Public Opinions Regarding Wolves and Wolf Management in Wisconsin

A Technical Report to the
Bureau of Wildlife Management

from the
Analysis Services Section
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ABOUT THIS REPORT

The mission statement of the Wisconsin Department of Natural Resources (DNR) directs the agency "…To ensure the right of all people to use and enjoy these resources in their work and leisure. To work with people to understand each other's views and to carry out the public will. And in this partnership consider the future and generations to follow." This report presents the results of a stratified random sample survey of households statewide to represent and better understand viewpoints of all Wisconsinites as they relate to wolves and wolf management in Wisconsin. We recognize that Wisconsinites living in wolf-range are closer to and have more direct encounters with wolves. However, wolf-range residents overall represent only a portion of Wisconsinites and many of those who have permanent residences outside of wolf-range regularly vacation and hunt in areas of the state where wolves live. The results presented here balance the need to understand the span of opinions for all Wisconsinites by providing findings at both a statewide level and at a geographic range-level. We also, where relevant, make comparisons with results from a similar survey conducted in 2014 and note any shifts in response trends over the past eight years. The report does not, however, include any specific management recommendations or policy prescriptions.

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CONTENTS

EXECUTIVE SUMMARY

This study measured current public opinions about and attitudes toward wolves and wolf management as well as changes in opinions and attitudes since the Wisconsin Department of Natural Resources' (DNR) last statewide investigation (Holsman et al., 2014). Our sampling methods and questionnaire were designed to enable direct comparisons to 2014 results with a focused investigation of the key issues and questions critical to updating the state's wolf management plan.

We mailed an 8-page questionnaire to 8,750 randomly selected households in the state during May and June 2022. Household addresses were purchased from a commercial firm and randomly drawn within four sampling strata using address-based sampling of U.S. Census records. Respondents were given the option to respond by mail or online, if they preferred, using a provided unique ID and passcode. After adjusting for undeliverable addresses in our sample, our overall response rate was 38% with a total of 3,158 returned questionnaires. Over half of those returned questionnaires (55%) came from households within wolf-range.

Characterizing Respondents

- Twenty percent of respondents formally declined participation in this study. The most commonly cited reasons for declining participation were *I feel I don't know enough to participate* (66%) and *I trust the DNR to make decisions without my input* (53%).
- Relative to Wisconsin's population, respondents to this survey were disproportionately male, older, and self-identified as hunters. Nearly two-thirds of respondents (65%) were male and 49% self-identified as a hunter and/or trapper; average age was 50 years old. To ensure results were representative of the sampled population, weights were applied to adjust for gender, age, and per-capita hunting participation.

Attitudes toward Wolves

- Across nine statements about wolves, the majority responded in a way that reflects favorable attitudes and emotions toward wolves.
    - Statewide, most people agreed with statements like *wolves are special animals that deserve our admiration* (75% agreement) and *predators like wolves keep nature in balance* (77% agreement). Most people disagreed with less favorable statements like *the previous generations were right in eliminating wolves from the landscape* (75% disagreement).
    - Statewide, most Wisconsinites reported no feelings of frustration (72%) or anger (80%) when thinking about wolves in Wisconsin.
- On average, those who lived in wolf-range held less favorable attitudes than those who lived outside of wolf-range.
- Among both wolf-range and non-range residents, attitudes toward wolves were more positive at the time of this study than they were in 2014 across six identically measured statements.

Experiences with Wolves

- Many Wisconsinites reported they had never heard a wolf howl (45%), had never seen wolf tracks (55%), or had never seen a wolf in the wild (61%). However, among those who reported these first-degree encounters, it was more common to have these experiences *more than once*.
- Direct or indirect experience with wolf attacks on domestic animals (second-degree encounters) were much less common than first-degree encounters. It was more common to know someone who had this type of encounter than to have personal experience with a wolf attack.
    - Fifteen percent of Wisconsinites reported knowing someone who had a domestic animal attacked (non-lethal) or harassed by a wolf and 12% reported knowing someone who had a domestic animal killed by a wolf.
    - Three percent of Wisconsinites indicated they personally had experience with a domestic animal being attacked (non-lethal) or harassed by a wolf and 2% indicated they have had a domestic animal killed by a wolf.
- Those living in wolf-range counties were more likely to have first-degree encounters and more likely to report those encounters *more than once.* Few wolf-range residents reported personal experience with wolves harassing a domestic animal (5%) or killing a domestic animal (4%) but a higher proportion reported knowing someone with these experiences.
- Among both wolf-range and non-range residents, those reporting first-degree wolf encounters (seeing or hearing wolves, seeing tracks) and second-degree wolf encounters (attacks on domestic animals) have decreased since 2014.

Worry for Safety While Outdoors in Areas Where Wolves Live

- Statewide, most Wisconsinites indicated they would worry for the safety of pets (61%) and of children (53%) in areas where wolves live. Fewer Wisconsinites would worry for their personal safety (31%).
- Measures of overall worry for safety increased as both the frequency and severity of reported wolf encounters increased.
- Proportions of those who would worry for safety of pets, children, and personal safety have all decreased since 2014 among both wolf-range and non-range residents.

Wolf Population Preferences

- Compared to current wolf abundance and distribution, the plurality of Wisconsinites statewide indicated they would like *about the same number* of wolves occupying *about the same amount* of the state.
    - Among wolf-range residents, 33% wanted *about the same number of wolves* in the state, 27% wanted *fewer* or *many fewer,* and 22% wanted *more* or *many more*.
    - Among wolf-range residents, 41% wanted wolves to occupy *about the same* range, 24% wanted *less* or *much less* of the state, and 15% wanted wolves to occupy *more* or *much more* of the state.

- Among non-range residents, 35% wanted *more* or *many more* wolves in the state, 33% wanted *about the same number* of wolves in the state, and 12% wanted *fewer* or *many fewer*.
- Among non-range residents, 47% wanted wolves to occupy *about the same* range, 22% wanted wolves to occupy *more* or *much more* of the state, and 12% wanted *less* or *much less* of the state.
- Seven percent of wolf-range residents and 3% of non-range residents would like *zero* wolves in the state.

- Those who perceived current wolf abundance to be lower (<900 wolves), generally preferred a population increase and those who perceived current abundance to be higher (>1,400 wolves) generally preferred a population decrease.
- Relative to 2014, we found higher proportions of wolf-range and non-range residents who would like *about the same number* or *more* wolves and lower proportions of wolf-range and non-range residents preferring a decrease or elimination of wolves.

Opinions Regarding Wolf Management Options

- When it comes to managing wolves in Wisconsin, a majority of Wisconsinites felt it was *very important* for the Wisconsin DNR to *educate people about wolves and wolf behavior* (68%), *monitor wolf numbers and distribution* (65%), and *conduct research on practices to prevent wolf-human conflicts* (53%).
- Management options that Wisconsinites felt were of mixed relative importance for Wisconsin DNR included: *creating refuge areas to protect wolves from harvest* (44% *very important*), *reducing wolf populations in areas of high wolf-human conflict* (36% *very important*), and *compensating livestock producers for animals lost to wolves* (31% *very important*).
- Management items that Wisconsinites felt were of less overall importance for Wisconsin DNR to do included: *reducing wolf predation impacts on white-tailed deer and elk* (30% *not at all important*, 31% *slightly important*) and *compensating hunters for hunting dogs lost to wolves on public lands* (45% *not at all important*, 23% *slightly important*).

Trust in Wisconsin DNR

- With respect to managing Wisconsin's wolf populations, a majority of Wisconsinites felt Wisconsin DNR *appropriately uses science and data in decision-making* (67%), *uses reliable methods to estimate wolf populations in Wisconsin* (65%), *can be trusted to make decisions about wildlife that are good for the resource* (64%), and *listens to the concerns of citizens* (59%).
- A plurality *neither agreed nor disagreed* that the Wisconsin DNR shares similar values (42%) and goals (43%) as them and takes similar actions as they would (44%). This may reflect a lack of awareness of Wisconsin DNR values, goals, and specific actions.
- Those who reported increased frequency or severity of wolf encounters and those who had high perceptions of current wolf abundance generally had lower trust in the Wisconsin DNR.

- Relative to 2014, we found increased agreement with statements that Wisconsin DNR has similar goals, has similar values, and takes similar actions as respondents would with respect to managing wolf populations in Wisconsin.

Opinions on Addressing Wolf-human Conflicts

- Few people opposed lethal control to address four types of wolf-human conflicts.
  - Statewide, 16% opposed lethal control for wolves attacking domestic livestock, 15% opposed lethal control for wolves regularly approaching humans, and 12% opposed lethal control for wolves attacking pets near residences. A higher proportion (35%) opposed lethal control to address wolves attacking hunting dogs on public land.
- Regarding the most preferred lethal control tool for each type of conflict, killing of individual wolves by wildlife professionals was the most preferred tool to address *wolves attacking pets near residences* (58%) and *wolves regularly approaching humans* (58%). In the case of *wolves attacking domestic livestock*, support for landowner permits to kill individual wolves (59%) was slightly higher than support for wildlife professionals doing so (50%). A plurality preferred the use of wildlife professionals to kill individual wolves that attack hunting dogs on public land (42%).
- Opposition to lethal control for four types of wolf-human conflicts increased slightly between 2014 and 2022 but meaningful differences in support for who carries out that lethal control (wildlife professionals, landowner permits, regulated hunting and trapping) were minimal.

Support for Wolf Hunting and Trapping

- Overall, 46% of Wisconsinites supported hunting and trapping of wolves to manage populations, while 29% were opposed to hunting and trapping. The remaining 25% were unsure.
  - Fifty-seven percent of wolf-range residents supported hunting and trapping.
  - Forty-three percent of non-range residents supported hunting and trapping.
- Most Wisconsinites (50%) were not aware that *Wisconsin Statutes* mandate a wolf hunting and trapping season in Wisconsin when wolves are not listed as endangered.
- Top reasons for opposing a regulated hunting and trapping season included concern that wolves will become endangered (75%), opposition to specific methods of harvest like hounds (64%) or traps (70%), and feelings that hunting wolves is unnecessary (62%) or culturally offensive to Native American tribes (57%).
- Those who opposed a regulated wolf season did not oppose all hunting. A majority *supported some forms of hunting, but not for wolves* (55%) and only 15% *opposed all forms of hunting*.
- Statewide, support for a hunting and trapping season has declined from 61% support in 2014 to 46% support in 2022. The decline was present among wolf-range residents (62% to 57% support) and among non-range residents (51% to 44% support).
- Relative to 2014, a higher proportion of Wisconsinites opposed a regulated season at the time of this study because of concern that wolves *will become endangered again*, that they *do not think we need to hunt wolves*, or that *wolves are culturally important to Native Americans and hunting them is offensive*.

INTRODUCTION

Wolves and Wolf Management in Wisconsin

The gray wolf (*Canis lupus*) has been a part of Wisconsin's landscape for millennia, involving a long history of co-existence with human communities, but post-colonial historical interactions with people led to the species being locally extirpated by 1960 and listed as endangered under the federal Endangered Species Act in 1973. While under federal protection, wolves from Minnesota slowly recolonized Wisconsin and Michigan's Upper Peninsula and have since expanded their range and population density (Wisconsin DNR, 2021). The Wisconsin Department of Natural Resources (DNR) has maintained extensive monitoring efforts of wolf pack sizes and locations. Since the early 2000s, gray wolf populations in the Western Great Lakes have generally met federal recovery goals and the U.S. Fish & Wildlife Service has removed wolves from federal protection and placed them under state management at various times. The 2020-2021 overwintering population estimate found Wisconsin's wolf abundance to fall between 937 and 1,364 individual wolves in approximately 292 packs (Wisconsin DNR, 2022). Despite large remaining areas of ecologically suitable habitat (Mech, 2017), the current distribution and population densities of wolves remain constrained by human intolerance and continuing disagreements over wolf management. The Wisconsin DNR is currently updating its wolf management plan to inform efforts to balance the maintenance of wolves in the state with associated impacts to human communities.

Recent Wolf-related Human Dimensions Work

Wolf management can be contentious and controversial, with many members of the public having strong feelings about the related issues. To better understand public sentiments, the Wisconsin DNR conducted a comprehensive survey of public attitudes about and opinions regarding wolves and wolf management in 2014 (Holsman et al., 2014). The 2014 study documented Wisconsinites' attitudes and opinions, and identified the demographic, experiential, and social-psychological factors that influence those attitudes. Holsman et al. (2014) also summarized relevant prior research to provide appropriate context for and to help shed light on these different factors. More recently, Bradshaw (2021) provided an updated summary of wolf-related human dimensions work with a particular emphasis on contributions since Holsman et al.'s (2014) survey (covering the period 2014-2021). She highlighted the commonly discussed costs and benefits of maintaining wolf populations, the common stakeholder attitudes toward wolves, the underlying values that shape attitudes and group identity, the influence of media portrayal of wolves, and potential areas of common ground among various wolf management interest groups.

Purpose of the Current Study

Successful implementation of an updated management plan will require the Wisconsin DNR to identify and successfully respond to public sentiments regarding the size and distribution of wolf populations. The degree of consensus regarding the strategies employed to manage the species will also, in part, determine success. As such, the Wisconsin DNR is interested in measuring current opinions of people across Wisconsin. In particular, this current survey

measures changes in public opinions and attitudes regarding wolves and wolf management since the Wisconsin DNR's last statewide effort (Holsman et al., 2014).

METHODS

We measured public opinions about and attitudes toward wolves and wolf management objectives and strategies using an 8-page, mailed questionnaire that paralleled the 2014 study (Holsman et al., 2014). The development of the 2014 questionnaire was based on an extensive literature review of previous wolf attitude research and input from the Wisconsin DNR's Wolf Advisory Committee. The investigators pilot tested the questions with six focus groups comprised of wolf stakeholders and substantively revised the wording and presentation in response. The investigators then pilot-tested the survey with a sample of households to fine-tune the measurements. An external panel of human dimensions experts peer-reviewed and affirmed the questionnaire and survey methodology. The 2022 study presented an opportunity to retest many of the 2014 questions and also incorporate new questions based on literature published since 2014 (Bradshaw 2021) and current circumstances in Wisconsin.

A key determinant of the types of inferences that can be made from a given survey effort is how well the individuals who complete the survey represent the overall population (Groves et al., 2011). We used several approaches to ensure the representativeness of our data and to correct against potential response bias. These steps are outlined in subsequent descriptive methods. The data collected and documented in this report are intended to provide accurate and representative social science information to inform wolf management plan decisions in Wisconsin. At a statewide level, the results have a margin of error within 3.2 percent of the mean at the 95 percent confidence level.

Sample Stratification

The 2014 study (Holsman et al., 2014), based on input from the Wisconsin DNR's Wolf Advisory Committee, oversampled people living among wolves, especially in rural areas, because those individuals are most likely to encounter wolves and be impacted by them. The 2014 sampling protocol allowed for an in-depth examination of residents living in counties that have established wolf territories. The approach also allowed for comparisons of responses from people living in wolf-range to responses from those living elsewhere and secondary comparisons (e.g., rural vs. urban residents) to test for attitude differences found in prior research on public attitudes toward wolves (reviewed by Holsman et al., 2014).

The sampling protocol for the current study was developed to ensure findings from 2022 would be comparable to those obtained in 2014. We identified four sampling strata based on whether a county falls within wolf-range (i.e., counties with established wolf packs, **Figure 1**, left) as well as a county's human population. We used the federal Office of Management and Budget's designations to identify counties as metropolitan and micropolitan (grouped together as "urban") or non-metropolitan ("rural") (**Figure 1**, right). Stratifying the sample in this manner ensured that we obtained sufficient representation from rural areas, particularly rural areas in wolf-range. **Table 1** provides a breakdown of census populations and our sample sizes for each stratum.

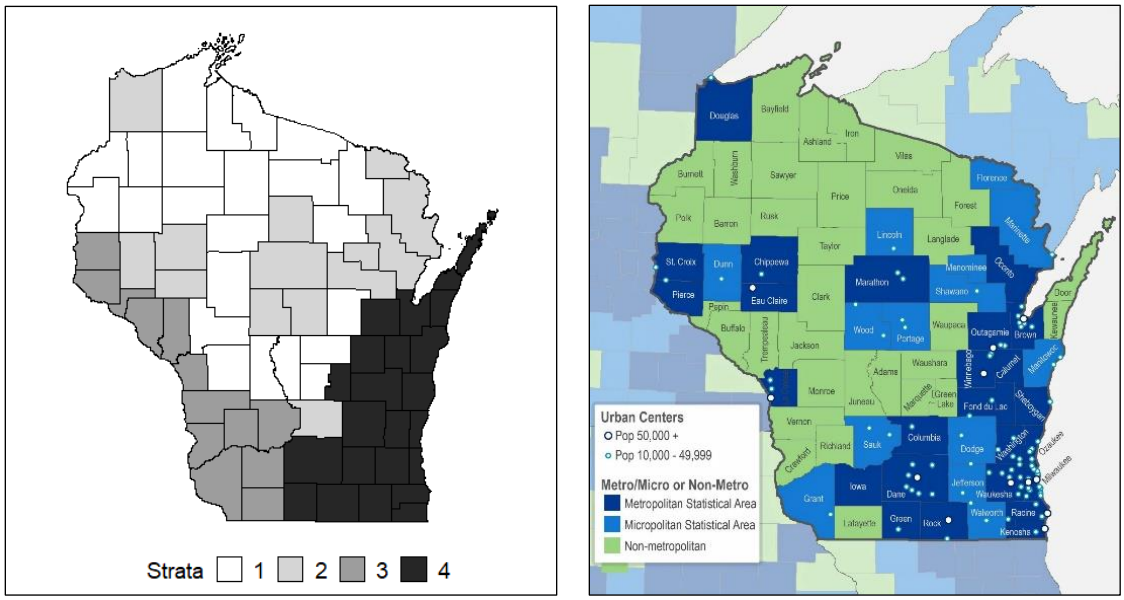

Figure 1. *(Left) Sample strata used for 2022 household survey. Stratum 1 = rural wolf-range, Stratum 2 = urban wolf-range, Stratum 3 = rural wolf non-range, Stratum 4 = urban wolf non-range. (Right) U.S. Office of Management and Budget designation of counties based on population and U.S. Census Bureau's urban centers (map generated by University of Wisconsin Applied Population Laboratory).*

Table 1. *Sample strata and associated sample sizes.*

Strata	Wolf-range	County designation	Human population	Sample size
1	Wolf-range	Rural	245,528	2,625
2	Wolf-range	Urban	324,723	1,750
3	Non-range	Rural	215,362	1,488
4	Non-range	Urban	1,719,418	2,888
				8,750

We based the sample sizes in **Table 1** on U.S. Census known population sizes of each stratum and scaled them accordingly to guarantee adequate "n" sizes in returns. Individual returns from any one county within a stratum, however, will likely be too small for statistically meaningful analysis at the county level.

Survey Administration

We mailed an 8-page questionnaire to 8,750 randomly selected households in the state during May and June 2022. Household addresses were purchased from a commercial firm and randomly drawn within each sampling strata using address-based sampling. Addresses marked as being vacant or designated as vacation properties were excluded from the sample. Respondents were given the option to respond by mail or online, if they preferred, using a provided unique ID and passcode. The online version of the survey was identical to the print version and hosted through a department SurveyMonkey license.

We sent the first round of surveys on May 9, 2022. Each envelope was sent using first-class postage and included the printed questionnaire, a cover letter signed by Wisconsin DNR Secretary Preston Cole, and a stamped return envelope. The questionnaire included an opportunity to formally decline participation in the study. Subsequent mailings followed standard mail survey protocol (Dillman, 2007). We sent a reminder postcard to the entire sample of 8,750 households on May 16, 2022. We sent a third mail contact to all households that had not yet responded (i.e., non-respondents) on June 7, 2022. This third contact contained the same contents as the initial mailing but with a modified cover letter to explain the purpose of the additional mailing and to reiterate the deadline for responding. Data collection closed at end-of-day on July 1, 2022. We used tracking codes printed on the bottom of each mail survey and/or the provided unique online access codes to track questionnaires returned to us in the mail or completed online. Unique tracking codes also allowed us to monitor for duplicate survey returns (e.g., completing online and mail) from a single household.

Five percent of mailings (n=423) were returned to us as undeliverable. The U.S. Postal Service returns mail as undeliverable in cases of vacant addresses, when no forwarding address is given, when no mail receptacle is present, when the intended recipient is deceased, and in some cases, when delivery is attempted and unsuccessful for undefined reasons. When mailings were marked as undeliverable because they were addressed to a name that no longer matched the current resident(s), we remailed surveys and changed the addressee to "current resident."

We entered data for mail survey returns using a separate SurveyMonkey collector. When data collection closed, we combined data sheets for the completed online responses and the entered mail data. All analyses were completed using IBM® SPSS® Statistics software and Microsoft Excel.

Data Cleaning and Weighting

After combining data sheets, we examined all returns and tracking codes for instances of a single sampled household responding more than once. We found a total of 34 tracking codes that appeared more than once in the data, amounting to 73 duplicate records. We examined each individual duplicate record and removed incomplete or accidental submission data records if a complete record from the same tracking code was present. If both duplicates were complete, we maintained the first response we received. In cases where both a completed mail and online duplicated response were received, we maintained only the mail response.

Data weighting is an important step to ensure returns are an accurate representation of the sampled population. The commercial firm from which the address-based sample was purchased provided weights that adjusted 2022 survey results to account for observed differences in age and gender distributions between the response dataset and U.S. Census tract information. To these weights, we added a correction for overrepresentation of hunters and trappers in the response dataset relative to per capita hunting/trapping participation. Weighting by hunters and trappers allowed for reasonable comparisons with findings from Holsman et al. (2014), who weighted by deer hunting participation. For any statewide analyses, we adjusted weights for the true proportion of each stratum's overall population within

the entire state. Comparisons of wolf-range and non-range populations used separate weights to preserve sample sizes and representation of populations within each region.

Analysis and Statistical Comparison

For some survey questions, comparison of responses across groups provided deeper insights into public opinions and preferences. We used chi-square tests to compare distributions of responses relying on categorical data, whereas t-tests and analysis of variance (ANOVA) with appropriate post-hoc tests were used to assess differences in means of continuous variables. In some cases, for questions that included multi-unit response scales (e.g., a continuum of *strongly agree* to *strongly disagree*), we followed standard practice in survey research by combining the frequencies of two or more response categories for analytical and reporting purposes. For example, the frequency of people who *strongly agreed* were added to those who *agreed* with a statement and simply reported as a single "agreed" category.

Analyses of responses to several questions in the survey rely on evaluations of multiple items that together capture a single underlying construct. Rather than comparing responses among individual but related items, we developed indices to reflect respondents' opinions, preferences, or experiences on a spectrum defining the underlying construct. We used principal component analysis to reduce the number of variables under consideration to the minimum number of independent components necessary to explain most of the observed variation in responses. There are two primary outputs from this type of analysis, the first of which is a set of component scores that measure the extent to which an individual item contributes to each of the identified components. Larger, positive values indicate a positive association between the item and the component, whereas larger negative values indicate a negative association between the item and the component. Values near zero indicate that the item contributes little to the component. The second output of the analysis is a set of factor scores that are added to the response data set. Each respondent is assigned a factor score for each component, which forms an index of the degree to which an individual adheres to the underlying construct measured by the component (i.e., an attitude, opinion, preference, or type of experience). These factor scores are a standardized continuous variable with a normal distribution centered around a mean value of zero and a standard deviation of one. As such, factor scores are well-suited for parametric approaches to statistical comparison.

Interpreting Change Over Time

One of the goals of this study was to reassess a number of constructs and topics tested in the previous work by Holsman et al. (2014). Our survey instrument and sampling approach were carefully designed to allow for comparisons of key questions and across the same population segments. The current study, however, is not a replication of Holsman et al.'s study (2014), and the available management options as well as the social, political, and regulatory context under which each study was conducted and analyzed are important factors to consider when interpreting changes over time.

To appropriately make comparisons over time, we first ensured the two datasets were weighted and analyzed in similar ways. Where we present comparisons in this report, each year's survey data were weighted to reflect the populations of residents within their

respective time periods. Where simple questions were compared between the two studies, we present findings from both study years. Where more complicated constructs were measured using a series of questions, we compare factor scores, which more simply summarize the strength and direction of the observed differences.

To confirm statistical significance of differences across study years, we standardized responses into Z-scores for individual questions or factor scores for series of questions measuring larger constructs. Both Z-scores and factor scores are standardized continuous variables with a normal distribution centered around zero, which represents the global average for the population. Comparisons of group mean factor scores or Z-scores across years allow us to detect the directionality and the magnitude of those differences between the two studies as well as the statistical variance from the average.

Terms and Definitions Used in This Report

"Affinity groups"—We asked respondents if they identified with particular labels including *animal lover*, *environmental advocate*, *farmer or livestock producer*, *hunter and/or trapper*, *landowner*, *outdoor enthusiast*, and *tribal member*. Respondents were not restricted to choosing a single label but, rather, had the opportunity to check all affinities with which they identified (Appendix A, Question 21). As a result, comparisons across these groups were not possible. We did, however, make comparisons between those who indicated that they belonged to a specific affinity group and all those who did not belong to that same group.

"Hunters and non-hunters"—We include comparisons of hunters and non-hunters in this report and some questions assess wolf attacks on hunting dogs. Any comparisons of opinion or preference between hunters and non-hunters in this analysis refer to the recreational pursuit broadly. The questionnaire did not specify any particular type of hunting or trapping (e.g., white-tailed deer, ruffed grouse, black bear) that respondents may participate in. Similarly, for questions addressing wolf attacks on hunting dogs, we did not specify a particular type of hunting dog (e.g., upland game bird, black bear) or circumstance (in the act of training on or hunting for certain species).

"Geography"—We focus our geographic comparisons on differences between individuals residing within wolf-range counties and those residing outside of wolf-range counties. Although we examined stratum-level differences, which would account for strong differences between urban and rural counties, we found these stratum-level comparisons in most cases to be primarily meaningful only at the wolf-range/non-range level.

RESULTS AND DISCUSSION

Response Rate

After adjusting for undeliverable addresses in our sample, our overall response rate was 38% for a total of 3,158 returned questionnaires (**Table 2**). All respondents had the option to return their questionnaire using the pre-stamped return envelope or to use a provided web-link and a unique access code to respond online. Most respondents (85%; n=2,688) chose to respond through the mail, but 15% (n=470) submitted responses online. Within sampling strata, residents within Stratum 1 (i.e., rural wolf-range counties) had the highest response rate (44%; **Table 2**) and those within Stratum 4 (i.e., metro wolf non-range counties) had the lowest response rate (31%). We removed two records from the dataset prior to conducting analyses because the respondents indicated they were minors (under the age of 18). Following this change, our unweighted statewide pool of responses totaled 3,156 cases.

Table 2. *Adjusted sample size, returned questionnaires, and response rate per sampling stratum and in total statewide. Stratum 1 = rural wolf-range, Stratum 2 = urban wolf-range, Stratum 3 = rural wolf non-range, Stratum 4 = urban wolf non-range.*

Stratum	Adjusted Sample Size	Mail Returns	Online Returns	Total Returns	Response Rate
1	2,475	967	115	1,082	44%
2	1,675	565	93	658	39%
3	1,665	533	95	628	38%
4	2,512	623	167	790	31%
Statewide	**8,327**	**2,688**	**470**	**3,158**	**38%**

Characterizing Respondents

All respondents had the option of formally declining to participate in the study (Appendix A, Question 1), and 20% of respondents declined to participate. Those electing to opt-out were older on average and less likely to live in wolf-range (**Table 3**). Those who participated in the full questionnaire were more likely to identify as male and more likely to indicate they were a hunter. This overrepresentation of men and hunters relative to the Wisconsin population was corrected by weighting.

"Opt-outs" were asked to answer four short questions to help us understand why they declined to participate. The most frequently cited reason was *I feel I do not know enough to participate* (66%; **Figure 2**). The second-most common reason was *I trust the DNR to manage wolves without my input* (53%). Additional reasons for declining to participate included *I am not interested in the topic* (22%), *I feel my opinion will be ignored* (12%), *I am too busy* (5%), and *other* reasons (9%) such as poor health. We compared reasons for formally opting out of the study in 2022 with those provided in 2014 and found opting out because they *trust the DNR to manage wolves without my input* increased significantly from 33% in 2014 to 53% in 2022 ($p<.05$) and was the only statistically significant difference in opt-out reasons across study years.

Table 3. *Characterizing demographics of survey respondents and those who chose to formally "opt-out" of the study. Percentage for each demographic sums within column and statistical tests compare between willingness to participate.*

Demographic & Response		Are you willing to participate? Yes	Are you willing to participate? No (opt-out)	P value
Resident in wolf-range	Yes	56%	50%	p<.005
	No	44%	50%	
Gender	Male	65%	47%	p<.001
	Female	35%	53%	
Are you a hunter?	Yes	49%	17%	p<.001
	No	51%	83%	
Mean Age		49.5 years	61.8 years	p<.001

We also compared reasons for formally opting out of the study in 2022 between respondents living within and outside of wolf-range and those identifying and not identifying as hunters. Those living within wolf-range were more likely (15%) to feel their opinion would be ignored than those living outside of wolf-range (9%). Hunters were more likely to feel their opinion would be ignored (30%) than non-hunters (7%). Non-hunters were more likely to cite trusting the DNR (56%) and not knowing enough (71%) when compared to hunters (45% and 46%, respectively; **Figure 3**). These significant differences between those residing within or outside of wolf-range and between those identifying and not identifying as hunters were also detected in 2014 (Holsman et al., 2014).

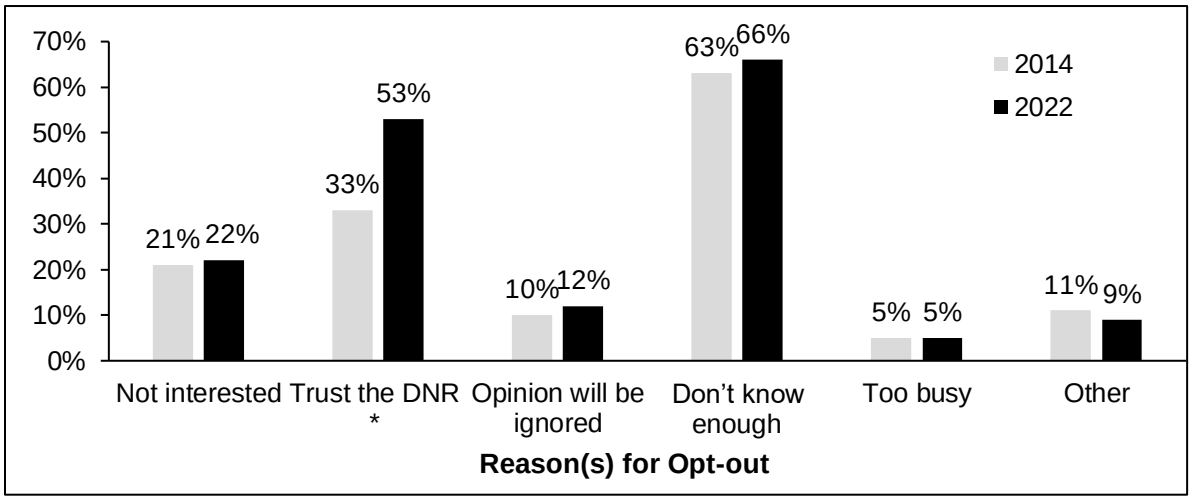

Figure 2. *Distribution of respondents' reasons for declining to participate in the study in 2014 and 2022. Percentages report unweighted data and therefore may not be reflective of the overall statewide population. * p<.05.*

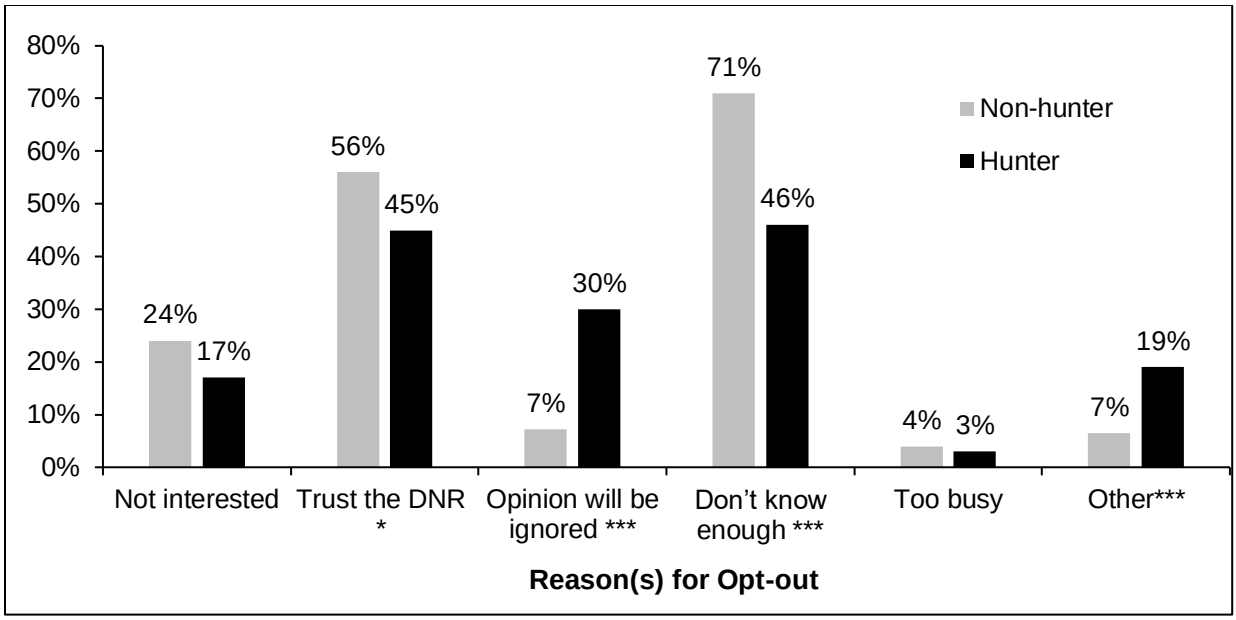

Figure 3. *Distribution of respondents' reasons for declining to participate in 2022 compared between those identifying ("Hunter") and not identifying ("Non-hunter") as hunters. Percentages report unweighted data and therefore may not be reflective of the overall statewide population. * p<.05, ** p<.01, *** p<.001.*

Wave Analysis and Non-Respondents

Providing a formal survey "opt-out" is a useful method to collect information about why individuals decline to participate in social science surveys; however, collecting this information still relies on a response from the subject. To better understand those who did not respond to our survey at all and account for associated sources of potential bias, we conducted a wave analysis. A wave analysis assumes respondents exist on a continuum from those who "will always respond" to those who "will never respond" to a survey request (Lin and Schaeffer, 1995). Those who responded late in the data collection process would have been non-respondents if data collection had stopped earlier and/or without additional contacts. Therefore, late respondents can be used as a proxy for non-respondents and compared against those who responded early in the data collection process. In our wave analysis, early respondents (i.e., Wave 1) are those who responded to the initial mailing or to the reminder postcard sent one week later. Late respondents (i.e., Wave 2) are defined as those who did not respond until the third contact (i.e., a re-mailing of the questionnaire), more than halfway through our data collection timeline.

Wave 2 respondents were nearly twice as likely to formally opt-out (30%) than Wave 1 respondents (16%). Further, Wave 2 respondents were more likely to opt-out because they were *not interested in the topic* (27%) compared to Wave 1 respondents (19%). Among those who responded to the full questionnaire, analysis of key questions suggested Wave 2 respondents were slightly more likely to hold neutral opinions. For example, regarding opinions on their desired population abundance for wolves in Wisconsin, Wave 2 respondents

were slightly more likely to select *I don't know* (14%) and *about the same number of* wolves (33%) when compared to Wave 1 respondents (11% and 31%, respectively). Similarly, Wave 2 respondents were more likely to feel decisions regarding wolf management in Wisconsin were *neither important nor unimportant* to them (18%) compared to Wave 1 respondents (14%). Overall, these findings suggest others in our sample may not have responded because they were uninterested in the topic or because they did not hold strong opinions regarding wolves and wolf management in Wisconsin. Thus, findings from this effort may underestimate the prevalence of neutral opinions regarding wolves and wolf management in Wisconsin.

Attitudes about Wolves

To gauge public opinions about wolves, we asked respondents to rate their level of agreement or disagreement with nine statements about wolves (Appendix A, Question 2). Three statements reflected positive values that may be associated with wolves, including perceptions related to ecological roles, cultural importance, or personal affinity for the species. Three statements related to opinions on maintaining wolf presence in Wisconsin and coexistence between people and wolves. Finally, three statements reflected negative values that may be associated with wolves, including perceptions that they provide no benefits, are a nuisance, and have negative impacts on deer hunting.

Statewide General Findings

Overall, most Wisconsinites somewhat or strongly agreed that *predators like wolves keep nature in balance* (77%), *wolves are culturally important* (71%), and *wolves are special animals that deserve our admiration* (75%; **Figure 4**). Similarly, a majority of Wisconsinites agreed that *people and wolves should be able to coexist* (75%) and that *it is important to maintain a wolf population in Wisconsin* (80%). In line with these opinions, the majority somewhat or strongly disagreed that *previous generations were right in eliminating wolves from the landscape* (75%) and that *wolves provide no benefits to people* (66%).

Opinions were more mixed on the remaining two statements. Although a plurality of Wisconsinites *somewhat* or *strongly disagreed* that *wolves are a nuisance for people* (49%) and that *wolves have negatively affected deer hunting in Wisconsin* (42%), the percentage of those who *neither agreed nor disagreed* with these statements was approximately double that for the other seven statements (**Figure 4**).

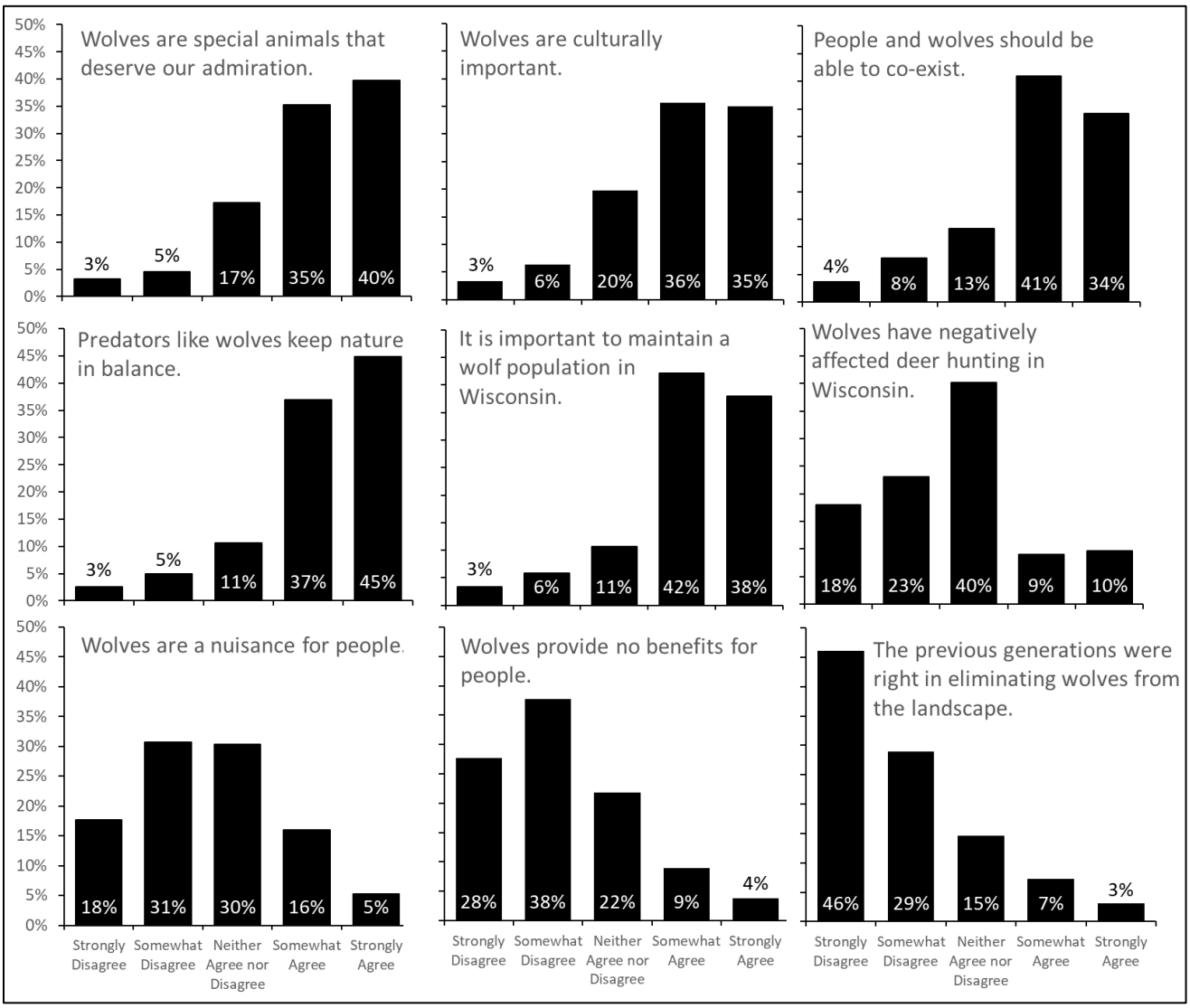

Figure 4. *Frequency distributions of Wisconsinites' ratings of levels of agreement or disagreement for nine statements used to assess opinions toward wolves.*

Although opinions were evaluated across nine distinct statements, a principal component analysis (see page 11) applied to these variables (i.e., statements) revealed a single underlying component. This single component explained 69% of the variance in responses to the nine statements, indicating opinions reflected in the statements are largely driven by a general favorable or unfavorable attitude toward wolves. The factor scores generated from this analysis served as an index of the degree to which each respondent held a more or less favorable opinion of wolves than the average Wisconsinite. Given that responses to all nine statements were largely explained by a single underlying factor that reflected the degree to which an individual held a more generally favorable or unfavorable opinion on wolves, comparisons for each statement would be redundant. Therefore, we used this favorability index to identify differences among groups based on geographic, demographic, and affinity group

characteristics, as well as to compare responses from the current survey to those of 2014. In these subsequent comparisons, readers are cautioned that mean factor scores for a group reflect the deviation of the group from the population mean and are not an absolute measure. Therefore, for example, a negative score may still reflect a generally favorable opinion, just one that is less favorable than the average.

Comparing the mean favorability index scores, we found statistically significant differences between members and non-members of each affinity group (**Figure 5**). Those who indicated that they identified as an *animal lover*, *environmental advocate*, *outdoor enthusiast,* or *tribal member* had significantly more favorable opinions of wolves on average than those who did not identify with these labels. In contrast, those who identified as *farmers or livestock producers*, *hunters and/or trappers*, or *landowners* had significantly less favorable opinions of wolves on average than those who did not identify with these labels.

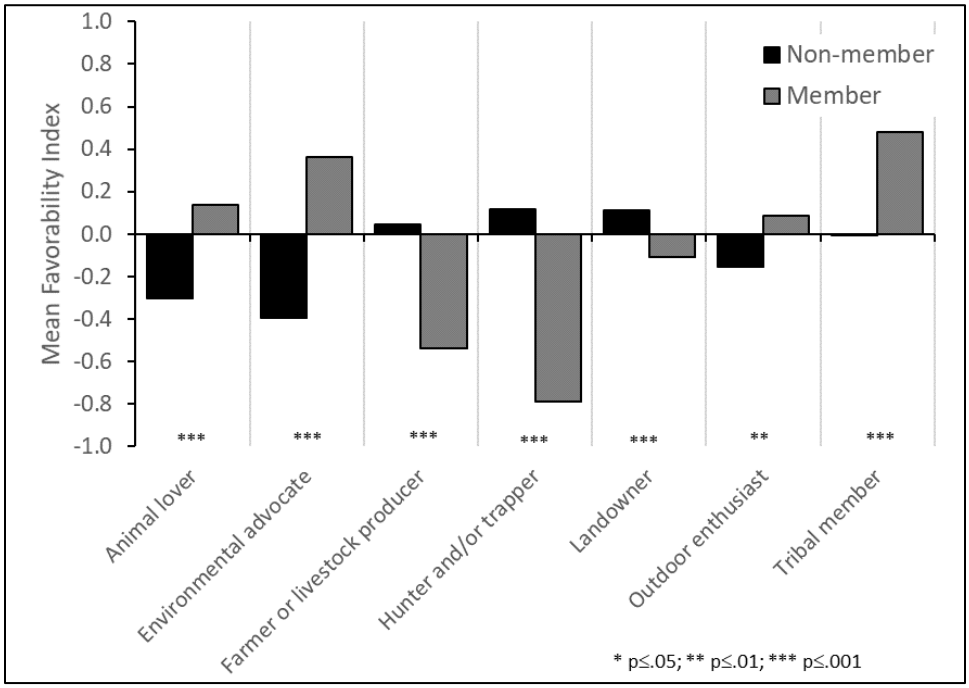

Figure 5. *Mean favorability index scores compared within self-identified affinity group.*

Comparisons by Geography

We compared the mean favorability index between groups defined by their residency within and outside of wolf-range and found a significant difference in mean values between these two groups ($p<.001$; **Figure 6**). Corroborating findings from Holsman et al. (2014) and Beardmore (2021), we found that wolf-range residents held a significantly less favorable opinion of wolves than did those living outside wolf-range.

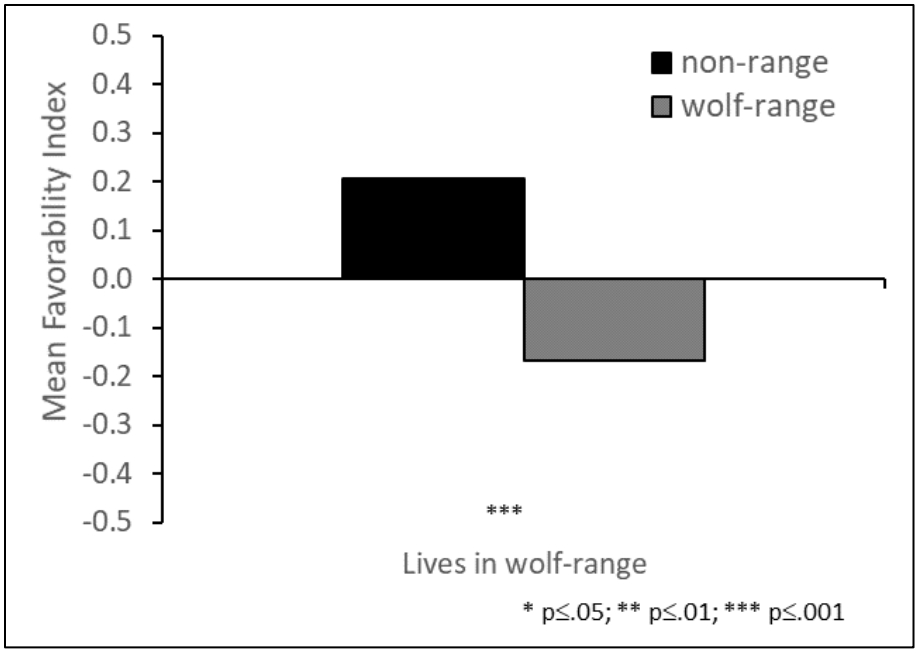

Figure 6. *Mean favorability index compared by residence in wolf-range. p<.001.*

Comparisons to 2014

Six of the nine statements used to assess public attitudes toward wolves were held in common with the survey conducted by Holsman et al. (2014). To facilitate comparison between the current survey and this past effort, we conducted a principal component analysis (see page 11) on these six statements in a combined dataset using the same procedure described above. A single underlying component was identified which explained 74% of the variance in responses. As before, the factor scores generated by this procedure formed an index of the favorability of opinions toward wolves.

Comparing mean factor scores between 2014 and 2022 survey years revealed that opinions toward wolves have grown significantly more favorable over time (**Figure 7**). Comparisons within wolf-range and within non-range mirrored those of the statewide comparison over time. On average, Wisconsinites became more favorable in their overall opinion of wolves compared to 2014 regardless of whether they lived with wolves.

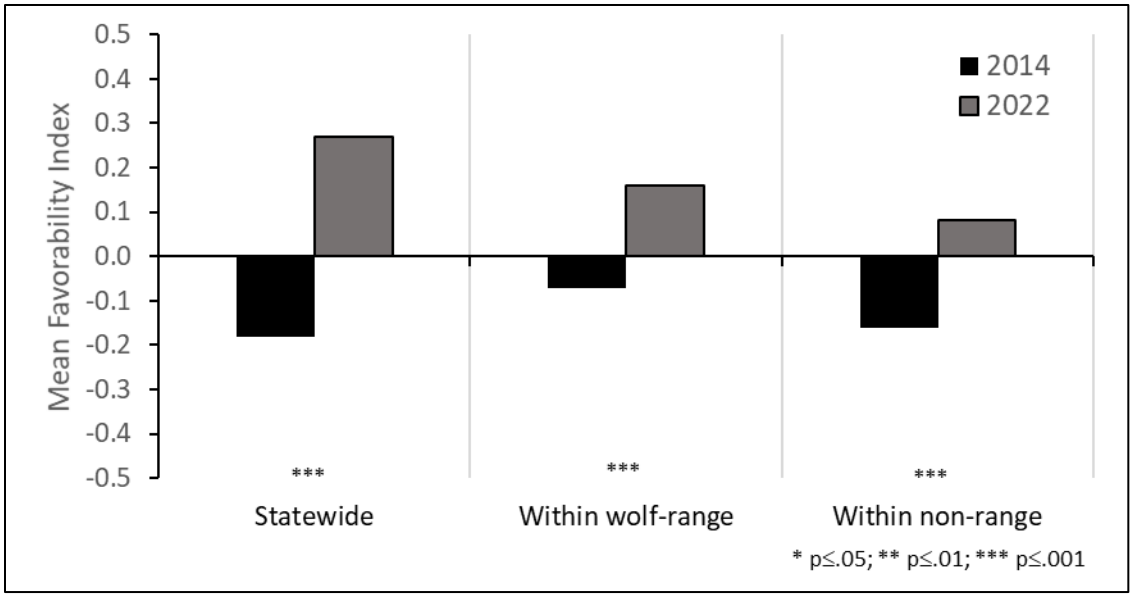

Figure 7. *Mean favorability index values statewide and by residence in wolf-range in 2014 and 2022. Indices were calculated separately for each comparison.*

Feelings about Wolves in 2022

Statewide General Findings

Wolves provoke emotional responses in many people. To gauge how Wisconsinites felt about the species, our survey included a question that asked respondents to rate the extent to which thinking about wolves in Wisconsin elicited each of four feelings: *frustration*, *anger*, *excitement*, and *appreciation* (Appendix A; Question 10). The majority of Wisconsinites reported no feelings of *frustration* (72%) or *anger* (80%) when thinking about wolves in Wisconsin. Of those who did experience these feelings, an even smaller minority (3% and 1%, respectively) did so to an extreme (**Figure 8***).*

In contrast, the distributions of responses to feelings of *excitement* and *appreciation* when thinking about wolves in Wisconsin were much less skewed. Twenty-eight percent of people reported no feeling of *excitement* and 18% reported no feeling of *appreciation*. Most Wisconsinites reported having these feelings a little to a lot (65% and 70%, respectively). As with *frustration* and *anger*, a minority reported extreme feelings of *excitement* or *appreciation* (5% and 12%, respectively).

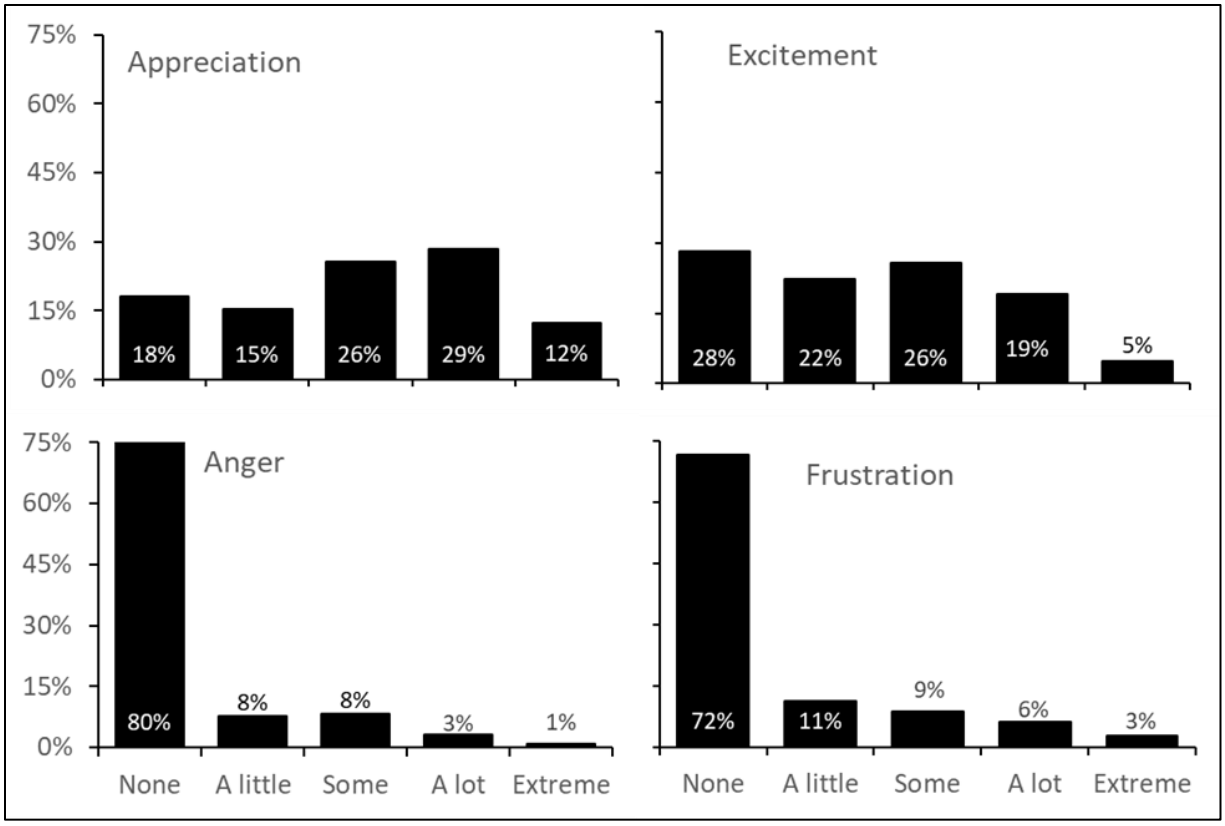

Figure 8. *Frequency distributions of ratings used to assess the extent of feelings (appreciation, excitement, anger, and frustration) about wolves.*

We applied a principal component analysis (see page 11) to ratings of the four feelings, which revealed two independent underlying components that together explained 87% of the variance in responses. Frustration and anger grouped together in Component 1, and excitement and appreciation grouped together in Component 2, suggesting the two negative emotions tend to appear together, as do the two positive emotions. Importantly, Components 1 and 2 are independent of each other, representing two separate metrics of the emotions experienced by Wisconsinites when thinking about wolves.

We used these factor scores as indices to identify differences in feelings toward wolves among groups based on geographic, demographic, and affinity group characteristics, as well as to compare responses from the current survey to those of 2014 respondents. As before, readers are cautioned that mean index values for a group reflect the deviation of the group from the population mean and are not an absolute measure. Therefore, for example, a positive value in Component 1 (the anger and frustration index) may still reflect little experience with these emotions when thinking about wolves, just slightly more experience of these feelings than the average Wisconsinite.

Regarding feelings of anger and frustration, we found those who identified as *environmental advocates* or *animal lovers* were less likely to experience these emotions than those who do not identify with these labels (**Figure 9**). In contrast, those who identified as *farmers or livestock producers*, *hunters and/or trappers*, *landowners*, or *outdoor enthusiasts* were more likely to experience these emotions than those who did not identify with these groups.

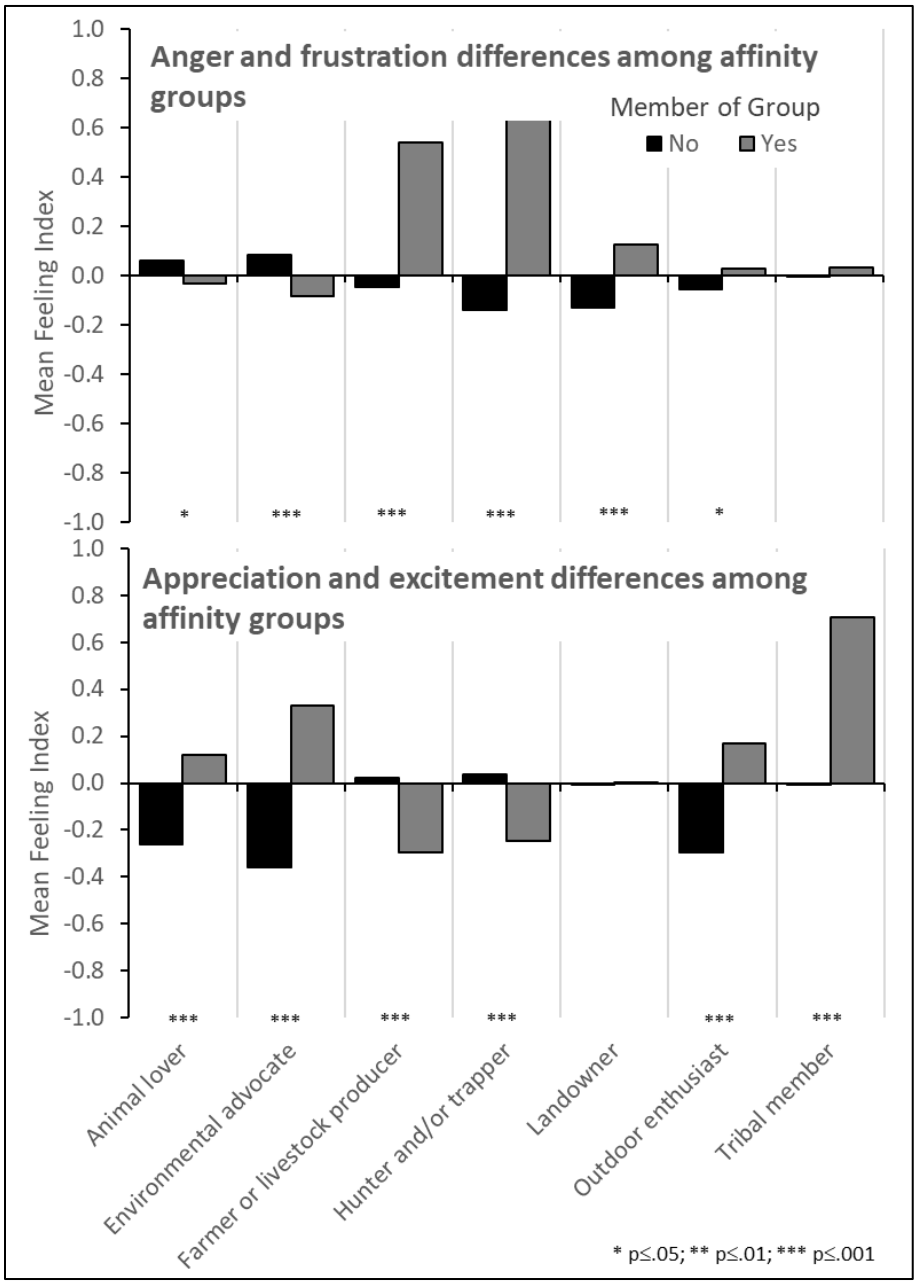

Figure 9. *Mean feelings indices compared within self-identified affinity groups.*

We also found statistically significant differences in mean values of the feeling index for appreciation and excitement between members and non-members of almost all affinity groups. Only the *landowner* label did not differ between those who selected this group and those who did not (p=.869). *Animal lovers*, *environmental advocates*, *outdoor enthusiasts*, and *tribal members* all had a higher mean index value than did those who did not so identify (**Figure 9**). *Farmers or livestock producers*, *hunters and/or trappers* had lower mean index values for excitement and appreciation than did those who did not identify with these groups.

Comparisons by Geography

Comparing mean feeling indices between residents who live within and outside of wolf-range revealed statistically significant differences in experiences of both anger and frustration and also appreciation and excitement (**Figure 10**). Residents in wolf-range experienced higher levels of anger and frustration on average than residents living outside wolf-range (p<.001). Residents outside wolf- range experienced higher levels of excitement and appreciation on average than residents living within wolf-range (p<.01). These findings corroborate results from Holsman et al. (2014) and Beardmore (2021) and align with differences in overall opinion on wolves also found in this survey (**Figure 6**).

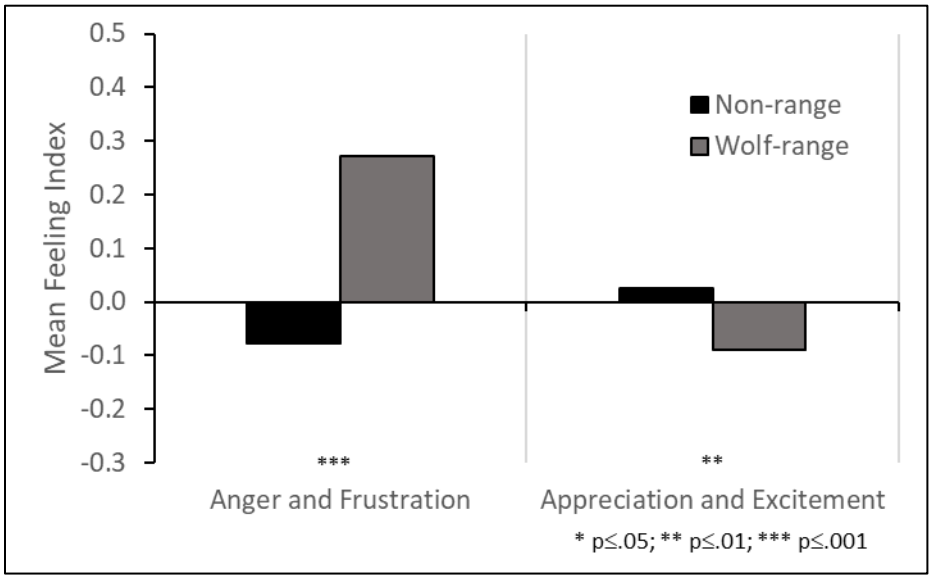

Figure 10. *Mean feeling index values compared by residence in wolf-range.*

Comparisons to 2014

Questions about emotions associated with wolves in Wisconsin were not included in the 2014 survey and no comparisons over time apply.

Experience with Wolves

In addition to understanding Wisconsinites' opinions and feelings associated with wolves, the survey also gauged respondents' past experiences encountering wolves in Wisconsin across seven types of encounters (Appendix A, Question 5). Three encounters involved seeing wolf tracks, hearing wolves howl, and seeing wolves in the wild, hereafter collectively referred to as "first-degree" encounters. The remaining four encounter types addressed the issue of wolves attacking and injuring or killing a domestic animal, hereafter collectively referred to as "second-degree" encounters. We asked if these second-degree encounters were experienced personally and/or if the respondent knew someone else who had experienced these types of encounters.

Statewide General Findings

Statewide, roughly half of Wisconsinites had never seen a wolf in the wild (61%), seen a wolf track (55%), or heard a wolf howl (45%; **Figure 11**). Among those who reported seeing wolf tracks or hearing a wolf howl, it was twice as common to have these experiences *more than once*. Those who had seen a wolf in the wild were equally likely to have the experience *once* and *more than once*.

Second-degree encounters with wolves were much less common than the first-degree encounters already described (**Figure 12**). Less than one-fifth of Wisconsinites reported knowing someone who either had a *domestic animal attacked or harassed* by a wolf (15%) or had a *domestic animal killed* by a wolf (12%). Even fewer Wisconsinites indicated that they personally had experience with a *domestic animal being attacked or harassed* by a wolf (3%) or killed by a wolf (2%).

For each of these seven encounter types, respondents could indicate if they were not sure about whether they had experienced the type of encounter. Wisconsinites were the most unsure about the first-degree encounters, with 11% unsure if they had seen wolf tracks before, 10% unsure of hearing a wolf howl, and 5% unsure if they had seen a wolf in the wild. In contrast, for the second-degree encounters, approximately 5% indicated they were unsure if they knew someone who had a domestic animal either attacked or killed by a wolf, and 2% were unsure if they personally had a domestic animal harassed or killed by a wolf.

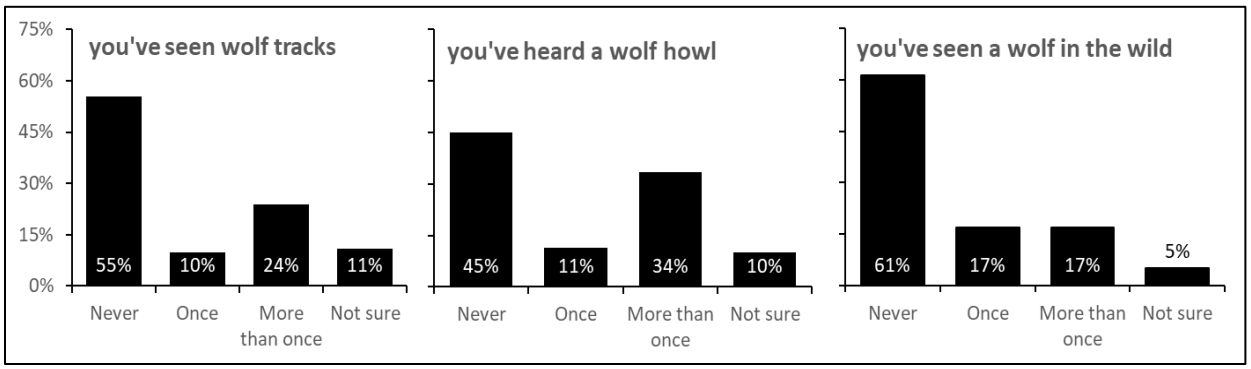

Figure 11. *Frequency distributions of ratings used to assess Wisconsinites' first-degree encounters with wolves.*

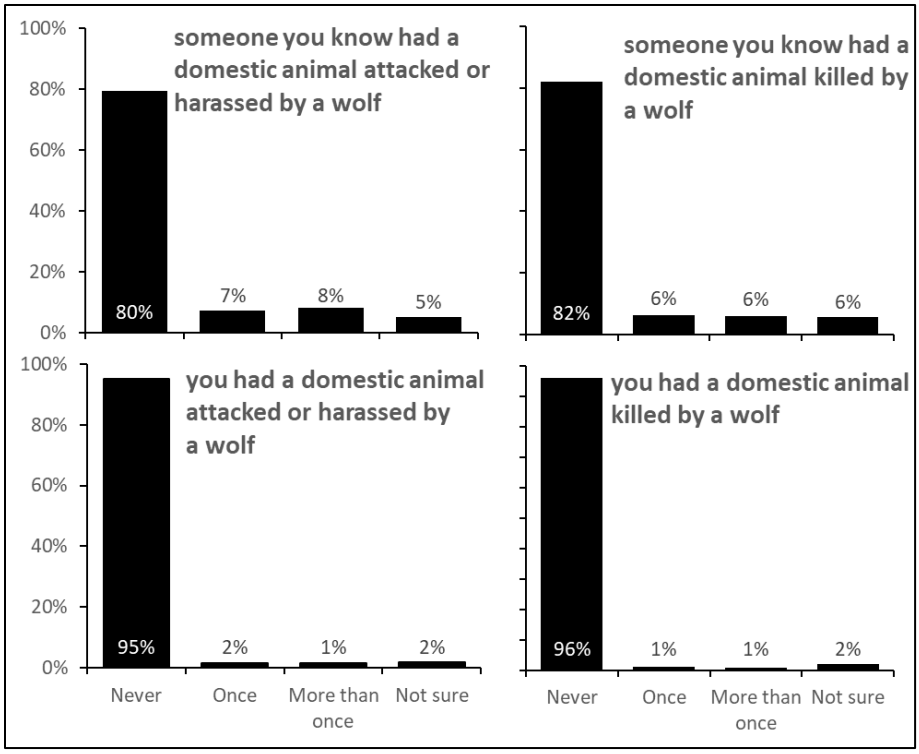

Figure 12. *Frequency distributions of ratings used to assess Wisconsinites' second-degree encounters with wolves.*

A principal component analysis (see page 11) of responses for these seven encounter types revealed two underlying components that together explained 69% of the variance in responses. The first component provided an index that captured the four second-degree encounters, and the second component provided an index of the three first-degree encounters. As in the previous section, these encounter indices were used to identify differences among groups based on geographic, demographic, and affinity group characteristics.

Comparing mean index values, we found several significant differences in wolf encounters between individuals who identified with a given affinity group and those who did not (**Figure 13**). *Environmental advocates* were slightly less likely to report having a first- or second-degree encounter with wolves, whereas *farmers or livestock producers*, *hunters and/or trappers* and *landowners* were more likely to report having experienced both types of encounters than those who did not identify with these groups. *Outdoor enthusiasts* reported more first-degree encounters than did those who did not identify as such but reported significantly fewer second-degree encounters. Although mean differences appeared between those who identified as *tribal members* and those who did not, the small number of respondents identifying as tribal members rendered statistical comparisons insignificant.

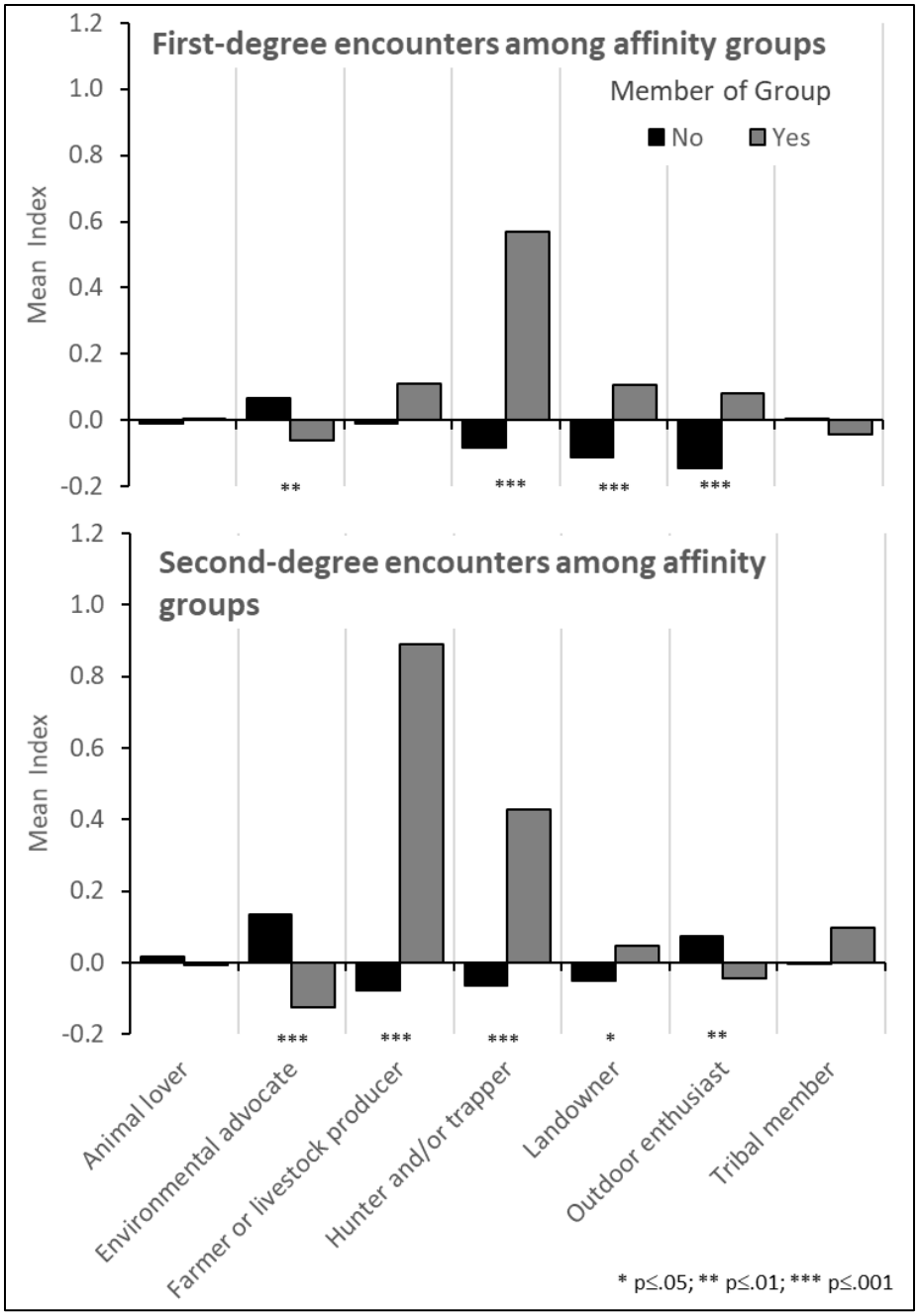

Figure 13. *Mean experience indices compared within self-identified affinity groups.*

Comparisons by Geography

We found significant differences in reports of wolf encounters between those living within and outside wolf-range for both first- and second-degree encounter types with wolves. Wolf-range residents were generally more likely to have first-degree encounters and more likely to report those encounters *more than once* compared with non-range residents ($p<.001$; **Table 4**). One-third or more wolf-range residents reported seeing wolf tracks (38%), hearing a wolf howl (44%), and seeing a wolf in the wild (33%) *more than once*.

Table 4. *Frequency of ratings used to assess first-degree wolf encounters compared between wolf-range and non-range residents.*

About how many times have...	Residency	% Response				P value
		Never	Once	More than once	Not sure	
You seen wolf tracks	Wolf-range	40	12	38	10	<.001
	Non-range	60	9	20	11	
You heard a wolf howl	Wolf-range	32	14	44	10	<.001
	Non-range	49	11	30	10	
You seen a wolf in the wild	Wolf-range	42	23	33	3	<.001
	Non-range	67	15	12	6	

Wolf-range residents were more likely than non-range residents to report experience with second-degree encounters, but these experiences were still not common overall ($p<.05$; **Table 5**). Few wolf-range residents reported personal experience with wolves attacking or harassing a domestic animal (5%) or having a domestic animal killed by a wolf (4%). However, roughly one-quarter of wolf-range residents reported knowing someone else who had a domestic animal attacked or harassed by a wolf (28%) or killed by a wolf (25%) (**Table 5**). This finding could be explained by social media and news media allowing for rapid sharing of second-degree wolf encounters within one's social networks and community. Furthermore, those who may be more likely to report experience with wolf encounters (e.g., hunters, farmers and livestock producers) may also be likely to maintain social connections with others in hunting, farming, or livestock producing communities, increasing their likelihood of knowing someone who has experienced a second-degree wolf encounter.

Table 5. *Frequency of ratings used to assess second-degree wolf encounters compared between wolf-range residents and non-range residents.*

About how many times have...	Residency	% Response				P value
		Never	Once	More than Once	Not Sure	
Someone you know had a domestic animal attacked or harassed by a wolf	Wolf-range	65	10	18	7	<.001
	Non-range	84	7	6	4	
Someone you know had a domestic animal killed by a wolf	Wolf-range	71	10	15	5	<.001
	Non-range	85	5	3	6	
You had a domestic animal attacked or harassed by a wolf	Wolf-range	91	2	3	4	<.001
	Non-range	96	1	1	1	
You had a domestic animal killed by a wolf	Wolf-range	94	2	2	3	.025
	Non-range	97	1	1	2	

We also recognize that 28% of those who lived outside of wolf-range reported that they *regularly visit a vacation home, cabin, cottage, or hunting land* within wolf-range. Non-range residents who regularly vacationed within wolf-range reported wolf encounters that were not dissimilar from wolf-range residents. These "vacationers" reported more first-degree wolf encounters than other non-range residents and commonly had more than one experience for each type of first-degree encounter. Those who vacationed in wolf-range reported more experience with second-degree encounters than non-vacationers; however, as with statewide findings and comparisons by residency, these encounters were less common overall and a higher proportion reported knowing someone who had a second-degree encounter than reported personal experience (**Table 6**). One-quarter of "vacationers" (25%) reported knowing someone who had a domestic animal attacked or harassed by a wolf and 20% reported knowing someone who had a domestic animal killed by a wolf. These "vacationers" reported nearly the same extent of personal experience with wolf attacks or harassment (6%) or a wolf killing a domestic animal (5%) as those who lived within wolf-range (**Table 5**, **Table 6**).

Table 6. *Frequency of ratings used to assess first-degree wolf encounters compared between non-range residents who regularly vacation in wolf-range and non-range residents who do not.*

About how many times have...	Regularly vacation or hunt in wolf-range?	% Response				P value
		Never	Once	More than Once	Not Sure	
You seen wolf tracks	yes	36	11	39	14	<.001
	no	69	8	13	10	
You heard a wolf howl	yes	31	11	48	11	<.001
	no	56	11	23	10	
You seen a wolf in the wild	yes	43	27	22	7	<.001
	no	76	11	9	5	
Someone you know had a domestic animal attacked or harassed by a wolf	yes	72	11	15	2	<.001
	no	88	5	2	5	
Someone you know had a domestic animal killed by a wolf	yes	75	12	8	5	<.001
	no	90	3	1	6	
You had a domestic animal attacked or harassed by a wolf	yes	91	3	3	3	<.001
	no	98	1	<1	1	
You had a domestic animal killed by a wolf	yes	92	3	2	3	<.001
	no	98	<1	<1	1	

Comparisons to 2014

Questions regarding wolf encounters involving non-lethal attacks or harassment of domestic animals were added in 2022 and were not present in the 2014 survey; therefore, comparisons across years were not possible for these questions. The three types of first-degree encounters and instances of wolves killing domestic animals, however, were held in common between the two surveys. A comparison of these response distributions and robust statistical testing revealed that reported wolf encounters have significantly decreased over the last 8 years ($p<.001$; **Table 7**). Statewide, higher proportions of Wisconsinites reported *never* having a first- or second-degree encounter and the proportion of those who have *never seen a wolf in the wild* nearly doubled from 33% in 2014 to 62% in 2022.

When we considered shifts in wolf encounters over time among wolf-range residents, we also observed a decrease in the proportion who reported wolf encounters, but of a smaller magnitude than was observed statewide ($p<.001$; **Table 8**). Among wolf-range residents in 2022, more reported *never* having a first-degree encounter than did in 2014. However, in both study years, those who reported experience with first-degree encounters commonly had them *more than once*. In both 2014 and 2022, few wolf-range residents reported personal

experience with wolf attacks. In 2014, 34% of wolf-range residents reported knowing someone who had a domestic animal killed by a wolf compared with 25% in 2022.

Table 7. *Frequency of ratings used to assess five types of wolf encounters among Wisconsinites across two survey years.*

About how many times have...	Survey Year	% Response			
		Never	Once	More than Once	Not Sure
You seen wolf tracks	2014	34	13	43	10
	2022	55	10	24	11
You heard a wolf howl	2014	27	13	53	7
	2022	46	11	33	10
You seen a wolf in the wild	2014	33	25	40	2
	2022	62	17	17	5
You had a domestic animal killed by a wolf	2014	91	4	3	2
	2022	96	1	1	2
Someone you know had a domestic animal killed by a wolf	2014	53	19	24	4
	2022	82	6	6	5

Among non-range residents, the majority in 2014 and in 2022 reported *never* seeing wolf tracks or seeing a wolf in the wild. Across all three types of first-degree encounters, the proportion who reported never having these experiences increased between 2014 and 2022 ($p<.001$; **Table 9**). In both survey years the vast majority (97%) reported no personal experience with having a domestic animal killed by wolves. Holsman et al. (2014) reported 15% of non-range residents knew someone who had a domestic animal killed by wolves, and in 2022, that proportion decreased by half (8%).

Table 8. *Frequency of ratings used to assess five types of wolf encounters among wolf-range residents across two survey years.*

About how many times have...	Survey Year	% Response			
		Never	Once	More than Once	Not Sure
You seen wolf tracks	2014	35	14	42	10
	2022	40	12	38	10
You heard a wolf howl	2014	28	14	52	7
	2022	32	14	44	10
You seen a wolf in the wild	2014	35	26	37	2
	2022	42	23	33	3
You had a domestic animal killed by a wolf	2014	92	3	3	3
	2022	94	2	2	3
Someone you know had a domestic animal killed by a wolf	2014	62	16	18	5
	2022	71	10	15	5

Table 9. *Frequency of ratings used to assess five types of wolf encounters among non-range residents across two survey years.*

About how many times have...	Survey Year	% Response			
		Never	Once	More than Once	Not Sure
You seen wolf tracks	2014	52	14	23	10
	2022	60	9	20	11
You heard a wolf howl	2014	43	15	37	6
	2022	49	11	30	10
You seen a wolf in the wild	2014	56	25	18	1
	2022	67	15	12	6
You had a domestic animal killed by a wolf	2014	97	2	<1	1
	2022	97	1	1	2
Someone you know had a domestic animal killed by a wolf	2014	81	10	5	3
	2022	85	5	3	6

Safety and Risk Perceptions

We asked survey respondents to answer three risk perception questions related to their worry about safety *while outdoors in areas where wolves live*. Specifically, we asked respondents to indicate, on a scale from *strongly agree* to *strongly disagree*, their level of agreement or disagreement with three statements: *I would worry about my personal safety while outdoors in areas where wolves live*, *I would worry about the safety of my pets while outdoors in areas where wolves live*, and *I would worry about the safety of children who are outdoors in areas where wolves live* (Appendix A, Question 11).

Statewide General Findings

Most Wisconsinites *agreed* or *strongly agreed* that they would worry for the safety of pets (61%) and the safety of children (53%) while outdoors in areas where wolves live. A smaller proportion of individuals would worry about their personal safety while outdoors in areas where wolves live (31%; **Table 10**).

Table 10. *Frequency of Wisconsinites' levels of agreement or disagreement with three statements related to safety when outdoors in areas where wolves live.*

I would worry about...while outdoors in areas where wolves live.	Percentage (%)				
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Personal safety	20	29	21	22	9
Safety of my pets	6	16	17	41	20
Safety of children	9	21	17	34	19

A principal component analysis applied to these three statements of worry for safety at a statewide level for 2022 revealed a single underlying component (i.e., general concern for safety) that explained 83.4% of the variance in responses to the statements (see page 11 for details on this analysis approach). We used the factor scores generated from this analysis as an index of overall worry for the three aspects of safety — personal, child, and pet safety — and to make comparisons across and among geographic and demographic groups. In these subsequent comparisons, readers are cautioned that mean factor scores for a group reflect the deviation of the group from the population mean and are not an absolute measure of worry. For example, a positive score indicates more worry for safety relative to the average Wisconsinite, whereas a negative score represents lower worry than the average Wisconsinite. As scores approach zero in both directions, they approach the representation of the average individual in Wisconsin.

Some segments of the population were more or less likely than others to feel worried about safety while outdoors in areas where wolves live (**Figure 14**). Those who identified as *farmers or livestock producers* and *hunters and/or trappers* were more likely to worry about safety than individuals who did not identify with these groups. Wisconsinites who identified as an *animal lover*, *environmental advocate*, or *outdoor enthusiast* were less likely to worry for safety than those who did not identify with these groups. Differences in worry for safety were not significant for *landowner* or *tribal member* compared to non-members of these groups. Tribal members were less likely to feel worried about safety compared to other affinity groups, however, the small sample size for *tribal member* compared to non-members limited the statistical power of this comparison.

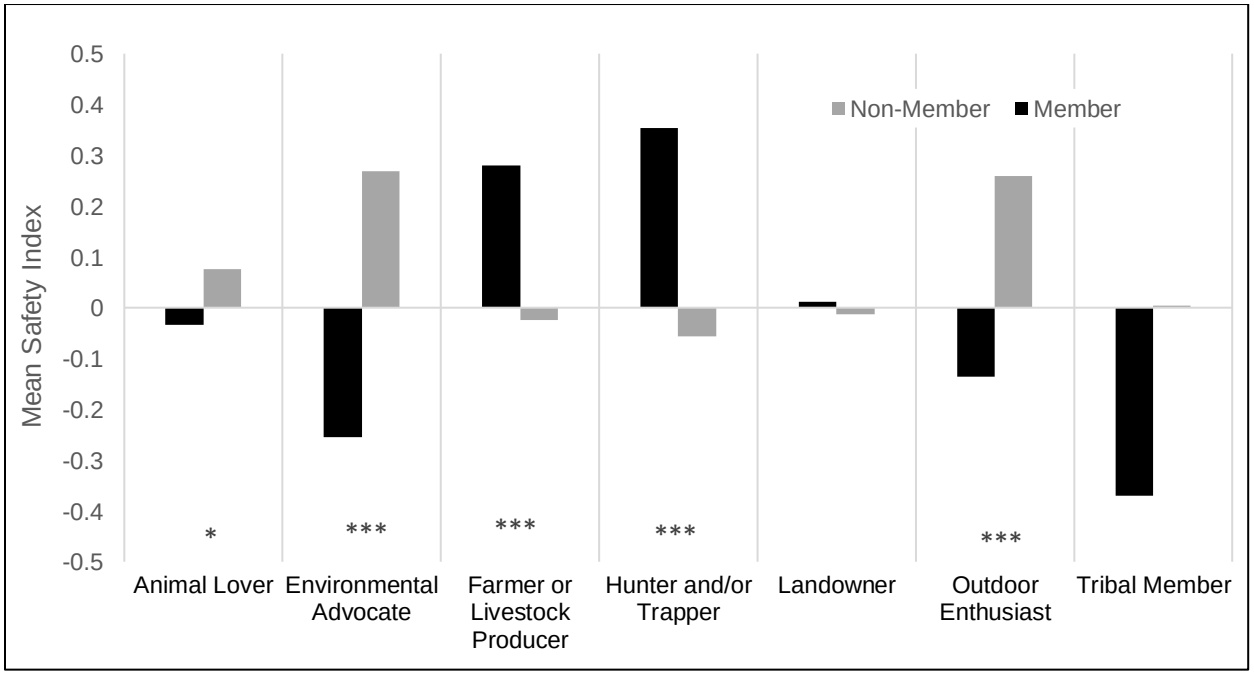

Figure 14. *Comparison of mean worry for safety index compared within self-reported affinity groups. * p≤.05, ** p≤.01, *** p≤.001.*

Encounters with wolves significantly correlated with safety concerns but only at certain encounter frequencies. For each type of wolf encounter, we asked respondents if they had these interactions happen *once*, *more than once*, or *never*. An estimated number of interactions was then calculated by recoding the scale (0=never, 1=once, 2=more than once) and summing the total number of encounters for all types of first- and second-degree encounters. Because a value of 2 was used to represent interactions that occurred *more than once*, this estimate represents the minimum number of wolf encounters and may be an underestimate for some respondents.

Those who had four or more first-degree encounters demonstrated higher than average worry for safety. Those who had three or fewer encounters with wolves demonstrated lower than average worry for safety (**Figure 15**). Importantly, factor scores do not represent an absolute measure of worry, so this finding does not mean those with fewer wolf encounters did not have any safety concerns about personal, pet, or child safety in areas where wolves live. Nor does it mean those with many wolf encounters had absolute worry for safety. Rather, it suggests that as experience with first-degree wolf encounters increased, worry for safety was also likely to increase.

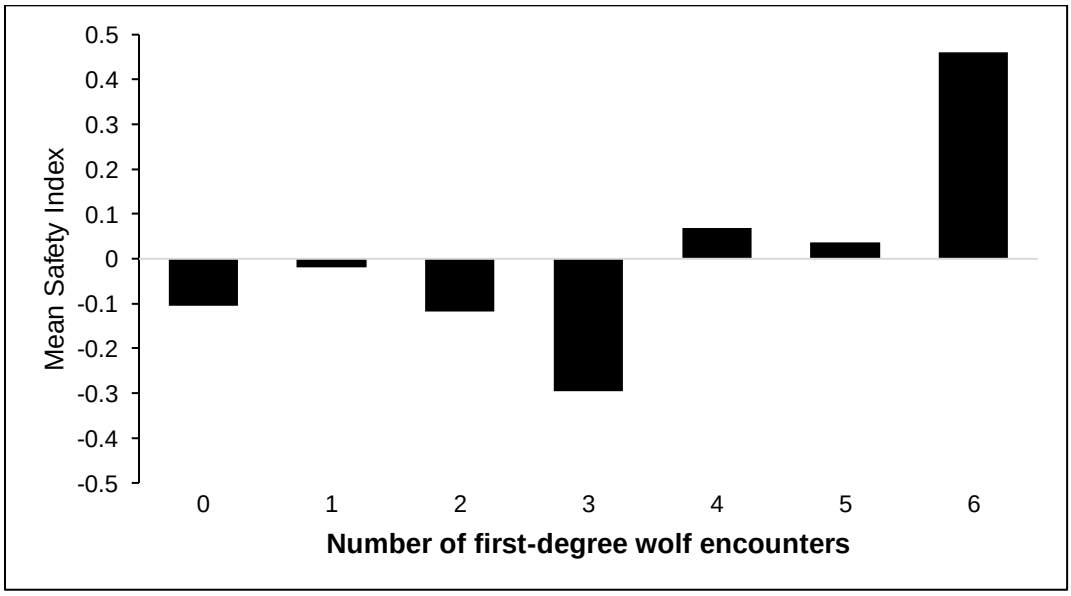

Figure 15. *Wisconsinites' number of first-degree encounters with wolves and mean worry for safety index. p≤.001.*

Second-degree encounters included wolf attacks on domestic animals through either personal experience or the experience of someone the respondent knew. Although few Wisconsinites had second-degree encounters (**Figure 12**), those who had any of these types of encounters had higher-than-average worry for safety (**Figure 16**). This finding suggests that not only does worry for safety increase with the frequency of wolf encounters (**Figure 15**), but also with the severity of the encounter (**Figure 16**).

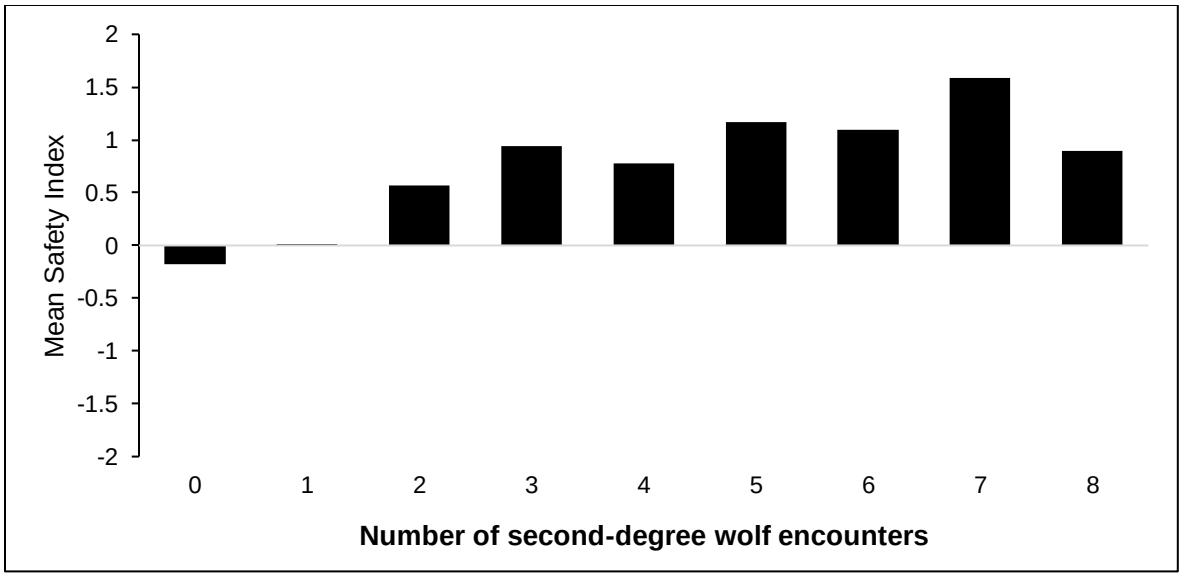

Figure 16. *Wisconsinites' number of second-degree encounters with wolves and mean worry for safety index. p≤.001.*

Comparisons by Geography

In comparing worry for safety between residents of wolf-range and those outside of wolf-range, we found wolf-range residents were significantly more likely to agree that they worry about their personal safety and the safety of their pets while outdoors in areas where wolves live (**Table 11**). However, wolf-range and non-range residents were not statistically different in their likelihood to worry about the safety of children in areas where wolves live (p=.084).

Table 11. *Frequency of agreement (agree + strongly agree) or disagreement (disagree + strongly agree) with statements related to worry for safety when outdoors in areas where wolves live compared between residents of wolf-range and non-range.*

I would worry about...while outdoors in areas where wolves live.	Residency	Percentage (%)			P value
		Agree	Neither Agree nor Disagree	Disagree	
Personal safety	Wolf-range	39	21	40	<.001
	Non-range	28	21	51	
Safety of my pets	Wolf-range	64	13	23	.005
	Non-range	60	18	22	
Safety of children	Wolf-range	57	16	28	.084
	Non-range	52	17	31	

Comparisons with 2014

We asked respondents to indicate their worry for personal, child, and pet safety in both the 2014 (Holsman et al., 2014) and 2022 efforts to assess public attitudes toward wolves in Wisconsin, allowing for comparisons across years. After filtering out those who answered *does not apply*, we found that worry for personal, pet, and child safety while outdoors in areas where wolves live has decreased since 2014. Regardless of residency in wolf-range or non-range, the proportion of residents who would feel worried for safety decreased the most in regard to pet and child safety (**Table 12**). Even so, in both study years, whether a resident lived in wolf-range or outside of wolf-range, a majority would feel worried for safety of pets and children while outdoors in areas where wolves live.

Table 12. *Frequency of agreement (agree + strongly agree) or disagreement (disagree + strongly disagree) to three statements about worry for safety while outdoors in areas where wolves live among Wisconsinites in 2014 and 2022.*

I would worry about…while outdoors in areas where wolves live.	Survey Year	% Statewide		
		Agree	Neither Agree nor Disagree	Disagree
Personal safety	2014	42	20	38
	2022	31	21	48
Safety of pets	2014	73	13	15
	2022	61	17	22
Safety of children	2014	65	15	20
	2022	53	17	30

Table 13. *Frequency of agreement (agree + strongly agree) or disagreement (disagree + strongly disagree) to three statements about worry for safety while outdoors in areas where wolves live among wolf-range residents in 2014 and 2022.*

I would worry about…while outdoors in areas where wolves live.	Survey Year	% Wolf-range residents		
		Agree	Neither Agree nor Disagree	Disagree
Personal safety	2014	44	19	37
	2022	38	21	41
Safety of pets	2014	72	12	16
	2022	64	13	22
Safety of children	2014	64	15	21
	2022	56	16	27

Table 14. *Frequency of agreement (agree + strongly agree) or disagreement (disagree + strongly disagree) to three statements about worry for safety while outdoors in areas where wolves live among non-range residents in 2014 and 2022.*

I would worry about…while outdoors in areas where wolves live.	Survey Year	% Non-Range residents		
		Agree	Neither Agree nor Disagree	Disagree
Personal safety	2014	33	27	40
	2022	28	21	51
Safety of pets	2014	70	15	15
	2022	60	18	22
Safety of children	2014	63	16	21
	2022	52	17	31

Opinions about Wolf Population Size and Location

We repeated many of the questions from Holsman et al. (2014) that examined social carrying capacity for wolves. We asked all respondents their preference for population levels both within their county of residence (Appendix A, Question 6) and at a statewide level (Appendix A, Question 8). Additionally, in 2022, we asked respondents to indicate their preference for the geographic distribution of wolves in the state (Appendix A, Question 9). Wisconsin DNR staff sometimes hear comments from the public implying that some segments of the population believe there are many more wolves in the state than Wisconsin DNR wolf population estimates show. To test how prevalent this belief might be, we asked all respondents to indicate their best guess for how many wolves were currently in the state (Appendix A, Question 4).

Perceptions of Current Wolf Abundance

Statewide General Findings

Prior to the February 2021 wolf hunting and trapping season, Wisconsin estimated that overwintering wolf abundance fell between 937 and 1,364 wolves (Wisconsin DNR 2022). During survey administration, this was the most recently available population estimate for statewide wolf abundance. We asked Wisconsinites to provide their best guesses for how many wolves were currently in the state (Appendix A, Question 4) and found the most common guess (29%) was *900-1,399 wolves* (**Figure 17**).

Nineteen percent of Wisconsinites were *not sure* about current wolf abundance (**Figure 17**). One in five (22%) guessed that Wisconsin had between *400-899 wolves* and 10% guessed the lowest option of *fewer than 400 wolves*. Fourteen percent guessed *1,400-1,899 wolves* and 7% guessed the highest option of *more than 1,900 wolves*. For those who believed the state currently had *more than 1,900 wolves*, we asked them to write in their estimate. Some written guesses indicated the respondent was not sure precisely how many wolves the state had but felt confident it was above 1,900. Many others provided written guesses between 2,000 and 6,000 wolves, but a few individuals believed Wisconsin had as many as 10,000 or 12,000 wolves.

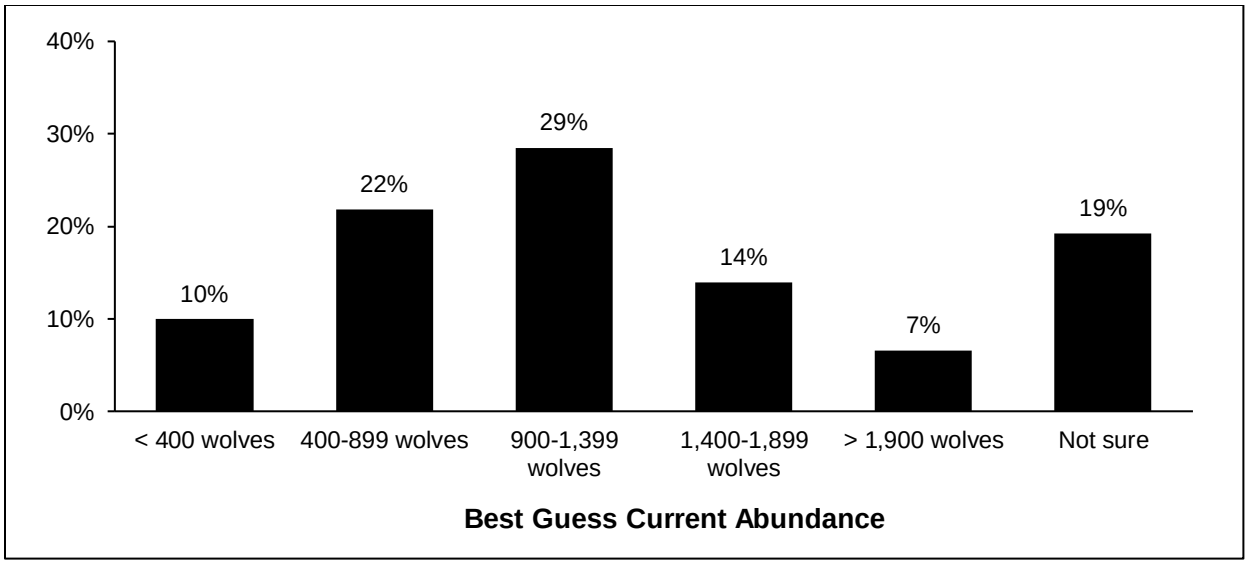

Figure 17. *Distributions of Wisconsinites' estimates for the number of wolves in Wisconsin at the time of survey administration.*

We compared Wisconsinites' best guesses of the current number of wolves in Wisconsin against the extent to which they followed news on wolf management over the last three years (Appendix A, Question 3). Those who followed the news *not at all* were more likely to feel *not sure* (26%) about wolf abundance compared with other levels of news following (**Table 15**). Those who followed the news *a lot* were more than twice as likely to believe wolf abundance to be above 1,900 animals (16%) compared with other levels of news following. Among those who followed the news *a little*, *some*, or *a lot*, the most common response (30-36%) was that wolf abundance was somewhere between 900-1,399 individuals (**Table 15**).

Table 15. *Frequency of Wisconsinites' estimates for the number of wolves in Wisconsin compared across the extent to which they followed news on wolf management over the last three years.*

I followed wolf management news...	% Best guess at current number of wolves in Wisconsin						P value
	<400 wolves	400-899 wolves	900-1,399 wolves	1,400-1,899 wolves	1,900+ wolves	Not sure	
Not at all	14	22	20	12	6	26	<.001
A little	13	19	30	15	4	19	
Some	5	24	32	16	7	15	
A lot	6	23	36	9	16	10	

We compared Wisconsinites' best guesses of the current number of wolves in Wisconsin against their experience with first- and second-degree encounters with wolves. As an individual's experience with wolves increased, so did their likelihood of perceiving wolf populations to be above Wisconsin DNR estimates. Using the indices generated (see pages 25-27) for

the extent of first-degree encounters (seeing wolves, seeing wolf tracks, hearing wolves) and second-degree encounters (attacks on domestic animals), we found that those who believed Wisconsin currently had *1,400-1,899 wolves* or *more than 1,900 wolves* were more likely to have experience with both first- and second-degree wolf encounters (p<.001; **Figure 18**). Those who believed current wolf abundance to be *400-899 wolves* or *fewer than 400 wolves* were less likely to have either type of experience with wolves (p<.001). We received written comments on surveys that emphasized the sentiment from some Wisconsinites that their personal experiences do not align with Wisconsin DNR population estimates (an example is provided below). This phenomenon likely fuels some degree of mistrust in how Wisconsin DNR generates wolf population abundance estimates.

The number estimates in this state are way low. I regularly travel winter roads and see more wolf tracks than other predators!

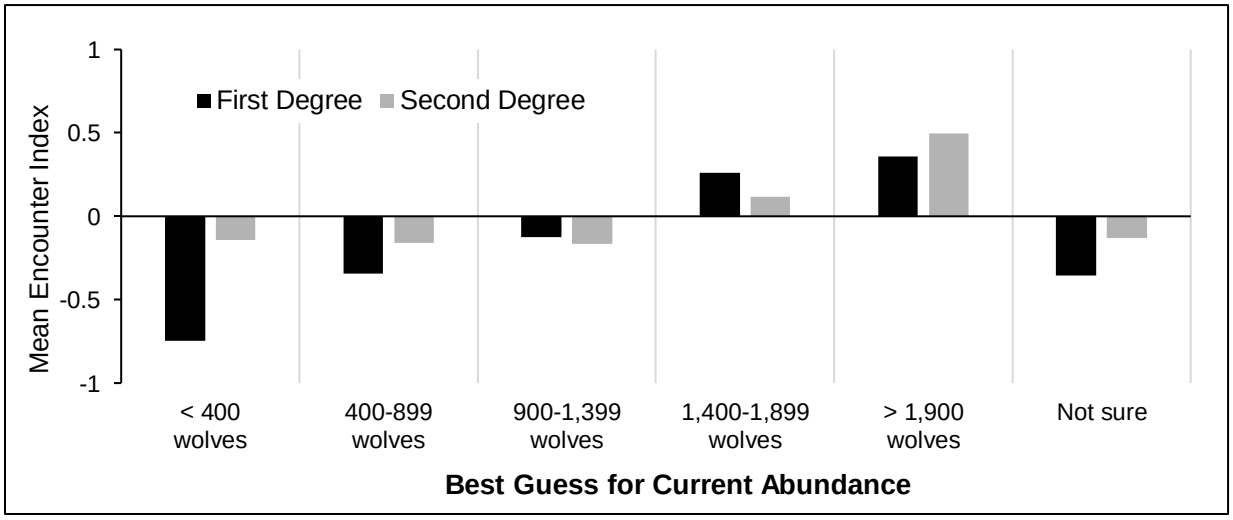

Figure 18. *Mean encounter indices for first- and second-degree wolf experiences compared across perceptions of wolf abundance at the time of the study.*

We compared Wisconsinites' best guesses of the current number of wolves in Wisconsin to their worry for safety while outdoors in areas where wolves live. We found as perceptions of wolf abundance increased, so did worry for safety. The index of worry for safety revealed those who perceived wolf abundance to be higher were more worried about safety than the average Wisconsinite (p<.001; **Figure 19**). Those who thought there were *more than 1,900 wolves* in Wisconsin were the most worried for safety. Those who were *not sure* about the current population size of wolves in Wisconsin were also more worried for safety than the average Wisconsinite.

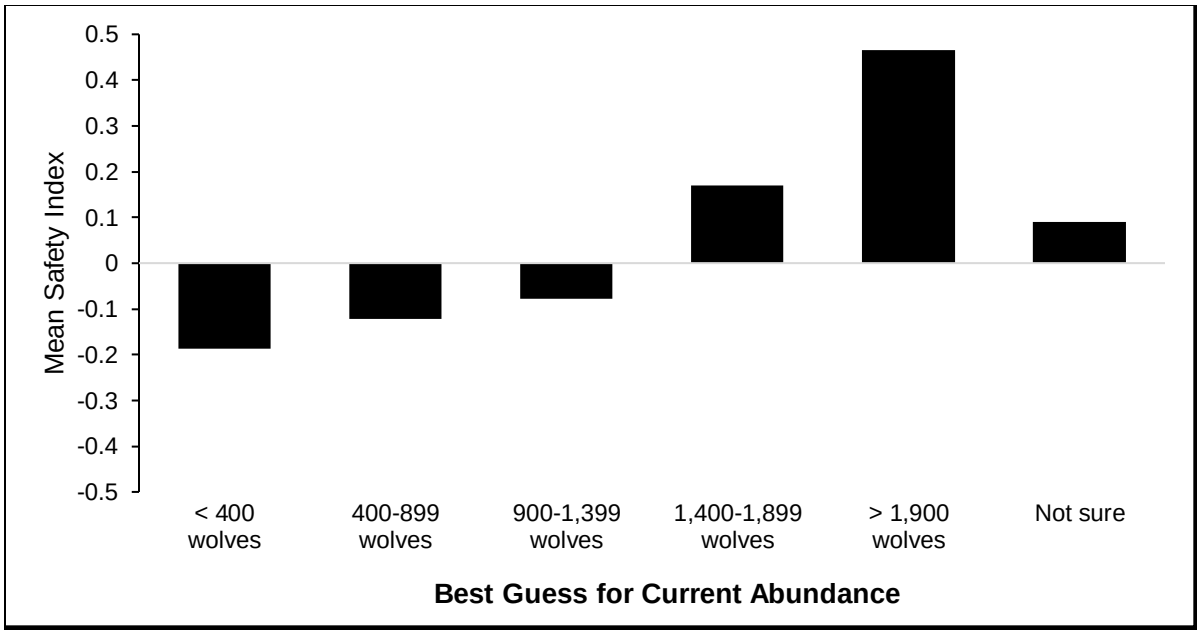

Figure 19. *Comparison of mean worry for safety index among Wisconsinites who perceived varying population abundances of wolves at the time of the study.*

Finally, we compared Wisconsinites' best guesses of the current number of wolves in Wisconsin within affinity groups. We found that those identifying as a *hunter and/or trapper, farmer or livestock producer, landowner,* or *outdoor enthusiast* were more likely than those who did not belong to these affinity groups to believe that wolf abundance was higher than the mean guess of the overall population ($p<.001$; **Table 16**). In contrast, those identifying as *animal lover* or *environmental advocate* were more likely than those who did not belong to these affinity groups to guess that wolf abundance was lower ($p<.001$; **Table 16**).

Comparisons by Geography

As with statewide results, the most common guess for current wolf abundance among wolf-range residents and non-range residents was *900-1,399 wolves* (26% and 29%, respectively; **Figure 20**). The distribution of other response options, however, revealed that wolf-range residents were more likely to perceive current wolf abundance to be higher than Wisconsin DNR estimates compared to residents of non-range ($p<.001$). Collectively, one-third of non-range residents guessed that Wisconsin currently has *400-899 wolves* (22%) or *fewer than 400 wolves* (11%) (**Figure 20**). In comparison, 26% of wolf-range residents guessed somewhere below 900 wolves. On the higher end of the spectrum, 19% of non-range residents guessed that Wisconsin has either *1,400-1,899 wolves* or *more than 1,900 wolves* compared to 26% of wolf-range residents. Similar proportions of both regions (19% and 21%) were *not sure* about current wolf abundance (**Figure 20**).

Table 16. *Frequency of Wisconsinites' estimates for the number of wolves in Wisconsin compared within self-identified affinity groups.*

Do you identify as a(n)...		% Best guess for current wolf abundance				P value
		<900 Wolves	900-1,399 Wolves	>1400 Wolves	Not sure	
Animal lover	No	30	30	23	16	.022
	Yes	33	28	19	21	
Environmental advocate	No	28	24	23	24	<.001
	Yes	35	32	18	15	
Farmer or livestock producer	No	33	28	20	19	<.001
	Yes	19	34	29	18	
Hunter and/or trapper	No	34	28	18	21	<.001
	Yes	20	31	39	10	
Landowner	No	32	29	20	19	.062
	Yes	32	28	21	19	
Outdoor enthusiast	No	34	25	18	23	<.001
	Yes	31	30	22	17	
Tribal member	No	32	29	21	19	.001
	Yes	19	26	7	48	

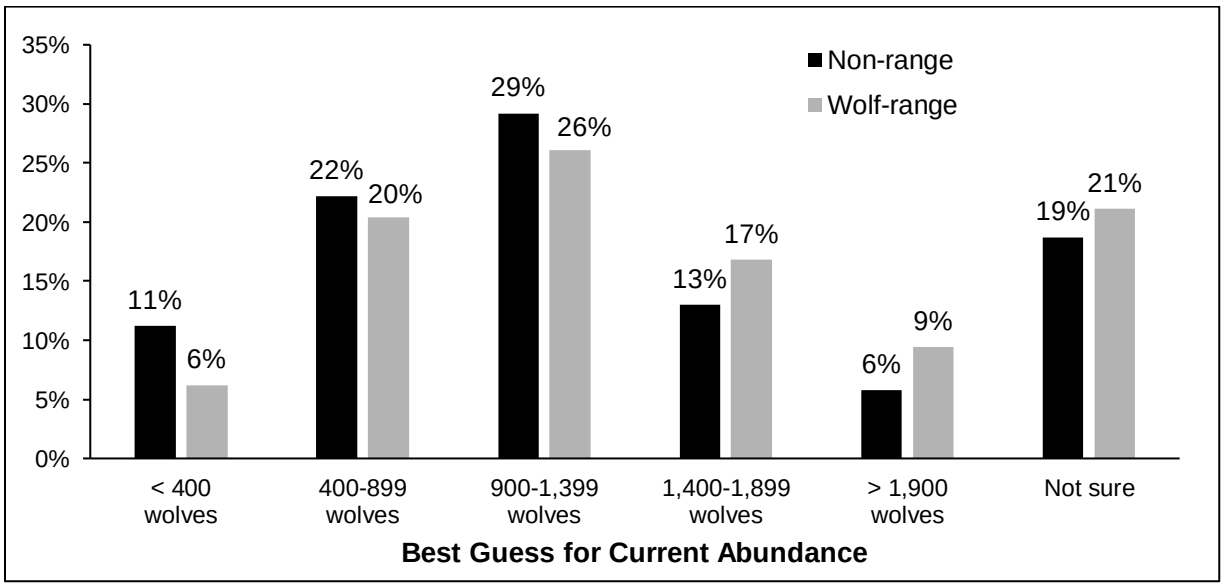

Figure 20. *Distribution of estimates for the number of wolves in Wisconsin at the time of the study compared between wolf-range and non-range residents (p<.001).*

Comparisons with 2014

The 2014 study did not assess perceptions about current wolf abundance so no comparisons over time apply.

Population Preferences

Statewide General Findings

Most Wisconsinites would like *about the same number* of wolves or more in the state and the vast majority do not want them eliminated (Appendix A, Question 8). One-third (33%) would like *about the same number*, 27% would like *more* wolves, and 6% would like *many more* wolves in the state (**Figure 21**). Fifteen percent of Wisconsinites would like *fewer* (9%) or *many fewer* (6%) wolves and 4% would like to have *zero* wolves in the state. Sixteen percent were unsure about how many wolves they would like to have in the state.

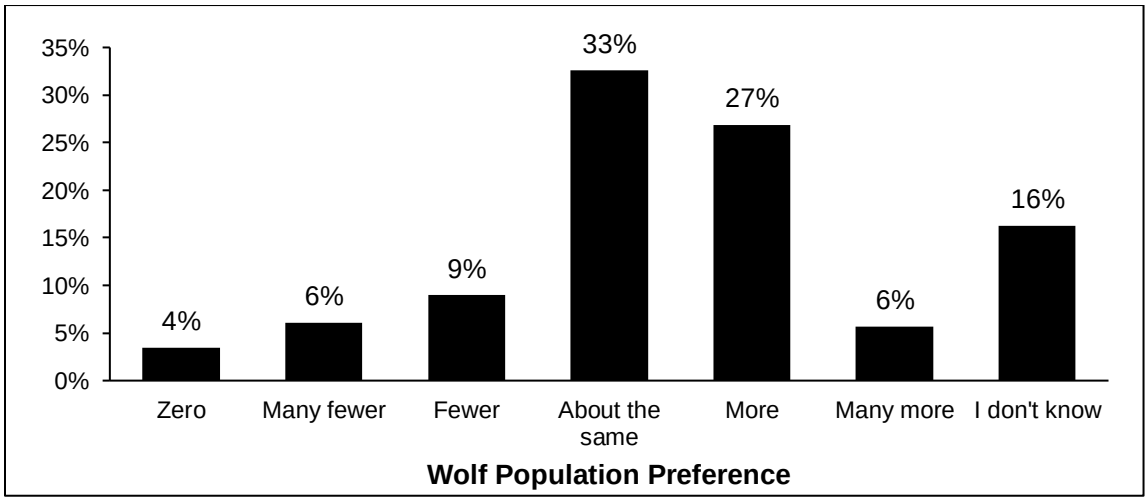

Figure 21. *Distribution of Wisconsinite's preferences for how many wolves they would like to have in the state relative to the wolf population level at the time of study.*

Preference for wolf population size significantly differed across beliefs about the current population abundance of wolves. Half of those who believed that Wisconsin has either *fewer than 400 wolves* or *400-899 wolves* wanted an increase in state wolf populations (**Table 17**). In contrast, those who believed the current population to be above Wisconsin DNR estimates (i.e., *1,400-1,899 wolves* or *more than 1,900 wolves*) were the most likely to want a decrease in state wolf populations. This finding suggests that misconceptions from both those overestimating and those underestimating the size of the population may be fueling disagreement over future population management.

We previously outlined the significant relationship between wolf encounters and increased perceptions of wolf abundance (**Figure 18**). Similarly, we found those who would like wolf populations in the state decreased or eliminated were significantly more likely than average to have both first-degree (seeing a wolf, hearing a wolf howl, seeing wolf tracks) and second-degree (wolves attacking domestic animals) encounters with wolves ($p<.001$; **Figure 22**). Those who preferred wolf populations to remain the same or increase in the state were less likely than average to have had encounters with wolves in the wild.

Table 17. *Frequency of Wisconsinite's preferences for how many wolves they would like to have in the state compared across perceptions of wolf population size at the time of this survey.*

Best Guess Abundance	% Would like to have...wolves in the state.					P value
	More/Many More	About the Same	Fewer/Many Fewer	Zero	Not Sure	
<400 wolves	50	26	5	2	17	
400-899 wolves	49	31	8	1	11	
900-1,399 wolves	35	37	15	2	12	<.001
1,400-1,899 wolves	18	42	26	4	10	
>1,900 wolves	16	20	40	11	13	

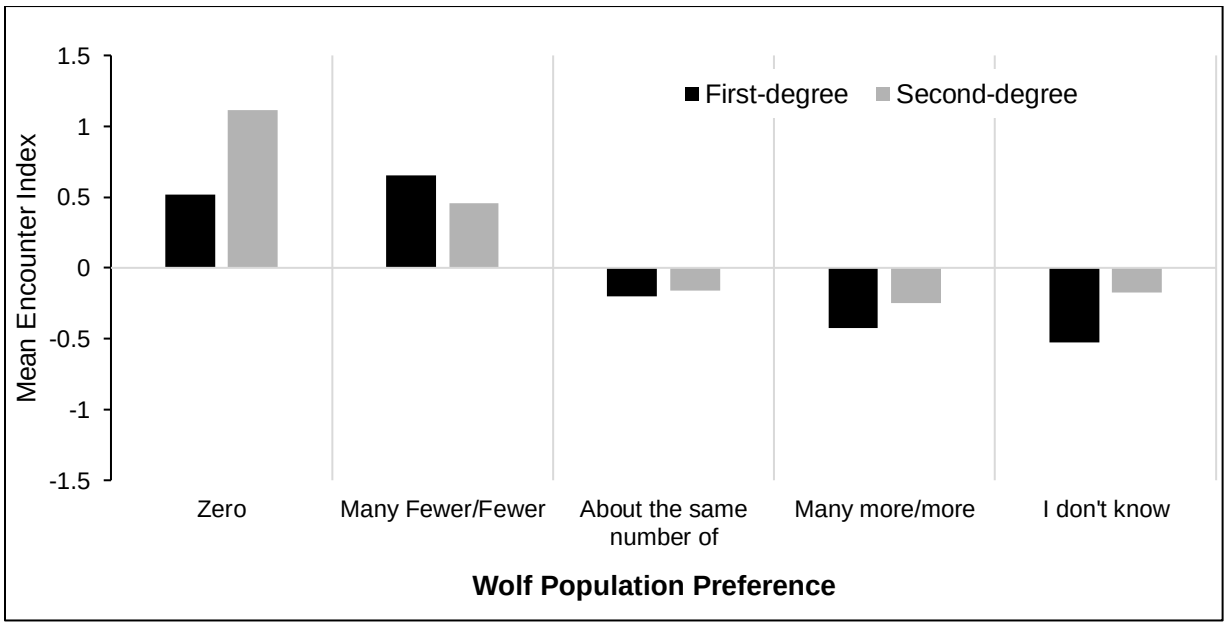

Figure 22. *Indices of first- and second-degree wolf encounters compared across preferred wolf abundance.*

We found some segments of the population were more likely than others to prefer an increase or decrease in state wolf abundance. In particular, those identifying as a *hunter or trapper, farmer or livestock producer* or *landowner* were more likely than non-members of these affinity groups to prefer a decrease in wolf population size (Table 18). In contrast, those identifying as an *animal lover*, *environmental advocate*, or *outdoor enthusiast* were more likely than their respective outgroups to prefer an increase in state wolf abundance. Tribal members were more likely than non-members to prefer an increase in wolf populations but, due to low sample size of those identifying as a *tribal member*, this difference was not statistically significant.

Table 18. *Frequency of Wisconsinites' preferred statewide wolf abundance compared within self-identified affinity groups.*

Do you identify as a(n)...		% Would like to have...wolves in the state					P value
		Zero	Fewer/Many Fewer	About the Same	More/Many More	Not Sure	
Animal lover	No	5	19	31	26	19	<.001
	Yes	3	13	35	36	15	
Environmental advocate	No	6	22	33	22	17	<.001
	Yes	1	9	32	42	16	
Farmer/livestock producer	No	3	14	33	24	17	<.001
	Yes	10	28	32	20	10	
Hunter and/or trapper	No	2	10	34	35	18	<.001
	Yes	13	47	22	15	4	
Landowner	No	3	11	31	36	19	<.001
	Yes	4	19	34	29	14	
Outdoor enthusiast	No	5	14	32	28	21	<.001
	Yes	3	16	33	35	13	
Tribal member	No	4	15	33	32	16	.234
	Yes	0	7	30	50	13	

Comparisons by Geography

We found significant differences in preferences for wolf population size between wolf-range residents and non-range residents; however, for both regions, the most common response was a preference for *about the same number* (33%) of wolves in the state (**Figure 23**). For those who did not want the same number of wolves, wolf-range residents were more likely to prefer *fewer* or *many fewer* wolves (27% overall) than those outside of wolf-range (13% overall; p<.001). Seven percent of wolf-range residents would prefer *zero* wolves in the state compared to 3% of non-range residents (**Figure 23**). Comparatively, those living outside of wolf-range were more likely to prefer *more* or *many more* wolves (35% overall) than wolf-range residents (22% overall; **Figure 23**). Those living outside of wolf-range were also slightly more likely to feel unsure (18%) about how many wolves they would like to have in the state compared to wolf-range residents (12%).

Recognizing that many Wisconsinites spend time in areas where wolves can be found but may not permanently reside in those same areas, we asked all respondents if they *regularly visit a vacation home, cabin, cottage, or hunting land* in counties where wolves are found (depicted on a map; Appendix A, Question 7). We found 28% of non-range residents regularly vacationed or hunted in wolf-range and 40% of wolf-range residents affirmed that they regularly vacationed or hunted in wolf-range (i.e., somewhere other than the residence for which they were sampled). Further breaking down regional preferences in this way revealed significant differences in preference depending on whether a person resided within or outside of wolf-range and whether they vacationed in wolf-range (p<.001).

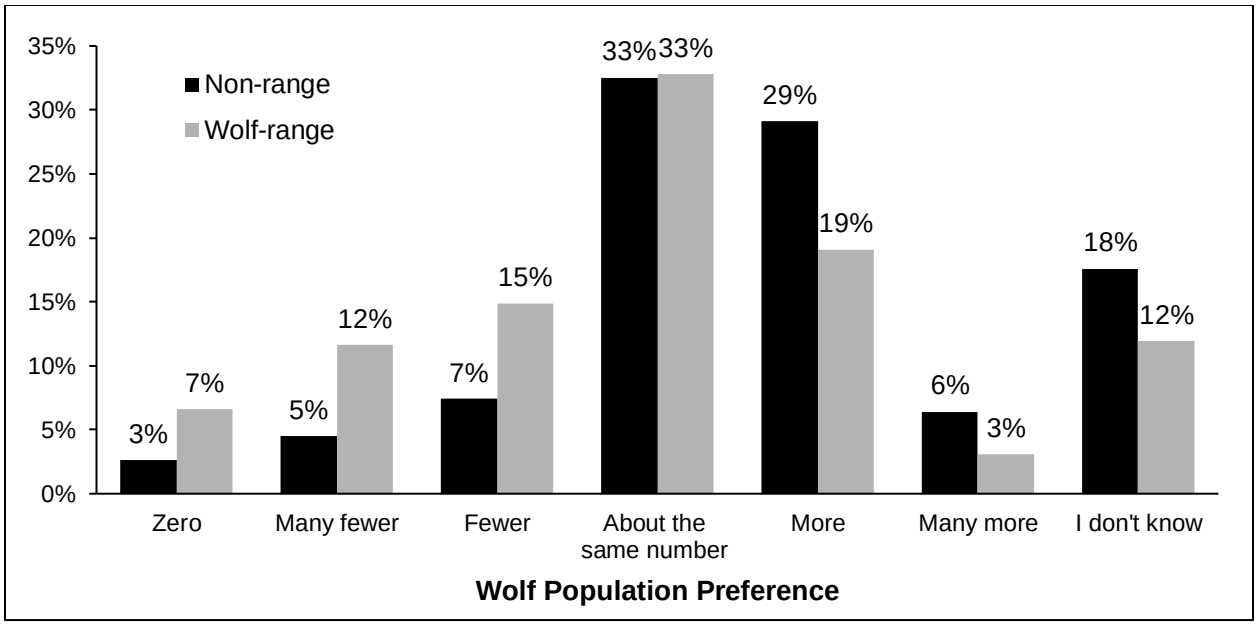

Figure 23. *Distribution of preferred statewide wolf population size relative to the population level at the time of this study among residents of wolf-range and non-range (p<.001).*

Wolf-range residents who also vacationed or hunted in wolf-range were the most likely to prefer wolf populations be decreased (36%) or eliminated (11%) from the state (**Table 19**). Non-range residents who vacationed in wolf-range were the next most likely group to prefer a decrease (26%) in wolf abundance and 4% of this group would like wolves eliminated. Non-range residents who did not regularly vacation in wolf-range were least likely to prefer wolf populations be decreased or eliminated (9%) and most likely to prefer increases (36%) relative to other groups. They were also more likely to feel unsure (22%) about wolf abundance relative to other groups (**Table 19**).

Table 19. *Frequency of preferred statewide wolf population size relative to the population level at the time of this study compared by residency in wolf-range and whether you regularly visit a vacation home/cabin or hunting land in wolf-range.*

Resides	Vacations or hunts in wolf-range?	% Would like to have...wolves in the state				
		Zero	Many Fewer/Fewer	About the Same	Many More/ More	I don't know
Wolf-range	Yes	11	36	26	19	8
	No	4	20	38	25	14
Non-range	Yes	4	26	31	32	7
	No	2	7	34	36	22

County-level Wolf Population Preference

In addition to asking about their preference for wolf abundance in the whole state, we asked all respondents, regardless of where they lived, what their preference was for wolf populations in their county of residence (Appendix A, Question 6). Respondents were provided a map of where wolf packs were currently found in the state.

Across all four strata, the most common response was a preference for wolf populations to be *maintained about the same* (in their county of residence 39-50%; **Table 20**). Notably, maintaining wolf populations *about the same* in Stratum 3 or Stratum 4 would mean maintaining zero wolves in those counties. Residents of rural non-range counties (i.e., Stratum 3) expressed the highest relative interest (28%) in having wolf populations *increased* in their county of residence ($p<.001$). Those residing in rural wolf-range counties (i.e., Stratum 1) were the most likely group to prefer wolf populations *decreased* (20%) or *eliminated* (12%) in their county (**Table 20**). Those residing in more metropolitan wolf-range counties (e.g., Stratum 2) held a higher preference for wolf populations to be *decreased* (15%) or *eliminated* (9%) in their county relative to non-range residents, but this preference was quantitatively lower than those in rural wolf-range counties. Opinions of those in Strata 1 and 2, both of which are within wolf-range, did not significantly differ in their county-level wolf population preference but all other comparisons between strata were significant at $p<.001$.

Table 20. *Frequency of preferred county of residence wolf abundance relative to the population level at the time of this study compared across strata of residence. Stratum 1 = rural wolf-range, Stratum 2 = urban wolf-range, Stratum 3 = rural wolf non-range, Stratum 4 = urban wolf non-range.*

Stratum	% Would like to see the wolf population...in county of residence					P value
	Eliminated	Decreased	Maintained about the Same	Increased	Not Sure	
1	12	20	42	15	11	<.001
2	9	15	45	18	13	
3	9	6	39	28	19	
4	5	4	51	18	22	

Comparisons with 2014

When comparing findings from 2022 with statewide results from 2014, as well as opinions of wolf-range residents and non-range residents, we found that preference for statewide wolf abundance shifted over the intervening eight years (**Table 21**). Generally, the proportion of those who felt unsure about wolf abundance decreased, meaning more Wisconsinites held some opinion at the time of this study than Wisconsinites did in 2014. The proportions who preferred *fewer* or *zero* wolves decreased and the proportions of those wanting *about the same* or *more* wolves increased statewide, both among wolf-range residents and among non-range residents. This finding corroborates a body of other peer-review literature on public attitudes toward wolves and wolf management (Bradshaw, 2021).

Table 21. *Frequency of preferred statewide wolf population size relative to the population level at the time of the study compared between 2014 and 2022 at different geographic scales.*

Geography	Survey Year	% Would like to have...wolves in the state.						
		Zero	Many Fewer	Fewer	About the Same	More	Many More	I Don't Know
Statewide	2014	10	12	15	26	15	5	19
	2022	4	6	9	33	27	6	16
Wolf-range	2014	11	12	15	26	15	4	17
	2022	7	12	15	33	19	3	12
Non-range	2014	3	6	8	29	21	6	28
	2022	3	5	7	33	29	6	18

Holsman et al. (2014) also assessed preferred wolf abundance at the county scale, however, they only posed this question to wolf-range residents. Comparing findings between the two study years for wolf-range residents only suggests that at the county level, wolf-range residents were more likely at the time of this study than in 2014 to prefer wolf populations be *maintained the same* or *increased* (**Table 22**). The proportion of residents who felt unsure and the proportion would like their county wolf populations *eliminated* both decreased between study years.

Table 22. *Frequency of preferred county of residence wolf abundance relative to the population level at the time of this study among wolf-range residents in 2014 and 2022.*

	Survey Year	% Would like wolf populations...in county of residence				
		Eliminated	Decreased	Maintained the Same	Increased	Not Sure
Wolf-range	2014	15	18	40	13	14
	2022	10	17	45	15	12

Geographic Range Preference

Statewide General Findings

A plurality (45%) of Wisconsinites would like wolves to occupy *about the same amount of* the state (Appendix A, Question 9). Remaining responses were mixed between expanding or shrinking the distribution of wolves. In all, 20% of Wisconsinites would like wolves to occupy *more* or *much more* of the state and 5% would prefer wolves occupy *all* of the state (**Figure 24**). Fifteen percent would like wolves to occupy *less* or *much less* of the state and 3% would like wolves to occupy *none* of the state (i.e., total elimination). This closely aligns with the 4% who indicated they would like wolf populations in the state to be *zero* (**Figure 21**).

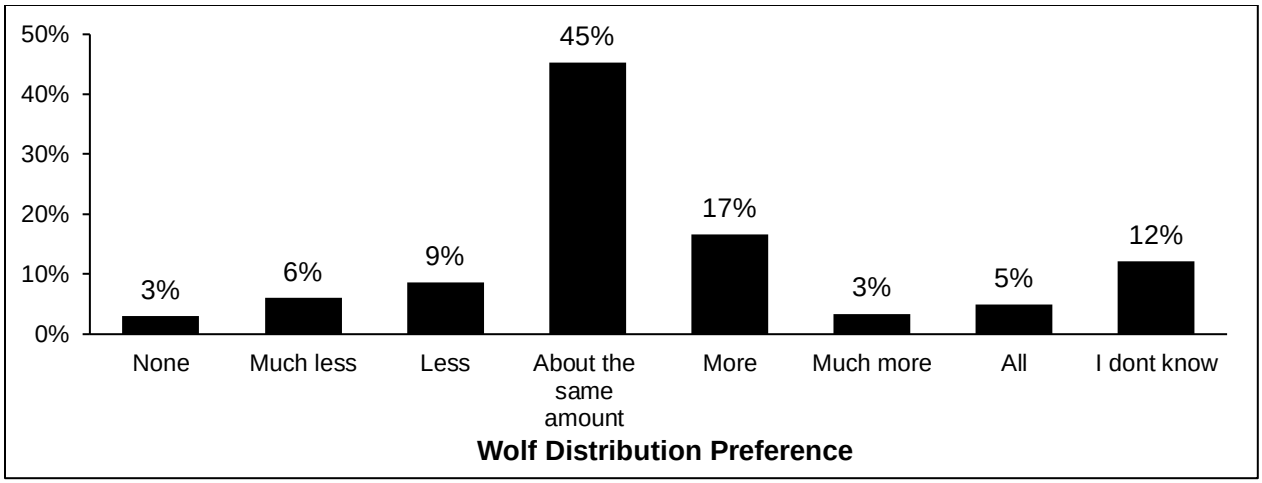

Figure 24. *Distribution of Wisconsinites' preferences for geographic distribution of wolves relative to wolf distribution at the time of this study.*

We found some segments of the statewide population were more likely to hold certain opinions about the geographic distribution of wolves. Compared to their respective outgroups, those who identified as a *hunter and/or trapper*, *farmer or livestock producer*, or *landowner* were more likely than the average Wisconsinite to prefer a decrease in wolf-range (**Table 23**). Those who identified as an *animal lover*, *environmental advocate*, *outdoor enthusiast,* or *tribal member* were more likely than their respective outgroups to hold a higher-than-average preference for wolf distribution.

Table 23. *Frequency of preferred geographic distribution of wolves relative to distribution at the time of survey within affinity groups.*

Do you identify as a(n)...		% Would like wolves to occupy...of the state.						P value
		None	Much Less /Less	About the Same	More/ Much More	All	I Don't Know	
Animal lover	No	5	18	40	19	3	16	<.001
	Yes	2	13	48	21	6	11	
Environmental advocate	No	5	22	43	15	3	13	<.001
	Yes	1	8	48	25	6	12	
Farmer or livestock producer	No	3	14	45	21	5	13	<.001
	Yes	9	25	45	13	5	2	
Hunter and/or trapper	No	2	11	48	21	5	14	<.001
	Yes	12	41	30	12	3	3	
Landowner	No	2	11	46	20	6	15	<.001
	Yes	4	18	45	20	4	10	
Outdoor enthusiast	No	4	15	44	18	4	16	.001
	Yes	3	15	46	21	5	10	
Tribal member	No	3	15	45	20	5	12	.141
	Yes	0	3	39	36	7	16	

Comparisons by Geography

The most common response among both wolf-range residents (41%) and those residing outside of wolf-range (47%) was for wolves to occupy *about the same amount of* the state as their current geographic distribution (**Figure 25**). Among those who did not prefer the same geographic distribution, those residing in wolf-range were more likely to prefer a smaller range than those residing outside of wolf-range ($p<.001$). Three in ten wolf-range residents (30%) would prefer wolves occupy either *less*, *much less*, or *none* of the state and 19% would like wolves to occupy *more*, *much more*, or *all* of the state. In comparison, less than one-fifth (14%) of non-range residents would like a smaller geographic distribution and 27% would like a larger geographic distribution. Roughly one in ten wolf-range (11%) and non-range (13%) residents felt unsure about their preference for wolf distribution (**Figure 25**).

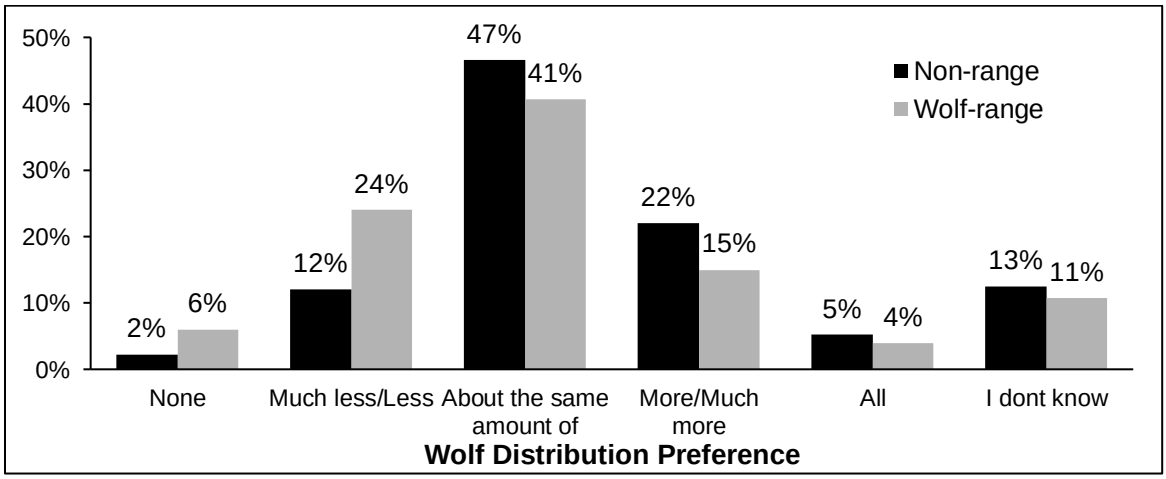

Figure 25. *Distribution of preferred geographic distribution of wolves relative to distribution at time of survey among wolf-range and non-range residents.*

Comparisons with 2014

The 2014 study did not assess perceptions about current wolf distribution so no comparisons over time apply.

Opinions about Wolf Management Objectives

We asked survey respondents questions related to specific aspects of wolf management. These included how important wolf management issues were to them personally (Appendix A, Question 12), their opinions regarding wolf management objectives (Appendix A, Question 17), and their preferences for addressing human-wolf conflicts (Appendix A, Question 18).

Statewide General Findings

Overall, 71% of Wisconsinites said decisions regarding wolf management were either *somewhat* or *very important* to them personally (**Figure 26**). One in five (21%) indicated wolf management decisions were *neither important nor unimportant* to them, and 8% felt these decisions were either *very* or *somewhat unimportant* to them (**Figure 26**).

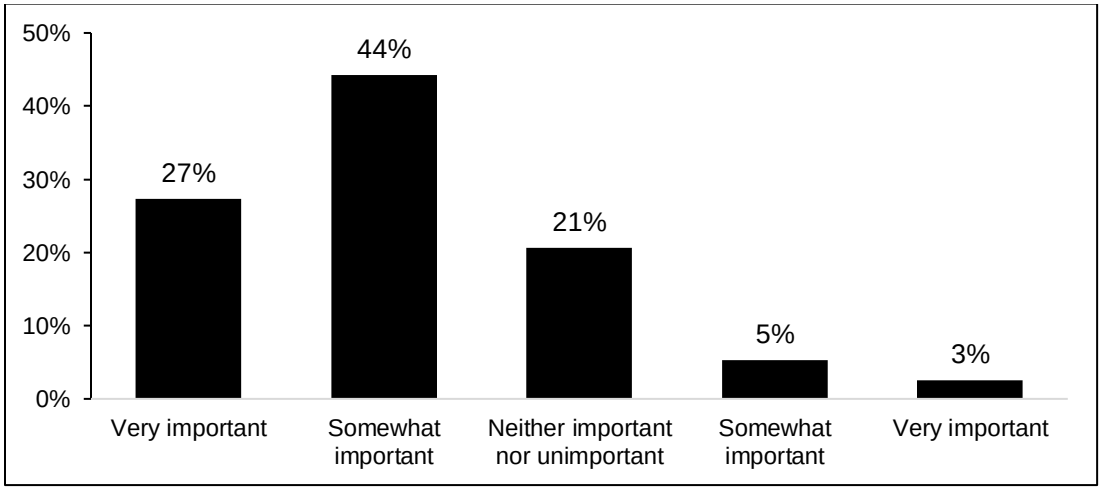

Figure 26. *Frequency distribution of Wisconsinites' ratings of importance of wolf management decisions to them personally.*

Regarding specific management options for wolves, Wisconsinites generally agreed that all available management options for wolves possessed at least some level of importance, though ratings of relative importance varied by option. A majority checked that it was *very important* to *educate people about wolves and wolf behavior* (68%), *monitor wolf numbers and distribution* (65%), and *conduct research on practices to prevent wolf-human conflicts* (53%; **Figure 27**). A plurality chose that it was *very important* to *create refuge areas to protect wolves from harvest or removal* (44%) and *reduce wolf populations in areas of high wolf-human conflicts* (36%). All of these statements suggest a preference among Wisconsinites statewide to reduce wolf-human conflicts via preventative approaches.

Approaches to wolf-human conflicts like compensation for *livestock producers for animals lost to wolves* held mixed importance to Wisconsinites. This option received some level of support by a majority, but less than a third (31%) felt it was *very important*; 30% felt it was *moderately important* and another 25% felt it was only *slightly important* (**Figure 27**).

The management options that received the lowest relative support among Wisconsinites involved addressing predation impacts on ungulates and compensation for hunting dogs killed by wolves. Three in ten (30%) said it was *not important* to *reduce wolf predation impacts on white-tailed deer and elk* and for those who said it held some level of importance the most common response was *slightly important* (31%; **Figure 27**). Close to half (45%) of Wisconsinites felt it was *not important* to *compensate hunters for hunting dogs lost to wolves on public lands* (45%); 23% felt it was *slightly important*, 16% felt it was *moderately important*, and 16% felt it was *very important*. This final statement on hunting dogs did not specify a particular type of hunting one might do with a dog (e.g., upland game bird, waterfowl, bear, wolves) in order to avoid introducing bias toward types of hunting. The department wolf depredation program does not compensate for hunting dog deaths or injuries caused by wolves if said hunting dogs are being actively used in the hunting of wolves (s. 29.888, *Wis. Stats.*).

On the topic of human-wolf conflict situations, we asked respondents whether they supported or opposed the use of three different lethal options to address four kinds of human-wolf conflicts: *wolves attacking domestic livestock (cattle, sheep)*, *wolves attacking hunting dogs on public lands*, *wolves regularly approaching humans*, and *wolves attacking pets near residences* (Appendix A, Question 18). In response to each of these conflict types, respondents could select either *I do not support the killing of wolves for this type of conflict*, or any of the following that applied: *I support the killing of individual wolves by wildlife professionals for this type of conflict*, *I support issuing permits to landowners to kill individual wolves for this type of conflict*, *I support a public wolf hunting and trapping season for regional wolf population reduction for this type of conflict*, and/or *I am unsure*.

Statewide, a majority of respondents supported some type of lethal control in each human-wolf conflict scenario. Mirroring other management option findings (**Figure 27**), levels of opposition to lethal responses were highest for *wolves attacking hunting dogs on public lands* (35%). Opposition to lethal control was similar for instances of *wolves attacking domestic livestock (cattle, sheep*; 16%), *wolves regularly approaching humans* (15%), and *wolves attacking pets near residences* (12%; **Table 24**).

Among those who supported lethal response options to human-wolf conflicts, preferred approach varied by conflict type. For conflicts involving *wolves attacking domestic livestock,* the most popular response option was the use of landowner permits (59%) followed by wildlife professionals (50%; **Table 24**).

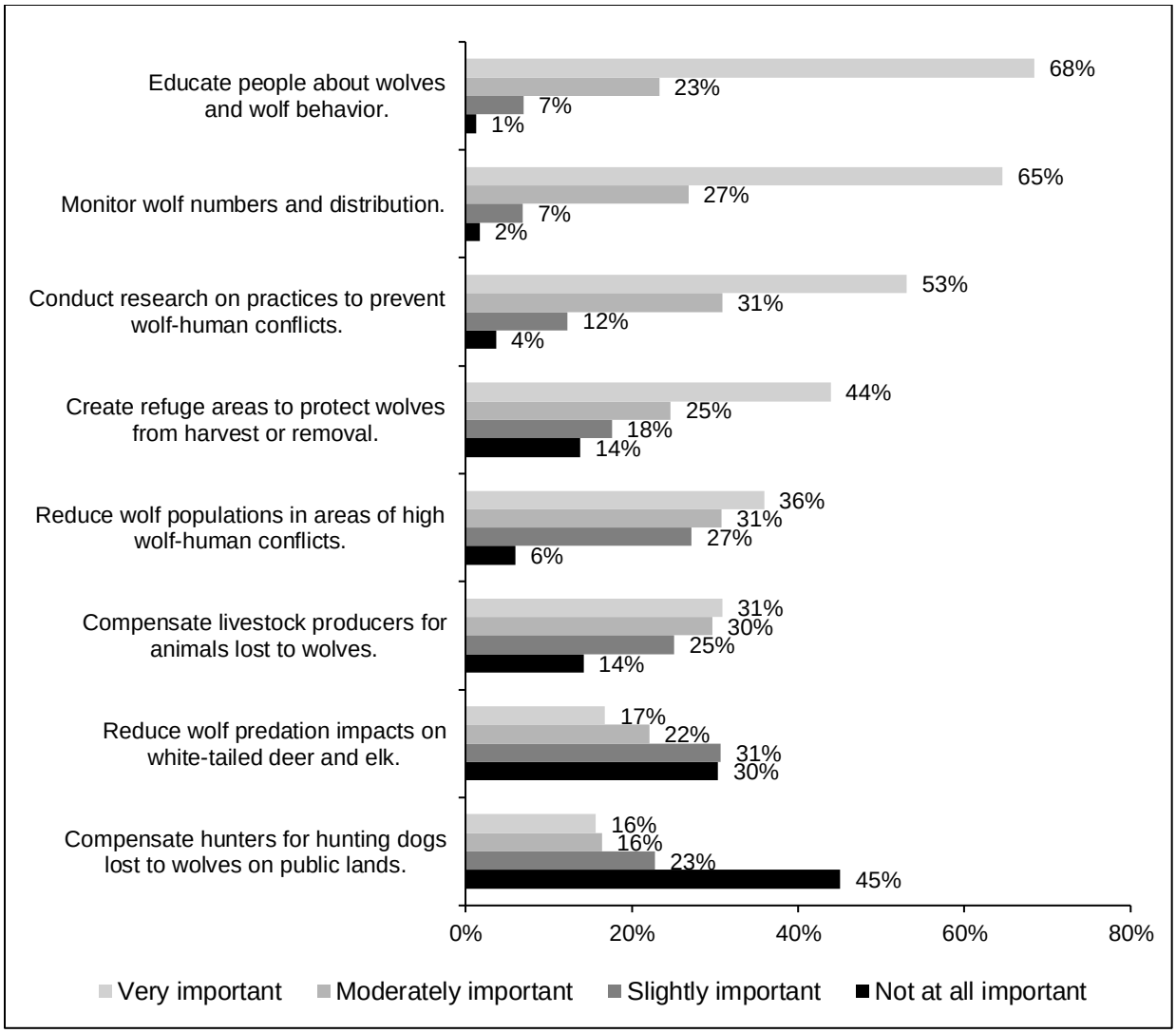

Figure 27. *Frequency distribution of rated importance of various wolf management options for the Wisconsin DNR.*

For conflicts involving *wolves attacking hunting dogs on public lands*, support was split across wildlife professionals (44%), landowner permits (37%), and a public harvest season (33%; **Table 24**). Support for wildlife professionals to address conflicts was highest for conflicts involving *wolves regularly approaching humans* (58%) and *wolves attacking pets near residences* (58%; **Table 24**).

Table 24. *Frequency of Wisconsinites' preferred approach to types of wolf-human conflicts. (Note: If respondent did not oppose lethal control, they could check multiple acceptable options, so row totals do not sum to 100%).*

Type of Conflict	% Do Not Support Lethal Control	% If you support lethal control, what is acceptable approach to lethal control:			
		Wildlife Professionals	Permits to Landowners	Public Wolf Hunting and Trapping Season	Not Sure
Wolves attacking domestic livestock.	16	50	59	20	6
Wolves attacking hunting dogs on public lands.	35	42	37	33	18
Wolves regularly approaching humans.	15	58	35	31	13
Wolves attacking pets near residences	12	58	47	28	9

Comparisons by Geography

Residents of wolf-range were statistically more likely than those living in non-range to report that wolf management decisions were *very important* to them (p<.001; **Figure 28**). More wolf-range residents selected *very important* (33%) than non-range residents (26%) whereas more non-range residents selected that wolf management was *neither important nor unimportant* (22%) to them than did wolf-range residents (18%; **Figure 28**). Cumulatively, seven in ten wolf-range residents felt wolf management decisions were very or somewhat important to them compared with six in ten of non-range residents (71% vs 63% cumulatively; **Figure 28**).

Opinions about the wolf management priorities were significantly different between those living within and outside of wolf-range for all options except *conduct research on practices to prevent wolf-human conflicts* (p=.091; **Table 25**). Despite statistical differences in the relative importance that wolf-range and non-range residents reported for the remaining management options, some reflected similar priorities between the two groups (**Table 25**). As with statewide findings, a majority of both wolf-range and non-range residents felt it was *very important* to *educate people about wolves and wolf behavior*, *monitor wolf numbers and distribution*, and *conduct research on practices to prevent wolf-human conflicts* (**Table 25**).

The remaining management options yielded more distinct differences between residents within and outside of wolf-range (**Table 25**). Wolf-range residents placed slightly less relative importance on *creating refuge areas to protect wolves from harvest or removal* (p<.001) compared to 47% of non-range residents who felt this was *very important* (**Table 25**). Wolf-range residents placed more importance on efforts to *reduce wolf populations in areas of high wolf-human conflict* (p<.001) and *compensating livestock producers for animals lost to wolves* (p<.001) than did non-range residents (**Table 25**).

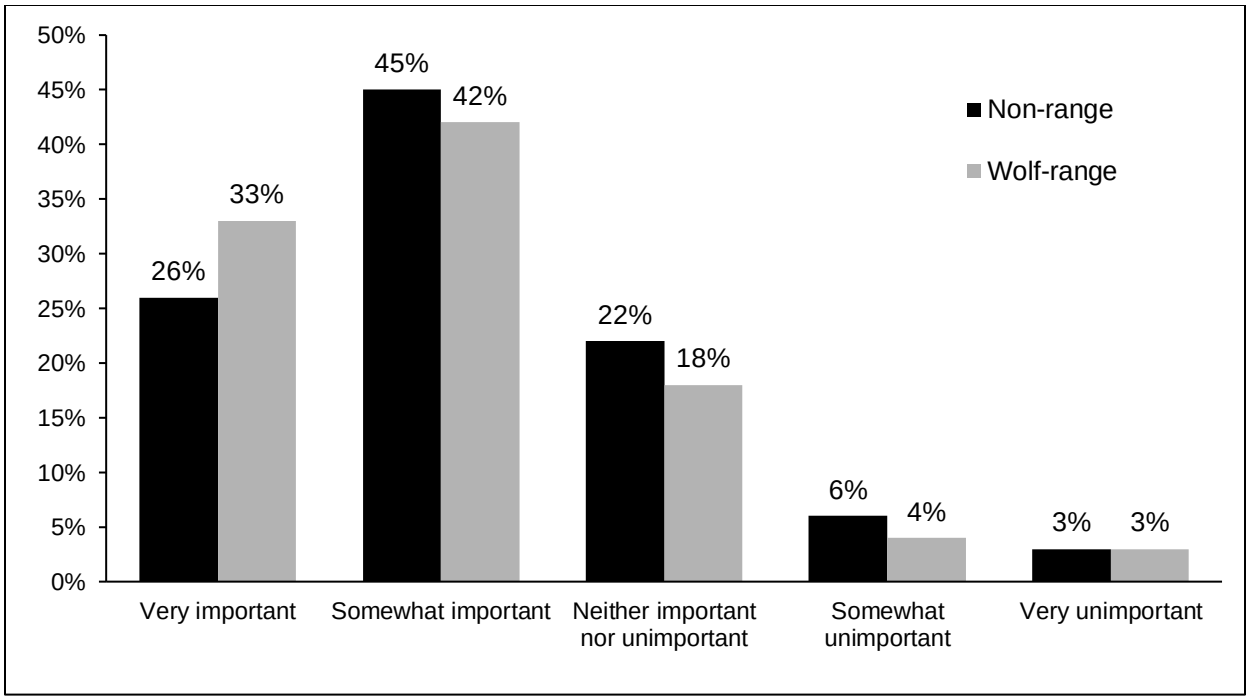

Figure 28. *Frequency distribution of ratings of importance of wolf management decisions to them personally compared by wolf-range residency (p<.001).*

The importance of *reducing wolf predation impacts on white-tailed deer and elk* and compensating *hunters for hunting dogs lost to wolves on public lands* both received the lowest relative importance ratings for wolf-range and non-range residents. Regarding impacts on ungulate populations, wolf-range residents were divided but more likely to rate this option as *very important* (26%) compared to non-range residents (14%; **Table 25**). Similarly, wolf-range and non-range residents were most likely to rate compensation for hunting dogs as *not at all important* (40% and 46%, respectively) but among those who felt it had some importance, wolf-range residents were more likely to rate it as *very important* (23%) compared to non-range residents (14%). Non-range residents were more likely to rate it as *slightly important* (24%; **Table 25**). These management options may be valued more by individuals who hunt white-tailed deer or elk or use a hunting dog in areas where wolves live, and it may be less salient to individuals who do not.

We compared levels of support and opposition between wolf-range and non-range residents to the use of lethal response to four types of human-wolf conflicts. Across conflict types, those within wolf-range generally had higher levels of support for the use of landowner permits and public harvest seasons to address conflicts, whereas non-range residents tended to have higher levels of support for the use of wildlife professionals as well as higher levels of uncertainty (**Table 26**).

Table 25. *Frequency of importance of various wolf management options for the Wisconsin DNR compared by wolf-range residency.*

Management Option	Location	Percentage				P value
		Not at all Important	Slightly Important	Moderately Important	Very Important	
Educate people about wolves and wolf behavior.	Wolf-range	3	12	24	62	<.001
	Non-range	1	6	23	70	
Monitor wolf numbers and distribution.	Wolf-range	3	7	28	62	<.001
	Non-range	1	7	26	66	
Conduct research on practices to prevent wolf-human conflicts.	Wolf-range	5	12	31	52	.091
	Non-range	3	12	31	54	
Create refuge areas to protect wolves from harvest or removal.	Wolf-range	22	22	23	34	<.001
	Non-range	12	17	25	47	
Reduce wolf populations in areas of high wolf-human conflicts.	Wolf-range	8	20	26	45	<.001
	Non-range	6	29	32	33	
Compensate livestock producers for animals lost to wolves.	Wolf-range	9	20	28	44	<.001
	Non-range	16	27	30	27	
Reduce wolf predation impacts on white-tailed deer and elk.	Wolf-range	27	26	22	26	<.001
	Non-range	31	32	22	14	
Compensate hunters for hunting dogs lost to wolves on public lands.	Wolf-range	40	18	19	23	<.001
	Non-range	46	24	16	14	

Table 26. *Frequencies of support for lethal response options to address four kinds of human-wolf conflicts compared by wolf-range residency.*

Type of Conflict	Lethal Response Option	% Support among		P value
		Wolf-range	Non-range	
Wolves attacking domestic livestock (cattle, sheep).	Wildlife professionals	44	51	.001
	Landowner permits	63	58	.051
	Public harvest season	36	27	<.001
	Unsure	3	8	<.001
Wolves attacking hunting dogs on public lands.	Wildlife professionals	37	43	.007
	Landowner permits	42	36	.017
	Public harvest season	44	30	<.001
	Unsure	13	19	<.001
Wolves regularly approaching humans.	Wildlife professionals	56	58	.183
	Landowner permits	39	34	.024
	Public harvest season	38	29	<.001
	Unsure	9	14	<.001
Wolves attacking pets near residences.	Wildlife professionals	52	60	<.001
	Landowner permits	49	46	.103
	Public harvest season	36	26	<.001
	Unsure	6	10	.001

Comparisons with 2014

Wolf management options available to and under consideration by the department shifted somewhat between 2014 and 2022 so no comparisons over time were made between specific management objectives or options. However, the four types of wolf-human conflict and preferences for lethal control were held in common between survey years and could be compared.

Since 2014, opposition to lethal control increased slightly for each type of wolf-human conflict. This increase was observed among the statewide population as well as within wolf-range residents and within non-range residents (**Table 27**). Two exceptions to this trend were found. Opposition to lethal control remained the same among wolf-range residents for wolves *attacking hunting dogs on public land* and *attacking pets near residences* from 2014 to 2022.

Table 27. *Frequencies of opposition to lethal control for four conflict scenarios compared among statewide, wolf-range, and non-range residents in 2014 and 2022.*

Type of Conflict	% Do not support lethal control					
	Statewide		Wolf-range		Non-range	
	2014	2022	2014	2022	2014	2022
Wolves attacking domestic livestock.	7	16	6	12	8	17
Wolves attacking hunting dogs on public lands.	30	35	30	30	28	36
Wolves regularly approaching humans.	10	15	9	11	13	16
Wolves attacking pets near residences	7	12	8	8	8	13

Among those who supported some type of lethal response option, we found little meaningful change in support for each of the lethal control methods between 2014 and 2022 (**Table 28**). In both study years, residents were most supportive of the use of landowner permits for instances of wolves attacking livestock and the use of wildlife professionals to kill individual wolves that regularly approach humans or attack domestic pets, but residents had mixed opinions for how to address wolves attacking hunting dogs on public land.

Table 28. *Frequencies of support for lethal response options to address four kinds of human-wolf conflicts compared among statewide, wolf-range and non-range residents in 2014 and 2022.*

Type of Conflict	Lethal Response Option	% Support					
		Statewide		Wolf-range		Non-range	
		2014	2022	2014	2022	2014	2022
Wolves attacking domestic livestock (cattle, sheep).	Wildlife professionals	50	50	47	44	45	51
	Landowner permits	67	59	64	63	56	58
	Public harvest season	31	20	30	36	21	27
Wolves attacking hunting dogs on public lands.	Wildlife professionals	44	42	30	37	34	43
	Landowner permits	41	37	30	42	23	36
	Public harvest season	39	33	28	44	18	30
Wolves regularly approaching humans.	Wildlife professionals	65	58	59	56	59	58
	Landowner permits	43	35	40	39	29	34
	Public harvest season	31	31	29	38	21	29
Wolves attacking pets near residences.	Wildlife professionals	62	58	57	52	59	60
	Landowner permits	52	47	40	49	38	46
	Public harvest season	29	28	29	36	21	26

Opinions Regarding Regulated Wolf Hunting and Trapping

Stakeholder awareness of current laws and support for regulations that affect species management are important aspects of communicating about and enforcing hunting and trapping seasons. One unique aspect of wolf management in Wisconsin relative to other Great Lakes states is a state law that requires the department to allow the hunting and trapping of wolves if the wolf is not listed on the federal endangered species list and is not listed on the state endangered species list (s. 29.185, *Wis. Stats.*).

Statewide General Findings

We asked respondents if they were aware (prior to receiving the survey) that *Wisconsin state law mandates that when the wolf is not on the federal or state endangered species list, the Department of Natural Resources must allow the hunting and trapping of wolves* (Appendix A, Question 14). Statewide, half of Wisconsinites (50%) were unaware that Wisconsin state law requires a wolf harvest season. Most other Wisconsinites were previously aware (42%) but some were *not sure* if they knew of that law prior to receiving the survey (8%).

Immediately following this question, we asked respondents about their support or opposition toward having a regulated wolf hunting and trapping season in Wisconsin to manage wolf populations (Appendix A, Question 15). Statewide, Wisconsinites were supportive of a wolf hunting or trapping season and results showed that cumulative levels of support (46%) exceeded cumulative levels of opposition (29%; **Figure 29**). One quarter (25%) were undecided about a wolf hunting and trapping season in Wisconsin. We found support for wolf hunting and trapping was correlated with increased awareness of state law. A majority of those who supported or strongly supported a wolf hunting and trapping season were aware of state laws affecting wolf management in Wisconsin (58%; **Figure 30**). Those who were not aware of this Wisconsin state law were divided on their opinion of a wolf hunting and trapping season. This might suggest that communication from Wisconsin DNR on why and how wolf hunting and trapping decisions are made could lead to increased support from the public.

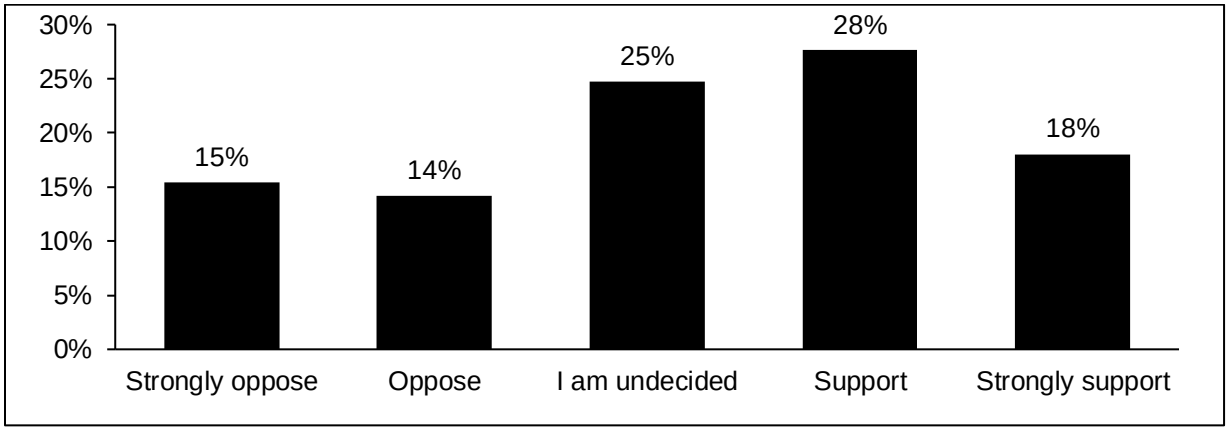

Figure 29. *Distribution of Wisconsinites' level of support or opposition for a regulated wolf hunting and trapping season in Wisconsin.*

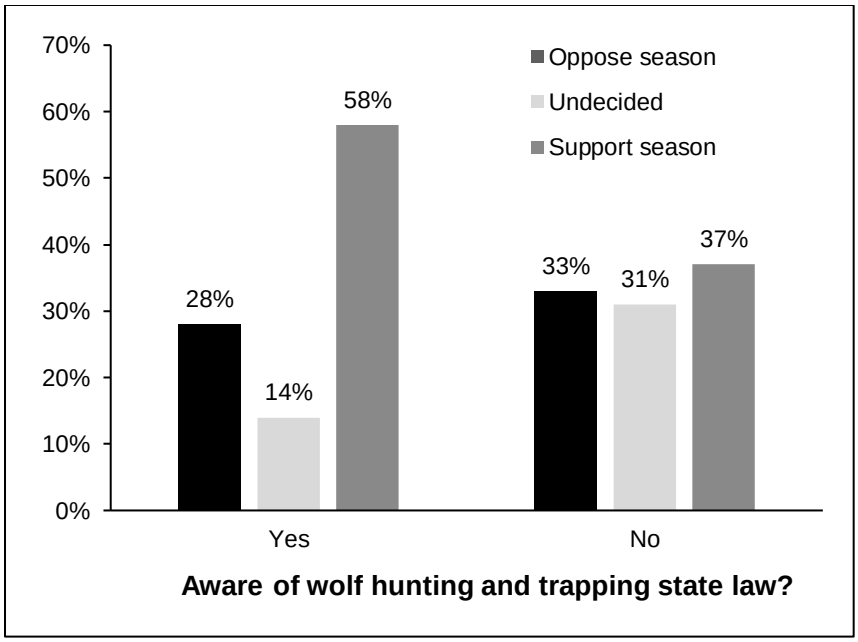

Figure 30. *Distribution of Wisconsinites' support (support + strongly support) or opposition (oppose + strongly oppose) for a regulated wolf hunting and trapping season in Wisconsin compared by awareness of state law.*

Among those who opposed a regulated wolf hunting and trapping season, the most commonly selected reason for opposing (Appendix A, Question 16) was *I am worried that wolves will become endangered again* (75%). A majority indicated that they opposed particular methods of wolf hunting and trapping such as the use of traps (70%) or hounds to track and harvest wolves in Wisconsin (64%; **Table 29**). Although only those who opposed a season were directed to the follow-up question regarding reasons for opposing, some mail survey respondents who supported a wolf hunting and trapping season included written comments that expressed disappointment and concern regarding the speed at which the February 2021 wolf season achieved its harvest goals. This suggests that the media attention following the February 2021 season may have influenced support for future wolf hunting and trapping seasons.

The vast majority of opponents to a regulated wolf harvest season in Wisconsin did not represent "anti-hunting" sentiment broadly but instead possessed concerns that are specific to wolves and wolf management in Wisconsin. Statewide, few people checked that they *oppose all forms of hunting* (15%). A majority *support some forms of hunting, but not for* wolves (55%), *do not think that we need to hunt wolves* (62%) or checked that *wolves are culturally important to Native Americans and hunting them is offensive* (57%; **Table 29**). Other reasons respondents specified for opposing a regulated wolf season included beliefs that hunting wolves is unethical or unsportsmanlike, concerns about the humaneness of specific harvest tools or practices, beliefs that regulated harvest seasons interfere with the balance of nature, distrust that a regulated harvest season could be sufficiently managed and enforced by authorities, values for the rights of individual wolves and wolf packs, and perceived benefits of wolves such as controlling other wildlife species that cause conflicts with humans (e.g., white-tailed deer).

Table 29. *Reasons selected for opposing a regulated wolf hunting and trapping season in Wisconsin.*

Statewide	Reason
75%	I am worried that wolves will become endangered again.
70%	I oppose the use of traps to harvest wolves in Wisconsin.
64%	I oppose the use of hounds to track and harvest wolves in Wisconsin.
62%	I do not think that we need to hunt wolves.
57%	Wolves are culturally important to Native Americans and hunting them is offensive.
55%	I support some forms of hunting, but not for wolves.
52%	I do not think that hunting wolves will reduce wolf-human conflicts.
15%	I oppose all forms of hunting.
15%	Other

Comparisons by Geography

Prior awareness of laws affecting regulated wolf hunting and trapping in Wisconsin significantly varied between wolf-range residents and non-range residents ($p<.001$; **Figure 31**). Wolf-range residents were slightly more likely to be aware of this law (56%) than those residing outside of wolf-range (39%). The two groups had approximately equal rates of being unsure.

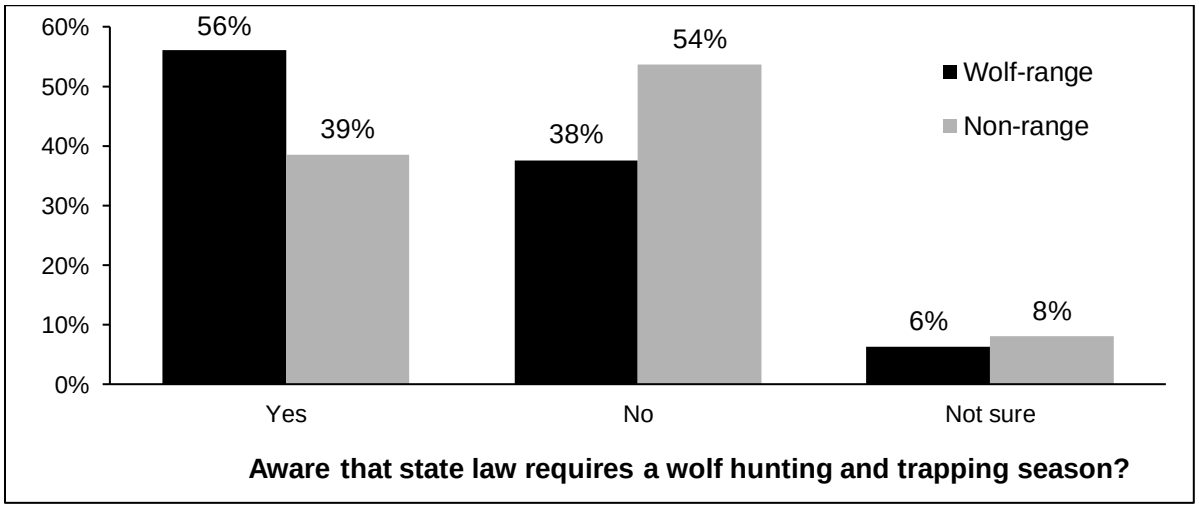

Figure 31. *Frequency distribution of awareness of the Wisconsin state law requiring a wolf harvest season compared by residency in wolf-range vs non-range ($p<.001$).*

We also found significant differences of opinion between wolf-range and non-range residents regarding their support for a wolf hunting and trapping season ($p<.001$). Overall, levels of support were higher among wolf-range residents (57%) than among non-range residents (43%). Those living outside of wolf-range were slightly more likely to oppose a wolf hunting and trapping season, but the larger proportional difference came from non-range residents who were undecided. Twenty-seven percent of non-range residents were undecided compared to 17% of wolf-range residents (**Figure 32**). Among those who opposed wolf hunting and trapping, we found no statistically significant differences between wolf-range and non-range residents for the reasons they selected for opposing hunting and trapping.

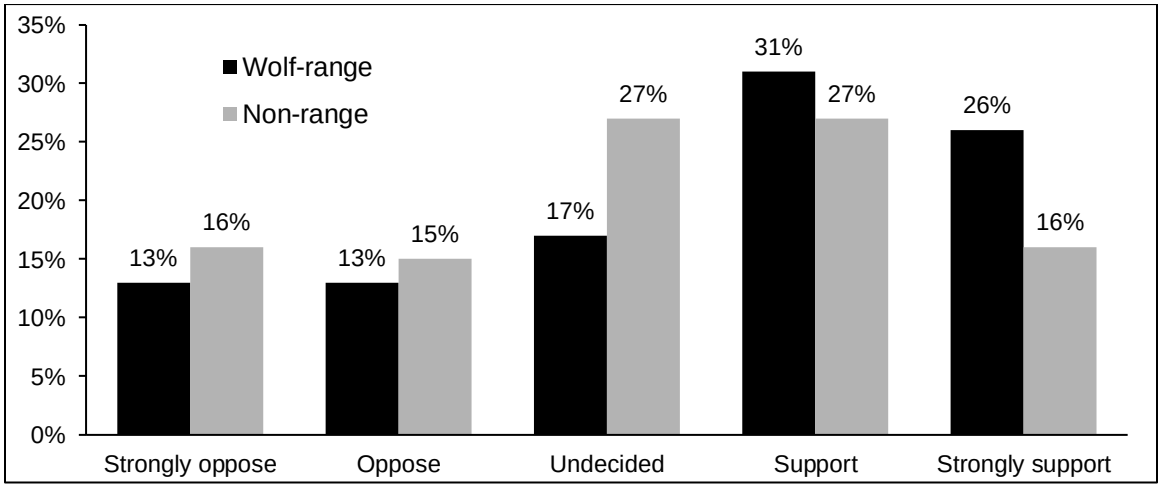

Figure 32. *Frequency distribution of levels of support or opposition for a regulated wolf hunting and trapping season in Wisconsin compared by residency in wolf-range. $p<.001$.*

Comparisons to 2014

Holsman et al. (2014) asked about support or opposition to a regulated wolf hunting and trapping season. However, the question and response options used to assess levels of support or opposition to a regulated wolf hunting and trapping season in Wisconsin were modified in 2022 to create a balanced response scale. This prohibits any formal statistical comparisons, but we can collapse certain response options within each question (Table 30) to approximate and informally compare relative levels of support over time.

Informal comparisons suggest that a decrease in support for a regulated hunting and trapping season occurred between 2014 and 2022. Statewide, 46% indicated support for a hunting and trapping season in 2022 compared to 61% of Wisconsinites in 2014. Correspondingly, the proportion of those who were undecided or opposed to a regulated wolf hunting and trappings season increased slightly (**Table 31**). We also performed this informal comparison among wolf-range and non-range residents in both years and found support for a wolf season declined between 2014 and 2022 for both groups. In 2014, just over half (51%) of non-range residents were supportive of a season; but in 2022, less than half of non-range residents (44%) were supportive of wolf hunting and trapping. Among wolf-range

residents, a majority were supportive of a regulated wolf season, but the proportion declined from 62% support in 2014 to 57% support in 2022. Correspondingly, the proportions of opposed opinions increased in 2022 for both groups (**Table 31**).

Table 30. *Questions used to assess levels of support and opposition to a regulated wolf hunting and trapping season in Wisconsin in 2014 and 2022. To facilitate an approximate and informal comparison between years, we collapsed each question into three categories: "oppose" (Q24(a) and Q15(a-b)), "undecided" (Q24(b) and Q15(c)) and "support" (Q24(c-d) and Q15(d-e)).*

Survey Year	Question and Response Options
2014	Q24. Which statement best describes your opinion about the regulated wolf season (hunting and trapping) in Wisconsin? Check all that apply. a) I oppose having a season for wolves. b) I am undecided. c) I support a season for wolves as a tool to reduce the population. d) I support hunting wolves as long as it can be done sustainably.
2022	Q15. To what extent do you support or oppose having a regulated wolf hunting and trapping season in Wisconsin to manage wolf populations? Check one. a) Strongly oppose b) Oppose c) I am undecided d) Support e) Strongly support

Table 31. *Collapsed frequencies of support for a regulated wolf hunting and trapping season among statewide residents and among wolf-range and non-range residents between 2014 and 2022.*

Geographic Scale	Survey Year	% Opinion on wolf hunting and trapping		
		Oppose	Undecided	Support
Statewide	2014	22	17	61
	2022	29	25	46
Wolf-range	2014	21	17	62
	2022	26	17	57
Non-range	2014	27	22	51
	2022	31	27	43

We compared reported reasons for opposing a regulated wolf hunting and trapping season in Wisconsin across the survey efforts in 2014 and 2022. However, in 2022 we modified some of the response options in order to reflect recent literature and changes in wolf management. Therefore, we did not perform statistical tests to determine the significance of changes between years, and instead informally compared the relative importance of various reasons present in both years as indicated by percentages. In both years, the top reason for opposing a wolf hunting and trappings season was concern that *wolves will become endangered again.* In 2014, *I think all forms of hunting are cruel* was the least-selected option (Holsman et al., 2014). Mirroring that finding, *I oppose all forms of hunting* was the least-selected option in 2022 (**Table 29**). *I support some forms of hunting, but not for wolves* received similar levels of support in both years, with about half of opponents selecting this option (**Table 29**, Holsman et al., 2014). Notably, the proportion of opponents who selected *wolves are culturally important to Native Americans and hunting them is offensive* in 2022 (**Table 29**) more than doubled the proportion who selected *hunting wolves is offensive to Native Americans* in 2014 (Holsman et al., 2014). This may reflect that awareness of the treaty rights and cultural practices of Wisconsin's sovereign tribes, particularly as they relate to wolf-human interactions, has become more widespread among the broader public in recent years.

Trust and Wisconsin DNR Management

Statewide General Findings

We asked Wisconsinites the extent to which they agreed or disagreed with seven statements pertaining to their trust in the Wisconsin DNR and its management of wolves in Wisconsin (Appendix A, Question 13). A majority of people agreed with statements that the Wisconsin DNR *appropriately uses science and data in decision-making* when managing wolves in Wisconsin (67%), *uses reliable methods to estimate wolf populations* (65%), *can be trusted to make decisions about wildlife management that are good for the resource* (64%) and *listens to the concerns of citizens (59%)* about wolf management in Wisconsin (**Table 32**).

The remaining three statements – *shares similar values as me*, *shares similar goals as me*, and *would take similar actions as I would* – received mixed ratings of agreement and neutrality. Roughly three in ten (29% to 31%) *agreed* or *strongly agreed* with these statements but the plurality (42% to 44%) of Wisconsinites expressed neutrality as to whether the Wisconsin DNR shares similar values, goals, and actions as them. This might suggest that the general public lacks an understanding of Wisconsin DNR values, goals, or actions and so may be hesitant to agree or disagree.

A principal component analysis applied to the seven different statements in **Table 32** revealed a single underlying component that explained 77% of the variation in the responses received (see page 11 for a description of this analysis approach). The single component indicates that responses to the separate statements were informed by how respondents felt about overall credibility of the Wisconsin DNR. Factor scores were used to generate an index of trust.

Table 32. *Frequency of Wisconsinites' agreement or disagreement with statements related to trust in the Wisconsin DNR and its management of wolves in Wisconsin.*

With respect to managing the wolf population in our state, I feel that the Wisconsin DNR...	Percentage (%)				
	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Appropriately uses science and data in decision-making.	22	45	23	8	3
Uses reliable methods to estimate wolf populations in Wisconsin.	21	44	26	7	3
Can be trusted to make decisions about wildlife management that are good for the resource.	22	42	22	11	3
Listens to the concerns of citizens.	18	41	25	12	4
Shares similar values as me.	12	31	42	12	4
Shares similar goals as me.	11	30	43	12	4
Takes similar actions as I would.	10	29	44	14	4

Beliefs about wolf abundance in Wisconsin appeared to influence ratings of trust in the Wisconsin DNR and its management of wolves. As perceptions of current wolf abundance increased, trust in Wisconsin DNR wolf management decreased. This could suggest that as someone's personal experiences and beliefs about wolf populations in Wisconsin deviate from Wisconsin DNR population estimates, their trust in Wisconsin DNR declines. Written comments like the one below included on returned surveys support this relationship.

I think there are way more wolves than you estimate.

Those whose best guesses for current wolf abundance were *900-1,399 wolves*, *400-899 wolves,* or *fewer than 400 wolves* were more likely than average to have trust in the Wisconsin DNR. However, those whose best guesses for current abundance were above Wisconsin DNR population estimates (i.e., *1,400-1,899 wolves* or *more than 1,900 wolves*) were less likely than the average Wisconsinite to trust the Wisconsin DNR (**Figure 33**).

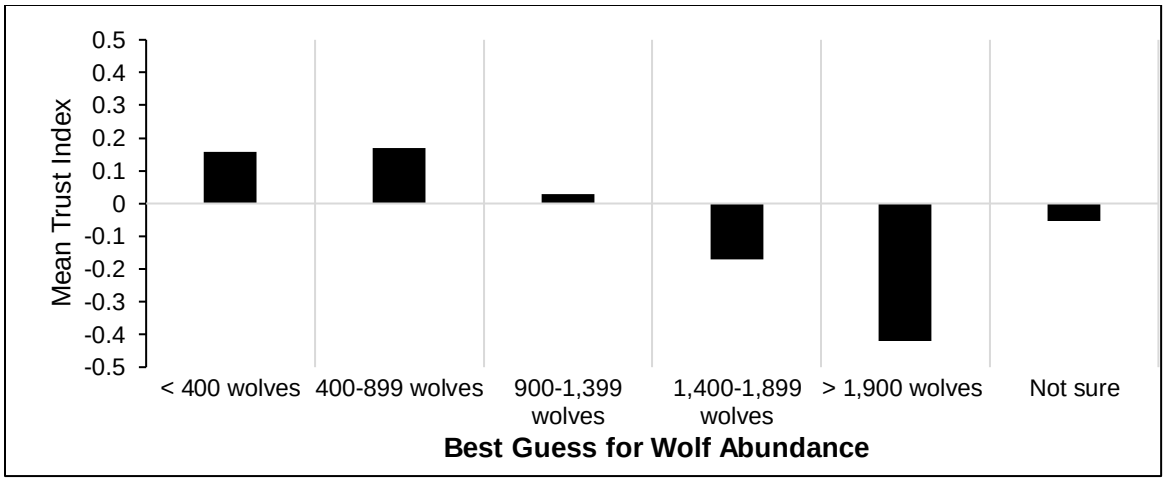

Figure 33. *Mean trust index compared across Wisconsinites' perceived wolf population abundance in Wisconsin at the time of the survey (p<.001).*

In previous sections of this report, we outlined the relationship between increasing experiences with wolves and opinions and preferences for wolf abundance. In our analysis of trust in Wisconsin DNR wolf management, we also found that more experiences with wolves in the wild significantly and negatively influenced trust in Wisconsin DNR wolf management. When comparing the extent of first-degree encounters, trust in Wisconsin DNR did not fall below average until an individual had five or more first-degree encounters (**Figure 34**). However, if Wisconsinites had one or more second-degree encounter with a wolf, trust in Wisconsin DNR management was lower than average (**Figure 35**). In other words, increasing frequency and intensity of encounters with wolves or wolf sign may cause Wisconsinites to have less trust in Wisconsin DNR wolf management.

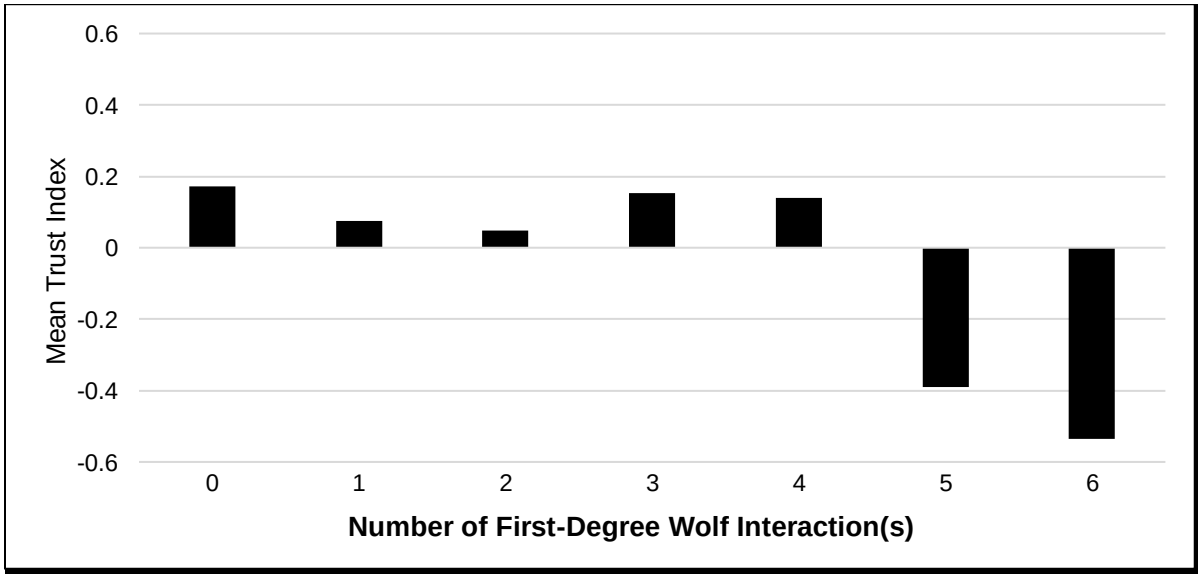

Figure 34. *Mean trust index compared across Wisconsinites' number of first-degree wolf encounters.*

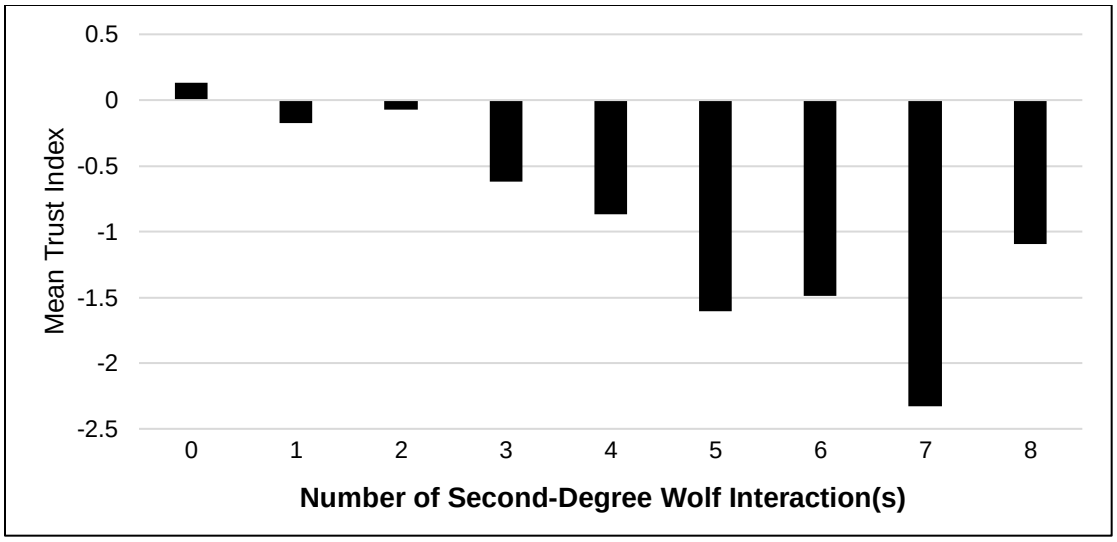

Figure 35. *Mean trust index compared across Wisconsinites' number of second-degree wolf encounters.*

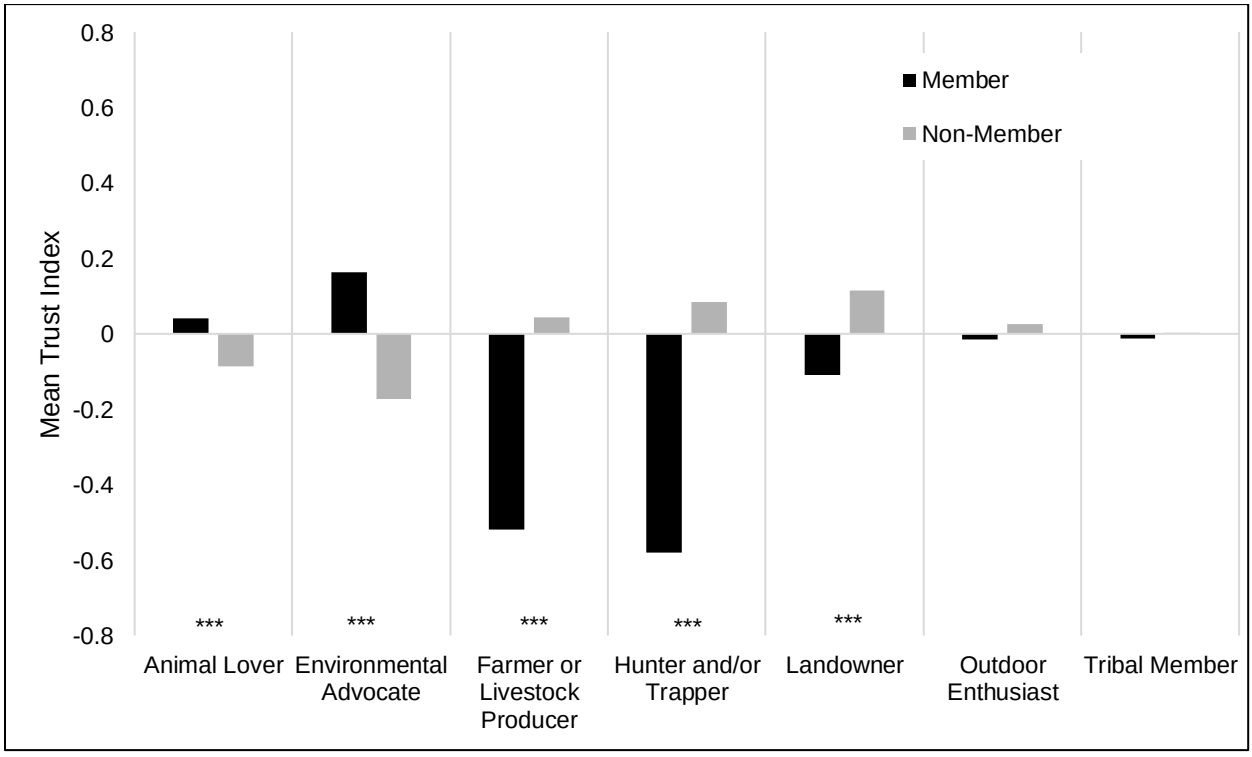

Figure 36. *Mean trust index compared within self-reported affinity groups. *p≤.05, ** p≤.01, *** p≤.001.*

We also evaluated potential differences in trust in the Wisconsin DNR and its management of wolves based on Wisconsinites' self-reported affinity groups. Those who identified as an *animal lover* or *environmental advocate* were more likely than non-members of those same groups to have trust in the Wisconsin DNR ($p<.01$). In contrast, those who identified as a *farmer or livestock producer*, *hunter and/or trapper*, or *landowner* were less likely than non-members of those same groups to have trust in the Wisconsin DNR ($p<.001$). We found no significant differences in trust between those who identified as an *outdoor enthusiast* or *tribal member* and non-members of these groups.

Comparisons by Geography

Trust in Wisconsin DNR wolf management significantly differed between those living within and outside of wolf-range. Those living outside of wolf-range were more likely than wolf-range residents to have trust in the Wisconsin DNR ($p<.001$; **Figure 36**).

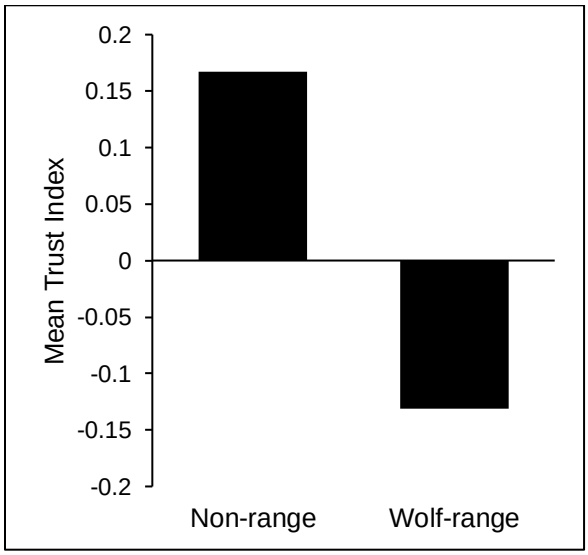

Figure 37. *Mean trust index compared between wolf-range and non-range residents. p<.001 .*

Comparisons with 2014

Three of the trust statements asked in 2022 were also asked on the questionnaire in 2014, allowing for a comparison to determine if trust in the Wisconsin DNR and its management of wolves shifted over the intervening eight years. The questions asked in both 2014 and 2022 were: *with respect to managing the wolf population in our state, I feel that the Wisconsin DNR*: (1) *shares similar values as me*, (2) *takes similar actions as I would*, and (3) *shares similar goals as me*. In comparing the extent of agreement for these three aspects of trust, we found trust in the Wisconsin DNR increased since 2014 among both wolf-range and non-range residents (**Tables 33-35**). The plurality of Wisconsinites in both years, however, *neither agree nor disagree* with these three statements. Those who *agree* or *strongly agree* increased slightly over the intervening eight years at a statewide level as well as among wolf-range and non-range residents.

Table 33. *Frequency of Wisconsinites' agreement or disagreement with three trust statements in 2014 and 2022.*

With respect to managing the wolf population in our state, I feel that the Wisconsin DNR...	Survey Year	% Statewide residents				
		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Shares similar values as me	2014	9	20	40	28	4
	2022	4	12	42	31	12
Takes similar actions as I would	2014	10	24	41	23	3
	2022	4	14	44	29	10
Shares similar goals as me	2014	10	21	41	25	3
	2022	4	12	43	30	11

Table 34. *Frequency of wolf-range resident agreement or disagreement with three trust statements in 2014 and 2022.*

With respect to managing the wolf population in our state, I feel that the Wisconsin DNR...	Survey Year	% Wolf-range residents				
		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Shares similar values as me	2014	10	21	39	27	4
	2022	7	14	42	26	10
Takes similar actions as I would	2014	11	25	39	23	3
	2022	8	17	44	23	8
Shares similar goals as me	2014	11	21	41	25	3
	2022	8	16	42	25	10

Table 35. *Frequency of non-range resident agreement or disagreement with three trust statements in 2014 and 2022.*

With respect to managing the wolf population in our state, I feel that the Wisconsin DNR...	Survey Year	% Non-range residents				
		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Shares similar values as me	2014	3	12	51	30	5
	2022	3	11	42	32	13
Takes similar actions as I would	2014	4	15	54	23	3
	2022	3	13	43	31	10
Shares similar goals as me	2014	4	13	53	26	4
	2022	3	11	43	32	12

Segmentation Analysis

Wolf management can be a contentious and controversial issue about which some members of the public have strong feelings, a fact made apparent by the bimodal distribution of responses to many of the questions posed on an open access public input form deployed in 2021 (Beardmore et al., 2021). Thus far, this report has taken a largely univariate approach to understanding the opinions, attitudes, and preferences of Wisconsinites; however, many of these constructs are correlated. It can therefore be useful to conduct a segmentation analysis in which the focus is on comparing multiple characteristics across groups of respondents. To assess the degree to which respondents who shared similar preferences regarding the number and distribution of wolves in Wisconsin also shared other characteristics, we conducted a latent cluster analysis (Vermunt and Magidson, 2002). This statistical technique groups respondents together based on the pattern of their responses to key questions, and then uses other characteristics of these respondents such as attitudes and demographic attributes to predict the likelihood of belonging to each group. The number of clusters was optimized by selecting the model with a minimum Bayesian Information Criterion (Vermunt and Magidson, 2002). For our analysis, the key indicator variables upon which the clusters were defined were the relative changes in statewide wolf population size and distribution preferred by each respondent. Respondents were weighted to represent the statewide population.

The results suggest that seven clusters or "types" of Wisconsinites exist (**Table 36**). Both indicators were highly significant ($p<.001$), with R^2 values indicating most of the variance of each indicator is explained by this seven-cluster model (**Table 37**). **Table 37** presents the conditional probabilities of response to the two indicator variables. While analogous to a frequency distribution, the percent values are more appropriately interpreted as the likelihood that an individual belonging to that cluster would select each response option.

Table 36. *The seven-cluster model that provided the best model fit using the Bayesian Information Criterion (BIC).*

				Size of Cluster									
Clusters	**BIC(LL)**	**Npar**	**Class.Err.**	1	2	3	4	5	6	7	8	9	10
2-Cluster	7289.011	45	0.0051	80%	20%								
3-Cluster	6395.487	78	0.0274	43%	38%	19%							
4-Cluster	6184.684	111	0.031	6%	19%	40%	36%						
5-Cluster	6006.379	144	0.0367	10%	11%	40%	34%	6%					
6-Cluster	5988.991	177	0.0278	10%	16%	35%	24%	10%	6%				
7-Cluster	**5956.991**	210	**0.0395**	**10%**	**16%**	**35%**	**21%**	**7%**	**7%**	**4%**			
8-Cluster	6116.545	243	0.0365	10%	16%	36%	21%	7%	4%	4%	3%		
9-Cluster	6256.814	276	0.0491	9%	12%	37%	24%	7%	4%	3%	2%	2%	
10-Cluster	6168.085	309	0.0381	9%	12%	28%	15%	9%	8%	7%	7%	4%	2%

The seven clusters demonstrate the strong correlation between the indicator variables, as each cluster is positioned along a spectrum of preference from many more wolves distributed across the entire state to many fewer wolves restricted to much less of the state, or even a complete elimination of wolves from the state (**Table 37**). In other words, Wisconsinites who would prefer fewer wolves were unlikely to prefer an expansion of wolf-range.

Conversely, those who would prefer more wolves were unlikely to also prefer a reduction in wolf-range. Most notably, the distribution of cluster sizes illustrates a strong central tendency in preferences among Wisconsinites, with relatively small clusters exhibiting strong preferences for extreme increases (Cluster 1 at 10%) or extreme decreases (Cluster 7 at 4%) in wolf population size and range. This result is a stark contrast to the open access public input process where strong bimodal tendencies were observed (Beardmore et al. 2021).

Table 37. *Conditional probabilities distinguishing cluster responses to questions related to desired wolf abundance and distribution.*

		Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	P value	R^2
	Cluster Size	7%	16%	21%	35%	10%	7%	4%		
Desired Population	Many more	**75%**	1%	6%	0%	3%	0%	0%	<.001	.718
	More	25%	**96%**	**81%**	2%	0%	0%	0%		
	About the same	0%	2%	**14%**	**97%**	6%	0%	0%		
	Fewer	0%	0%	0%	1%	**84%**	7%	1%		
	Many fewer	0%	0%	0%	0%	8%	**93%**	3%		
	Zero	0%	0%	0%	0%	0%	0%	**95%**		
Desired Range	All	**56%**	3%	3%	0%	0%	0%	0%	<.001	.567
	Much More	**44%**	0%	8%	0%	0%	0%	0%		
	More	0%	**39%**	**65%**	6%	1%	0%	0%		
	About the Same	0%	**58%**	**25%**	**92%**	**24%**	0%	0%		
	Less	0%	0%	0%	3%	**73%**	8%	0%		
	Much Less	0%	0%	0%	0%	3%	**92%**	10%		
	None	0%	0%	0%	0%	0%	0%	**89%**		

The latent cluster model assigns individuals to clusters based on their preferred wolf population size and distribution, but we also included several respondent characteristics as covariates to better understand who was most likely to belong in each group (**Table 38**). Just as preferences in wolf population size and range tended to align within each cluster, several respondent characteristics aligned along the preference spectrum as well.

Individuals belonging to clusters favoring fewer wolves (Clusters 5 to 7) were also likely to hold less favorable opinions about wolves. They were also more likely believe that current wolf numbers were higher than Wisconsin DNR estimates, and to trust the agency less. These individuals were more likely to report more first- and second-degree encounters with wolves, and to strongly support a regulated wolf hunting season. They were also more likely to be male, and to identify as a *hunter/trapper*, *landowner,* or *farmer/livestock producer*.

Individuals belonging to clusters favoring more wolves (Clusters 1 to 3) generally held more favorable opinions about wolves, and were more likely to underestimate wolf abundance relative to Wisconsin DNR population estimates and to oppose the hunting of wolves. That said, with preferences for more wolves also came with greater trust in the Wisconsin DNR. They were more likely to self-identify as an *animal lover* or *environmental advocate*. Clusters

1 and 2, which held the strongest preferences for more wolves, were more likely to fall within the youngest age bracket of the survey respondents (18-34). Should these preferences hold over time, it is likely that Wisconsinites' social tolerance for wolves may increase in the future, continuing the trend observed by comparing the current survey results to those of the 2014 study (Holsman et al., 2014).

Table 38. *Conditional probabilities of responses predicting cluster membership.*

		Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	P value
Cluster Size		7%	16%	21%	35%	10%	7%	4%	
Perceived Population Size	Less than 400	32%	23%	6%	10%	6%	0%	7%	<.001
	400 to 899	47%	42%	26%	25%	19%	8%	12%	
	900 to 1399	20%	31%	41%	39%	38%	23%	26%	
	1400 to 1899	0%	3%	19%	23%	27%	32%	24%	
	More than 1900	0%	0%	8%	4%	10%	37%	30%	
	Mean Population Estimate	608	734	1249	1132	1375	2162	1856	
Favorability Index	Mean Factor Score	1.02	0.75	0.70	0.01	-0.85	-1.75	-2.60	<.001
First-degree Encounter Index	Mean Factor Score	-0.16	-0.31	-0.30	-0.09	0.49	1.03	1.19	<.001
Second-degree Encounter Index	Mean Factor Score	-0.31	-0.44	-0.11	-0.05	0.60	0.84	0.66	<.001
Agency Trust Index	Mean Factor Score	0.52	0.19	0.13	0.26	-0.32	-1.01	-1.71	<.001
Support/Oppose Hunting Season	Strongly oppose	28%	23%	33%	5%	0%	0%	5%	<.001
	Oppose	31%	21%	27%	9%	1%	0%	1%	
	I am undecided	22%	26%	23%	32%	5%	2%	1%	
	Support	10%	20%	13%	44%	43%	13%	7%	
	Strongly support	9%	10%	4%	9%	51%	84%	86%	
Affinity Group	Animal lover	81%	76%	68%	69%	68%	60%	61%	<.001
	Environmental advocate	88%	83%	57%	48%	40%	24%	31%	<.001
	Farmer or livestock producer	0%	7%	4%	9%	15%	16%	23%	.028
	Hunter and/or trapper	6%	0%	10%	9%	43%	52%	64%	<.001
	Landowner	26%	39%	58%	53%	65%	65%	72%	<.001
	Outdoor enthusiast	76%	57%	72%	64%	76%	69%	68%	<.001
	Tribal member	2%	0%	2%	1%	0%	1%	0%	<.001
Gender	male	37%	75%	45%	48%	57%	65%	78%	<.001
	female	63%	25%	55%	52%	43%	35%	22%	
Age Category	18-34	68%	63%	17%	25%	21%	19%	18%	<.001
	35-44	15%	21%	11%	19%	14%	14%	23%	
	45-54	10%	9%	17%	15%	21%	25%	14%	
	55-64	3%	7%	26%	18%	22%	23%	17%	
	65+	5%	1%	30%	23%	22%	20%	28%	

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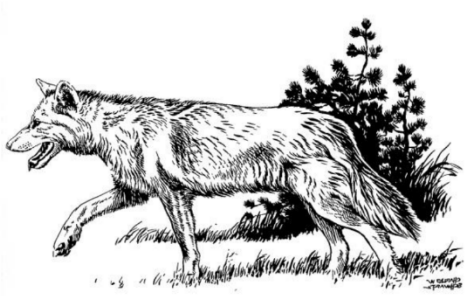
APPENDIX A: Survey Instrument

Wisconsin Wolf Opinion Survey

Gray wolves are native to Wisconsin. They were eliminated from the state in the early 1900s by a bounty system and reductions of habitat and prey. Beginning in about 1970, wolves returned to Wisconsin naturally from wolf populations in Minnesota. Federal law protected wolves beginning in 1973, allowing their population to grow. We now have wolf packs living in about half of the counties in Wisconsin. In the last decade, wolves in Wisconsin have undergone several legal status changes. Some years they have been protected by federal law and other years they have been managed under state law, including the implementation of four regulated wolf harvest seasons.



Wolves and wolf management evoke strong feelings among people and a diversity of views. Understanding those views is important to us.

1. Are you willing to participate in this study of public opinions regarding wolves and wolf management?

☐ **Yes >>> Go to next page and take survey**

☐ **No** >>> If NOT, please help us by taking 60 seconds to answer questions 1a-1d and then returning this questionnaire. *Thank you for sending this questionnaire back.*

1a. Why have you declined to participate? Check all that apply.

- ☐ I am not interested in the topic.
- ☐ I trust the DNR to manage wolves without my input.
- ☐ I feel my opinion will be ignored.
- ☐ I feel I do not know enough to participate.
- ☐ I am too busy.
- ☐ Other: _____

1b. Are you? ☐ Male ☐ Female ☐ Other/prefer not to say

1c. Are you a hunter? ☐ Yes ☐ No

1d. What is your age? _____ years

<< SURVEYID >>

YOUR THOUGHTS ABOUT WOLVES

2. To what extent do you agree or disagree with the following statements about wolves? *Check one box in each row.*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Wolves are special animals that deserve our admiration.	☐	☐	☐	☐	☐
Wolves provide no benefits to people.	☐	☐	☐	☐	☐
People and wolves should be able to co-exist.	☐	☐	☐	☐	☐
Wolves are culturally important.	☐	☐	☐	☐	☐
The previous generations were right in eliminating wolves from the landscape.	☐	☐	☐	☐	☐
It is important to maintain a wolf population in Wisconsin.	☐	☐	☐	☐	☐
Predators like wolves keep nature in balance.	☐	☐	☐	☐	☐
Wolves have negatively affected deer hunting in Wisconsin.	☐	☐	☐	☐	☐
Wolves are a nuisance for people.	☐	☐	☐	☐	☐

3. During the past three years, to what extent have you been following the news about wolf management in Wisconsin? *Check one.*

☐ Not at all ☐ A little ☐ Some ☐ A lot

4. When you think about wolves in Wisconsin, what is your best guess for how many wolves are currently in the state? *Check one.*

☐ Fewer than 400
☐ 400-899 wolves
☐ 900-1,399 wolves
☐ 1,400-1,899 wolves
☐ More than 1,900 wolves (Your estimate: _____)
☐ Not sure

5. Considering your experiences with wolves in Wisconsin, please answer the questions below by checking the box that best applies to you. *Check one box in each row.*

About how many times have.....	**Never**	**Once**	**More than once**	**Not sure**
you seen wolf tracks.....	☐	☐	☐	☐
you heard a wolf howl	☐	☐	☐	☐
you seen a wolf in the wild	☐	☐	☐	☐
you had a domestic animal attacked (non-lethal) or harassed by a wolf.....	☐	☐	☐	☐
someone you know had a domestic animal attacked (non-lethal) or harassed by a wolf.....	☐	☐	☐	☐
you had a domestic animal killed by a wolf.....	☐	☐	☐	☐
someone you know had a domestic animal killed by a wolf.....	☐	☐	☐	☐

WOLF POPULATION SIZE AND LOCATION

Please read: Take a moment to review the map. The shading represents counties with known, established wolf packs, keeping in mind that most wolves are concentrated in northern or central counties with more forest cover. Counties that are shown as white do not have established wolf packs and much of this area has unsuitable habitat (i.e., urban areas).

6. In **my county of residence** I would like to see the wolf population…. *Check one.*
   - ☐ Increased
   - ☐ Maintained about the same
   - ☐ Decreased
   - ☐ Eliminated
   - ☐ Not sure

7. Do you regularly visit a vacation home, cabin, cottage, or hunting land **in a shaded county** on the map? *Check one.*
   - ☐ Yes → *If yes*, write in which county: _____
   - ☐ No

What are your preferences for wolves in Wisconsin?

8. Compared to the current level, I would like to have _____ wolves in the state. *Check one.*

Many more	More	About the same number of	Fewer	Many fewer	Zero	I don't know
☐	☐	☐	☐	☐	☐	☐

9. Compared to the current geographic distribution, I would like to see wolves occupy _____ of the state. *Check one.*

All	Much more	More	About the same amount of	Less	Much less	None	I don't know
☐	☐	☐	☐	☐	☐	☐	☐

SAFETY PERCEPTIONS

10. When you think about wolves in Wisconsin, to what extent do you experience the following feelings? *Check one box in each row.*

	None	A little	Some	A lot	Extreme
Anger	☐	☐	☐	☐	☐
Excitement	☐	☐	☐	☐	☐
Appreciation	☐	☐	☐	☐	☐
Frustration	☐	☐	☐	☐	☐

11. Please indicate the extent to which you agree or disagree with the following statements about wolves. *Check one box in each row.*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Does not apply
I would worry about *my* personal safety while outdoors in areas where wolves live.	☐	☐	☐	☐	☐	☐
I would worry about the safety of *my* pets while outdoors in areas where wolves live.	☐	☐	☐	☐	☐	☐
I would worry about the safety of children who are outdoors in areas where wolves live.	☐	☐	☐	☐	☐	☐

OPINIONS ABOUT WOLF MANAGEMENT OBJECTIVES

12. How important are decisions regarding wolf management in Wisconsin to you personally? *Check one.*

- □ Very important
- □ Somewhat important
- □ Neither important nor unimportant
- □ Somewhat unimportant
- □ Very unimportant

13. Please indicate the extent to which you agree or disagree with the following statements regarding the Department of Natural Resources (DNR) and the wolf management program. *Check one box in each row.*

With respect to managing the wolf population in our state, I feel that the Wisconsin DNR…	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**
can be trusted to make decisions about wildlife management that are good for the resource.	□	□	□	□	□
appropriately uses science and data in decision-making.	□	□	□	□	□
listens to the concerns of citizens.	□	□	□	□	□
uses reliable methods to estimate wolf populations in Wisconsin.	□	□	□	□	□
shares similar values as me.	□	□	□	□	□
takes similar actions as I would.	□	□	□	□	□
shares similar goals as me.	□	□	□	□	□

14. Current Wisconsin state law mandates that when the wolf is not on the federal or state endangered species list, the Department of Natural Resources must allow the hunting and trapping of wolves. Prior to receiving this survey, were you aware that state law requires a wolf hunting and trapping season? *Check one.*

□ Yes □ No □ Not sure

15. To what extent do you support or oppose having a regulated wolf hunting and trapping season in Wisconsin to manage wolf populations? *Check one.*

- ☐ Strongly oppose → ***proceed to Question 16***
- ☐ Oppose → ***proceed to Question 16***
- ☐ I am undecided → ***skip ahead to Question 17***
- ☐ Support → ***skip ahead to Question 17***
- ☐ Strongly support → ***skip ahead to Question 17***

16. For what reasons do you oppose a regulated wolf hunting and trapping season in Wisconsin? *Check all that apply.*

- ☐ I oppose all forms of hunting.
- ☐ I support some forms of hunting, but not for wolves.
- ☐ I oppose the use of hounds to track and harvest wolves in Wisconsin.
- ☐ I oppose the use of traps to harvest wolves in Wisconsin.
- ☐ I am worried that wolves will become endangered again.
- ☐ Wolves are culturally important to Native Americans and hunting them is offensive.
- ☐ I do not think that we need to hunt wolves.
- ☐ I do not think that hunting wolves will reduce wolf-human conflicts.
- ☐ Other: _____

17. When it comes to managing wolves in Wisconsin, how important do you feel it is for the Wisconsin DNR to….? *Check one box in each row.*

	Not at all important	**Slightly important**	**Moderately important**	**Very important**
Create refuge areas to protect wolves from harvest or removal.	☐	☐	☐	☐
Monitor wolf numbers and distribution.	☐	☐	☐	☐
Educate people about wolves and wolf behavior.	☐	☐	☐	☐
Reduce wolf populations in areas of high wolf-human conflicts.	☐	☐	☐	☐
Reduce wolf predation impacts on white-tailed deer and elk.	☐	☐	☐	☐
Conduct research on practices to prevent wolf-human conflicts.	☐	☐	☐	☐
Compensate livestock producers for animals lost to wolves.	☐	☐	☐	☐
Compensate hunters for hunting dogs lost to wolves on public lands.	☐	☐	☐	☐

18. We would like to know your level of support for using three different options to try to reduce various kinds of human-wolf conflicts.

	Check this box only	**OR**	**Check all that apply**			
Type of human-wolf conflicts	**I do not support the killing of wolves for this type of conflict.**		**I support the killing of individual wolves by wildlife professionals for this type of conflict.**	**I support issuing permits to landowners to kill individual wolves for this type of conflict.**	**I support a public wolf hunting and trapping season for regional wolf population reduction for this type of conflict.**	**I am unsure.**
Wolves attacking domestic livestock (cattle, sheep).	☐	OR	☐	☐	☐	☐
Wolves attacking hunting dogs on public lands.	☐	OR	☐	☐	☐	☐
Wolves regularly approaching humans.	☐	OR	☐	☐	☐	☐
Wolves attacking pets near residences.	☐	OR	☐	☐	☐	☐

GENERAL INFORMATION

19. Are you? ☐ Male ☐ Female ☐ Other/prefer not to say

20. What is your age? _____ years

21. Please indicate any of the following labels that describe you. *Check all that apply.*

☐ Animal lover
☐ Environmental advocate
☐ Farmer or livestock producer
☐ Hunter and/or trapper
☐ Landowner
☐ Outdoor enthusiast
☐ Tribal member
☐ Other:_____

22. Please use the space below to write any additional comments or thoughts you would like to share regarding wolves or wolf management.

This publication is available upon request in alternate formats for visually impaired persons. Please contact Lauren Bradshaw at (608) 982-1548 to request an alternate format.

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Page 8