



U.S. Fish & Wildlife Service

NATIONAL WILDLIFE REFUGE VISITOR SURVEY

*2018 Results for
Hagerman National Wildlife Refuge*



**THE OHIO STATE
UNIVERSITY**



Acknowledgments

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Front cover: A visitor enjoys a walk along the Meadow Pond Trail at Hagerman National Wildlife Refuge. Photo credit: Kylie Campbell.

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Understanding Wildlife Refuge Visitors & Their Experiences

A hundred years in the making, the National Wildlife Refuge System (Refuge System) is a vast network of habitats that supports over 2,000 species of birds, mammals, reptiles, amphibians, and fish across the United States on national wildlife refuges (wildlife refuges). Wildlife refuges also provide unparalleled outdoor recreation experiences and health benefits to people by offering a chance to unplug from the stresses of modern life and reconnect with their natural surroundings. The National Wildlife Refuge System Improvement Act of 1997 specifically identified six priority recreational uses: hunting, fishing, wildlife observation and photography, environmental education, and interpretation (Fig. 1). These recreational activities are prioritized on every refuge where compatible with the refuge's stated purposes. Visitors may also engage in many other activities (for example, hiking, paddling, boating, and auto tour routes) where compatible.

At least one wildlife refuge exists within an hour's drive of most major metropolitan areas. With over 55 million visits per year, the Refuge System is committed to maintaining customer satisfaction and public engagement while helping people and wildlife to thrive. Increased

visitation is not limited to the Refuge System—over the past few years, there has been a rise in the number of people traveling to public lands and waters for recreation (Outdoor Foundation, 2018). This nationwide trend demands effective management of visitor access and use to ensure benefits for present and future generations.

The need to understand visitors and their experiences, as well as preferences for future opportunities, is further underscored by widespread societal changes that are shaping how people engage with nature and wildlife (Kellert et al., 2017; Manfredo et al., 2018). Researchers and land management professionals alike recognize the need to connect the next generation to nature and wildlife to enhance mental and physical well-being and build a broader conservation constituency (Charles & Louv, 2009; Larson, Green, & Cordell, 2011).

The National Wildlife Refuge Visitor Survey is a Refuge System-wide effort to monitor visitor characteristics, experience, and satisfaction with refuge experiences, as well as visitor economic contributions to local communities. The survey is conducted every five years on a rotating basis on wildlife refuges that have at least 50,000 visits per year. This effort provides refuge professionals with reliable baseline information and trend data that can be used to plan, design, and deliver quality visitor experiences, communicate the value of wildlife refuges to different audiences, and set future priorities. The National Wildlife Refuge Visitor Survey is a collaboration between the U.S. Fish & Wildlife Service (Service), The Ohio State University (OSU), and American Conservation Experience (ACE).

This report summarizes visitors and their experiences at Hagerman National Wildlife Refuge, referred to as “this wildlife refuge” or “refuge” throughout this report. Percentages noted throughout the report were rounded



Fig. 1: Priority recreational uses of National Wildlife Refuges.

to the nearest whole number and, when summarized per survey question, may not equal 100%. Additionally, most figures do not display a percentage for any category containing less than 5% of visitors. See Appendix A for the

survey methodology and limitations of findings. See Appendix B and C for visitor responses to specific survey questions for this wildlife refuge.



2018 National Visitor Survey interns in action at wildlife refuges across the United States. Photo credit: U.S. Fish & Wildlife Service.

Surveying Visitors at This Wildlife Refuge

REFUGE DESCRIPTION

Hagerman National Wildlife Refuge is located directly north of Dallas and just south of the Texas-Oklahoma border. The refuge encompasses the upper portion of the Big Mineral Arm of Lake Texoma, which is one of the largest reservoirs in the United States. This wildlife refuge was established in 1946 with the primary focus of providing a winter home for migratory waterfowl. Refuge lands were originally purchased by the U.S. Army Corps of Engineers, which is responsible for the Denison Dam Project that created Lake Texoma. The refuge is along the Central Flyway, and hundreds of thousands of birds reside at the wildlife refuge or stay there during part of the year while migrating. Though the birds are the most abundant type of wildlife at the refuge, many other species thrive on the 11,320 acres of protected habitat. Reptiles, amphibians, insects, fish, and mammals (including deer, turkeys, bobcats, coyotes, and fox squirrels) all call this refuge home. Of the total acreage, approximately 8,700 consist of uplands and the remaining 2,600 acres are comprised of wetlands.



Visitor Center entrance path at Hagerman National Wildlife Refuge. Photo credit: Kylie Campbell.

Each year approximately 190,000 visitors spend time at Hagerman National Wildlife Refuge (U.S. Fish and Wildlife Service, 2018, written comm.). Visitor activities include bird watching, wildlife observation, photography, fishing, hunting, hiking, and use of the visitor center for environmental education, interpretation, and special events. This wildlife refuge has a very active Friends group (Friends of Hagerman) which helps to promote the refuge through a number of events and other crucial support work.

SAMPLING

Refuge professionals at this wildlife refuge identified two separate 14-day sampling periods and one or more sampling locations that best reflected the primary uses of the refuge as well as the diversity of activities that occur (Fig. 2). For more details on methodology for the National Wildlife Refuge Visitor Survey, see Appendix A.

- During the two sampling periods, a total of 389 visitors agreed to participate in the survey by providing their names and addresses.
- In all, 165 visitors completed the survey online (51%) or by mail (49%) after their refuge visit, resulting in a 44% response rate.
- Results for this wildlife refuge have a $\pm 6\%$ margin of error at the 95% confidence level. For more details on limitations of results and survey methodology, see Appendix A.

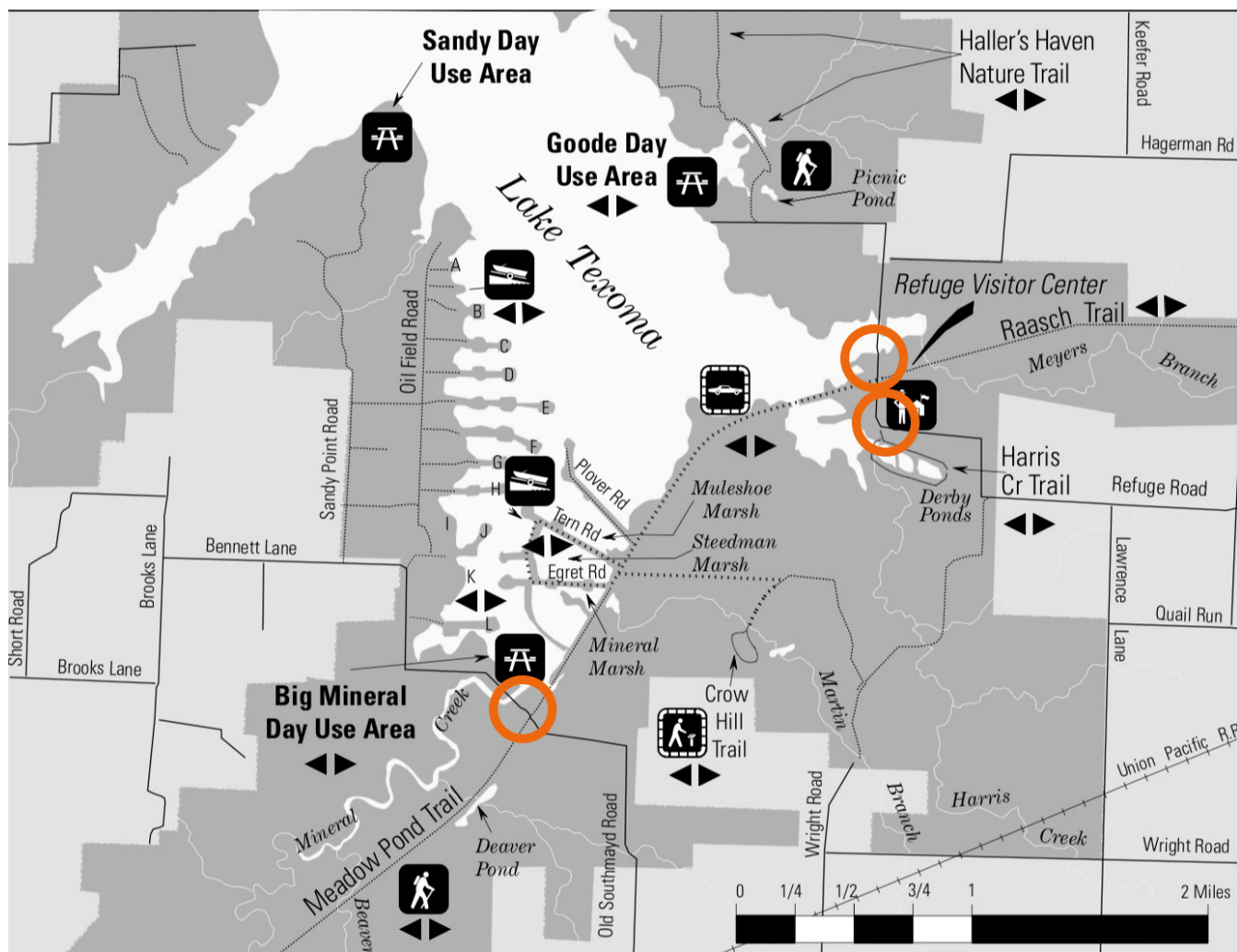


Fig. 2: Map of Hagerman National Wildlife Refuge. Visitors were contacted at the circled locations from 3/22/2018–3/31/2018 and 11/15/2018–11/26/2018.

Visitor Characteristics

An important first step in managing visitor experiences is to understand the characteristics of those who currently visit wildlife refuges. Refuge professionals can compare visitor demographics to the demographic composition of nearby communities or the nation to inform engagement efforts with new audiences. Useful tools for these comparisons include Headwaters Economics' Economic Profile System and their Populations at Risk (<https://headwaterseconomics.org>) or U.S. Census Bureau products (www.census.gov; www.socialexplorer.com).

AGE & GENDER

- 44% of visitors were female with an average age of 57 years (Fig. 3).
- 56% were male with an average age of 59 years.

EDUCATION

- 12% of visitors had a high school degree or less.
- 51% had at least some college.
- 37% had an advanced degree.

RACE & ETHNICITY

Most prevalent race or ethnicity (Fig. 4):

- White (90%).
- Asian (3%).
- Hispanic (3%).

INCOME

- Visitors had a mean income range of \$75,000-\$99,999 (Fig. 5).

OTHER TRIP CHARACTERISTICS

- Average group size of 2 people.
- 31% visited the refuge alone.
- 53% visited with at least one other adult.
- 15% visited with a combination of at least 1 adult and 1 child.

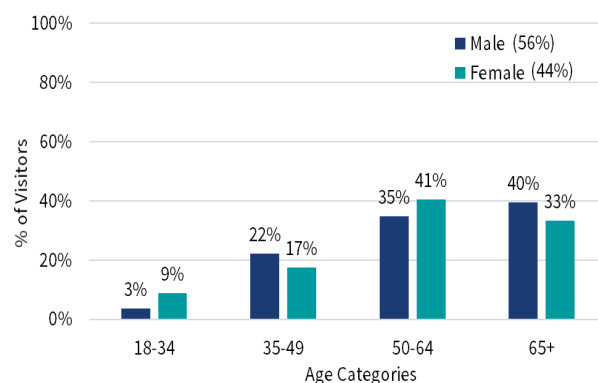


Fig. 3: Distribution of visitors to this refuge by gender and age group.

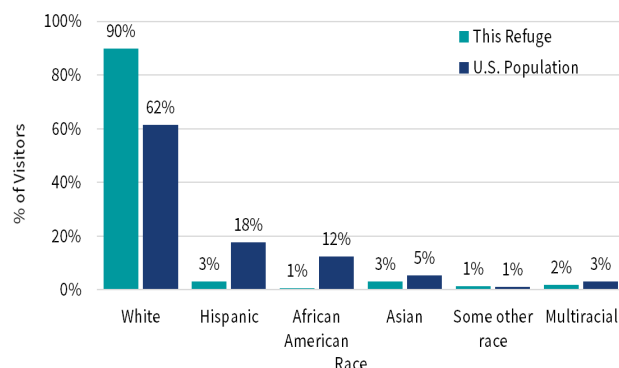


Fig. 4: Race and ethnicity of visitors to this refuge compared to the national average.

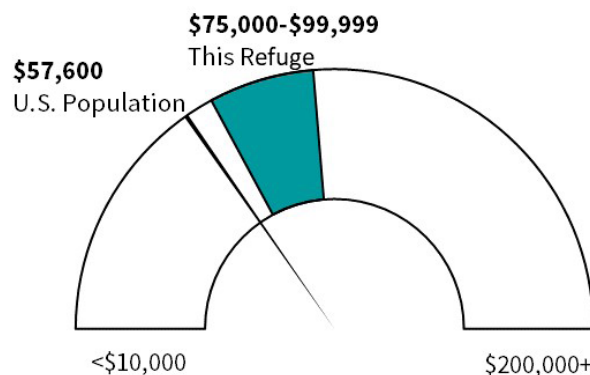


Fig. 5: Mean income range of visitors to this refuge compared to the national median income.

Trip Characteristics

Understanding the travel patterns of visitors and why they choose to visit wildlife refuges is important for effective visitor use management. Comparisons of responses from local visitors (those living ≤ 50 miles from the refuge) and nonlocal visitors (those living > 50 miles from the refuge) can inform communication efforts with current visitors and those who have yet to visit. Understanding seasonality helps refuge professionals better understand visitor use patterns and gauge supply and demand.

LOCAL VISITORS

Highlights of trip characteristics for local visitors to this wildlife refuge (60%) include:

- For locals, this refuge was the primary reason for their trip (84%) (Fig. 6).
- Local visitors traveled an average of 27 minutes to arrive at this refuge (Fig. 7).

NONLOCAL VISITORS

Highlights of trip characteristics for nonlocal visitors to this wildlife refuge (40%) include:

- For nonlocals, this refuge was the primary reason for their trip (79%) (Fig. 6).
- Nonlocal visitors traveled an average of 4 hours to arrive at this refuge (Fig. 8).
- Of the 99% of visitors who lived in the U.S., nonlocal visitors were most often from Texas (90%) and Oklahoma (5%).
- 1% of respondents were international visitors.

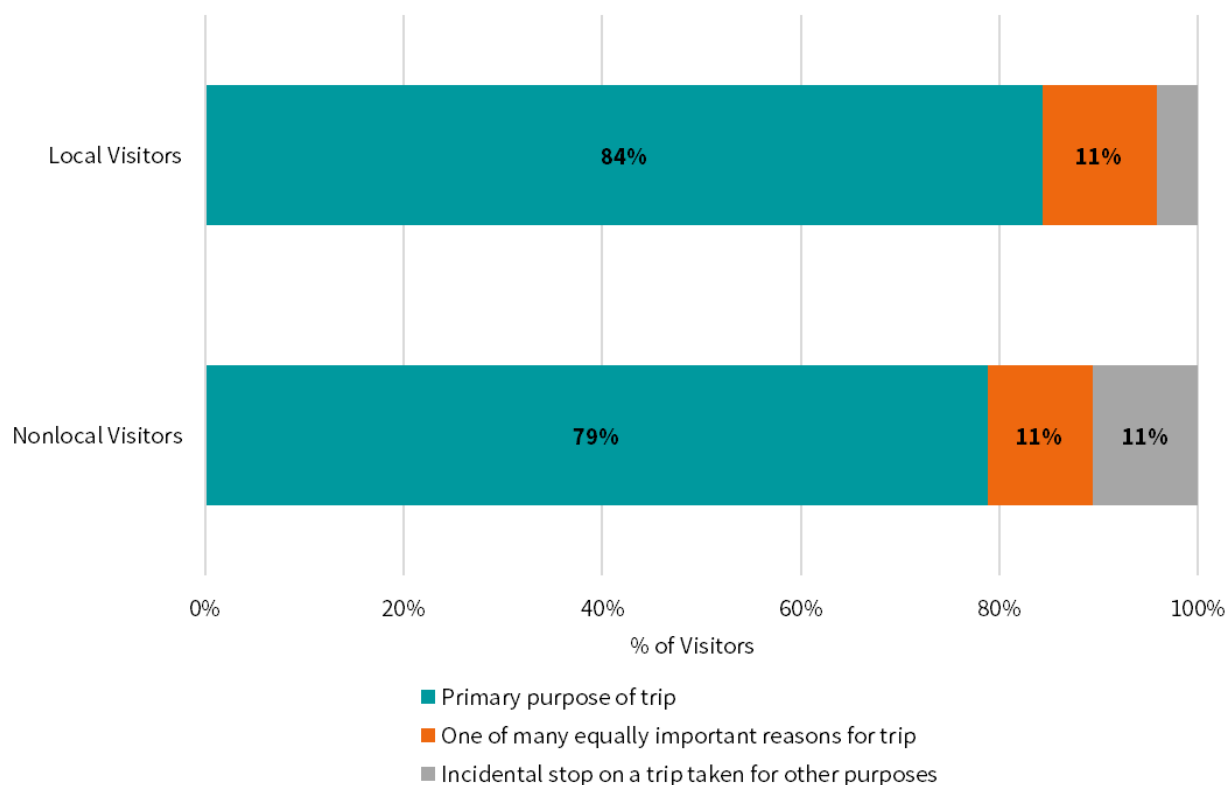


Fig. 6: Purpose of most recent refuge visit for local (living ≤ 50 miles from the refuge) and nonlocal (living > 50 miles from the refuge) visitors.

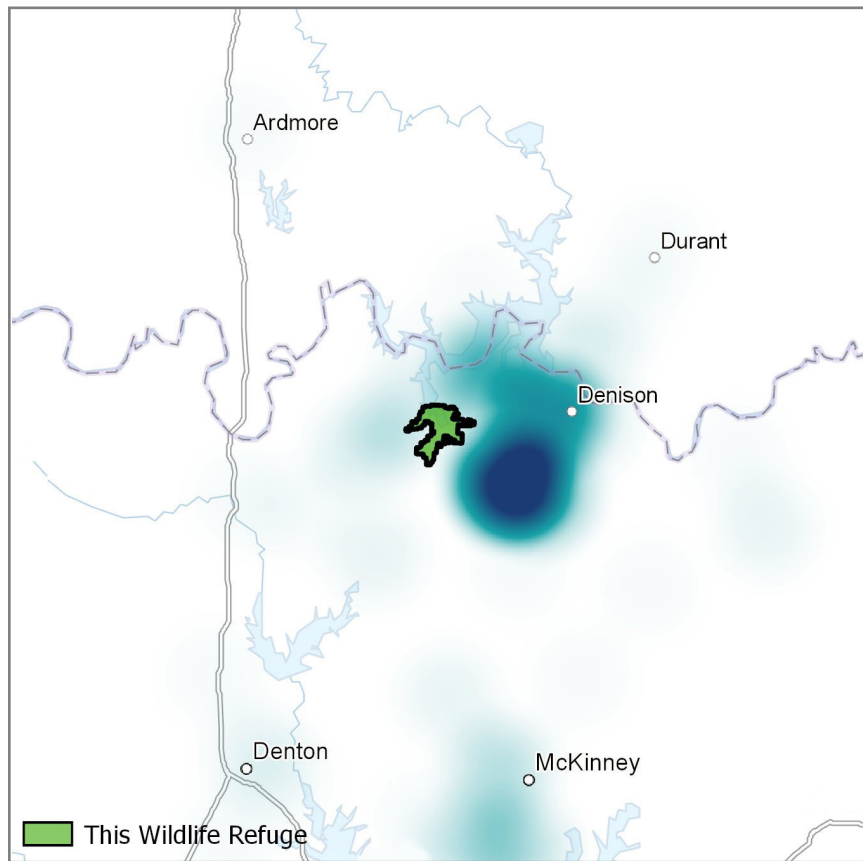


Fig. 7: Map showing residence of local visitors to this refuge. Darker shading represents relatively higher visitation from that area.

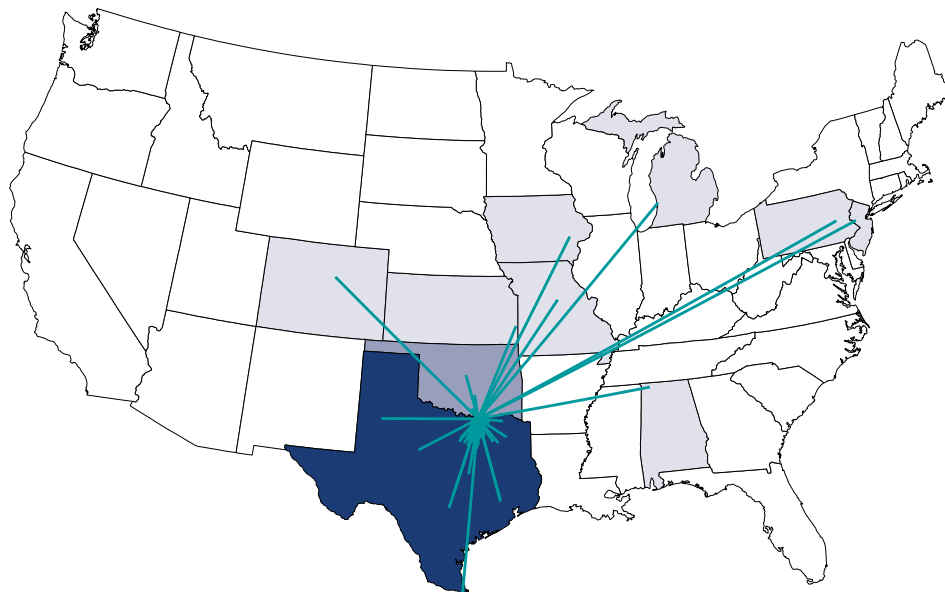


Fig. 8: Map showing residence of visitors to this refuge by zip code, with each line representing visitation from a different zip code. The convergence point of the lines is the geographical center of the refuge. Darker shading of the states represents higher visitation from that state.

OTHER TRIP CHARACTERISTICS

Other trip characteristics include:

- To get to this wildlife refuge, visitors primarily traveled by private vehicle without a trailer (92%) and by foot (5%) (Fig. 9).
- Once on the refuge, visitors primarily traveled by private vehicle without a trailer (69%) and by foot (41%) (Fig. 9).
- Visits occurred during winter (59%), spring (76%), summer (52%), and fall (77%).
- 85% of visitors made a single-day trip to this refuge, spending an average of 3 hours, while 15% of visitors were on a multi-day trip to this wildlife refuge that averaged 4 days.

During the 12 months prior to completing the survey, visitors also made multiple trips to this wildlife refuge, other wildlife refuges, and other public lands:

- 81% were repeat visitors to this wildlife refuge, visiting an average of 23 times.
- 45% visited other national wildlife refuges, averaging 2 visits.
- 64% visited other public lands, averaging 4 visits.

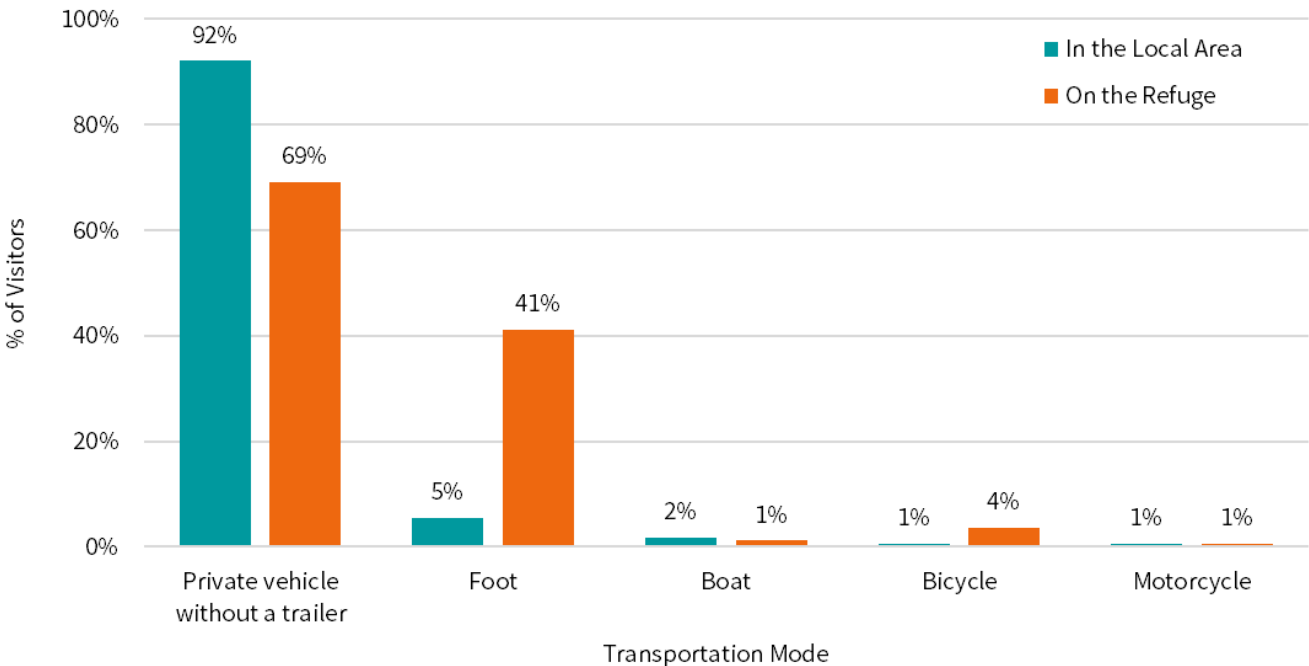


Fig. 9: Modes of transportation used by visitors to get from the local area to this refuge and within the boundaries of this refuge.

Information Sources Used for Trip Planning

Knowing more about which information sources visitors use (or do not use) to plan their trips can improve communication strategies and facilitate positive experiences on refuges. The Refuge System's success in reaching new and diverse audiences as well as current visitors also depends on its ability to keep pace with communication trends (U.S. Fish & Wildlife Service, 2016a).

Visitors to this wildlife refuge found a variety of in-person, print/internet, and refuge-specific information sources helpful when planning their trips. Details for information sources identified as very or extremely helpful include:

- In-person sources that were most helpful to visitors regardless of age included tourist information/welcome center and word of mouth.
- Print and internet sources that were most helpful to visitors regardless of age included printed map/atlas and web-based map.
- Refuge-specific sources that were most helpful to visitors regardless of age included refuge employees/volunteers and kiosks/displays/exhibits at this refuge.
- Use of information sources varied by age groups (see Figs. 10-12 for details).

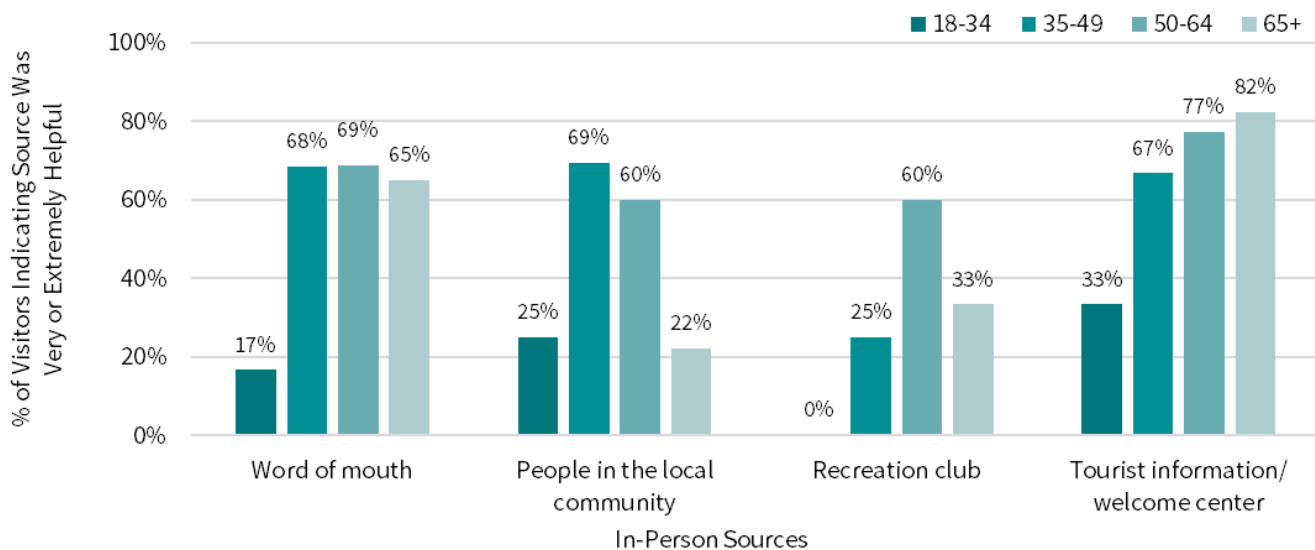


Fig. 10: Percent of visitors by age group who found in-person information sources very or extremely helpful in planning their trip.

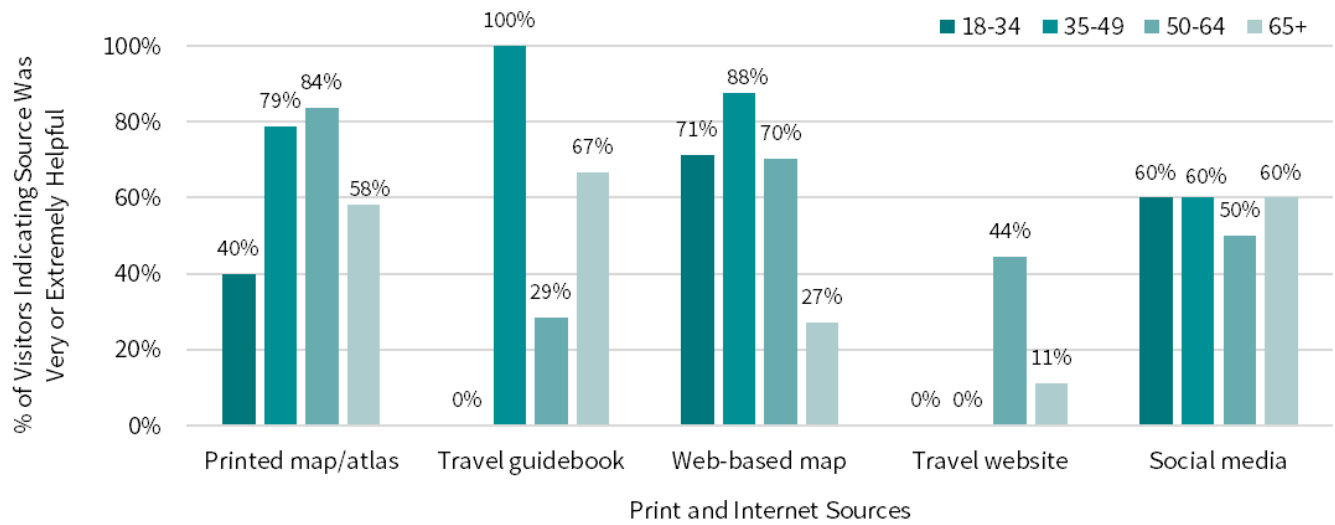


Fig. 11: Percent of visitors by age group who found print and internet information sources very or extremely helpful in planning their trip.

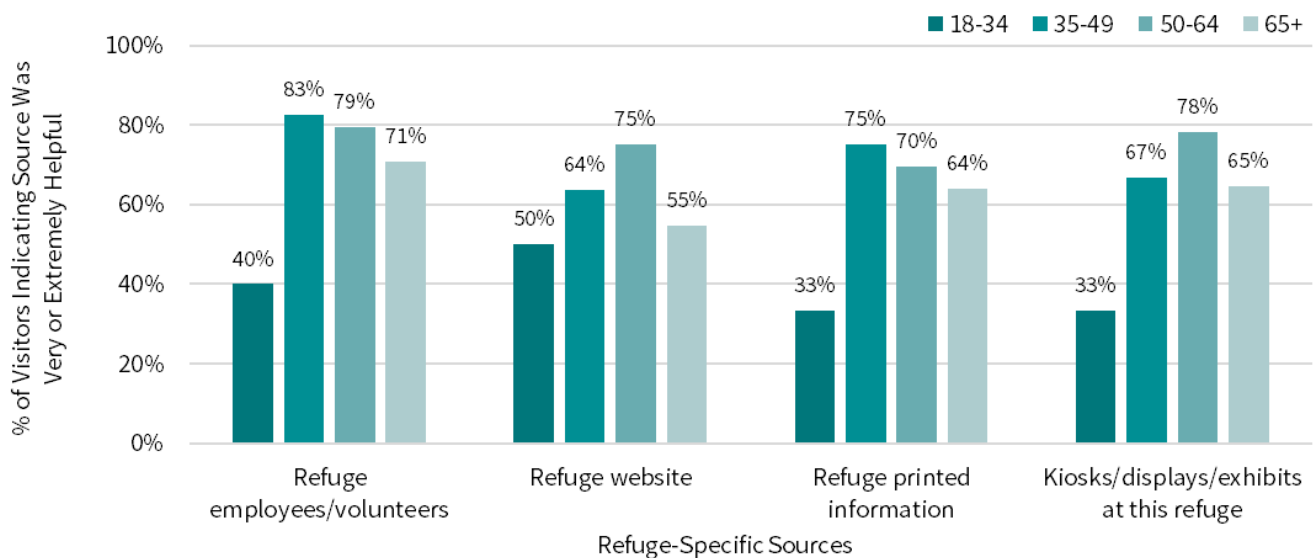


Fig. 12: Percent of visitors by age group who found refuge-specific information sources very or extremely helpful in planning their trip.

Use of Social Media

Around 70% of Americans use social media to connect with one another, engage with news content, share information, and entertain themselves (Smith & Anderson, 2018). Social media posts can act as a virtual “word of mouth” method for increasing awareness about the refuge to the visitor’s network and beyond. A social media presence can further generate awareness of the refuge and its resources among audiences that do not use or did not otherwise learn about the refuge through traditional advertising outlets.

Social media was used by 55% of visitors to share their experience on this refuge with others. Use of specific social media platforms varied by age group (Fig. 13):

- Visitors 18-34 years old preferred to use Facebook (56%) and Instagram (33%).
- Visitors 35-49 years old preferred to use Facebook (62%) and Instagram (14%).
- Visitors 50-64 years old preferred to use Facebook (40%) and Instagram (17%).
- Visitors 65 or older preferred to use Facebook (42%).

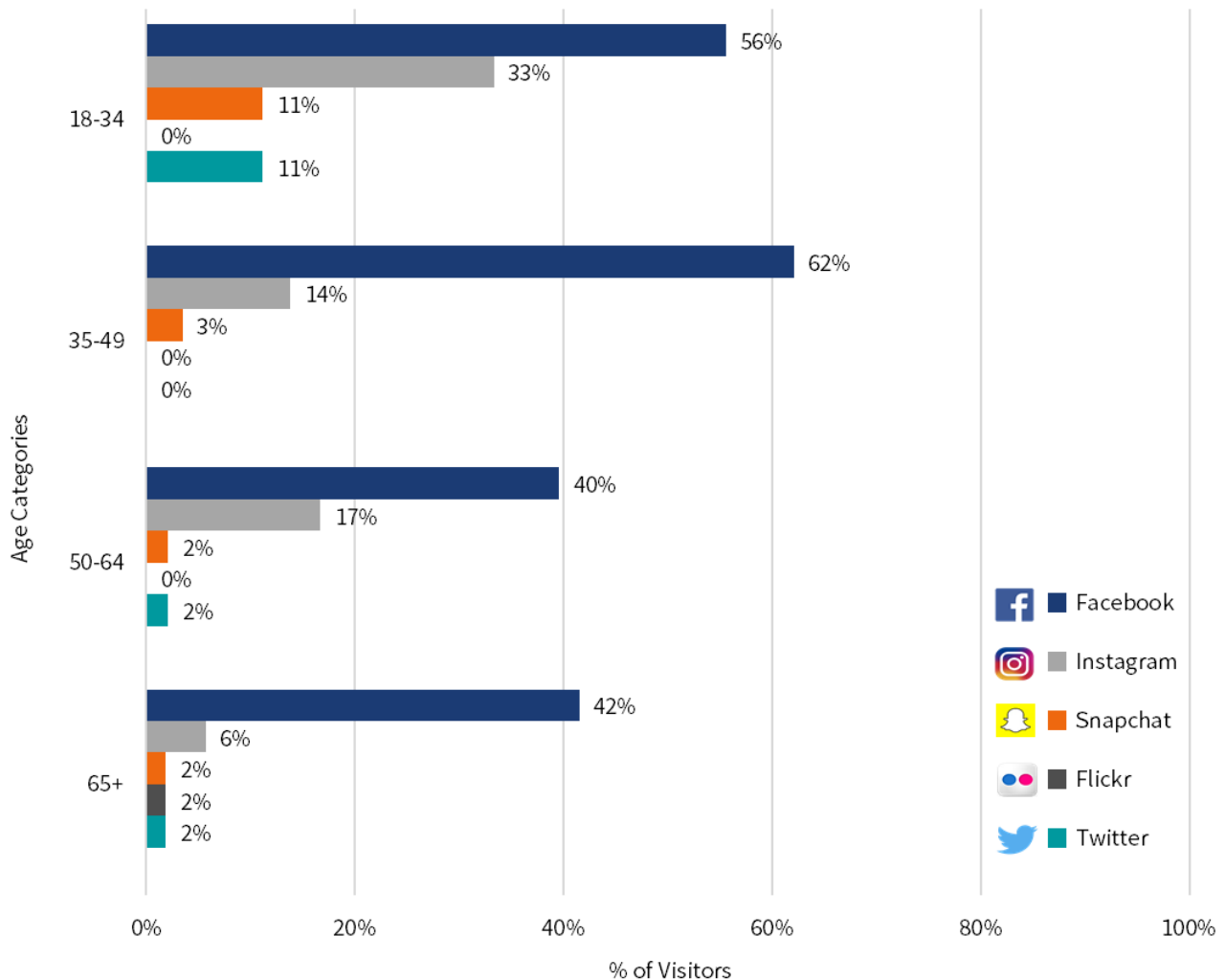


Fig. 13: Percent of visitors by age group who used various social media platforms to share their experience on this refuge with others.

Participation in Recreational Activities

Some research shows that rates of participation in outdoor recreation activities have increased (Outdoor Foundation, 2018), while other studies have indicated declines in participation in heritage activities such as hunting (U.S. Fish & Wildlife Service, 2016a). In light of these trends it is important to understand recreation participation on refuges to create quality visitor experiences and foster personal and emotional connections to the refuge and its resources (U.S. Fish & Wildlife Service, 2011). Understanding what people do while visiting refuges can also aid in developing programs that facilitate meaningful interactions between visitors and refuge professionals. Finally, such information can help to ensure impacts to resources and conflicts among visitor groups are minimized.

Participation in recreational activities at this wildlife refuge can be characterized as follows:

- The top three activities in which visitors participated during the past 12 months were wildlife observation (79%), bird watching (70%), and hiking (60%) (Fig. 14).
- The top activities noted as their primary activity on the day visitors were contacted to participate in the survey were bird watching (22%), photography (14%), fishing (12%), and wildlife observation (12%) (Fig. 14).
- Approximately 62% of visitors went to the visitor center, and they most often used the facilities (73%), viewed the exhibits (58%), and viewed list of recent bird or wildlife sightings (54%) (Fig. 15).



Photo credit: U.S. Fish & Wildlife Service.

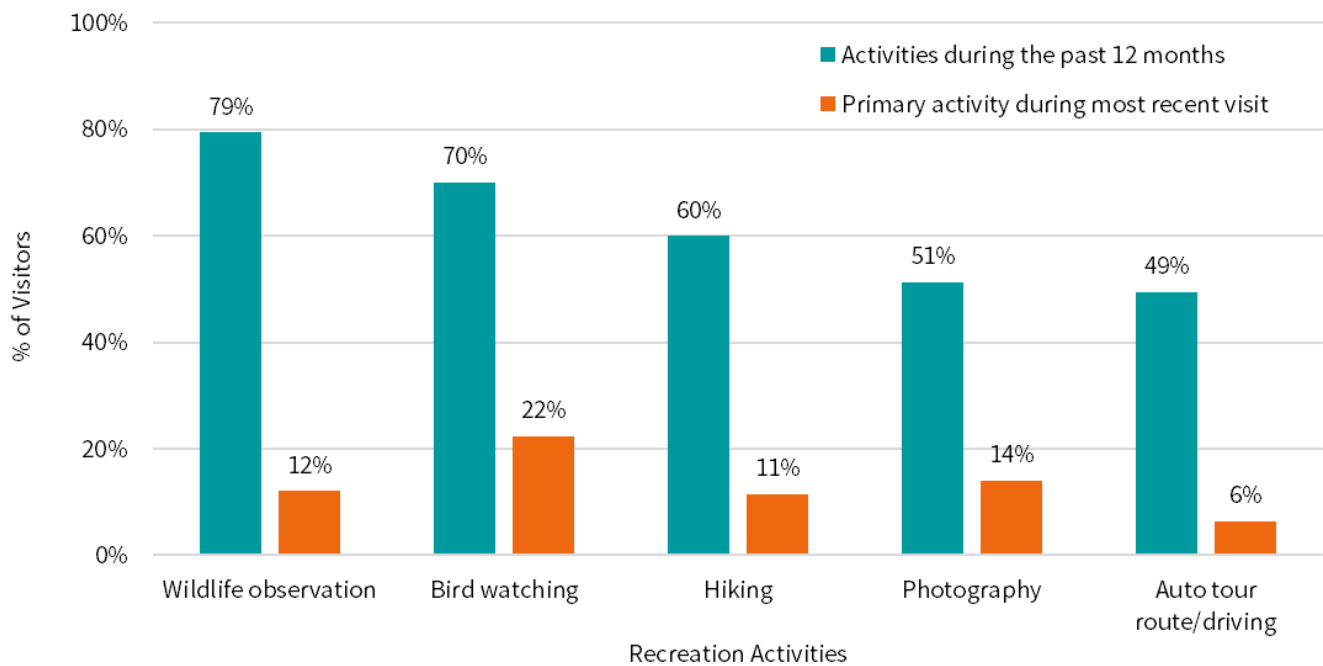


Fig. 14: Recreational activities visitors participated in during the past 12 months and their primary activity during their most recent visit to this refuge.

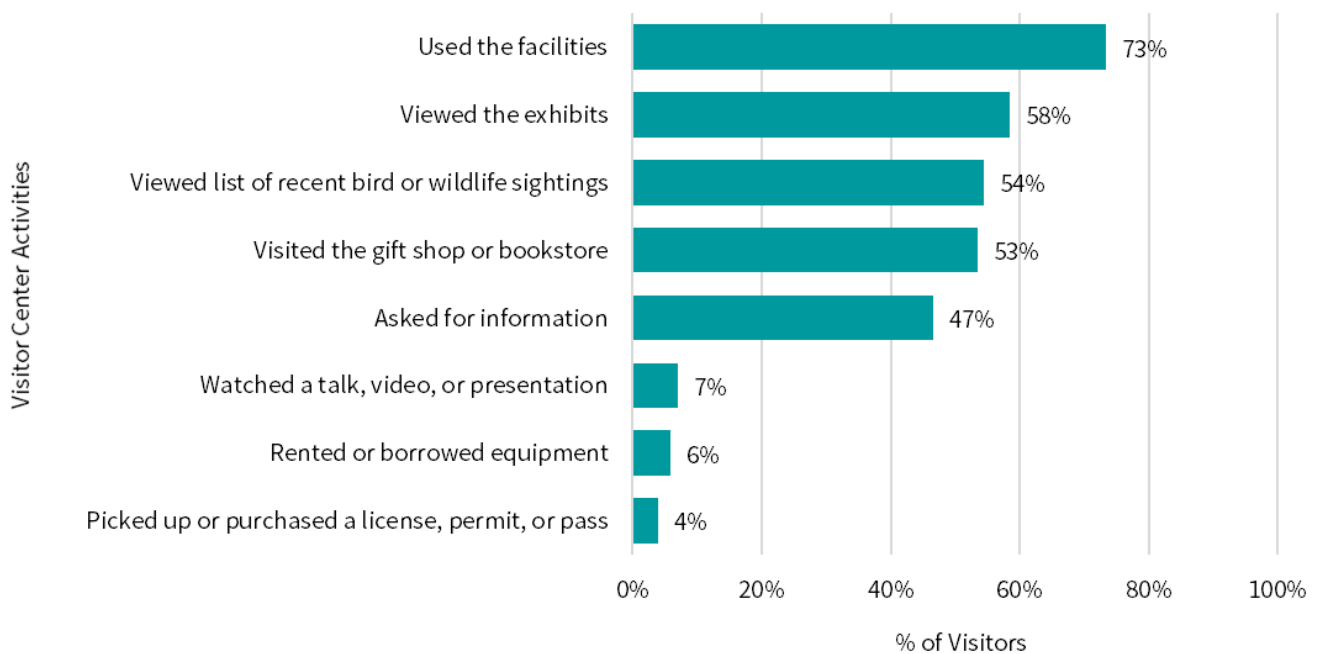


Fig. 15: Reasons visitors used the visitor center during their most recent visit to this refuge.

Comfort in Nature/Feeling Safe & Welcome

While many people are repeat visitors to refuges, each year thousands of people experience these lands and waters for the first time. One barrier for some visitors, particularly those living in urban areas or with little past exposure to nature-based recreation, is the perception that being in nature is dangerous or unsafe (U.S. Fish & Wildlife Service, 2014). There may also be negative stigmas associated with outdoor spaces that arise from social contexts (for example, people associating being outdoors with poverty or ‘dirty’ contexts) and historical contexts in which being ‘in the woods’ was dangerous and unsafe (Sexton, Ross-Winslow, Pradines, & Dietsch, 2015).

While ensuring that visitors feel safe and welcome is a foundational standard of the Urban Wildlife Conservation Program (<https://www.fws.gov/urban>), these basic needs apply across the Refuge System.

Before visitors can appreciate the wonders of nature, their basic need for safety and belonging must be met. Thus, an understanding of how visitors perceive safety, belonging, accessibility, and comfort in nature is critical to ensure real threats to safety are minimized, and that individuals from all demographic groups feel as welcome and comfortable in nature as possible.

Visitors to this wildlife refuge shared the following about safety, belonging, and their comfort while being in nature:

- 94% of visitors felt welcome during their refuge visit (Fig. 16).
- 97% of visitors felt safe during their refuge visit (Fig. 16).
- 99% of visitors felt comfortable in nature, but 8% did not like being in nature alone (Fig. 17).

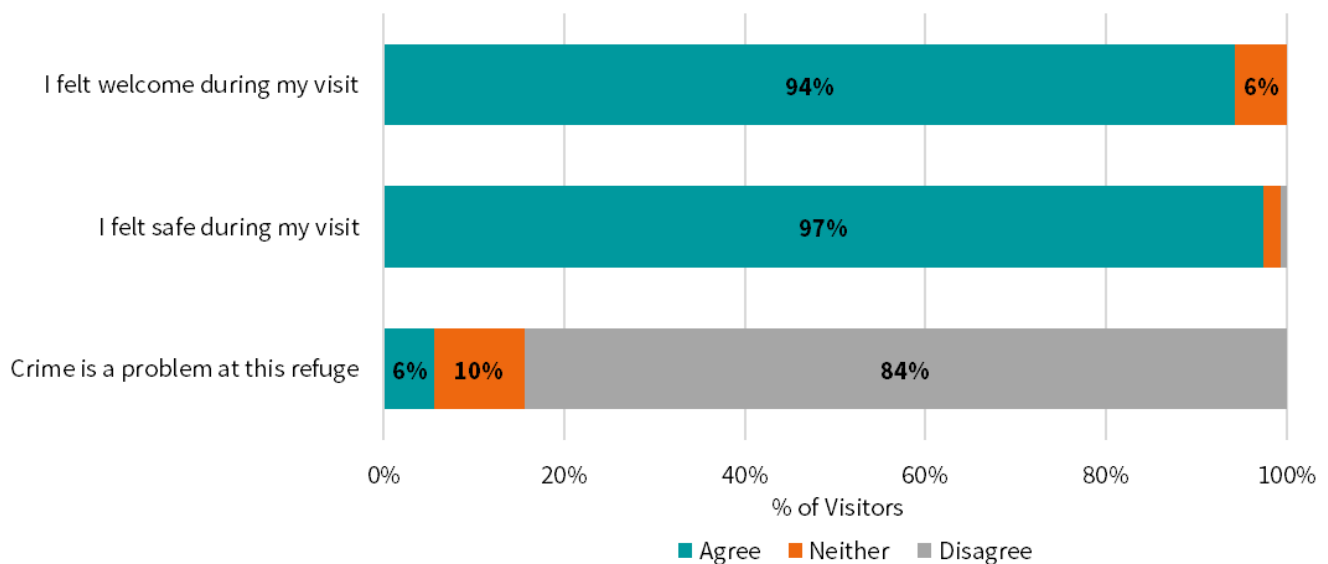


Fig. 16: Visitors' perceptions of safety and feeling welcome at this refuge during their visit.

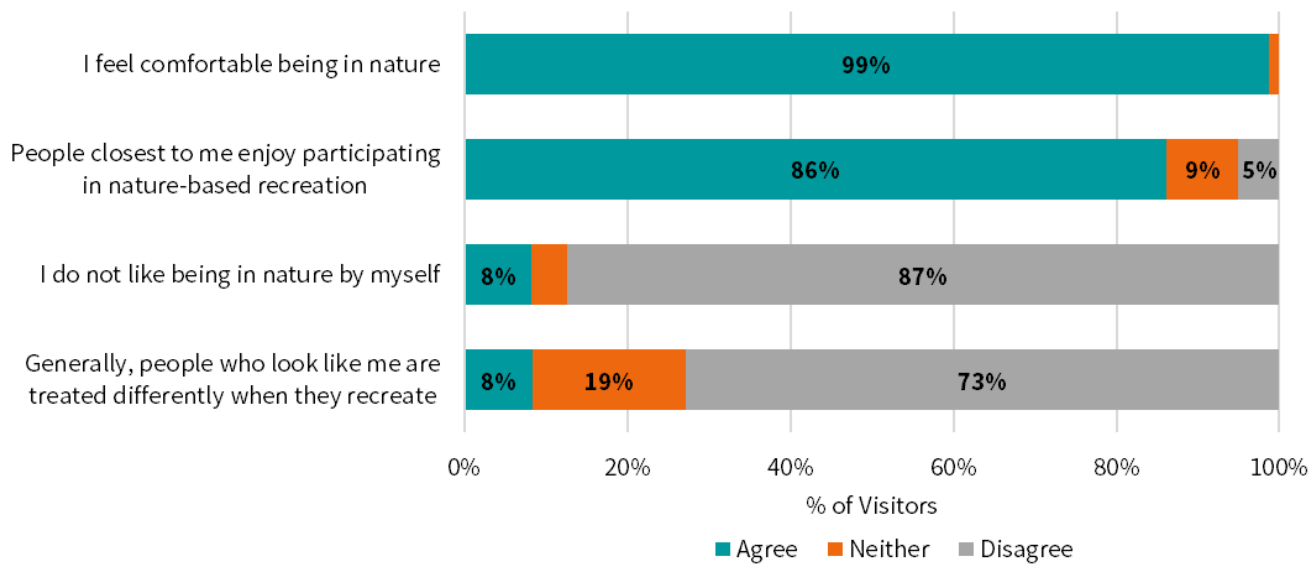


Fig. 17: Visitors’ comfort with being in nature.



Photo credit: U.S. Fish & Wildlife Service.

Satisfaction with Refuge Experiences

OVERALL SATISFACTION

Refuge professionals strive to maintain a high level of customer satisfaction by operating visitor centers; designing, installing, and maintaining accessible trails; constructing viewing blinds; and much more to facilitate quality recreational experiences. A solid understanding of visitors' perceptions of their experiences provides a framework for monitoring and responding to trends across time. Overall satisfaction with this wildlife refuge is summarized as follows:

- 90% of visitors were very or extremely satisfied with the overall experience at this wildlife refuge (Fig. 18).
- 89% of visitors were very or extremely satisfied with this wildlife refuge's job of conserving fish, wildlife, and their habitats (Fig. 18).

CUSTOMER SERVICE

Refuge professionals regularly interact with visitors and maintain facilities to ensure high quality experiences. From greeting visitors, to keeping bathrooms clean, to clearly stating regulations, providing quality customer service is important to ensuring overall satisfaction.

Satisfaction with customer service was highest among visitors for the following (Fig. 19):

- courteous and welcoming employees/volunteers (91%),
- visitor center (90%),
- restrooms (85%), and
- availability of employees/volunteers (85%).

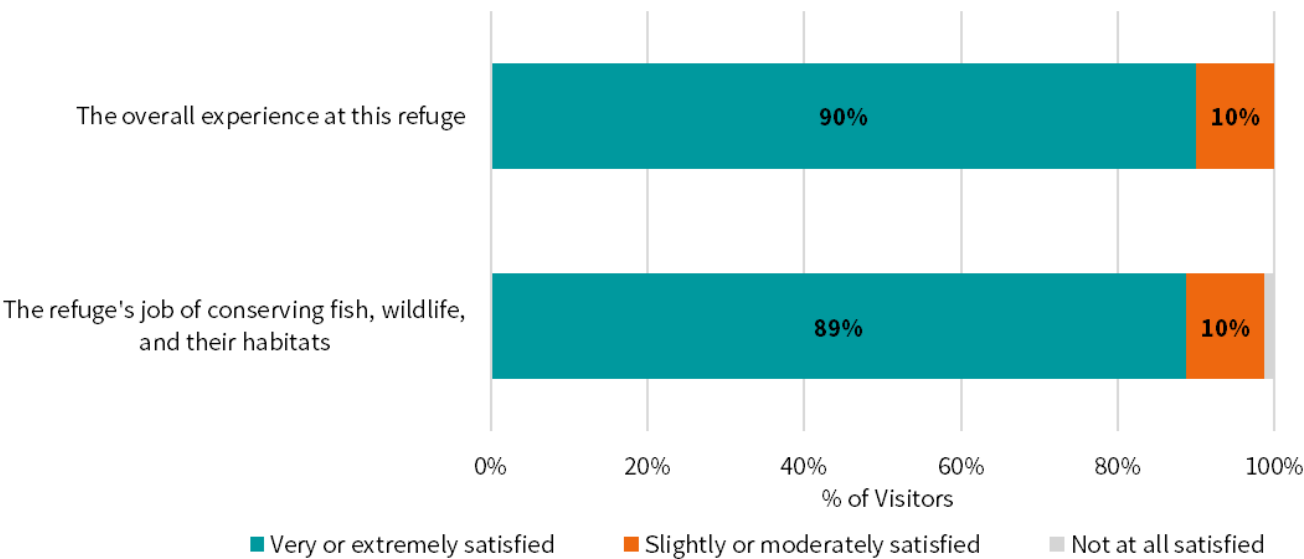


Fig. 18: Visitors' satisfaction with their experience at this refuge and with this refuge's job of conserving fish, wildlife, and habitats.

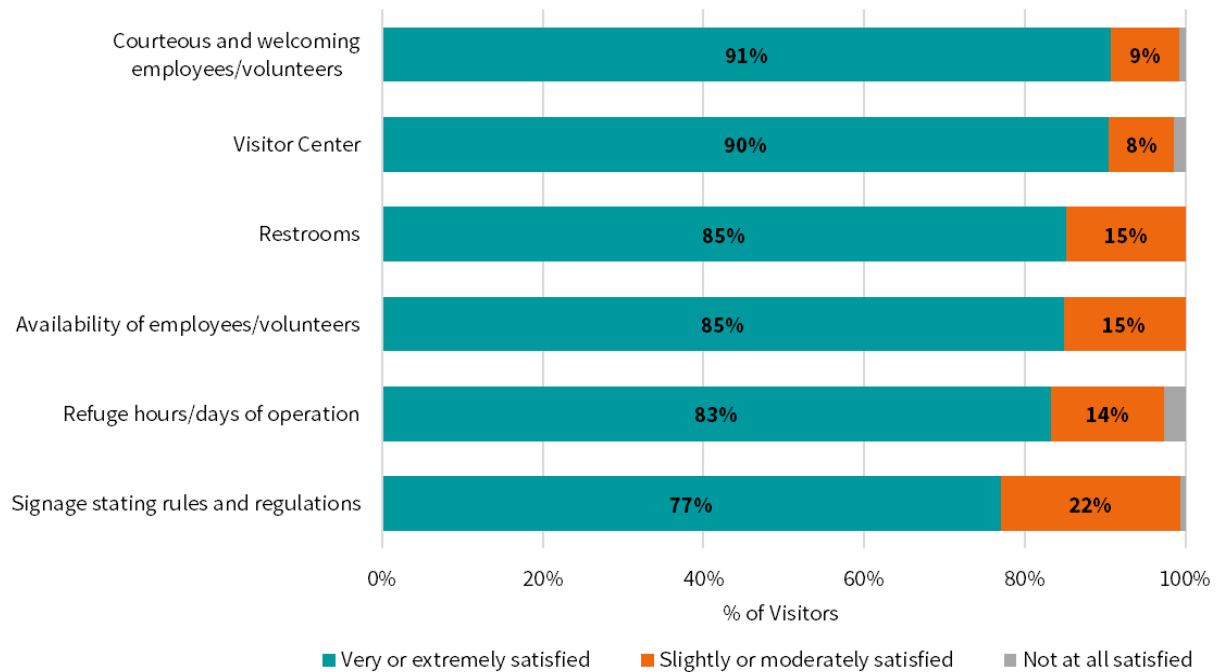


Fig. 19: Visitors' satisfaction with customer service and amenities at this refuge.

RECREATIONAL OPPORTUNITIES

Outdoor recreation on wildlife refuges is a fundamental part of a visit. As American's values toward wildlife and their relationship with nature continue to shift (Kellert et al., 2017; Manfredo et al., 2018), public desires for recreational experiences on public lands are also likely to shift. In addition, researchers and land management professionals recognize the need to connect the next generation to nature and wildlife (Charles & Louv, 2009; Larson et al., 2011). A solid understanding of visitors' perceptions of their experiences provides a

framework for monitoring and responding to these recreation trends across time.

Satisfaction with recreation opportunities among visitors who had participated in the activity during the last 12 months was highest for the following (Fig. 20):

- hunting (95%),
- environmental education (89%),
- photography (83%), and
- bird watching (82%).

"Exceptional staff at Hagerman National Wildlife Refuge. Their attitudes, demeanor and personalities contribute immensely to the overall experience. It is apparent they all enjoy what they do." – Visitor to Hagerman National Wildlife Refuge

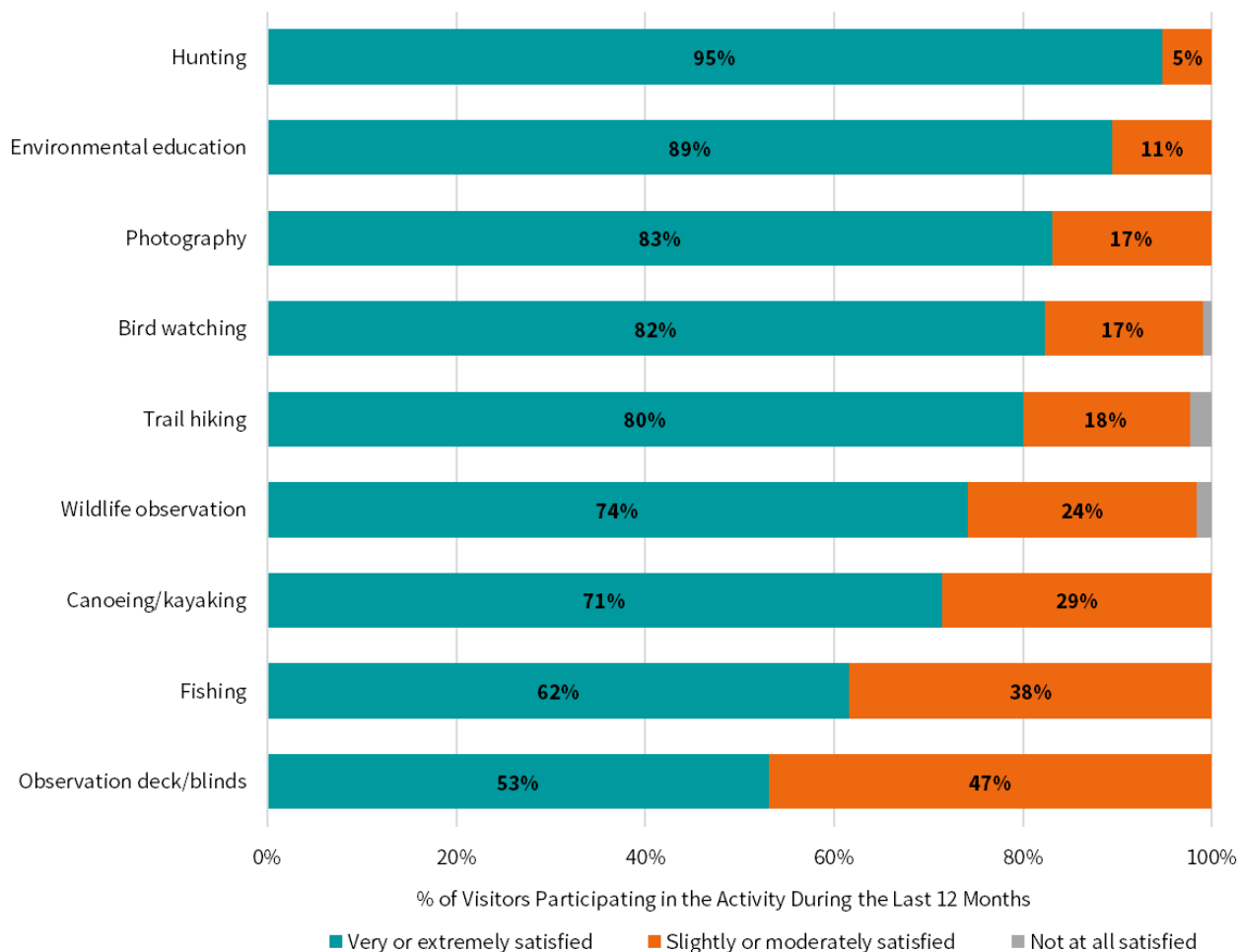


Fig. 20: Visitors' satisfaction with recreational opportunities at this refuge. Only visitors (10 or more) who participated in activities related to each opportunity at this refuge during the last 12 months were included.

TRANSPORTATION SAFETY & ACCESS

Transportation networks connect local communities to refuges and are critical to visitors' experiences there. Visitors access refuges by plane, car, train, boat, bike, and foot. The Service works to ensure that the roads, trails, and parking areas are welcoming and safe for visitors of all abilities. A goal of the Service's National Long-Range Transportation Plan is to enhance experiences on wildlife refuges and fish hatcheries through improvement to the transportation network (U.S. Fish & Wildlife Service, 2016b). How visitors perceive different transportation features can be used to prioritize access and transportation improvements.

Visitors were satisfied with transportation safety and access at this wildlife refuge as follows (Fig. 21):

- Getting to this wildlife refuge, visitors were most satisfied with safety of refuge road entrances and exits (87%).
- Getting around this wildlife refuge, visitors were most satisfied with safety of driving conditions on refuge roads (79%), condition of parking areas (78%), and condition of bridges on roadways (75%).
- Accessing recreation on this wildlife refuge, visitors were most satisfied with safety of roads or trails for nonmotorized use (77%), and condition of trails and boardwalks (71%).

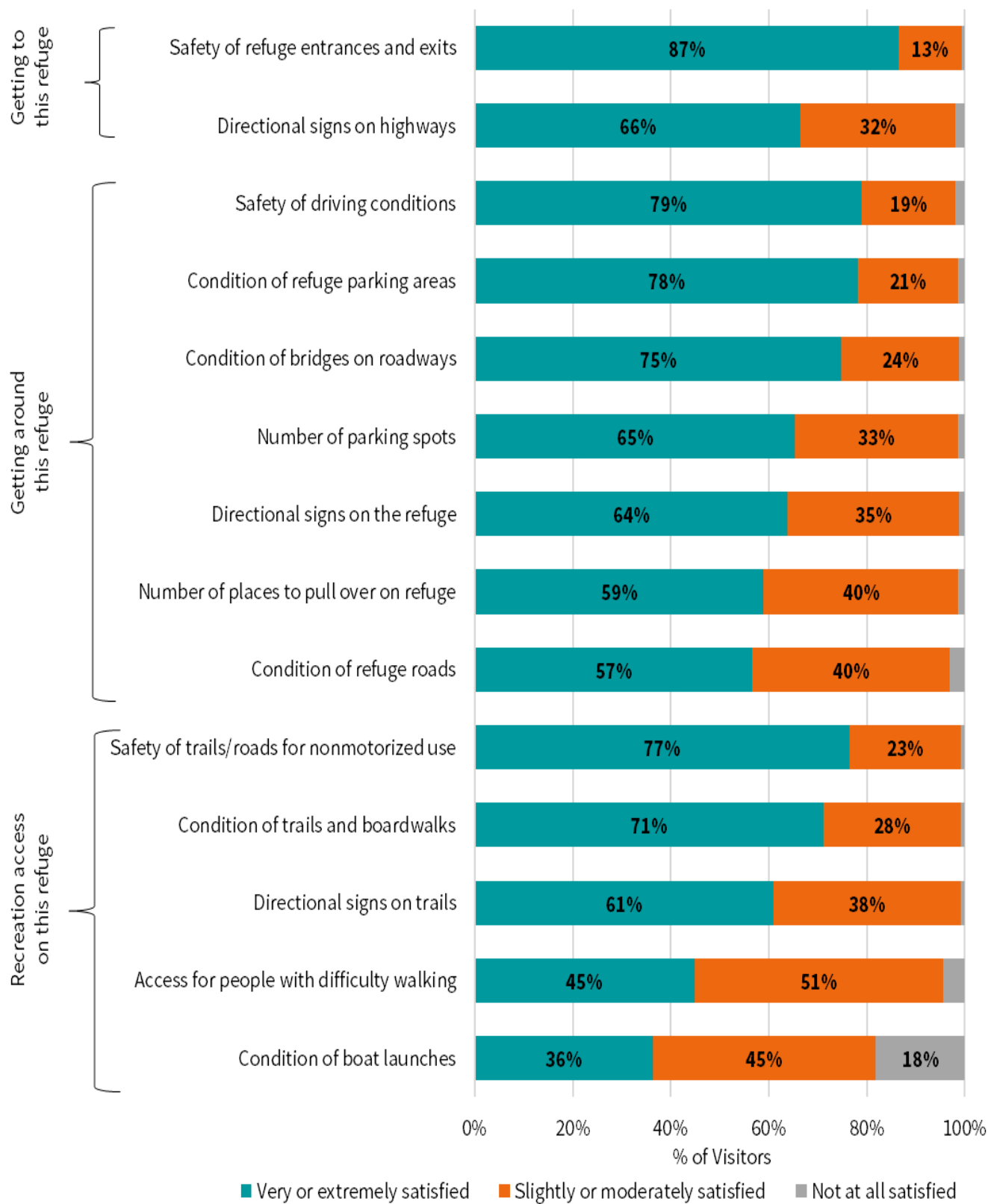


Fig. 21: Visitors' satisfaction with how the refuge is managing transportation-related features.

Economic Benefits to Local Communities & Visitors

The value of any commodity is comprised of two elements: 1) the amount paid and 2) the additional benefit derived above and beyond what is paid. The first element equates to direct expenditures. Visitors to wildlife refuges pay for a variety of things, including nearby lodging, gas, food, and other purchases from local businesses. This spending has a significant positive contribution to local economies. The *Banking on Nature* report (Caudill & Carver, 2017) highlights how nearly 54 million visits to wildlife refuges during 2017 generated \$3.2 billion of economic output in local communities and supported over 41,000 jobs. The report further indicates that recreational spending on wildlife refuges generated \$229 million in tax revenue at the local, county, and state levels.

Determining benefits derived above and beyond what is paid is commonly estimated by “willingness to pay” for an experience. Studies show people are often willing to pay more for a recreational experience than what they actually spent (Neher, Duffield, & Patterson, 2011; Rosenberger & Loomis, 2001). For example, a visitor may have spent \$500 on lodging, food, and gasoline to make the trip possible, while also indicating that they would be willing to pay an additional \$50 to visit this wildlife refuge if total trip costs were to increase.

Results for local visitors (those living ≤ 50 miles from this wildlife refuge; 60%) are as follows:

- On average, local visitors accounted for 35% of expenditures.
- Top trip expenditures by locals were for food/drink and retail (Fig. 22).
- The average amount paid by locals to visit this wildlife refuge was \$50 per person per day (Fig. 22).
- Local visitors were personally willing to pay an additional \$36 per day on average to visit this wildlife refuge (Fig. 23).

Results for nonlocal visitors (those living >50 miles from this wildlife refuge; 40%) are as follows:

- On average, nonlocals accounted for 65% of expenditures.
- Top trip expenditures by nonlocals were for transportation and food/drink (Fig. 22).
- The average amount paid by nonlocals to visit this wildlife refuge was \$71 per person per day (Fig. 22).
- Nonlocal visitors were personally willing to pay an additional \$62 per day on average to visit this wildlife refuge (Fig. 23).
- Nonlocal visitors spent an average of 2 days in the local community during this visit.





Fig. 22: Individual daily expenditures in the local community for local, nonlocal, and all visitors. Expenditures were reported by respondents on a per group basis; the total expenditures were divided by the number of people in the group who shared trip expenditures and the number of days spent in the local community. The number of people sharing trip expenditures was often smaller than the total group size.

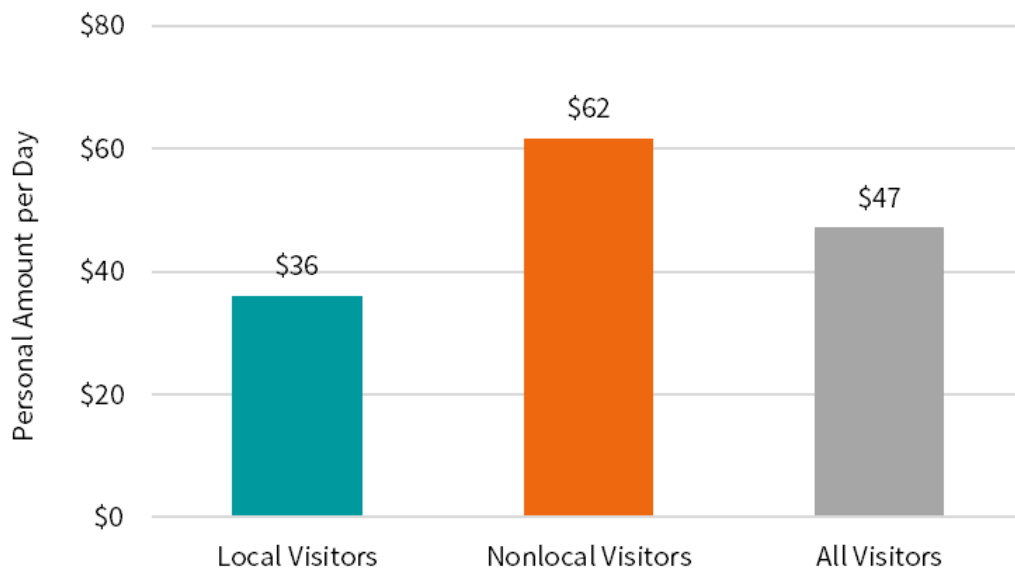


Fig. 23: Total personal willingness to pay per day above and beyond most recent trip expenses if costs were to increase for local, nonlocal, and all visitors. Due to the fixed-response question format, estimates of willingness to pay may underestimate the amount visitors would actually pay. Responses were divided by the number of days spent at the refuge.

Encouraging Return Visits & Future Recreation Participation

Public land managers strive to maximize benefits for visitors while achieving and maintaining desired resource conditions. This complex task requires that managers accurately estimate visitor numbers, as well as where visitors go, what they do, their impacts on resources, how they perceive their experiences, and their desires for future visits. Gaining a sense of what would encourage visitors to return and how management activities affect their likelihood of returning can lead to improved visitor use and resource management (U.S. Fish & Wildlife Service, 2014).

PROGRAMS AND OTHER OFFERINGS

Programming and other offerings that are compatible with the purpose of a refuge and the Refuge System mission can encourage people to continue visiting the refuge. Additionally, changes to regulations and access for improving resource availability may increase or decrease future participation, or have little effect at all.

In the future, changes in programming, offerings, or regulations would have an effect on visitation to this wildlife refuge as follows:

- Programs most likely to encourage visitors to return to this wildlife refuge included those focused on skill-building (57%), engaging youth (36%), and engaging families and multiple generations (35%) (Fig. 24).
- The top factors likely to increase visitors' future participation in their primary recreation activity were more infrastructure (29%), recreation equipment available for rent (14%), and less regulations on hunting (14%) (Fig. 25).
- The top factors likely to decrease visitors' future participation in their primary recreation activity were less regulations on hunting (22%) and more people participating in their primary activity (21%) (Fig. 25).

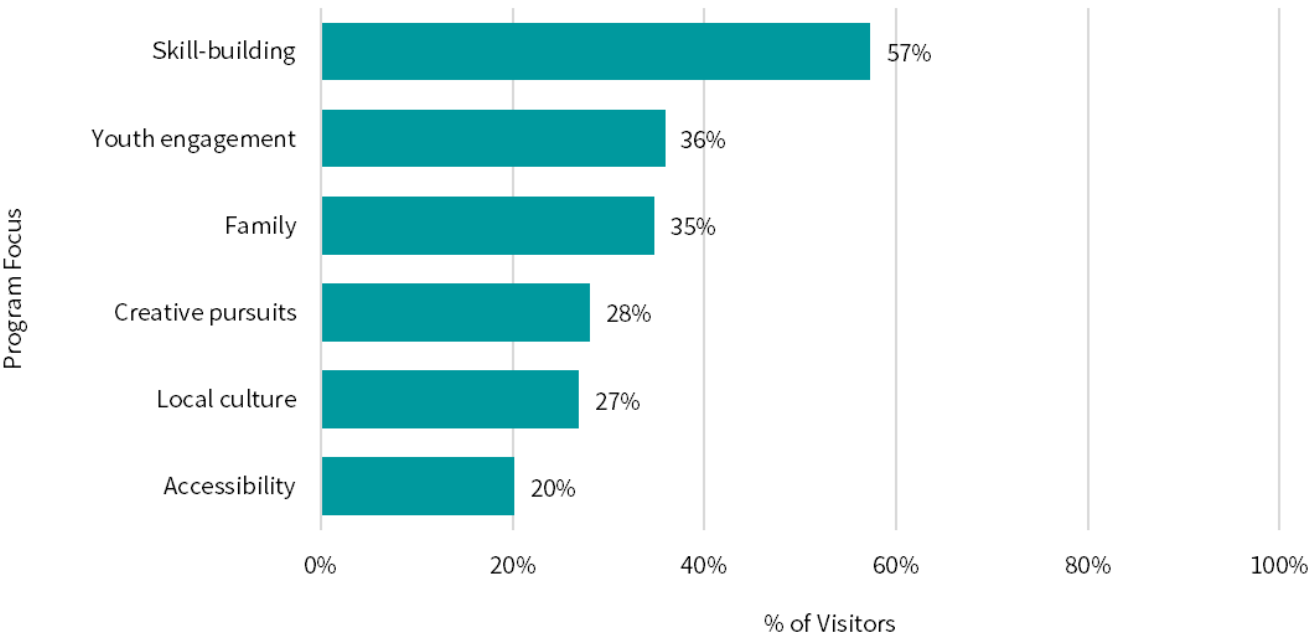


Fig. 24: Types of programs that would encourage visitors to return to this refuge.

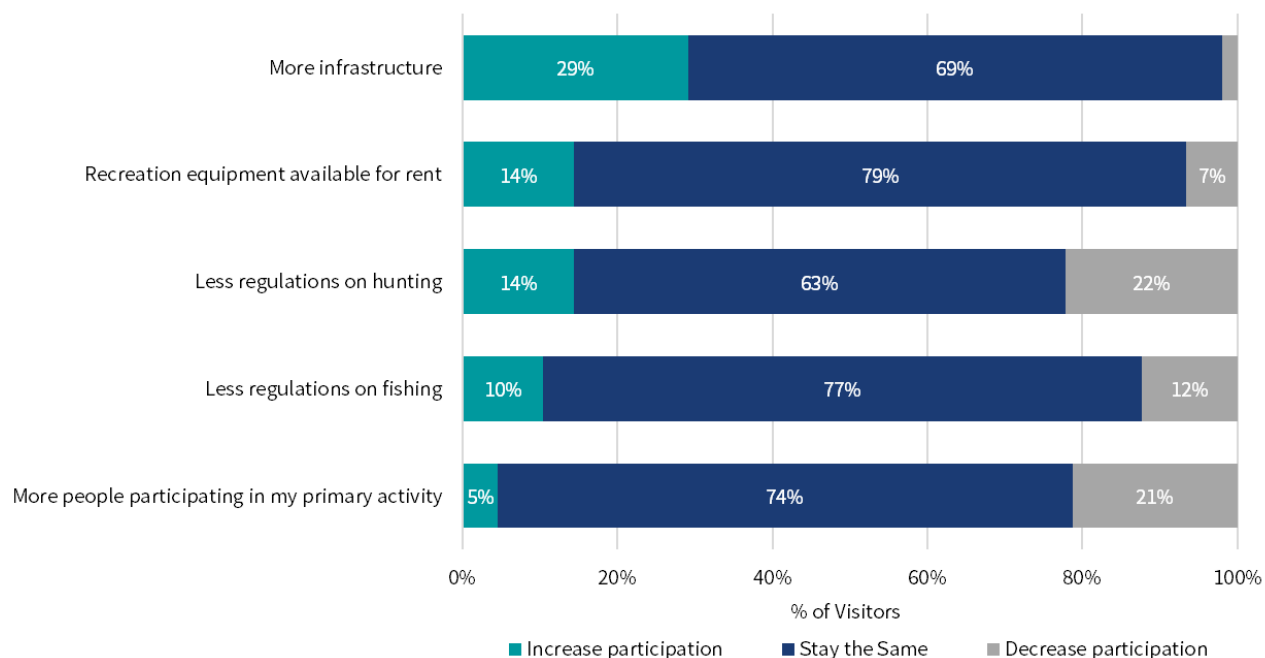


Fig. 25: Changes in visitors’ participation in their primary activity if the listed recreation factors were to change.

ALTERNATIVE TRANSPORTATION

Understanding visitor demand for alternative transportation options is a goal of the Service’s National Long-Range Transportation Plan (U.S. Fish & Wildlife Service, 2016b). Alternative transportation options can be valuable in realizing refuge goals to conserve natural resources, reduce visitors’ carbon footprint (Volpe Center, 2010), and improve visitor experiences. Even though demand may be relatively small, any use of alternative transportation that is feasible at a wildlife refuge can help to meet goals.

The top future alternative transportation options supported by visitors at this wildlife refuge included (Fig. 26):

- bus/tram that provides a guided tour (24%),
- bus/tram that takes passengers to different points within refuge boundaries (18%), and
- pedestrian paths (10%).

ECOSYSTEM SERVICES

Natural processes associated with wildlife refuges can provide benefits to people, including provisioning services such as food

and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and educational benefits; and supporting services such as nutrient cycling (Millennium Ecosystem Assessment, 2005). Understanding how changes in natural resources and related processes may impact future visitation and participation in certain recreation activities can improve resource and visitor management, as well as inform communication efforts with stakeholders and policy-makers (Patton, Bergstrom, Covich, & Moore, 2012).

In the future, changes to resources would affect visitation to this refuge as follows (Fig. 27):

- The top resource changes likely to increase visitors’ future participation in their primary recreation activity were an improvement in the quality of wildlife habitat other than wetlands (62%) and a greater diversity of species (60%).
- The top resource changes likely to decrease visitors’ future participation in their primary recreation activity were less water available for recreation (31%) and more acreage open to hunting and fishing (25%).

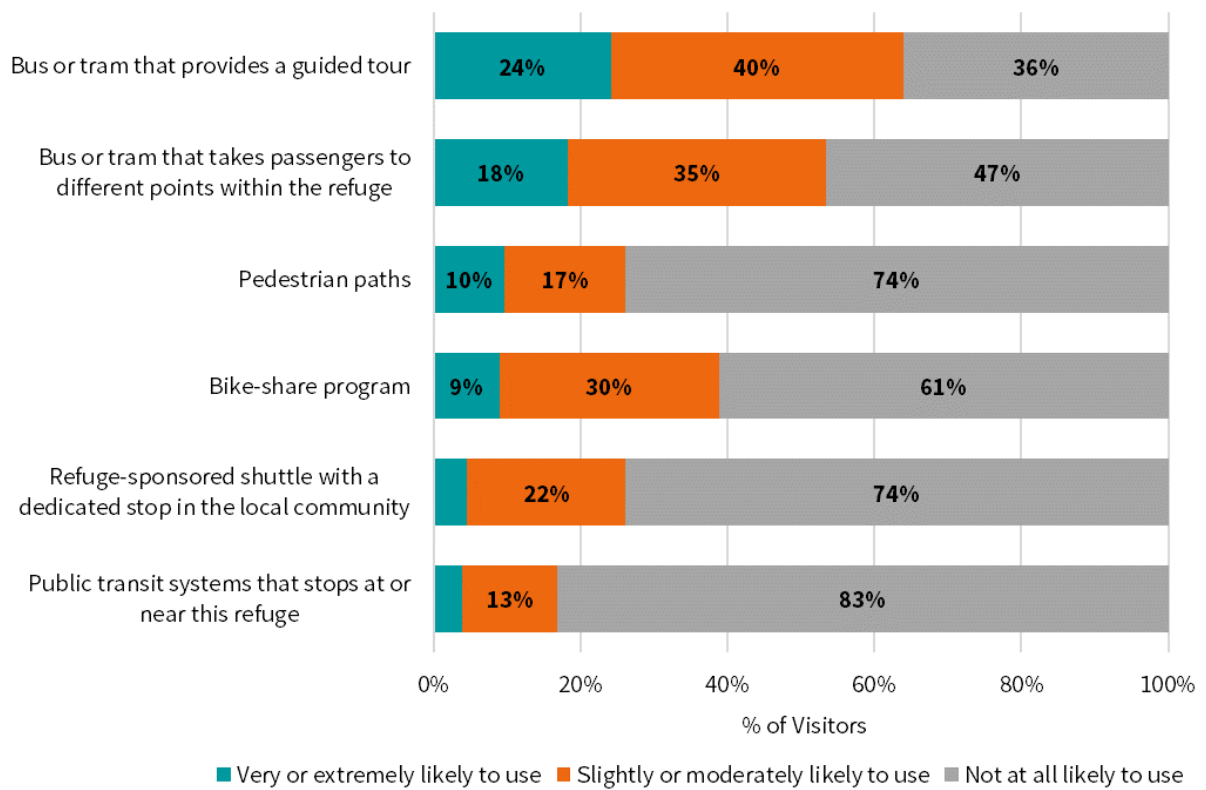


Fig. 26: Visitors' likelihood of using alternative transportation options if offered at this refuge.

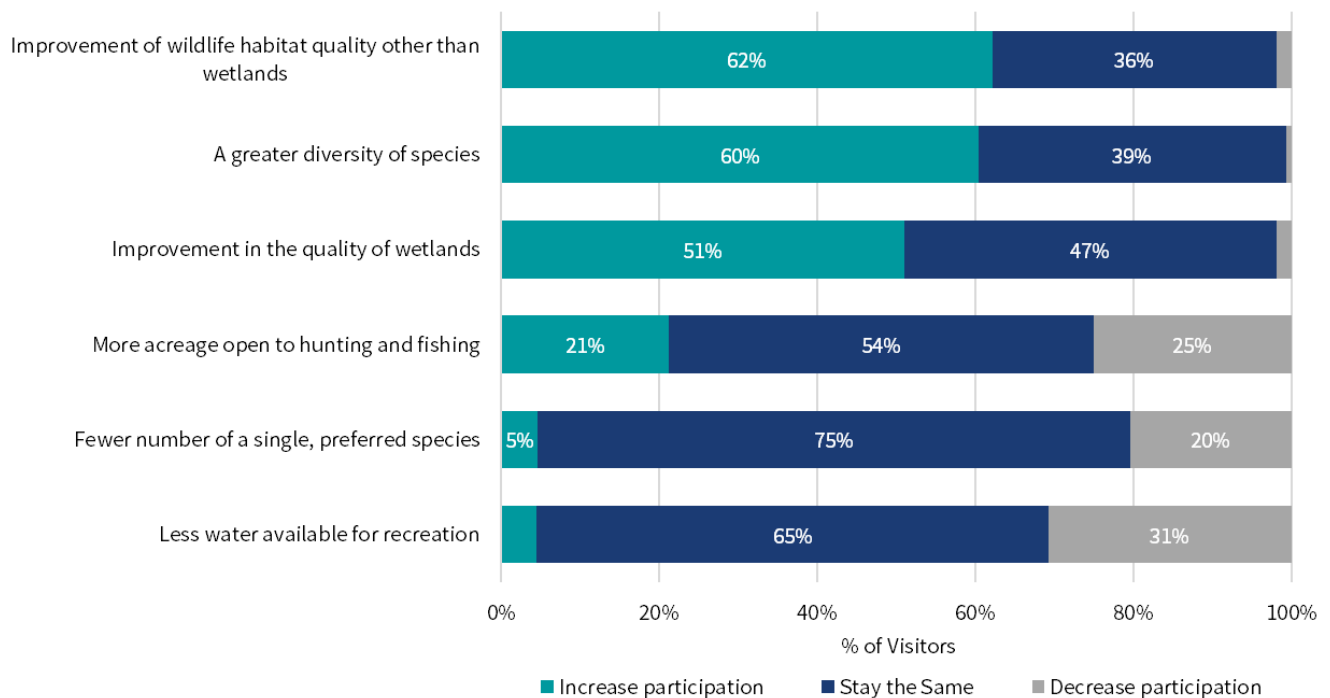


Fig. 27: Changes in visitors' participation in their primary activity if the listed resources were to change.

Conclusion

These individual refuge results provide a summary of trip characteristics and experiences of a sample of visitors to Hagerman National Wildlife Refuge during 2018. They are intended to inform refuge planning, including the management of natural resources, recreation, and the design and delivery of programs for visitors. These results offer a baseline that can be used to monitor and evaluate efforts over time. Refuge professionals who understand

visitor demographics, trip characteristics, and desires for future conditions can make informed decisions for proactive visitor management and resource protection. Integrating this social science with biophysical science ensures that management decisions are consistent with the Refuge System mission while fostering a continued public interest in and connection with these special places we call national wildlife refuges.



Photo credit: U.S. Fish & Wildlife Service.

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Appendix A: Survey Methodology

The National Wildlife Refuge Visitor Survey (NVS) team consisted of staff from The Ohio State University (OSU), U.S. Fish & Wildlife Service (Service), and American Conservation Experience (ACE) who collectively developed the following NVS methodology. Staff from OSU and the Service designed the survey instrument with multiple reviewers within the Refuge System providing feedback about content and wording. The logistical coordinator and interns from ACE conducted sampling on refuges. OSU staff coordinated survey mailings, analyzed data, and in cooperation with Service staff, designed the report template and created each refuge report.

SAMPLING SCHEDULE

Interns (survey recruiters) sampled on each participating refuge for two 14-day sampling periods between March 2018 and February 2019. Refuge staff identified the sampling periods and locations that best reflected the diversity of use and visitation patterns of the refuge.

The national visitor survey team developed a sampling schedule for each refuge that included eight randomly selected sampling shifts during each 14-day sampling period. Shifts were four-hour time bands stratified across mornings and afternoons/evenings. The NVS team customized the schedule as needed to accommodate the individual refuge sampling locations and specific spatial and temporal patterns of visitation. The target number of contacts was 25 adult visitors (18 years of age or older) per shift for a total of 375 participants contacted per refuge. Shifts were moved, added, or extended to address logistical limitations (for example, bad weather or low visitation).

CONTACTING VISITORS ONSITE

ACE interns received a multi-day training that included role-play exercises on a refuge to

simulate engagement of visitors. Once onsite, the interns contacted visitors following a protocol developed by OSU and Service staff. Interns surveyed across the entire sampling shift and only one visitor per group was asked to participate. If a visitor declined to participate, interns recorded a direct refusal. Visitors willing to participate provided their name, mailing address, language preference (English or Spanish), and answered a few initial questions about their experience that could be used for nonresponse comparisons. Willing visitors were also given a small token incentive (for example, sticker) as a thank you and reminder of their participation.

COMPLETING A SURVEY AT HOME

All visitors that agreed onsite to participate in the survey received a postcard mailed to their address within 10 days. The postcard thanked visitors for agreeing to participate, provided a weblink and unique password, and invited the visitor to complete the survey online. All participants then received the following sequence of correspondence by mail from OSU until a survey was returned and the address removed from the mailing list (as suggested by Dillman et al., 2014):

- 1) A packet consisting of a cover letter, survey, and postage-paid return envelope approximately seven days after the first postcard was mailed.
- 2) A reminder postcard mailed 14 days after the first packet was mailed.
- 3) A final packet consisting of a cover letter, survey, and postage-paid return envelope mailed seven days after the reminder postcard.

All printed correspondence and online material were provided in the language chosen by visitors onsite; however, visitors who went online to complete the survey were able to switch between English and Spanish. The

survey was designed to take no more than 25 minutes to complete, and the average completion time recorded by the online survey software was approximately 20 minutes.

DATA ENTRY & ANALYSIS

The NVS team used Qualtrics survey software to collect survey data online. OSU staff then exported the data for cleaning (for example, treatment of missing data) and analyses. The team entered data from the paper surveys into Microsoft Excel using a standardized survey codebook and data entry procedures. All data from the two sources (paper and online) were merged and analyzed using Statistical Package for the Social Sciences (SPSS, v.25) software.

LIMITATIONS OF RESULTS

The degree to which these results represent overall visitation at a wildlife refuge depends on the number of visitors who completed the survey (sample size), and how well the sample reflects the degree of use at the refuge (Scheaffer et al., 2011). Many respondents completing the survey will produce a smaller margin of error, leading to greater confidence in results, but only to a point. For example, a margin of error of $\pm 5\%$ at a 95% confidence level signifies that if a reported percentage is 55%, then 95 out of 100 times that sample estimate would fall between 50% and 60% (if the same question was asked in the same way of the same sample). The margin of error for this survey was calculated with an 80/20

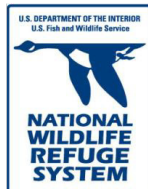
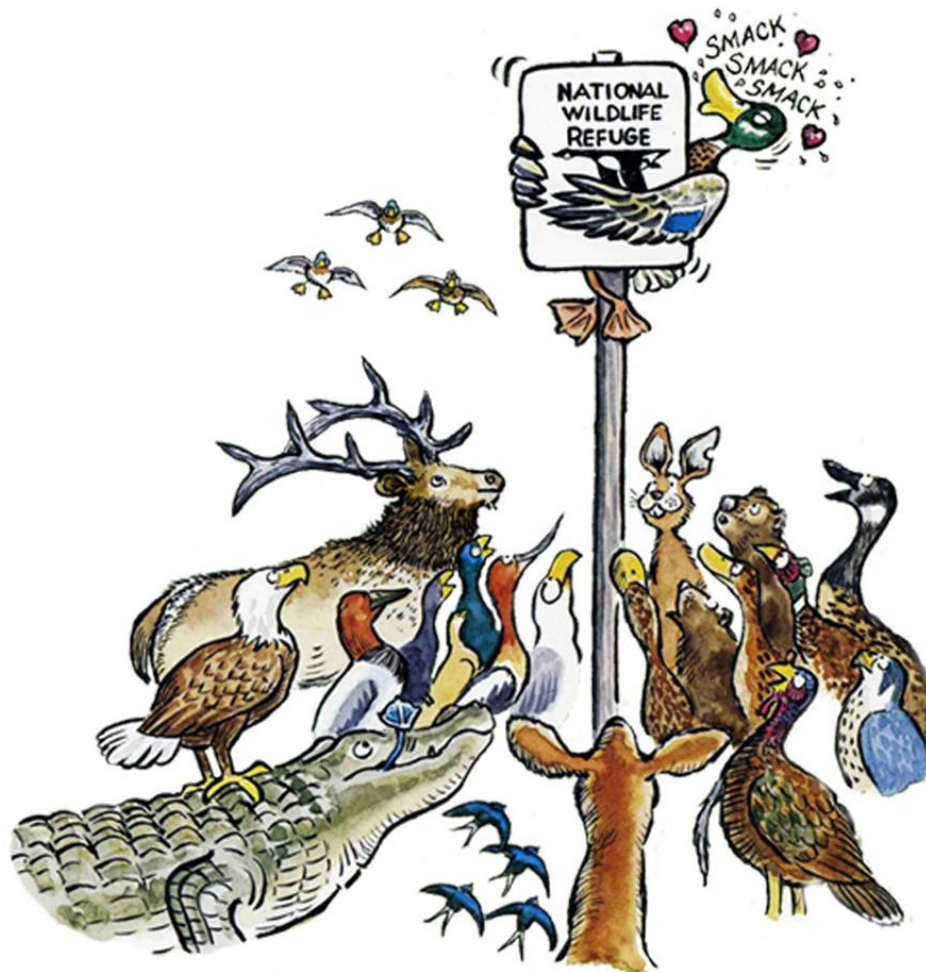
response distribution, meaning if respondents were given a dichotomous choice question, approximately 80% of respondents would select one choice and 20% would select the other (Salant & Dillman, 1994).

While OSU designed the standardized sampling protocol to account for spatial and temporal visitation patterns, the geography and infrastructure of wildlife refuges vary widely. This variation can affect who is ‘captured’ as part of the survey. For example, contacting visitors is much easier if everyone must pass through a single-entry point and much more difficult if a refuge has multiple access points over a large area. Additionally, the two 14-day sampling periods may not have effectively captured all visitor activities throughout the year on some wildlife refuges (for example, visitors who solely engage in ice fishing). As such, results presented in any one of these reports are aimed at representing overall visitation at a wildlife refuge while recognizing that particular visitor groups may vary in their beliefs and activities.

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National Wildlife Refuge Visitor Survey



Front cover of the 2018 National Wildlife Refuge Visitor Survey instrument. Artwork credit: Kent Olson.

PLEASE READ THIS FIRST:

Thank you for visiting a national wildlife refuge and agreeing to participate in this study! We hope that you had an enjoyable experience. The U.S. Fish and Wildlife Service and The Ohio State University are conducting this survey to learn more about refuge visitors and their experiences in order to improve management and enhance visitor opportunities.

Please respond regarding the refuge and the visit for which you were asked to participate in this survey. The cover letter indicates the refuge you visited.

SECTION 1. Your visit to this refuge

1. Including your most recent visit, which activities did you participate in during the past 12 months at this refuge? (Mark all that apply.)

<input type="checkbox"/> 79% Wildlife observation	<input type="checkbox"/> 60% Hiking/Walking	<input type="checkbox"/> 8% Volunteering
<input type="checkbox"/> 70% Bird watching	<input type="checkbox"/> 3% Jogging/Running/Exercising	<input type="checkbox"/> 12% Environmental education program (classroom visits, labs)
<input type="checkbox"/> 51% Photography	<input type="checkbox"/> 4% Bicycling	
<input type="checkbox"/> 11% Big game hunting	<input type="checkbox"/> 49% Auto tour route/Driving	<input type="checkbox"/> 8% Interpretative program (bird walks, staff/volunteer-led talks)
<input type="checkbox"/> 1% Upland/Small game hunting	<input type="checkbox"/> 3% Motorized boating	
<input type="checkbox"/> 1% Waterfowl/Migratory bird hunting	<input type="checkbox"/> 4% Nonmotorized boating (canoeing, kayaking)	<input type="checkbox"/> 10% Refuge special event (<i>specify</i>) _____ See Appendix C
<input type="checkbox"/> 18% Freshwater fishing	<input type="checkbox"/> 0% Foraging (berries, nuts, other)	<input type="checkbox"/> 4% Other (<i>specify</i>) _____ See Appendix C
<input type="checkbox"/> 0% Saltwater fishing	<input type="checkbox"/> 14% Picnicking	

2. Which of the activities above was the primary purpose of your most recent visit to this refuge?

(Please write **only one activity** here.) _____ See Appendix C

3. Which of the following best describes your most recent visit to this Refuge? (Mark only one.)

☐ 82% It was the primary purpose or sole destination of my trip.

☐ 11% It was one of many equally important reasons or destinations for my trip.

☐ 7% It was just an incidental or spur-of-the-moment stop on a trip taken for other purposes or to other destinations.

4. How many people were in your personal group, including yourself, on your most recent visit to this refuge? (Please answer each category.)

_____ 2 _____ number of people 18 years and older _____ 0 _____ number of people under 18 years

5. Did you go to a visitor center at this refuge during your most recent visit?

☐ 38% No / Not Applicable

☐ 62% Yes → If yes, what did you do there? (*Mark all that apply.*)

☐ 47% Asked information of employees/volunteers

☐ 54% Looked at list of recent bird/wildlife sightings

☐ 7% Attended a talk/video/presentation

☐ 73% Stopped to use the facilities (for example, got water, used restroom)

☐ 58% Viewed the exhibits

☐ 4% Picked up/purchased a license, permit, or pass

☐ 6% Rented/borrowed equipment (for example, binoculars, fishing rod, snowshoes)

☐ 53% Visited the gift shop or bookstore

☐ 9% Other (*specify*) See Appendix C

6. How much time did you spend **at this refuge** during your most recent visit?

If you spent less than one day at this refuge, enter the number of hours: 3 hour(s)

If you spent one day or more at this refuge, enter the number of days: 4 day(s)

7. Do you live in the local area (within 50 miles of this refuge)?

☐ 60% Yes

☐ 40% No → How much time did you spend in **the local area** on this trip?

If you spent less than one day in the local area, enter the number of hours: 4 hour(s)

If you spent one day or more in the local area, enter the number of days: 2 day(s)

8. Approximately how many hours/minutes (one-way) did you travel from your home to this refuge?

If you travelled less than one hour, enter the number of minutes: 28 minutes

If you travelled more than one hour, round to the nearest hour: 3 hours

9. Including this visit, during which seasons did you visit this refuge in the last 12 months? (*Mark all that apply.*)

☐ 76% Spring
(March-May)

☐ 52% Summer
(June-August)

☐ 77% Fall
(September-November)

☐ 59% Winter
(December-February)

10. In the last 12 months, how many times have you visited...

...this refuge (including this visit)? 19 number of visits

...other national wildlife refuges? 2 number of visits

...other public lands (for example, national or state parks) to participate in the same primary activity as this visit? 4 number of visits

11. Which, if any, of the following social media outlets did you use to share your refuge experience with other people? (*Mark all that apply.*)

<input type="checkbox"/> 47%	Facebook	<input type="checkbox"/> 3%	Snapchat	<input type="checkbox"/> 5%	Personal blog (for example, Tumblr, Wordpress)
<input type="checkbox"/> 1%	Flickr	<input type="checkbox"/> 3%	Twitter	<input type="checkbox"/> 1%	Travel-related website (for example, Trip Advisor)
<input type="checkbox"/> 14%	Instagram	<input type="checkbox"/> 0%	Vimeo	<input type="checkbox"/> 3%	Other (<i>specify</i>) <u>See Appendix C</u>
<input type="checkbox"/> 0%	Pinterest	<input type="checkbox"/> 1%	YouTube	<input type="checkbox"/> 45%	I do not use social media

SECTION 2. Information about this refuge and its resources

1. How helpful was each of the following sources to get information about this refuge and its resources? (*Circle one number for each source, or mark the box if you did **not** use a source.*)

Information source	For those who used a source, the % who found it to be...					Did not use
	Not at all helpful	Slightly helpful	Moderately helpful	Very helpful	Extremely helpful	
Personal knowledge from previous visit(s)	<input type="checkbox"/> 1%	<input type="checkbox"/> 1%	<input type="checkbox"/> 4%	<input type="checkbox"/> 34%	<input type="checkbox"/> 59%	<input type="checkbox"/> 17%
Word of mouth (for example, a friend or relative)	<input type="checkbox"/> 5%	<input type="checkbox"/> 4%	<input type="checkbox"/> 28%	<input type="checkbox"/> 42%	<input type="checkbox"/> 21%	<input type="checkbox"/> 37%
People in the local community near the refuge	<input type="checkbox"/> 14%	<input type="checkbox"/> 16%	<input type="checkbox"/> 23%	<input type="checkbox"/> 30%	<input type="checkbox"/> 16%	<input type="checkbox"/> 64%
Refuge employees or volunteers	<input type="checkbox"/> 3%	<input type="checkbox"/> 4%	<input type="checkbox"/> 18%	<input type="checkbox"/> 34%	<input type="checkbox"/> 42%	<input type="checkbox"/> 30%
Printed map or atlas	<input type="checkbox"/> 1%	<input type="checkbox"/> 6%	<input type="checkbox"/> 23%	<input type="checkbox"/> 48%	<input type="checkbox"/> 22%	<input type="checkbox"/> 45%
Web-based map (for example, Google Maps, Waze)	<input type="checkbox"/> 5%	<input type="checkbox"/> 10%	<input type="checkbox"/> 21%	<input type="checkbox"/> 37%	<input type="checkbox"/> 27%	<input type="checkbox"/> 49%
Refuge website	<input type="checkbox"/> 5%	<input type="checkbox"/> 8%	<input type="checkbox"/> 23%	<input type="checkbox"/> 39%	<input type="checkbox"/> 24%	<input type="checkbox"/> 37%
Travel website (for example, TripAdvisor)	<input type="checkbox"/> 41%	<input type="checkbox"/> 18%	<input type="checkbox"/> 18%	<input type="checkbox"/> 18%	<input type="checkbox"/> 5%	<input type="checkbox"/> 86%
Other website (<i>specify</i>) <u>See Appendix C</u>	<input type="checkbox"/> 31%	<input type="checkbox"/> 8%	<input type="checkbox"/> 8%	<input type="checkbox"/> 0%	<input type="checkbox"/> 54%	<input type="checkbox"/> 90%
Social media (for example, Facebook, Instagram)	<input type="checkbox"/> 8%	<input type="checkbox"/> 10%	<input type="checkbox"/> 24%	<input type="checkbox"/> 31%	<input type="checkbox"/> 27%	<input type="checkbox"/> 63%
Recreation club or organization	<input type="checkbox"/> 25%	<input type="checkbox"/> 21%	<input type="checkbox"/> 11%	<input type="checkbox"/> 29%	<input type="checkbox"/> 14%	<input type="checkbox"/> 82%
Refuge printed information (for example, brochure)	<input type="checkbox"/> 1%	<input type="checkbox"/> 7%	<input type="checkbox"/> 25%	<input type="checkbox"/> 37%	<input type="checkbox"/> 30%	<input type="checkbox"/> 39%
Kiosks/displays/exhibits at the refuge	<input type="checkbox"/> 4%	<input type="checkbox"/> 11%	<input type="checkbox"/> 17%	<input type="checkbox"/> 42%	<input type="checkbox"/> 27%	<input type="checkbox"/> 47%
Travel guidebook or other book	<input type="checkbox"/> 23%	<input type="checkbox"/> 14%	<input type="checkbox"/> 14%	<input type="checkbox"/> 32%	<input type="checkbox"/> 18%	<input type="checkbox"/> 86%
Tourist information or welcome center	<input type="checkbox"/> 4%	<input type="checkbox"/> 9%	<input type="checkbox"/> 13%	<input type="checkbox"/> 33%	<input type="checkbox"/> 41%	<input type="checkbox"/> 66%
Other source (<i>specify</i>) <u>See Appendix C</u>	<input type="checkbox"/> 29%	<input type="checkbox"/> 0%	<input type="checkbox"/> 14%	<input type="checkbox"/> 0%	<input type="checkbox"/> 57%	<input type="checkbox"/> 93%

SECTION 3. Transportation and access at this refuge

1. First rate how important each of the following transportation-related features is to you when visiting this refuge; then rate how satisfied you are with the way this refuge is managing each feature. *If this refuge does not have a specific feature or you did not experience it during this visit, please rate how important it is to you and then circle NA "Not Applicable" under the satisfaction column.*

Importance <i>Circle one for each item.</i>					Transportation-Related Features	Satisfaction <i>Circle one for each item.</i>					
Not at all Important	Slightly Important	Moderately important	Very Important	Extremely Important		Not at all Satisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	Extremely Satisfied	Not Applicable
1%	9%	36%	36%	18%	Surface conditions of refuge roads	3%	5%	35%	38%	18%	NA
4%	13%	40%	31%	13%	Surface conditions of parking areas	1%	4%	17%	43%	35%	NA
2%	4%	26%	43%	25%	Condition of bridges on roadways	1%	3%	21%	49%	26%	NA
3%	5%	27%	39%	27%	Condition of trails and boardwalks	1%	5%	23%	49%	22%	NA
56%	10%	15%	11%	9%	Condition of boat launches	18%	15%	30%	27%	9%	NA
5%	13%	41%	30%	11%	Number of places for parking	1%	9%	25%	43%	22%	NA
2%	8%	27%	47%	17%	Number of places to pull over on refuge roads	1%	8%	32%	38%	21%	NA
1%	4%	17%	48%	31%	Safety of driving conditions on refuge roads	2%	2%	17%	48%	31%	NA
1%	5%	19%	48%	27%	Safety of refuge road entrances/exits	1%	2%	11%	51%	35%	NA
9%	7%	21%	34%	29%	Safety of roads/trails for nonmotorized users (for example, bicyclists and hikers)	1%	2%	21%	50%	26%	NA
2%	10%	29%	36%	23%	Signs on highways directing you to this refuge	2%	7%	25%	39%	28%	NA
2%	7%	30%	41%	19%	Signs directing you around refuge roads	1%	6%	28%	45%	19%	NA
7%	4%	23%	42%	23%	Signs directing you on trails	1%	7%	31%	47%	14%	NA
21%	11%	24%	24%	21%	Access for people with physical disabilities or who have difficulty walking	4%	10%	40%	31%	13%	NA

2. If you have any comments about transportation-related features at this refuge, please write them here.

See Appendix C

3. What modes of transportation did you use to travel from the local area to this refuge and within this refuge during your most recent trip? (*Mark all that apply.*)

Transportation modes used to travel...	...from the local area to this refuge	...within the boundaries of this refuge
Private/rental vehicle without a trailer	92%	69%
Private/rental vehicle with a trailer (for boat, camper, or other)	1%	1%
Recreational vehicle (RV)	0%	0%
Refuge shuttle bus/tram	1%	2%
Tour bus/van	1%	2%
Public transportation	1%	0%
Motorcycle	1%	1%
Bicycle	1%	4%
Foot (for example, walking/hiking)	5%	41%
Boat	2%	1%
Other (<i>specify</i>): <u>See Appendix C</u>	3%	3%
Other (<i>specify</i>): <u>See Appendix C</u>	0%	0%

4. Please tell us how likely you would be to use each transportation option **at this refuge** if it were available in the future. Not all options are currently available at every refuge. (*Circle one number for each option.*)

Transportation options	Not at all Likely	Slightly Likely	Moderately Likely	Very Likely	Extremely Likely
Bus or tram that takes passengers to different points within refuge boundaries (such as the Visitor Center)	47%	18%	18%	11%	7%
Bus or tram that provides a guided tour of the refuge with information about this refuge and its resources	36%	14%	26%	13%	11%
Refuge-sponsored shuttle with a dedicated stop in the local community for picking up people at set times	74%	13%	8%	3%	2%
Public transit system that stops at or near this refuge	83%	8%	5%	3%	1%
Bike-share program that offers bicycles for rent on or near this refuge	61%	15%	15%	7%	2%
Pedestrian paths for access to this refuge from the local community	74%	9%	8%	6%	3%

SECTION 4. Your expenses related to your refuge visit

1. Record the amount of money that you and other members of your group spent in the local 50-mile area during your most recent visit to this refuge. Your group would include you and those with whom you shared expenses (for example, family members, traveling companions). *Enter the amount spent or enter 0 (zero) if you did not spend any money in a particular category.*

Categories	Amount spent in the local area/communities & at this refuge (within 50 miles of this refuge)
Hotel, bed & breakfast, cabin, etc.	
Camping fees (for example, tent, RV)	
Restaurants and bars	
Groceries	
Gasoline and oil (for private vehicles, boats, RVs, or other motors)	
Local transportation (for example, public transit, rental car)	See report for summary of visitor expenditures
Guides and tour fees	
Equipment rental (for example, bicycle, canoe, kayak)	
Sporting goods (for example, bait, binoculars)	
Souvenirs/clothing and other retail	
Other (specify) <u>See Appendix C</u>	

2. Including yourself, how many people in your group shared these trip expenses?
- 2 number of people sharing expenses
3. As you know, costs of travel such as gasoline, hotels, and public transportation often increase. If your total trip costs were to increase, what is the maximum extra amount you would pay and still visit this refuge? (Mark the dollar amount that represents your response.)

<input type="checkbox"/> 5% \$0	<input type="checkbox"/> 18% \$30	<input type="checkbox"/> 18% \$100	<input type="checkbox"/> 1% \$250
<input type="checkbox"/> 5% \$5	<input type="checkbox"/> 7% \$45	<input type="checkbox"/> 0% \$125	<input type="checkbox"/> 1% \$350
<input type="checkbox"/> 9% \$10	<input type="checkbox"/> 5% \$60	<input type="checkbox"/> 2% \$150	<input type="checkbox"/> 0% \$500
<input type="checkbox"/> 17% \$20	<input type="checkbox"/> 4% \$75	<input type="checkbox"/> 4% \$200	<input type="checkbox"/> 1% \$750

SECTION 5. Your experience at this refuge

1. First rate how important each of the following services, facilities, and opportunities is to you when visiting this refuge; then rate how satisfied you are with the way this refuge is managing each item. *If this refuge does not offer a specific item or you did not experience it on this visit, please rate how important it is to you and then circle NA "Not Applicable" under the satisfaction column.*

Importance <i>Circle one for each item.</i>					Refuge Services, Facilities, and Opportunities	Satisfaction <i>Circle one for each item.</i>					
Not at all Important	Slightly Important	Moderately important	Very Important	Extremely Important		Not at all Satisfied	Slightly Satisfied	Moderately satisfied	Very Satisfied	Extremely Satisfied	Not Applicable
2%	3%	11%	40%	45%	Convenient hours/days of operation for this refuge	3%	3%	12%	37%	46%	NA
5%	13%	31%	33%	18%	Availability of employees or volunteers	0%	2%	13%	44%	41%	NA
3%	10%	25%	32%	30%	Courteous and welcoming employees or volunteers	1%	1%	8%	34%	56%	NA
1%	7%	26%	38%	29%	Signs with rules/regulations for this refuge	1%	3%	19%	45%	32%	NA
4%	7%	20%	33%	36%	Visitor center	1%	2%	6%	30%	60%	NA
2%	3%	13%	39%	42%	Well-maintained restrooms	0%	1%	13%	27%	58%	NA
7%	12%	31%	32%	19%	Recreational structures (decks, blinds, platforms)	1%	13%	34%	27%	26%	NA
9%	7%	16%	29%	39%	Bird-watching opportunities	1%	4%	13%	41%	41%	NA
5%	4%	17%	39%	35%	Opportunities to observe wildlife other than birds	3%	8%	20%	41%	28%	NA
7%	3%	18%	32%	41%	Opportunities to photograph wildlife and scenery	1%	3%	13%	43%	40%	NA
9%	14%	26%	34%	16%	Environmental education opportunities	1%	3%	24%	43%	29%	NA
57%	8%	10%	8%	17%	Hunting opportunities	12%	8%	27%	27%	27%	NA
38%	10%	12%	16%	23%	Fishing opportunities	6%	5%	18%	37%	34%	NA
8%	9%	18%	28%	38%	Trail hiking opportunities	3%	6%	14%	49%	29%	NA
34%	14%	25%	15%	12%	Bicycling opportunities	5%	9%	32%	32%	20%	NA
33%	11%	23%	17%	16%	Water trail opportunities for canoeing or kayaking	6%	8%	39%	27%	20%	NA
28%	14%	30%	13%	15%	Volunteer opportunities	3%	6%	23%	41%	27%	NA
16%	12%	23%	23%	26%	Wilderness experience opportunities	5%	6%	21%	35%	34%	NA

2. If you have comments about the services, facilities, and opportunities at this refuge, please write them here.

See Appendix C

3. How much do you disagree or agree with each statement below? (*Circle one number for each statement.*)

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I felt welcome during my visit to this refuge.	0%	0%	6%	31%	64%
I felt safe during my visit to this refuge.	0%	1%	2%	33%	65%
Crime <u>is</u> a problem at this refuge.	60%	24%	10%	4%	1%
I feel comfortable being in nature.	0%	0%	1%	27%	72%
I do <u>not</u> like being in nature by myself.	62%	25%	4%	6%	3%
People closest to me enjoy participating in nature-based recreation.	1%	4%	9%	47%	40%
Generally, people who look like me are treated differently when they participate in nature-based recreation.	49%	24%	19%	6%	2%

4. How satisfied are you with the following? (*Circle one number for each statement.*)

	Not at all Satisfied	Slightly Satisfied	Moderately satisfied	Very Satisfied	Extremely Satisfied
The job this refuge is doing of conserving fish, wildlife, and their habitats.	1%	3%	8%	43%	46%
The quality of the overall experience when visiting this refuge.	0%	2%	8%	43%	48%

SECTION 6. Future visits to this refuge

1. Considering **the primary activity** you participated in during your most recent visit to this refuge, please tell us how the following factors, if they occurred, could affect your future participation in that activity at this refuge. (*Circle one number for each factor.*)

If there was...	My participation in my primary activity would...		
	Decrease	Stay the same	Increase
Less water in lakes, rivers, or streams available for recreation	31%	65%	4%
More acreage open to hunting and fishing	25%	54%	21%
More infrastructure (for example, bathrooms, observation decks)	2%	69%	29%
Recreation equipment available for rent (for example, fishing rods, binoculars, snowshoes)	7%	79%	14%
Less regulations on fishing	12%	77%	10%
Less regulations on hunting	22%	63%	14%
A greater diversity of species	1%	39%	60%
Fewer numbers of a single, preferred species	20%	75%	5%
More people participating in my primary activity	21%	74%	5%
An improvement in the quality of wetlands	2%	47%	51%
An improvement in the quality of wildlife habitat other than wetlands	2%	36%	62%

2. Do you plan to return to this refuge in the next 12 months?

63% Yes 27% No 10% Not sure

3. Which of the following types of programs, if offered, would encourage you to return to this refuge in the future? (*Mark all that apply.*)

43% I do not typically participate in refuge programs

For those that do participate in refuge programs, the % that would be encouraged to return if the following programs were offered:

36% Programs that engage youth	28% Programs that focus on creative pursuits (for example, art, writing, meditation)
35% Programs that focus on family/multiple-generations	20% Programs that support people with accessibility concerns (for example, difficulty walking, in a wheelchair)
57% Programs that teach skills to visitors	16% Other (<i>specify</i>) <u>See Appendix C</u>
27% Programs that highlight unique local culture	

SECTION 7. A little about you

**** Please tell us a little bit about yourself. Your answers to these questions will help us to know more about who visits national wildlife refuges. Answers will not be linked to any individual taking this survey. ****

1. Are you? ☐ 56% Male ☐ 44% Female

2. In what year were you born? 1960 (YYYY)

3. How many years of formal schooling have you had? (Circle one number.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+
(elementary)					(junior high or middle school)			(high school)				(college or technical school)				(graduate or professional school)			
					<input type="checkbox"/> 0%			<input type="checkbox"/> 12%				<input type="checkbox"/> 51%				<input type="checkbox"/> 37%			

4. What race or ethnicity do you consider yourself? (Mark all that apply.)

<input type="checkbox"/> 94% White	<input type="checkbox"/> 3% American Indian or Alaska Native
<input type="checkbox"/> 3% Hispanic, Latino, or Spanish	<input type="checkbox"/> 1% Middle Eastern or North African
<input type="checkbox"/> 1% Black or African American	<input type="checkbox"/> 1% Native Hawaiian or Other Pacific Islander
<input type="checkbox"/> 4% Asian	<input type="checkbox"/> 1% Some other race or ethnicity

5. How many people (including yourself) live in your household? 2 persons

6. What was your approximate household income from all sources (before taxes) last year? (Mark only one.)

<input type="checkbox"/> 2% Less than \$10,000	<input type="checkbox"/> 9% \$35,000 - \$49,999	<input type="checkbox"/> 24% \$100,000 - \$149,999
<input type="checkbox"/> 9% \$10,000 - \$24,999	<input type="checkbox"/> 13% \$50,000 - \$74,999	<input type="checkbox"/> 9% \$150,000 - \$199,999
<input type="checkbox"/> 6% \$25,000 - \$34,999	<input type="checkbox"/> 18% \$75,000 - \$99,999	<input type="checkbox"/> 9% \$200,000 or more

7. Which of the following best describes your current employment situation? (Mark only one.)

<input type="checkbox"/> 39% Employed full-time	<input type="checkbox"/> 1% Unemployed	<input type="checkbox"/> 37% Retired
<input type="checkbox"/> 6% Employed part-time	<input type="checkbox"/> 2% Homemaker/caregiver	<input type="checkbox"/> 2% Disabled/unable to work
<input type="checkbox"/> 13% Self-employed	<input type="checkbox"/> 0% Student	<input type="checkbox"/> 0% Other (specify): <u>See Appendix C</u>

Thank you for completing the survey.

There is space on the next page for any additional comments you may have regarding your visit to this refuge.

Comments?

See Appendix C

PAPERWORK REDUCTION ACT STATEMENT: The Paperwork Reduction Act requires us to tell you why we are collecting this information, how we will use it, and whether or not you have to respond. The information that we collect in this survey will help us understand visitor satisfaction with and use of national wildlife refuges and to inform management and policy decisions. Your response is voluntary. An agency may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a valid OMB Control Number. We estimate it will take an average of 25 minutes to complete this survey. You may send comments concerning the burden estimate or any aspect of the survey to the Information Collection Clearance Officer, Fish and Wildlife Service, 4401 North Fairfax Drive, MS 222-ARLSQ, Arlington, VA 22203. OMB CONTROL # 0596-0236 EXPIRATION DATE 11/30/2020

Appendix C: Open-Ended Survey Responses by Question

Survey Section 1

Question 1: “Including your most recent visit, which activities did you participate in during the past 12 months at this refuge?”

Special Event	Frequency
Boar diver	1
Bow hunt	1
Butterfly day	1
Butterfly garden wall	1
Eclipse watch party	1
Friends of Hagerman programs	1
High on the Hawg	1
Journaling workshop	1
Monthly kids’ activities	1
Photo club	2
Scout seminar	1
Second Saturday nature programs	1
Speaker	1
Texas master naturalist training	1
Wildflower tour	1

Other Activity	Frequency
Butterfly garden wildflowers	1
Insect collection	1
Passing thru	1
Scouting for deer hunting	1
Woodpecker biologist	1

Question 2: “Which of the activities above was the primary purpose of your most recent visit to this refuge?”

Primary Activity	Frequency
Auto tour route/driving	10
Bicycling	2
Bird watching	35
Environmental education	3
Fishing	19
Hiking	18
Hunting	15
Interpretation	1
Other	3
Photography	22
Picnicking	2
Special event	5
Wildlife observation	19

Question 3: “Did you go to a visitor center at this refuge during your most recent visit?”; If Yes, “What did you do there?”

Other Visitor Center Activity	Frequency
Attended hunt orientation	2
Attended hunt orientation, daily check in	1
CD of car tour	1
Got a map of the facility	1
Help/feed birds	1
Met with people going on tour	1
Picked up notebook/data record	1
Workers	1

Question 11: “Which, if any, of the following social media outlets did you use to share your refuge experience with other people?”

Other Social Media Outlets	Frequency
National Geographic your shot	1
SmugMug	1
Texasbowhunter.com	2

Survey Section 2

Question 1. “How helpful was each of the following sources to get information about this refuge and its resources?”

Other Websites	Frequency
eBird	1
Friendsofhagerman.com	7
Texas Parks and Wildlife (Lake Texoma)	1
Texasbowhunter.com	1

Other Information Sources	Frequency
Local media	1
T.V. news local	1
Weekly bird census	1

Survey Section 4

Question 1: “Record the amount of money that you and other members of your group spent in the local 50-mile area during your most recent visit to this refuge. Your group would include you and those with whom you shared expenses (for example, family members, traveling companions).”

Other Expenses	Frequency
Donation	1
Fishing license	1
Hunting fee	1
Workshop fee	1

Survey Section 6

Question 3: “Which of the following types of programs, if offered, would encourage you to return to this refuge in the future?”

Other Programs	Frequency
Bird-related programs	2
Hiking-related programs	1
Hunting-related activities	4
Nature-related programs	1
Other	1
Photography-related programs	4
Programs for adults	1

Survey Section 3

Question 2: "If you have any comments about transportation-related features at this refuge, please write them here."

Comments on Transportation-Related Features at This Refuge (n=32)

Areas where the roads tend to be washed out during lake flooding need to be raised or improved so they will not wash out. Bridges should be raised so they do not become water crossings during high water periods.

Dock roads need improved.

Easy to navigate around roads in the refuge and there's plenty of space to easily maneuver my car in and around wildlife roads and areas.

Even though crushed rock and gravel is used to reduce dust, it is still very dusty.

Heavy flooding at Hagerman NWR has washed out one road completely. I don't know if it will be repaired. I observed a lot of work to restore and reopen roads and the big mineral parking lot during my visit.

I have taken a friend there to check the flooding one year and was amazed. Went later when water down and talked with ranger who explained grading needed afterwards, found it interesting. Love the areas out to drilling sights to view birds and maybe see fish jumping. Some deep depressions but still able to drive.

I like the people/volunteers manning the visitor center. They are very helpful. The butterfly garden was large and beautiful this year. The roads were damaged by recent flooding, thus were bumpy. We are "friends of Hagerman" and members of the Hagerman photo club.

I think its "chicken [expletive]" to put on this hunt and then run radar to ticket people for exceeding 20 mph on wildlife drive.

It is hard to fish most spots due to lack of parking. Refuge is about the only place to fish from the shore nowadays. Most good fishing spots on lake have been closed off.

It was a fabulous trip for my grandsons.

Locals drive at very high rate of speeds on refuge roads, which is not very safe!

Most issues with roads and signage are due to recent flooding.

Not a very big refuge. Not many roads but well maintained.

Now I know why the roads are frequently flooded and thus, closed preventing my visiting.

Potholes. I'm sure with the heavy equipment that is dragged around the oil derricks, it messes with the roads and area can flood, thus potholes. I feel they do a pretty good job filling them, but they are there nevertheless.

Refuge is flooded again - roads unusable.

Road dusty.

Roads have bad potholes - needs more gravel & to be maintained better.

Roads sometimes flood.

Roads with potholes wash out roads.

Roadway work redo in past - work subgrade - haul in new flex base (process, run density test and finish to section). Did not put fine surface; therefore, we have chug holes and limestone dust (unbelievable). Wildlife is discouraged and fisher people are covered up w/dust. If you cannot provide paving - the oil field can provide dust control with oil.

Several bridges have large pot holes where the road connects to them that really need attention. They do a great job maintaining the roads, but never seem to smooth out the road/bridge connection.

Signs were old looking and small.

Some roads were in poor shape.

The refuge is great! I do wish that there were more paved trails so my chronically ill son could do more there. We couldn't push his wheelchair on the gravel paths. We did enjoy one plowed path which is appreciated, but it was small.

The refuge law enforcement budget does not support adequate coverage for monitoring speeding on the refuge. Speeders create a dangerous situation, since most people are going very slowly or stopping to watch wildlife.

There is a lot of pass through and oil and gas traffic through the refuge. They speed and sometimes run over wildlife.

This refuge needs better, and more, launch areas for hand launching canoes and kayaks. A gradual dirt grade into the water to slide the boats in. In some areas the banks are too steep. Big mineral day use area.

Very pleased with the park. The park recently flooded. As soon as the water receded, the park maintenance crew worked exceptionally hard to get the roads passable, and all the debris picked up.

We arrived on a Sunday and visitor center did not open until later. I believe weekends should be normal hours, as expected.

When the roads are underwater, often for several weeks at a time, I don't visit at all.

Wildlife drive is extremely rough.

Survey Section 5

Question 2: "If you have comments about these services, facilities, and opportunities at this refuge, please write them here."

Comments on Services, Facilities, and Opportunities at This Refuge (n=41)

Above all, the park is very well maintained.

All staff were very pleasant to visit with.

As stated earlier, our group of 3 vehicles on a Texas exploration trip stopped here on a Sunday morning. The visitor's center was not open and did not open for a few hours. I think on weekends, the center should have had normal business hours.

At the title there were not very many birds available at the refuge.

Every experience was wonderful. Employees were delightful!

Flooding has had a lasting impact on trails.

Hunting on the preserve is ridiculous! I don't know how many times we have been towed away because big strong men with large guns were blasting away at defense-less creatures.

Hunting: when I only had weekends to visit the refuge, it frustrated me that the refuge would close for hunting only on weekends - maybe the hunts should be Thurs-Sat leaving Sunday for other visitors. Refuge staff is generally very accommodating, and the Friends of Hagerman NWR provide excellent programs and activities.

I have been going to Hagerman for 30 years. It continues to improve. The new visitor's center was a great addition to the park. When I invite friends up from the Dallas area, they are surprised about the size, condition, and facilities of the park. Most first timers will comment that they had no idea about the park and plan a return visit.

I love Hagerman. Have been coming here for as long as I can remember.

I love hunting but not in a wildlife refuge. My wife and I go to Hagerman to see geese and deer and take short hikes. Please do not change direction in the way questions are asked.

I love spending time at Hagerman NWR. It has become my home away from home over the last nine years. I sorely missed visits there during the months following the floods of 2015. The staff and volunteers are so supportive that I even managed to lead a tour of wildflowers on the refuge and it went very well.

I love the refuge. It has taken a beating from flooding over the last few years. Heavy rains this year wiped out almost all of the winter wheat crop that migrating geese rely upon. The roads and bridges were also damaged, but I can see that the refuge is working hard to fix the damage. It's about a 2.5 hour round-trip for me from Dallas, but I make the trip at least monthly, on average, because of the excellent opportunities for bird and wildlife photography.

I love this refuge and feel that we are very lucky to have it in our area. It is very nice and a wonderful place to see many different species of birds. I do not agree with the hunting policies. I believe that a wildlife refuge should be a refuge. It should be a safe place for wildlife. They close the trails and allow hunting on this refuge and I fear that they will one day allow duck hunting. This refuge is a major migration stop for birds, a very important resting place.

I was not aware you were able to fish and hunt on a wildlife preserve.

I would like to be able to fish overnight.

I would not visit any refuge that allowed bicycles and cars.

I've not yet entered the visitor's center, but I did meet a staff member outside of the visitor's center who was extremely courteous, and I have called the visitor's center for information.

It would be cool to see more animals, but the birds were really cool to see more to see/explore. The main improvement I would make is more paved paths for wheelchairs.

Like the friendly volunteers and rangers, who are all willing to answer questions. Been coming over 20 years and love the changes to the visitor/ranger center, including catch basin for rain off the roof and patio where one can relax and look out over water and land, other conservation efforts there.

Love Hagerman!

More accessible trails.

Need a fish cleaning station. Hiking trails need improvement and more shade on trails. Need some boat docks.

Need to stock ponds, for fishing.

Nice facilities-we will be back occasionally.

Not many picnic areas.

Offer the draw hog hunts before conducting the helicopter eradication. Conducting planting for doves would be beneficial.

Overall, lake level fluctuations not helpful for this refuge's health.

Quite a few visitors were fishing, so it'd be a good refuge for that. As for hunting, there needs to be isolated areas, so not so sure about.

Satisfied with the availability of all services.

Saw an amazing variety of birds, insects, butterflies, moths, and even an armadillo! Thoroughly enjoyed the hiking trails.

The amount of wildlife in this so called refuge has been reduced to deplorable numbers in recent years! Shame on you!

The archery deer hunt is an extremely well regulated and supervised program.

The archery deer hunt should be 5 day instead of 3. 3 days, which is not enough time. Most draw hunts in Texas are 5 days.

The center should be open earlier. Access to the restrooms should be dawn to dusk.

The staff at Hagerman NWR are fantastic! Love them!

The visitor center is very nice. The people that work there are knowledgeable and have always been helpful.

They should put picnic tables and trash cans about the areas more so!! Then you could get out of your vehicle and enjoy the area more so.

Very clean and well maintained visitor center as well as trails. Very friendly and helpful staff as well.

Very nice facilities and hiking trails. Good opportunities for wildlife/bird viewing.

Visitor center is top notch. I would like to see enforcement of fishing regulations, such as no fishing from bridges.

End of Survey

General Comments (n=38)

Allow night fishing.

Almost forgot, I like the small deck at one of the ponds. Also took pictures of flowers in area and birds. Liked the recording and will probably get it again. I'm trying to get there once a month to see the changes.

Enjoyed visiting with the ladies who were out working the day I drove through! Love having Hagerman almost in our backyard!

Exceptional staff at Hagerman. Their attitudes, demeanor and personalities contribute immensely to the overall experience. It is apparent they all enjoy what they do.

Great refuge... Main road needs to be smoother.

Great visitor center - I like the improved trails and signage.

Hagerman National Wildlife Refuge rocks!

Having the refuge in my backyard is very nice. Need better roads and parking. Black powder should be ok for hunting. Need more guides on weekends. More wildlife/animals on refuge would be nice. Flooding caused issues for planting for feeding of snow geese in Nov thru winter!

I came to wildlife refuge to attend training on master naturalist - my primary purpose to visit. Will volunteer and visit now that I have been introduced to refuge and its purpose.

I come to the area in November to visit family for Thanksgiving and always make a trip to the wildlife area. I live in Fort Scott, KS.

I consider Hagerman NWR to be an extremely well-run operation with a very good regular lecture program staff - ran by very knowledgeable people.

I have enjoyed this refuge for the last 22 years. We have enjoyed hiking and sightseeing. I greatly appreciate the opportunity this refuge provides for hunting. I'm an avid bow hunter and love the chance of being able to harvest an animal of my dreams if drawn in the lottery hunt. Thanks again for the opportunities the refuge allows.

I love visiting HNWR. It provides healing and recovery from time spent with my mom who suffers from a degenerative neurological condition. If I ever find time, I'd like to blog about the continually changing faces of HNWR. Ironically, I grew up just a few miles from HNWR yet only discovered it on Christmas day 2017. I had visited once before in spring 2015, hoping my mom would enjoy the visit. I knew she had volunteered there, briefly after my father passed away. Since Christmas, I have visited almost 30 times and will be doing some volunteer gardening and butterfly photography there. I'm constantly telling friends to visit this gem!

I only came in order to deer hunt. I will not be back until I am able to hunt again which will likely not be for three years based on the draw.

I really do not like deer hunting to be allowed within the refuge.

I thought there would be all kinds of animals at the refuge since it is a refuge and not just fowls.

I would like to thank Hagerman for saving mother nature.

I've been enjoying hiking in Hagerman NWR for 50 years. I grew up next to it. It preserves an important portion of the area's natural condition.

I've been visiting Hagerman for years and when I travel around, I try to hit up others, as well. I've had wonderful birding experiences. I just love the outdoors and I often bring my 4-legged buddy with me.

It would be helpful to get a weekly e-mail report on the wildlife activity and locations of specific wildlife locations in the refuge. Also reports on the conditions of the roads and crossings.

Me and my wife have 7 kids, ages 2, 2, 3, 5, 8, 13, and 17, and we really enjoy going out to the refuge and riding around and watching all the birds and other wildlife. With so many kiddos, it's nice to be able to go and do stuff together and not cost an arm and a leg. Besides, they all like watching the birds too!! It's a fun time for them and they're always talking about it. Thanks for all you do.

More fish stocking and post times/sizes.

My visits to Hagerman NWR have increased since I retired. I sold my house and moved in order to be closer to this refuge. I enjoy visiting, volunteering, and learning there.

My wife and I enjoy walking our dogs on the trails here, enjoy fishing for crappie in the spring with my sons and grandkids. Enjoy the birds and wildlife in general. I think the visitor center is awesome, have watched some of the movies and exhibits there. We also are avid bicycle riders and enjoy riding here to look for birds and stopping at visitor center, volunteers are very nice! We only live 1 1/2 miles away so we come here often. Thank you.

My wife and I often take a couple of our grandsons birding to Hagerman. We are grateful that Hagerman exists. I just wish it were closer. It's approx. 65 miles. If it were closer, I would happily volunteer.

Need to do something about the erosion of the bank at "Sandy Point". In 20 plus years I have seen the bank erode, causing the loss of trees, picnic tables and a great amount of land loss.

Please keep the hunting selection program under refuge control.

Thanks.

The deer hunt held at this refuge is a unique and special opportunity. I have applied for the hunt for approximately 14 years, and this is only the 2nd time I have been drawn in the lottery permit system. One additional activity that I would like to see be made available to refuge visitors at Hagerman is the ability to collect shed antlers. Currently, refuge rules prohibit that activity. If that activity was allowed, I would visit this refuge at least two additional days each year and possibly more than that. I would suggest making it legal to collect shed antlers through a permit-based system. I would be willing to pay \$50 each year for a permit to look for and collect shed antlers on the refuge.

The man who asked me to do this survey was very polite and interesting.

The only hunts that should be allowed at the refuge should be related to invasive species only.

The only thing I did not like about the refuge was all of the oil pumping stations. These pumping stations seem incompatible with a refuge. I fear the birds being harmed.

The staff at Hagerman do a great job with what they have, but they need more support from USFWS, not less.

The weekly bird census on the Friends' webpage is closely watched by many birders and photographers, and generates a lot of spur-of-the-moment visits when unusual or vagrant species appear. It often includes animal sightings as well.

Visitor center is very nice, clean, and well kept. Employees are good people and friendly. Public relations with local people are good. Roadway need upgrading. Base materials are in place. The flex base needs to be re-worked and brought to section. Then it needs to be finished with a topping of asphalt or concrete. The excuse that it will be underwater will not do. If damage occurs in such a short time; repairs can be done at once. Something must be done to control the dust problem that everyone is experiencing. The dust problem is a deterrent to the wildlife and the refuge visitors and the traffic through the refuge. Your attention to this problem and any improvement will be appreciated - believe me.

Walking tours would be great, occasional small golf cart tours would be okay. However, if the park were to have many amenities, lots of human noise, large motorized vehicle tours, bicycles on trails, and many people fishing and hunting, it would no longer feel like a refuge for wildlife, but instead like a tourist attraction. This would cause me great concern for the health and safety of the wildlife, water, and flora. The greater the human and mechanized traffic, the less natural the refuge would feel. If the refuge were to change in this way, not only would I lose interest in visiting, but I would feel sad for the loss. I believe wildlife refuges are meant to be wildlife refuges foremost and are necessary; a source of pride for the country, state and the local area - and not to cater to tourist or promote consumer spending in the local area. People who truly enjoy wildlife and wilderness will always come.

We had a wonderful time. We felt welcome and learned about nature. We definitely will be returning especially in the fall when the snow geese migrate. One of the volunteers told us that it's an amazing sight.

Whenever I travel, I look for opportunities to visit wildlife refuges, parks, national forests, etc. Our natural resources are priceless. I have made it a mission to open the eyes of Boy Scouts, Audubon members, and friends and family to Hagerman NWR. I'd love to be able to share my photography with refuge staff.