land donation, with only 35% of respondents indicating they were *moderately, very, or extremely likely* to contribute via this method. Chi-squared test revealed statistically significant differences for a conservation license plate ($\chi^2 = 25.05, df = 12 p = .01$; Table 104; Figures 104 - 107), land donation ($\chi^2 = 21.57, df = 12 p = .04$; Table 102; Figures 104 - 107), and direct donation ($\chi^2 = 23.51, df = 12 p = .02$; Table 101; Figures 104 - 107).

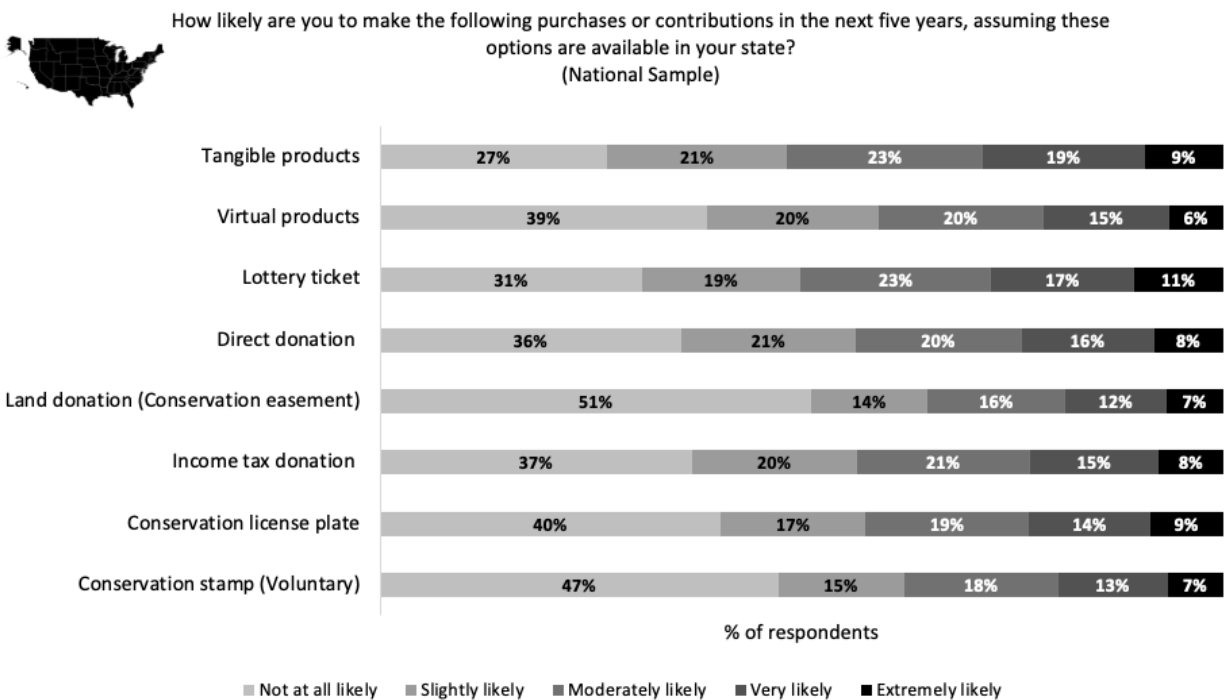


Figure 103. Likelihood of future voluntary contributions, Nationwide

Wildlife viewers' reported likelihood of making voluntary purchases or contributions at the nationwide level in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The blocks darken with increasing likelihood to purchase or contribute to state agencies via voluntary funding mechanisms (Tables 95 - 105).



How likely are you to make the following purchases or contributions in the next five years, assuming these options are available in your state?
(West Region)

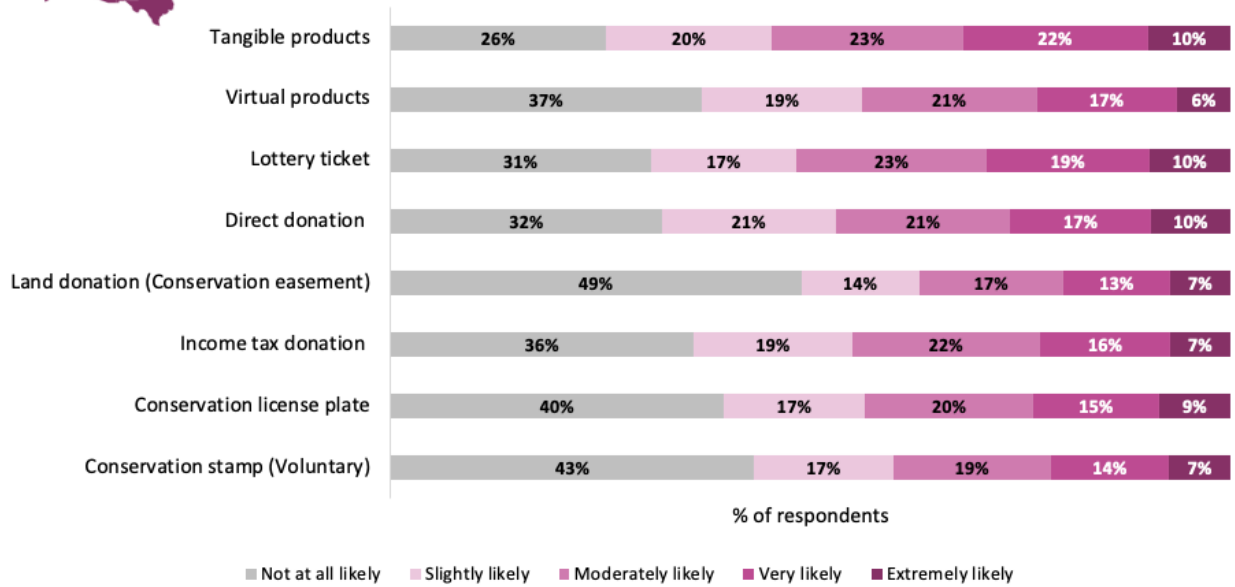


Figure 104. Likelihood of future voluntary contributions, West

Wildlife viewers’ reported likelihood of making voluntary purchases or contributions in the West in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The blocks darken with increasing likelihood to purchase or contribute to state agencies via voluntary funding mechanisms (Tables 95 - 105).



How likely would you be to provide more financial support than you currently do to your state agency, if your contributions were used in the following ways?
(Midwest Region)

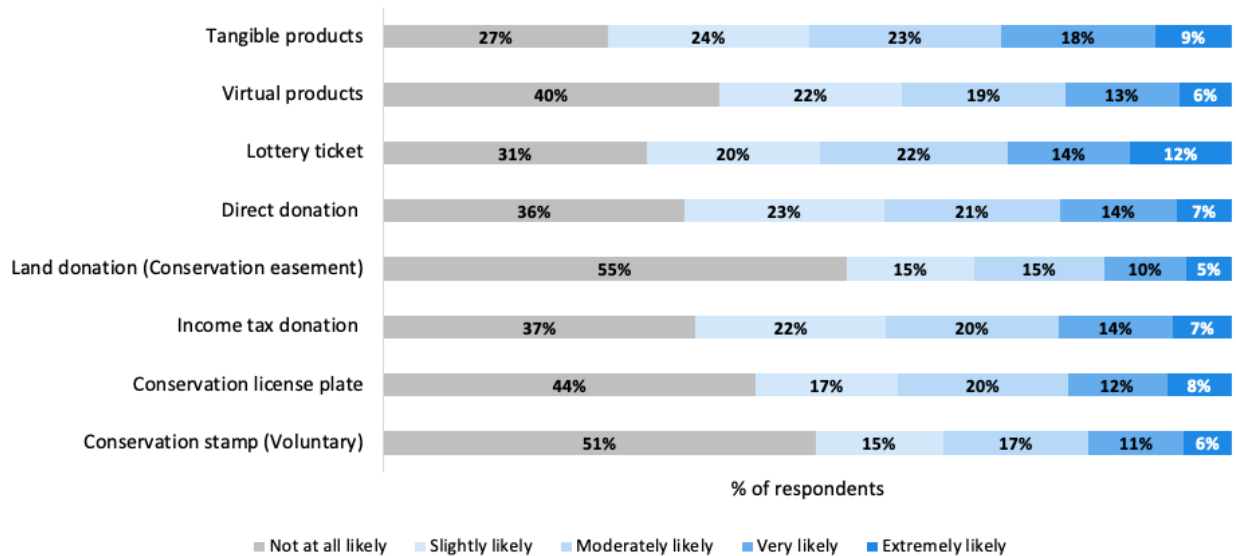


Figure 105. Likelihood of future voluntary contributions, Midwest

Wildlife viewers’ reported likelihood of making voluntary purchases or contributions in the Midwest in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The blocks darken with increasing likelihood to purchase or contribute to state agencies via voluntary funding mechanisms (Tables 95 - 105).



How likely are you to make the following purchases or contributions in the next five years, assuming these options are available in your state?
(Northeast Region)

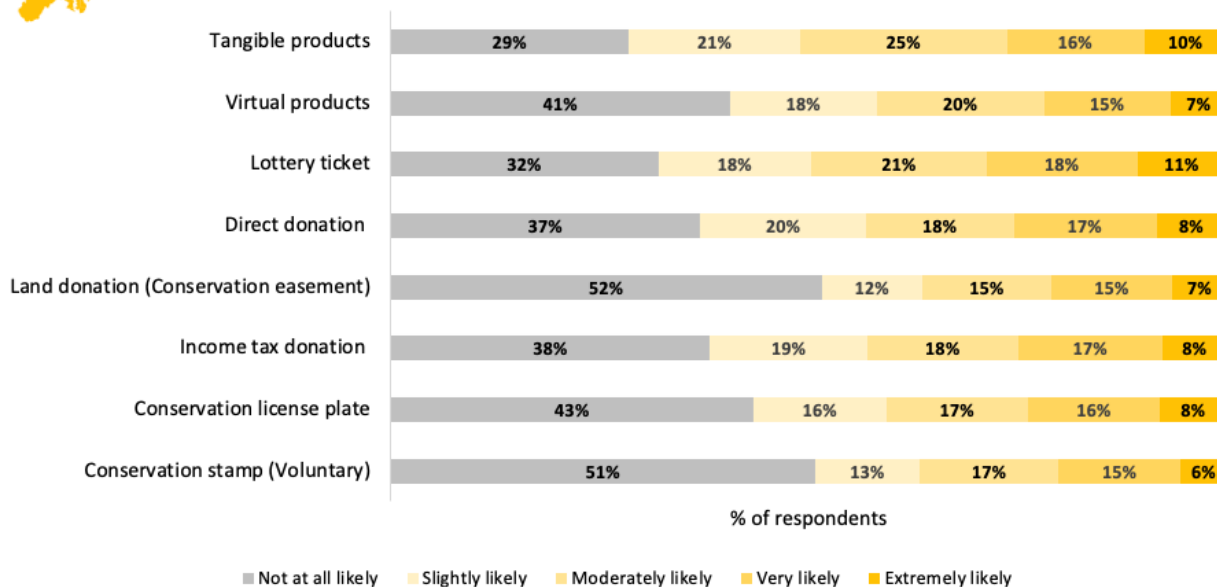


Figure 106. Likelihood of future voluntary contributions, Northeast

Wildlife viewers’ reported likelihood of making voluntary purchases or contributions in the Northeast in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The blocks darken with increasing likelihood to purchase or contribute to state agencies via voluntary funding mechanisms (Tables 95 - 105).



How likely are you to make the following purchases or contributions in the next five years, assuming these options are available in your state?
(Southeast Region)

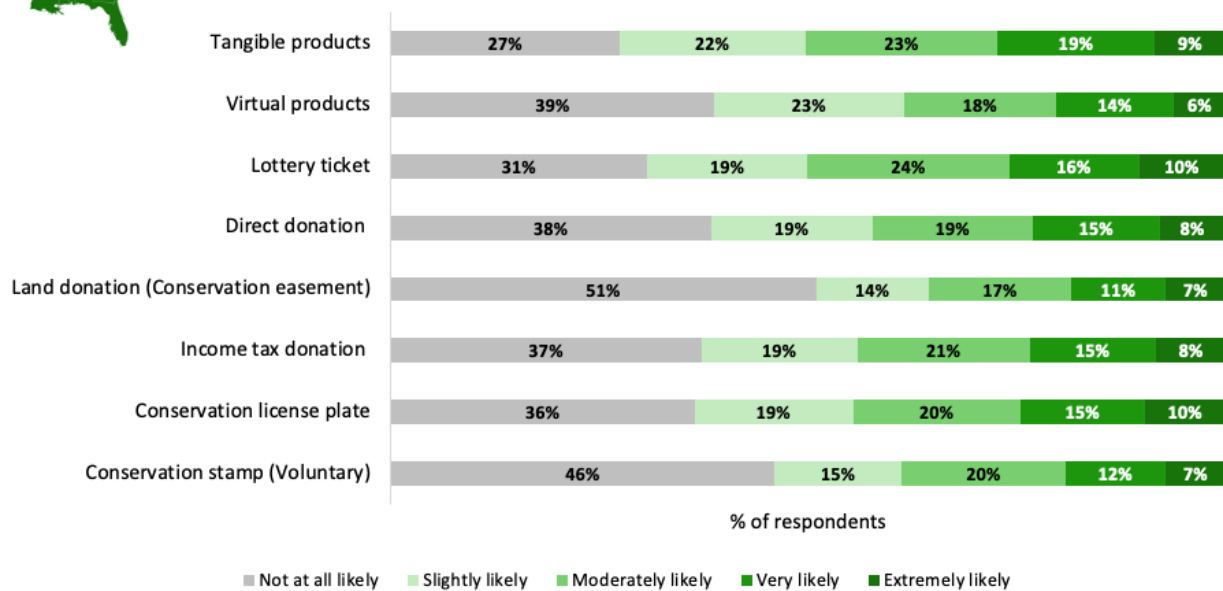


Figure 107. Likelihood of future voluntary contributions, Southeast

Wildlife viewers’ reported likelihood of making voluntary purchases or contributions in the Southeast in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The blocks darken with increasing likelihood to purchase or contribute to state agencies via voluntary funding mechanisms (Tables 95 - 105).

Consumptive wildlife viewers were more likely to contribute to state fish and wildlife agencies for all financial mechanisms, both nonvoluntary and voluntary, in comparison to nonconsumptive wildlife viewers (Table 106 - 118; Figures 108 - 111).



How likely are you to make the following purchases or contributions in the next five years, assuming these options are available in your state?
(Nonconsumptive Viewers)

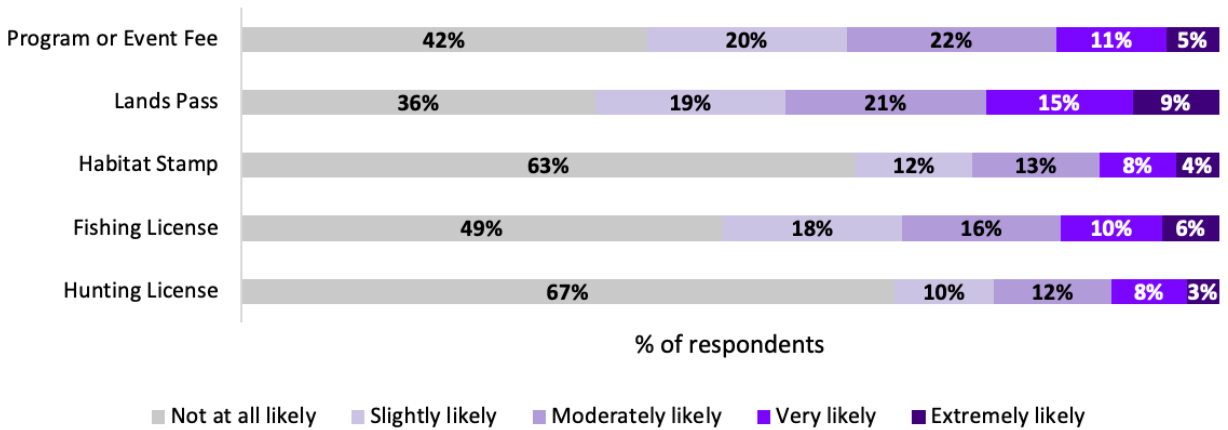


Figure 108. Likelihood of future nonvoluntary contributions, Nonconsumptive

Nonconsumptive wildlife viewers’ reported likelihood of making nonvoluntary purchases or contributions in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the blocks darkens with increasing likelihood to purchase or contribute to their state agencies via nonvoluntary funding mechanisms (Tables 106 - 110).



How likely are you to make the following purchases or contributions in the next five years, assuming these options are available in your state?
(Consumptive Viewers)

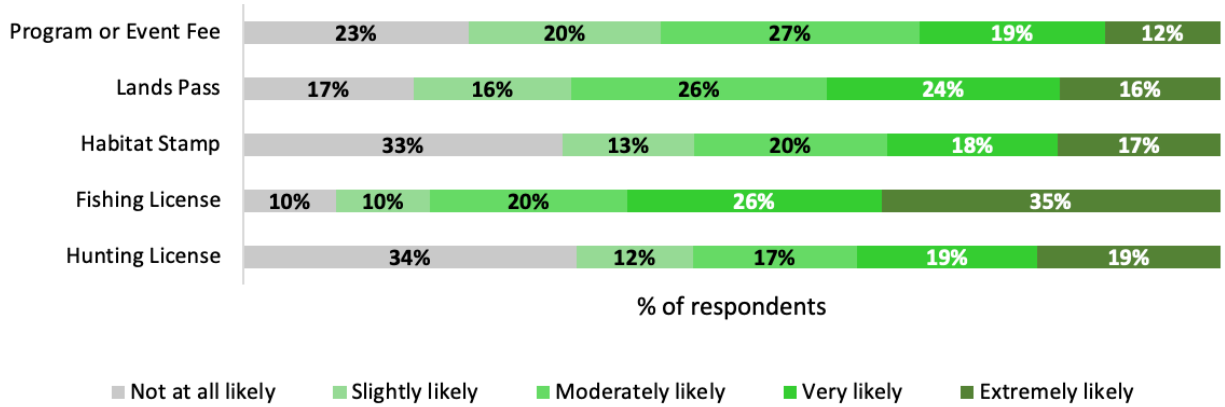


Figure 109. Likelihood of future nonvoluntary contributions, Consumptive

Consumptive wildlife viewers’ reported likelihood of making nonvoluntary purchases or contributions in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the blocks darkens with increasing likelihood to purchase or contribute to their state agencies via nonvoluntary funding mechanisms (Tables 106 - 110).



How likely are you to make the following purchases or contributions in the next five years, assuming these options are available in your state?
(Nonconsumptive Viewers)

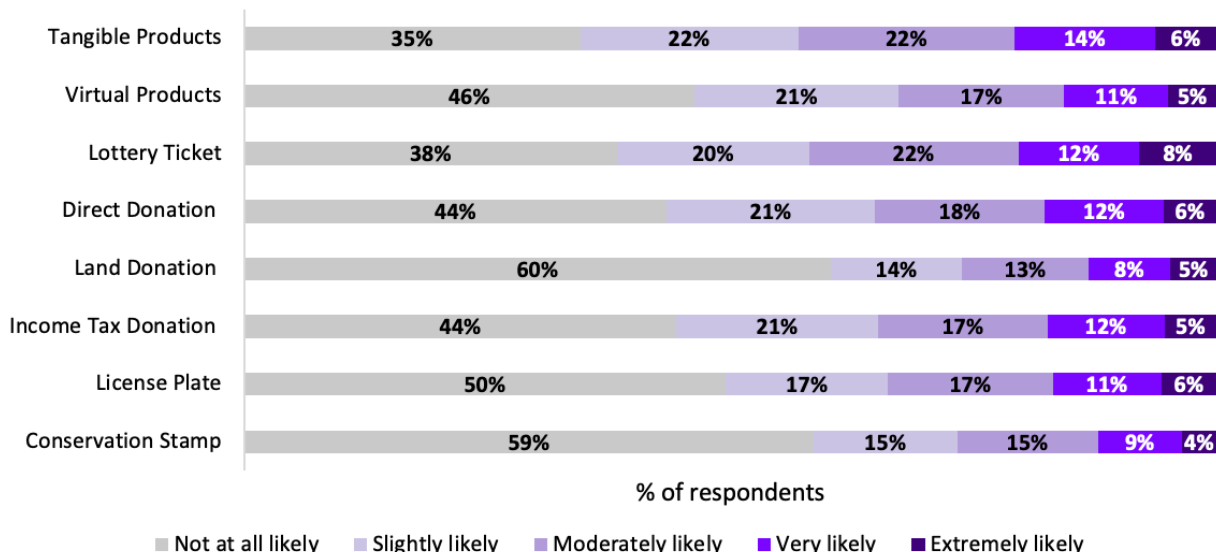


Figure 110. Likelihood of future voluntary contributions, Nonconsumptive

Nonconsumptive wildlife viewers’ reported likelihood of making voluntary purchases or contributions in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The blocks darken with increasing likelihood to purchase or contribute to state agencies via voluntary funding mechanisms (Tables 111 - 118).



How likely are you to make the following purchases or contributions in the next five years, assuming these options are available in your state?
(Consumptive Viewers)

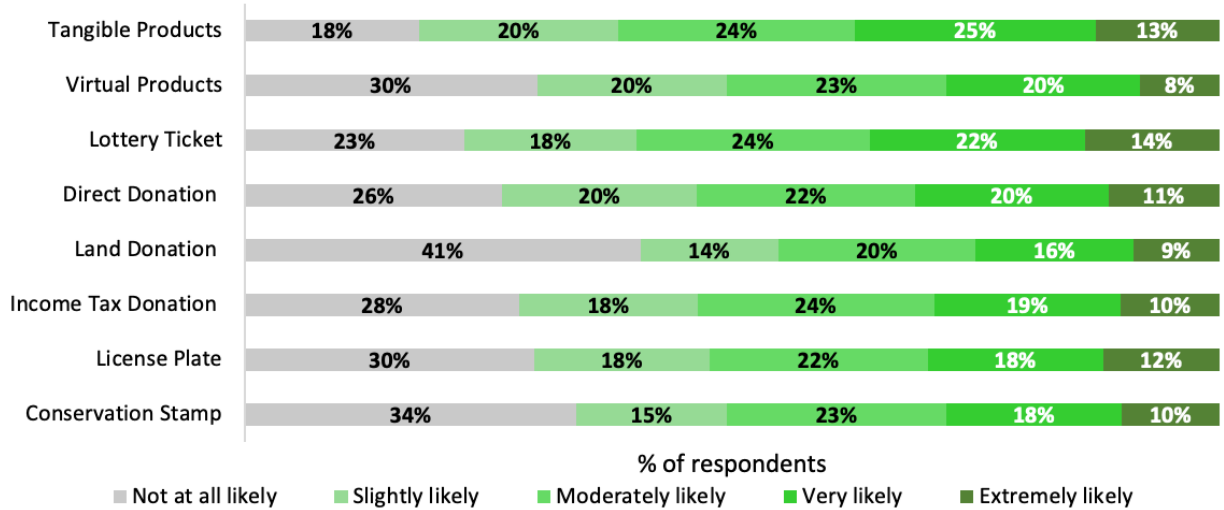


Figure 111. Likelihood of future voluntary contributions, Consumptive

Consumptive wildlife viewers’ reported likelihood of making voluntary purchases or contributions in the next five years, assuming all options are available in their state. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The blocks darken with increasing likelihood to purchase or contribute to state agencies via voluntary funding mechanisms (Tables 111 - 118).

Encouraging additional financial support

Wildlife viewers have expectations for how state agencies use their funds. In this section, we further investigate those expectations. We asked, “How likely would you be to provide more financial support than you currently do to your state agency, if your contributions were used in the following ways?” We provided respondents with a list of seven potential mechanisms of agencies utilizing their funds. The 5-point scale ranged from 1 (*not at all likely*) to 5 (*extremely likely*).

Respondents were most likely to provide additional financial support if they knew their funds were used for “Conservation of rare and vulnerable species” and “Conservation of preferred viewing species,” with 61% of respondents indicating they were *moderately, very, or extremely likely* to increase their contributions to state agencies under either of those two conditions. Chi-squares test revealed no statistically significant differences across regions (Tables 119 - 125; Figures 113 - 116).

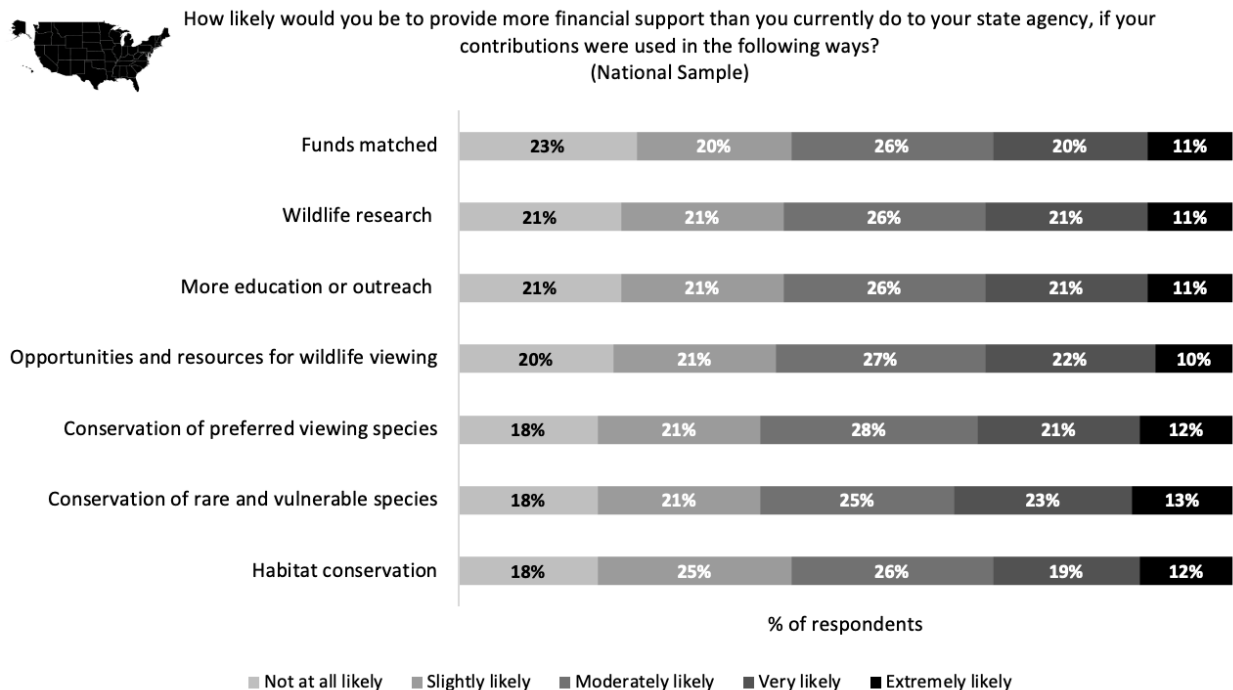


Figure 112. Encouraging additional support, Nationwide

Wildlife viewers’ reported likelihood of providing more financial support than they currently do to their state agencies, at the nationwide level, if their contributions were used in various ways. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the block darkens with increasing likelihood to provide additional financial support to state agencies, given these potential uses of funds (Tables 119 - 125).



How likely would you be to provide more financial support than you currently do to your state agency, if your contributions were used in the following ways?
(West Region)

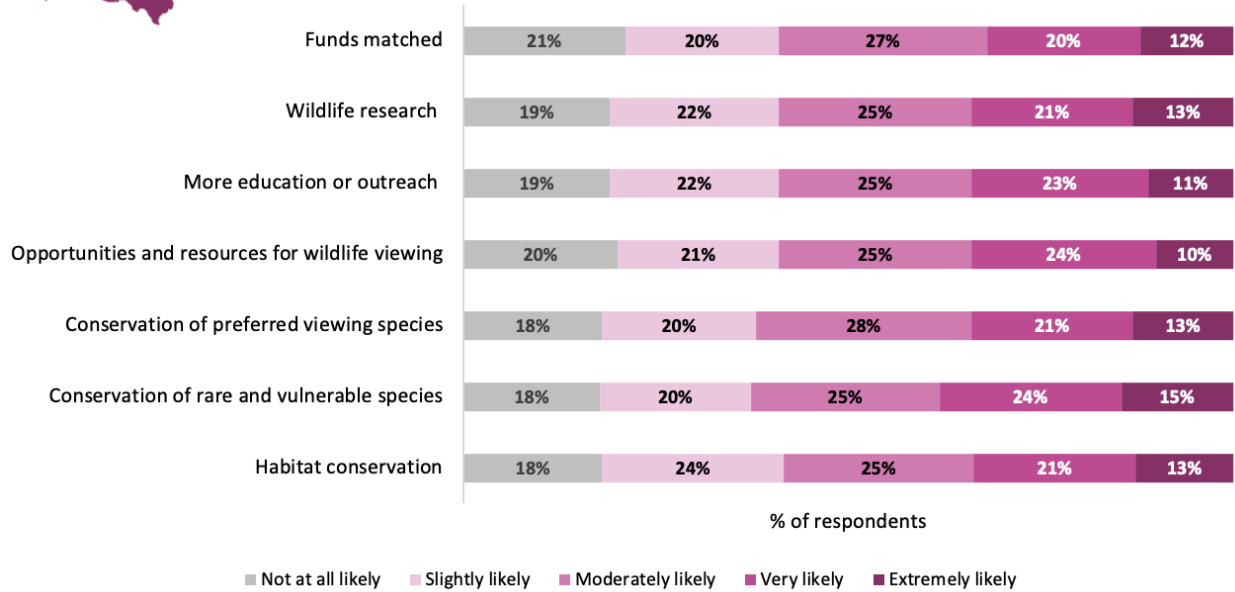


Figure 113. Encouraging additional support, West

Wildlife viewers’ reported likelihood of providing more financial support than they currently do to their state agencies in the West if their contributions were used in various ways. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the block darkens with increasing likelihood to provide additional financial support to state agencies, given these potential uses of funds (tables 119 - 125).



How likely would you be to provide more financial support than you currently do to your state agency, if your contributions were used in the following ways?
(Midwest Region)

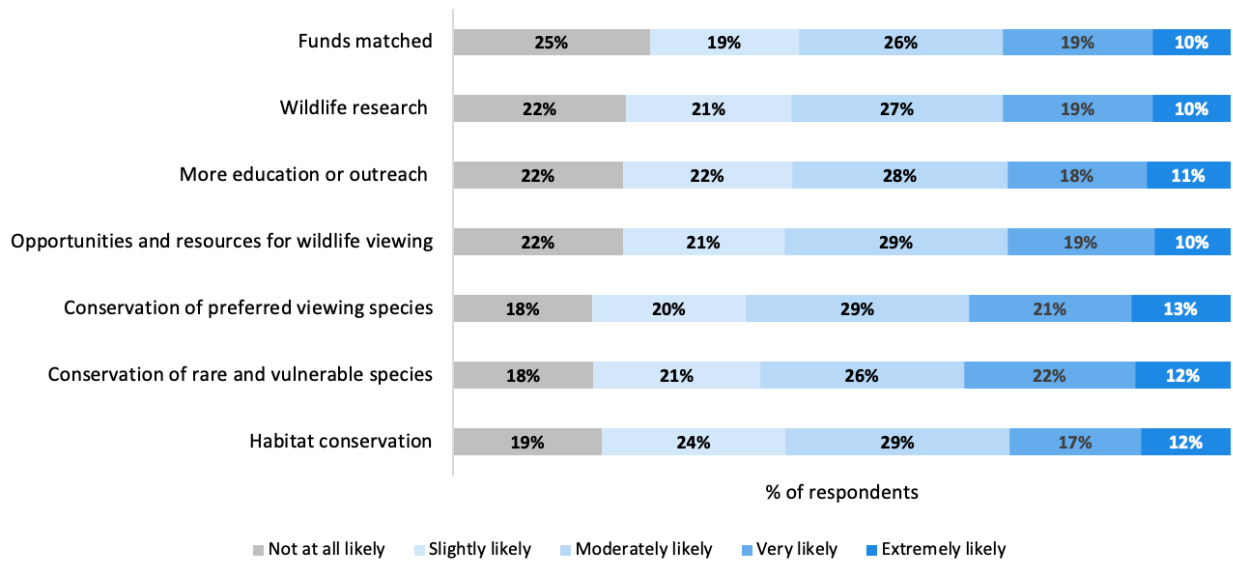


Figure 114. Encouraging additional support, Midwest

Wildlife viewers’ reported likelihood of providing more financial support than they currently do to their state agencies in the Midwest if their contributions were used in various ways. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the block darkens with increasing likelihood to provide additional financial support to state agencies, given these potential uses of funds (Tables 119 - 125).

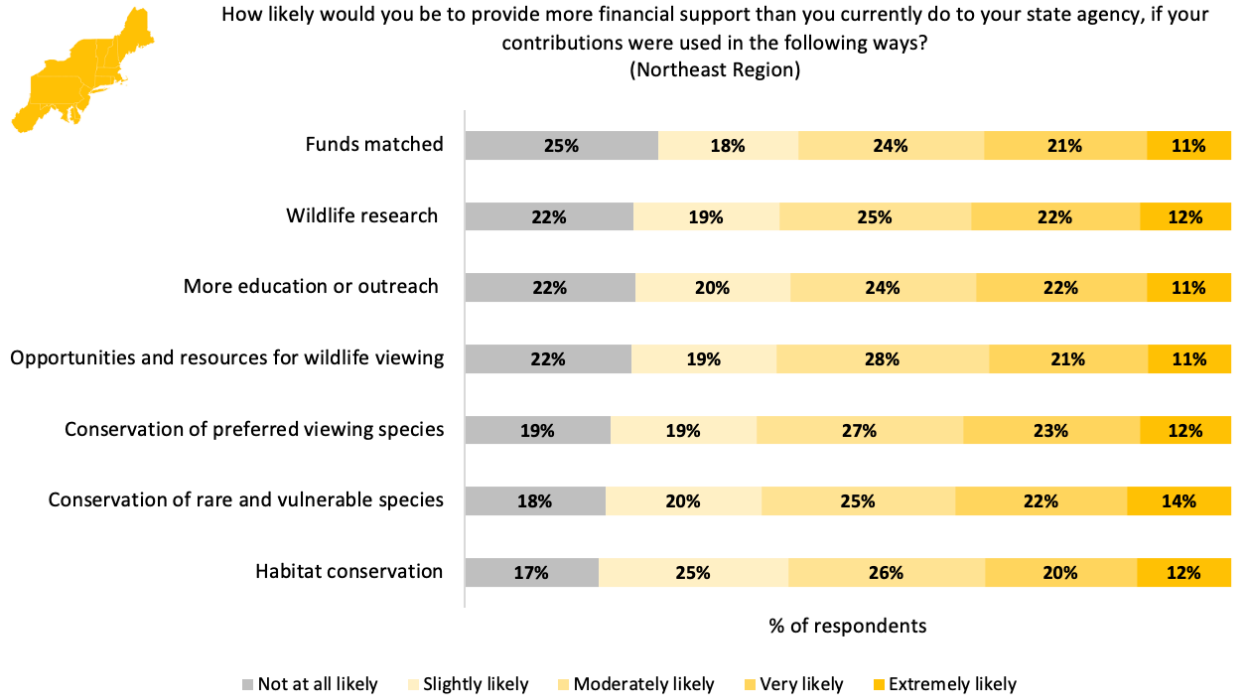


Figure 115. Encouraging additional support, Northeast

Wildlife viewers’ reported likelihood of providing more financial support than they currently do to their state agencies in the Northeast if their contributions were used in various ways. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the block darkens with increasing likelihood to provide additional financial support to state agencies, given these potential uses of funds (Tables 119 - 125).

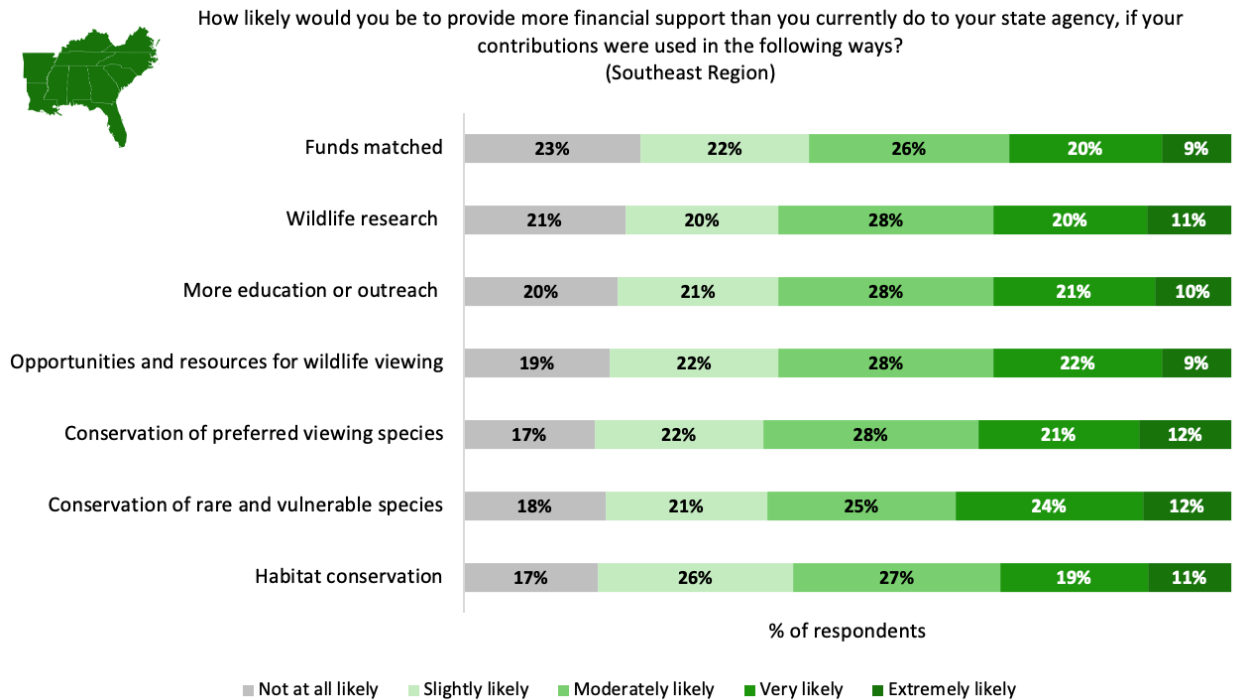


Figure 116. Encouraging additional support, Southeast

Wildlife viewers’ reported likelihood of providing more financial support than they currently do to their state agencies in the Southeast if their contributions were used in various ways. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the block darkens with increasing likelihood to provide additional financial support to state agencies, given these potential uses of funds (Tables 119 - 125).

Next, we assessed these results by comparing consumptive and nonconsumptive viewers. Nonconsumptive viewers were most likely to increase their contributions to state agencies if they knew their funds were used for “conservation of rare and vulnerable species” or “conservation of preferred viewing species”, with 54% of nonconsumptive viewers indicating they were *moderately, very, or extremely likely* to increase their contributions under these conditions. Similarly, consumptive viewers were more likely to increase their contributions to state agencies under these conditions; with 70% of consumptive viewers indicating they were *moderately, very, or extremely likely* to increase their contributions if their funds went to “conservation of rare or vulnerable species” and 71% of consumptive viewers were *moderately, very, or extremely likely* to increase their contributions if their funds supported “conservation of preferred viewing species.” Chi-square tests revealed statistically significant differences for all categories, with consumptive viewers indicating a higher likelihood of potential contributions than nonconsumptive (Tables 125 - 133; Figures 117 - 118).



How likely would you be to provide more financial support than you currently do to your state agency, if your contributions were used in the following ways?
(Nonconsumptive Viewers)

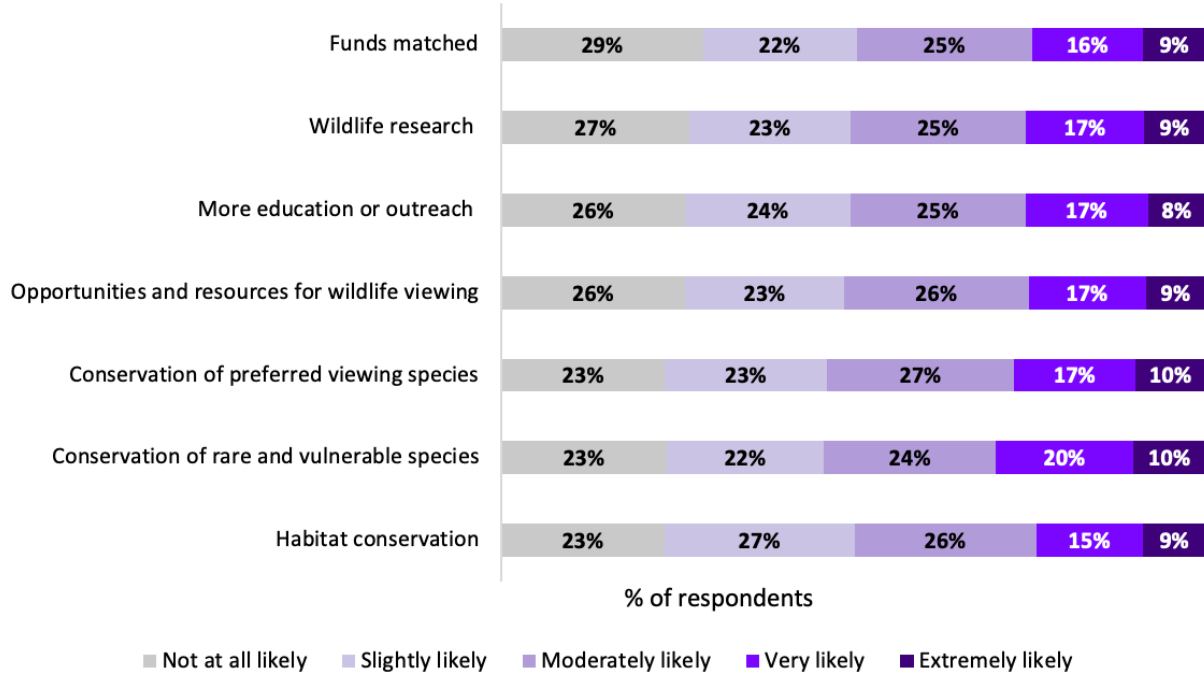


Figure 117. Encouraging additional support, Nonconsumptive

Nonconsumptive wildlife viewers’ reported likelihood of providing more financial support than they currently do to their state agencies if their contributions were used in various ways. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the block darkens with increasing likelihood to provide additional financial support to state agencies, given these potential uses of funds (Tables 125 - 132).



How likely would you be to provide more financial support than you currently do to your state agency, if your contributions were used in the following ways?
(Consumptive Viewers)

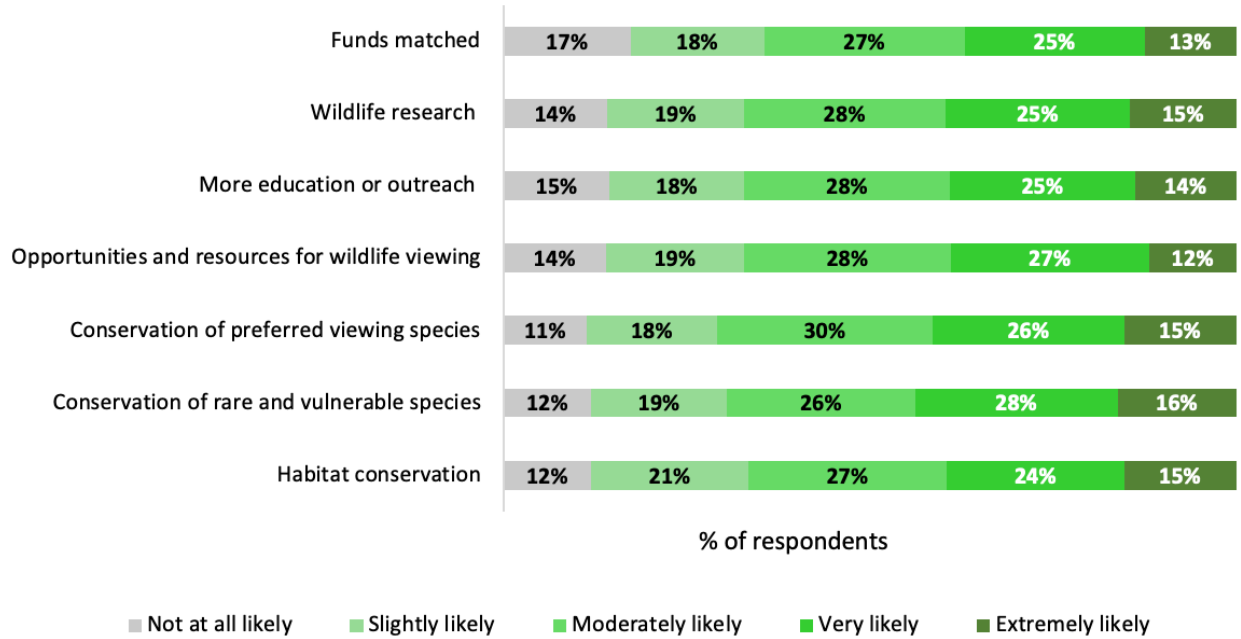


Figure 118. Encouraging additional support, Consumptive

Consumptive wildlife viewers’ reported likelihood of providing more financial support than they currently do to their state agencies if their contributions were used in various ways. Each block represents the percentage of respondents who fell into each of the five categories: *not at all likely* to *extremely likely*. The shade of the block darkens with increasing likelihood to provide additional financial support to state agencies, given these potential uses of funds (Tables 125 - 132).

State agency support for wildlife viewing

AFWA's Relevancy Roadmap outlines broad recommendations for increasing engagement of state fish and wildlife agencies toward a broader constituency, including "increased and improved partnering and collaboration to increase engagement with, and service to, a broader constituency" (AFWA, 2016). Understanding what programs and services wildlife viewers prefer allows agencies to identify and prioritize programs to engage this constituency. In addition, supporting wildlife viewers through management and changes may help to increase relationships between viewers and agencies (Grooms et al. 2021, AFWA 2016). To this end, we provided respondents with a list of 17 programs and services that may be available to support wildlife viewing and asked the question, "Which of the following potential programs or services from [state agency] would better support your wildlife viewing activities in [your state]?" This list of items was initially developed based on focus groups conducted for a study of wildlife recreationists in Virginia (Grooms et al. 2019), which we then adapted based on feedback from our multi-state Steering Committee. An 18th, mutually exclusive option "I am not interested in any of these options to support my wildlife viewing activities" (12%) was also provided.

Overall, respondents were most interested in receiving more information from their state fish and wildlife agencies; at the national level, 42% of respondents were interested in receiving more information about wildlife in the state, followed by 40% of respondents interested in receiving more information about where to view wildlife. In addition, 35% of respondents were interested in access to more places to go wildlife viewing. More than a quarter of respondents at the national level expressed interest in more information about where and when to view wildlife where there is no hunting (28%), more information about how to view various types of wildlife (28%), and more accessible features in wildlife viewing locations (27%). Respondents were least interested in more opportunities to be involved in other volunteer activities, not related to research or data collection (6%) and more wildlife viewing staff (15%). Chi-square tests indicated no statistically significant differences across regions for the programs and services explored in this survey (Table 133; Figure 119).

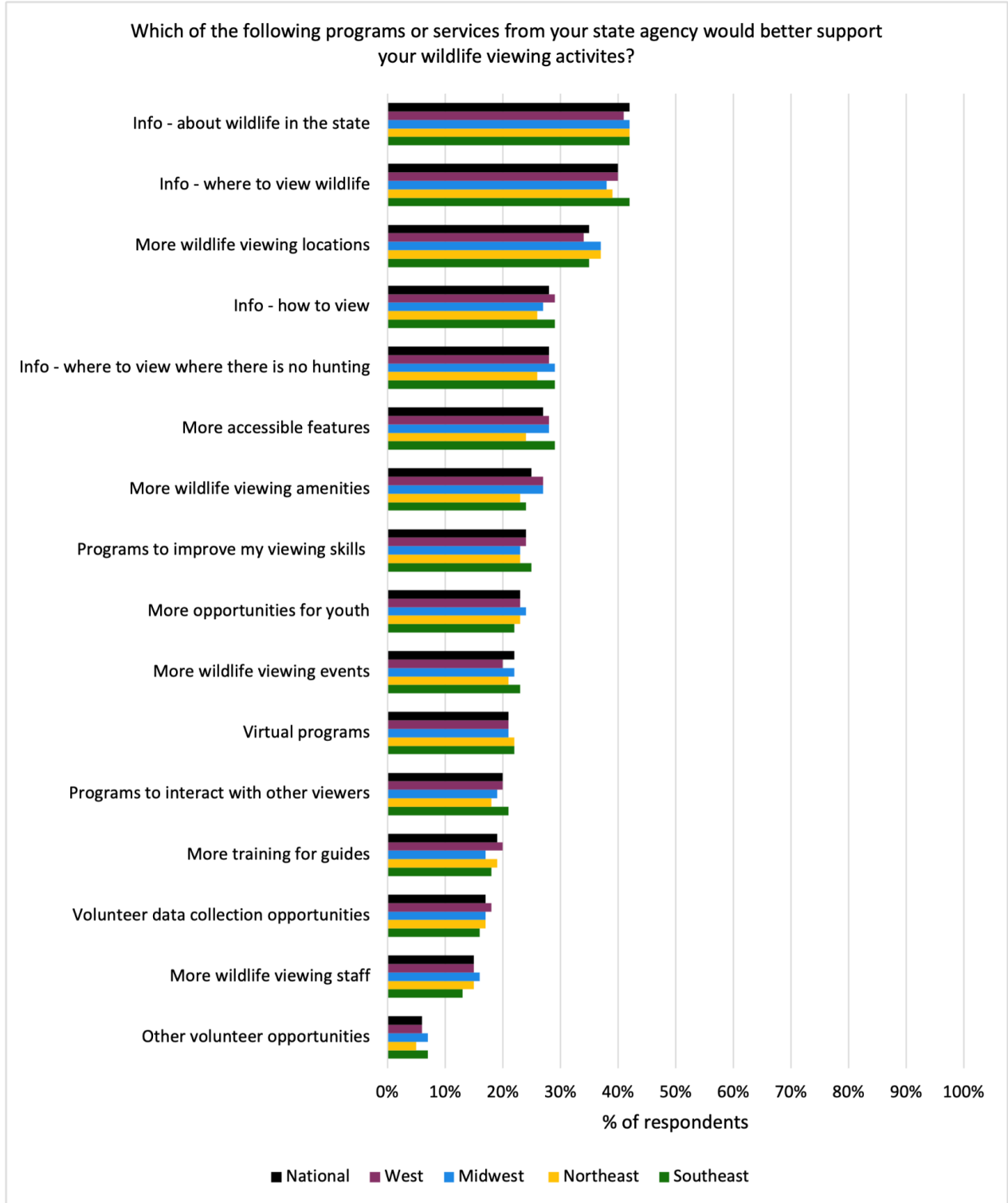


Figure 119: State agency support for wildlife viewing

State agency programs and services indicated by wildlife viewers that would better support their wildlife viewing activities for nationwide respondents and in all four regions. Note that individual categories sum to more than 100% because respondents were able to select more than one program or service to reflect their opinion. Chi-square tests indicated no statistically significant differences across regions (Table 133).

Preferred communication

We examined viewers' interest in methods of receiving information from state agencies. In this question, we provided wildlife viewers with a list of 15 ways of receiving information, with a 16th, mutually exclusive option of "I would prefer not to receive information from my state agency" ($n = 398$).

The majority of wildlife viewers indicated they liked to receive information from their state agency's website (50%). Respondents also expressed high interest in printed materials (49%) and email updates (47%). We asked respondents about a variety of social media platforms including YouTube (29%), Instagram (19%), Twitter (15%), and Tik-Tok (National = 13%), with Facebook being the most popular (National = 39%). There were no statistically significant differences across the four regions (Table 134; Figure 120).

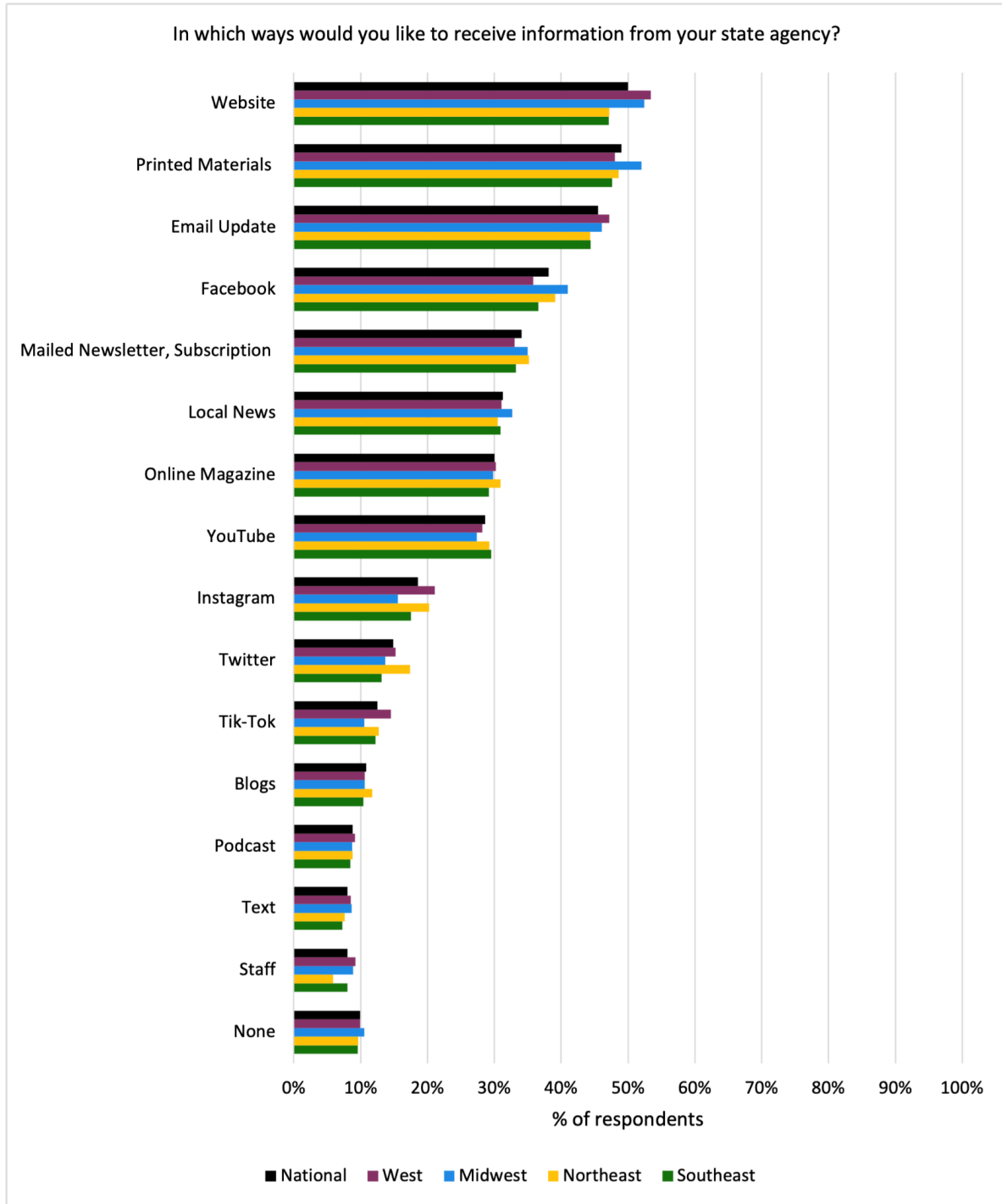


Figure 120. Preferred communication from state agencies

Preferred method of receiving information from state agencies to wildlife viewers for nationwide respondents and in all four regions. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect their preferred method of communication. Chi-square tests indicated no statistically significant differences across regions (Table 134).

COVID-19 impact on wildlife viewing

On March 11th, 2020, the World Health Organization declared the COVID-19 virus to be a pandemic (WHO 2020). This pandemic dramatically altered everyday activities worldwide as federal, state, and local governments enacted public health policies to mitigate the spread of this highly contagious virus (Cucinotta & Vanelli, 2020). For example, the COVID-19 pandemic and associated mitigations brought about unprecedented and dynamic changes in outdoor recreation behaviors throughout the country, which we are only beginning to understand. A study by Rice et al. (2020) indicated that, as limitations to travel on a wide range of scales were instituted, participation in outdoor activities declined significantly overall, with disproportionately negative effects for urban residents. However, another study showed slight increases in participation in wildlife viewing and recreation close to home (Hochocka et al., 2021).

In this survey, we examined how COVID-19 affected wildlife viewers and the nature of their participation, as well as identified any potential management implications for state fish and wildlife agencies interested in supporting wildlife viewing. We examined participation in wildlife viewing using the Outdoor Recreation Adoption Model (also referred to as the “R3 Framework”) vis a vis the first year of the pandemic (Bynre and Dunfee, 2018). By comparing the number of days spent viewing in the first year of the COVID-19 pandemic with numbers of days in a typical year, we categorized wildlife viewers into four groups: “churned” (i.e., stopped viewing during the pandemic), “retained” (i.e., maintained viewing throughout the pandemic), “recruited” (i.e., began wildlife viewing for the first time during the pandemic) and “reactivated” (i.e., had participated in wildlife viewing in the past but were not actively participating when the pandemic began, then resumed participation during or after March 2020).

The largest proportion of respondents (56%) fell into the retained category, meaning the COVID-19 pandemic did not cause them to start, stop, or resume participation in wildlife viewing. Across all regions, the next largest group was the churned category (24%). Finally, the smallest proportion of wildlife viewers indicated they were recruited (7%) during or in the year after March 2020. While the ordering of the categories did not differ by region, there was a statistically significant difference across regions ($\chi^2 = 30.99$, $df = 9$, $p < .001$; Table 135; Figure 121) reflecting some differences in the proportions in the categories. For example, the highest proportion of retained respondents came from the Midwest (60%), compared to only 52% of respondents from the West (Table 135; Figure 121).

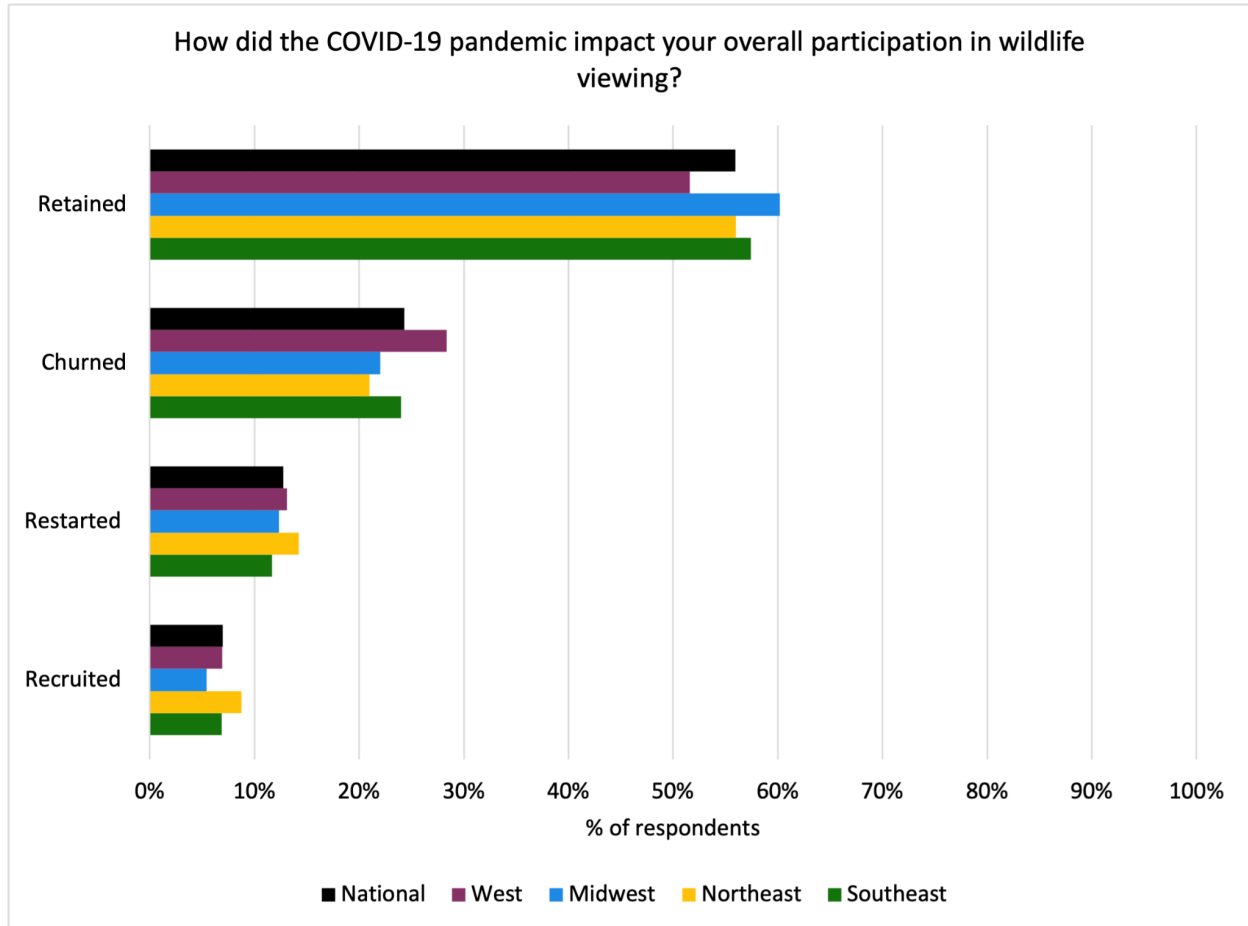


Figure 121. Impact of COVID-19 pandemic on wildlife viewing, R3

Impact of the COVID-19 pandemic on wildlife viewers’ overall participation in wildlife viewing. Respondents were separated into four groups: retained (maintained throughout the pandemic), churned (stopped viewing during the pandemic), restarted (had participated in wildlife viewing in the past but were not actively participating when the pandemic began, then resumed participation during or after March 2020), and recruited (began wildlife viewing for the first time during the pandemic). A chi-square test indicated a statistically significant difference in the COVID-19 impact on wildlife viewing participation across regions (Table 135).

To better understand the demographics and potential for state agencies to connect with these viewer groups, we conducted additional analyses comparing retained, recruited, reactivated, and churned viewers’ age, preferred state agency support for wildlife viewing, and preferred state agency communication channels.

COVID-19: Respondent age

An ANOVA indicated that retained viewers ($M = 56$) were, on average, approximately a decade older than recruited ($M = 43$), churned ($M = 46$) and reactivated viewers ($M = 44$; $F = 126.24$, $df = 3$, $p < .001$; Table 136; Figure 122).

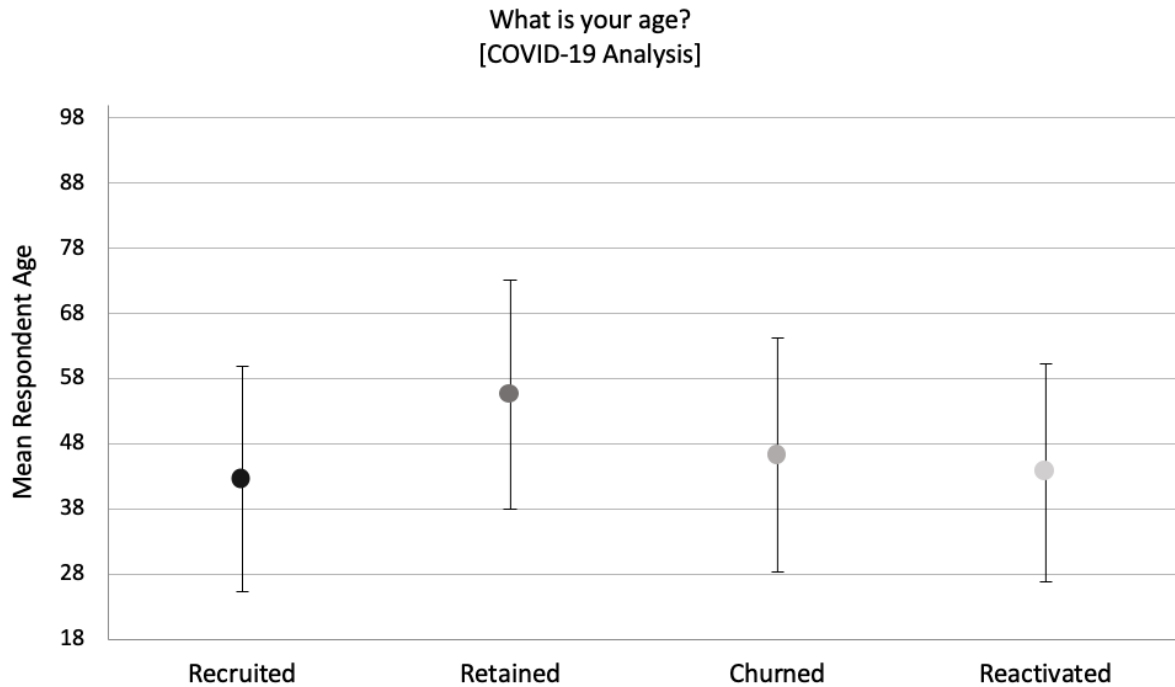


Figure 122. Respondent age, COVID-19 Analysis

A means graph showing the differences in the age of wildlife viewers across recruited, retained, churned, and reactivated respondent groups. Circles represent the mean age and lines represent the distance of one standard deviation. An ANOVA indicated that the mean age of retained wildlife viewers was significantly higher than the other groups of viewers (Table 136).

COVID-19: State agency support for wildlife viewing

Next, we analyzed preference for ways in which state agencies can support wildlife viewers based on these groups. All groups expressed interest in additional information from their state agencies. Retained (43%) and reactivated (38%) viewers were most interested in information about wildlife in the state, while churned (40%) and recruited viewers (42%) were most interested in information about where to see wildlife. Retained respondents were least interested in any form of support for wildlife viewing, with 17% selecting a mutually exclusive option, “I am not interested in any of these options to support my wildlife viewing activities” ($\chi^2 = 109.476, df = 3, p < .001$; Table 137; Figure 123).

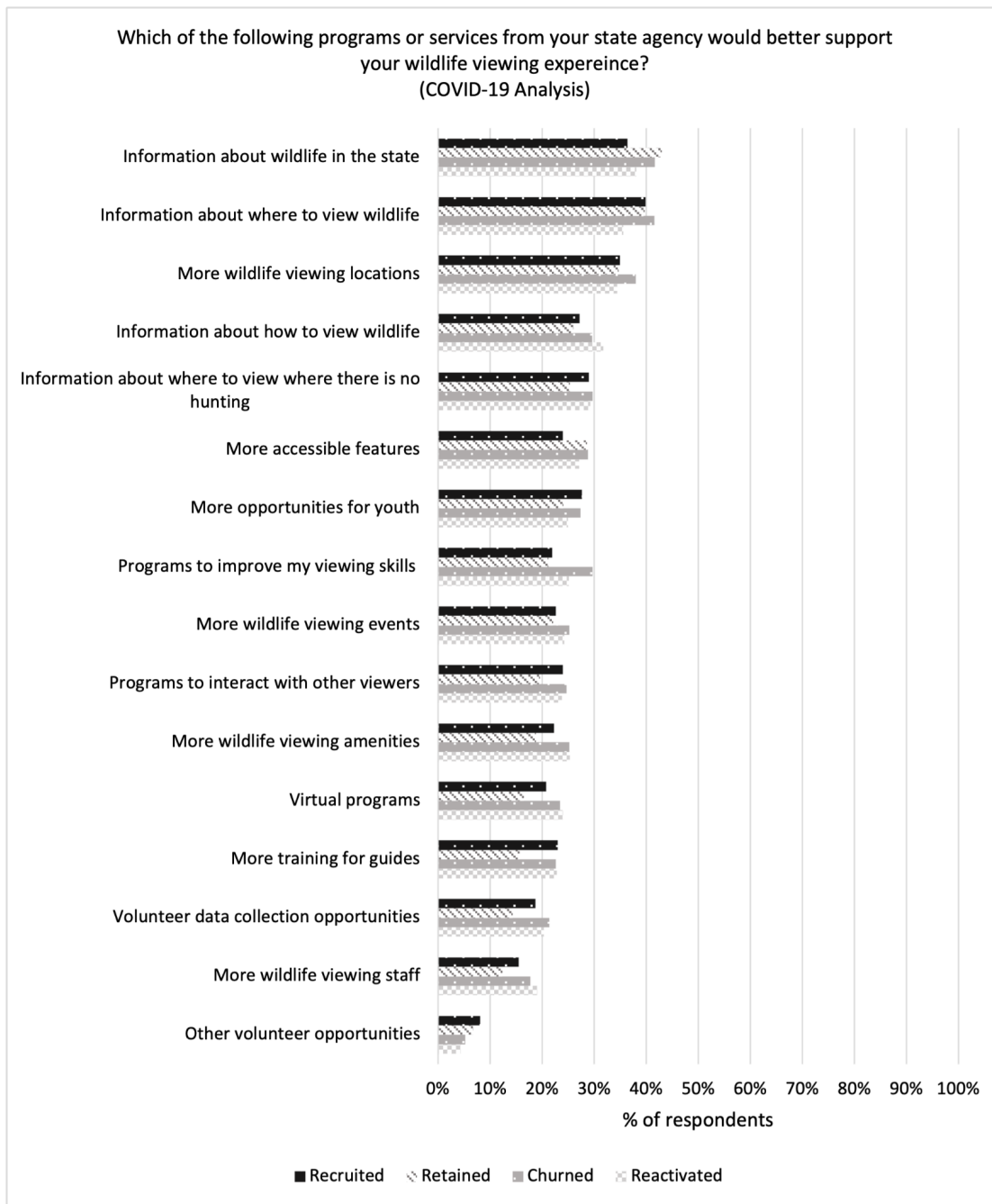


Figure 123. State agency support for viewing, COVID-19 Analysis

State agency programs and services that wildlife viewers indicated would better support their wildlife viewing activities for recruited, retained, churned, and reactivated groups. Note that individual categories sum to more than 100% because respondents were able to select more than one program or service to reflect their opinion. Chi-square tests indicated statistically significant differences across groups for more information about how to view various types of wildlife, more programs to interact with other wildlife viewers, more programs to improve wildlife viewing skills, more virtual programs for wildlife viewing, more opportunities to be involved in volunteer research or wildlife data collection activities, more training opportunities for wildlife viewing guides or mentors, more wildlife viewing events, more agency staff to support wildlife viewing, and more accessible features in wildlife viewing locations (Table 137).

COVID-19: Preferred state agency communication

Finally, we also examined ways state agencies can communicate with wildlife viewers based on these groups. While there were some differences in the top three items, based on means, across the four groups, all respondents were most interested in state agency websites, printed materials (such as brochures and maps), and email updates to receive information from their state agency. Chi-squared tests revealed a number of statistically significant differences across all four groups. Approximately half of all retained (52%), churned (49%) and reactivated (50%) viewers expressed interest in receiving information from state agency websites, compared to only 39% of recruited viewers ($\chi^2 = 17.170$ $df = 3$, $p < .001$; Table 138; Figure 124).

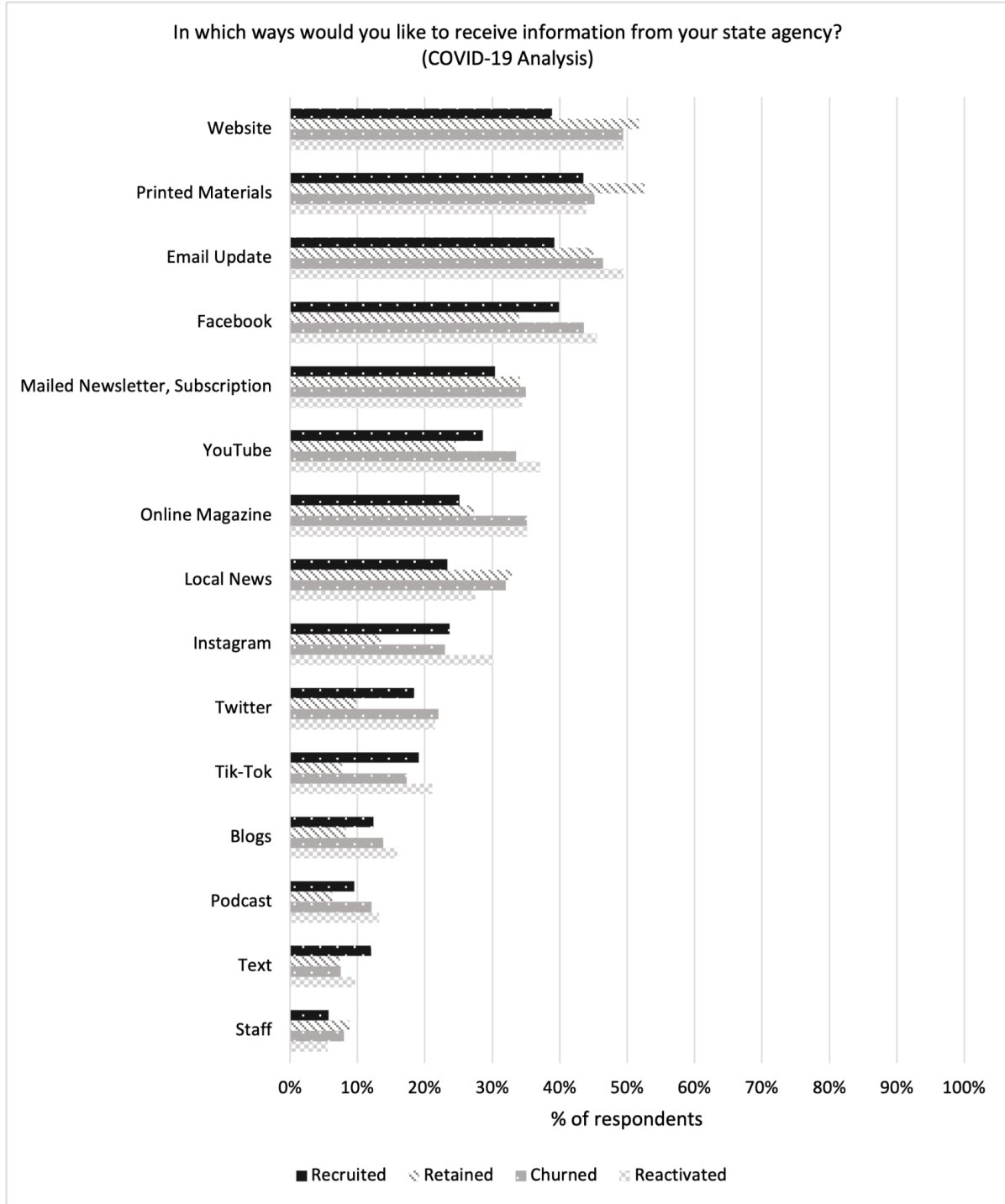


Figure 124. Preferred communication, COVID-19

Preferred method of communication for state agency information to wildlife viewers nationwide for recruited, retained, churned, and reactivated groups. Note that individual categories sum to more than 100% because respondents were able to select more than one option to reflect their preferred method of communication. Chi-square tests indicated significant differences for all communication methods with the exception of mailed newsletters or subscriptions (Table 138).

RECOMMENDATIONS

Background

Recommendations for state agency engagement with wildlife viewers based on the findings of the Wildlife Viewer Survey were co-produced with state agency staff, as well as some local and federal agency and NGO staff, at the Wildlife Viewing and Nature Tourism Academy in February 2022. An all-day co-production workshop engaged 80 participants from 24 states in-person, as well as 12 additional state agency participants from the project Steering Committee via Zoom. The workshop included a keynote presentation and three “deep dive” sessions delivered by the research team during the first half of the day. Our keynote presentation provided a review of project methodology and explored results from over two dozen survey items. The first deep dive session reviewed the impacts of the COVID-19 pandemic on overall participation in wildlife viewing and suggested utilizing the R3 framework to plan for wildlife viewing in the COVID-19 era and beyond. Next, our second deep dive session explored diversity, equity, and inclusion in wildlife viewing by comparing identity measures for white wildlife viewers to Black, Indigenous, and people of color (BIPOC) wildlife viewers. Finally, our third deep dive session explored wildlife viewers’ trust in and familiarity with agencies, as well as their interests in funding the work of agencies.

As part of the co-production workshop, our Virginia Tech team also presented with two state agencies who are using survey data on wildlife viewers collected by our research team in their states, with the aim of demonstrating how other state agencies might apply survey results in planning for meaningful engagement with viewers. First, the Minnesota Department of Natural Resources Nongame Wildlife Program and our team members presented on how they are extending our research to explore connections with the Nongame Wildlife Program and conservation activities in the state, including how to foster greater BIPOC representation in their outreach and programming efforts. Second, the Virginia Department of Wildlife Resources and our team described the design and implementation of their Wildlife Viewing Plan (VA DWR, 2021) based on data from the Wildlife Recreation Study (Grooms et al. 2020) and a concurrent stakeholder engagement process (Grooms et al. 2020) we previously conducted in Virginia.

Throughout the presentations, participants (remote and in-person) had the opportunity to share their reflections on the utility and applications of the results via Padlet, a web-based collaboration tool. During the final afternoon wrap-up session, participants discussed six prompts and questions in small groups. Prompts included such topics as, “What do you need from the Wildlife Viewing and Nature Tourism Working Group?” and “Barriers to applications.”

Small groups posted notes from their discussions on Padlet. Additionally, we took extensive field notes during full group discussions of the prompts. Over 300 comments and questions were provided in the Padlet and through large group discussion.

Our analysis of these comments and questions, as well as our intimate understanding of the findings, revealed **five broad recommendations**:

1. Respond to demand for agencies to develop programs and engage viewers
2. Broaden constituency of agencies through viewing support with underserved groups
3. Develop financial support opportunities for viewers
4. Support agencies in implementing results
5. Conduct additional research to fill wildlife viewing information gaps

Below we detail the basis for each recommendation in the survey results, make connections to other existing social science research that supports the recommendation, and detail suggested action. We also provide call-out boxes with examples of state agencies that have implemented programs that align with the recommendations provided.

Respond to demand for agencies to develop programs and engage viewers

Engaging nonconsumptive recreationists serves as an opportunity for state agencies to expand their constituency and achieve their relevancy goals (AFWA 2016) by addressing a group not currently involved in hunting and angling. Yet, our findings indicate that both consumptive viewers (viewers who also fish or, in fewer cases, also hunt, or both) and nonconsumptive viewers (viewers who do not engage in hunting or fishing) welcome additional programs, services, and opportunities for viewing and conservation activities from state agencies. In fact, while consumptive and nonconsumptive recreationists are often treated as separate groups, our findings from this study and research published elsewhere (e.g., Cooper et al. 2015; Grooms 2021) indicate that interest in wildlife viewing is a common ground for many wildlife recreationists. Specifically, one-quarter of both consumptive and nonconsumptive viewers believe their state fish and wildlife agency is not prioritizing programs for viewers enough. Additionally, our findings show that some consumptive recreationists desire additional support from their agencies beyond hunting and angling. Across all wildlife viewers, programs and services of particular interest include more information about wildlife in their states and where to view wildlife, as well as access to more viewing locations. To connect to the largest number of viewers, this information could be shared through their state agency's website, printed materials, email updates, or Facebook. This information should relate to birds and terrestrial mammal viewing opportunities which pique the interests of over two-thirds of viewers each, but all types of wildlife were of interest to at least one-quarter of viewers.

Programs

As agencies continue to develop programs to engage viewers, it is critical to keep in mind that the majority of wildlife viewers are beginner to intermediate viewers and prefer to view around their homes. A mere 10% of the wildlife viewers we surveyed self-identified as advanced or expert viewers. Additionally, agencies will connect with more viewers if they develop means to serve those who view around the home—these constitute three-quarters of viewers. Further, the predominant barrier to viewing reported by respondents was distance to viewing sites, which could be addressed with programs viewers could do on their own at home or nearby the home. For example, programs to support these interests might include information on how to responsibly feed birds, as more respondents participated in bird feeding than any other form of wildlife viewing. State agencies that prefer not to encourage bird feeding might aim to harness viewers' interest in wildlife around the home by encouraging interest in planting wildlife habitat at home. Importantly, this activity provides an opportunity to engage viewers with the wildlife they appreciate in new ways, since across the forms of wildlife viewing explored in our survey, the fewest number of wildlife viewers currently participate in establishing or maintaining wildlife habitat. We recommend first, though, that agencies aim to better understand the barriers that prevent more wildlife viewers from establishing wildlife plantings, rather than feeding wildlife from feeders.

Conservation

Respondents were not only interested in information about wildlife viewing and locations, but there was also interest expressed in conservation activities with or in support of agencies. Across a variety of conservation activities, respondents were most interested in participating in trash and litter pick-ups. Community clean-ups or other conservation events could be an avenue to build relationships with viewers and possibly serve as a steppingstone to cultivating interest in participating in additional conservation activities, such as collecting data about wildlife and habitat or educating others about wildlife. On average, viewers were also more likely to participate in data collection with their agencies than independent of them, highlighting an opportunity for the development of community science programs with wildlife viewers.

COVID-19 changes in viewing

Lastly, as state agencies develop programs and opportunities to support wildlife viewers, they need to consider the context of pandemic changes in viewing partners. In particular, while a quarter of viewers reported that they stopped viewing in the first year of the pandemic, about half of these “churned viewers” anticipated restarting their participation in wildlife viewing the

following year. Our findings indicate that state agencies can support all wildlife viewers, regardless of their recruitment, reactivation, retention, or churn during the first year of the pandemic by providing more information about wildlife in their state, more information about where to see wildlife, and access to more places to view wildlife. Uniquely, compared to the other groups, churned viewers more often indicated that agencies could support their viewing experiences by providing more programs to improve their wildlife viewing skills. The viewers who were retained through the first year of the COVID-19 pandemic need the least support from state agencies.

Broaden constituency of state agencies through viewing support with underserved groups

These recommendations provide guidance on how to increase BIPOC participation in wildlife viewing, foster greater support and representation in wildlife viewing, and internalize the importance of identifying as wildlife viewers. We also highlight actions to avoid while considering more inclusive wildlife viewing management. We found that the most underrepresented group in our survey sample were BIPOC viewers. These viewers receive more social support from all groups (family members, peers, mentors, and friends) when compared to White respondents, highlighting the importance of community for this group of viewers.

BIPOC wildlife viewers

Black, Indigenous, and people of color (BIPOC) have been historically underserved in wildlife recreation (Flores et al. 2018; Loukaitou-Sideris & Mukhija 2019; Sánchez et al. 2020) and by state and federal wildlife agencies, in particular (Winter et al. 2019; Thomas et al. 2022). The BIPOC percentage of our sample, 19%, was not representative of the American population of 42%, indicating that BIPOC are underrepresented in wildlife viewing (US Census Bureau, 2021). Our finding that the role of social connections is critical to addressing this lack of involvement in wildlife viewing among BIPOC communities corroborates other research like the “Don’t Loop” in birdwatching (Robinson, 2005). That is, if people do not see themselves reflected among birdwatchers, or if they do not know or meet others like them who birdwatch, they will not become involved in birdwatching. State agencies can contribute to breaking the “Don’t Loop” in several ways. One way is by considering BIPOC representation among their staff. A few state agencies have laid a strong foundation for addressing this issue by hiring Diversity Directors or similar positions. In South Carolina, the Department of Natural Resources has hired Black and Hispanic staff to coordinate efforts to engage with those particular communities (see South Carolina case study; Page 164). This commitment to building lasting relationships with communities of color can lead to sustainable and meaningful BIPOC involvement in recreation (Winter et al. 2019).

South Carolina Case Study: BIPOC Community Engagement



Project Description

The South Carolina Department of Natural Resources (SCDNR) embraced the task of reaching underrepresented audiences by creating a unique program in 2015, known today as SCDNR Community Engagement. In the early stages, the SCDNR strived to serve the fast-growing but unengaged Hispanic population of the state, so it was essential to hire a bilingual candidate with a background in wildlife management, conservation, and education. This candidate was found through an internship opportunity offered at one of the department's Wildlife Management Areas and promoted by a partner local technical college. For two years, the Hispanic Outreach Coordinator established bilingual resources and outreach strategies that proved to be successful. Thanks to that initial success, the agency decided to expand its efforts and developed a similar strategy to reach the Black population in the state as well.

Main Project Goals

The main goals of the Community Engagement Program are to:

1. Promote awareness of the agency.
2. Promote SCDNR's conservation initiatives and outdoor opportunities to new audiences.
3. Facilitate and improve communication between the public and agency staff.
4. Increase participation in the existing SCDNR programs and services for both Hispanic and Black populations in South Carolina.

Outcomes

Since its inception, the SCDNR Community Engagement Program has served approximately 17,000 Hispanic and 26,000 Black participants in South Carolina. Staff host or co-host educational programs related to hunting, fishing, hiking, and birding; and participate in public events like public health fairs, cultural festivals, career and sports days. In response to the pandemic and cancelation of in-person events and education offerings, the program shifted priorities. The program has been working toward starting a "How To" video series on social media and a partnership with Clemson University to conduct research related to potential constraints of Hispanic populations to enjoying the outdoors.

Additional outcomes involve:

- Internship opportunities targeting underrepresented candidates/areas
- Partnerships through events and sponsorships with non-traditional organizations
- Integrating representation of diverse audiences in educational, marketing and outreach materials

Additional Information: <https://www.facebook.com/SCDNRspanol>
<https://www.facebook.com/groups/scdnrcommunityengagement>



Nature Hike at Wateree River Heritage Preserve and Wildlife Management Area, March 2019 (KJ)



Nature Hike at Wateree River Heritage Preserve and Wildlife Management Area, March 2019 (KJ)



Nature Hike at Wateree River Heritage Preserve and Wildlife Management Area, March 2019 (KJ)



Saluda River Walk, March 2022 (CF)



Saluda River Walk, March 2022 (CF)

BIPOC respondents to this survey indicated that while wildlife viewing was important to their lives, many did not consider themselves to be wildlife viewers. This follows similar trends seen in environmentalism, showing that while BIPOC tend to be more concerned about environmental issues than White people, they do not consider themselves to be environmentalists (Pearson et al. 2018). A second way that agencies can break the “Don’t Loop” is by providing notable examples of BIPOC wildlife viewers in communication materials and events (Robinson, 2005). This representation can play a role in internalizing identity as a wildlife viewer and encouraging participation in viewing as a whole. While many BIPOC recreationists enjoy wildlife viewing, they may not feel welcome to events or programs marketed for viewers, and agencies should take care to avoid tokenism (i.e., making a symbolic effort rather than being truly committed to addressing underrepresentation) in hiring or media. Instead, agencies can offer programs and events for BIPOC wildlife viewers, ideally hosted by BIPOC staff, which can help increase feelings of inclusion in organized viewing activities (Bowden, 2021).

Building relationships with BIPOC communities is a vital step to lasting and equitable engagement. Agencies can build these relationships through mutually-beneficial partnerships with BIPOC-serving organizations in outdoor recreation at both the national (e.g., Outdoor Afro) and local levels. They can also support the integration of nature- and wildlife-related programming into the work of BIPOC-serving organizations that may not focus on outdoor recreation per se, such as work in collaboration with community centers, churches, or civic organizations. It is important that agencies take care in their partnerships with BIPOC-serving organizations to avoid being extractive and instead focus on building relationships that benefit the BIPOC organizations and communities as well as the agency (Heaney et al. 2011; Pandya 2012; Balazs & Morello-Frosch 2013; Davis & Ramirez-Andreotta 2021).

People with disabilities

We found that 39% of wildlife viewers experienced *somewhat to a great deal* of accessibility challenges, meaning “the difficulties someone experiences in interacting with or while using the physical or social environment while trying to engage in a meaningful activity (such as wildlife viewing). This may be a result of a mobility challenge, blindness or low vision, intellectual or developmental disabilities (including Autism), mental illness, being Deaf or Hard of Hearing, or other health concerns” (Birdability, 2022). Compared to those without accessibility challenges, wildlife viewers who reported accessibility challenges were younger and limited more by all the barriers to viewing we assessed, in particular, safety perceptions, transportation, facilities, social support, and crowding. Additionally, more wildlife viewers with accessibility challenges expressed interest in accessible features, more staff to support wildlife viewing, training for wildlife viewing guides, and a variety of wildlife viewing-related programming opportunities. State agencies could look for opportunities to connect with local organizations dedicated to

supporting people living with disabilities to collaborate on developing further wildlife viewing opportunities.

Develop financial support opportunities for viewers

Increase familiarity with the agency

Similar to research previously conducted in Virginia (Grooms et al., 2020), our findings in this study suggest that viewers' familiarity with state agencies, rather than trust, contribute to their likelihood to contribute financially. We also found that nonconsumptive viewers were significantly less familiar with state agencies than consumptive viewers. Thus, we recommend that state agencies target increasing familiarity and new programming to nonconsumptive viewers to build their relevancy. State agencies can accomplish this through programming that engages viewers, as described above. State agencies can also collaborate with marketing consultants and professionals to develop tailored approaches for reaching viewers within their state. Broadly, we recommend utilizing social media-targeted advertisements (e.g., sponsored Instagram posts, Facebook advertisements) toward the desired audience (e.g., younger age, outdoor recreation interest, and other demographics). Based on survey findings, we recommend these communications and media include a) information about wildlife in the state, b) information about where to view wildlife, and c) promotion of existing locations where wildlife can be viewed.

Nonconsumptive viewer funding opportunities

Following the building of viewers' engagement and familiarity with the state fish and wildlife agency, we recommend developing means for nonconsumptive wildlife viewers, in particular, to support the agency (see Arizona case study; Page 167). Considering the interest in purchasing lottery tickets and tangible products, state agencies could consider promoting lottery tickets (see Colorado case study; Page 169), wildlife viewing products (binoculars, guides, other merchandise) branded with the state agency logo (see Florida case study; Page 168). These efforts serve two purposes: they will help increase wildlife viewers' familiarity with state agencies and their wildlife viewing programs while also providing a way for them to contribute financially. Additionally, we recommend that state agencies consider the development of a wildlife viewer pass or membership similar to the Virginia DWR's "Restore the Wild Membership" (see Virginia Case study; Page 170). Such a membership could provide wildlife viewers with an access pass, potentially to Wildlife Management Areas and/or other perks (e.g., merchandise, wildlife viewing equipment) based on purchase level. This would provide a way for state agencies to increase their connection with viewers in the state while providing a viewer-specific opportunity for financial contributions.

Arizona Case Study: Wildlife Viewing Program Gaining Financial Support



Project Description

The Arizona Game and Fish Department's (AZGFD) Wildlife Viewing Program (WVP) was first implemented in 2006 with a single coordinator position. The initial program goal was to broaden AZGFD's recognition and support through innovative and compelling programs that engage the public with wildlife, promote wildlife appreciation and conservation, and attempt to recover program costs. The WVP became fully staffed with two positions in 2015, one coordinator and one program manager.



Desert Bighorn Sheep (Ovis canadensis nelsoni) as seen from the Viewing Tour Boat.

Programming consists of a variety of events ranging from rare events (e.g. bat netting and bighorn sheep photography tours) to common events (e.g. deer relocation and elk viewing and birding), which are field-based, as well as an ongoing series of virtual and in-person wildlife lectures. The WVP charges small fees to the public for attending these events, highlighting the willingness of non-traditional constituents to financially support the Department. The recovered costs enable staff to expand the range and number of events that the program can host each season.

Main Project Goals

1. Engage non-traditional constituents in a sustainable cost-recovery, self-funded model of wildlife viewing program opportunities.
2. Offer experience-based programming in order to educate the public and provide wildlife viewing ethics and safety basics, empowering these customers to increasingly start engaging in wildlife viewing pursuits of their own.
3. Through successful programming and strong engagement with the public, help illustrate to executive staff and the Commission a willingness among said constituents to financially and politically support the work of their state wildlife agency.

By offering experience-based programming, both traditional and non-traditional constituents have shown a high level of support for these programs, and they regularly request more events on an even wider variety of wildlife viewing-based topics and opportunities.

Outcomes

To date, the WVP has proven successful in obtaining support with a >99% customer satisfaction rate via post-event surveys (greater than 89% of those respondents rating their satisfaction with the programs as "highly satisfied"). The WVP also enjoys a high rate of return patronage by constituents that have attended previous WVP programs (from 35% - 56% attended multiple WVP events each year). The cost-recovery dollars obtained through this programming comes into the WVP budget and can then be used to further expand wildlife education and programming throughout the state.



Bighorn Sheep Viewing Tour via AZGFD pontoon boat.

The increase to the operating budget via these cost-recovery efforts also allows the Program to operate and maintain multiple streaming wildlife cameras that are viewable by the public. These Arizona wildlife cameras offer wildlife viewing opportunities to people all over the globe. An extremely conservative estimate of the total number of constituents that the WVP has reached through all programming exceeds 4,250,000 individuals, providing an unprecedented opportunity for the delivery of Departmental messaging to large numbers of people.

Additional Information: <https://www.azgfd.com/wildlife/viewing/>

Florida Case Study: Online Store



Project Description

The Florida Fish and Wildlife Conservation Commission (FWC), in partnership with the Fish and Wildlife Foundation of Florida, established an online store where wildlife viewers can purchase Great Florida Birding and Wildlife Trail (GFBWT) and Wings over Florida (WOF) branded products to help support wildlife conservation in Florida. These products include entry level binoculars and logoed products such as reusable bags and T-shirts. To eliminate the need for maintaining inventory, the program uses a print-on-demand service for most products. This allows products to be designed quickly and easily, to update selections frequently, and to create tailored products for special events. For example, FWC recently began a program within their online store highlighting products depicting artwork of Florida wildlife by wildlife artists which has proven successful in terms of popularity and sales.

Main Project Goals

The online store has three overarching goals:

1. Provide products that expand recognition of our brand by displaying both the Great Florida Birding and Wildlife Trail and Wings Over Florida logos. Recent research has shown that the GFBWT's Swallow-tailed Kite logo is highly recognized among wildlife viewers in Florida. Additionally, the products raise awareness of the WOF program to wildlife viewers actively using the GFBWT and its products.
2. Provide an income stream for program materials not easily purchased with state funds. Funds from the sale of products are deposited into the Florida Fish and Wildlife Foundation support corporation account. In addition to program support, 10% of the store profit supports on-the-ground projects through the FWC's volunteer program, projects directly benefitting Florida's wildlife.
3. Provide an option to beginning wildlife viewers to purchase entry level binoculars at a retail price with all profit supporting the Trail and bird conservation. This is done through a partnership with Opticron North American Optics.

Outcomes

The online store, particularly the print-on-demand process, has allowed staff to be more creative in designing products. With no upfront costs beyond setting up the storefront, products can be added and removed easily. Since 2012, with little marketing or promotion and mostly selling products directly at a few festivals a year, the online store generated \$35,000 in sales resulting in an income of \$18,268. Although still in its infancy (created in December of 2020), the print-on-demand products have proven to be successful financially currently generating 92% of our overall sales and profit. Although not measured at this point, we have begun to see social media posts displaying GFBWT products and are starting to realize the goal of increasing brand recognition.

*Images: Sample of Featured Artist products available for a three-month period.
Further Information:
Store website: <https://floridabirdingtrail.com/gfbwt-store/>*



Colorado Case Study: GOCO Lottery

Project Description

In 1992, voters approved a constitutional amendment to create Great Outdoors Colorado (GOCO), establishing a trust fund committed to investing in the future of Colorado's outdoors via parks, trails, wildlife habitats, river corridors, playgrounds and open spaces. Under the Colorado Constitution, GOCO receives 50 percent of the state's net lottery proceeds, up to a cap that is adjusted for inflation each year and is managed by an independent board (appointed by the Governor and confirmed by the state Senate) using no tax dollars. Half of GOCO funds is dedicated to Colorado Parks and Wildlife projects, including building and enhancing parks, trails and facilities; providing water for recreation; preserving natural areas and protecting wildlife species; and supporting environmental education/interpretation, wildlife viewing, and volunteer programs. The other half of GOCO funds is invested in competitive grants to local governments and land trusts.

Main Project Goals

The GOCO mission is to help preserve, protect, enhance, and manage the state's wildlife, park, river, trail, and open space heritage, and the project vision is to fulfill the trust of the people of Colorado through wise investments in the great outdoors.

Guiding Principles:

1. Advance equity.
2. Lead with legacy in mind.
3. Leverage innovation and be flexible to increase impact.
4. Evolve how to approach investment areas.
5. Be a responsive and cooperative partner.

Project made possible by this funding: Generation WILD

Generation Wild launched in 2015 to help community-based groups break down barriers to the outdoors through new places to play, outdoor programs and activities, and employment opportunities in the outdoors.

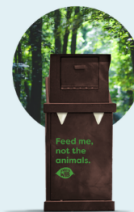
There are 12 Generation Wild communities throughout Colorado. Each one brings together a coalition of organizations investing GOCO funding to break down barriers to getting youth and families outside. These communities are creating incredible places for recreation and designing outdoor programs for all ages and abilities. Many of these communities are building gear libraries, so people can check out the right outdoor equipment for adventuring.



GOCO funding supports wildlife viewing festivals, such as the Georgetown Bighorn Sheep Festival.



Generation Wild provides a variety of educational materials for parks and outdoor spaces to inspire connections to nature and encourage outdoor stewardship.



Since our inception in 1992:



Since 1992, GOCO has invested a portion of Colorado Lottery proceeds to help outdoor organizations, including local governments, nonprofits, and Colorado Parks and Wildlife, complete more than 5,500 conservation and recreation projects in all counties and in every corner of the state.

Further Information

Great Outdoors Colorado: <https://goco.org/>
 Great Outdoors & Colorado Parks and Wildlife Annual Report: https://goco.org/sites/default/files/CPW_AR_forweb_1.pdf
 GOCO 2021 Annual Report: https://goco.org/sites/default/files/GOCO_AR2021_F.pdf

Virginia Case Study: Restore the Wild



Project Description

Restore the Wild was developed in 2018 as an effort to redefine Virginia Department of Wildlife Resource's existing Access Permit. Restore the Wild is a membership initiative designed to provide an opportunity for likeminded individuals to partner with DWR's mission to conserve and manage Virginia's wildlife. All proceeds from the membership initiative are earmarked for habitat restoration. Individuals may join Restore the Wild at different levels of membership depending on their desired level of support, with the smallest membership level of Restore the Wild at \$25.00, which is equivalent to the cost of a hunting or fishing license and provides the same benefits and status as a license. Benefits of the Restore the Wild membership and DWR licenses include: access to all of DWR's properties including 225,000 acres of wildlife management areas, DWR's boat ramps that access over 25,000 miles of streams, and more than 175,000 acres of lakes and reservoirs.

Main Project Goals

The Restore the Wild initiative had two main goals:

1. Redefine the existing Access Permit as a conservation fund earmarked for habitat restoration projects through a membership initiative titled, "Restore the Wild."
2. Broaden support for DWR through the creation of a targeted funding mechanism and associated branding that is relevant to new audiences, fosters relationship-building, and provides a call-to-action.

Outcomes

Restore the Wild has successfully raised habitat conservation funds each year since its inception, bringing in \$22,000 dollars in its first year, \$67,000 in year two, and it is on track to exceed the year two total this year (2022). Restore the Wild has evolved to include a more general call for support since the inception of the initiative in 2018. DWR uses the term "Restore the Wild" to provide a simplified call to action and is intended to provide opportunities for everyone to support the mission of conserving and managing Virginia's wildlife. This simplified call to action allows individuals to not only become members but to donate their time, money or expertise for the cause of conserving and managing Virginia's wildlife (i.e. Restoring the Wild). DWR continues to look for ways to allow people to connect to DWR and its mission by providing unique events and other opportunities like a virtual Restore the Wild run and unique citizen science projects.



From left to right:
1) Art submitted for restore the wild competition
2 and 3) Materials associated with Restore the Wild's "Run for the Wild"

Further Information:
<https://dwr.virginia.gov/restore-the-wild/>

Build awareness

Finally, we recommend increased communication with wildlife viewers about existing nonvoluntary mechanisms of supporting agencies financially. Consistently across the mechanisms for funding, respondents reported more interest in future financial support of agencies than they reported having actually engaged in in the past. Further, given that one-third of wildlife viewers had purchased a required habitat stamp and/or fishing licenses, state agencies may consider putting wildlife viewing language on their website near the purchase portal for these items. For example, in Virginia, when someone purchases a fishing license they have the opportunity to also donate to Restore the Wild. Based on our survey findings that viewers reported being more likely to support their agencies financially if their funds would be used in specific ways (e.g., “conservation of rare or vulnerable species” or “conservation of preferred viewing species”), we further recommend language that clarifies what type of effort the donation will benefit.

Support state agencies in implementing results

Agency support of viewing

Our co-production workshop emphasized that state fish and wildlife agencies need support in implementing the results of this study. Despite calls for broadening the relevancy of state agencies to a greater segment of the public, there is still a need for many state agencies to develop the initial internal support for viewer programs before direct implementation of these results can occur. The already-planned webinars on the survey results, as well as potential presentations at the AFWA Directors’ Meeting, the North American Wildlife and Natural Resources Conference, and at regional AFWA meetings, could ensure that agency directors are aware of the compelling results from this survey described above. It is essential to identify champions within the agency directors to secure such speaking opportunities. For example, the Director of the Virginia Department of Wildlife Resources could articulate their state agency’s commitment to using related survey results to develop the wildlife viewing plan that the agency is now implementing. In addition, it may be necessary to develop a compelling short communication product that articulates the importance of engaging viewers to state agencies, calls out some of the key highlights from this research, and connects readers to the full report (e.g., through a QR code).

Finally, the Pathways Human Dimensions conference (May-June 2023) will provide an ideal venue to showcase the role of viewers in the future of agencies. This conference is being hosted by Colorado State University, Virginia Tech, and the Association of Fish and Wildlife Agencies. Multiple agency directors are involved in hosting and speaking at the conference. Additionally,

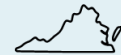
Dr. Dayer (PI for the Virginia Tech research team) will give a plenary presentation on the importance of viewers. We also suggest planning a symposium on the results and applications from this viewer study.

Support in applying results

Equally important to developing support and awareness for wildlife viewing programs within the state agency, state agency staff also called for support in implementing the results of the survey. In particular, they expressed that their strongest barrier to implementation was a lack of expertise for interpreting and applying survey results. This support could be achieved, in part, through staff collaborating with human dimensions specialists at their state agencies. Yet, in many cases, those specialists are spread thin as just one or two staff support the entire state agency. To ease their burden, we recommend a webinar aimed at bringing state-level human dimensions staff up to speed and highlighting how they can work with the report and dataset to aid their agency in implementing results. State agency staff also expressed an interest in working with the Virginia Tech team given their experience in applying results from a similar survey in Virginia to the development of a comprehensive wildlife viewing plan (See Virginia case study, *Wildlife Viewing Plan*; 173). While the development of such a plan for multiple states would take extensive capacity, a Community of Practice would allow Virginia Tech to support multiple state agencies with implementation simultaneously. Importantly, it would also allow for mutual support among the agency staff implementing results and recommendations within their states, building on the existing culture within the Wildlife Viewing and Nature Tourism Working Group.

In 15 states, the survey was also implemented at the state level providing forthcoming insights on wildlife viewers in their states. These results will be most appropriate for application in those states. For states without state-level data, general patterns from the regional results should in most cases be applicable to guide efforts with wildlife viewers. In our preliminary comparisons of regional and state data, we have found statistically significant differences between state-level results and corresponding regional results for several different survey items, but the differences in results in terms of implications for agency management are not relevant or necessarily applicable.

Virginia Case Study: Wildlife Viewing Plan



Project description

In 2017, the Virginia Department of Wildlife Resources (DWR) contracted with researchers at Virginia Tech to conduct human dimensions research and lead a stakeholder engagement process to develop a Wildlife Viewing Plan. Aiming for the agency to better connect with viewers, the Virginia Wildlife Viewing Plan was jointly developed two groups: an 18-member Technical Advisory Committee (TAC), composed of DWR staff, and a 20-member Stakeholder Advisory Committee (SAC), composed of individuals and organizational representatives with experience and interest in wildlife viewing in Virginia. The plan was informed by research on the behaviors and interests of the growing number and diversity of wildlife recreationists (including birders, other wildlife viewers, hunters, and anglers) throughout the Commonwealth of Virginia. This mixed-methods study consisted of focus groups; a survey distributed to a random sample of Virginia residents and to recreationists currently connected to DWR through license sales, agency communications, or citizen science and a web-based analysis of wildlife viewing organizations in the state. Results from each phase of the Wildlife Recreation Study were presented to the Stakeholder Advisory Committee (SAC) and Technical Advisory Committee during planning meetings in order to support the development of data-driven goals, objectives, and strategies for this Wildlife Viewing Plan.

The SAC and TAC met in person twice in 2019 to identify issues related to wildlife viewing in Virginia and to develop the values statement and goals for the Wildlife Viewing Plan. Due to the COVID-19 pandemic, the planning process transitioned to a web-based format. The SAC and TAC met in a series of seven online meetings to first affirm the values statement and goals of the Wildlife Viewing Plan, followed by a discussion of the general directions and specific ideas for objectives and strategies under each plan goal. In the course of the planning process, the SAC and TAC conducted an analysis of the conditions that may shape the success of the plan, referred to as a SWOT analysis, to strategically consider internal strengths and weaknesses, as well as external opportunities and threats. Content from these joint meetings informed the objectives and strategies and the complete Wildlife Viewing Plan. The rich and innovative ideas that emerged from the planning meetings for specific, actionable steps DWR could take to increase participation in wildlife viewing and conservation and engagement between wildlife viewers and the agency were organized into a list of potential tactics. The plan document was reviewed and revised by the full SAC and TAC in October 2020, and then presented to the Virginia Board of Wildlife Resources in January 2021. With Board approval, the draft plan was posted online for a 30-day public input period beginning February 2021. Written and electronic public comments were considered thoroughly in the plan revision. The SAC and TAC and then the DWR Board endorsed the plan in spring 2021.

Main project goals

1. Develop a 10-year Wildlife Viewing Plan for DWR implementation
2. Engage stakeholders and agency staff throughout the Wildlife Viewing Plan creation
3. Build a stronger relationship between wildlife viewers and the agency through the planning and implementation process
4. Enhance the agency's understanding of wildlife viewers' unique needs and interests so the DWR can better serve this group
5. Ultimately, foster the agency's connection with wildlife viewers to enhance their support of the agency

Outcomes

- First agency Wildlife Viewing Plan engaged over 5000 people in the Commonwealth and endorsed by the DWR Board
- A committee-led by the Executive Deputy Director of the agency-is now guiding the implementation of the plan
- All divisions and programs are involved in implementation & evaluation of the plan

See the plan here: <https://dwr.virginia.gov/wildlife-watching/wildlife-viewing-plan/>



Conduct additional research to fill wildlife viewing information gaps

Identifying research areas of interest

The dataset for this study is extensive, with 4,030 regional respondents and another 13,561 state respondents. A data set of such magnitude with such a breadth of survey items provides endless opportunities for supporting the decisions of state agencies. While the dataset will be made publicly available, there is a benefit to having dedicated time for more analyses and presentation of results for agencies in reports and webinars, especially with associated recommendations for implementation. State agency staff requested some additional analyses to aid them in implementing evidence-based programs and efforts. Some potential analyses included identifying differences across residential location, participation (or lack of participation) in consumptive activities, age, viewing experience, and likelihood to contribute financially to state agencies. For example, agency staff were interested in further understanding urban wildlife viewers, as there was a perception that there is a weaker relationship with state agencies among this group and given the importance of around-the-home viewing revealed in this survey, connection with this audience in urban locations is key. With the consideration of these variables of interest, more advanced modeling is desired to determine which predictors influence participation in wildlife viewing and relationships with state agencies.

Supporting underserved groups through further research

Because this survey covered a breadth of topics, several topics that were not the focus of the project could not be tackled to the extent that may be necessary to inform state agency decisions. Further, some topics would benefit from qualitative insights developed through interviews or focus groups with target groups. While the survey gave general trends, qualitative work can put those trends in context and provide state agencies with more developed insights to inform appropriate actions and next steps. In particular, we recommend that future qualitative research with BIPOC communities could guide agencies in relationship building and developing new programming. BIPOC communities across the U.S. vary significantly in their needs and desires, so it is vital that agencies engage these communities in their own state as opposed to relying on generalized data that may not be relevant to local communities. For example, Virginia Tech is working with the Minnesota Department of Natural Resources Nongame Wildlife Program to facilitate the co-creation of a community science project for BIPOC wildlife viewers, through Community-based Participatory Research, with organizations and agencies that serve these communities (see Minnesota case study; Page 175).

Minnesota Case Study: BIPOC Research



Project Description

The Minnesota Department of Natural Resources Nongame Wildlife Program (MN DNR) is launching a new community science program focused on fulfilling the goals of the state wildlife action plan while also engaging more diverse audiences in conservation-focused participatory science. The MN DNR wants to ensure program offerings benefit volunteers as well as meet conservation goals, but they don't currently have enough information about barriers and needs of conservation-minded individuals from Black, Indigenous, and People of Color (BIPOC) communities in Minnesota.

In May of 2021, the MN DNR began a collaborative social science research project to address this need. They partnered with the Dayer Lab at Virginia Tech to conduct focused research on the conservation needs and goals of Minnesotans, with a specific emphasis on BIPOC communities. The agency hopes to learn what qualities could make the community science program appealing to BIPOC participants and organizations, what may be limiting engagement in community science initiatives, and how to use community science to support organizations that provide programs to BIPOC participants.

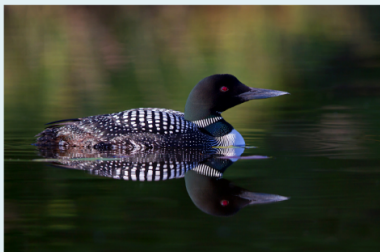
Main Project Goals

1. Fulfill State Wildlife Action Plan objectives with help and support from participants that represent the diverse and changing demographics of Minnesota.
2. To provide support to communities that may not have previously engaged with MN DNR or have access to community science opportunities.

In partnering with local, outdoor focused BIPOC organizations and learning about their needs and wants, MN DNR hopes to ensure that its community science and educational programming is relevant to a wide spectrum of Minnesotans. The relationships formed with community organizations as part of this research will continue to grow and develop and may lead to other connections in the future.

Outcomes

This research is still in progress. Focus groups with local BIPOC community groups are scheduled for fall of 2022, and relevant information gathered at these workshops will be incorporated into program plans moving forward. Through this research MN DNR hopes to gain insights about the needs and goals of conservation-minded BIPOC Minnesotans and where they may overlap with the agency's program goals. MN DNR also hopes to generate specific recommendations about how to mindfully cultivate opportunities for collaboration and partnership. The main goal of this effort is to provide support, build trust, and establish a framework of working relationships that can be expanded upon as more is learned.



From left to right:
1) The Loon, Minnesota's State Bird.
2) Canoeing and Kayaking are popular recreation activities in Minnesota.



Similarly, the single survey item on disabilities indicated that disabilities considerably limit the extent to which about 40% of wildlife viewers participate in wildlife viewing. Future research targeted to people with disabilities could help develop a better understanding of their desired outcomes from participation in wildlife-related recreation and can serve as a platform for agencies to better include this audience.

Evaluation of results

Finally, as with all conservation and management activities, evaluation and monitoring of results can contribute to adapting and improving efforts in implementation. We recommend that agencies set aside some resources to evaluate new efforts created based on the survey results, such as trying a new communications tool. A best practice for developing such evaluations is to develop a logic model when designing a new program or activity. The logic model aids the program designer in thinking through expected outputs and outcomes and how they will be measured. Additionally, if state agencies put a considerable effort into better serving wildlife viewers, a follow-up survey in 5-10 years could track whether there are changes in the needs and interests of wildlife viewers, as well as their perceptions of and engagement with state agencies.

Conclusion

The Wildlife Viewer Survey fills multiple knowledge gaps about wildlife viewers: what they like to participate in, how they view and trust state agencies, what services and programs they wish agencies provided, how they most like to support conservation through action and/or funding, and more. This baseline information can enable agencies to start building or adapting programming, staffing, funding models, and other efforts to better connect and interact with wildlife viewers. In turn, these efforts will enable agencies to become more relevant to a larger constituency than they are currently.

While much work can be done using the data already collected and analyzed in the report, many additional opportunities exist to take this study to the next level through implementing activities at the state level and diving deeper into the data already collected. The WVNT Working Group is poised to support the implementation of these findings. Yet, the full implementation of the recommendations above will be best realized with a phase 2 multi-state grant, allowing the Working Group to continue to work with Virginia Tech.

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dwr.virginia.gov/wildlife-watching/wildlife-viewing-plan/

APPENDIX A. Survey Instrument



Thank you for your interest in taking this survey! Before we get started, we would like to share some information about this research study with you.

ABOUT THIS STUDY

This survey is being conducted by researchers at Virginia Tech, with funding from the Association of Fish and Wildlife Agencies (AFWA) and individual fish and wildlife agencies across the United States. **The goal of this research is to learn about the activities, experiences, and preferences of people who recreationally participate in wildlife viewing**, which includes observing, photographing, or feeding wildlife; improving or maintaining wildlife habitat; or visiting parks and natural areas for the primary purpose of wildlife viewing.

This survey should take you about 15-25 minutes to complete. Your participation in this research study is **voluntary and anonymous**. Your responses will never be presented in a way that they can be connected to your identity. The results of the survey will be published in summary form in reports, graduate theses, and journal articles. Anonymous survey data will be made available to state fish and wildlife agencies and may be archived online in a publicly accessible format. There are **no known risks** associated with this research; there are **no right or wrong answers** to survey questions; and **you can leave the survey at any time**, for any reason.

First, we would like to know about your participation in different kinds of wildlife viewing.

In which, if any, of the following forms of **wildlife viewing** have you participated in the past 5 years?

Note: For this survey, "**wildlife**" refers to all animals, such as birds, fish, insects, mammals, amphibians, and reptiles, that are living in natural environments, including in urban and semi-urban places. Wildlife does not include animals living in artificial or captive environments, such as aquariums, zoos, or museums, or domestic animals such as farm animals or pets. "**Wildlife viewing**" refers to intentionally observing, photographing, or feeding wildlife; improving or maintaining wildlife habitat; or visiting parks and natural areas for the primary purpose of wildlife viewing. Wildlife viewing does not include simply noticing wildlife while doing something else, such as gardening, exercising, hunting, or fishing, or intentionally scouting for game.

(Please select all that apply.)

Closely observing wildlife or trying to identify unfamiliar types of wildlife

Photographing or taking pictures of wildlife

Feeding wild birds

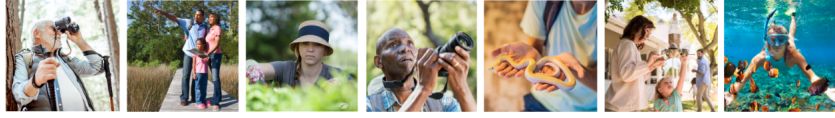
Feeding other wildlife

Maintaining plantings or natural areas for the benefit of wildlife

Visiting parks and natural areas to observe, photograph, or feed wildlife

Taking trips or outings to any other location to observe, photograph, or feed wildlife

I did not participate in any of these forms of wildlife viewing in the past 5 years.

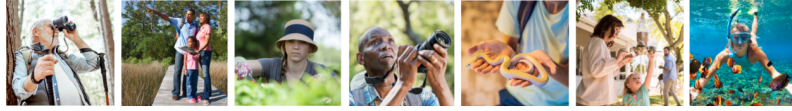


Before we continue with the rest of the survey, we have just a few quick questions about you.

In **what year** were you born?

(Please select your birth year from the drop-down list.)

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Which state do you live in for most of the year?

(Please select a state from the drop-down list.)

What is your gender?

(Please select one.)

Man

Woman

Non-binary

Prefer to not disclose

Prefer to self-describe



What is the **highest degree or level of school** you have completed?

(Please select one.)

- High school diploma, equivalent, or less
- Some college
- Associate's or technical degree
- Bachelor's degree
- Professional, master's or doctoral degree

Now, we would like to ask you more about your wildlife viewing activities.

Which of the following **types of wildlife** are you interested in observing, photographing, or feeding?

(Please select all that apply.)

- Insects or spiders**
(such as butterflies, dragonflies, beetles, etc.)
- Amphibians**
(such as frogs, salamanders, etc.)
- Reptiles**
(such as turtles, snakes, etc.)
- Birds**
(such as songbirds, waterfowl, birds of prey, etc.)

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Land mammals
(such as deer, bears, elk, etc.)

Marine mammals
(such as whales, seals, dolphins, etc.)

Freshwater or saltwater fish
(such as sunfishes, darters, trout, salmon, sea bass, etc.)

None of the above, I am interested in observing, photographing, or feeding other types of wildlife

None of the above, I am not interested in observing, photographing, or feeding wildlife

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How would you **rate your skill level** in wildlife viewing?

(Please select one.)

Beginner

Novice

Intermediate

Advanced

Expert



Next, we would like to know about your expenditures related to wildlife viewing.

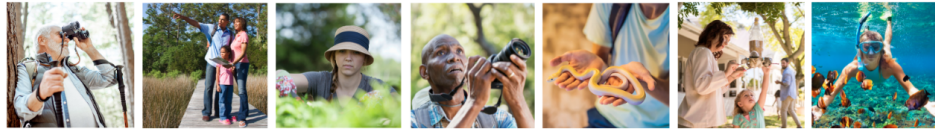
How much money do you spend on the following expenses related to wildlife viewing in a typical year?

***Note:** Throughout this survey we will ask you about your activities during "a typical year." This is because we recognize that the last year has been unusual due to the COVID-19 pandemic, and this may have impacted your participation in wildlife viewing. By "a typical year," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic. If you started viewing wildlife during the pandemic, please answer all questions about "a typical year" for the past year.*

(For each expense category below, please select the response that contains your best estimate of how much you typically spend.)



Trip-related costs for wildlife viewing (such as transportation, lodging, guide fees, or access fees)



All other wildlife viewing expenses and equipment (such as binoculars, hiking or boating equipment for viewing, field guides, bird feeders or bird food, or membership dues for wildlife viewing organizations)



Now, we would like to know more about the role of wildlife viewing in your life.

To what extent do you **agree or disagree** with the following statements?

(Please select one response per statement.)

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think of myself as a wildlife viewer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being a wildlife viewer is an important part of who I am .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wildlife viewing has a central role in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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- A lot of my life is **organized** around wildlife viewing.
- Wildlife viewing is **not an important** part of my life.
- People who **look like me** participate in wildlife viewing.
- I feel **welcome** among other wildlife viewers.
- Being a wildlife viewer is **not a key** part of who I am.
- I **teach** or **mentor** others in wildlife viewing.

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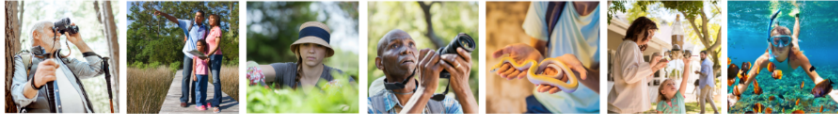


We are also interested in your history with wildlife viewing.

How did the **COVID-19 pandemic** impact your overall participation in wildlife viewing?

(Please select one.)

- No impact;** I was wildlife viewing prior to the COVID-19 pandemic, and I continued wildlife viewing during the pandemic.
- I was wildlife viewing prior to the COVID-19 pandemic, but **I stopped wildlife viewing** during the pandemic.
- While I previously participated in wildlife viewing, I was not currently wildlife viewing when the COVID-19 pandemic started. During the pandemic, I **started wildlife viewing again.**
- I **started wildlife viewing for the first time** during the COVID-19 pandemic.



For about **how many years** have you participated in wildlife viewing?

(Please select the category that contains your best estimate.)

In this section of the survey, we will ask you about how much time you spend wildlife viewing in different locations. The first question asks about the number of days you spend wildlife viewing in a *typical year*. The next two questions ask you about how many days you spent wildlife viewing in the *past year* and how much time you think you will spend wildlife viewing in the *upcoming year*.

First, **how many days** do you spend wildlife viewing in each of the following locations **in a typical year?**

Note: By "a typical year," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.

(Please select the response that contains your best estimate for the number of days you spend wildlife viewing in each location. If you do not typically participate in wildlife viewing in these locations, please select 0 days.)

	0 days	1-30 days	31-60 days	61-90 days	91-120 days	121-150 days	151-180 days	181-210 days	211 or more days
Around or within 1 mile of your home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More than 1 mile away from your home, but within your state	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outside of your state or outside of the United States	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



In this section of the survey, we will ask you about how much time you spend wildlife viewing in different locations. The first question asks about the number of days you spent wildlife viewing in *the first year of the COVID-19 pandemic*. The next question asks how much time you think you will spend wildlife viewing in *the upcoming year*.

How many days did you spend wildlife viewing in each of the following locations **during the first year of the COVID-19 pandemic** (March 2020 - February 2021)?

(Please select the response that contains your best estimate for the number of days you spent viewing in each location. If you did not participate in wildlife viewing in these locations in the first year of the COVID-19 pandemic, please select 0 days.)

	0 days	1-30 days	31-60 days	61-90 days	91-120 days	121-150 days	151-180 days	181-210 days	211 or more days
Around or within 1 mile of your home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More than 1 mile away from your home, but within your state	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outside of your state or outside of the United States	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How many days do you think you will spend wildlife viewing in each of the following locations **in the next 12 months**?

(Please select the response that contains your best estimate for the number of days you expect to spend wildlife viewing in each location. If you do not expect to participate in wildlife viewing in these locations in the upcoming year, please select 0 days.)

	0 days	1-30 days	31-60 days	61-90 days	91-120 days	121-150 days	151-180 days	181-210 days	211 or more days
Around or within 1 mile of your home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More than 1 mile away from your home, but within your state	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outside of your state or outside of the United States	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Now, we would like to know more about where you participate in wildlife viewing in [\\${q://QID244/ChoiceGroup/SelectedChoices}](#).

In a typical year, in **which locations** do you participate in wildlife viewing in [\\${q://QID244/ChoiceGroup/SelectedChoices}](#)?

Note: By "a typical year," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.

(Please select all that apply.)

My own home or property

Property of friends or family

Other privately-owned areas (such as lands owned by land trusts, non-profit organizations, private companies, or individuals)

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- Locally-managed areas (such as town or county parks, trails, or open spaces)
- State-managed areas (such as state parks, forests, boat landings, fishing areas, conservation areas, or Wildlife Management Areas)
- Federally-managed areas (such as National Parks, National Wildlife Refuges, Bureau of Land Management Land, Waterfowl Production Areas, or National Forests)
- Tribal lands
- I am unsure who owns or manages the areas where I participate in wildlife viewing.
- I do not participate in wildlife viewing in any of the above locations.



Next, we would like to understand the factors that support and limit your participation in wildlife viewing.

To what extent do people in each of the following groups **encourage your participation** in wildlife viewing?

(Please select one response per statement.)

	Not at all	Very little	Somewhat	Quite a bit	A great deal
Family member(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friend(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mentor(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peer(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

To what extent do you experience **accessibility challenges** related to wildlife viewing?

Note: By "**Accessibility challenges**" we mean the difficulties someone experiences in interacting with or while using the physical or social environment while trying to engage in a meaningful activity (such as wildlife viewing). This may be a result of a mobility challenge, blindness or low vision, intellectual or developmental disabilities (including Autism), mental illness, being Deaf or Hard of Hearing, or other health concerns. (Definition from Birdability.org)

(Please select one.)


Not at all

Very little

Somewhat

Quite a bit

A great deal

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To what extent do each of the following **limit the extent of your participation** in wildlife viewing in a typical year?

Note: By "**a typical year**," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.

(Please select one response per statement.)

	Not at all	Very little	Somewhat	Quite a bit	A great deal
Lack of free time to participate in wildlife viewing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Few people who support your wildlife viewing activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Few people to participate in wildlife viewing with	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of organized viewing opportunities within your community or social groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<hr/>					
Lack of wildlife viewing skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of access to equipment or supplies for wildlife viewing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial costs associated with wildlife viewing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Distance to high-quality locations for wildlife viewing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not knowing where to go wildlife viewing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of transportation to wildlife viewing locations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accessibility challenges for yourself or the people you go wildlife viewing with	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of facilities at wildlife viewing locations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety concerns when wildlife viewing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crowds in wildlife viewing locations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We are also interested in your participation in other kinds of outdoor recreation.

Which of the following **outdoor activities**, if any, do you participate in during a typical year?

Note: By "a typical year," we mean a recent year (within the last ~5 years) that was not impacted by unusual circumstances like the COVID-19 pandemic.

(Please select all that apply.)

Road or mountain biking

Camping

Rock climbing or bouldering

Fishing

Foraging
(for wild foods such as mushrooms or berries)

Geocaching

Hiking or backpacking

Horseback riding

Hunting

Botanizing or viewing wildflowers, other plants, or fungi

Recreational shooting sports or archery

Swimming

Motorized boating

Non-motorized boating
(such as kayaking or canoeing)

Off-roading or use of Off Highway Vehicles
(such as ATVs or snowmobiles)

Running, jogging, or walking

Winter sports
(such as skiing, snowboarding, or snowshoeing)

I do not participate in any of these activities.

Now we would like to know more about your interest in participating in wildlife or habitat conservation activities in the future.

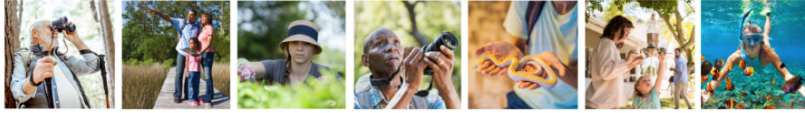
How likely would you be to participate in each of the following **conservation activities** in the next 5 years, if you had the opportunity to do so?

(Please select one response per conservation activity.)

	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Informing or teaching others about wildlife conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhancing wildlife habitat (the place or environment where wildlife live and grow)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Participating in civic engagement (such as voting or advocating) related to wildlife conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collecting data on wildlife or habitat to contribute to science or management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Donating money to support wildlife conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Purchasing products that benefit wildlife or whose proceeds support conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cleaning up trash or litter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



In this section of the survey, we would like to know more about your experiences with and thoughts about $\{e://Field/StateAgency\}$, the state agency responsible for conserving fish and wildlife and their habitats and managing wildlife-related recreation in $\{q://QID244/ChoiceGroup/SelectedChoices\}$, among other things.



How **familiar** are you with $\{e://Field/StateAgency\}$?

(Please select one.)

Not at all familiar

Slightly familiar

Moderately familiar

Very familiar

Extremely familiar

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Regardless of your level of familiarity with $\{e://Field/StateAgency\}$, we are interested in your thoughts about **how the agency currently prioritizes** programs and services that support wildlife viewing. Please complete the following statement:

The level at which $\{e://Field/StateAgency\}$ prioritizes programs and services that support wildlife viewing is...

(Please select one.)

- Far too low
- Too low
- About right
- Too high
- Far too high
- I don't have an opinion.



We are also interested in any experiences you may have with the programs and services offered by $\{e://Field/StateAgency\}$.

$\{e://Field/StateAgency\}$ offers a variety of **programs and services** that connect people with wildlife and support wildlife viewing. Which of the following $\{e://Field/StateAgency\}$ programs and services, if any, have you **participated in or used** in the past 5 years?
(Please select all that apply.)

- Volunteer research or wildlife data collection opportunities
- Volunteer opportunities, not related to research or data collection
- Technical assistance or information about improving wildlife habitat
- Information about wildlife viewing opportunities in the state
- Information about wildlife in the state
- Programs or presentations for groups or clubs
- $\{e://Field/StateAgency\}$ lands
- $\{e://Field/StateAgency\}$ nature, education, or visitor centers
- Wildlife festivals or viewing competitions sponsored by $\{e://Field/StateAgency\}$
- Live stream wildlife cameras

- Conservation law enforcement
- I have not used or engaged in any of these agency programs or services in the last 5 years.

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Have any members of your household engaged in programming for children or youth provided by $\{e://Field/StateAgency\}$ (such as school-based programs, camps, or youth and family events)?

(Please select one.)

- Yes;** children or youth in my household have engaged in some of these programs.
- No;** children or youth in my household have not engaged in any of these programs.
- Not applicable;** I do not have children or youth in my household.

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Which, if any, of the following **agency programs and services** that you participated in or used were you **satisfied with?**

(Please select all agency programs and services that you were satisfied with. If you were dissatisfied with the program, please do not select it.)

- Volunteer research or wildlife data collection opportunities
- Volunteer opportunities, not related to research or data collection
- Technical assistance or information about improving wildlife habitat
- Information about wildlife viewing opportunities in the state
- Information about wildlife in the state
- Programs or presentations for groups or clubs

-
- \${e://Field/StateAgency} lands
 - \${e://Field/StateAgency} nature, education, or visitor centers
 - Wildlife festivals or viewing competitions sponsored by \${e://Field/StateAgency}
 - Live stream wildlife cameras
 - Conservation law enforcement
 - Programming for children or youth
 - I was not satisfied with any of the agency programs or services that I have experienced.

We would also like to understand how $\{e://Field/StateAgency\}$ can best meet the needs of wildlife viewers.

Which of the following potential programs or services from $\{e://Field/StateAgency\}$ would better **support your wildlife viewing activities**

in $\{q://QID244/ChoiceGroup/SelectedChoices\}$?

(Please select all that apply.)

$\{e://Field/StateAgency\}$ can better support my wildlife viewing activities by providing...

Access to more **places** to go wildlife viewing

More information about **where** to go to see wildlife

More information about where and when to view wildlife where there is **no hunting**

More information about **wildlife in $\{q://QID244/ChoiceGroup/SelectedChoices\}$**

More information about **how** to view various types of wildlife

More programs to **interact** with other wildlife viewers

More programs to improve wildlife viewing **skills**

More **virtual programs** for wildlife viewing (*such as video classes, online presentations, or wildlife cameras*)

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- More opportunities to be involved in volunteer **research** or wildlife data collection activities
- More opportunities to be involved in other **volunteer** activities, not related to research or data collection
- More opportunities for **youth** to learn how to participate in wildlife viewing
- More **training** opportunities for wildlife viewing guides or mentors
- More wildlife viewing **events** (*such as wildlife viewing festivals or competitions*)
- More agency **staff** to support wildlife viewing
- More **amenities** for wildlife viewing (*such as viewing platforms, blinds, or signs*)
- More **accessible features** in wildlife viewing locations (*such as paved trails, accessible parking, or tactile signage*)
- I am **not interested** in any of these options to support my wildlife viewing activities.



Now, we would like to know about your past financial support of $\{e://Field/StateAgency\}$.

Below are a variety of ways that wildlife conservation and recreation opportunities provided by $\{e://Field/StateAgency\}$ are *financially* supported by the public in $\{q://QID244/ChoiceGroup/SelectedChoices\}$. Which of the following **purchases or contributions**, if any, have you made in the past 5 years?

Note: Please also select options for which you have ever made a one-time, permanent purchase, such as a lifetime hunting or fishing license.

(Please select all that apply.)

- Any $\{q://QID244/ChoiceGroup/SelectedChoices\}$ hunting license
- Any $\{q://QID244/ChoiceGroup/SelectedChoices\}$ fishing license
- $\{q://QID244/ChoiceGroup/SelectedChoices\}$ conservation or habitat stamp *required with purchase of a hunting license*
- $\{q://QID244/ChoiceGroup/SelectedChoices\}$ conservation or habitat stamp *voluntarily purchased independent of a hunting license*
- Conservation or wildlife license plate
- $\{e://Field/StateAgency\}$ lands access pass, permit, or entrance fee
- Fees for a program or event hosted by $\{e://Field/StateAgency\}$

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- Voluntary donation of a portion of state income tax return to \${e://Field/StateAgency}
- Donation of land to \${e://Field/StateAgency} through a conservation easement
- Direct donation of money to \${e://Field/StateAgency}
- Lottery ticket for which the proceeds go to habitat conservation
- Virtual products from \${e://Field/StateAgency} (such as podcasts, e-books, and other online materials)
- Tangible products from \${e://Field/StateAgency} (such as books, maps, and other merchandise)
- I have not made any of these purchases or contributions.



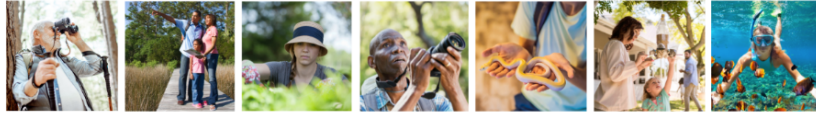
Do you hold a **lifetime fishing or hunting license**?

(Please select one.)

Yes, I have a lifetime fishing or hunting license.

No, I do not have a lifetime fishing or hunting license.

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Now, we would like to know about future purchases or contributions you may make to $\{e://Field/StateAgency\}$.

How likely are you to make the following **purchases or contributions** in the next 5 years, assuming these options are available in $\{q://QID244/ChoiceGroup/SelectedChoices\}$?
 (Please select one response for each type of contribution, regardless of whether or not the option is currently available in $\{q://QID244/ChoiceGroup/SelectedChoices\}$.)

	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Any $\{q://QID244/ChoiceGroup/SelectedChoices\}$ hunting license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Any $\{q://QID244/ChoiceGroup/SelectedChoices\}$ fishing license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\{q://QID244/ChoiceGroup/SelectedChoices\}$ conservation or habitat stamp <i>required with purchase of a hunting license</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\{q://QID244/ChoiceGroup/SelectedChoices\}$ conservation or habitat stamp <i>voluntarily purchased independent of a hunting license</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conservation or wildlife license plate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\{e://Field/StateAgency\}$ lands access pass, permit, or entrance fee	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fees for a program or event hosted by $\{e://Field/StateAgency\}$	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voluntary donation of a portion of state income tax return to $\{e://Field/StateAgency\}$	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Donation of land to $\{e://Field/StateAgency\}$ through a conservation easement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct donation to $\{e://Field/StateAgency\}$	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

National and Regional Results of the Wildlife Viewer Survey

Lottery ticket for which the proceeds go to habitat conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Virtual products from <i>{e://Field/StateAgency}</i> (such as podcasts, e-books, and other online materials)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical products from <i>{e://Field/StateAgency}</i> (such as books, maps, and other merchandise)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

National and Regional Results of the Wildlife Viewer Survey

How likely would you be to provide **more financial support** than you currently do to $\{e://Field/StateAgency\}$, if your contributions were used in the following ways?

(Please select one response per statement.)

	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Supported habitat conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supported conservation of rare or vulnerable species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supported conservation of the types of wildlife you like to view	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supported more opportunities or resources for wildlife viewing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supported wildlife research or monitoring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Were matched with funding from a different source	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

National and Regional Results of the Wildlife Viewer Survey

How likely would you be to participate in each of the following **conservation activities with or in support of *{e://Field/StateAgency}*** in the next 5 years, if you had the opportunity to do so?

(Please select one response per conservation activity.)

	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Informing or teaching others about wildlife conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhancing wildlife habitat <i>(the place or environment where wildlife live and grow)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in civic engagement <i>(such as voting or advocating)</i> related to wildlife conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informing or teaching others about wildlife conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhancing wildlife habitat <i>(the place or environment where wildlife live and grow)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in civic engagement <i>(such as voting or advocating)</i> related to wildlife conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collecting data on wildlife or habitat to contribute to science or management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Donating money to support wildlife conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Purchasing products that benefit wildlife or whose proceeds support conservation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cleaning up trash or litter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

National and Regional Results of the Wildlife Viewer Survey

To what extent do you agree or disagree with each of the **following statements about** **`\${e://Field/StateAgency}`**?

(Please select one response per statement.)

	Strongly Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Strongly Agree
I trust `\${e://Field/StateAgency}` .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust the staff at `\${e://Field/StateAgency}` .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I doubt the honesty of `\${e://Field/StateAgency}` .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promises made by `\${e://Field/StateAgency}` are likely to be reliable .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that `\${e://Field/StateAgency}` will keep promises they make.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not doubt the honesty of `\${e://Field/StateAgency}` .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that `\${e://Field/StateAgency}` is well-meaning .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that `\${e://Field/StateAgency}` has good intentions toward wildlife viewers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that `\${e://Field/StateAgency}` 's intentions are benevolent .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I doubt that `\${e://Field/StateAgency}` is well-meaning .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

National and Regional Results of the Wildlife Viewer Survey

<i>{e://Field/StateAgency}</i> knows about wildlife viewing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>{e://Field/StateAgency}</i> understands the environment they work in.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>{e://Field/StateAgency}</i> knows how to support to wildlife viewers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>{e://Field/StateAgency}</i> does not know about wildlife viewing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Which, if any, of the following ways are you interested in **receiving information** from `{e://Field/StateAgency}`?

Note: Your responses are for data collection only. `{e://Field/StateAgency}` will not receive your specific response nor contact you as a result of this survey.

(Please select all that apply.)

Printed materials (such as brochures and maps)

Mailed newsletter or other subscription

Email update or e-newsletter

Online magazine

`{e://Field/StateAgency}` website

Local news (such as television or online or print newspapers)

Blogs

Facebook

Twitter

Tik-Tok

Instagram

YouTube

Podcast

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Text alert

One-on-one interaction with agency staff

I would prefer not to receive information from $\{e://Field/StateAgency\}$.



For about how many years total have you lived in

$\{q://QID244/ChoiceGroup/SelectedChoices\}$?

(Please select the number that's your best estimate of total years you've lived in

$\{q://QID244/ChoiceGroup/SelectedChoices\}$.)

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What is your race and/or ethnicity?

(Please select all that apply.)

American Indian or Alaska Native

Asian

Black or African American

Hispanic, Latino, or Spanish

Middle Eastern or North African

Native Hawaiian or other Pacific Islander

Some other race or ethnicity

White

What was your total household income during the past 12 months?

(Please select one.)

Less than \$24,999

\$25,000 - \$49,999

\$50,000 - \$74,999

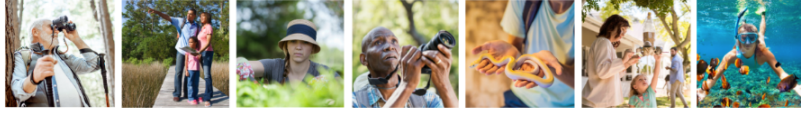
\$75,000 - \$99,999

\$100,000 - \$124,999

\$125,000 or more

I prefer not to answer.

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What is your five-digit zip code?



Which of the following best describes where you currently live?

(Please select one per statement.)

Rural area (Less than 2,500 people)

Small town (2,500 - 9,999 people)

Small city (10,000 - 49,999 people)

Urban area (50,000 or more people)

APPENDIX B. Reverse coded items and attention checks

- IF Q122 ["Closely observing wildlife or trying to identify unfamiliar types of wildlife"] AND Q2 ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
1. OR Q122 ["Photographing or taking pictures of wildlife"] AND Q2 ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
 2. OR Q122 ["Feeding wild birds"] AND Q2 ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
 3. OR Q122 ["Feeding other wildlife"] AND Q2 ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
 4. OR Q122 ["Visiting parks and natural areas to observe, photograph, or feed wildlife"] AND Q2 ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
 5. OR Q122 ["Taking trips or outings to any other location to observe, photograph, or feed wildlife"] AND Q2 ["None of the above, I am not interested in observing, photographing, or feeding wildlife"]
2. Q83: IF ["Strongly Agree"] FOR ["Being a wildlife viewer is an important part of who I am" AND "Being a wildlife viewer is not a key part of who I am"]
 1. OR Q83: IF ["Strongly Disagree"] FOR ["Being a wildlife viewer is an important part of who I am"] AND ["Being a wildlife viewer is not a key part of who I am"]
 3. Q83: IF ["Strongly Agree"] FOR ["Wildlife viewing is not an important part of my life"] AND ["Wildlife viewing has a central role in my life"]
 1. OR Q83: ["Strongly Disagree"] FOR ["Wildlife viewing is not an important part of my life" AND "Wildlife viewing has a central role in my life"]
 4. Q4: IF [211 or more days] IS SELECTED FOR ["Outside of your state or the United States"] AND ["More than 1 mile away from your home, but within your state"] OR ["Around or within 1 mile of your home"]
 5. Q123: IF [211 or more days] IS SELECTED FOR ["Outside of your state or the United States"] AND ["More than 1 mile away from your home, but within your state"] OR ["Around or within 1 mile of your home"]
 6. Q133: IF [211 or more days] IS SELECTED FOR ["Outside of your state or the United States"] AND ["More than 1 mile away from your home, but within your state"] OR ["Around or within 1 mile of your home"]
 7. Q124: IF [211 or more days] IS SELECTED FOR ["Outside of your state or the United States"] AND ["More than 1 mile away from your home, but within your state"] OR ["Around or within 1 mile of your home"]
 8. Q94: IF ["Strongly Agree"] IS SELECTED FOR ["I doubt the honesty of [State Agency]"] AND ["I can count on [State Agency] to be truthful"]

1. OR Q94: IF [“Strongly Disagree”] IS SELECTED FOR [“I doubt the honesty of [State Agency]”] AND [“I can count on [State Agency] to be truthful”]
9. Q94: IF [“Strongly Agree”] IS SELECTED FOR [“I expect that [State Agency]’s intentions are benevolent”] AND [“I doubt that [State Agency] is well meaning”]
 1. OR Q94: IF [“Strongly Disagree”] IS SELECTED FOR [“I expect that [State Agency]’s intentions are benevolent”] AND [“I doubt that [State Agency] is well meaning”]
10. Q94: IF [“Strongly Agree”] IS SELECTED FOR [“[State Agency] knows very little about wildlife viewing”] AND [“[State Agency] knows how to support wildlife viewers”]
 1. OR Q94: IF [“Strongly Disagree”] IS SELECTED FOR [“[State Agency] knows very little about wildlife viewing”] AND [“[State Agency] knows how to support wildlife viewers”]

APPENDIX C. Calculation of weights for the aggregated, national sample

We generated a national-level sample for this report by combining data from all four AFWA regions and weighting responses to reflect the geographic distribution of wildlife viewers across the country. Weights were determined for responses from each region based on estimates of the number of wildlife viewers in each state from the National Survey of Wildlife Recreation (US DOI et al. 2016). We first determined the proportion of all U.S. wildlife viewers that reside in each AFWA region using the total number of wildlife viewers in the country and the sum of the number of wildlife viewers in all of the states within each of the regions. We then calculated weights by dividing the proportion of wildlife viewers expected for each region in a representative sample by the proportion of actual survey respondents from that region.

Calculating weights for West Region

	N viewers (National Survey)	N respondents	Regional Weight
Alaska	458600	12	
Arizona	1766000	95	
California	7883000	252	
Colorado	1834000	63	
Hawaii	251400	14	
Idaho	797200	22	
Montana	494100	15	
Nevada	817700	38	
New Mexico	710600	15	
Oklahoma	751800	75	
Oregon	1404000	51	
Texas	5940000	253	
Utah	640500	24	
Washington	2257000	74	
Wyoming	322000	10	
Region total	26327900	1013	
	0.3059928476	0.2508046546	1.22

Calculating weights for Midwest Region

	N viewers (National Survey)	N respondents	Regional Weight
Illinois	3739000	134	
Indiana	1835000	101	
Iowa	556600	32	
Kansas	699600	42	
Michigan	2840000	152	
Minnesota	1811000	64	
Missouri	1472000	110	
Nebraska	313900	23	
North Dakota	175300	12	
Ohio	3101000	198	
South Dakota	305700	12	
Wisconsin	2077000	125	
Region total	18926100	1005	
	0.2199663183	0.2488239663	0.88

Calculating weights for Northeast Region

	N viewers (National Survey)	N respondents	Regional Weight
Connecticut	1006000	48	
Delaware	367900	17	
Maine	423000	26	
Maryland	1670000	63	
Massachusetts	1577000	76	
New Hampshire	531900	30	
New Jersey	1860000	113	
New York	4639000	322	
Pennsylvania	3682000	234	
Rhode Island	359100	11	
Vermont	236600	9	
West Virginia	502300	57	
Washington, DC		5	
Region total	16854800	1011	
	0.1958928835	0.2503094825	0.78

Calculating weights for Southeast Region

	N viewers (National Survey)	N respondents	Regional Weight
Alabama	2078000	75	
Arkansas	1343000	43	
Florida	4909000	264	
Georgia	2731000	133	
Kentucky	1458000	61	
Louisiana	1591000	32	
Mississippi	626100	36	
North Carolina	3335000	114	
South Carolina	1538000	69	
Tennessee	2261000	92	
Virginia	2062000	91	
Region total	23932100	1010	
	0.2781479506	0.2500618965	1.11

APPENDIX D. Tables Appendix

Table 1. Age (survey quota)

	National (mean)	West (mean)	Midwest (mean)	Northeast (mean)	Southeast (mean)	Significance (F)
Age	51	50	51	50	51	1.003
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 2. Gender (survey quota)

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Man	58	58	58	59	58	14.534
Woman	41	40	41	40	41	
Non-binary	.7	.7	.5	.4	1	
Not Disclose	.2	.5	0	.3	0	
Self-Describe	.1	0	.2	.1	.1	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 3. Education (survey quota)

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Professional, master's or doctoral degree	14	14	13	14	15	6.681
Bachelor's degree	24	24	25	25	23	
Associate's or technical degree	9	9	9	9	8	
Some college	15	14	15	13	15	
High school diploma, equivalent, or less	39	39	39	39	39	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 4. Race and ethnicity

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
American Indian or Alaska Native	3	4	2	2	2	18.713***
Asian	2	3	1	4	2	15.988**
Black or African American	8	6	7	7	12	35.518***
Hispanic, Latino, or Spanish	6	9	5	5	4	36.620***
Middle Eastern or North African	.4	1	.4	0.2	.1	6.007
Native Hawaiian or other Pacific Islander	.2	.4	.2	.1	.2	2.104
White	85	82	88	86	83	21.765***
Some other race or ethnicity	1	2	1	1	1	5.766
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 5. Household income

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Less than \$24,999	21	20	22	20	22	17.492
\$25,000 - \$49,999	26	25	28	24	27	
\$50,000 – \$74,999	17	17	17	17	18	
\$75,000 – \$99,999	12	12	12	13	11	
\$100,000 – \$124,999	8	9	7	8	7	
\$125,000 or more	12	13	11	14	11	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 15$</p>						

Table 6. Residential location

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Rural area (Less than 2,500 people)	22	17	21	23	28	104.496***
Small town (2,500 - 9,999 people)	17	13	16	22	18	
Urban area (50,000 or more people)	37	47	35	34	31	
Small city (10,000 - 49,999 people)	24	23	28	21	24	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 9$</p>						

Table 7. Forms of wildlife viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Visiting parks and natural areas	51	53	47	53	51	7.184
Photographing or taking pictures of wildlife	50	50	49	51	50	1.057
Feeding wild birds	50	59	60	55	53	14.988**
Closely observing wildlife	41	41	42	41	39	2.029
Taking trips or outings to any other location	38	37	37	39	39	1.511
Feeding other wildlife	33	33	33	34	31	2.123
Maintaining plantings or natural areas	31	31	33	31	30	2.034
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 8. Types of wildlife

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Birds	79	77	81	82	79	9.825**
Land Mammals	68	64	71	69	68	11.884**
Marine Mammals	41	42	35	40	45	22.267***
Reptiles	34	34	32	33	36	.269
Fish	34	34	34	33	36	2.871
Insects	29	28	29	28	30	1.647
Amphibians	27	27	28	27	27	.844
Other Wildlife	2	2	2	2	1	8.208*
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 9. Affective specialization: centrality scale

Specialization	National (Mean)	West (Mean)	Midwest (Mean)	Northeast (Mean)	Southeast (Mean)	Significance (F)
Centrality	3.20	3.17	3.21	3.21	3.22	.541
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 10. Behavioral specialization: specialized equipment

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Own or rent equipment	57	58	56	56	58	0.87
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 11. Behavioral specialization: years viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
1-5 years	29	29	29	27	29	39.116
6-10 years	18	18	18	19	18	
11-15 years	10	9	10	10	11	
16-20 years	9	10	8	9	9	
21-25 years	5	6	5	5	6	
26-30 years	5	4	6	5	6	
31-35 years	3	4	3	3	3	
36-40 years	5	5	6	6	4	
41-45 years	3	3	2	3	3	
46-50 years	4	5	4	4	3	
51-55 years	2	2	1	2	2	
56-60 years	3	2	3	3	3	
61-65 years	2	2	2	1	2	
66 or more years	2	2	2	3	2	

Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.
 * $p = .01 - .05$
 ** $p = .001 - .01$
 *** $p < .001$
 $df = 54$

Table 12. Behavioral specialization: Experience as percentage of life spent viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0-20%	42%	42%	44%	39%	43%	16.08
21-40%	22%	22%	21%	25%	25%	
41-60%	12%	12%	12%	13%	11%	
61-80%	11%	11%	10%	12%	9%	
81-100%	13%	13%	12%	11%	11%	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 13. Cognitive specialization

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Beginner	30	32	30	30	27	15.444
Novice	31	29	33	30	32	
Intermediate	29	29	27	28	31	
Advanced	8	9	9	9	8	
Expert	2	2	2	3	2	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 14. Time spent wildlife viewing around the home, typical year

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0 days	5.9	7.7	4.7	6.1	4.8	20.899
1-30 days	37.9	37.9	38.7	37.4	37.7	
31-60 days	12.2	11.6	12.3	12	12.8	
61-90 days	12.2	8.5	7.4	8.2	8.5	
91-120 days	6.6	7.2	6.9	5.9	6.1	
121-150 days	4.4	4.8	4	3.9	4.6	
151-180 days	3.4	3	3.6	3.1	4	
181-210 days	3	2.4	3.5	3.1	3.2	
211 or more days	18.4	17	18.8	20.3	18.3	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 24$</p>						

Table 15. Time spent wildlife viewing away from home, typical year

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0 days	13.3	12	14.2	13.6	13.7	20.899
1-30 days	44.4	44.2	44	45.4	44.5	
31-60 days	18.2	19.2	19.1	18	16.4	
61-90 days	18.2	9.2	8.5	10	9.9	
91-120 days	5.6	5.3	6.5	5.3	5.5	
121-150 days	2.9	2.7	2.1	2.6	3.7	
151-180 days	2.5	2.5	1.8	1.8	3.5	
181-210 days	1	1.3	1.4	1.1	0.3	
211 or more days	2.8	3.7	2.3	2.2	2.6	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 24$</p>						

Table 16. Time spent wildlife viewing outside of state or country, typical year

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0 days	42.3	41.2	44.6	42.4	41.7	30.608
1-30 days	36.1	35.2	37.7	36.5	35.7	
31-60 days	8.6	9	7.9	9.6	8.1	
61-90 days	8.6	5.3	4.3	5.1	4.9	
91-120 days	3.6	3.9	2.8	2.6	4.5	
121-150 days	2	2.3	1.2	1.7	2.5	
151-180 days	1.3	2.1	0.4	1.1	1.1	
181-210 days	0.3	0.2	0.3	0.1	0.4	
211 or more days	0.9	0.9	0.8	1	1.1	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 24$</p>						

Table 17. Time spent wildlife viewing around the home, first year of COVID-19 pandemic

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0 days	12.1	15.2	9.4	12	10.9	40.387*
1-30 days	38.9	37.8	40.8	38.8	38.2	
31-60 days	11.5	12.4	10.4	10.7	12	
61-90 days	7.2	5.9	8	7.2	7.9	
91-120 days	5.2	5.6	4.6	5.2	5.5	
121-150 days	3.6	4.5	3.9	3.1	3.1	
151-180 days	2.6	2.5	3.1	2.3	2.5	
181-210 days	2.6	2	3	2.2	3.4	
211 or more days	16.2	14.1	16.7	18.5	16.6	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 24$</p>						

Table 18. Time spent wildlife viewing away from home, first year of COVID-19 pandemic

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0 days	26	27.2	25	25.7	25.9	31.680
1-30 days	40.2	39.3	43.1	42.4	39.5	
31-60 days	13.5	12.8	14.2	13.5	13.7	
61-90 days	7.5	8.2	6.5	7.9	7.5	
91-120 days	4.5	4.7	4.6	3.4	4.9	
121-150 days	2.5	1.6	2.1	3.5	3.3	
151-180 days	1.9	2.3	1.9	1.3	2	
181-210 days	0.9	0.8	0.9	1.1	0.9	
211 or more days	2.1	3.1	1.7	1.3	2.3	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 24$</p>						

Table 19. Time spent wildlife viewing outside of state or country, first year of COVID-19 pandemic

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0 days	58.9	59.3	62.8	59.5	53.9	33.431
1-30 days	23.7	22.7	22.3	24.1	25.5	
31-60 days	6.7	7.5	5.3	7.1	7	
61-90 days	4.1	4	4.3	3.8	4.5	
91-120 days	2.7	2.2	2.3	2.2	3.9	
121-150 days	2	2.1	1.5	1.5	2.7	
151-180 days	0.9	1	0.7	1	0.9	
181-210 days	0.4	0.6	0.2	0.2	0.6	
211 or more days	0.7	0.6	0.5	0.6	1	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 24$</p>						

Table 20. Time anticipated wildlife viewing around the home, upcoming year

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0 days	7.5	8.7	6.5	7.1	7.3	28.929
1-30 days	36.8	37.1	36.8	36.9	36.5	
31-60 days	14	14.4	12.6	15	13.8	
61-90 days	8.8	9.1	9.3	8.6	8.2	
91-120 days	6.1	7.1	6	4.4	6.3	
121-150 days	4.5	4.9	4.6	4.1	4.4	
151-180 days	3.2	2.2	3.5	3.1	3.9	
181-210 days	2.7	1.9	3.4	2.4	3.2	
211 or more days	16.8	14.7	17.4	18.5	16.5	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 24$</p>						

Table 21. Time anticipated wildlife viewing away from home, upcoming year

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0 days	15.6	15.4	15.8	14.7	16.4	25.842
1-30 days	42.8	42.6	43.2	44.3	41.2	
31-60 days	17.6	17	17.8	19	16.4	
61-90 days	8.8	7.9	8.6	8.7	9.9	
91-120 days	6.1	6.9	5.6	6.2	5.7	
121-150 days	3.1	3.2	2.8	2.5	3.9	
151-180 days	2.2	1.7	2.6	1.6	2.7	
181-210 days	1.5	1.8	1.6	1.1	1.3	
211 or more days	2.5	3.4	1.8	1.9	2.4	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 24$</p>						

Table 22. Time anticipated wildlife viewing outside of state or country, upcoming year

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
0 days	45.2	45.4	46.5	45.5	43.5	24.394
1-30 days	32	31.9	31.9	33	31.2	
31-60 days	8.9	7.9	7.8	9.3	10.7	
61-90 days	6	6.5	6.7	4.9	6	
91-120 days	3.1	3.3	2.7	2.8	3.4	
121-150 days	2.2	2.2	2	1.5	2.9	
151-180 days	1.3	1.5	0.9	1.7	1.2	
181-210 days	0.5	0.8	0.6	0.3	0.3	
211 or more days	0.8	0.5	0.7	0.9	0.9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 24$</p>						

Table 23. Wildlife viewing location

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
My own home or property	75	70	77	77	77	17.744***
State-managed areas	52	52	54	51	51	1.787
Locally-managed areas	51	53	54	49	50	7.988*
Property of friends or family	40	37	44	39	40	10.374**
Federally-managed areas	34	38	30	31	35	18.716***
Other private property	22	23	21	23	23	1.868
Tribal lands	7	9	5	6	6	14.530**
I am unsure	7	8	7	5	6	11.848***
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 24. Wildlife viewing trip-related expenditures

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
\$0	23	20	23	28	22	57.123**
\$1-\$50	20	20	23	19	19	
\$51-\$100	13	13	14	12	12	
\$101-\$150	8	10	7	7	9	
\$151-\$200	6	7	7	6	6	
\$201-\$250	5	5	5	6	6	
\$251-\$300	5	5	5	5	5	
\$301-\$350	4	5	4	3	5	
\$351-\$400	3	3	3	3	3	
\$401-\$450	2	2	2	3	3	
\$451-\$500	3	3	2	4	4	
\$501 or more	7	8	5	5	8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 33$</p>						

Table 25. Other wildlife viewing-related expenditures

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
\$0	19	18	18	22	20	41.983
\$1-\$50	22	21	25	21	21	
\$51-\$100	13	14	14	12	13	
\$101-\$150	9	9	10	10	10	
\$151-\$200	7	8	7	7	7	
\$201-\$250	5	6	4	6	6	
\$251-\$300	5	5	6	5	5	
\$301-\$350	4	4	4	3	3	
\$351-\$400	3	3	2	3	3	
\$401-\$450	2	3	1	3	1	
\$451-\$500	3	3	2	3	4	
\$501 or more	6	6	6	6	7	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 33$</p>						

Table 26. Consumptive and nonconsumptive recreation

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Hunter	4	5	4	3	4	30.545***
Angler	29	26	33	26	31	
Both	13	14	13	11	14	
Nonconsumptive	54	55	51	60	51	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 27. Other outdoor recreation

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Biking	17	19	17	17	17	1.539
Camping	41	46	41	38	40	14.622*
Climbing	9	10	9	10	8	2.946
Fishing	42	41	45	37	45	20.389***
Foraging	13	12	15	13	13	6.053
Geocaching	7	9	7	6	6	6.676
Hiking or Backpacking	37	40	35	36	35	5.763
Horseback Riding	12	14	11	11	14	9.421*
Hunting	17	19	17	14	19	10.445*
Botanizing	10	11	9	9	9	2.835
Recreational Shooting	15	17	14	14	16	5.977
Swimming	38	36	35	39	44	19.889***
Motorized Boating	12	10	14	10	14	18.325***

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Non-Motorized Boating	9	7	10	8	10	7.449
Off Highway Vehicles	12	14	12	11	11	4.353
Running, Walking, or Jogging	53	53	52	56	50	6.850
Winter Sports	11	13	13	11	7	20.486***
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 28. Conservation behaviors independent of agency, informing or teaching others

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	34	33	37	36	32	25.371*
Slightly likely	22	20	21	22	23	
Moderately likely	22	22	22	21	21	
Very likely	15	16	13	12	17	
Extremely likely	8	9	8	9	7	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 29. Conservation behaviors independent of agency, enhancing wildlife habitat

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	18	17	18	19	17	20.894
Slightly likely	24	23	26	24	24	
Moderately likely	27	27	30	26	27	
Very likely	21	22	16	21	23	
Extremely likely	10	11	10	10	9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 30. Conservation behaviors independent of agency, participating in civic engagement

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	21	20	22	22	21	15.859
Slightly likely	20	20	18	20	21	
Moderately likely	25	24	27	23	25	
Very likely	21	22	19	22	23	
Extremely likely	13	13	14	13	11	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 31. Conservation behaviors independent of agency, collecting data

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	33	33	34	33	31	12.416
Slightly likely	22	20	24	23	22	
Moderately likely	21	21	22	20	23	
Very likely	16	17	15	16	16	
Extremely likely	8	9	6	9	8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 32. Conservation behaviors independent of agency, donating money

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	20	21	19	18	19	15.217
Slightly likely	25	24	28	24	24	
Moderately likely	25	26	24	24	25	
Very likely	20	19	19	21	21	
Extremely likely	11	11	9	13	11	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 33. Conservation behaviors independent of agency, purchasing environmentally friendly products

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	15	16	14	15	14	8.504
Slightly likely	23	22	24	22	22	
Moderately likely	27	26	27	28	28	
Very likely	24	24	23	24	26	
Extremely likely	11	11	12	12	11	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 34. Conservation behaviors independent of agency, cleaning up trash or litter

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	8	8	7	7	8	10.734
Slightly likely	15	14	14	15	16	
Moderately likely	23	22	24	23	23	
Very likely	28	27	29	31	28	
Extremely likely	26	29	25	24	25	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 35. Conservation behaviors with agency, informing or teaching others

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	36	33	38	37	36	13.557
Slightly likely	21	21	22	20	20	
Moderately likely	19	20	18	17	20	
Very likely	15	16	14	16	16	
Extremely likely	9	9	9	10	8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 36. Conservation behaviors with agency, enhancing wildlife habitat

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	21	20	21	22	21	12.483
Slightly likely	23	22	23	24	25	
Moderately likely	26	26	27	24	25	
Very likely	20	20	18	20	21	
Extremely likely	11	12	11	10	9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 37. Conservation behaviors with agency, participating in civic engagement

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	23	21	23	25	25	12.728
Slightly likely	18	19	19	18	18	
Moderately likely	24	25	26	24	23	
Very likely	21	22	19	20	22	
Extremely likely	13	14	14	13	12	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 38. Conservation behaviors with agency, collecting data

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	32	31	32	34	32	13.916
Slightly likely	20	20	22	20	20	
Moderately likely	21	22	22	20	21	
Very likely	17	18	16	17	19	
Extremely likely	9	10	8	10	8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 39. Conservation behaviors with agency, donating money

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	23	23	23	22	22	13.438
Slightly likely	23	24	25	21	23	
Moderately likely	23	22	24	23	23	
Very likely	19	19	17	22	20	
Extremely likely	12	13	11	12	11	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 40. Conservation behaviors with agency, purchasing environmentally friendly products

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	19	18	18	20	19	14.588
Slightly likely	22	22	23	20	23	
Moderately likely	25	24	26	24	26	
Very likely	22	22	22	22	22	
Extremely likely	12	14	11	14	10	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 41. Conservation behaviors with agency, cleaning up trash or litter

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	10	10	11	11	10	19.561
Slightly likely	15	15	13	13	18	
Moderately likely	21	20	22	22	20	
Very likely	26	26	27	26	26	
Extremely likely	28	29	27	28	26	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 42. Barriers to wildlife viewing, crowds in viewing locations

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	33	30.8	34.6	32.6	34.4	22.019*
Somewhat disagree	23.9	22.7	26.4	23.6	23.5	
Neither agree nor disagree	23.6	25.7	21.8	22.2	23.8	
Somewhat agree	13.2	14.5	12.2	13.3	12.4	
Strongly agree	6.3	6.4	4.9	8.3	5.9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 43. Barriers to wildlife viewing, safety concerns when viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	33.7	31.1	36.9	34.4	33.4	15.982
Somewhat disagree	23.6	24.1	23.4	22	24.5	
Neither agree nor disagree	24	26.1	22.3	23.8	23.3	
Somewhat agree	12.2	12.6	12.1	12	12.1	
Strongly agree	6.4	6.1	5.2	7.9	6.8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 44. Barriers to wildlife viewing, lack of facilities at wildlife viewing locations

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	32.9	33.6	32.7	31.9	33.1	10.078
Somewhat disagree	24.2	22.6	24.8	25.3	24.8	
Neither agree nor disagree	25.4	25.3	25.6	25.6	25.4	
Somewhat agree	12.3	12.5	12.6	11.3	12.6	
Strongly agree	5.1	6	4.2	6	4.1	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 45. Barriers to wildlife viewing, accessibility challenges

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	35.5	34.4	36.1	34.8	36.6	8.142
Somewhat disagree	20.8	21.4	19.4	22	20.3	
Neither agree nor disagree	24.3	24.4	24.1	23.6	24.8	
Somewhat agree	13.1	13.1	14	12.1	13.1	
Strongly agree	6.4	6.7	6.4	7.5	5.3	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 46. Barriers to wildlife viewing, lack of transportation to viewing locations

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	39.3	37.2	40.7	39.1	40.7	12.880
Somewhat disagree	20.6	19.3	20.9	21.8	20.9	
Neither agree nor disagree	21.3	23.2	20.1	19.6	21.5	
Somewhat agree	11.7	13.3	11.1	12.4	9.9	
Strongly agree	7.1	7	7.1	7.2	7	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 47. Barriers to wildlife viewing, not knowing where to go wildlife viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	30.2	29.5	29.9	30	31.4	8.722
Somewhat disagree	23.6	22.5	24.6	23.8	24	
Neither agree nor disagree	26.7	27.6	25.5	25.5	27.6	
Somewhat agree	13.4	14.1	13.4	14.7	11.5	
Strongly agree	6.1	6.3	6.6	5.9	5.5	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 48. Barriers to wildlife viewing, distance to viewing locations

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	22.2	21.9	21.5	22.1	23.2	14.210
Somewhat disagree	20.5	19.5	22.2	20.6	20.1	
Neither agree nor disagree	30	28.7	28.8	29.9	32.4	
Somewhat agree	17.9	18.9	18.9	17.6	16.4	
Strongly agree	9.4	11	8.6	9.9	7.9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 49. Barriers to wildlife viewing, financial cost

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	26.9	26.3	27.2	27.7	26.8	18.035
Somewhat disagree	23.3	20.8	23.9	24.1	24.9	
Neither agree nor disagree	26.7	28.2	26.3	25.5	26.3	
Somewhat agree	15.6	17.3	16.3	13.4	14.5	
Strongly agree	7.5	7.4	6.3	9.3	7.5	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 50. Barriers to wildlife viewing, lack of access to equipment

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	31.3	30.7	31.5	30.3	32.5	8.279
Somewhat disagree	25.8	24.6	25.1	26.3	27.4	
Neither agree nor disagree	24.8	26.1	25.6	23.6	23.5	
Somewhat agree	12.4	13	12.2	13.4	11.4	
Strongly agree	5.6	5.6	5.6	6.4	5.1	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 51. Barriers to wildlife viewing, lack of viewing skills

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	29.6	29	29.4	29.2	30.6	4.061
Somewhat disagree	27.1	26.4	28.3	26.4	27.4	
Neither agree nor disagree	26.6	26.9	26.3	27.3	26	
Somewhat agree	11.7	12.4	11.1	11.5	11.4	
Strongly agree	5	5.2	5	5.7	4.5	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 52. Barriers to wildlife viewing, lack of organized viewing opportunities

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	32.7	32.5	33.6	33	32.2	11.362
Somewhat disagree	22.7	22.6	21.3	21.6	24.7	
Neither agree nor disagree	25.1	24.6	25.4	25.4	25	
Somewhat agree	14.1	14.9	15.3	13.5	12.4	
Strongly agree	5.5	5.3	4.4	6.5	5.7	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 53. Barriers to wildlife viewing, few people to view with

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	30	29.1	30.6	30.5	30	15.739
Somewhat disagree	24.2	24.4	23.5	21.5	26.6	
Neither agree nor disagree	26.4	25.7	27.9	26.8	25.8	
Somewhat agree	13.4	14.9	12.1	13.7	12.6	
Strongly agree	6	5.9	5.9	7.5	5	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 54. Barriers to wildlife viewing, few people who support viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	33.1	33.3	32.3	33.9	33.1	9.480
Somewhat disagree	27.2	26.7	30	25.5	26.8	
Neither agree nor disagree	23.3	23.1	22.7	22.9	24.1	
Somewhat agree	11.3	11.5	10.4	11.6	11.5	
Strongly agree	5.1	5.3	4.5	6.1	4.4	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 55. Barriers to wildlife viewing, lack of free time

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	26.3	26.9	24.3	26.1	27.4	7.412
Somewhat disagree	24.1	24.1	23.7	23.1	25.1	
Neither agree nor disagree	30.1	30	32.2	30.7	28.3	
Somewhat agree	14.6	14.4	15	14.4	14.5	
Strongly agree	4.8	4.6	4.9	5.7	4.6	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 56. Social support for wildlife viewing, family

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all	15	14.8	14.8	14.5	16.3	18.843
Slightly	15	15.4	13.4	14.9	16.2	
Moderately	31	31.7	33.7	30.5	28.1	
Very	24	24.3	23.8	21.9	24.4	
Extremely	15	13.9	14.2	18.2	14.9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 57. Social support for wildlife viewing, friends

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all	20	20.3	19.7	19.4	19.8	11.464
Slightly	20	18.2	19	19.9	22.2	
Moderately	31	32.1	33.3	29.6	30.2	
Very	19	18.3	17.8	20.7	18	
Extremely	10	11.1	10.2	10.4	9.7	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 58. Social support for wildlife viewing, peers

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all	32	20	27	14	7	18.360
Slightly	30.2	20.8	25.8	14.9	8.3	
Moderately	31.7	17	30.3	13.6	7.5	
Very	33.6	18.6	25.6	15	7.2	
Extremely	31.9	21.8	26.2	13.8	6.3	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 59. Social support for wildlife viewing, mentors

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all	44	43.7	43.2	46.6	44.5	12.817
Slightly	14	13.7	13.5	13.8	16.4	
Moderately	20	20.8	21.5	19.7	18.3	
Very	12	12	13.3	11.3	12.9	
Extremely	9	9.8	8.6	8.6	7.8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 60. Wildlife viewing identity, “I teach or mentor others in wildlife viewing”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	29	29	29	28	29	4.641
Somewhat disagree	21	20	21	22	20	
Neither agree nor disagree	24	24	25	23	24	
Somewhat agree	19	19	17	19	19	
Strongly agree	8	8	8	8	8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 61. Wildlife viewing identity, “I feel welcome among other wildlife viewers”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	2	2	3	3	2	5.889
Somewhat disagree	5	6	5	4	5	
Neither agree nor disagree	32	32	33	32	31	
Somewhat agree	42	41	41	43	42	
Strongly agree	18	19	18	18	19	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 62. Wildlife viewing identity, “A lot of my life is organized around wildlife viewing”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	14	15	13	14	12	6.934
Somewhat disagree	23	23	24	23	23	
Neither agree nor disagree	32	31	32	32	33	
Somewhat agree	21	21	22	21	22	
Strongly agree	9	10	9	10	9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 63. Wildlife viewing identity, “Wildlife viewing has a central role in my life”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	8	9	8	7	8	5.202
Somewhat disagree	16	17	16	16	16	
Neither agree nor disagree	35	34	35	36	35	
Somewhat agree	27	26	27	27	28	
Strongly agree	14	15	14	13	13	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 64. Wildlife viewing identity, “Being a wildlife viewer is an important part of who I am”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	5	7	5	5	4	22.637*
Somewhat disagree	11	11	9	11	11	
Neither agree nor disagree	3	30	32	31	29	
Somewhat agree	37	35	38	34	40	
Strongly agree	17	17	16	19	16	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 65. Wildlife viewing identity, “I think of myself as a wildlife viewer”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	4	4	3	3	4	18.292
Somewhat disagree	7	8	7	6	6	
Neither agree nor disagree	18	19	18	20	17	
Somewhat agree	49	48	49	48	49	
Strongly agree	22	21	23	22	23	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 66. Wildlife viewing identity, BIPOC Analysis, “I think of myself as a wildlife viewer”

	Black or African American (%)	Multiracial (%)	Hispanic, Latino, or Spanish (%)	Some other race or ethnicity (%)	Asian	Significance (χ^2)
Strongly disagree	8	9	4	7	4	27.794*
Somewhat disagree	9	13	8	9	12	
Neither agree nor disagree	20	18	13	17	27	
Somewhat agree	39	47	50	47	44	
Strongly agree	23	13	25	20	12	
<p>Note that statistical tests are across ethnoracial identities . Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 16$</p>						

Table 67. Wildlife viewing importance scale, BIPOC Analysis

	Black or African American (%)	Multiracial (%)	Hispanic, Latino, or Spanish (%)	Some other race or ethnicity (%)	Asian	Significance (χ^2)
Strongly disagree	3	4	8	1	5	37.057**
Somewhat disagree	17	10	15	10	14	
Neither agree nor disagree	33	45	34	50	45	
Somewhat agree	34	32	38	31	34	
Strongly agree	14	9	6	8	1	
<p>Note that statistical tests are across ethnoracial identities. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 16$</p>						

Table 68. Accessibility challenges

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all	39	37	39	42	38	23.977*
Very little	23	26	21	19	23	
Somewhat	24	23	26	24	23	
Quite a bit	10	9	10	9	11	
A great deal	5	5	5	6	5	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 69. Familiarity with state agency

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all familiar	15	11	16	20	16	49.725***
Slightly familiar	30	31	29	29	31	
Moderately familiar	28	28	29	27	27	
Very familiar	19	21	22	16	19	
Extremely familiar	8	8	9	9	8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 70. Familiarity with state agency, Nonconsumptive - consumptive analysis

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all familiar	20.4	7.5	339.929***
Slightly familiar	35.4	23.7	
Moderately familiar	26.4	29.2	
Very familiar	13.0	26.9	
Extremely familiar	4.7	12.7	
Not at all familiar	20.4	7.5	
<p>Note that statistical tests are between consumptive and nonconsumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 71. Perception of prioritization for viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Chi Squared
Far too low	4	4	3	4	5	1.462
Too low	17	15	18	17	17	
About right	54	54	57	51	53	
Too high	7	9	6	6	7	
Far too high	3	3	2	3	3	
I don't have an opinion	16	15	15	19	16	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 72. Perception of prioritization for viewing, nonconsumptive and consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Far too low	5.0	4.2	18.005***
Too low	21.4	17.9	
About right	63.9	64.2	
Too high	6.8	9.8	
Far too high	2.9	3.8	
<p>Note that statistical tests are conducted between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 73. Experiences with state agency programs

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Volunteer data collection	14	15	13	16	13	4.567
Other volunteer opportunities	13	14	11	13	12	4.303
Technical assistance or information about habitat	14	15	12	14	14	4.591
Wildlife viewing opportunities	23	22	24	23	23	.832
Wildlife information	30	29	31	30	31	1.027
Programs for groups or clubs	10	10	10	11	10	1.350
Agency lands	21	24	23	19	16	24.769***
Visitor or education centers	19	19	21	19	16	8.376*
Viewing festivals	8	8	8	9	9	2.253
Livestream wildlife cameras	9	8	13	12	6	32.915***
Conservation law enforcement	7	7	6	7	9	4.059

Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.

* $p = .01 - .05$

** $p = .001 - .01$
 *** $p < .001$
 $df = 3$

Table 74. Experiences with programs and services for youth

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Yes, youth have engaged in programming	22	24	20	22	21	6.435
No, youth have not engaged in programming	23	22	24	24	23	
N/A, no youth in household	55	54	56	54	56	

Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.

* $p = .01 - .05$
 ** $p = .001 - .01$
 *** $p < .001$
 $df = 3$

Table 75. Satisfaction with state agency programs

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Volunteer data collection	73	70	77	75	74	2.105
Other volunteer opportunities	63	61	59	66	66	1.892
Technical assistance or information about habitat	57	58	62	61	50	4.938
Wildlife viewing opportunities	69	67	67	67	75	5.063
Wildlife information	77	77	79	78	75	1.925
Programs for groups or clubs	59	56	67	60	55	3.736
Agency lands	77	74	77	83	75	5.877
Visitor or education centers	78	81	81	71	74	7.766
Viewing festivals	67	71	66	66	66	.553
Livestream wildlife cameras	71	65	75	77	67	4.740
Conservation law enforcement	62	65	65	53	64	2.949

Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.

* $p = .01 - .05$

** $p = .001 - .01$
 *** $p < .001$
 $df = 3$

Table 76. Trust, “Agency knows how to support viewers”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	1.2	1.2	1.4	0.9	1.2	6.326
Somewhat disagree	4.5	4.7	4.2	3.7	5	
Neither agree nor disagree	29	28.4	29.7	30.5	28.2	
Somewhat agree	37.9	37.4	38.7	37	38.3	
Strongly agree	27.4	28.4	25.9	27.9	27.2	
Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$						

Table 77. Trust, “Agency knows about wildlife viewing”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	2	2.4	1.9	1.3	2	19.494
Somewhat disagree	3.8	4.6	3.6	2.4	3.9	
Neither agree nor disagree	23.2	22.7	21.6	26.3	22.7	
Somewhat agree	38.3	37.1	37.9	38.4	40	
Strongly agree	32.7	33.2	35	31.5	31.4	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 78. Trust, “Agency understands the environment they work in”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	1.1	1.5	0.7	0.8	1.2	10.647
Somewhat disagree	3.4	3.7	3.3	2.7	3.7	
Neither agree nor disagree	21.7	20.8	21.5	23.1	21.9	
Somewhat agree	37.6	37.7	36.1	37	38.9	
Strongly agree	36.3	36.3	38.4	36.4	34.3	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 79. Trust, “Agency is well-meaning”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	1.8	1.7	1.6	1.1	2.3	18.191
Somewhat disagree	4	4.4	3	3.1	5.1	
Neither agree nor disagree	20.5	19.9	21.8	21.3	19.6	
Somewhat agree	39.8	39.8	37.6	41.2	40.6	
Strongly agree	33.9	34.2	36	33.3	32.4	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 80. Trust, “Agency has benevolent intentions”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	3.5	3.3	4	3.2	3.6	8.792
Somewhat disagree	5	5	5.2	3.9	5.7	
Neither agree nor disagree	34.1	33.2	35.8	35	33.3	
Somewhat agree	34.2	35	31.7	34.7	35.1	
Strongly agree	23.1	23.5	23.2	23.3	22.3	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 81. Trust, “Agency has good intentions toward viewers”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	1.2	1.5	1.4	0.8	0.9	13.332
Somewhat disagree	4	3.9	3.2	3.2	5.1	
Neither agree nor disagree	20.2	19.4	19.5	21.9	20.2	
Somewhat agree	40.2	39.7	40.1	40.2	41	
Strongly agree	34.5	35.4	35.8	33.9	32.8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 82. Trust, “Agency will keep promises”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	2.1	2.4	2.1	1.9	1.8	8.047
Somewhat disagree	4.6	4.3	4.8	4.1	5.2	
Neither agree nor disagree	23.6	22.3	23.2	25.5	23.8	
Somewhat agree	40.8	42.1	40.5	41.3	39	
Strongly agree	29	28.8	29.4	27.2	30.3	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 83. Trust, “I do not doubt agency’s honesty”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	3	3.3	2.9	2	3.4	7.900
Somewhat disagree	6.8	6.5	7.1	7	6.5	
Neither agree nor disagree	26.6	25.4	26.4	29.2	26.1	
Somewhat agree	27.8	28.7	28.3	26.6	27.2	
Strongly agree	35.9	36.1	35.3	35.2	36.8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 84. Trust, “Agency makes reliable promises”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	2.2	2.4	2.5	1.6	2.3	7.964
Somewhat disagree	5.8	6	6.3	4.9	5.8	
Neither agree nor disagree	29	28.3	28.4	30.2	29.3	
Somewhat agree	39.8	39	39.6	39.1	41	
Strongly agree	23.3	24.3	23.2	24.2	21.6	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 85. Trust, “I trust state agency staff”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	2	2.4	1.9	1.7	1.9	9.201
Somewhat disagree	4.2	4.1	4	4.2	4.4	
Neither agree nor disagree	26.2	25.2	25.7	28.1	26.2	
Somewhat agree	38.5	37.3	37.7	39	40.2	
Strongly agree	29.1	30.9	30.7	27.1	27.3	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 86. Trust, “I trust state agency”

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Strongly disagree	2.3	2.2	2.5	1.8	2.8	.580
Somewhat disagree	5	5.6	4.8	4.9	4.9	
Neither agree nor disagree	24	22.9	22.9	26.5	24.2	
Somewhat agree	38.7	38.8	37.7	38.6	39.4	
Strongly agree	29.9	30.5	32.2	28.2	28.8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 87. Trust, Gefen mean

	National (mean)	West (mean)	Midwest (mean)	Northeast (mean)	Southeast (mean)	Significance (F)
Gefen score	3.725	3.324	3.12	3.348	3.314	0.813
<p>Note that statistical tests are across the four AFWA Regions. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 88. Past purchases and contributions, nonvoluntary

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Habitat Stamp (Required)	38	36	42	33	39	6.370
Hunting License	21	18	23	19	22	9.467*
Fishing License	20	25	21	14	16	23.228**
Land Access Fee	12	13	14	12	8	51.108**
Program Fee	12	13	13	10	11	3.076
None (Includes Voluntary)	32.4	32.1	27.5	35.4	34.9	18.142

Note that statistical tests are across the four AFWA Regions. Statistically significant test values in bold.
 * $p = .01 - .05$
 ** $p = .001 - .01$
 *** $p < .001$
 $df = 3$

Table 89. Past purchases and contributions, voluntary

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Habitat Stamp (Voluntary)	14	16	12	14	13	6.638
License Plate	12	13	10	14	13	9.381*
Income Tax Donation	10	12	10	10	10	7.015
Land Donation (Easement)	10	11	8	12	11	6.463
Direct Donation	10	10	12	11	8	18.733**
Lottery Ticket	10	9	13	15	5	71.609**
Virtual Product	8	10	7	9	7	9.690*
Tangible Product	7	6	7	9	7	7.539
None	32	32	28	35	35	18.142**
<p>Note that statistical tests are across the four AFWA Regions. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 90. Past purchase and contributions, nonvoluntary, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Habitat Stamp (Required)	7.3	21.3	164.194***
Hunting License	8.7	34.5	403.448***
Fishing License	16.1	62.5	914.765***
Land Access Fee	13.6	26.6	106.067***
Program Fee	6.2	15.3	89.598***
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>			

Table 91. Past purchases and contributions, voluntary, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Habitat Stamp (Voluntary)	6.1	15.4	92.572***
License Plate	8.3	17.2	73.486***
Income Tax Donation	7.1	13.7	47.794***
Land Donation (Easement)	5.1	12.4	67.725***
Direct Donation	7.5	16.7	80.600***
Lottery Ticket	7.4	12.6	30.942***
Virtual Product	4.3	10.5	57.739***
Tangible Product	8.8	15.1	38.601***
None (Includes Voluntary)	50.0	12.3	643.17***
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 1$</p>			

Table 92. Lifetime hunting or fishing license

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Lifetime hunting or fishing license	39	35.9	32.5	43.9	43.1	17.770***
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$ $n = 1,776$</p>						

Table 93. Likelihood of future nonvoluntary contributions, program fee

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	33	30	32.7	35.6	34	25.327*
Slightly likely	20	19	23.8	18	20	
Moderately likely	23.8	26	21.7	22.5	24	
Very likely	14.8	16	12.6	16.1	15	
Extremely likely	8.4	9	9.1	7.7	8	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 94. Likelihood of future nonvoluntary contributions, land pass

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	27.5	24	26.4	32.1	29	42.164***
Slightly likely	17.9	17	17.8	19	19	
Moderately likely	23.1	23	23.3	21.1	25	
Very likely	19.1	21	18.6	18.2	18	
Extremely likely	12.3	16	13.9	9.6	10	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 95. Likelihood of future nonvoluntary contributions, conservation or habitat stamp

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	48.9	45	51.3	54	48	23.317*
Slightly likely	12.6	13	12.5	10.7	13	
Moderately likely	16.2	17	14.9	14.5	17	
Very likely	12.3	13	11.4	11.8	13	
Extremely likely	10	12	9.9	9	9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 96. Likelihood of future nonvoluntary contributions, fishing license

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	30.8	29	28	35.7	32	26.761**
Slightly likely	14.3	16	14.4	13.2	13	
Moderately likely	18	18	18.2	18.4	17	
Very likely	17.6	17	17.7	16.4	20	
Extremely likely	19.2	20	21.8	16.3	18	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 97. Likelihood of future nonvoluntary contributions, hunting license

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	51.6	49	52.7	55.3	51	15.870
Slightly likely	11	11	11.7	9	12	
Moderately likely	14.2	15	13.6	14.7	14	
Very likely	12.7	14	10.9	11.9	13	
Extremely likely	10.5	11	11	9.2	10	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 98. Likelihood of future voluntary contributions, tangible products

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	26.9	25.7	26.5	28.5	27.4	16.761
Slightly likely	21.4	19.7	23.6	20.5	22.2	
Moderately likely	23.2	22.8	22.7	24.7	23	
Very likely	19.2	22	18.1	16.4	18.8	
Extremely likely	9.3	9.9	9.1	9.9	8.5	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 99. Likelihood of future voluntary contributions, virtual products

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	38.8	37.1	39.6	40.6	38.8	15.545
Slightly likely	20.3	19	21.6	17.6	22.7	
Moderately likely	19.6	20.8	19.2	20	18.3	
Very likely	14.9	16.7	13.4	15.2	14.1	
Extremely likely	6.4	6.4	6.3	6.7	6.2	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 100. Likelihood of future voluntary contributions, lottery ticket

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	31.1	30.9	31	32	30.7	16.654
Slightly likely	18.8	17.4	20.4	18.3	19.2	
Moderately likely	22.7	22.6	22.2	21	24.2	
Very likely	16.9	19.3	14.3	18	15.5	
Extremely likely	10.6	9.7	12.1	10.7	10.4	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 101. Likelihood of future voluntary contributions, direct donation

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	35.7	32.4	35.5	37	38.4	23.514*
Slightly likely	20.7	20.7	23.4	19.9	19.3	
Moderately likely	19.7	20.8	20.8	17.6	19.3	
Very likely	15.7	16.8	13.6	17.1	15.2	
Extremely likely	8.2	9.5	6.6	8.4	7.9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 102. Likelihood of future voluntary contributions, land donation or conservation easement

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	51.2	48.9	54.5	51.6	51	21.577*
Slightly likely	13.7	14	15.1	12.1	13.5	
Moderately likely	16.4	17.2	15.2	15.4	17.1	
Very likely	12	12.7	9.7	14.5	11.3	
Extremely likely	6.7	7.2	5.4	6.5	7.2	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 103. Likelihood of future voluntary contributions, income tax donation

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	37	36.1	36.8	38.2	37.2	16.061
Slightly likely	19.5	18.8	22.4	18.9	18.7	
Moderately likely	20.6	22.4	20.3	18	20.6	
Very likely	15.3	15.5	13.5	17.3	15.2	
Extremely likely	7.6	7.2	7	7.7	8.3	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 104. Likelihood of future voluntary contributions, conservation license plate

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	40.4	39.7	43.9	43.4	36.4	25.055*
Slightly likely	17.2	16.8	16.7	15.9	19	
Moderately likely	19.4	20.1	20	16.9	20.1	
Very likely	14.4	14.9	11.7	15.8	14.9	
Extremely likely	8.6	8.6	7.7	8	9.7	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 105. Likelihood of future voluntary contributions, conservation or habitat stamp, voluntarily purchased

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	47.2	43.3	50.9	50.8	46	27.175**
Slightly likely	15	16.5	15	12.5	15.2	
Moderately likely	18.2	18.8	17.2	16.6	19.6	
Very likely	13	14	11.2	14.6	12	
Extremely likely	6.6	7.4	5.7	5.5	7.2	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 106. Likelihood of future nonvoluntary contributions, program fee, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	41.5	23.1	197.901***
Slightly likely	20.4	19.6	
Moderately likely	21.5	26.5	
Very likely	11.2	19	
Extremely likely	5.4	11.8	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 107. Likelihood of future nonvoluntary contributions, land pass, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	36.2	17.4	231.663***
Slightly likely	19.4	16.2	
Moderately likely	20.5	26.1	
Very likely	15	23.9	
Extremely likely	8.8	16.4	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 108. Likelihood of future nonvoluntary contributions, conservation or habitat stamp, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	62.8	32.7	430.799***
Slightly likely	11.9	13.4	
Moderately likely	13	19.8	
Very likely	7.8	17.5	
Extremely likely	4.4	16.6	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 109. Likelihood of future nonvoluntary contributions, fishing license, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	49.3	9.5	1129.181***
Slightly likely	18.4	9.6	
Moderately likely	16.2	20.2	
Very likely	10.4	26	
Extremely likely	5.8	34.7	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 110. Likelihood of future nonvoluntary contributions, hunting license, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	66.8	34.1	536.519***
Slightly likely	10.2	11.9	
Moderately likely	12	16.8	
Very likely	7.7	18.5	
Extremely likely	3.3	18.7	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 111. Likelihood of future voluntary contributions, tangible products, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	34.6	17.9	198.586***
Slightly likely	22.4	20.4	
Moderately likely	22.3	24.3	
Very likely	14.4	24.7	
Extremely likely	6.4	12.7	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 112. Likelihood of future voluntary contributions, virtual products, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	46.3	30	152.280***
Slightly likely	21	19.5	
Moderately likely	17	22.6	
Very likely	10.7	19.9	
Extremely likely	5	8.1	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 113. Likelihood of future voluntary contributions, lottery ticket, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	38.4	22.5	169.690***
Slightly likely	19.7	17.7	
Moderately likely	21.6	23.9	
Very likely	12.4	22.1	
Extremely likely	8	13.8	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 114. Likelihood of future voluntary contributions, direct donation, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	43.5	26.4	169.158***
Slightly likely	21.4	20	
Moderately likely	17.5	22.4	
Very likely	12.2	19.8	
Extremely likely	5.5	11.4	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 115. Likelihood of future voluntary contributions, land donation or conservation easement, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	60.3	40.6	177.029***
Slightly likely	13.5	14.1	
Moderately likely	13	20.3	
Very likely	8.4	16.2	
Extremely likely	4.8	8.8	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 116. Likelihood of future voluntary contributions, income tax donation, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	44.4	28.2	155.098***
Slightly likely	20.7	18.3	
Moderately likely	17.4	24.3	
Very likely	12	19.2	
Extremely likely	5.4	10.1	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 117. Likelihood of future voluntary contributions, conservation license plate, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	49.5	29.7	186.096***
Slightly likely	16.7	17.9	
Moderately likely	16.9	22.4	
Very likely	11.2	18	
Extremely likely	5.7	11.9	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 118. Likelihood of future voluntary contributions, conservation or habitat stamp, voluntarily purchased, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	58.5	34	285.522***
Slightly likely	14.7	15.4	
Moderately likely	14.5	22.5	
Very likely	8.6	18	
Extremely likely	3.6	10	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 119. Encouraging additional financial support, funds matched

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	23	21	25	25	23	15.763
Slightly likely	20	20	19	18	22	
Moderately likely	26	27	26	24	26	
Very likely	20	20	19	21	20	
Extremely likely	11	12	10	11	9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 120. Encouraging additional financial support, wildlife research

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	21	19	22	22	21	12.625
Slightly likely	21	22	21	19	20	
Moderately likely	26	25	27	25	28	
Very likely	21	21	19	22	20	
Extremely likely	11	13	10	12	11	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 121. Encouraging additional financial support, more education or outreach

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	21	19	22	22	20	16.176
Slightly likely	21	22	22	20	21	
Moderately likely	26	25	28	24	28	
Very likely	21	23	18	22	21	
Extremely likely	11	11	11	11	10	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 122. Encouraging additional financial support, opportunities and resources for wildlife viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	20	20	22	22	19	15.256
Slightly likely	21	21	21	19	22	
Moderately likely	27	25	29	28	28	
Very likely	22	24	19	21	22	
Extremely likely	10	10	10	11	9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 123. Encouraging additional financial support, conservation of preferred viewing species

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	18	18	18	19	17	5.75
Slightly likely	21	20	20	19	22	
Moderately likely	28	28	29	27	28	
Very likely	21	21	21	23	21	
Extremely likely	12	13	13	12	12	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 124. Encouraging additional financial support, conservation of rare and vulnerable species

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	18	17.7	18	18.3	18.4	7.510
Slightly likely	21	19.6	21.4	20.3	21.1	
Moderately likely	25	24.5	26.2	25.3	24.5	
Very likely	23	23.6	22	22.4	24.4	
Extremely likely	13	14.5	12.3	13.6	11.5	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 125. Encouraging additional financial support, habitat conservation

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Not at all likely	18	18	19.1	17.4	17.4	12.260
Slightly likely	25	23.6	23.7	24.8	25.5	
Moderately likely	26	24.6	28.8	25.6	27	
Very likely	19	21.1	16.9	19.8	19.2	
Extremely likely	12	12.6	11.6	12.4	10.9	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 126. Encouraging additional financial support, funds matched, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	28.6	17.4	113.122***
Slightly likely	21.9	18.2	
Moderately likely	24.9	27.4	
Very likely	15.8	24.6	
Extremely likely	8.9	12.5	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 127. Encouraging additional financial support, wildlife research, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	28.6	17.4	113.122***
Slightly likely	21.9	18.2	
Moderately likely	24.9	27.4	
Very likely	15.8	24.6	
Extremely likely	8.9	12.5	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 128. Encouraging additional financial support, more education or outreach, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	26	14.5	136.285***
Slightly likely	23.5	18.3	
Moderately likely	24.8	28.1	
Very likely	17.4	25.2	
Extremely likely	8.2	13.8	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 129. Encouraging additional financial support, opportunities and resources for wildlife viewing, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	26.1	14	140.079***
Slightly likely	22.6	18.9	
Moderately likely	26.2	28.2	
Very likely	16.7	27.1	
Extremely likely	8.5	11.9	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 130. Encouraging additional financial support, conservation of preferred viewing species, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	23.2	11.4	153.619***
Slightly likely	23	17.7	
Moderately likely	26.6	29.5	
Very likely	17.2	26.1	
Extremely likely	10	15.3	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 131. Encouraging additional financial support, conservation of rare and vulnerable species, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	23.4	12	132.710***
Slightly likely	22.4	18.5	
Moderately likely	24.4	25.7	
Very likely	19.5	27.6	
Extremely likely	10.3	16.2	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold. * $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 132. Encouraging additional financial support, habitat conservation, nonconsumptive-consumptive

	Nonconsumptive (%)	Consumptive (%)	Significance (χ^2)
Not at all likely	23.1	12	155.994***
Slightly likely	27	21.4	
Moderately likely	25.7	27.1	
Very likely	15.2	24.2	
Extremely likely	8.9	15.3	
<p>Note that statistical tests are between nonconsumptive and consumptive viewers. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 4$</p>			

Table 133. State agency support for wildlife viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
More wildlife viewing locations	35	34	37	37	35	8.289
Info - where to view wildlife	40	40	38	39	42	2.645
Info - where to view where there is no hunting	28	28	29	26	29	2.224
Info - about wildlife in the state	42	41	42	42	42	.751
Info - how to view	28	29	27	26	29	3.833
Programs to interact with other viewers	20	20	19	18	21	1.821
Programs to improve my viewing skills	24	24	23	23	25	1.245
Virtual programs	21	21	21	22	22	.756
Volunteer data collection opportunities	17	18	17	17	16	1.563
Other volunteer opportunities	6	6	7	5	7	3.794

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More opportunities for youth	23	23	24	23	22	.797
More training for guides	19	20	17	19	18	3.159
More wildlife viewing events	22	20	22	21	23	1.938
More wildlife viewing staff	15	15	16	15	13	4.623
More wildlife viewing amenities	25	27	27	23	24	5.890
More accessible features	27	28	28	24	29	6.644
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>						

Table 134. Preferred state agency communication methods

Preferred communication

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Staff	8	9	9	6	8	9.493*
Text	8	9	9	8	7	1.949
Podcast	9	9	9	9	8	.306
Blogs	11	11	11	12	10	1.058
Tik-Tok	13	15	11	13	12	7.292
Twitter	15	15	14	17	13	8.796*
Instagram	19	21	16	20	18	12.847*
YouTube	29	28	27	29	30	1.407
Online Magazine	30	30	30	31	30	.739
Local News	31	31	33	31	31	1.243
Mailed Newsletter, Subscription	34	33	35	35	33	1.759
Facebook	38	36	41	39	37	7.404

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Email Update	46	47	46	44	44	2.395
Printed Materials	49	48	52	49	48	4.837
Website	50	53	52	47	47	13.455*

Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.

* $p = .01 - .05$

** $p = .001 - .01$

*** $p < .001$

$df = 12$

Table 135. COVID-19 impact on participation in viewing

	National (%)	West (%)	Midwest (%)	Northeast (%)	Southeast (%)	Significance (χ^2)
Recruited	7	7	5	9	7	30.989**
Restarted	13	13	12	14	12	
Stopped	24	28	22	21	24	
No Impact	56	52	60	56	57	
<p>Note that statistical tests are across the four regions: West, Midwest, Northeast and Southeast. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 12$</p>						

Table 136. Respondent age; COVID-19

	Recruited (Mean)	Retained (Mean)	Churned (Mean)	Reactivated (Mean)	Significance (F)
Age	42.6	55.5	46.3	43.6	126.24***
<p>Note that statistical tests are across recruited, retained, churned, and reactivated groups. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>					

Table 137. State agency support for wildlife viewing, COVID-19 analysis

	Recruited (%)	Retained (%)	Churned (%)	Reactivated (%)	Significance (χ^2)
More wildlife viewing locations	35	34.7	38	34.4	3.509
Info - where to view wildlife	39.9	39.7	41.6	35.6	5.02
Info - where to view where there is no hunting	24	28.6	28.8	27.1	3.05
Info - about wildlife in the state	36.4	43	41.7	38.1	7.603
Info - how to view	27.2	26	29.6	31.7	9.279*
Programs to interact with other viewers	20.8	16.5	23.4	24	28.785***
Programs to improve my viewing skills	21.9	21.2	29.7	25.1	28.124***
Virtual programs *	22.3	18.8	25.2	25.3	21.719***
Volunteer data collection opportunities	18.7	14.3	21.4	20.3	29.36***
Other volunteer opportunities	8.1	6.7	5.2	4.3	7.771
More opportunities for youth	22.6	22.1	25.2	24.2	4.025
More training for guides	23	15.7	22.6	22.8	32.165***

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More wildlife viewing events	24	19.6	24.7	23.8	13.269**
More wildlife viewing staff	15.5	12.4	17.7	19.1	24.45***
More wildlife viewing amenities	27.6	24.1	27.4	25	4.799
More accessible features	29	25.3	29.7	29.2	8.768*
None	5.1	17	5.7	5.1	109.476***
<p>Note that statistical tests are across recruited, retained, churned, and reactivated groups. Statistically significant test values in bold.</p> <p>* $p = .01 - .05$ ** $p = .001 - .01$ *** $p < .001$ $df = 3$</p>					

Table 138. Preferred state agency communication methods, COVID-19 analysis

Receive Information from State Agency	Recruited (%)	Retained (%)	Churned (%)	Reactivated (%)	Significance (χ^2)
Staff	5.7	8.8	8	5.6	8.100*
Text	12	7.4	7.5	9.7	9.576*
Podcast	9.5	6.3	12.1	13.2	42.825***
Blogs	12.4	8.3	13.8	15.9	40.169***
Tik-Tok	19.1	7.7	17.3	21.1	114.256***
Twitter	18.4	9.9	22	21.5	102.598***
Instagram	23.7	13.5	23	30.2	101.790***
YouTube	28.6	24.6	33.5	37.1	47.787***
Online Magazine	25.1	27.3	35.1	35.2	29.525***
Local News	23.3	32.9	32	27.5	14.920**
Mailed Newsletter, Subscription	30.4	34.1	35	34.4	2.109
Facebook	39.9	34	43.6	45.5	40.169***

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Email Update	39.2	45	46.4	49.5	8.353*
Printed Materials	43.5	52.6	45.2	43.9	26.006***
Website	38.9	51.8	49.4	49.5	17.170***

Note that statistical tests are across recruited, retained, churned, and reactivated groups. Statistically significant test values in bold.

* $p = .01 - .05$

** $p = .001 - .01$

*** $p < .001$

$df = 3$