

Grizzly Bear Outreach Project Evaluation

Baseline Survey Report

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Jim Davis
Conservation Partnership Center
2219 Fir Street S.E.
Olympia, WA 98501
jimdavispc@comcast.net

Chris Morgan
Insight Wildlife Management
P.O. Box 28656
Bellingham, WA 98228
chrismorgan@insightwildlife.com

www.bearinfo.org

Background on Grizzly Bears and Their Recovery in the North Cascades

Before Europeans arrived, grizzly bears were thriving in all western states ranging as far south as Mexico. Population levels in the lower 48 states are estimated to have been between 50,000 to 100,000 bears. Grizzly bears played a critical role in maintaining natural ecosystems throughout the west. Native Americans co-existed with grizzly bears for thousands of years. During a 32-year period in the mid 1800's, 3,788 grizzly bear hides were processed through Hudson Bay forts in the North Cascades area. The decimation of the grizzly bear population continued for more than a century with commercial trapping, habitat loss, and unregulated hunting the leading causes of mortality.

Currently, grizzly bears are present in less than 2% of their former range, with fewer than 1,100 bears in the lower 48 states. The estimated resident population in Washington's North Cascades is 5 to 20 bears. The estimated resident population in British Columbia's North Cascades is also 5 to 20 bears. There may be some movement of bears across the Canadian/US border.

Grizzly bears have good eyesight (much like humans), an excellent sense of smell (better than a dog), and very good hearing. They are intelligent, curious, and have a good memory (particularly regarding food sources). The standing behavior often shown in magazines is not a threatening posture, but instead is the bear's way of fully viewing its surroundings. The grizzly bear's claws are used mainly for digging roots.

Grizzly bears are most often found on upper elevation slopes, in avalanche chutes, and in lower elevation wetlands. Females usually require 50-300 square miles of range, while males require 200-500 square miles. Individual bear's ranges overlap, with several bears sharing an area. Grizzly bears den from late October to November and leave dens in late March to April.

Grizzly bears are omnivores with a typical diet of less than 10% fish or meat. Much of the meat is carrion from winter killed deer and elk. Grizzly bears in coastal areas are an exception: for these bears, fish (salmon) comprise a larger proportion of their diet. More than 100 plants in the North Cascades have been identified as part of the grizzly bear's diet. Grizzly bears visit wetlands in the spring for plants high in nutrients. Summer foods include thistle, cow parsnip, mushrooms, roots, spawning fish and wild berries. In late summer, they add clusters of moths from high-elevation areas. Fall foods include berries (very important), plants, and ants.

In 1975, the grizzly bear was listed as "Threatened" under the US Endangered Species Act. In 1983, the Interagency Grizzly Bear Committee (IGBC) was established with the goal of recovering the grizzly bear population in the lower 48 states. The IGBC includes representatives from the US Fish and Wildlife Service, National Park Service, USDA Forest Service, US Geological Survey, state Fish and Wildlife Departments, and the British Columbia Ministry of Water, Air, and Land Protection. The IGBC was charged with identifying good areas where recovery should occur and the specific actions to recover the population.

The IGBC identified six ecosystems for recovery, ranging from Yellowstone to the North Cascades. The North Cascades recovery area is bounded by the Canadian border, approximately the west boundary of the Mount Baker/Snoqualmie National Forest, the I-90 corridor, and approximately the east border of the Wenatchee/Okanogan National Forest and the Loomis State Forest. The North Cascades recovery area is one of the largest in the US, encompassing nearly 10,000 square miles. More 40% of the recovery area is designated wilderness, 90% is federally owned, and 68% has no motorized access.

Grizzly bears are often portrayed by the media as voracious predators. In fact, they are very reclusive and usually not aggressive. They may act aggressive when they are startled or feel threatened by human actions around cubs or food sources. Much misinformation about grizzly bears circulates in local communities. The public has a poor understanding of how humans and grizzly bears can safely co-exist. There is a clear need for education about grizzly bears in the North Cascades.

The Grizzly Bear Outreach Project (GBOP) is an independent project guided and implemented by community members. The primary purpose of the GBOP is to provide accurate information on grizzly bears and the grizzly bear recovery process so that local residents can make more informed and effective comments during a future EIS process on grizzly bear recovery. The GBOP also provides education on how local residents can co-exist safely with bears in the North Cascades.

GBOP activities in the North Cascades have been funded by multiple partners including the US Fish and Wildlife Service, USDA Forest Service, National Park Service, Interagency Grizzly Bear Committee, Washington Department of Fish and Wildlife, Northwest Ecosystem Alliance, Defenders of Wildlife, Woodland Park Zoo, and Seattle City Light.

The GBOP was first implemented in 2002 as a pilot in Okanogan County (the northeastern portion of the recovery area). The east side GBOP has been continued, while the project has also been expanded to the west side of the North Cascades in Skagit and Whatcom Counties. The west side project includes a rigorous structured evaluation funded by the Skagit Wildlife Research Grant program managed by Seattle City Light. The two-year evaluation consists of baseline and follow-up telephone surveys, quarterly key informant interviews, and a media content analysis. The results reported in this document are derived from the baseline survey conducted in the fall of 2003.

Survey Methods

Study Design: The information provided in this report is from the baseline survey of the Seattle City Light funded evaluation of the GBOP in Whatcom and Skagit Counties. The overall pre-post evaluation of the GBOP education program uses a split-panel study design to achieve adequate statistical power, while testing to determine whether participation in the baseline interviews will bias responses in the follow-up interviews. A total of 508 Skagit and Whatcom County adults were randomly selected to complete the baseline interview. A randomly selected subset of 330 from this baseline group will be assigned to the panel. Panel members will be called again in 18 months to complete the follow-up interview. Allowing for about 25% loss to follow-up, we estimate 250 completed follow-up interviews with panel members. An additional 250 adults (not interviewed at baseline) will be randomly selected to also participate in the follow-up interviews. If there are no significant statistical differences between the panel and non-panel respondents at follow-up, then the two samples will be merged for comparison to the baseline sample using statistical methods for cross-sectional surveys. We estimate at least 500 total completed interviews at follow-up for this analysis. This study design will also enable us to control for individual effects by comparing baseline and follow-up responses of panel members (i.e., statistical methods for cohorts). Allowing for 25% loss to follow-up among panel member, we estimate a sample size of 250 for this analysis. This study design provides an eighteen-month period for implementation of GBOP education activities and consequent changes in public knowledge, attitudes, and beliefs regarding grizzly bear recovery.

Sample Selection

GBOP education activities are expected to have an impact on all residents in Skagit and Whatcom Counties. However, the study evaluation is focused only on rural residents who live within 15 miles of the North Cascades Grizzly Bear Recovery Area (i.e., those most likely to be effected by grizzly bear recovery). All participants in the survey live east of Highway 9 in Skagit and Whatcom Counties. Limitation of survey respondents to this geographic area was facilitated through use of census data and screener questions at the beginning of the survey questionnaire. The survey was limited to adults age 18 and older.

Survey Contact Method

A telephone survey method was used to interview study participants. The telephone survey included random digit dialing, standardized callback procedures (i.e., five calls distributed over weekends, weekdays, and

evenings), and supervision methods that assure quality control. Each telephone interview took about 10 to 15 minutes to complete.

Questionnaire Content

Content for the telephone interview questionnaire was developed by Jim Davis based on information obtained from past qualitative interviews conducted in Skagit County, an earlier telephone survey questionnaire developed by Responsive Management to assess attitudes toward grizzly bears, and a review of secondary documents that reveal public concerns about grizzly bear recovery (e.g., comments on grizzly bear recovery from the Selway-Bitterroot Recovery Area). Questionnaire items were reviewed by the GBOP Steering Committee (i.e., representatives from collaborating agencies and other funding partners). The questionnaire focused primarily on knowledge and attitudes regarding grizzly bears and grizzly bear recovery in the North Cascades. Response options on attitude questions included *strongly agree*, *moderately agree*, *neither agree nor disagree*, *moderately disagree*, *strongly disagree*, and *don't know*. Several questions examined respondent trust of wildlife agencies and willingness to work with the agencies to develop acceptable grizzly bear recovery strategies. One question identified respondent sources of information on grizzly bears. Demographic information was also collected.

Survey Implementation

The baseline survey telephone interviews were conducted during September and October of 2003. Responsive Management (Harrisonburg, Virginia) was contracted to implement the telephone survey. The overall participation rate in the survey (i.e., percent of randomly selected residential phone numbers that resulted in a completed interview) was 43%. However, this included answering machines and busy signals where an individual person was not directly contacted. The participation rate for individuals actually contacted was 62%, with 299 individuals declining to participate at the beginning of the interview and 19 individuals terminating in the middle of an interview. Most of the early refusals occurred before the individual even knew the topic of the survey. Generally, most individuals who refuse to participate after hearing the topic are not interested in the topic. Most individuals with well-formed opinions on a survey topic will complete a telephone questionnaire.

Data Analysis

SAS Programs were used to manage the survey data and develop frequency tables on participant responses to questionnaire items. The large sample size for the baseline survey (n=508) provided good statistical power for analyzing the results. The results provided in this report are accurate to within plus or minus 4%.

In the final analysis of baseline and follow-up survey data, linear regression and logistic regression will be used to identify predictors of knowledge and attitudes. A T-test will be used to analyze pre-post changes in respondent knowledge and attitudes assessed with interval or ratio scales. A Chi-square test will be used to analyze changes in dichotomous variables.

Data Presentation

In this report, response frequencies for all questionnaire items in the survey are provided in bar charts (figures 1-42) with the numbers after each bar indicating the percent of survey participants that provided that response. Information on selected representative questionnaire items by demographic characteristics are provided in tables 1-18. The numbers in the tables are the actual numbers of individual participants in the survey (by demographic group) that provided the indicated responses. The percentages below the numbers in the body of the tables are the percentages within a demographic segment that provided that response. For example, table 1 shows that 49.81% of Skagit County residents were “strongly supportive” of grizzly bear recovery. Percentages at the bottom of each table indicate the percent of the total sample (n=508) that was in each of the demographic categories. For example, table 1 shows that 267 individuals (i.e., 52.56% of the participants in the survey) were from Skagit County.

Survey Results

Questionnaire Item Response Frequencies

Knowledge About Grizzly Bears: Figures 1 – 14

Information Sources on Grizzly Bears: Figure 15

Attitudes Toward Grizzly Bears: Figures 16 - 25

Attitudes Toward Grizzly Bear Recovery: Figures 26 – 32

Attitudes Toward Wildlife Management Agencies: Figures 33 – 37

Demographics of Survey Respondents: Figures 38 - 42

Support for Grizzly Bear Recovery by Demographic Characteristics

Support for Grizzly Bear Recovery by County: Table 1

Support for Grizzly Bear Recovery by Gender: Table 2

Support for Grizzly Bear Recovery by Level of Education: Table 3

Support for Grizzly Bear Recovery by Age: Table 4

Support for Grizzly Bear Recovery by Family Income Dependent on Forest: Table 5

Support for Grizzly Bear Recovery by Camped, Hunted, or Fished in North Cascades: Table 6

Support for “There Is No Need for Grizzly Bear Recovery” Statement by Demographic Characteristics

Support for Grizzly Bear Recovery by County: Table 7

Support for Grizzly Bear Recovery by Gender: Table 8

Support for Grizzly Bear Recovery by Level of Education: Table 9

Support for Grizzly Bear Recovery by Age: Table 10

Support for Grizzly Bear Recovery by Family Income Dependent on Forest: Table 11

Support for Grizzly Bear Recovery by Camped, Hunted, or Fished in North Cascades: Table 12

Support for “Grizzly Bear Inherent Right to Live in North Cascades” Statement by Demographic Characteristics

Support for Grizzly Bear Recovery by County: Table 13

Support for Grizzly Bear Recovery by Gender: Table 14

Support for Grizzly Bear Recovery by Level of Education: Table 15

Support for Grizzly Bear Recovery by Age: Table 16

Support for Grizzly Bear Recovery by Family Income Dependent on Forest: Table 17

Support for Grizzly Bear Recovery by Camped, Hunted, or Fished in North Cascades: Table 18

Figure 1: Prior to this survey, would you say you have heard a great deal, a moderate amount, a little, or nothing about this grizzly bear recovery program?

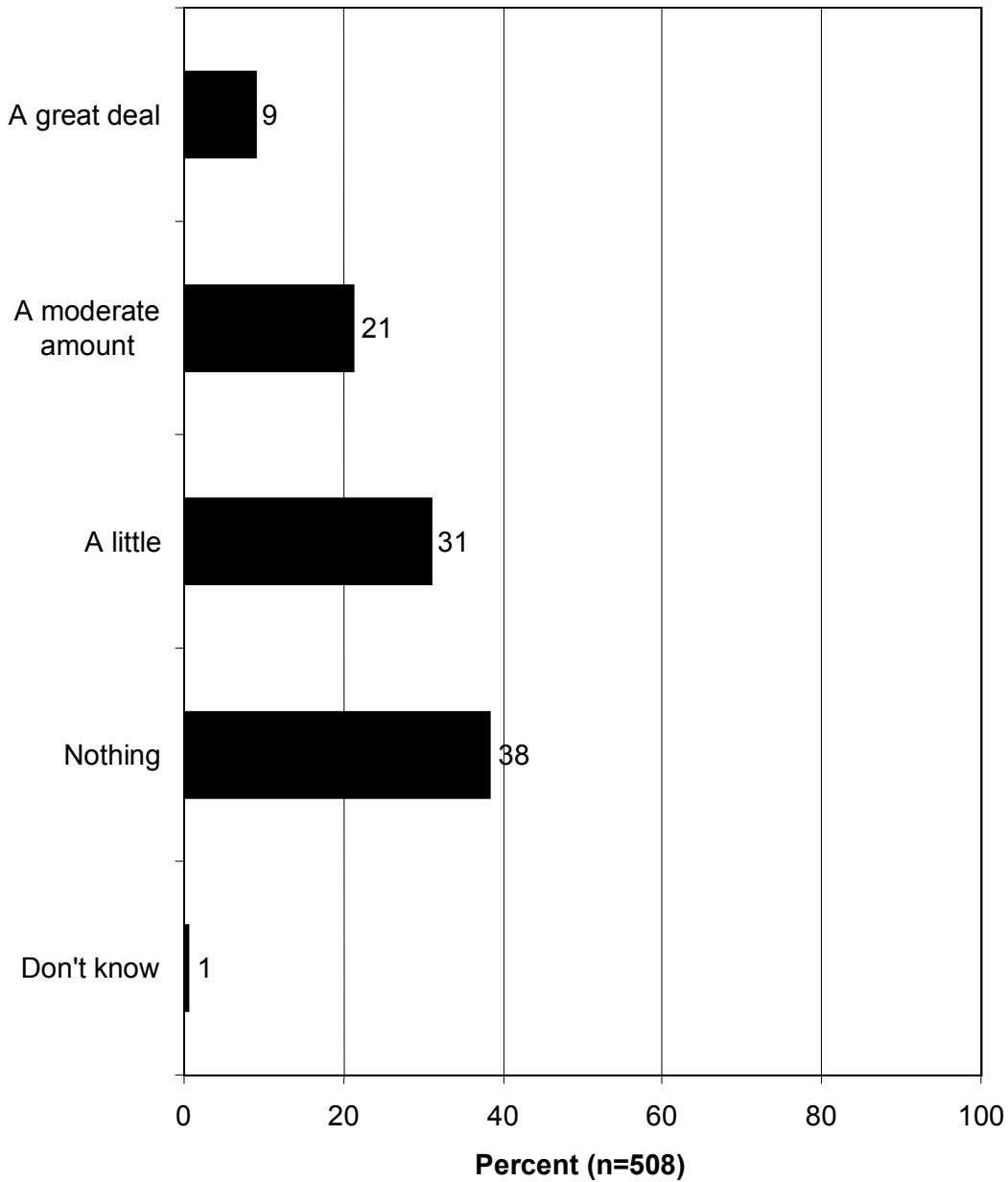


Figure 2: How common would you say grizzly bears were in the North Cascade Mountains before the early 1900s? Would you say grizzly bears were abundant, common, rare, or absent from the North Cascades?

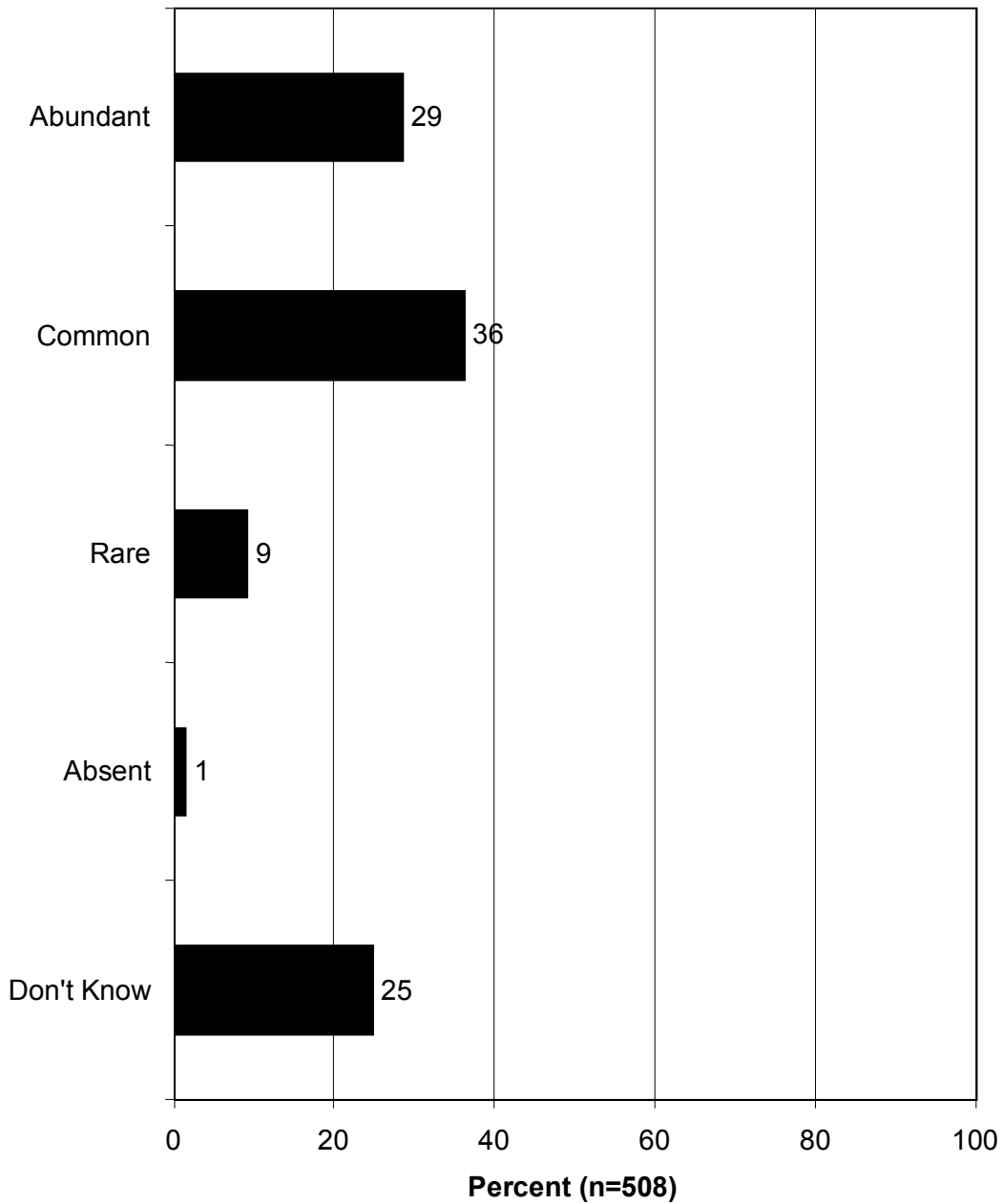


Figure 3: How common would you say grizzly bears are in the North Cascades today? Would you say grizzly bears are abundant, common, rare, or absent from the North Cascades?

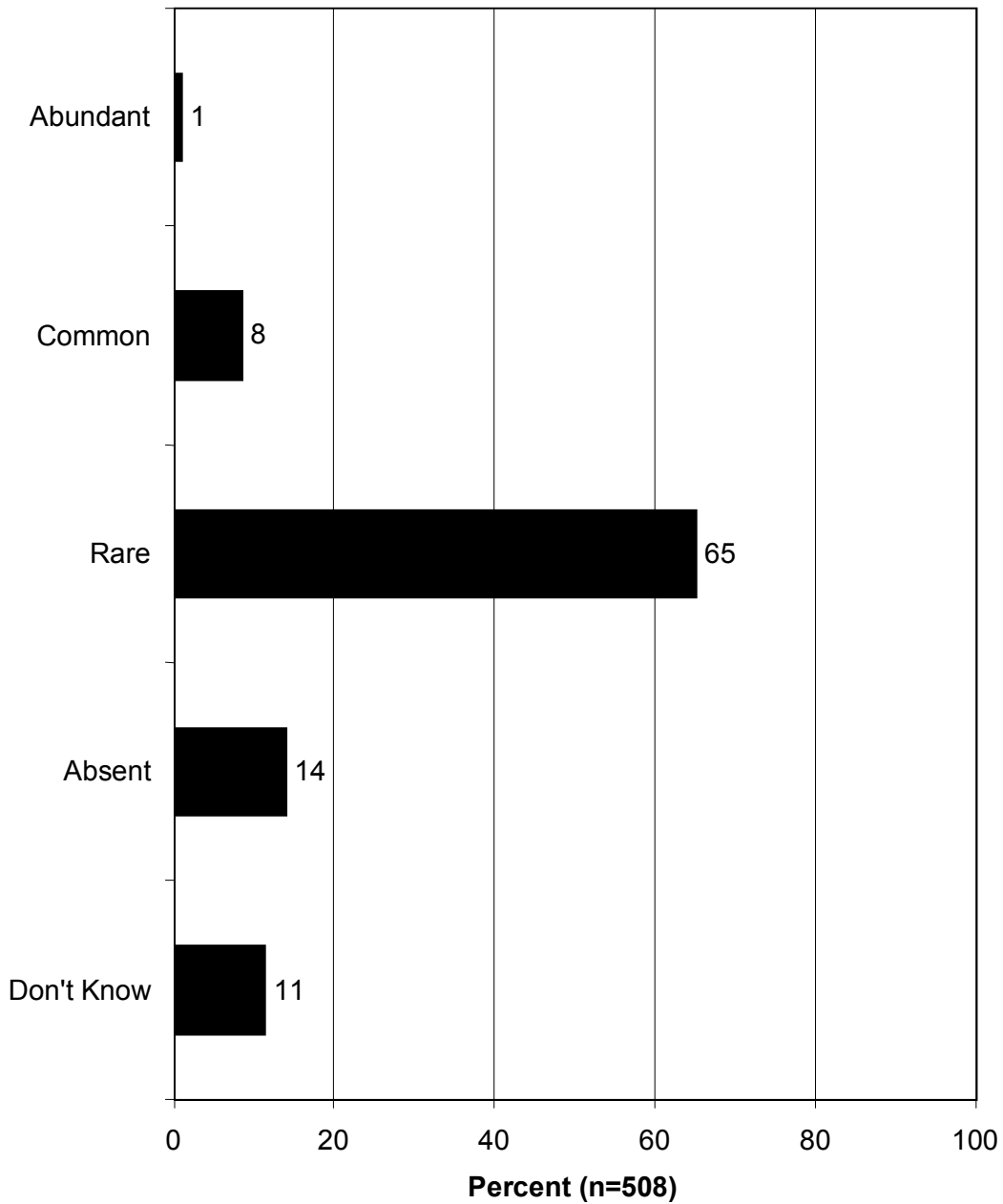


Figure 4: What is your estimate of the current number of grizzly bears in the North Cascade Mountains?

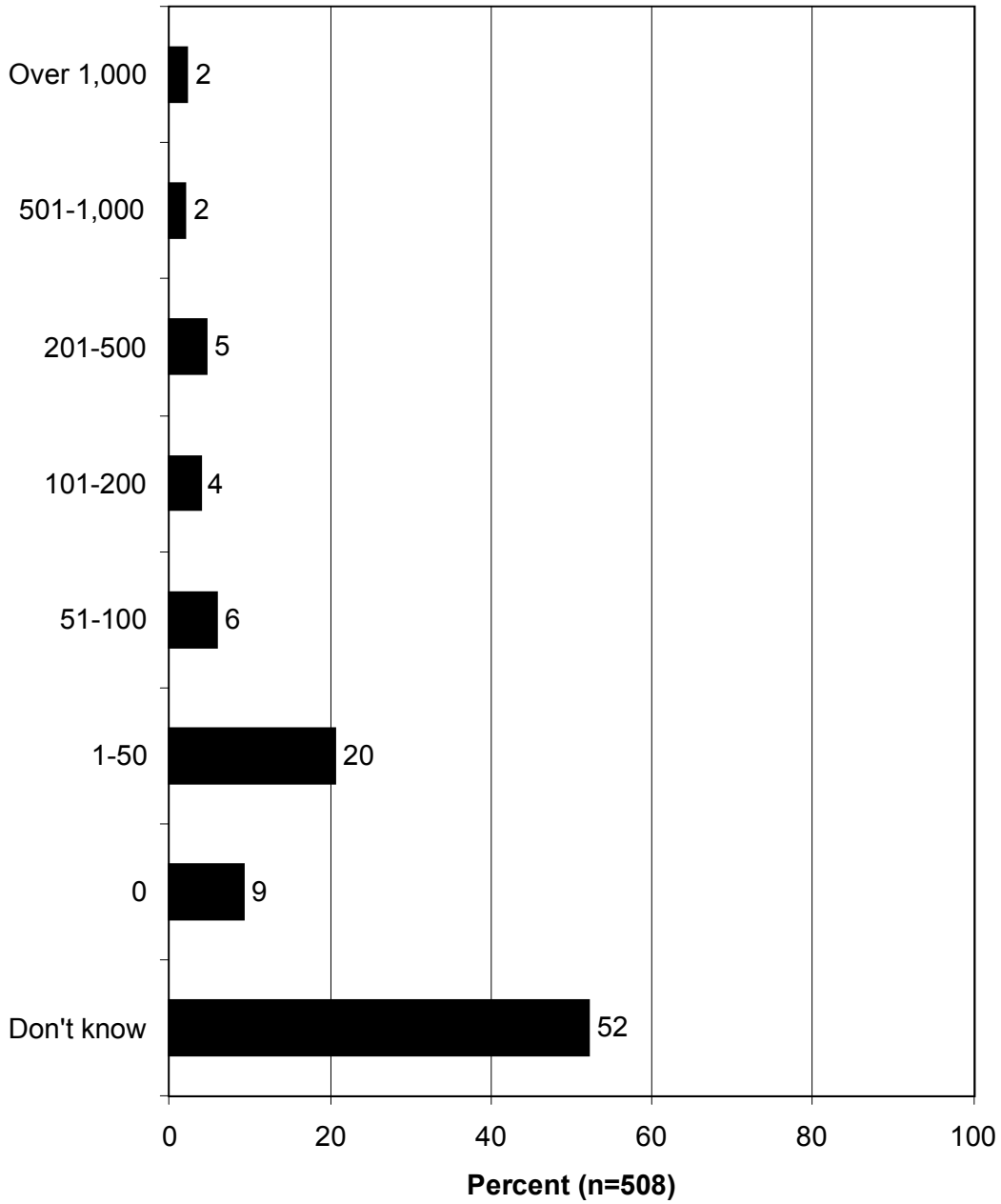


Figure 5: How good do you think the food source is for grizzly bears in the North Cascade Mountains? Would you say it is excellent, good, adequate, poor, or very poor?

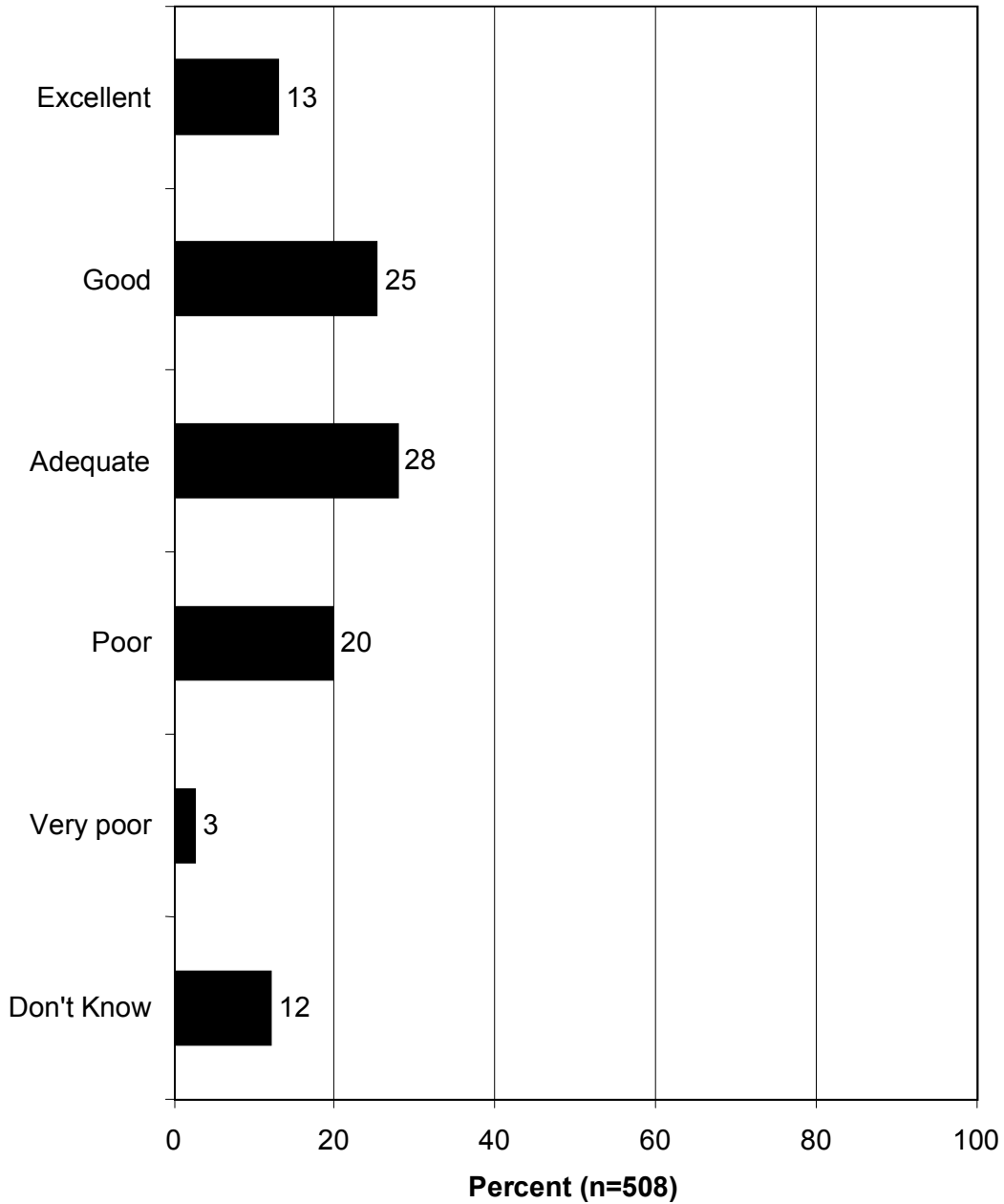


Figure 6: For grizzly bears in the North Cascades, what percent of their diet do you think is meat or fish?

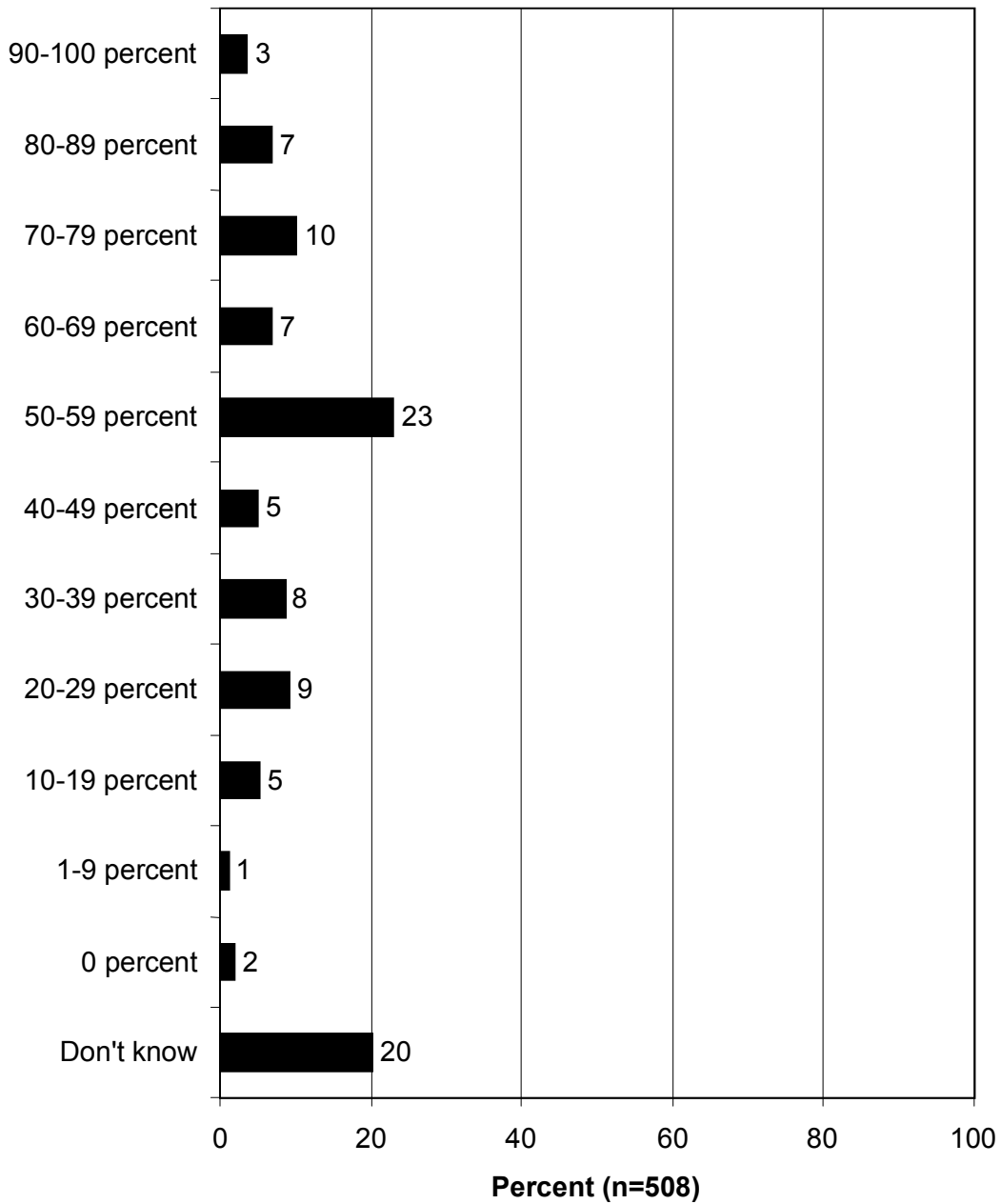


Figure 7: About how many grizzly bears do you think there will need to be in the U.S. portion of the North Cascade Mountains before the population is fully recovered?

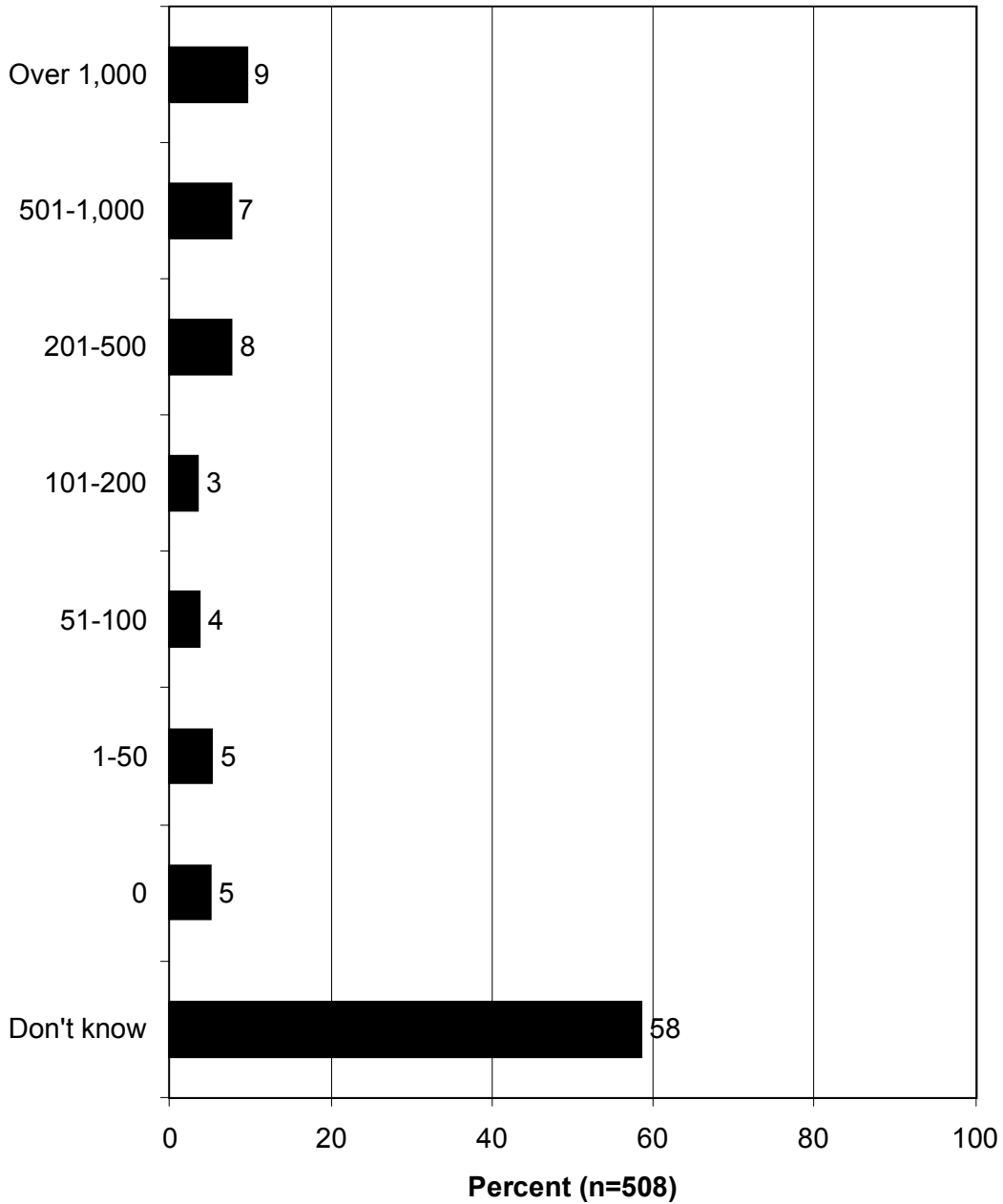


Figure 8: About how many years do you think it will take for the grizzly bear population to fully recover in the North Cascades?

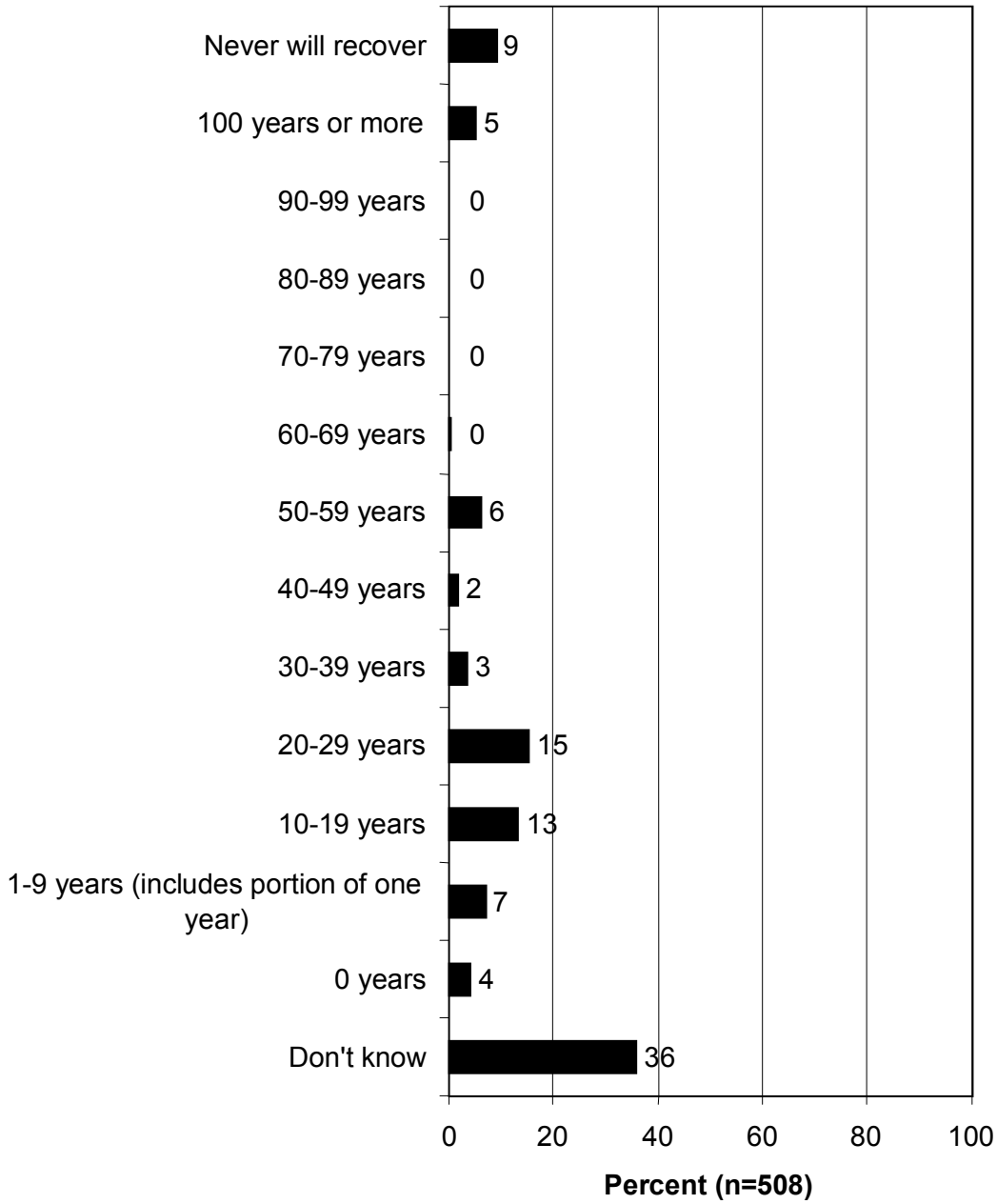


Figure 9: Which of the following best describes the way in which campers should store food and garbage when camping in bear country?

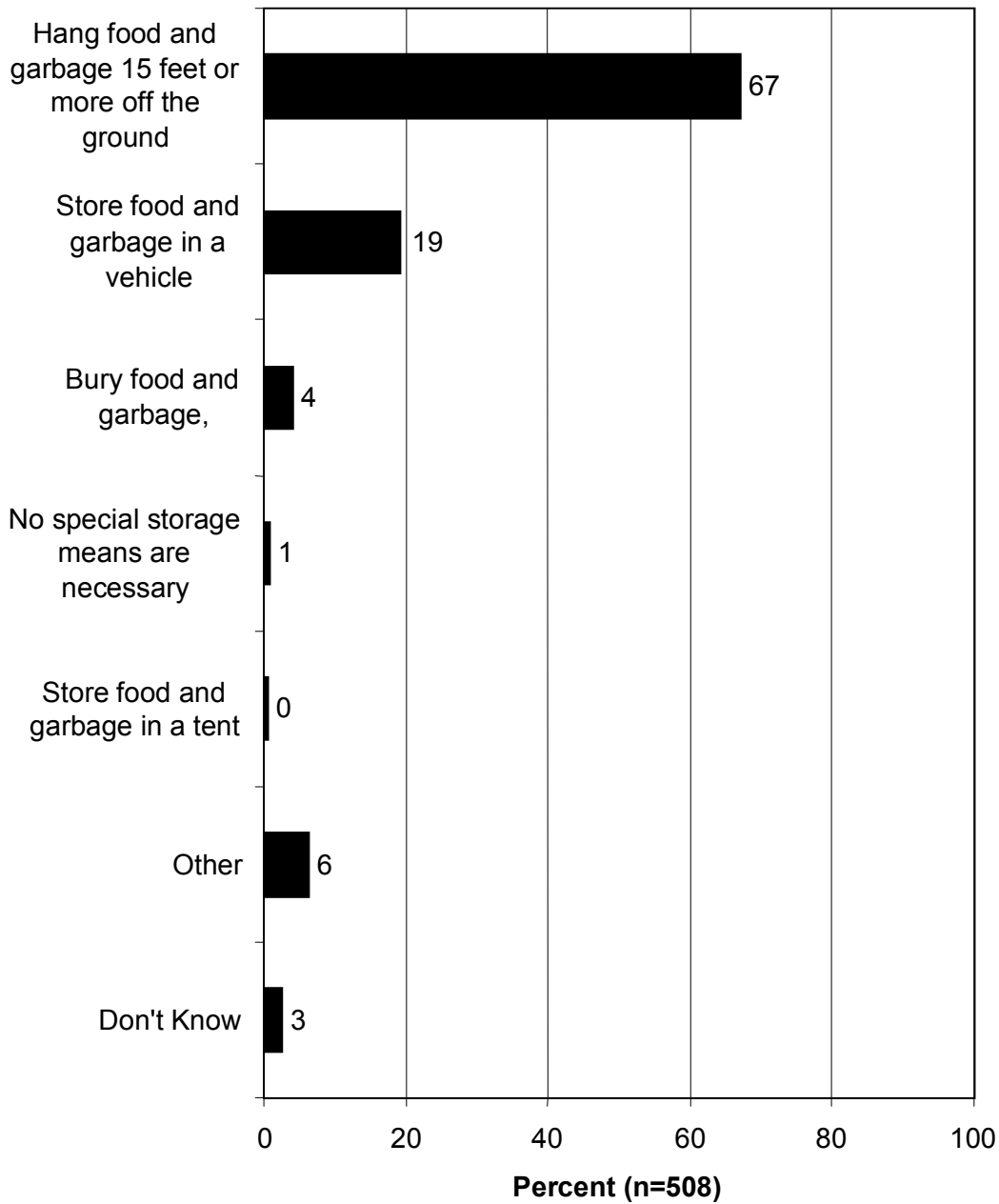


Figure 10: Grizzly bears may attack humans for a number of reasons. Please tell me the two most likely reasons why you think a grizzly bear may attack a human?

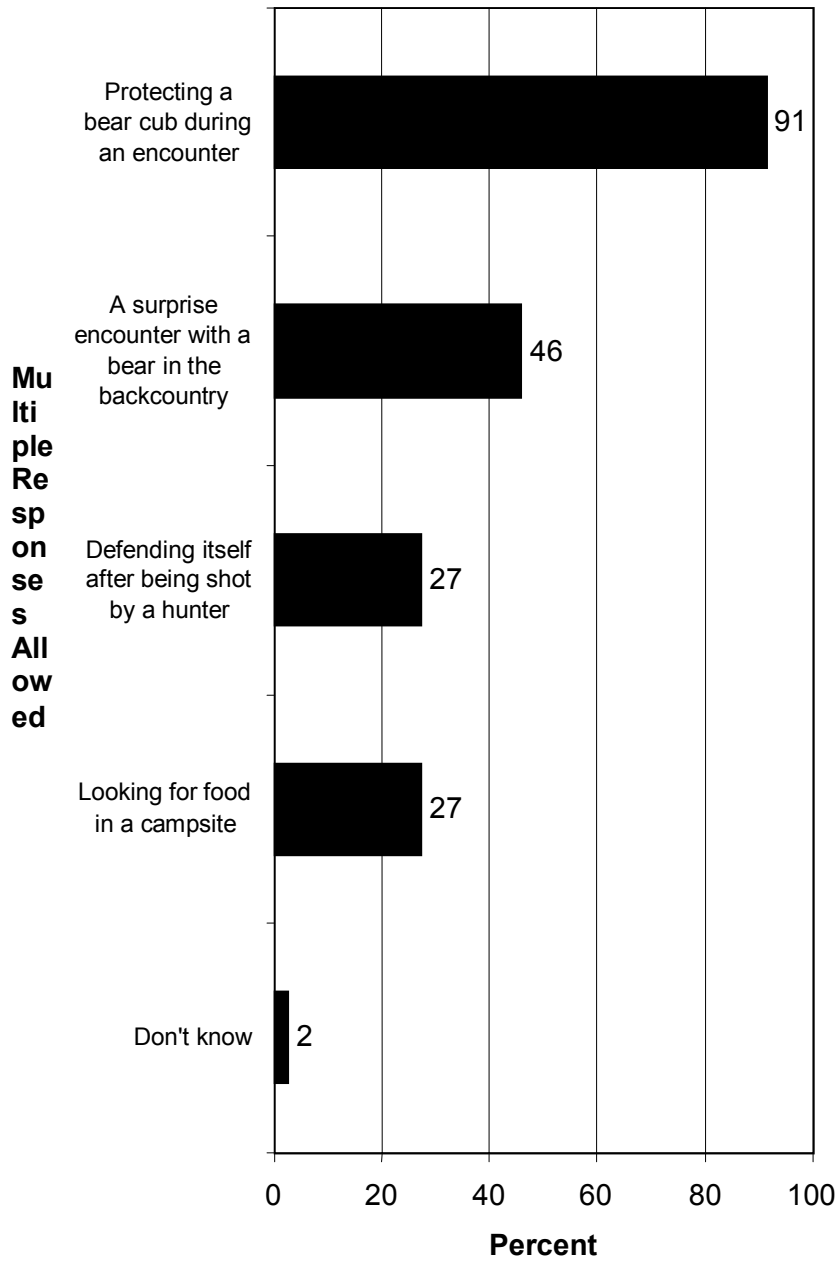


Figure 11: Since grizzly bears are protected under the endangered species act, do you think it is legal or illegal to kill a grizzly bear in self-defense or in defense of other people?

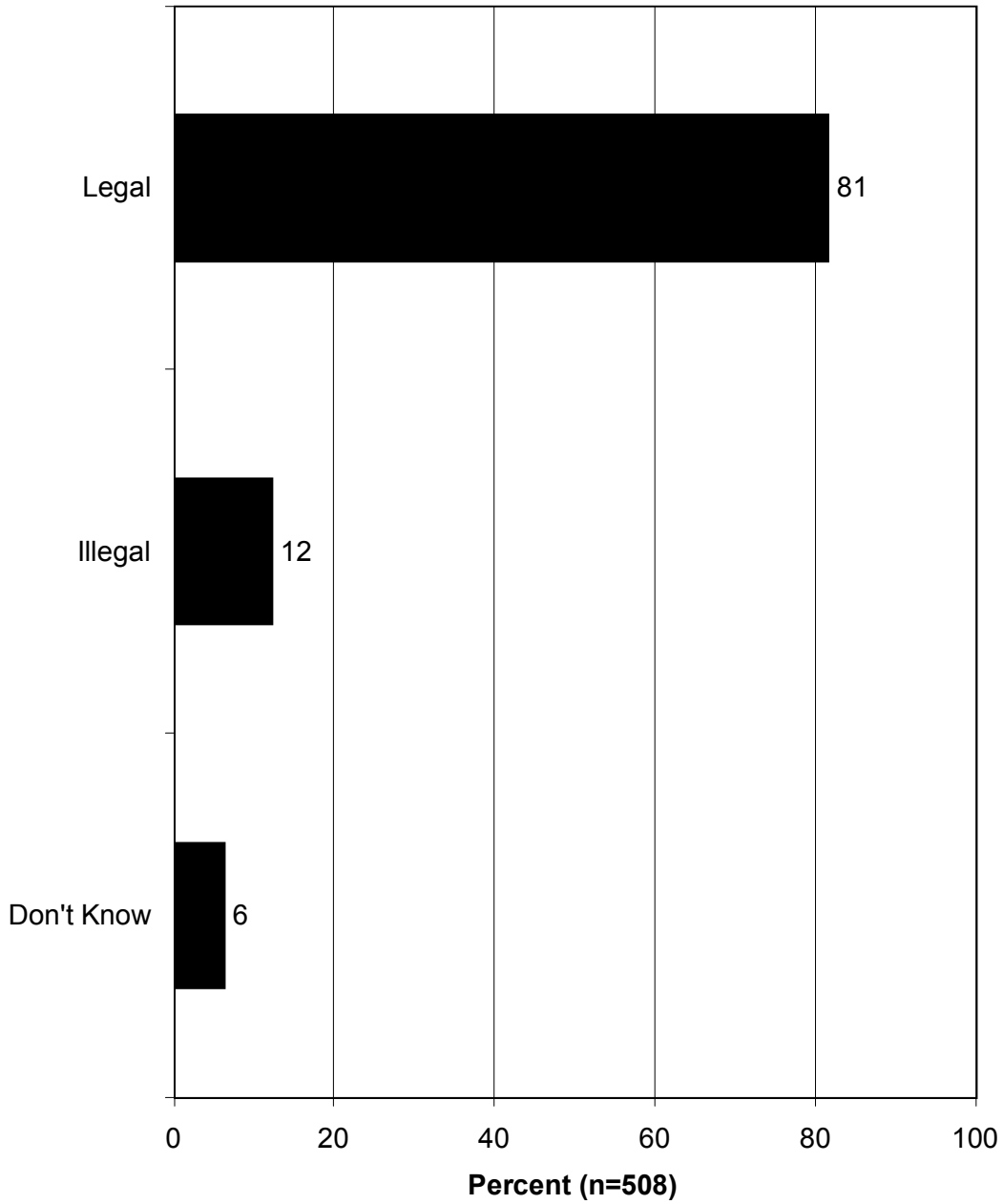


Figure 12: Since grizzly bears are protected under the endangered species act, do you think it is legal or illegal to kill a grizzly bear to stop an attack on livestock?

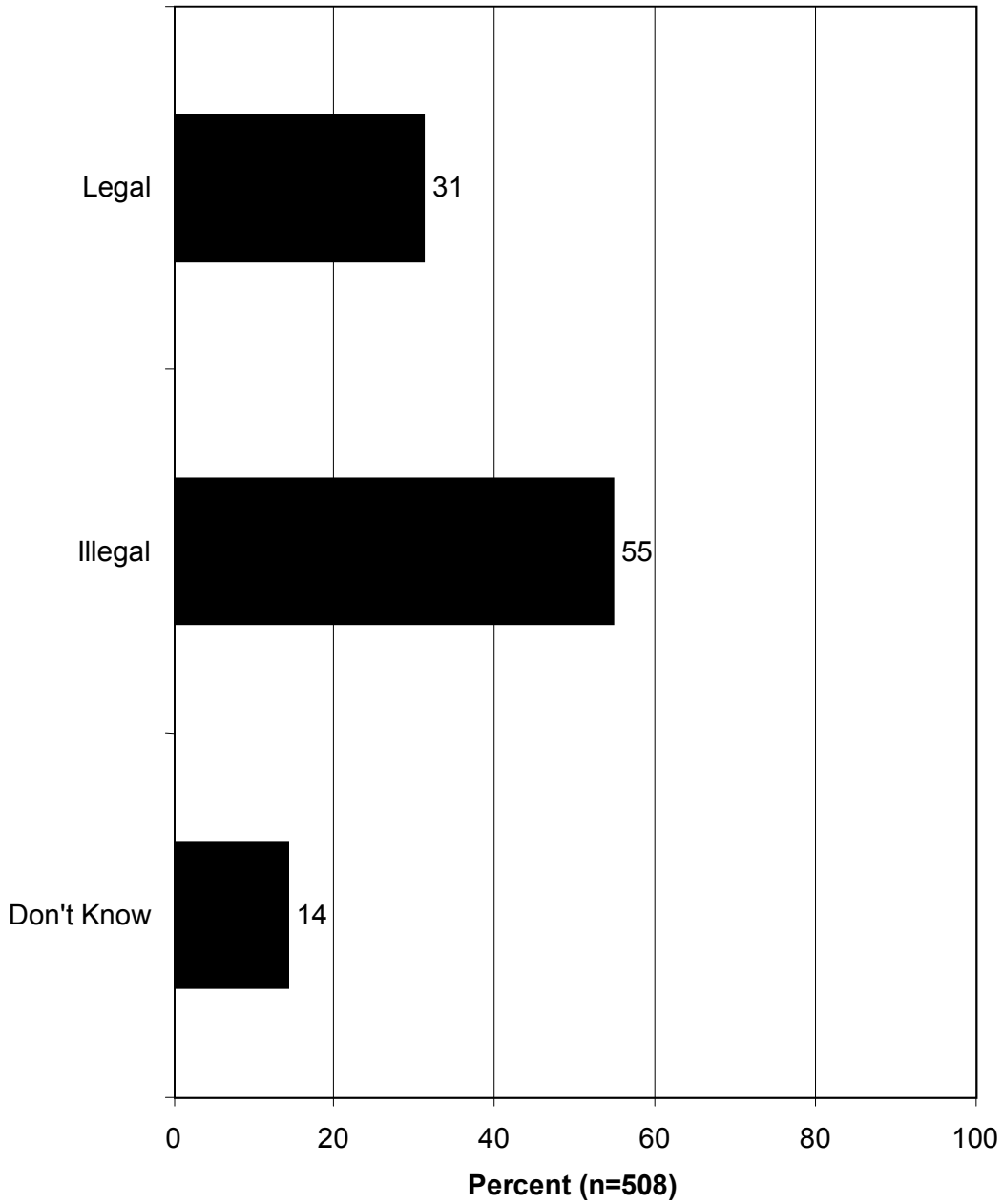


Figure 13: How many people would you say are killed by grizzly bears in the western United States each year, not including Alaska?

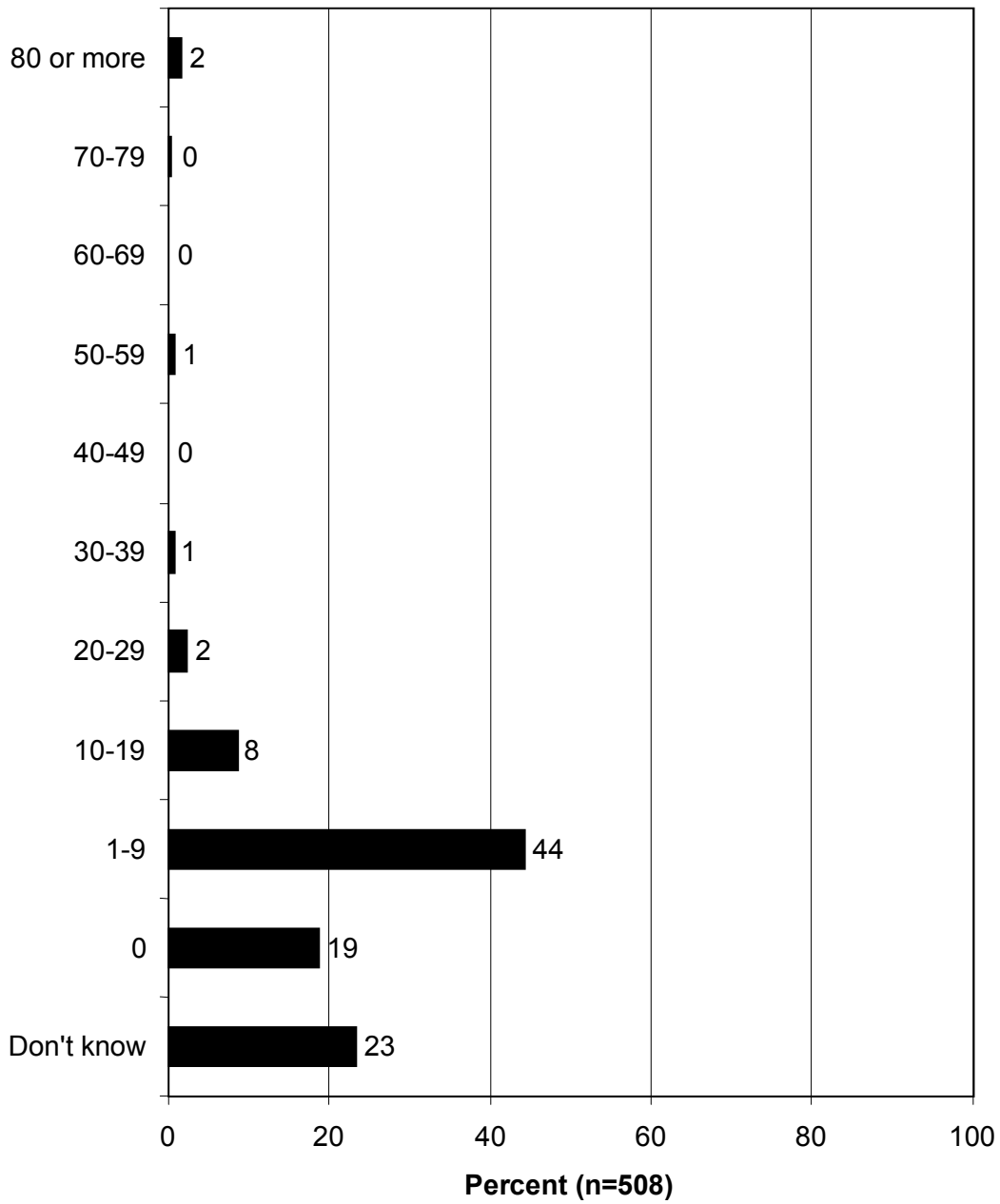


Figure 14: How many people would you say are injured by grizzly bears in the western United States each year, not including Alaska?

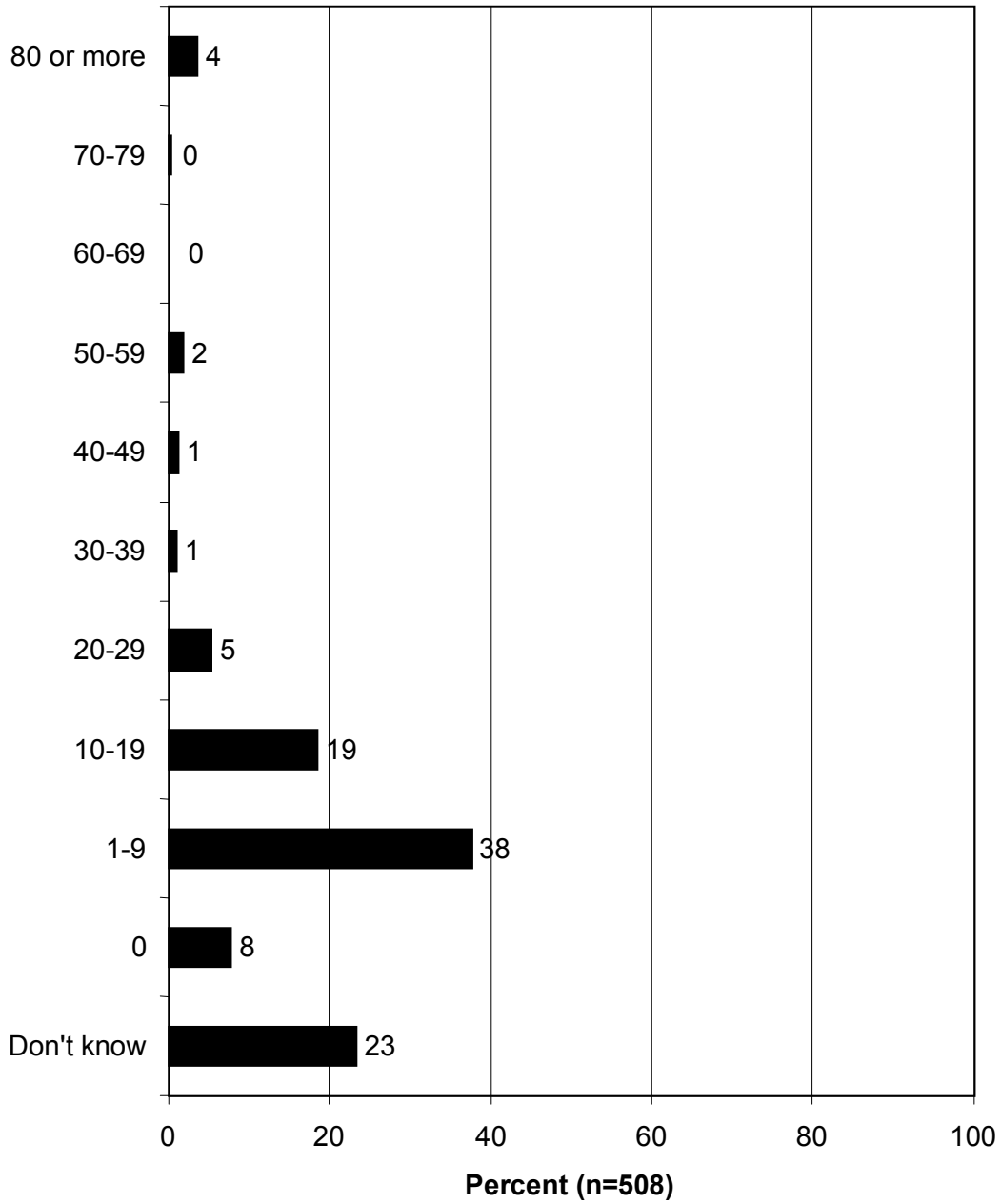


Figure 15: Where have you received most of your information about grizzly bears and grizzly bear recovery?

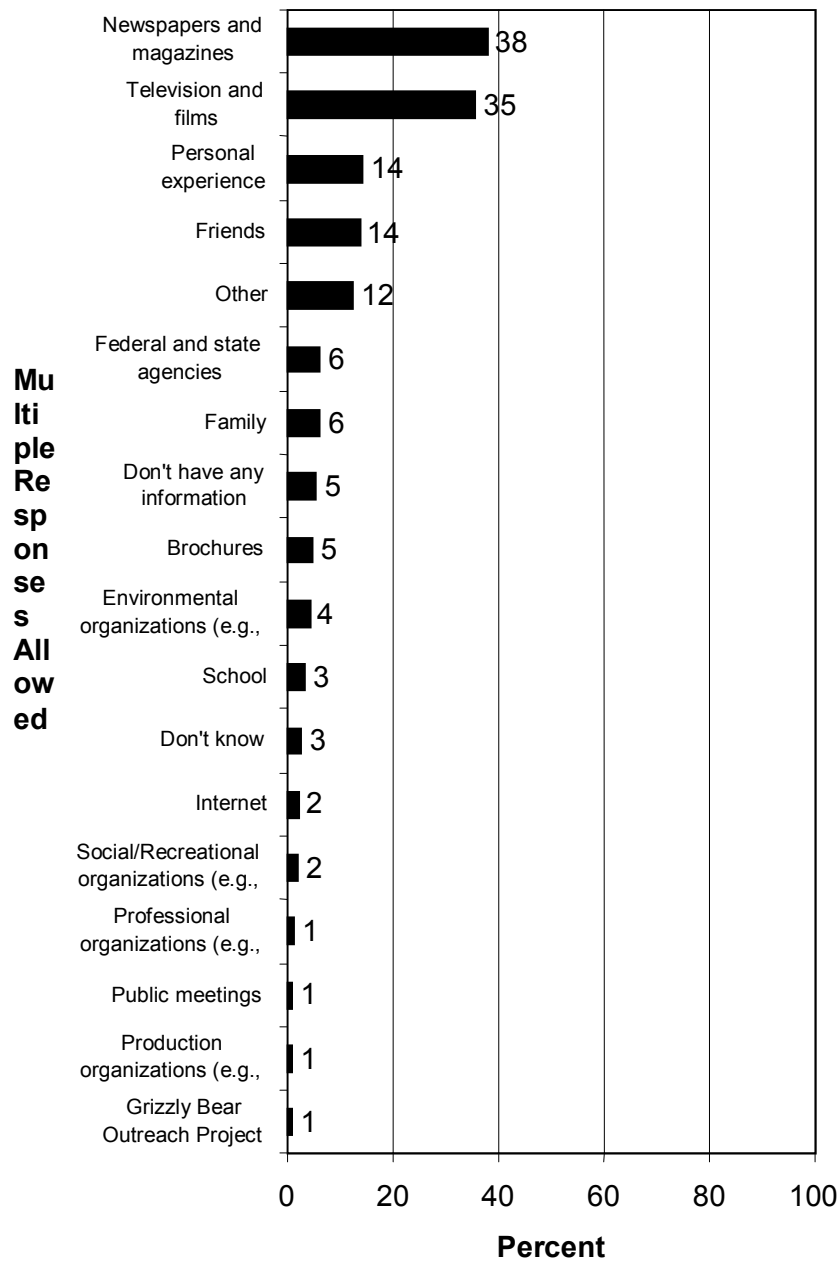
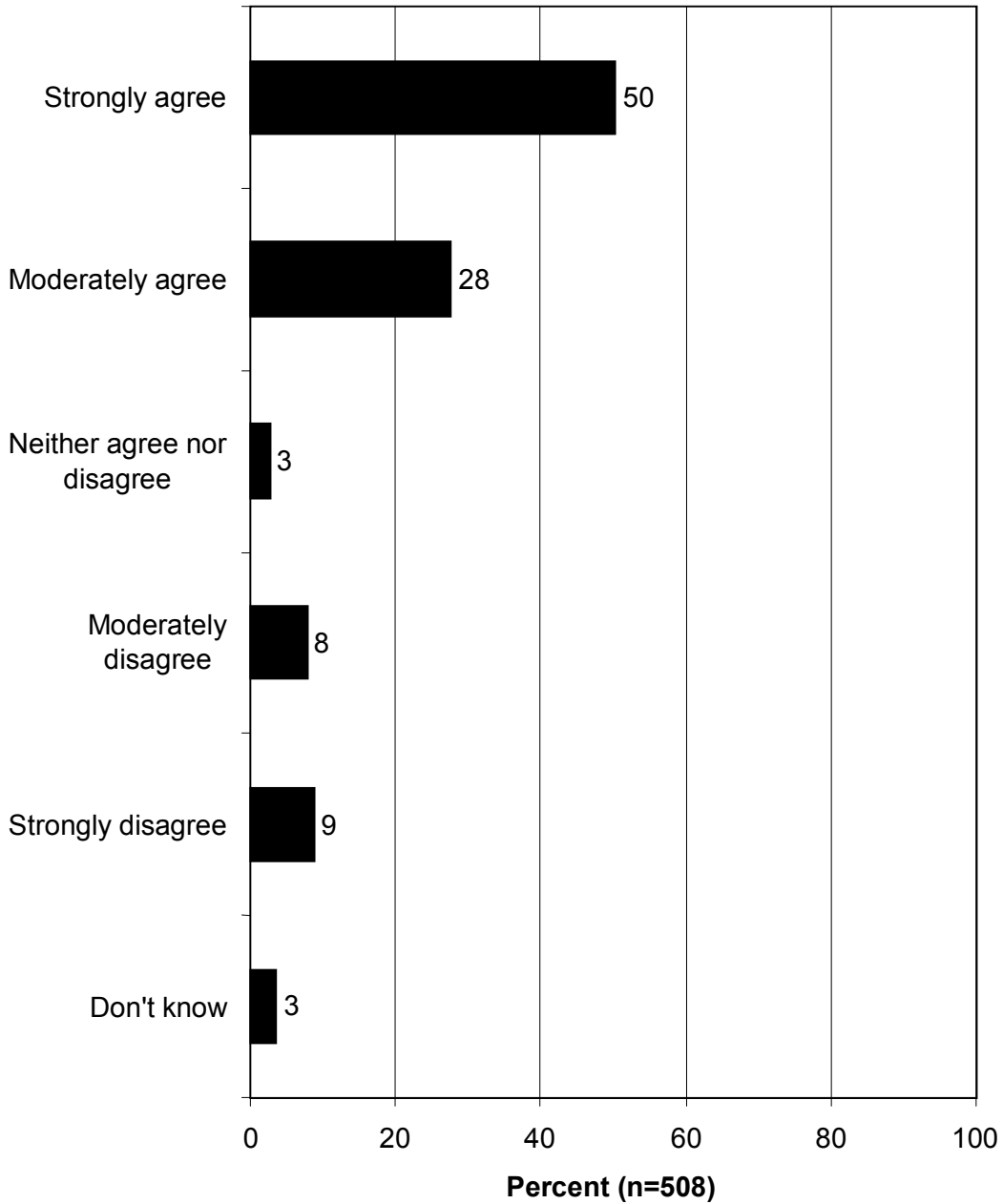


Figure 16: Grizzly bears are an important and essential part of the North Cascades ecosystem. Do you agree or disagree with this statement?



**Figure 17: Grizzly bears are very dangerous to humans.
Do you agree or disagree with this statement?**

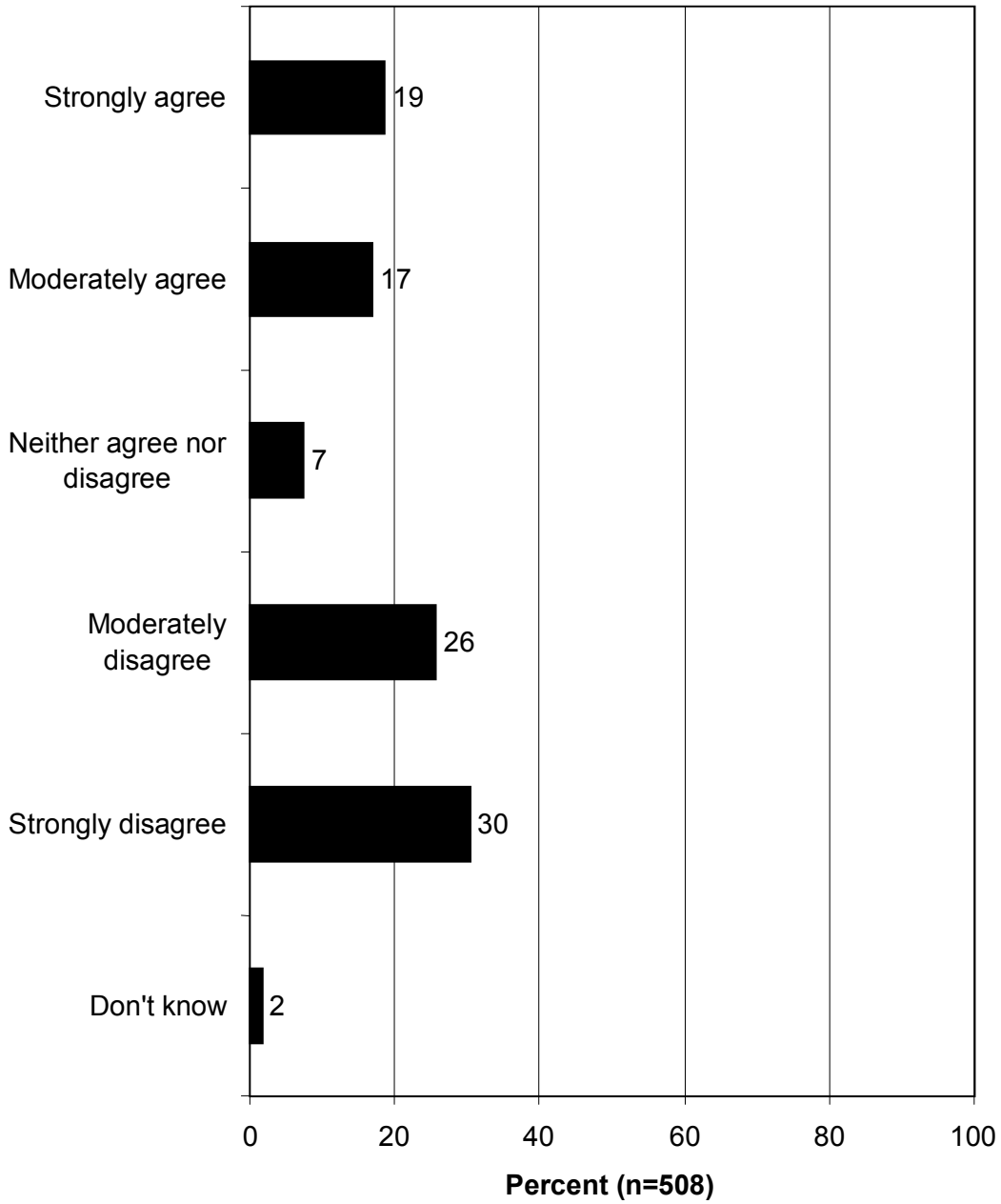


Figure 18: Grizzly bears from the North Cascade Mountains will kill many livestock and pets. Do you agree or disagree with this statement?

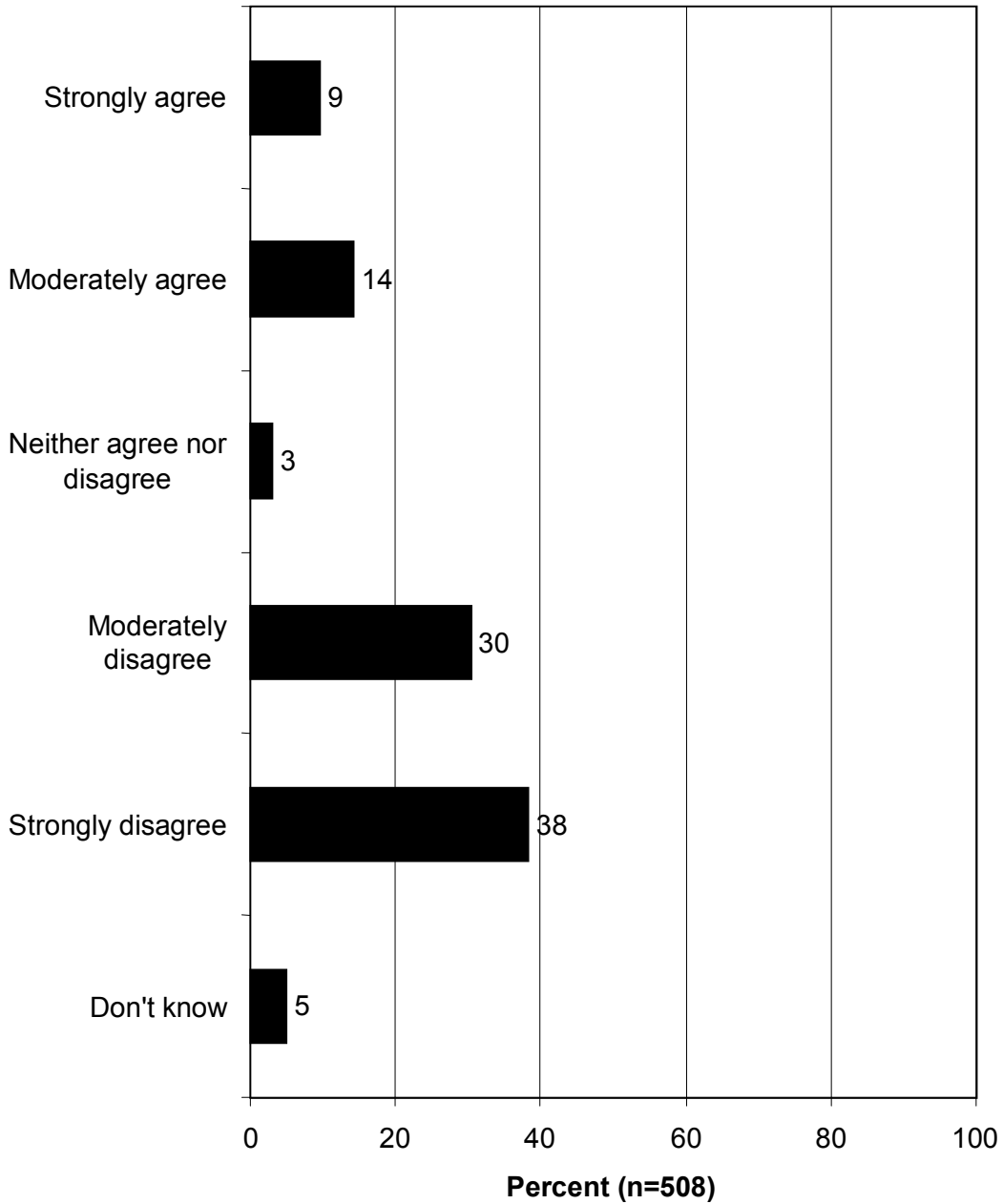


Figure 19: Grizzly bears were here before humans and have an inherent right to live in the North Cascades. Do you agree or disagree with this statement?

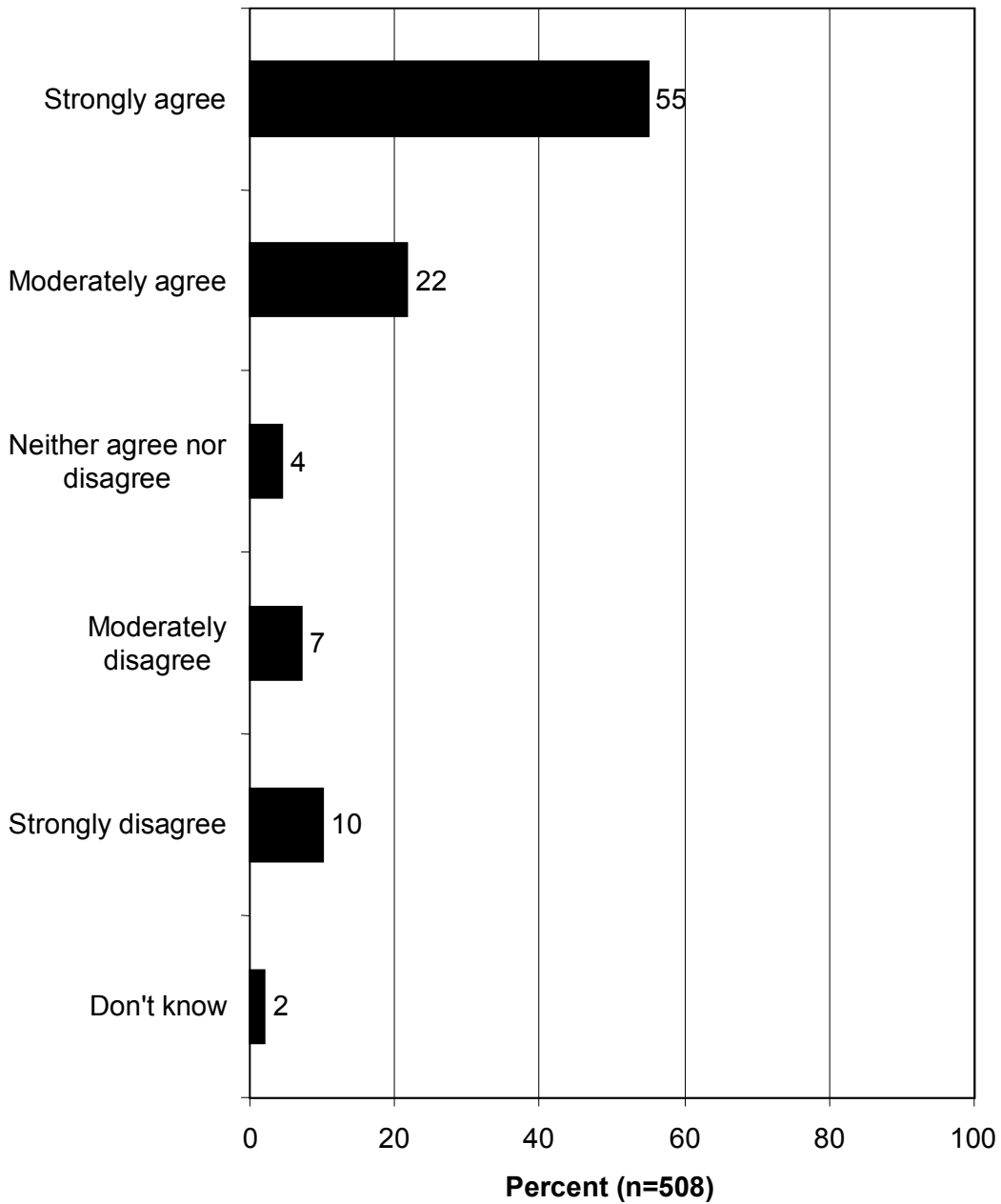


Figure 20: There is no need for grizzly bears in the North Cascade Mountains. Do you agree or disagree with this statement?

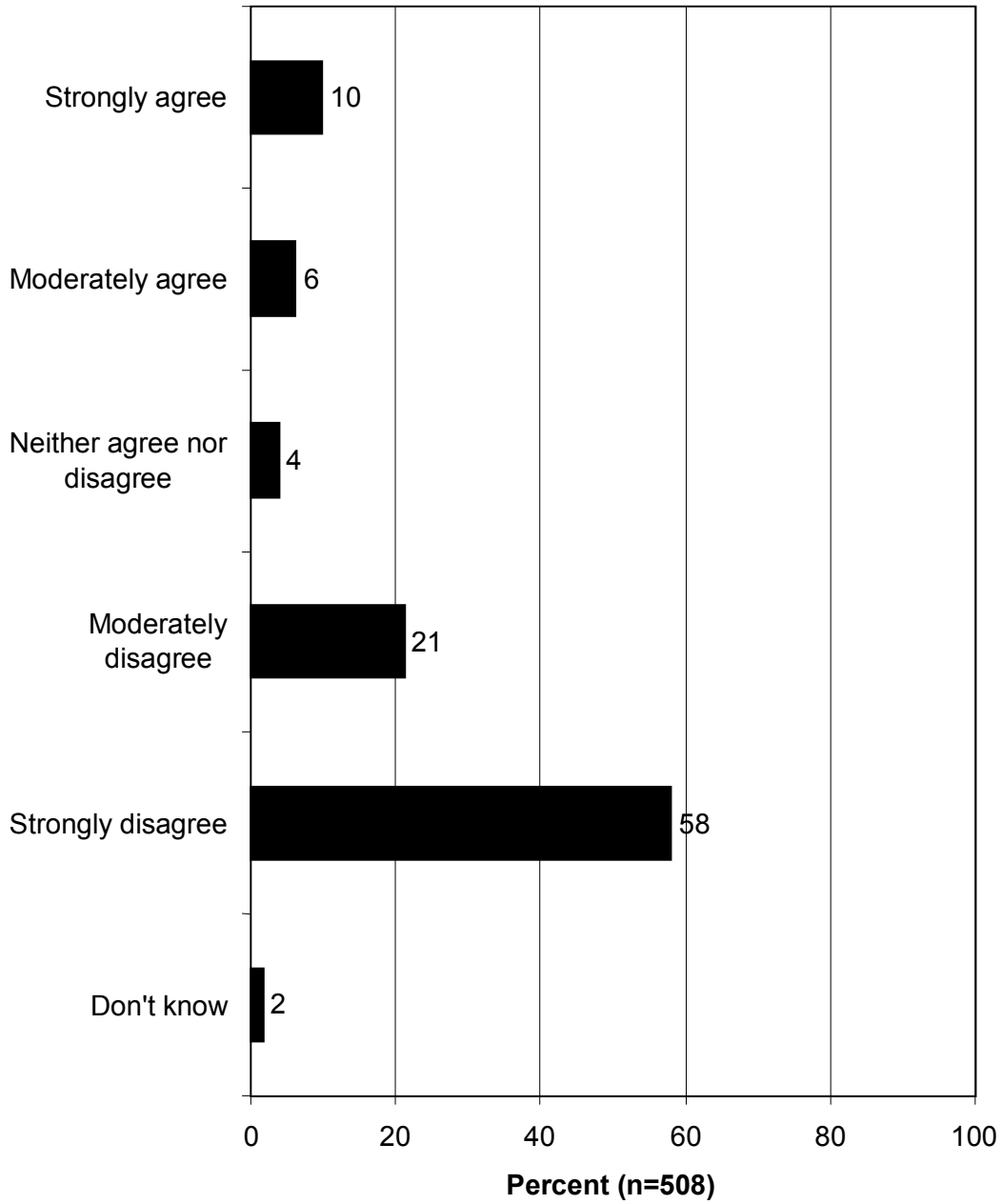


Figure 21: Grizzly bears are a symbol of the American frontier and should be preserved as part of our national heritage. Do you agree or disagree with this statement?

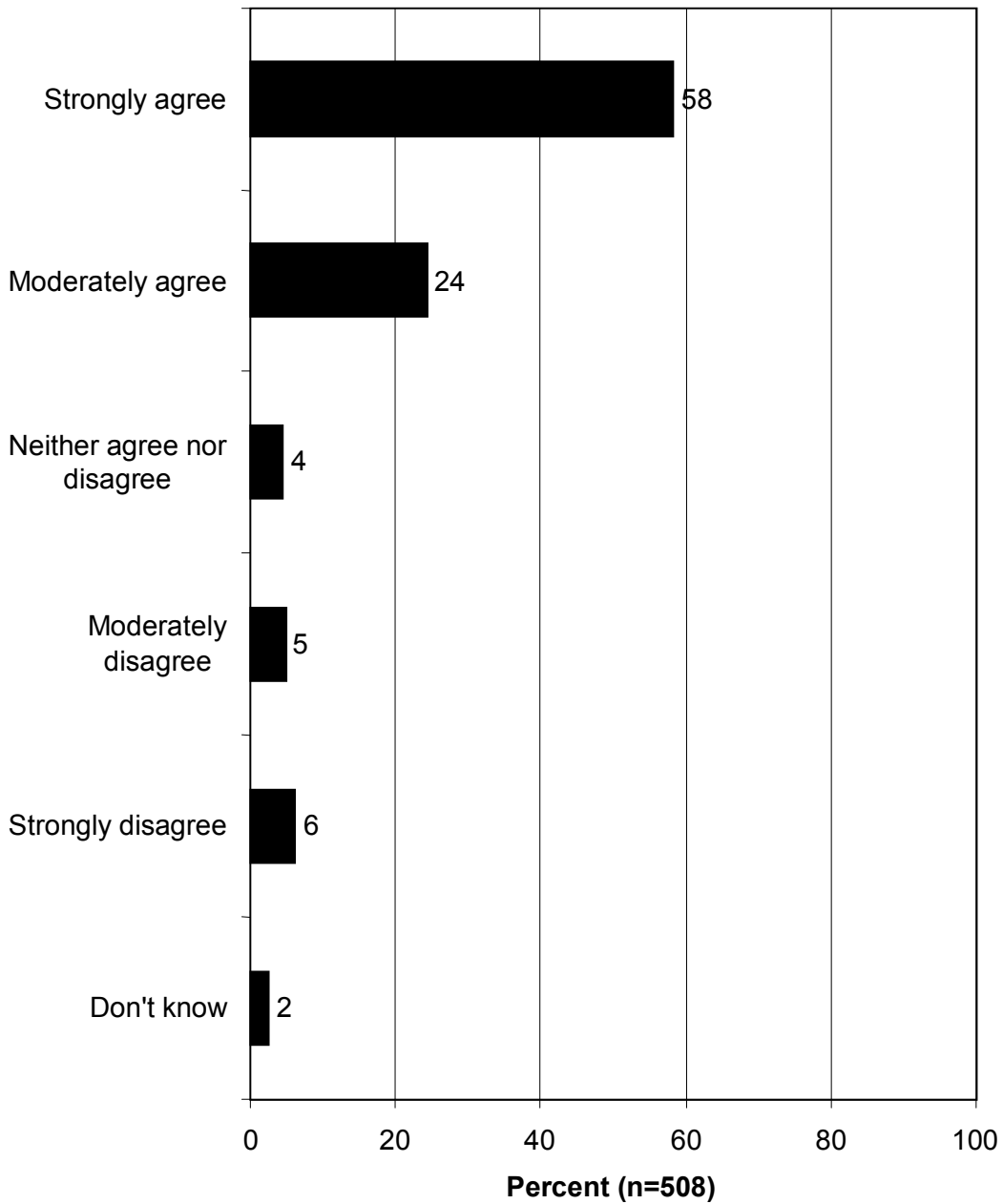


Figure 22: Grizzly bears will frequently come down out of the North Cascade Mountains into local communities. Do you agree or disagree with this statement?

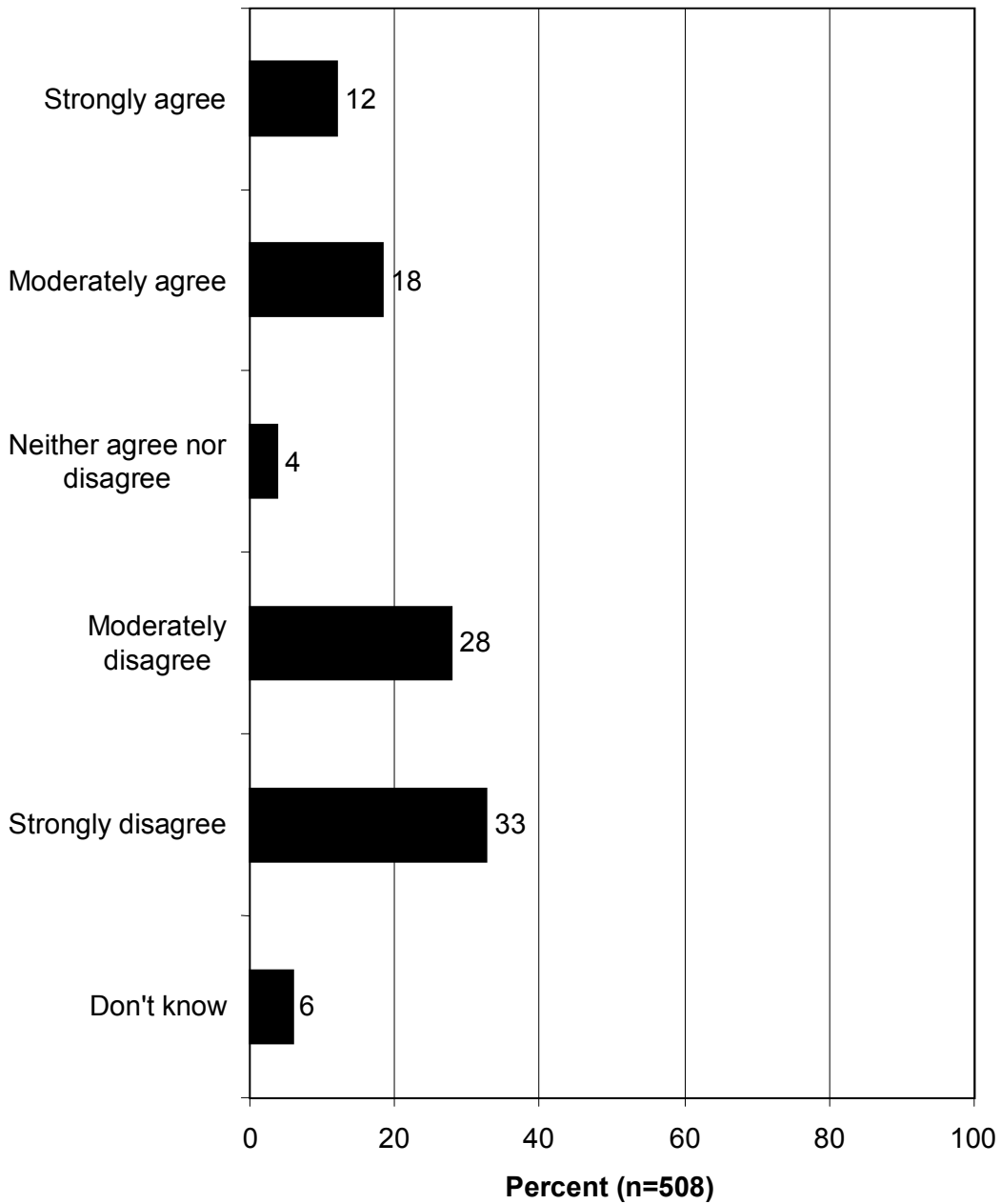


Figure 23: Grizzly bears in the North Cascade Mountains should be preserved for future generations. Do you agree or disagree with this statement?

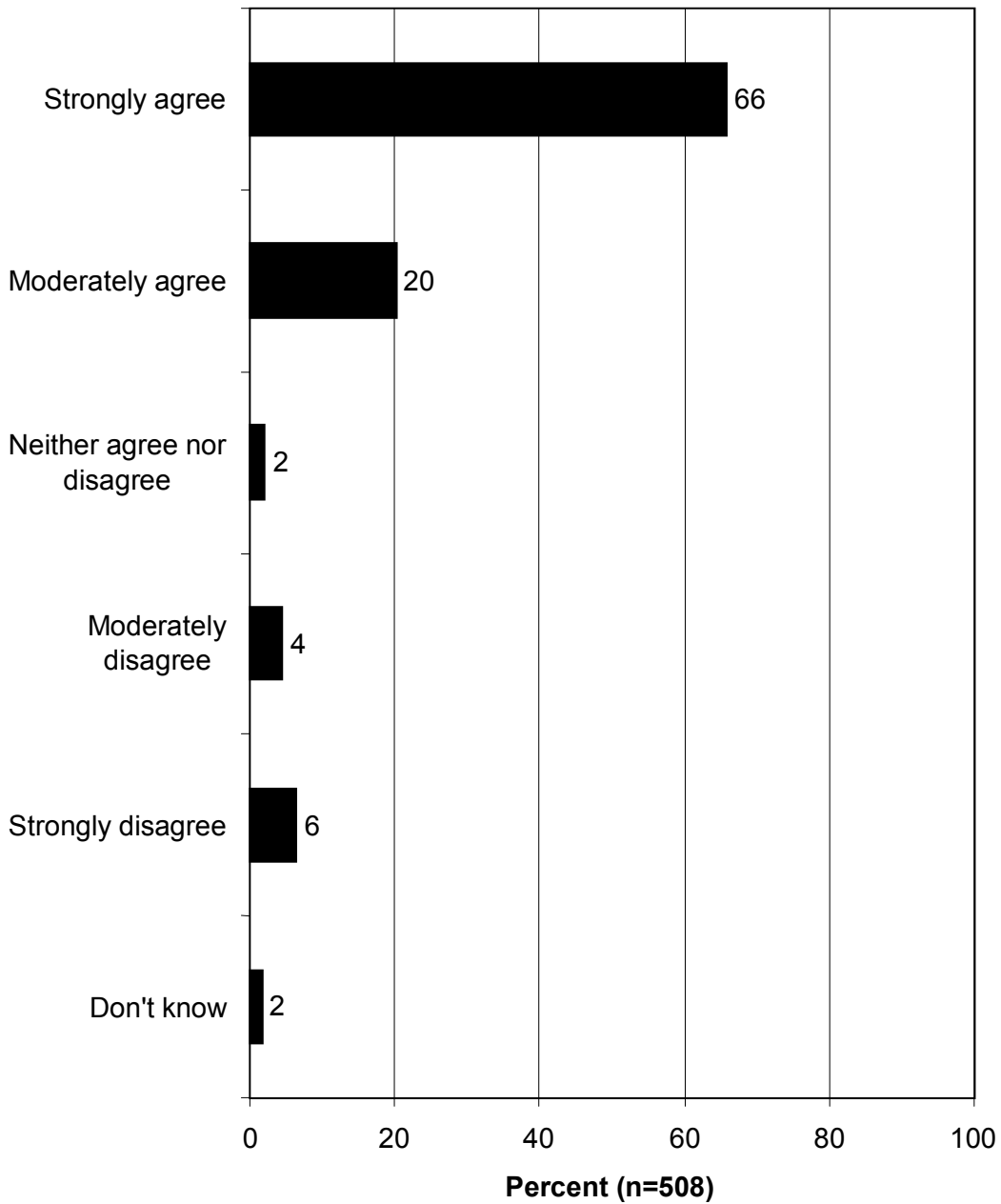


Figure 24: Residents and visitors to the North Cascades can prevent almost all problems with grizzly bears by taking a few precautions such as keeping a clean campsite and avoiding areas with heavy bear activity. Do you agree or disagree with this statement?

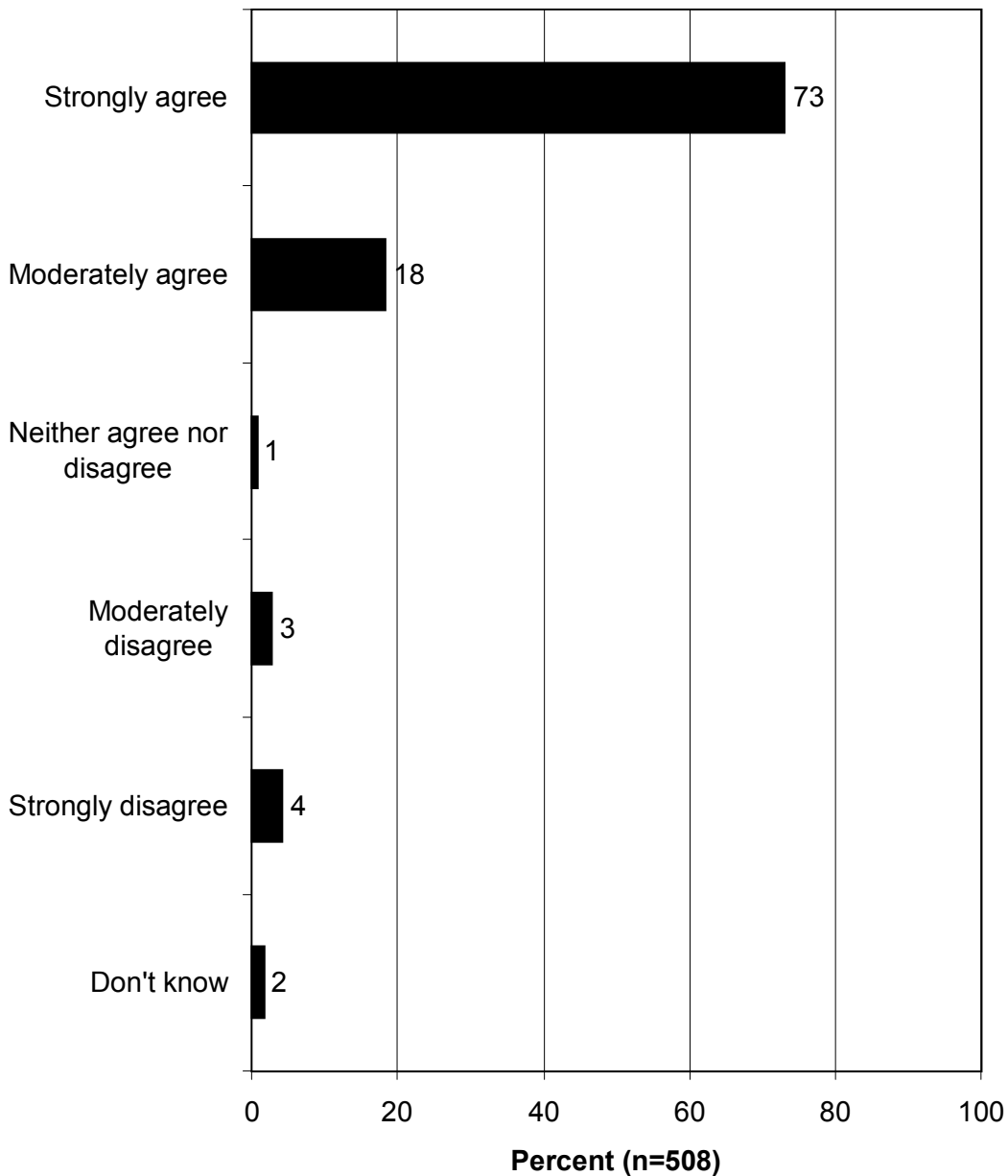


Figure 25: I would derive satisfaction from just knowing that grizzly bears are present in the North Cascade Mountains. Do you agree or disagree with this statement?

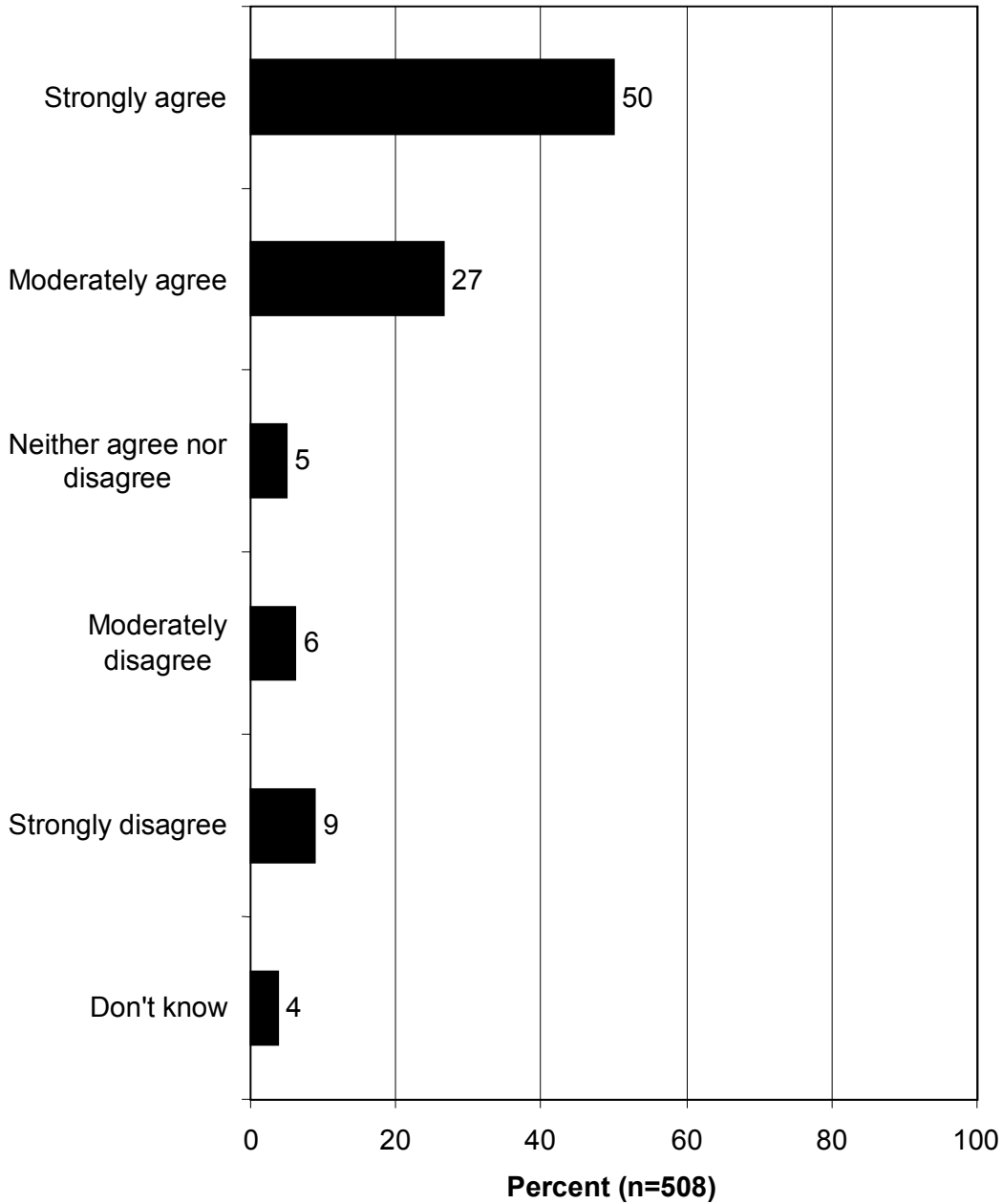


Figure 26: At this time, it has not been determined exactly how the grizzly bear population will be recovered in the North Cascades. In general, do you support or oppose grizzly bear recovery in the North Cascade Mountains?

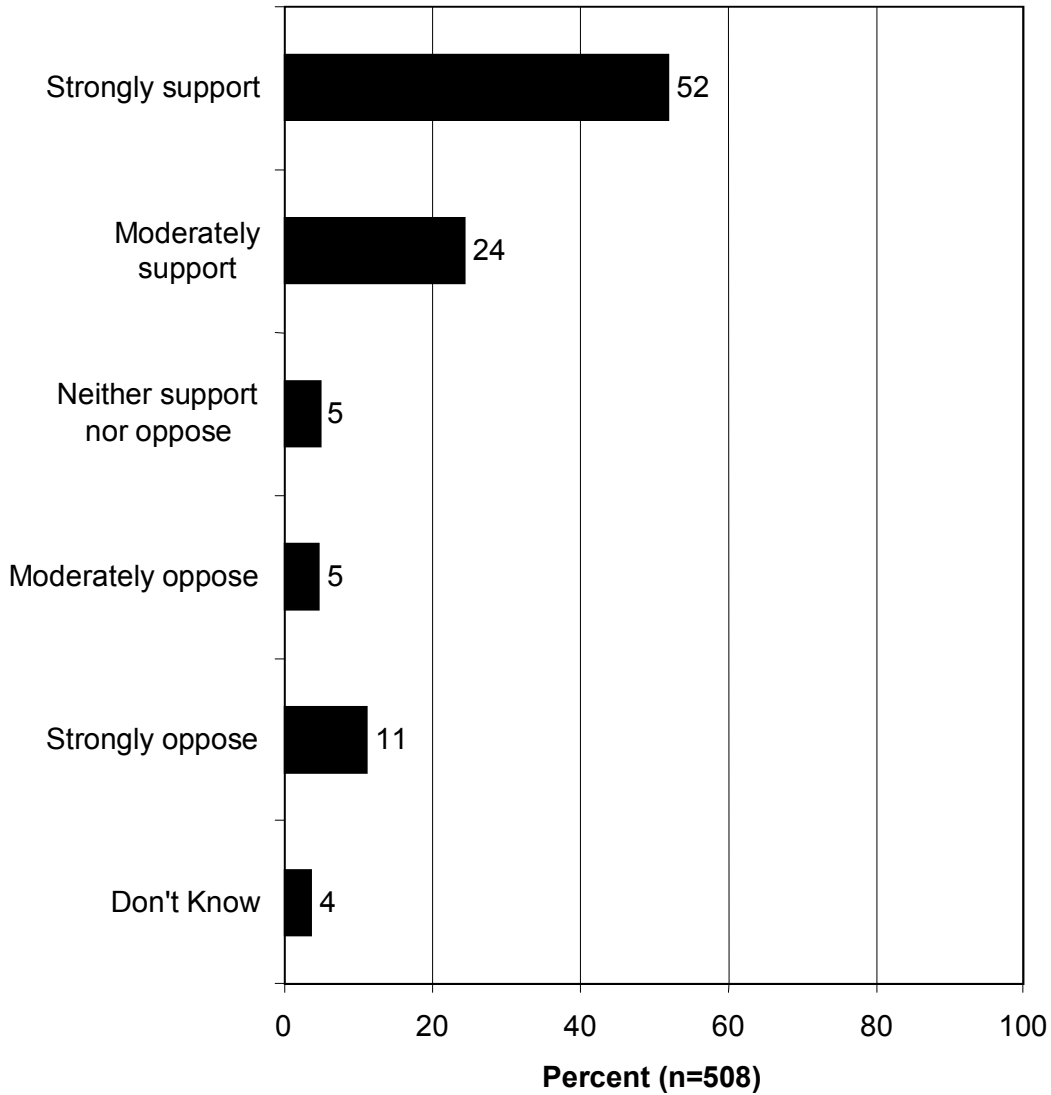


Figure 27: Would your opinion of grizzly bear recovery be more supportive, the same, or less supportive if recovery required adding 5-10 bears into the North Cascade Mountains from another wild population in the U.S.?

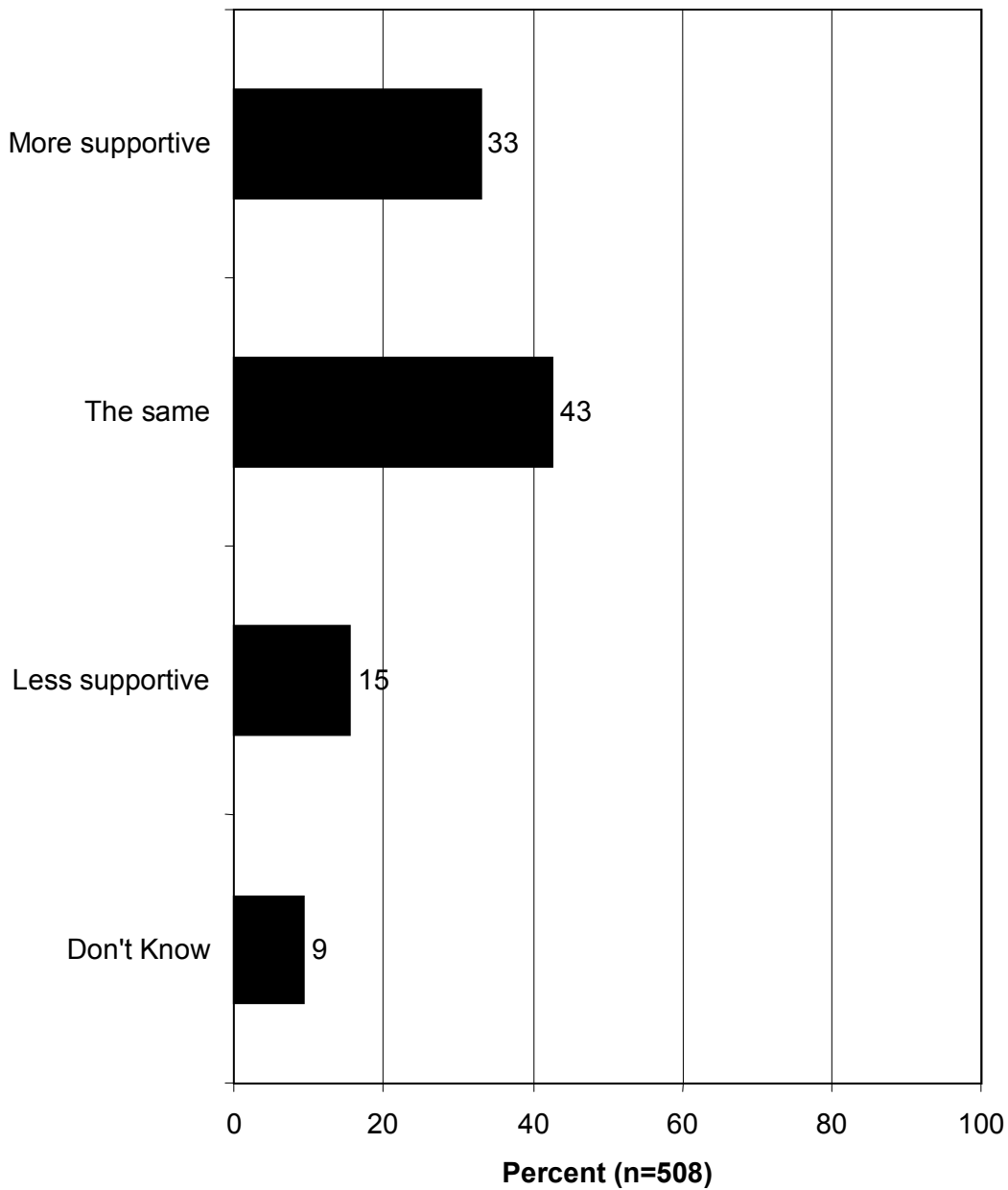


Figure 28: Would your opinion of grizzly bear recovery be more supportive, the same, or less supportive if it could be done without adding bears into the North Cascade Mountains?

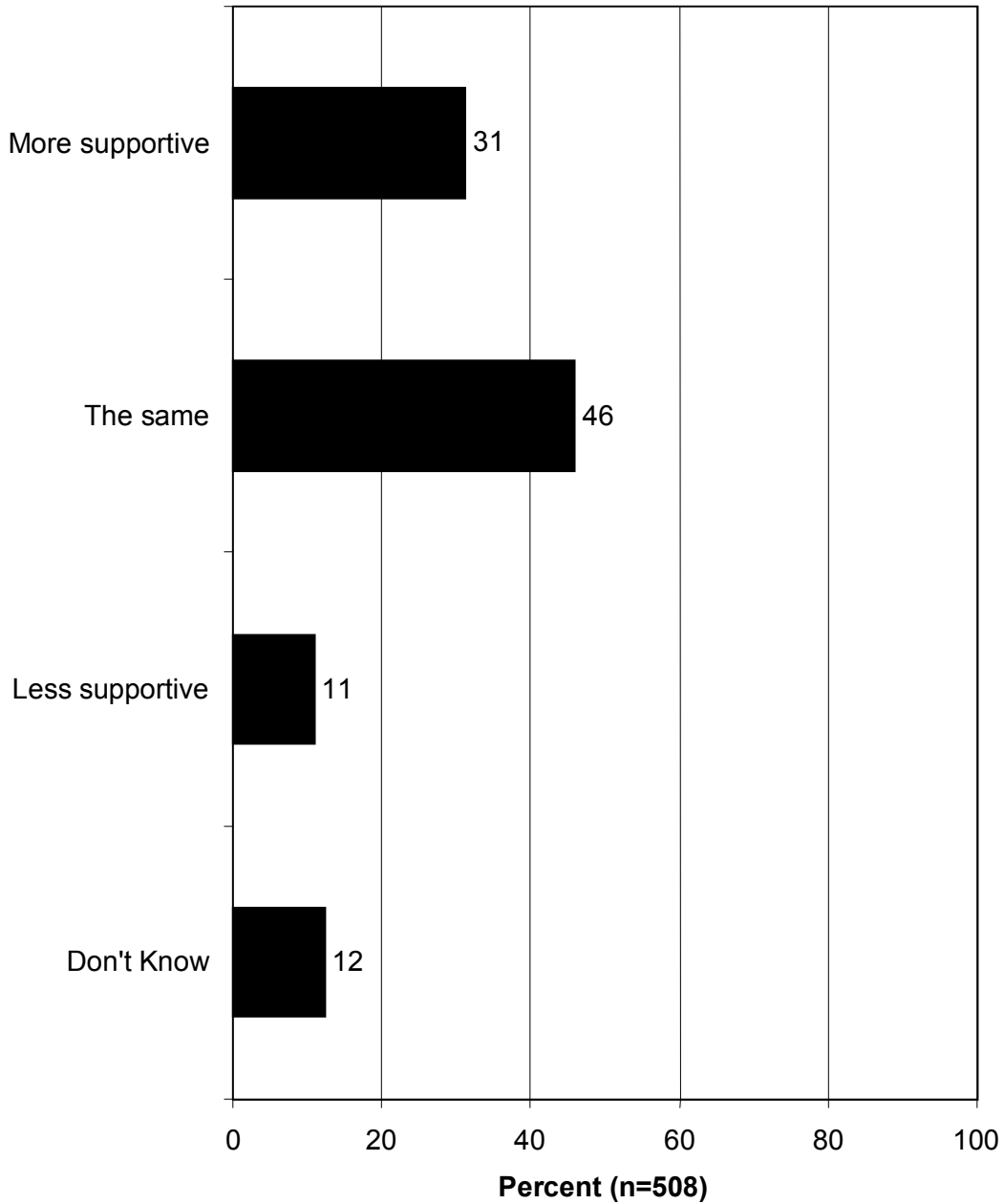


Figure 29: Would your opinion of grizzly bear recovery be more supportive, the same, or less supportive if some land use restrictions were required, such as closing some roads and trails at certain times of the year?

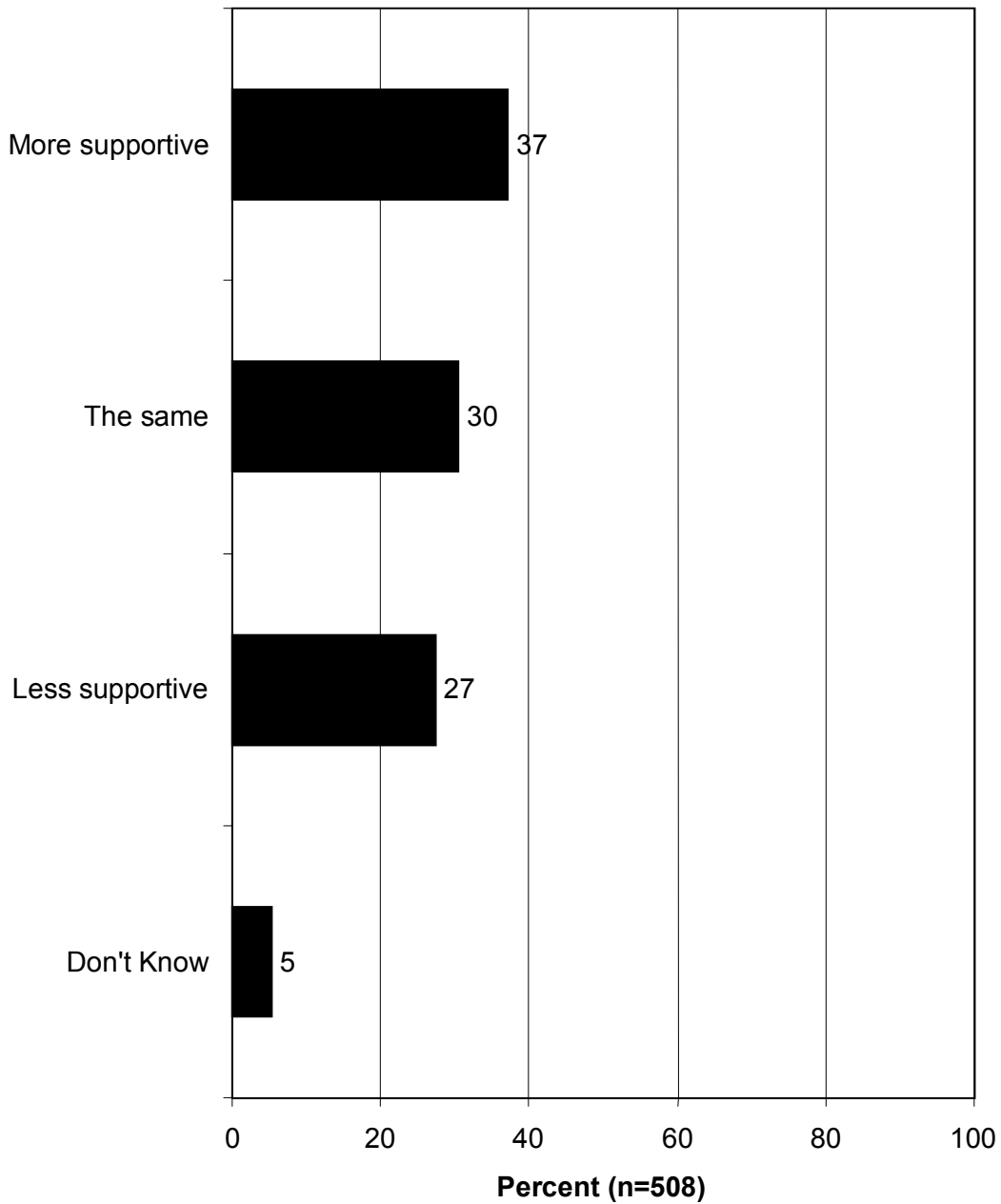


Figure 30: Would your opinion of grizzly bear recovery be more supportive, the same, or less supportive if stronger restrictions on garbage disposal methods were required to prevent problems with grizzly bears?

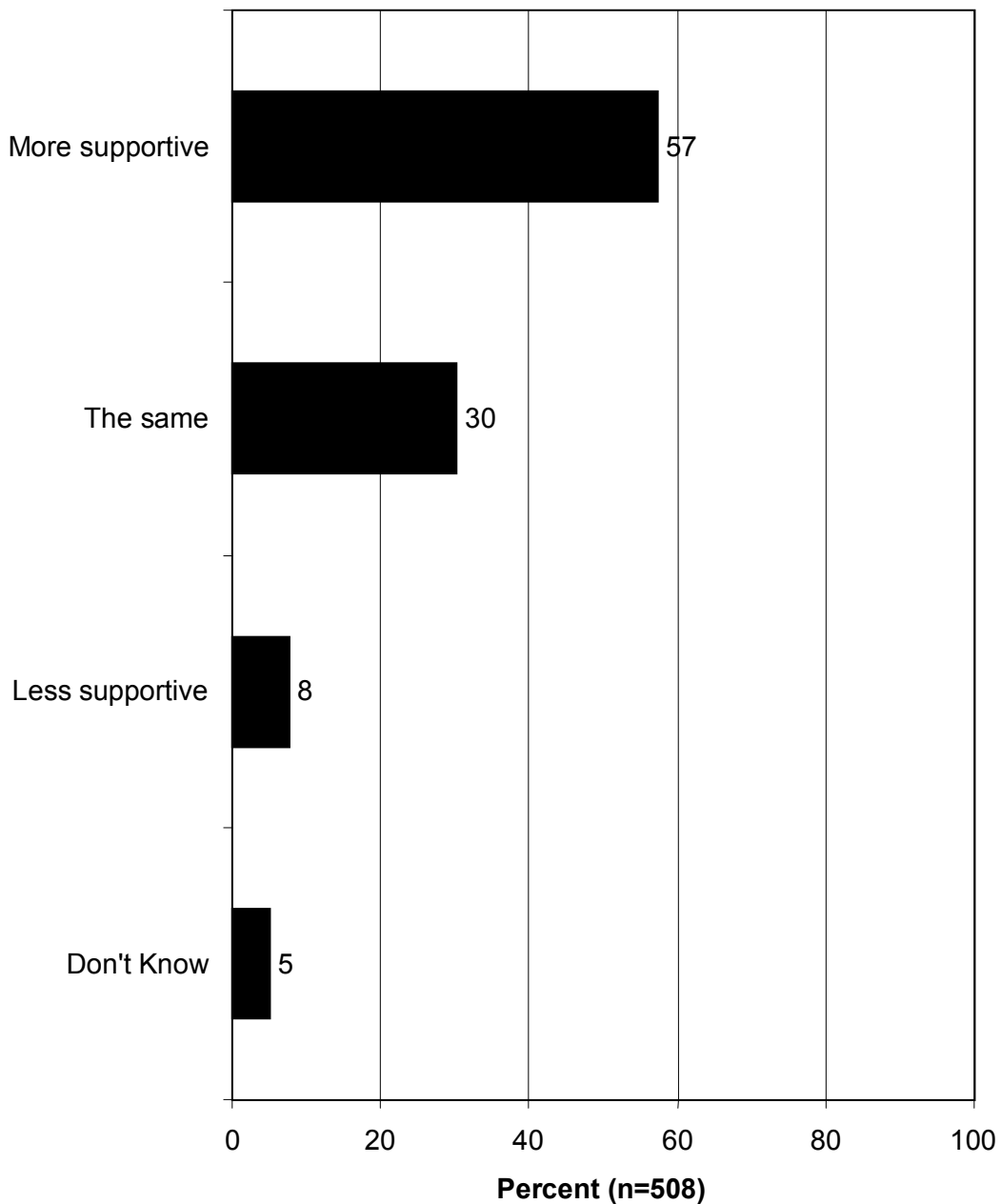


Figure 31: Would your opinion of grizzly bear recovery be more supportive, the same, or less supportive if funds were available to compensate ranchers for livestock losses that may occur from grizzly bears?

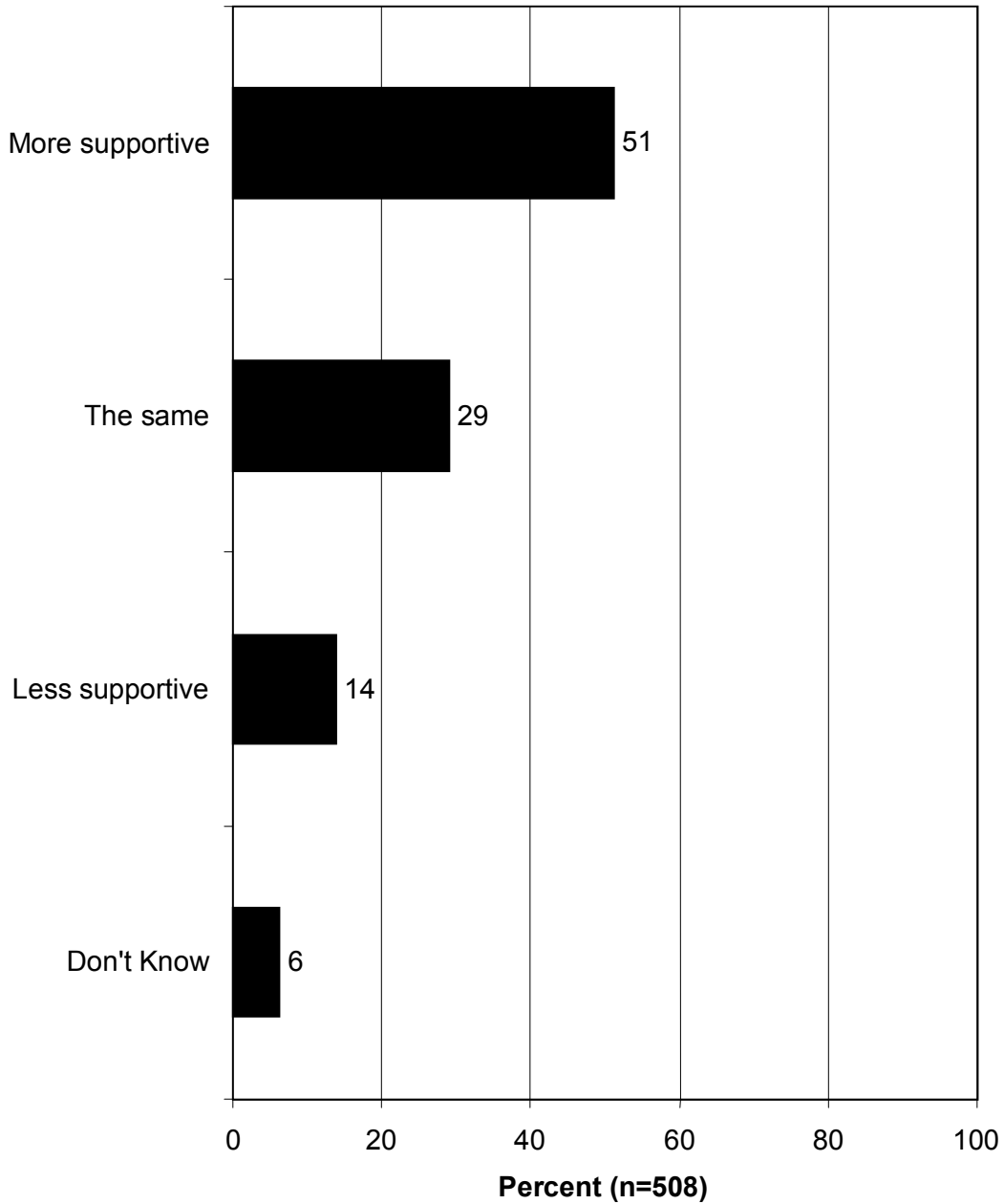


Figure 32: Would your opinion of grizzly bear recovery be more supportive, the same, or less supportive if agency wildlife managers were able to meet more frequently with local residents to discuss grizzly bear recovery?

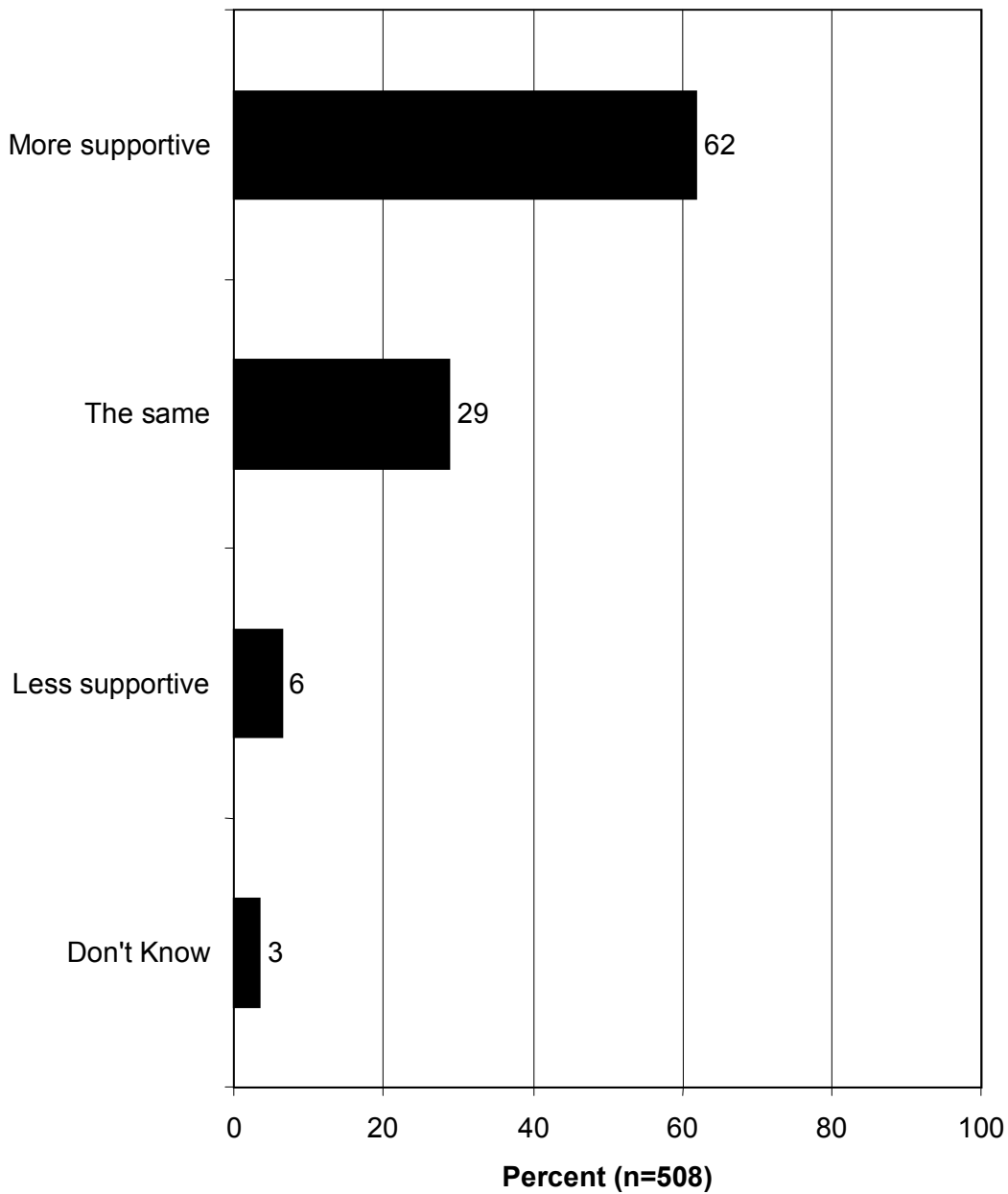


Figure 33: Agency biologists provide the most accurate information available for understanding and managing the grizzly bear population in the North Cascades. Do you agree or disagree with this statement?

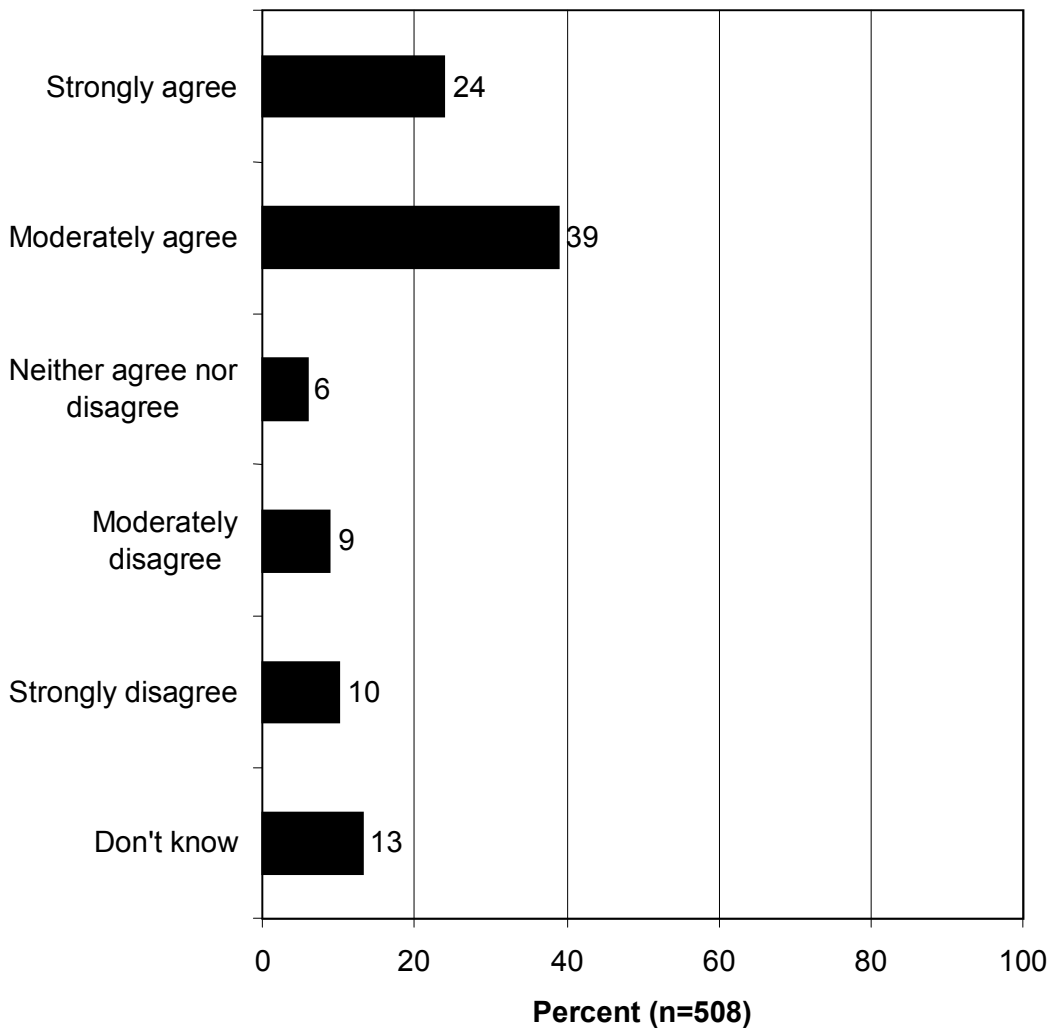


Figure 34: Agency wildlife managers will involve local citizens in all major decisions about how grizzly bears will be recovered in the North Cascades. Do you agree or disagree with this statement?

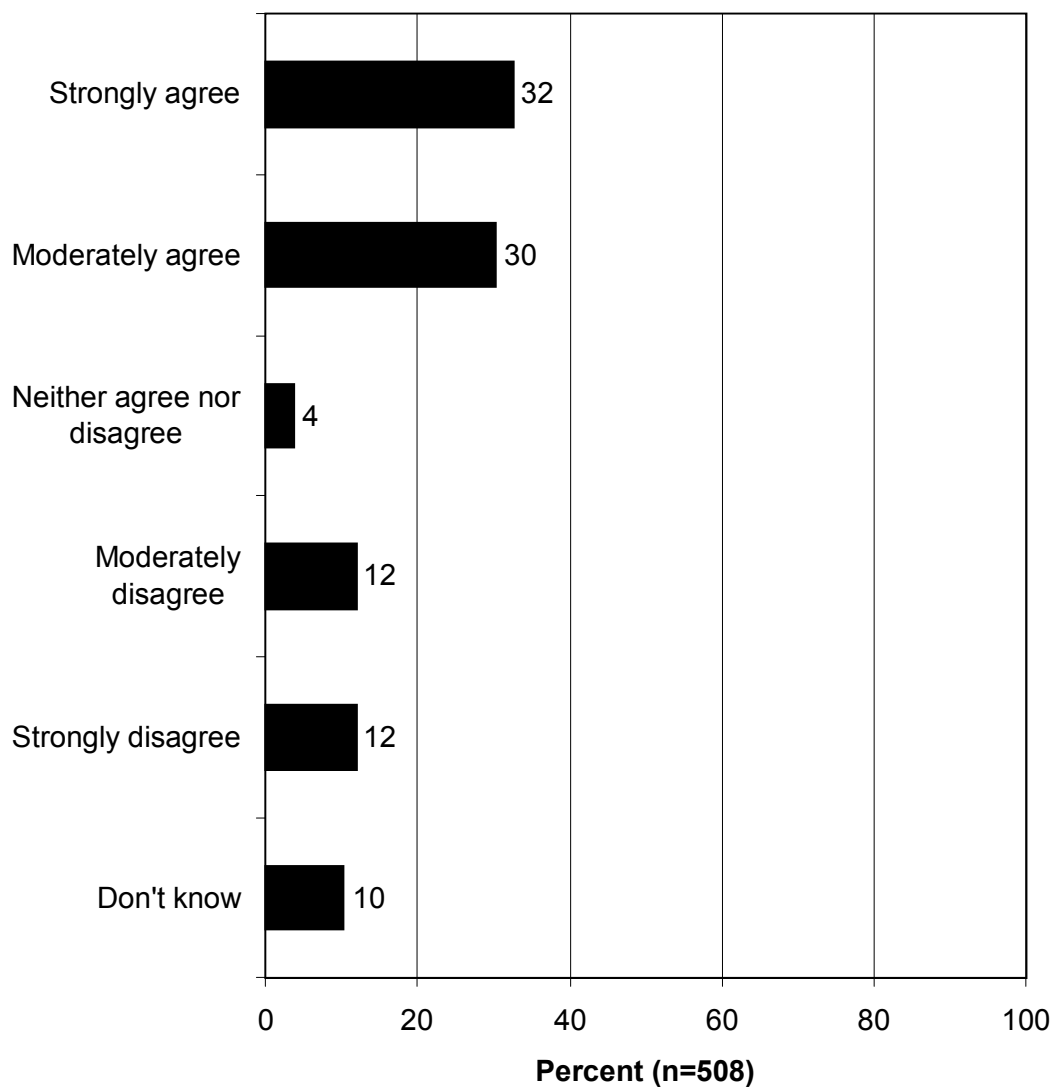


Figure 35: Agency wildlife managers will pay attention to citizen concerns about grizzly bear recovery in the North Cascades Mountains. Do you agree or disagree with this statement?

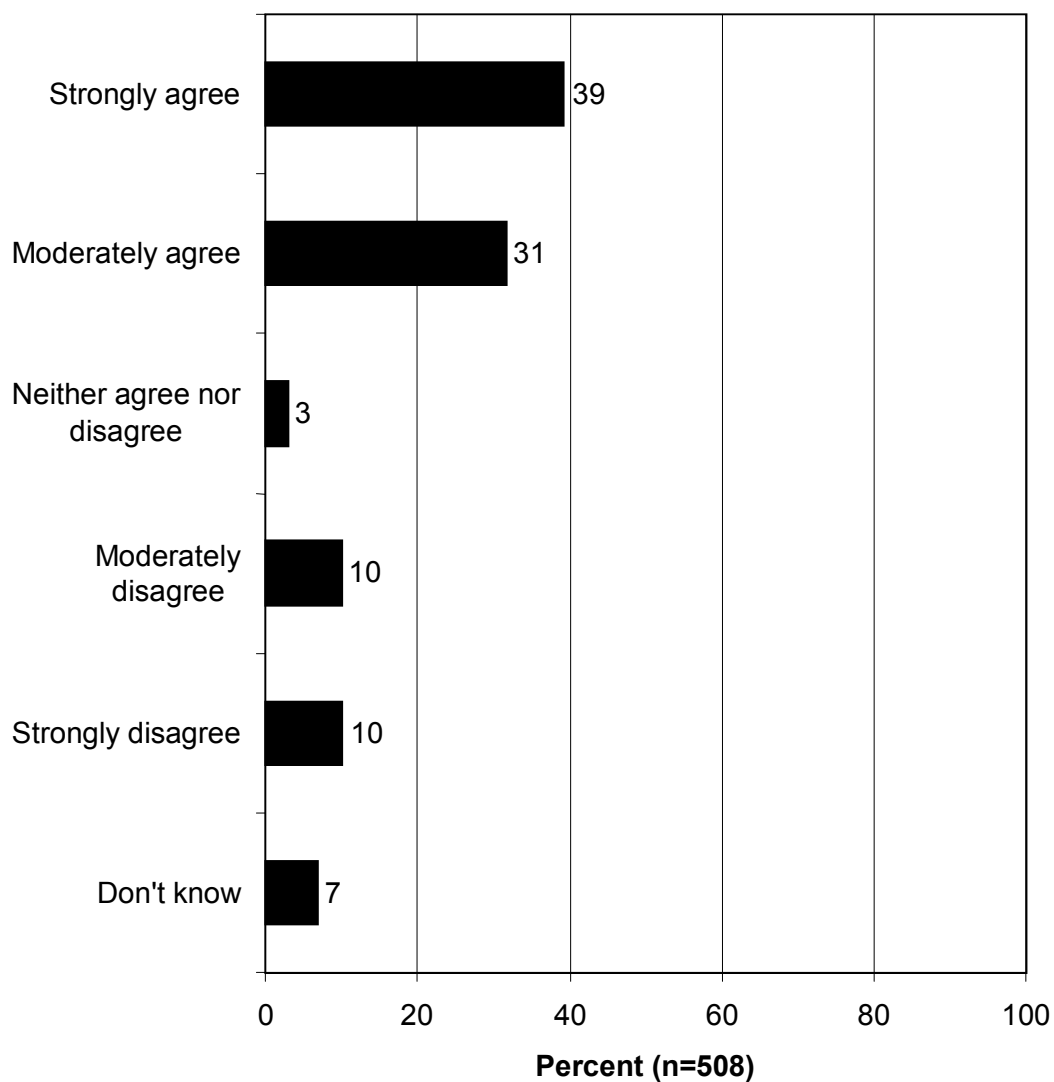


Figure 36: Agency wildlife managers will promptly remove any grizzly bears that linger in areas of high human use, act aggressively toward humans, or kill livestock. Do you agree or disagree with this statement?

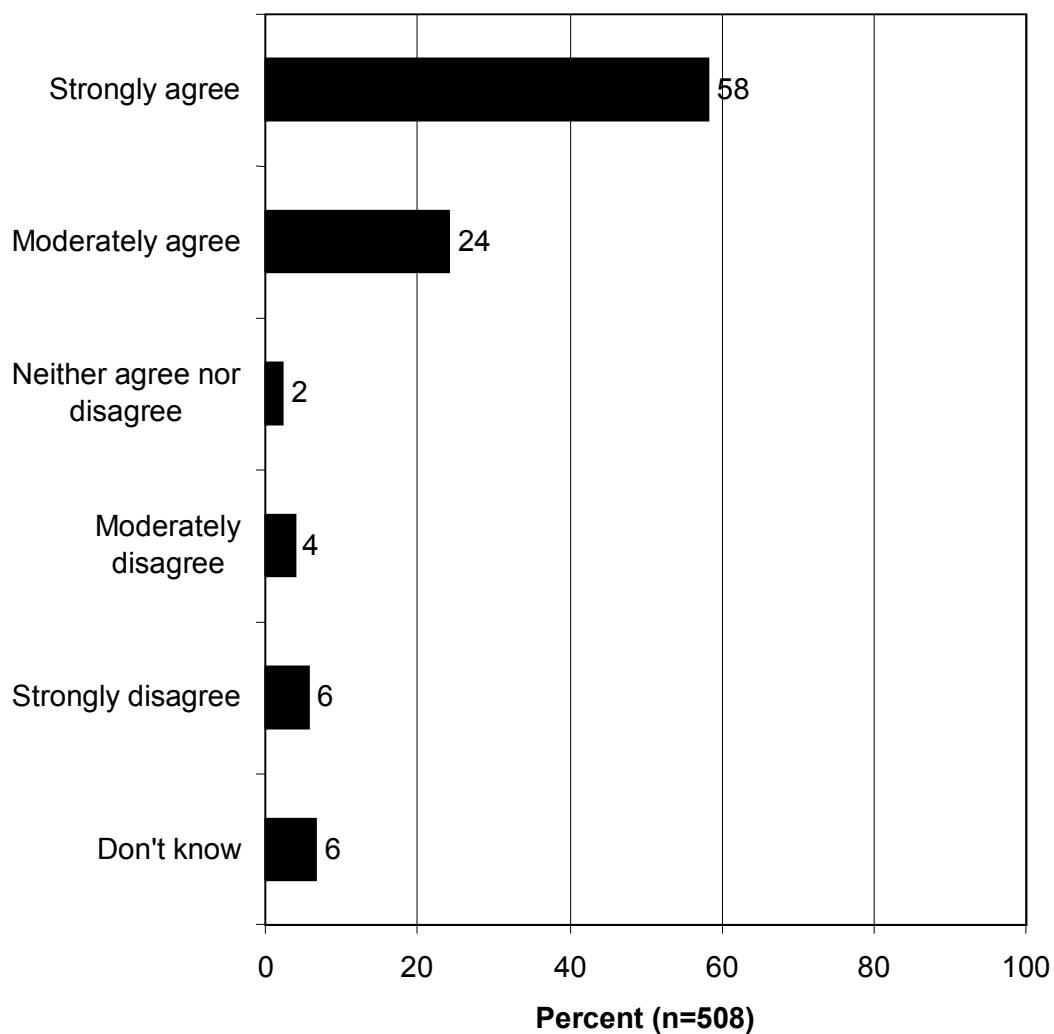


Figure 37: Local citizens in and near the North Cascades will be willing to work with wildlife management agencies to determine the best way to recover grizzly bears in the North Cascades Mountains. Do you agree or disagree with this statement?

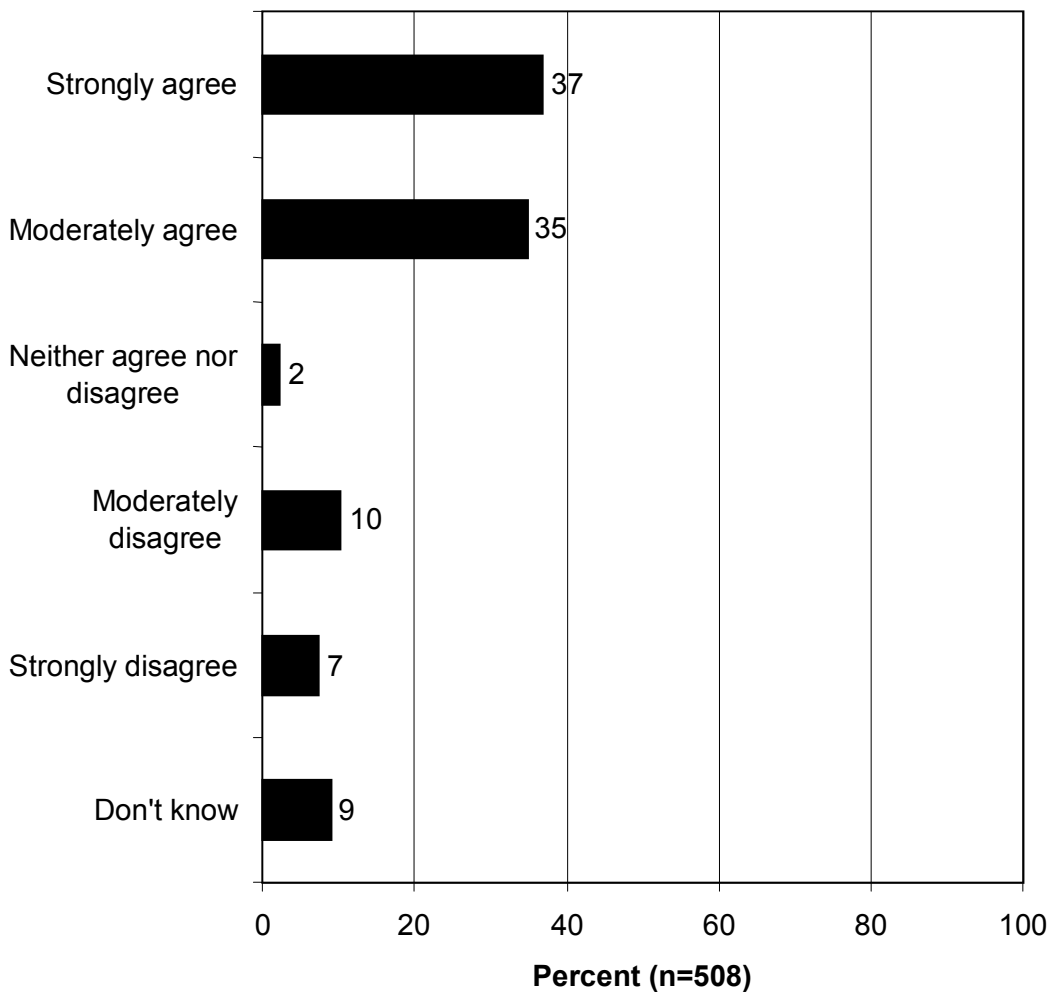


Figure 38: Have you ever camped, hunted, fished, or participated in any other outdoor recreation activities in Washington's North Cascade Mountains?

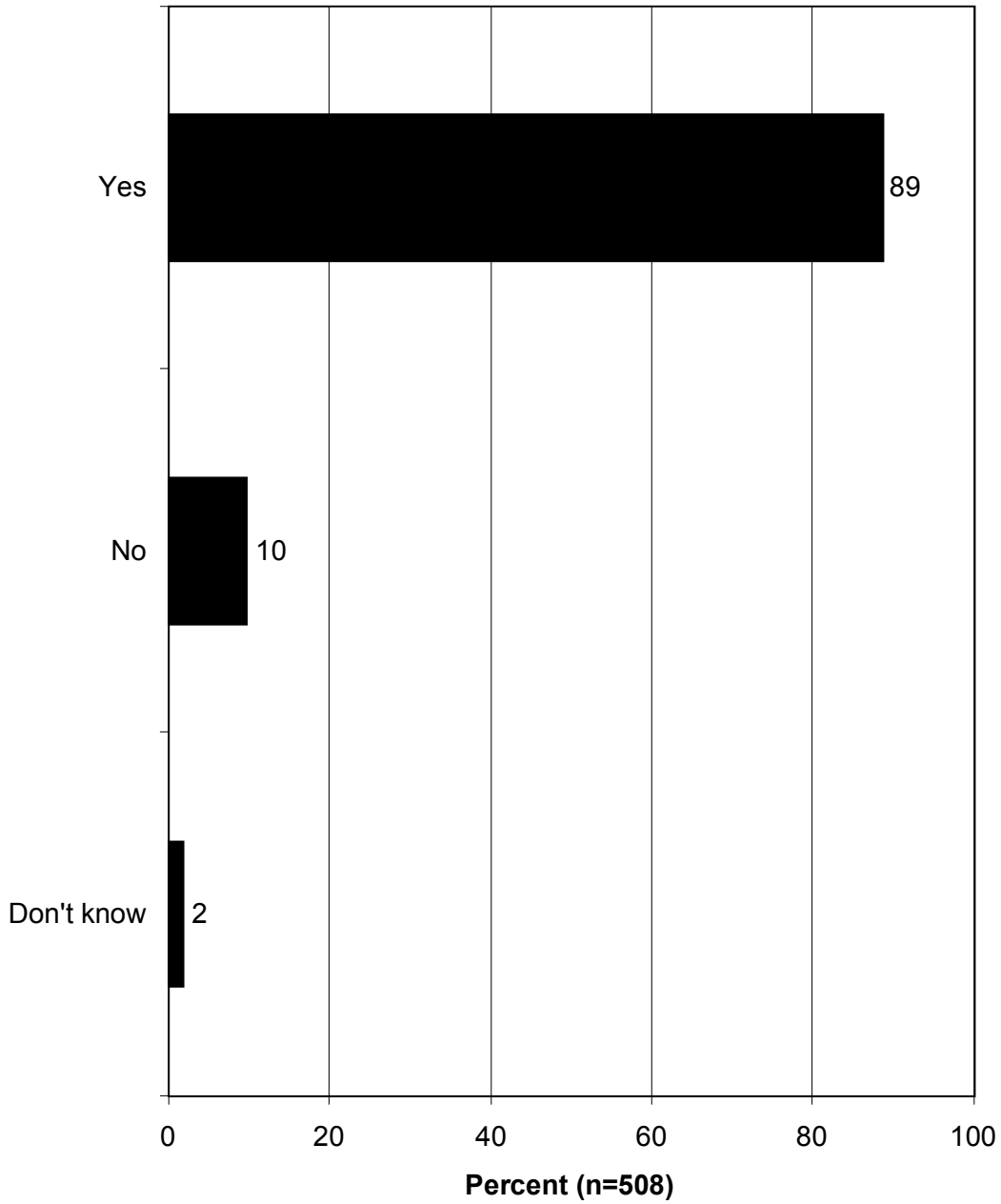


Figure 39: Has your or your family's income been dependent on the forest or a forestry-related industry at any time in the past 5 years?

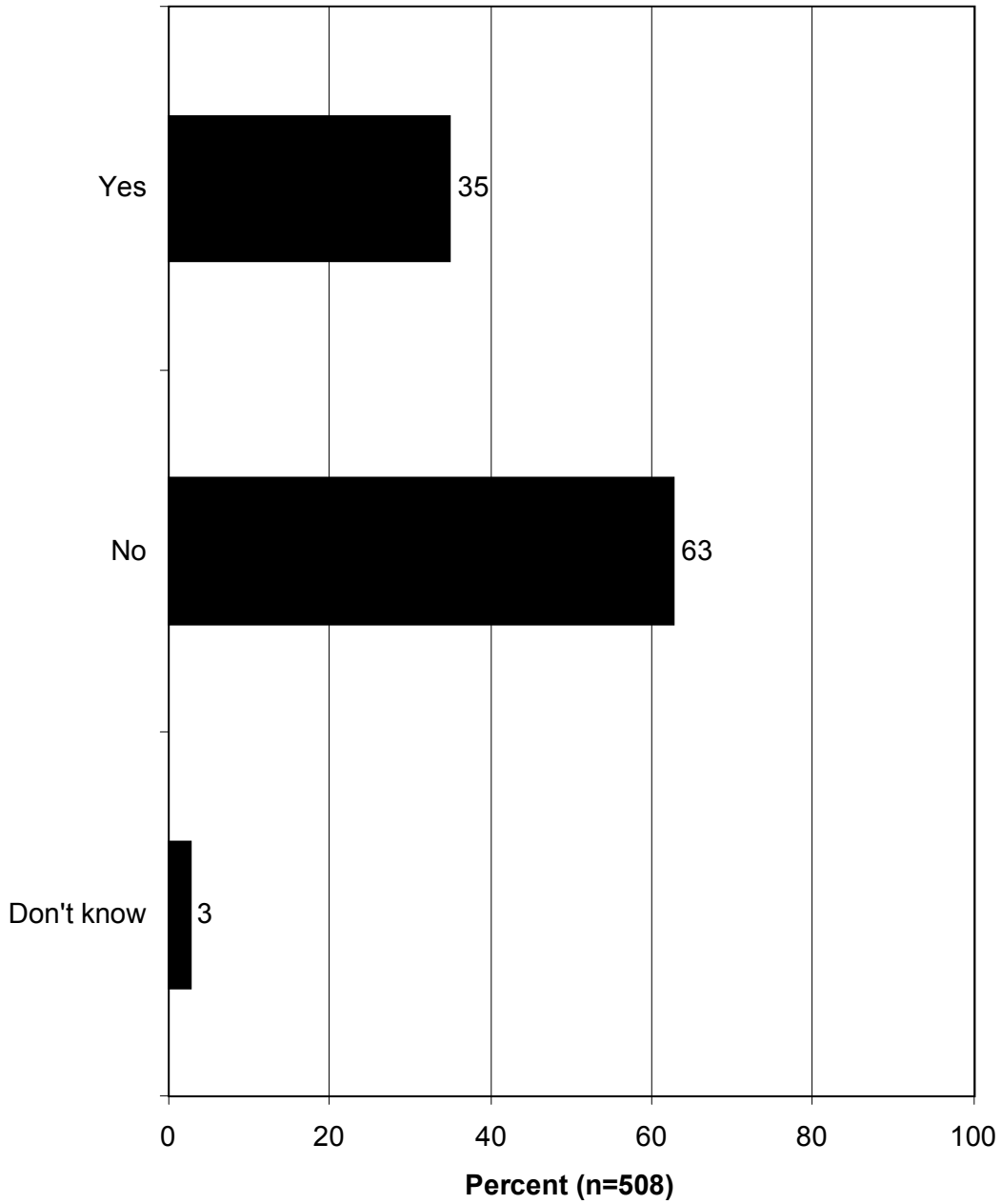


Figure 40: What is the highest grade level you have completed in school?

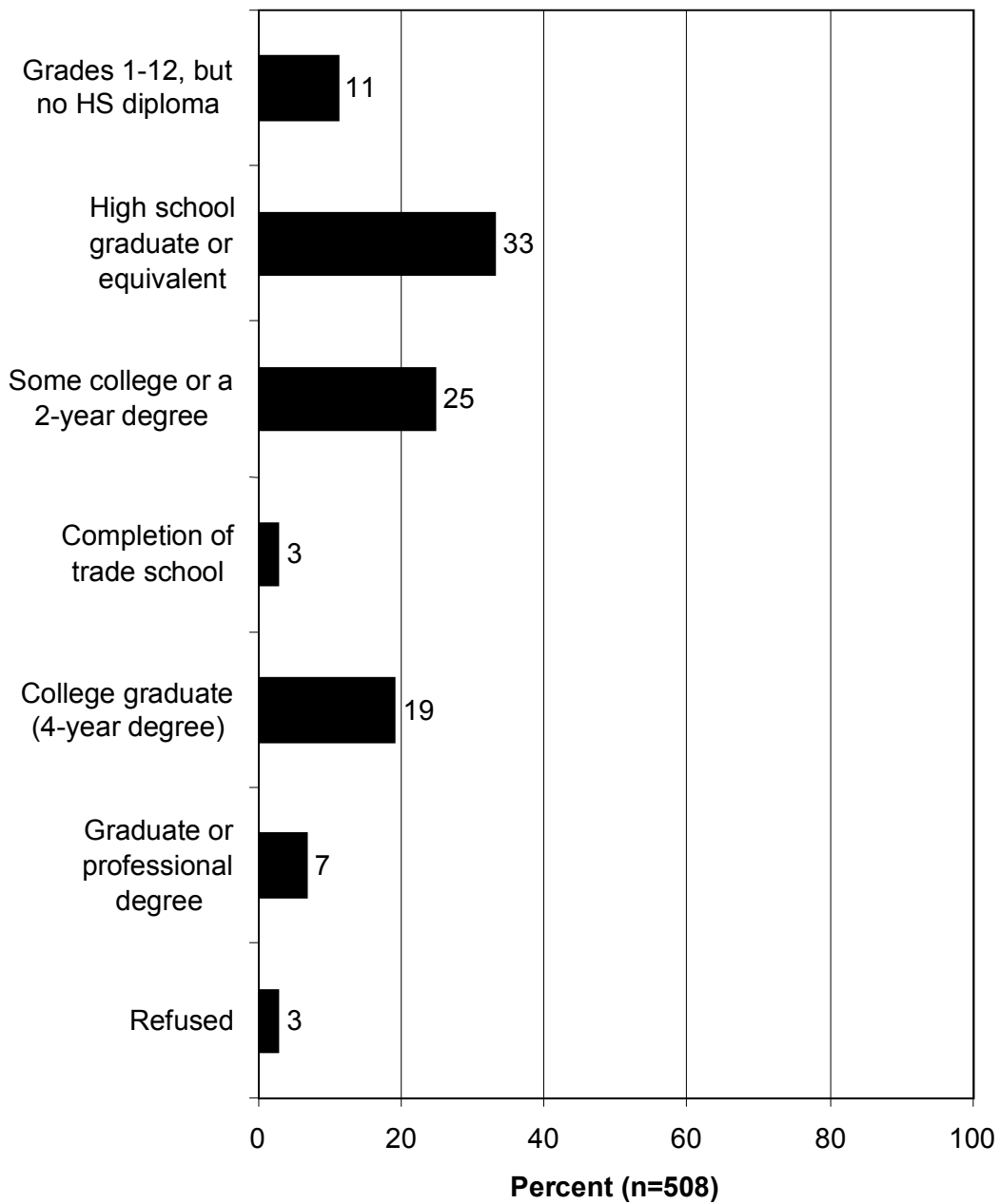


Figure 41: Respondent Age

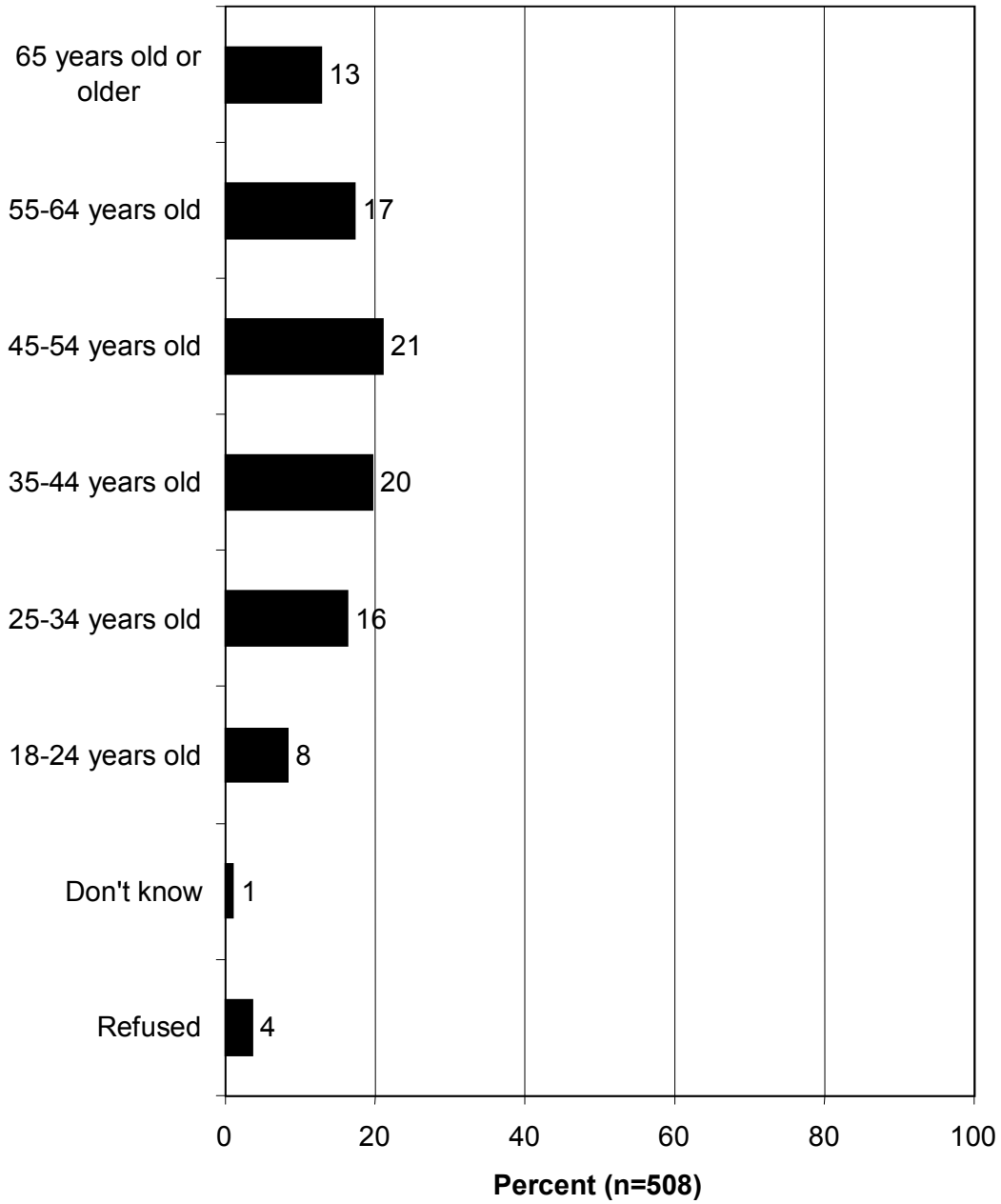


Figure 42: Respondent Gender

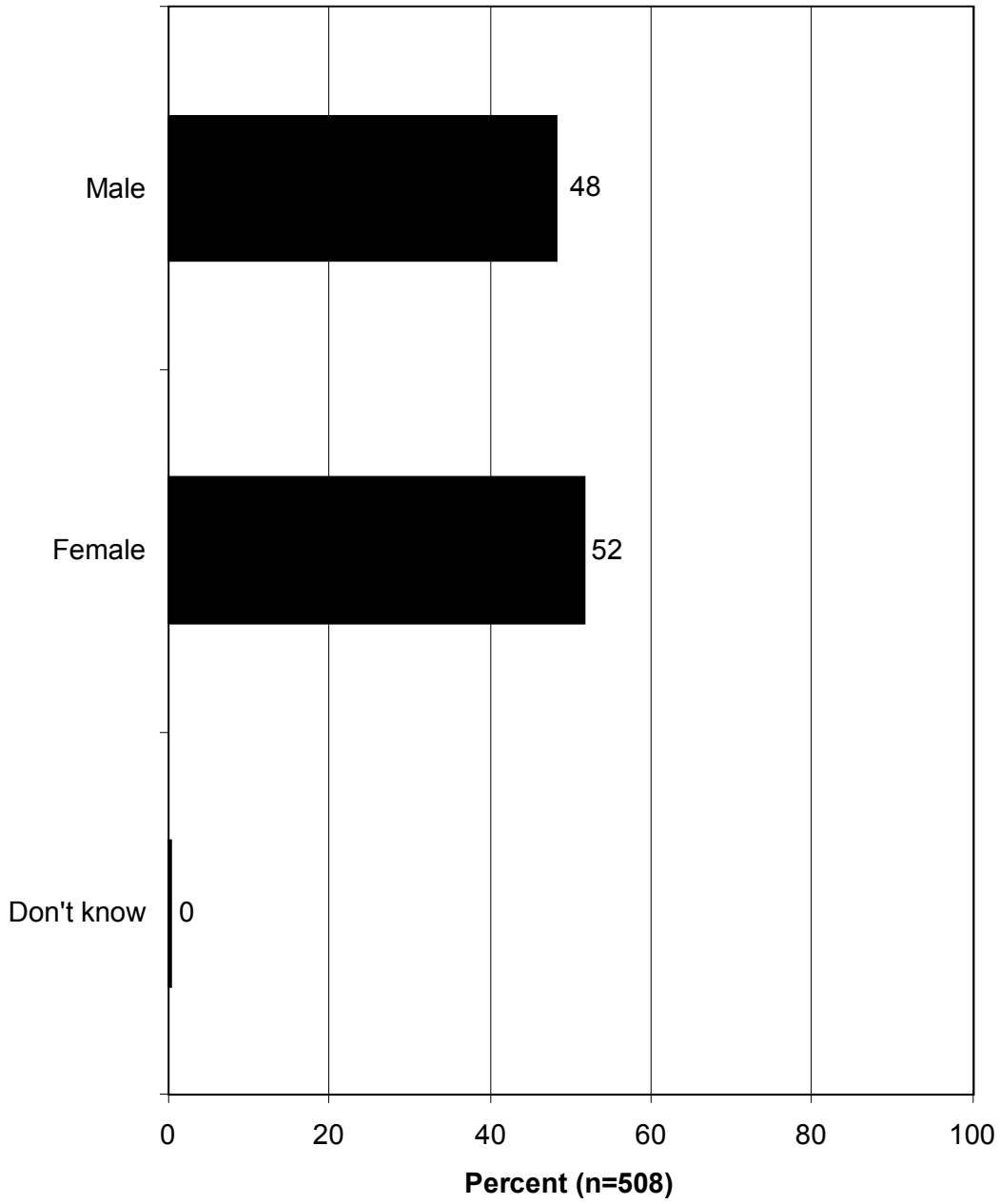


Table 1: Support or Oppose Grizzly Bear Recovery by County

	Skagit	Whatcom	Total
Strongly Support	133 49.81%	130 53.94%	263 51.77%
Moderately Support	68 25.47%	56 23.24%	124 24.41%
Neutral	13 4.87%	11 4.56%	24 4.72%
Moderately Oppose	14 5.24%	9 3.73%	23 4.53%
Strongly Oppose	30 11.24%	26 10.79%	56 11.02%
DK / NS	9 3.37%	9 3.37%	18 3.54%
Total	267 52.56%	241 47.44%	508 100.00%

Table 2: Support or Oppose Grizzly Bear Recovery by Gender

	Male	Female	Ref.	Total
Strongly Support	122 49.80%	141 53.82%	0 0.00%	263 51.77%
Moderately Support	57 23.27%	66 25.19%	1 100.00%	124 24.41%
Neutral	10 4.08%	14 5.34%	0 0.00%	24 4.72%
Moderately Oppose	15 6.12%	8 3.05%	0 0.00%	23 4.53%
Strongly Oppose	35 14.29%	21 8.02%	0 0.00%	56 11.02%
DK / NS	6 2.45%	12 4.58%	0 0.00%	18 3.54%
Total	245 48.23%	262 51.57%	1 0.20%	508 100.00%

Table 3: Support or Oppose Grizzly Bear Recovery by Education Level

	< HS	HS GED	Some Coll.	Trade Sch.	Coll. Grad.	Grad. Degree	Ref.	Total
Strongly Support	33 58.93%	84 50.00%	72 57.60%	7 50.00%	46 47.42%	16 47.06%	5 35.71%	263 51.77%
Moderately Support	10 17.86%	42 25.00%	32 25.60%	5 35.71%	25 25.77%	9 26.47%	1 7.14%	124 24.41%
Neutral	2 3.57%	8 4.76%	5 4.00%	0 0.00%	5 5.15%	2 5.88%	2 14.29%	24 4.72%
Moderately Oppose	2 3.57%	9 5.36%	7 5.60%	1 0.00%	3 3.09%	1 2.94%	0 0.00%	23 4.53%
Strongly Oppose	6 10.71%	19 11.31%	7 5.60%	1 7.14%	14 14.43%	6 17.65%	3 21.43%	56 11.02%
DK / NS	3 5.36%	6 3.57%	2 1.60%	0 0.00%	4 4.12%	0 0.00%	3 21.43%	18 3.54%
Total	56 11.02%	168 33.07%	125 24.61%	14 2.76%	97 19.09%	34 6.69%	14 2.76%	508 100.00%

Table 4: Support or Oppose Grizzly Bear Recovery by Age

	65+	55-64	45-54	35-44	25-34	18-24	DK	Ref.	Total
Strongly Support	25 38.46%	39 44.32%	57 53.27%	59 59.00%	53 63.86%	27 64.29%	0 0.00%	3 16.67%	263 51.77%
Moderately Support	14 21.54%	21 23.86%	26 24.30%	31 31.00%	18 21.69%	9 21.43%	0 0.00%	5 27.78%	124 24.41%
Neutral	3 4.62%	4 4.55%	7 6.54%	1 1.00%	4 4.82%	2 4.76%	1 20.00%	2 11.11%	24 4.72%
Moderately Oppose	4 6.15%	4 4.55%	7 6.54%	1 1.00%	5 6.02%	0 0.00%	1 20.00%	1 5.56%	23 4.53%
Strongly Oppose	15 23.08%	17 19.32%	9 8.41%	4 4.00%	3 3.61%	1 2.38%	3 60.00%	4 22.22%	56 11.02%
DK / NS	4 6.15%	3 3.41%	1 0.93%	4 4.00%	0 0.00%	3 7.14%	0 0.00%	3 16.67%	18 3.54%
Total	65 12.08%	88 17.32%	107 21.06%	100 19.69%	83 16.34%	42 8.27%	5 0.98%	18 3.54%	508 100.00%

Table 5: Support or Oppose Grizzly Bear Recovery by Family Income Dependent on the Forest

	Yes	No	DK/NS	Total
Strongly Support	76 42.94%	185 58.18	2 15.38%	263 51.77%
Moderately Support	48 27.12%	74 23.27%	2 15.38%	124 24.41%
Neutral	9 5.08%	12 3.77%	3 23.08%	24 4.72%
Moderately Oppose	15 8.47%	8 2.52%	0 0.00%	23 4.53%
Strongly Oppose	23 12.99%	30 9.43%	3 23.08%	56 11.02%
DK / NS	6 3.39%	9 2.83%	3 23.08%	18 3.54%
Total	177 34.84%	318 62.60%	13 2.56%	508 100.00%

Table 6: Support or Oppose Grizzly Bear Recovery by Ever Camped, Hunted, or Fished In North Cascades

	Yes	No	DK/NS	Total
Strongly Support	242 53.78%	21 42.86%	0 0.00%	263 51.77%
Moderately Support	107 23.78%	15 30.61%	2 22.22%	124 24.41%
Neutral	17 3.78%	5 10.20%	2 22.22%	24 4.72%
Moderately Oppose	20 4.44%	3 6.12%	0 0.00%	23 4.53%
Strongly Oppose	51 11.33%	2 4.08%	3 33.33%	56 11.02%
DK / NS	13 2.89%	3 6.12%	2 22.22%	18 3.54%
Total	450 88.58%	49 9.65%	9 1.77%	508 100.00%

Table 7: Support of “No Need for Grizzly Bears” Statement by County

	Skagit	Whatcom	Total
Strongly Agree	24 8.99%	25 10.37%	49 9.65%
Moderately Agree	19 7.12%	12 4.98%	31 6.10%
Neutral	10 3.75%	9 3.73%	19 3.74%
Moderately Disagree	55 20.60%	52 21.58%	107 21.06%
Strongly Disagree	155 58.05%	139 57.68%	294 57.87%
DK / NS	4 1.50%	4 1.66%	8 1.57%
Total	267 52.56%	241 47.44%	508 100.00%

Table 8: Support of “No Need for Grizzly Bears” Statement by Gender

	Male	Female	Ref.	Total
Strongly Agree	29 11.84%	19 7.25%	1 100.00%	49 9.65%
Moderately Agree	22 8.98%	9 3.44%	0 0.00%	31 3.44%
Neutral	11 4.49%	8 3.05%	0 0.00%	19 3.74%
Moderately Disagree	55 22.45%	52 19.85%	0 0.00%	107 21.06%
Strongly Disagree	126 51.43%	168 64.12%	0 0.00%	294 57.87%
DK / NS	2 0.82%	6 2.29%	0 0.00%	8 1.57%
Total	245 48.23%	262 51.57%	1 0.20%	508 100.00%

Table 9: Support of “No Need for Grizzly Bears” Statement by Education Level

	< HS	HS GED	Some Coll.	Trade Sch.	Coll. Grad.	Grad. Degree	Ref.	Total
Strongly Agree	8 14.29%	15 8.93%	5 4.00%	2 14.29%	11 11.34%	6 17.65%	2 14.29%	49 9.65%
Moderately Agree	3 5.36%	9 5.36%	11 8.80%	0 0.00%	7 7.22%	1 2.94%	0 0.00%	31 6.10%
Neutral	0 0.00%	8 4.76%	3 2.40%	0 0.00%	6 6.19%	1 2.94%	1 7.14%	19 3.74%
Moderately Disagree	12 21.43%	32 19.05%	24 19.20%	5 35.71%	21 21.65%	10 29.41%	3 21.43%	107 21.06%
Strongly Disagree	32 57.14%	102 60.71%	81 64.80%	7 50.00%	51 52.58%	16 47.06%	5 35.71%	294 57.87%
DK / NS	1 1.79%	2 1.19%	1 0.80%	0 0.00%	1 1.03%	0 0.00%	3 21.43%	8 1.57%
Total	56 11.02%	168 33.07%	125 24.61%	14 2.76%	97 19.09%	34 6.69%	14 2.76%	508 100.00%

Table 10: Support of “No Need for Grizzly Bears” Statement by Age

	65+	55-64	45-54	35-44	25-34	18-24	DK	Ref.	Total
Strongly Agree	13 20.00%	12 13.64%	8 7.48%	4 4.00%	3 3.61%	2 4.76%	3 60.00%	4 22.22%	49 9.65%
Moderately Agree	8 12.31%	7 7.95%	5 4.67%	4 4.00%	5 6.02%	0 0.00%	0 0.00%	2 11.11%	31 6.10%
Neutral	2 3.08%	4 4.55%	4 3.74%	3 3.00%	4 4.82%	1 2.38%	1 20.00%	0 0.00%	19 3.74%
Moderately Disagree	17 26.15%	22 25.00%	20 18.69%	25 25.00%	16 19.28%	3 7.14%	0 0.00%	4 22.22%	107 21.06%
Strongly Disagree	24 36.92%	42 47.73%	69 64.49%	63 63.00%	54 65.06%	35 83.33%	1 20.00%	6 33.33%	294 57.87%
DK / NS	1 1.54%	1 1.14%	1 0.93%	1 1.00%	1 1.20%	1 2.38%	0 0.00%	2 11.11%	8 1.57%
Total	65 12.08%	88 17.32%	107 21.06%	100 19.69%	83 16.34%	42 8.27%	5 0.98%	18 3.54%	508 100.00%

Table 11: Support of “No Need for Grizzly Bears” Statement by Family Income Dependent on the Forest

	Yes	No	DK/NS	Total
Strongly Agree	19 10.73%	28 8.81%	2 15.38%	49 9.65%
Moderately Agree	16 9.04%	15 4.72%	0 0.00%	31 6.10%
Neutral	10 5.65%	8 2.52%	1 7.69%	19 3.74%
Moderately Disagree	33 18.64%	71 22.33%	3 23.08%	107 21.06%
Strongly Disagree	97 54.80%	192 60.38%	5 38.46%	294 57.87%
DK / NS	2 1.13%	4 1.26%	2 15.38%	8 1.57%
Total	177 34.84%	318 62.60%	13 2.56%	508 100.00%

Table 12: Support of “No Need for Grizzly Bears” Statement by Ever Camped, Hunted, or Fished In North Cascades

	Yes	No	DK/NS	Total
Strongly Agree	44 9.78%	3 6.12%	2 22.22%	49 9.65%
Moderately Agree	28 6.22%	3 6.12%	0 0.00%	31 6.10%
Neutral	16 3.56%	2 4.08%	1 11.11%	19 3.74%
Moderately Disagree	94 20.89%	11 22.45%	2 22.22%	107 21.06%
Strongly Disagree	264 58.67%	27 55.10%	3 33.33%	294 57.87%
DK / NS	4 0.89%	3 6.12%	1 11.11%	8 1.57%
Total	450 88.58%	49 9.65%	9 1.77%	508 100.00%

Table 13: Support for “Grizzly Bears Inherent Right to Live in North Cascades” Statement by County

	Skagit	Whatcom	Total
Strongly Agree	146 54.68%	133 55.19%	279 54.92%
Moderately Agree	57 21.35%	53 21.99%	110 21.65%
Neutral	14 5.24%	8 3.32%	22 4.33%
Moderately Disagree	19 7.12%	17 7.05%	36 7.09%
Strongly Disagree	28 10.49%	23 9.54%	51 10.04%
DK / NS	3 1.12%	7 2.90%	10 1.97%
Total	267 52.56%	241 47.44%	508 100.00%

Table 14: Support for “Grizzly Bears Inherent Right to Live in North Cascades” Statement by Gender

	Male	Female	Ref.	Total
Strongly Agree	121 49.39%	158 60.31%	0 0.00%	279 54.92%
Moderately Agree	56 22.86%	53 20.23%	1 100.00%	110 21.65%
Neutral	15 6.12%	7 2.67%	0 0.00%	22 4.33%
Moderately Disagree	20 8.16%	16 6.11%	0 0.00%	36 7.09%
Strongly Disagree	29 11.84%	22 8.40%	0 0.00%	51 10.04%
DK / NS	4 1.63%	6 2.29%	0 0.00%	10 1.97%
Total	245 48.23%	262 51.57%	1 0.20%	508 100.00%

**Table 15: Support for “Grizzly Bears Inherent Right to Live in North Cascades”
Statement by Education Level**

	< HS	HS GED	Some Coll.	Trade Sch.	Coll. Grad.	Grad. Degree	Ref.	Total
Strongly Agree	36 64.29%	99 58.93%	67 53.60%	9 64.29%	42 43.40%	17 50.00%	9 64.29%	279 54.92%
Moderately Agree	9 16.07%	33 19.64%	29 23.20%	4 28.57%	27 27.84%	6 17.65%	2 14.29%	110 21.65%
Neutral	3 5.36%	6 3.57%	4 3.20%	0 0.00%	6 6.19%	2 5.88%	1 7.14%	22 4.33%
Moderately Disagree	4 7.14%	10 5.95%	11 8.80%	0 0.00%	7 7.22%	4 11.76%	0 0.00%	36 7.09%
Strongly Disagree	3 5.36%	15 8.93%	14 11.20%	1 7.14%	13 13.40%	5 14.71%	0 0.00%	51 10.04%
DK / NS	1 1.79%	5 2.98%	0 0.00%	0 0.00%	2 2.06%	0 0.00%	2 14.29%	10 1.97%
Total	56 11.02%	168 33.07%	125 24.61%	14 2.76%	97 19.09%	34 6.69%	14 2.76%	508 100.00%

**Table 16: Support for “Grizzly Bears Inherent Right to Live in North Cascades”
Statement by Age**

	65+	55-64	45-54	35-44	25-34	18-24	DK	Ref.	Total
Strongly Agree	30 46.15%	43 48.86%	65 60.75%	57 57.00%	51 61.45%	23 54.76%	1 20.00%	9 50.00%	279 54.92%
Moderately Agree	15 23.08%	20 22.73%	20 18.69%	23 23.00%	19 22.89%	10 23.81%	1 20.00%	2 11.11%	110 21.65%
Neutral	4 6.15%	1 1.14%	6 5.61%	2 2.00%	5 6.02%	3 7.14%	0 0.00%	1 5.56%	22 4.33%
Moderately Disagree	3 4.62%	11 12.50%	6 5.61%	10 10.00%	3 3.61%	1 2.38%	1 20.00%	1 5.56%	36 7.09%
Strongly Disagree	11 16.92%	13 14.77%	8 7.48%	7 7.00%	5 6.02%	2 4.76%	2 40.00%	3 16.67%	51 10.04%
DK / NS	2 3.08%	0 0.00%	2 1.87%	1 1.00%	0 0.00%	3 7.14%	0 0.00%	2 11.11%	10 1.97%
Total	65 12.08%	88 17.32%	107 21.06%	100 19.69%	83 16.34%	42 8.27%	5 0.98%	18 3.54%	508 100.00%

Table 17: Support for “Grizzly Bears Inherent Right to Live in North Cascades” Statement by Family Income Dependent on the Forest

	Yes	No	DK/NS	Total
Strongly Agree	86 48.59%	186 58.49	7 53.85%	279 54.92%
Moderately Agree	40 22.60%	68 21.38%	2 15.38%	110 21.65%
Neutral	11 6.21%	9 2.83%	2 15.38%	22 4.33%
Moderately Disagree	11 6.21%	25 7.86%	0 0.00%	36 7.09%
Strongly Disagree	25 14.12%	24 7.55%	2 15.38%	51 10.04%
DK / NS	4 2.26%	6 1.89%	0 0.00%	10 1.97%
Total	177 34.84%	318 62.60%	13 2.56%	508 100.00%

Table 18: Support for “Grizzly Bears Inherent Right to Live in North Cascades” Statement by Ever Camped, Hunted, or Fished In North Cascades

	Yes	No	DK/NS	Total
Strongly Agree	245 54.44%	29 59.18%	5 55.56%	279 54.92%
Moderately Agree	97 21.56%	11 22.45%	2 22.22%	110 21.65%
Neutral	18 4.00%	3 6.12%	1 11.11%	22 4.33%
Moderately Disagree	34 7.56%	2 4.08%	0 0.00%	36 7.09%
Strongly Disagree	49 10.89%	1 2.04%	1 11.11%	51 10.04%
DK / NS	7 1.56%	3 6.12%	0 0.00%	10 1.97%
Total	450 88.58%	49 9.65%	9 1.77%	508 100.00%

Discussion

Support for Grizzly Bear Recovery

As indicated in Figure 26 and Table 1, rural residents from Skagit and Whatcom Counties reported substantial support for grizzly bear recovery in the North Cascades. A majority of respondents (52%) reported strong support for recovery and 24% reported moderate support for recovery. Combining these two categories indicates that 76% of respondents supported grizzly bear recovery. Very few (11%) said that they strongly oppose grizzly bear recovery and only 5% said that they moderately oppose recovery.

Wildlife agencies managing grizzly bear recovery have not yet determined whether grizzly bears will be added (i.e., augmentation) to the North Cascades to recover the population. The survey revealed that 33% of the respondents said that they would be “more supportive” of grizzly bear recovery in the North Cascades if 5-10 bears had to be added (figure 27). Another 43% expressed the same level of support for recovery if grizzly bears had to be added to the North Cascades. Only 15% said they would be “less supportive” if bears had to be added. On the other hand, 31% reported that they would be “more supportive” if recovery could be accomplished without adding bears to the North Cascades (figure 28).

Figures 29 and 30 reveal respondent attitudes toward land use and community changes that might be needed to recover grizzly bears in the North Cascades. On balance, Skagit and Whatcom County residents would be “more supportive” of recovery if some land use restrictions were required, such as closing some roads and trails at certain times of the year. They would be substantially “more supportive” of recovery if stronger restrictions on garbage disposal methods were required to prevent problems with grizzly bear recovery. Majorities of respondents also reported that they would be “more supportive” of grizzly bear recovery if a program was available to compensate ranchers for grizzly bear related livestock losses (figure 31) and if agency wildlife managers would meet more frequently with residents to discuss recovery (figure 32).

Respondent support for grizzly bear recovery was about the same in Skagit County and Whatcom County (table 1). Females (table 2) and individuals with some college or trade school training (table 3) appeared to be slightly more supportive of grizzly bear recovery than other segments of the population. Clearly, younger participants in the survey were more supportive of grizzly bear recovery than older respondents (table 4). The survey revealed slightly less support for recovery among respondents whose family income was dependent on the forest (table 5). However, respondents who camped, hunted, fished, or used the forest in some other recreational capacity were slightly more likely to support recovery (table 6).

Attitudes Toward Grizzly Bears

Figures 16 through 25 show respondent attitudes toward grizzly bears. For the most part, results for these attitudinal items parallel the results for level of support for grizzly bear recovery. Overwhelming majorities of respondents agreed with positive statements about grizzly bears as shown in figures 16, 19, 21, 23, 24, and 25. Nearly everyone (91%) agreed with the statement, “Residents and visitors to the North Cascades can prevent almost all problems with grizzly bears by taking a few precautions such as keeping a clean campsite and avoiding areas with heavy bear activity (figure 24). Majorities, and in some cases strong majorities, of respondents disagreed with negative statements about grizzly bears (figures 17, 18, 20, and 22).

Figure 20 provides an overview of responses to the statement, “There is no need for grizzly bears in the North Cascades Mountains.” A strong majority (79%) disagreed with this statement, and a majority (58%) strongly disagreed. Tables 7 through 12 provide a breakdown of responses to this statement by demographic characteristics. There was no difference by county of residence (table 7). There were minor differences by gender (table 8), education (table 9), and recreational activity (table 12), with more support for the statement among males, by those with less than a high school education or those with a college education, and among those with a family income dependent on the forest. Age was strongly related to this statement, with older respondents (55+) far more likely to agree (table 10).

Figure 19 provides an overview of responses to the statement, “Grizzly bears were here before humans and have an inherent right to live in the North Cascades.” Results from this questionnaire item were very similar to respondent support for grizzly bear recovery, with 55% strongly agreeing with the statement and 22% moderately agreeing with the statement. Tables 13 through 18 reveal support for this statement by demographics. Responses were almost identical for Skagit County and Whatcom County respondents (table 13). Females (table 14), those with less than a high school education or trade school training (table 15), younger respondents (table 16), and those reporting participation in North Cascades recreational activities (table 18) were more likely to agree with the statement. Respondents with family incomes dependent on the forest were less likely to agree with this statement (table 17).

Attitudes Toward Wildlife Management Agencies

Attitudes toward wildlife management agencies were mixed, with many people expressing support, but quite a few doubting that agencies will meet their needs with regard to grizzly bear recovery. A substantial proportion (61%) agreed that agency biologists provide the most accurate information available on grizzly bears (figure 33). However, this leaves 39% of the population either not knowing or not agreeing that biologists provide the most accurate information available. Approximately, the same proportion of respondents (62%) agreed that wildlife managers would involve local citizens in all major decisions regarding grizzly bear recovery (figure 35). Even a larger proportions of respondents agreed that agency wildlife managers would pay attention to citizen concerns (70%) and would promptly remove any grizzly bears that linger in areas of high human use or act aggressively toward humans or kill livestock (82%). Unfortunately, a segment of respondents did not know or did not agree that agency wildlife managers would pay attention to their concerns (30%) and/or act to protect them if grizzly bears were present (18%). However, a strong majority of respondents agreed that local residents would work with agencies to determine the best way to recover grizzly bears in the North Cascades (figure 37).

Knowledge About Grizzly Bears and Grizzly Bear Recovery

Respondent knowledge about grizzly bears and grizzly bear recovery was very mixed (figures 2 through 14) with some responses right on target and others substantially incorrect. Respondent estimates of past (figure 2) and current (figure 3) grizzly bear population levels in the North Cascades were fairly accurate, with grizzly bears actually being common to abundant in the past and rare today. The majority of respondents (52%) reported that they did not know the exact current population (table 4).

Most respondents appeared to accurately recognize that food sources for grizzly bears in the North Cascades are good (figure 5). The presence of good grizzly bear food sources in the North Cascades has been confirmed by research conducted by the USDA Forest Service and other land management agencies with responsibility for grizzly bear recovery in the North Cascades. Very few respondents (only 8%) realized that the diet of grizzly bears in the North Cascades is only about 10% meat and fish (figure 6). The diet of grizzly bears along the coast (where they are more commonly known as brown bears) can include substantially more fish.

Respondent knowledge about the grizzly bear recovery process was very poor. Only 8% knew that a fully recovered grizzly bear population in the North Cascades would include only about 250 bears (figure 7). Even fewer knew that it would take around 100 years to achieve full recovery (figure 8).

Survey participants were fairly well informed about aspects of grizzly bears that directly affect their safety. Figure 9 shows that two-thirds of respondents recognized that hanging food and garbage at least 15 feet off the ground is the best way to store it. An additional 19% knew that storage in a vehicle is also an option, although not as good, for storing food and garbage in bear country. Figure 10 shows that a substantial proportion also correctly identified the primary circumstances under which a grizzly bear is likely to attack a human (i.e., protecting a cub or during a surprise encounter). This knowledge will help hikers and others avoid problems with grizzly bears. Most respondents (81%) knew that it is legal to kill a grizzly bear in self-

defense or in defense of other people (figure 11). Unfortunately, too many (31%) incorrectly believe that it is legal to kill a grizzly bear to stop an attack on livestock (figure 12).

Many respondents were aware that very few people are killed (figure 13) or injured (figure 14) by grizzly bears each year in the western United States. Records indicate that, only 18 people have been killed by grizzly bears during the past 100 years in the western United States. However, more than one-third of respondents (37%) either did not know or substantially over estimated the number of people killed. Even a larger proportion of respondents (55%), either did not know or substantially over estimated the number of people injured each year. These data reveal that a substantial proportion of Skagit and Whatcom County residents may have unwarranted fears about personal safety regarding grizzly bears.

Respondent Information Sources

Figure 15 displays respondent sources of information on grizzly bears and grizzly bear recovery. Respondents could and did occasionally select more than one primary source, thus the percentages listed in figure 15 add to more than 100%. As expected, newspapers, magazines, and television were the primary sources of information. Personal experience (undefined) and friends were also major sources of information. Unfortunately, all of the work that goes into programs and educational materials (i.e., brochures) sponsored by wildlife and land management agencies appears to reach very few people. Despite the fact that the survey respondents live less than 15 miles from the recovery area, almost 40% knew nothing about grizzly bear recovery in the North Cascades (figure 1). Less than 10% reported that they knew a great deal about recovery. Environmental organizations seem to fare nearly as well as agencies in reaching local residents with information about grizzly bears. Very few respondents listed social, recreational, professional, or production organizations as their primary source of information on grizzly bears and grizzly bear recovery.

Conclusions

The level of support for grizzly bear recovery among rural residents in Skagit and Whatcom Counties (i.e., those living east of Highway 9) was unknown before this survey was completed. Anecdotal reports from this area and other parts of Washington indicated that a substantial proportion of rural residents might be opposed to grizzly bear recovery, especially if it were occurring near their homes. In contrast to this expectation, the survey revealed strong support for grizzly bear recovery in the North Cascades among rural residents in Skagit and Whatcom Counties. Although there were minor differences, the survey also revealed a preponderance of strong support from every demographic segment of the population.

Some might question the accuracy of the survey results and challenge whether they represent the opinions of rural residents in Skagit and Whatcom Counties. However, the large sample size in this survey (i.e., 508 adults age eighteen and older) yields point estimates that are accurate to within plus or minus 4%. The large number of people completing the survey gives us confidence that the results (e.g., 76% support for grizzly bear recovery) accurately represent the opinions of rural residents in Skagit and Whatcom Counties,

Anecdotal reports indicated that study participants might be supportive of grizzly bear recovery, but that they might be opposed to adding bears to the North Cascades to accomplish recovery. However, there appears to be no major concern among Skagit and Whatcom County residents about augmentation of the grizzly bear population. Some people (33%) said they would be “more supportive” if augmentation was needed and others (31%) said they would be “more supportive” if recovery could occur without augmentation.

Although they are adjacent and both include land in the North Cascades Grizzly Bear Recovery Area, Skagit County and Whatcom County are different in many ways. However, there was no major difference between residents of Skagit and Whatcom Counties regarding their support for grizzly bear recovery in the North Cascades. It is likely that the residents of the other rural counties, as well as urban counties, including portions of the North Cascades Grizzly Bear Recovery Area would also support grizzly bear recovery. An

earlier 1996 study by Responsive Management (Washington Residents' Opinions on Grizzly Bear Recovery in the North Cascades Mountains) found support for recovery throughout Washington State.

Support for grizzly bear recovery among Skagit and Whatcom County residents appears to be rooted in attitudes toward grizzly bears that are based on broader values. Most Skagit and Whatcom County residents (82%) perceive grizzly bears as a symbol of the American frontier and part of our national heritage that should be preserved, especially for future generations. A strong majority (78%) also recognizes the importance of grizzly bears to the North Cascades ecosystem. Many (77%) agree that grizzly bears have an inherent right to live in the North Cascades, a biocentric attitude that places value on nature above and beyond instrumental uses by human.

The survey also revealed a clear understanding and appreciation by Skagit and Whatcom County residents that they may need to make minor changes in their lifestyles to recover grizzly bears in a way that would be safe for both bears and humans. Support for recovery increases when Skagit and Whatcom County residents are told that a few roads and trails might need to be closed part of the year to assist grizzly bear recovery. Most Skagit and Whatcom County residents support stronger restrictions on garbage disposal if they are necessary to achieve grizzly bear recovery. Almost everyone recognizes that most problems with grizzly bears can be prevented by changes in human behaviors.

The survey revealed substantial room for improvement in public trust of wildlife and land management agencies responsible for grizzly bear recovery in the North Cascades. About one-quarter to one-third of rural residents in Skagit and Whatcom Counties have doubts about agency science, the meaningfulness of public participation processes, and the commitment of wildlife managers to public safety during grizzly bear recovery. There is a clear need for more direct interaction between agency staff and local citizens to explain the results of scientific research on grizzly bears, to communicate how the recovery process will respond to citizen concerns, and to outline actions that will be taken by wildlife managers to assure public safety.

Survey results clearly show that Skagit and Whatcom County residents need more information on grizzly bears and grizzly bear recovery. Few people know that meat and fish comprise only 10% of the grizzly bear's diet in the North Cascades. Substantial proportions of Skagit and Whatcom County residents do not appreciate how few people are killed or injured by grizzly bears each year in western states. Very few realize that full recovery of the grizzly bear population in the North Cascades will take around 100 years and that only about 250 bears will need to be present when agencies declare the population recovered. The limited opposition to grizzly bear recovery revealed by this survey may be even further diminished when Skagit and Whatcom County residents receive accurate information about grizzly bears and grizzly bear recovery in the North Cascades. Alarming, almost one-third of Skagit and Whatcom County residents do not know that it is illegal to kill a grizzly bear if it were to attack livestock. Although it occurs infrequently, intentional killing of grizzly bears threatening livestock can be a major factor in preventing recovery in a population that is critically dependent on the health and reproduction of every individual bear.

Based on these research results, it appears that Skagit and Whatcom County residents will be ready for active steps toward grizzly bear recovery in the North Cascades after a brief time period that allows for education about grizzly bears and enhanced cooperation with wildlife agencies responsible for grizzly bear recovery.

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