



# The Nature of Americans

## Disconnection and Recommendations for Reconnection

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### *Texas Report*

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## Executive Summary

The relationship between Texans and nature is changing. Adults and children alike spend evermore time indoors, participation in traditional activities like hunting and fishing is stagnant or declining, and shifts in social expectations treat engagement with nature as a mere amenity. These trends pose a problem, since overwhelming evidence shows the physical, psychological, and social wellbeing of humans depends on contact with nature.

To monitor these trends and to reveal how to restore this relationship, social scientists conducted an unprecedented study of 2,948 adults, children, and parents in the state throughout 2015–2016. This study is one part of The Nature of Americans, a national initiative to understand and connect Americans and nature.

Three different methods were used in this study. Each was integrated with the others, using themes and questions in common or closely parallel wherever possible. The first method involved six focus groups conducted in three major Texas cities. The second featured personal interviews with 261 children (8–12-years-old), along with an online survey of one parent of each of the participating children for additional insight to the children’s responses. The third method was an online survey of 2,379 adults. Each method revealed respondents’ sentiments toward nature, activities in nature, perceived benefits of nature, and barriers and facilitators to exposure to nature. In each part of the study, the research team oversampled three minority groups—blacks, Hispanics, and Asians—to provide a closer look at these groups.

The findings presented here on Texans are one portion of a larger study that examined the United States as a whole and the state of Florida. Those two companion reports are also available; all three form a robust look at the nation as a whole and at two bellwether states. All quotations, word clouds, tables, and graphs in this report contain results *only* from Texans, except where clearly indicated.

Chapter 1 presents the conceptual framework and methods used in this national inquiry. Remaining chapters then describe results from adults as a whole (Chapter 2), children ages 8–12 and their parents (Chapter 3), and adults of different demographic groups (Chapter 4). We conclude with a description of major findings and discussion of the recommendations emerging from this study (Chapter 5).

## Major Findings

Our research distills into eight major findings that reveal a profound *interest–action gap* in Texans’ relationships with nature. We begin first with the problem at stake, then describe factors of particular importance in developing strategies or programs to address this problem.

1. *Texans face a significant gap between their interests in nature and their efforts, abilities, and opportunities to pursue those interests.* Five interrelated, society-wide forces disconnect adults and children from nature in daily life. 1) Physical places, or a built environment, generally discourage contact with the natural world. 2) Competing priorities for time, attention, and money prevent contact with nature from becoming routine and habitual. 3) Declining direct dependence on the natural world for livelihoods and subsistence allows Texans to orient their lives to other things. 4) New technologies, especially electronic media, distract and captivate. 5) Shifting expectations about what “good” contact to nature ought to be mean

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adults are generally satisfied with the relatively little time they spend outdoors in nature. Some groups—especially minorities, younger adults, and urban and suburban residents—encounter additional barriers, including discomfort being outdoors alone, a lack of financial resources, and a lack of social support, such as adults to accompany children outside or friends to encourage other adults to make time for nature.

2. *Experiences in nature are deeply social.* Developing strategies for addressing the interest–action gap begins with the reality that for the majority of adults, children, and parents, experiences in nature are not primarily marked by solitude. Instead, influential, meaningful, and durable moments in nature and connections to special places typically occur in the company of others, especially family and friends. When describing influential or memorable moments in nature, Texans reveal again and again that these experiences occur—and are remembered—because they connect people to one another.
3. *Adults and children differ in where they locate unforgettable, authentic nature.* For children, nature is located quite literally right out the door, and special places outdoors and unforgettable memories often consist of nearby yards, woods, creeks, and gardens. Adults, to be sure, describe nature as consisting of the trees, beaches, animals, flowers, and lakes near where they lived. But in contrast to children, adults tend to set a high and even impossible standard for what they perceived to be “authentic” and unforgettable nature, believing that it requires solitude and travel to faraway places, which reinforces their perceptions of the relative inaccessibility of nature.
4. *Access to nature is as much about the quality of places as their quantity.* The vast majority of adults agree that there are “plenty” of places to enjoy nature. However, when asked about places near where they live, minorities and urban residents in particular perceive fewer places *nearby* to enjoy the outdoors. Parents of minority children report that there are fewer parks nearby compared with parents of white children. In terms of the quality of places, less than one-third of adults are very satisfied with places for outdoor and nature recreation near where they live. The social safety of places is an important concern for all parents and children, and even more so for minorities and urban residents. Concerns include the barriers of driving long distances or fighting traffic to access quality places—places they perceive are free of dangerous people and speeding vehicles, places where they feel like they belong, and places that afford opportunities for a wide variety of uses, including exploration, learning, admiration of beauty, peacefulness, and engagement with the spiritual and the divine.
5. *Texans value nature in remarkably broad, diverse ways.* Texans today value nature in broad, diverse ways—a pattern that holds across demographic differences of age, race and ethnicity, residential location, educational attainment, income level, and gender. The great majority value contact with the natural world through multiple dimensions, including affection and attraction, intellectual development, spirituality, and symbolism.
6. *Texans support nature-related programming, funding, and conservation.* The majority of adults surveyed believe programs to help Texans enjoy nature and wildlife are underfunded. Most support increasing these programs, and they support a number of ways to pay for nature and wildlife activities. Furthermore, most adults do not agree that we should build on land if it results in fewer places for wildlife to live. Children and adults on the whole disagree that people need to be dominant over wild animals and plants.
7. *Texans’ relationship with nature is complex and nuanced.* Across many questions—including time spent outdoors, general interest in nature, and certain values of nature—Texans of all

types are strikingly similar. However, clear and substantial differences emerge across and within race and ethnicity, residential location, and age in two particular areas: interest in particular recreational activities, and barriers to those interests. For example, interest in activities like camping and hiking differs dramatically across groups, while interest in activities like fishing, walking outdoors, and visiting nature-education centers is more widely shared. In addition, minorities, younger respondents, and urban residents are especially concerned about the lack of nearby places to enjoy nature, competing interest from computers, health reasons, lack of time, and lack of social support for their interests in nature.

8. *Texans perceive tremendous benefit from experiences in nature.* The vast majority of adult Texans surveyed note that nature is highly important for their physical health and for their emotional outlook. Most say that being in nature provides them with peace, meaning, and purpose. The great majority of the 8–12-year-old children in our study indicate that contact with nature makes them healthier, happier and more creative, and more connected with others. In short, Texans of all types report that exposure to nature promoted their physical, psychological, and social wellbeing.

## Recommendations

Central to this initiative is transformative action. Hence, we offer 22 actionable recommendations for those who seek to connect Texans and nature. We detail these recommendations in Chapter 5.

1. Pay close attention to—and respond to—adults’ existing concerns about younger generations’ disconnection from nature.
2. Emphasize regular, recurrent, and routine engagement with nature, the outdoors, and wildlife.
3. For adults and children, promote nature not only as a place for experiences, but also as a place for involvement and care.
4. Assure adults and children that time in nature can be (and even ought to be) social.
5. Recruit pre-existing groups to programs.
6. Reach adults through children.
7. Support mentorship that extends beyond the parent–child relationship.
8. Carefully consider how different sectors promote what “good” connection with nature is or ought to be.
9. Deepen local experiences in nature near home.
10. For children and adults, use geographically local or familiar activities as a bridge to geographically distant or unfamiliar activities.
11. Provide socially safe and satisfying places outdoors, especially for urban and minority adults and children.
12. Work to lower the perceived costs of participation in recreational activities.
13. Promote experiences in nature that match Texans’ multidimensional values of nature.

14. Broaden programming to include a range of outcomes.
15. For adults, promote conservation efforts as a way to improve their overall community and quality of life.
16. Set clear goals and objectives.
17. Question “one-size-fits-all” and “silver-bullet” diagnoses and prognoses.
18. Be explicit about common assumptions, and consider revising them.
19. Use differences across age and stages of life to tailor programs and policies.
20. Clearly state, trace, test, and analyze causal pathways.
21. Join parents, children, and adults alike in recognizing that expenditures on children’s engagement with nature are fundamentally important investments.
22. Build partnerships among professionals in healthcare, education, urban planning, conservation, community development, and other sectors.

Connecting Texans and nature must be a vibrant, ongoing effort propelled by all members of the public. The state of the natural world and our place within it cannot afford for us to act slowly. We must act now to ensure that present and future generations are connected with nature for the health and wellbeing of all.

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Undoubtedly, there are public agencies, private institutions, and individuals who contributed to the success of this project yet are not noted here. Any such oversights are in no way intended to slight these contributions; many thanks to these individuals and organizations.

## Dedication

Dr. Stephen R. Kellert

1943–2016

Dr. Stephen R. Kellert collaborated on *The Nature of Americans* with DJ Case & Associates. This national initiative is grounded in his 1970s research of Americans' perceptions of nature, research that is widely recognized as a wellspring for the study of the social dimensions of conservation. Dr. Kellert was passionate about this project, and was still providing guidance and direction on the near-completed project reports just two weeks prior to his passing. But Dr. Kellert was joyous and enthusiastic in his work—as anyone who came in contact with him would agree—and hopeful that the study's findings would provide important guidance to improving human health and wellbeing.

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# Chapter 1

## Introduction: Theoretical Framework and Methods

### 1.1 Background for the Study

Profound trends and changes common across the United States as a whole are common to the state of Texas. One is that Texas society is shifting away from traditional nature-based recreation, such as hunting and fishing. Another is that children’s time is increasingly occupied by the consumption of electronic media. A third trend is urbanization, including the loss of open space, a built environment that discourages interaction with nature, difficulties accessing recreational areas and opportunities, a lack of training or background in outdoors-oriented activities, the primacy of vehicular transportation, fears of letting children play outside on their own, and the (over-)structuring of children’s time.<sup>1</sup> Yet despite the seeming significance of these factors in disconnecting people from nature awareness and outdoor activity, these results have not been comprehensively documented for adults and children in Texas. In particular, it is unclear to what extent shifts in recreational activities signal shifts in other outcomes of interest—support for conservation, appreciation of nature, recognition of nature’s benefits, knowledge of the natural world, and more. Also unclear is what difference demographic changes make or have made in Texans’ values of and interest in nature, the outdoors, and wildlife. Rather than presume that there are differences across groups, we sought to empirically explore what—if any—differences emerge.

#### 1.1.1 The Nature of Americans

Given these societal changes and given our relative lack of understanding about them, the principal investigators began The Nature of Americans in 2012, a national initiative to understand and connect Americans and nature. To support the breadth and depth of the project, investigators secured funding from a range of sources, including Fish & Wildlife Foundation of Florida, Florida Fish & Wildlife Conservation Commission, Texas Parks & Wildlife Department, Walt Disney Corporation, Wildlife Management Institute, and Morrison Family Foundation. Funding specifically

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<sup>1</sup>Kellert, Stephen R. *Birthright: People and Nature in the Modern World*. New Haven, CT: Yale University Press, 2012.

for the adult focus groups and adult online survey was generously provided by the U.S. Fish & Wildlife Service.

The first major component entailed detailed focus groups, interviews, and surveys with 2,687 adults, children, and parents in Texas. Upon including respondents from the state of Florida and the US as a whole, 11,817 adults, children, and parents shared their thoughts and feelings with us. This report represents only one step in conveying the results. While the empirical findings here provide numerous insights, we recognize that still more analyses can be conducted and synthesized from our data, and we look forward to working with the conservation community and others to do so. The second major component of *The Nature of Americans* aims to turn these insights into action. We anticipate working closely with conservation agencies, non-profits, foundations, corporations, and thought leaders in various sectors to support the public's connections to nature. Again in Chapter 5, we provide recommendations for how to do so.

This study was conducted by Dr. Stephen R. Kellert, professor emeritus at Yale University, and David J. Case, Dr. Daniel Escher, Dr. Daniel J. Witter, Dr. Jessica Mikels-Carrasco, and Phil T. Seng, from DJ Case & Associates.

### 1.1.2 Theoretical Framework: The Basic Need for Contact with Nature

Despite evidence of a growing separation between people and nature, increasing theoretical understanding and scientific evidence suggest contact with nature, rather than being a dispensable recreational and aesthetic amenity, is critical to people's physical and mental health, quality of life, and wellbeing. The concept of biophilia has been used to describe this basic human need to affiliate with natural features and processes.<sup>2</sup>

The biophilia hypothesis originates in an understanding of human evolutionary biology, where our species evolved for more than 99 percent of its history in adaptive response to largely natural, not artificial or human-created, forces. As a consequence, people's senses, emotions, and even intellect reflect an instinctual affinity for natural stimuli and processes. These biophilic tendencies continue to be an integral aspect of human functioning today. A lingering uncertainty is whether or not biophilia remains adaptive in modern society or has become largely obsolete and "vestigial"—once relevant in circumstances where it originally developed, but no longer of meaningful significance in contemporary society.

Complicating this uncertainty further, the inherent inclination to affiliate with nature, like much of what makes us human, is not a "hard-wired" instinct, but rather relies on experience, learning, and social support to develop and become functionally beneficial. If people, especially children, are to benefit from their association with nature—in character development, in physical health, in psychological happiness, and in social wellbeing—they must be provided with sufficient opportunity and access, repeated engagement, and a supportive social and cultural environment.

Data from a variety of sources suggest contact with nature and wildlife continues to contribute significantly to people's physical and mental health and capacity, even in our modern, increasingly urban society. This outcome has been revealed in research involving people's health, work, learning, children's cognitive and emotional development, and social and community relationships. A review

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<sup>2</sup>Wilson, Edward O. *Biophilia*. Cambridge, MA: Harvard University Press, 1984. Kellert, Stephen R., and Edward O. Wilson, eds. *The Biophilia Hypothesis*. Washington, DC: Island Press, 1993. See also Kellert (2012).

of some of this research literature is available in other publications.<sup>3</sup> Although many of these studies are methodologically limited in sample size and location, overall the data are so consistent that they prompted a noted psychologist to conclude:

If there is an evolutionary basis for biophilia...then contact with nature is a basic human need: not a cultural amenity, not an individual preference, but a universal primary need. Just as we need healthy food and regular exercise to flourish, we need ongoing connections with the natural world.<sup>4</sup>

Brief descriptions of each of the eight biophilic values and frequently associated benefits are described below.<sup>5</sup>

- **Affection**—The human tendency to express strong emotional attachment and at times love for features of the natural world. Commonly associated benefits include the ability to bond, care, and emotionally connect with others.
- **Attraction**—People’s aesthetic attraction and ability to perceive beauty in nature. Associated benefits include feelings of harmony and symmetry, emotional and intellectual development, and enhanced capacities for imagination and creativity.
- **Aversion**—The inclination to avoid aspects of nature that generate feelings of anxiety, threat, and sometimes fear. While this response can provoke antagonistic perceptions and behaviors, it can sometimes also engender a more positive appreciation and respect for the power and defensive capacities of other creatures and aspects of the natural world. Benefits include enhanced safety and security, coping and competitive skills, and sometimes a sense of awe and respect for powers greater than one’s own.
- **Control**—The tendency to master, dominate, and at times subjugate nature. Benefits include enhanced mastery and problem solving skills, critical thinking, and cognitive development.
- **Exploitation**—The tendency to utilize the natural world as a source of materials and resources. Commonly associated benefits include enhanced security, extractive abilities, and practical skills. One of the great challenges of modern life is to achieve this need in a sustainable fashion that results in minimal long-term environmental depletion, natural resource damage, and harm and suffering to particular species.
- **Intellect**—The inclination to use nature as a means for advancing rational thought and intellectual development. Benefits include cognitive skills, empirical and observational abilities, critical thinking, and learning.
- **Spirituality**—The inclination to experience nature as a means for achieving a sense of meaning, purpose, and connection to creation. Associated benefits include feelings of meaningful and purposeful existence, enhanced self-confidence, and bonding with others.
- **Symbolism**—The tendency to employ the image of nature to advance communication and abstract thought. Important benefits include the capacities for language and culture, intellectual development, and enhanced imagination and creativity.

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<sup>3</sup>See, for example, Kellert (2012).

<sup>4</sup>Heerwagen, Judith. “Biophilia, Health, and Well-Being.” In *Restorative Commons: Creating Health and Well-Being through Urban Landscapes*, edited by Lindsay Campbell and Anne Wiesen, 38–57. Gen. Tech Rep. NRS-P-39. Washington, DC: U.S. Department of Agriculture, U.S. Forest Service, 2009.

<sup>5</sup>Each is examined in detail in other publications: see Kellert (2012).

The adaptive occurrence of any biophilic value depends on experience, learning, and social support. People do not receive the full benefit from contact with nature unless it involves engaging and recurring experience rather than indifferent or sporadic exposure. Effectively incorporating nature into people’s lives necessitates a supportive learning environment that relates to people’s normal existence and benefits from the encouragement of significant others such as family, friends, peers, and community.

### 1.1.3 Research Questions

The basic theoretical framework of our research generated a number of questions. These questions focused on adult Texans as a whole; minority Texans, particularly blacks, Hispanics, and Asians; and children during the middle childhood years of 8 to 12.<sup>6</sup> Altogether, 25 questions guided our research. Listed in no priority of importance, these include:

*Adult Texans (18 years of age and older)*

1. What does “nature” mean to Texans?
2. What are Texans’ personal interests in nature?
3. What are the basic values of the adult public toward nature and wildlife?
4. What benefits do Texans view as deriving from the experience of nature?
5. How do members of the public perceive contact with nature affects their health?
6. What is the extent of contact that Texans have with nature?
7. How much do Texans know about the natural world?
8. How and to what extent do minority Texans—particularly blacks, Hispanics, and Asians—value nature and wildlife?
9. What is the extent of contact among minority Texans with nature, and how does it affect their health and quality of life?
10. How do other major demographic differences among Texans—age, residential location, gender, education, and income—correspond to differences in perceptions, values, interests, and experiences of nature?
11. What are the major barriers and facilitators to adults’ exposure to nature, the outdoors, and wildlife in today’s society?

*Children in middle childhood (8 to 12 years of age)*

12. What are children’s interests in nature?

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<sup>6</sup> Throughout this report, the terms “white adults” or “white children” refer to non-Hispanic/Latino respondents who selected “white” as their race. The terms “black adults” or “black children” refer to non-Hispanic/Latino respondents who selected “black or African American” as their race. The terms “Asian adults” or “Asian children” refer to non-Hispanic/Latino respondents who selected “Asian” as their race. Any respondent who selected “Yes, of Hispanic or Latino origin” is categorized as “Hispanic” for our purposes. We use the term “Hispanics” following a 2011 Pew Research Center study, which found 33 percent preferred the term “Hispanic,” 14 percent preferred “Latino,” and 51 percent had no preference. See the 2011 National Survey of Latinos at <http://www.pewhispanic.org/2012/04/04/when-labels-dont-fit-hispanics-and-their-views-of-identity/>.

13. What is the extent of children's engagement in the outdoors?
14. How important are family and friends in children's participation in nature-related activities?
15. How important is the availability of and access to open space and parks in children's involvement in the outdoors?
16. How much time do children spend using electronic media and participating in organized sports relative to time spent outdoors?
17. Do children have favorite places and memorable experiences in the outdoors?
18. How often do children engage in the care of plants and animals?
19. How do children perceive and value nature and wildlife?
20. What forms of contact do children have with nature and wildlife, and what are their preferences for certain outdoors activities?
21. How much do children know about the natural world?
22. To what extent does children's contact with nature and wildlife affect their physical, social, and psychological health and development?
23. What are the major obstacles and facilitators of children's contact with nature in Texas today?

Participation data for fishing, hunting, and wildlife-watching have been collected every five years since 1956 by the USFWS and Census Bureau via the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. Survey content has focused on measuring participation in fishing and hunting, with limited attention on respondents' sentiments toward nature. In the late-1970s, to help close this gap in our understanding of public perceptions of nature and the outdoors, the USFWS supported research by one of The Nature of Americans' principal investigators, resulting in a benchmark characterization and classification of Americans' perceptions of and sentiments toward wildlife and nature.<sup>7</sup> The current study incorporates some questions from this earlier investigation, permitting some comparison of values and knowledge of nature and wildlife in Texas today in relation to the national study conducted in 1978.

#### *Historical trends*

24. What, if any, differences distinguish the values and attitudes toward nature among Texans in 2016 with Americans as a whole surveyed in 1978?
25. What, if any, differences distinguish the knowledge of the natural world among Texans in 2016 with Americans as a whole surveyed in 1978?

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<sup>7</sup>Kellert, Stephen R. "Public Attitudes toward Critical Wildlife and Natural Habitat Issues, Phase I." Washington, DC: U.S. Department of the Interior, 1979. Kellert, Stephen R., and Joyce K. Berry. "Knowledge, Affection, and Basic Attitudes toward Animals in American Society, Phase III." Washington, DC: U.S. Department of the Interior, 1979. Kellert, Stephen R., and Miriam O. Westervelt. "Children's Attitudes, Knowledge, and Behaviors toward Animals, Phase V." Washington, DC: U.S. Department of the Interior, 1979.

## 1.2 Methods for the Study

To understand Texans' perceptions of and relationship with nature, investigators conducted a comprehensive research study using multiple methods. Each method was deployed to bring out the diverse dimensions of this extensive topic. Emphasis was placed on understanding the nature-related interests and biophilic values of Texans as a whole but especially minorities who have been perhaps under-served (or even largely un-served) in contemporary nature-related programming. A synopsis of the research methods used is presented here.

### 1.2.1 Focus Groups among Adults

In June and July of 2015, we conducted six focus groups with 47 participants in three major cities in Texas: Dallas (2), Houston (2), and San Antonio (2). We also conducted focus groups with 72 additional respondents in four states: California (Los Angeles); Florida (Jacksonville, Miami, Tampa); Illinois (Chicago); and New York (New York City). Altogether, these five states comprise about one-third of the US population, are among the fastest-growing in population, and represent different regions of the country: West, Southeast, Midwest, Northeast, and South. In addition, these states have experienced pronounced shifts in their demographic composition during the past 40 years, particularly in terms of race and ethnicity.

Focus group participants were recruited through the research firm Focus Pointe Global (FPG). Per request, FPG used three qualifying demographic criteria in selecting potential participants, including near-equal representation by gender, balance across the adult-age spectrum, and purposive selection of major ethnoracial groups (see Table 1.1). Of the 15 focus groups, eight were composed entirely of minorities as follows:

1. Chicago, Illinois, June 10, 2015: general population,<sup>8</sup>  $N = 8$
2. Houston, Texas, June 15, 2015: general population,  $N = 6$
3. Houston, Texas, June 15, 2015: black adults only,  $N = 8$
4. New York City, New York, June 16, 2015: general population,  $N = 8$
5. Dallas, Texas, June 16, 2015: black adults only,  $N = 10$
6. Dallas, Texas, June 16, 2015: Hispanic adults only,  $N = 7$
7. San Antonio, Texas, June 18, 2015: general population,  $N = 8$
8. San Antonio, Texas, June 18, 2015: Hispanic adults only,  $N = 8$
9. Los Angeles, California, June 25, 2015: Asian adults only,  $N = 7$
10. Tampa, Florida, June 30, 2015: Asian adults only,  $N = 9$
11. Tampa, Florida, June 30, 2015: Hispanic adults only,  $N = 10$
12. Jacksonville, Florida, July 1, 2015: general population,  $N = 6$
13. Jacksonville, Florida, July 1, 2015: black adults only,  $N = 8$
14. Miami, Florida, July 2, 2015: general population,  $N = 8$

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<sup>8</sup>Adults of various races and ethnicities

15. Miami, Florida, July 2, 2015: Hispanic adults only,  $N = 8$

The purpose of the focus groups was to generate a more open-ended understanding of the relationship between adult Texans and nature, and to help guide the development of our more structured and closed-ended survey and interview questions. The focus groups covered diverse topics, from the meaning of nature, values and benefits of the natural world, and obstacles to involvement with nature and the outdoors. Facilitators led groups of six to 10 people through the following in-depth questions, producing detailed qualitative data on not only participants' attitudes and experiences, but also the meaning behind them:

- What adults think of as “nature”
- Interest in nature, including personal interest and interest compared with the past
- Affection for nature, especially emotional attachment to particular aspects of nature (such as smells or sounds)
- Exploitation of nature, especially thoughts and experiences with using nature as a source of materials or products
- Attraction to nature, especially sights, sounds, beauty, shapes, and colors
- Aversion to nature, especially things in nature that might generate fear or avoidance
- Control over nature, especially experiences trying to dominate or master nature
- Intellect, especially benefits of learning about nature for intellectual and cognitive development
- Symbolism of nature, especially the importance of nature as a source of language, metaphor, communication, art, and design
- Comparisons of the respondents' interest in nature to “average” Americans' interests
- Personal and societal barriers and obstacles to spending time in nature

The focus group topic guide is included in Appendix C. In this report, all quotations from focus group participants are exclusively from those that occurred in Texas.

### **Minimizing Risk to Participants**

To ensure that our focus groups protected the participants involved and presented minimal risk to them, we sought and were granted approval from Heartland Institutional Review Board on May 26, 2015. It classified the focus group project as follows: “There is no more than minimal risk to the subjects.” (Approval can be found in HIRB No. 150526-78.) In accordance with the Paperwork Reduction Act, we also sought and were granted approval from the Office of Management and Budget (OMB), justifying the need for the focus groups, the questions asked, and the plan for analysis of the data. (Approval can be found in OMB Control No. 1090-0011, expiration July 31, 2015.) During each focus group, we took the following additional steps to minimize risk to participants. First, each participant was required to read and sign a consent form before entering the room where the focus group was conducted. Second, prior to engaging discussion, each focus group was read a statement approved by OMB, explaining the purpose for the focus group, identifying the federal sponsor of the information collection, and affirming that each participant's involvement in

Table 1.1: Focus Group Participants

<b>Question</b>	<b>Categories</b>	<b>All, %</b>	<b>Texas Only, %</b>
<i>Gender</i>			
	Men	53	53
	Women	47	47
<i>Race and ethnicity</i>			
	White	25	20
	Hispanic	38	41
	Black	24	35
	Asian	11	0
	Other	2	4
<i>Age</i>			
	18 to 24	11	9
	25 to 34	16	11
	35 to 44	24	32
	45 to 54	19	23
	55 to 64	15	17
	65 to 74	13	9
	75 to 84	2	0
<i>Education</i>			
	HS degree or less	31	32
	Some college	36	45
	Bachelor's degree	23	17
	Postgraduate degree	10	6
<i>Household income</i>			
	< \$25,000	19	13
	\$25,000 to \$49,999	24	26
	\$50,000 to \$74,999	26	26
	\$75,000 to \$99,999	16	20
	\$100,000 to \$124,999	6	9
	\$125,000 to \$149,999	4	4
	\$150,000 +	5	2

Note: Columns may not add to 100 due to rounding. Percentages reported in the “All” column are proportions out of 119, except for race and ethnicity, which is out of 114 due to missing data. Percentages reported in the “Texas Only” column are proportions out of 47, except for race and ethnicity and household income, which are out of 46 due to missing data.

the focus group was strictly voluntary. Third, participants received an honorarium for their time, varying by city from \$75–\$100 per person.

To protect participants' confidentiality, the research team used three techniques. During the focus groups themselves, facilitators and participants identified one another via their first names only. Subsequent transcriptions of the proceedings replaced their names with a numeric code. (An observer watching the focus group videos assured that individuals were labeled properly in the transcripts.) After their focus group finished, participants filled out a brief handout with basic demographic questions. On this sheet, participants used their code, thus further ensuring confidentiality. Subsequent analysis of focus group participants relied on this blinded data. The research team worked closely with FPG to ensure all collected data were secured, with data-storage redundancies, and protected from participants for their confidentiality.

### 1.2.2 Adult Survey

An online survey was conducted of English- and Spanish-speaking adults, 18 years of age and older, residing in Texas.<sup>9</sup> The Texas sample consisted of 2,379 adults, including an oversample of 100 blacks, 100 Asians, and 100 Hispanics. The survey was fielded from May 12, 2016, to November 4, 2016.

As with each element of this overall study, the adult survey was approved by Heartland Institutional Review Board, which determined that it posed minimal risk to participants. (Approval can be found in HIRB No. 150526-78.) The adult survey was also approved by the Office of Management and Budget per the Paperwork Reduction Act. (Approval can be found in OMB Control No. 1018-0163, expiration April 30, 2019.)

The research firm Toluna, which specializes in online survey research, assisted in the selection of the Texas sample. Toluna ensured the sample was representative of the state's population by matching the sample's final composition to demographic data from the U.S. Census Bureau's American Community Survey (ACS).<sup>10</sup> Table 1.2 compares the Texas online survey to the five-year ACS, which collects data using probability sampling. Under the "Texas 2016" column, figures reported are weighted. A small weight was applied to ensure that the sample aligned with the demographic

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<sup>9</sup>We also conducted the same survey among two separate samples—adults in the US as a whole ( $N = 5,550$ ) and adults in Florida ( $N = 2,227$ ). Results specific to the US as a whole and to Florida can be found in separate reports.

<sup>10</sup>This approach to collect data is becoming increasingly common and appears regularly in highly regarded peer-reviewed journals. Because the Texas survey is a non-probability sample, we can make no statement about margins of sampling error on population estimates, nor would it be appropriate to use tests of statistical significance between or among sub-groups. Given that the online survey used quotas to fill the final tally of respondents, nonresponse bias is a potential concern. Toluna dealt with nonresponse in a few ways. Individuals contacted via email voluntarily clicked a link to participate in the survey. (To belong to the overall panel, panelists must have an email address—but need not necessarily have a computer or Internet connection at home.) If the target number of complete surveys was not achieved after the initial invitation, additional invitation messages were sent to nonrespondents. These follow-up messages were identical to the original invitation. (Toluna has found that it achieves better participation by sending the same message again than it does by creating a "reminder" message.) Up to two reminders were sent to each nonrespondent, after which communication regarding the survey was terminated. To assist in increasing the response rate and quality of resulting data, the survey was available in Spanish (Latin American) upon respondent's request. When additional respondents were needed to fill sample quotas, Toluna sent out additional invitations. Toluna's method does not measure participation rates and nonresponse in the traditional sense. Ultimately, nonresponse is a concern because it can introduce error and bias to the sample. Given that the Texas sample aligns with highly regarded probability-based surveys in demographics, we have minimized bias to a reasonable level given the degree of accuracy needed for our purposes.

characteristics of the 2011–2015 ACS. An illustration of how weighting affected eight important variables can be found in Appendix B. Any differences are relatively minor and do not affect the overall interpretation of results, major findings, or recommendations provided.

Before releasing the survey, the research team pretested it. As a check for respondent understanding of survey questions, and as confirmation of time for survey completion, a pilot test of the survey questionnaire was conducted with five content experts unfamiliar with the study and four members of the general public. The content experts indicated that the survey items were conceptually solid and clear. Members of the general public affirmed that they understood the survey and found the survey questions interesting and thought-provoking. To ensure the confidentiality of respondents, data analysts did not have access to the key which links respondents with their responses.

The average (mean) length of the survey was 33 minutes, and the median length was 21 minutes. Further confidence in the quality of the data came from checks for attentiveness during the survey itself and the removal of overly uniform and seemingly automatic survey responses. Respondents could complete the survey in English or Spanish. The survey instrument was translated from English into Latin-American Spanish by a native Spanish speaker, and then it was back-translated by a different native Spanish-speaker from Spanish into English. These two translators then collaborated to resolve any differences.

The survey covered a wide range of issues and dimensions, including:

- What participants consider to be “nature”
- Interest in nature and various activities, their orientation to the outdoors, and their identity as a “city” or “country” person
- Frequency of spending time outdoors
- Most influential experience in nature and most influential person in terms of how they think about nature
- Perceptions of what nature provides humanity
- Formal knowledge about the natural world
- How adults value and appraise nature, including the previously described biophilic values, such as affection and attraction toward nature and wildlife, their values of dominion and exploitation over wildlife and other elements, and their aversion to the natural world.
- Perceptions of the relationship between contact with nature and physical and emotional health
- Barriers and facilitators to exposure to nature
- Support for increasing the number of nature-related programs, the funding for those programs, and spending on the environment

Exact questions asked on the adult survey can be found in Appendix D.

### 1.2.3 Child Interviews and Parent Survey

The relationship of children to nature, wildlife, and the outdoors constituted another major focus of this investigation. These perceptions and experiences were examined through a paired interview of 261 children and an interview one of their parents, for a total of 522 respondents. (These

Table 1.2: Comparisons of Adult Participants to the American Community Survey

Question	Categories	ACS 2011–15, %	Texas 2016, %
<i>Race</i>			
	White	74.9	76.0
	Black	11.9	11.6
	Asian	4.2	5.4
	Indigenous	0.6	1.0
	Other race	8.5	5.9
<i>Hispanic origin</i>			
	No	61.6	64.7
	Yes	38.4	35.3
<i>Gender</i>			
	Men	49.6	41.6
	Women	50.4	58.4
<i>Age category</i>			
	18 to 24	13.9	17.7
	25 to 34	19.7	26.5
	35 to 44	18.5	17.0
	45 to 54	17.8	12.7
	55 to 64	14.8	13.1
	65 to 74	8.9	10.4
	75 to 84	4.6	2.3
	85 +	1.7	0.3
<i>Education</i>			
	< high school	18.1	3.1
	high school	25.2	18.5
	Associate, some college	29.2	40.9
	Bachelor's	18.2	26.0
	Post-graduate	9.4	11.4
<i>Household income</i>			
	< \$15,000	12.3	10.0
	\$15,000 to \$24,999	10.7	11.4
	\$25,000 to \$49,999	23.9	29.6
	\$50,000 to \$74,999	17.8	20.4
	\$75,000 to \$99,999	11.8	13.3
	\$100,000 to \$149,999	13.1	10.0
	\$150,000 to \$199,999	5.1	2.6
	\$200,000 +	5.3	2.7

Note: For the Texas 2016 column, percentages reported are proportions out of 2,379. Columns may not add to 100 due to rounding. The margin of error for the 2011–2015 American Community Survey (ACS) estimates of Texas is  $\pm 0.1$  percent. “Indigenous” includes respondents who identify as American Indian, Alaska Native, Native Hawaiian, or other Pacific Islander. Educational attainment is for respondents 18 years and older on our survey, and for adults 25 and older on ACS. Household income on ACS is for the prior year. On our survey, the question asked respondents for their household income “averaged over the past five years.”

respondents came from a larger pool of surveys of 771 parents and interviews with 771 children conducted in California, Florida, Illinois, New York, and Texas.) Due to the challenges of surveying younger children, these interviews were conducted with children via online cameras (webcams). Research collaborator Focus Pointe Global (FPG) conducted these interviews with specially trained personnel and provided the necessary equipment and technological guidance when needed.

To select the sample, FPG narrowed its panel of 1.5 million Americans to parents residing in California, Florida, Illinois, New York, and Texas. Invited parents fulfilled sampling quotas according to community type, gender, race, and ethnicity. Parents who were willing to let their child participate in a later interview completed an online survey of 64 questions. (See Table 1.3 for more information about the parents surveyed.) Participants received compensation for their involvement. Answers had to pass quality control tests for authenticity and attentiveness. Surveys of the parents were conducted from September 8, 2015, to January 12, 2016.

Investigators also interviewed one of the parent's children via webcam, securing the parent's permission first via telephone. A total of 261 children in Texas participated, ranging in age from 8 to 12 years old. (See Table 1.4 for more information about the children interviewed.) Given the shorter attention span of children, these personal interviews featured 25 questions and lasted about 20 minutes. Interviews of the children were conducted from September 14, 2015, to January 1, 2016. Seventy percent of the interviews were conducted between 4 p.m. and 9 p.m.

Interviewing children requires careful and sensitive attention, so the research team piloted the technology and content of the interviews extensively beforehand. During the interview, a parent of each child was typically physically present nearby. Households that did not have a webcam were provided one by FPG. A total of 17 (out of 261) households in Texas received a webcam prior to their participation. Both the technology used in the online, personal interview and the content of the questions underwent extensive piloting prior to fielding the method, yielding refinements that continued even into the early stages of the field research. Child research specialists and the Heartland Institutional Review Board reviewed items and this portion of the project to ensure they posed minimal risk to the children involved. (Approval can be found in HIRB No. 150526-78.)

Many of the questions for parents and children were worded similarly to facilitate comparison between them. Parents also reported information about their children, which helped to ensure the quality of the children's data. Both parents and children had the opportunity to answer fixed-choice questions and open-ended questions, yielding distinct insights. Specific areas of inquiry included:

- How interested are children in nature, and where does their interest lie?
- How often do children visit outdoor settings, and what do they do there?
- What sorts of activities in the outdoors and in nature do children do by themselves, with friends, and with family?
- Relative to time outdoors, how much time do children spend using electronic media and playing sports?
- Do children have favorite places and memorable experiences in the outdoors? What are they, and where are they located?
- What do parents perceive to be barriers and facilitators to their child's exposure to nature? What do children perceive these are?

Table 1.3: Comparisons of Parent Participants to Texas Adults in the American Community Survey

Question	Categories	ACS 2011–15, %	Texas 2016, %
<i>Parent's race</i>			
	White	74.9	65.1
	Black	11.9	19.9
	Asian	4.2	11.5
	Indigenous	0.6	2.7
	Other race	8.5	0.8
<i>Parent's Hispanic origin</i>			
	No	61.6	87.7
	Yes	38.4	11.1
	Prefer no answer	N/A	1.2
<i>Parent's gender</i>			
	Men	49.6	10.3
	Women	50.4	89.3
	Prefer no answer	N/A	0.4
<i>Parent's education</i>			
	< high school	18.1	0.8
	high school	25.2	6.1
	Associate, some college	29.2	33.3
	Bachelor's	18.2	36.8
	Post-graduate	9.4	22.2
	Prefer no answer	N/A	0.8
<i>Parent's household income</i>			
	< \$15,000	12.3	1.5
	\$15,000 to \$24,999	10.7	1.9
	\$25,000 to \$49,999	23.9	17.2
	\$50,000 to \$74,999	17.8	16.5
	\$75,000 to \$99,999	11.8	21.5
	\$100,000 to \$149,999	13.1	23.8
	\$150,000 to \$199,999	5.1	5.0
	\$200,000 +	5.3	5.4
	Prefer no answer	N/A	7.3
<i>Parental status</i>			
	Parent	N/A	98.2
	Other caregiver	N/A	1.8

Note: The two sources are not strictly comparable, given that the ACS includes adults as a whole, while this Texas portion of The Nature of Americans study examined only parents. For the survey in Texas, percentages reported are proportions out of 261. Columns may not add to 100 due to rounding.

Table 1.4: Demographic Information on Child Participants

<b>Question</b>	<b>Categories</b>	<b>Texas 2016, %</b>
<i>Child's race</i>	White	63.2
	Black	20.3
	Asian	10.7
	Other	5.8
<i>Child's Hispanic origin</i>	No	84.7
	Yes	15.3
<i>Child's gender</i>	Boy	48.3
	Girl	51.7
<i>Child's residential location</i>	Urban	21.1
	Suburban	69.4
	Rural	9.6
<i>Child's age</i>	8 years	19.9
	9 years	17.6
	10 years	20.3
	11 years	17.6
	12 years	24.5

Note: Percentages reported are proportions out of 261. Columns may not add to 100 due to rounding. "Other" race includes children who are of two or more races, American Indian or Alaska Native, and Native Hawaiian or other Pacific Islander.

- How often do children engage in the care of plants and animals?

The questions asked of children can be found in Appendix E. The questions asked of parents can be found in Appendix F.

#### 1.2.4 Analysis of Qualitative Responses

The various segments of The Nature of Americans study generated large amounts of qualitative data: Transcripts of all 15 focus groups amounted to nearly 800 pages of conversation; each child answered up to six open-ended questions during their interview; each parent also answered several open-ended questions about their child during their survey; each adult answered four open-ended questions during their survey. Members of the research team used several techniques to analyze and synthesize these responses:

1. Multiple readings: Members of the research team read through responses multiple times, then discussed them, to get a sense of common patterns and themes, as well as to see what (if anything) was missing from the data that had been expected.
2. Word clouds: In this process, punctuation and capitalization were removed, words were shortened to their stems, and common short words were eliminated (such as “the” or “a”). The remaining words were shown visually with each word’s size representing its frequency. This illustrated what respondents talked about most often and also gave an indication as to how certain words might fit together. They also indicate the relative frequency of different ideas.
3. Word trees: Further indication of how certain words fit together came from word trees. In these, phrases or sentences are arranged spatially after recurrent words to show the different ways respondents talk about a given topic.
4. Coding of all responses: Data were imported into a qualitative analysis software (NVivo), and respondents were linked with their demographic information. Two members of the research team then coded the responses for emergent themes, and then combined those themes into larger nodes. This technique was used, for example, in analyzing the focus group transcripts.
5. Coding of randomly selected responses: When coding each response was not feasible due to time and cost limitations, members of the research team coded a random sample of responses for themes. This technique was used, for example, in analyzing adults’ most influential experience in how they think and feel about nature.

#### 1.2.5 Checks for Computational Accuracy

Analyses in this report were conducted using the open-source statistical software R (version 3.3.1). All generated tables, charts, graphs, and plots were directly imported into the final document, eliminating possible errors from mistyping or transferring information between various software programs. To confirm accuracy in data tabulation and computational precision, an independent analysis of selected variables was conducted using Statistical Package for the Social Sciences (SPSS version 24). A comparison of tabulations revealed only a small number of differences of less than 1 percent in individual proportions, owing to differences in each software’s rules of rounding decimals.

## 1.3 Interpreting Results

This report contains two types of statistical analysis that may be unfamiliar to readers. The first type is a correlation matrix. Each cell in the correlation matrix represents the extent and direction of associations, or correlations, between two particular variables.

- If variable  $A$  tends to increase when variable  $B$  increases, the association is positive. The highest possible positive value is 1. If variable  $A$  tends to decrease when variable  $B$  increases, the association is negative. The highest possible negative value is  $-1$ . A value of 0 means the two variables have no direct association.
- The color blue represents a positive correlation between two variables; the color red, a negative one.
- The tint of the color shows the strength of magnitude. For example, dark blue shows a correlation that approaches 1, a very strong correlation. Light blue shows a correlation that approaches 0, a very weak correlation.
- The variables that are included have ordinal categories, not linear ones; this means the distance between categories is not identical. Hence, the coefficients reported are Spearman rank correlations.

For example, Figure 2.30 shows that, among adults, greater interest in computers than nature had no correlation with time spent outside in nature each week. However, it did have a negative relationship with interest in hunting. To use another example, Figure 2.32 shows that adults whose close ties are making more time for nature had greater interest in hunting, fishing, hiking, and exploring the outdoors; they also reported spending more time outside in nature each week.

The second type of statistical analysis used is binomial logistic regression. This method summarizes how the average values of an outcome vary over subpopulations. Put a different way, logistic regression predicts the probability that members of sub-groups fall into one of two categories of a particular outcome. For example, Figure 2.38 shows how different factors are related to strong support for increasing programs to help Americans enjoy nature, the outdoors, and wildlife. In particular, Hispanic respondents, urban residents, and those who have low satisfaction with their community are likely to strongly support increasing these types of programs.

- The dots (points) represent a version of the predicted probability of an outcome occurring based on a one-unit change in a particular predictor when all other predictors are held constant. (More precisely, the dots represent the log of the odds, which is the ratio of the probability that the outcome is 1 over the probability that the outcome is 0.)
- The larger the absolute value, whether positive or negative, the greater the relationship between that variable and the outcome.
- In each analysis, dots (points) to the left of 0 indicate that members of that sub-group, on average, are *less* likely to achieve the outcome. Dots (points) to the right of 0 indicate that members of that sub-group are *more* likely to achieve the outcome.
- Each analysis includes important demographic sub-groups, including race and ethnicity, gender, age, educational attainment, and household income.
- Each sub-group has a reference category. In all analyses, the reference categories are *whites* in comparison to Hispanics, blacks, and Asians; *men* in comparison to women; *35–44-year-olds*

in comparison to all other age categories; adults with a *high school degree or less* in comparison to all other levels of educational attainment; adults from households with incomes of \$50,000–\$74,999 averaged over the last five years in comparison to all other income categories; and *rural residents* in comparison to urban and suburban residents.

- How much each variable is related to the outcome is net of (i.e., adjusts for) the other variables included. For example, the probability that Hispanics on average are likelier than whites to support increasing nature-related programming is the case even when adjusting for household income, educational attainment, gender, and other variables in the analysis.

## 1.4 Overview of Report

In this report all quotations, tables, graphs, word clouds, and other analyses are exclusively from respondents in Texas, except when clearly indicated. The following three chapters present empirical findings on adults as a whole, children and parents, and demographic groups, especially blacks, Hispanics, and Asians. At the end of each chapter is a summary of results. The final chapter of the report synthesizes these insights, distilling them to eight major findings. Under each major finding are recommendations for the conservation community about ways to continue this initiative's ultimate aim of connecting Texans—and, indeed, all Americans—to nature.

## Chapter 2

# Adults: Results

This chapter examines how adults in Texas as a whole relate to nature. As noted in Chapter 1, this in-depth examination was prompted by a number of societal shifts, particularly changes in the residential location and demographic composition of the population, as well as changes in the built environment and the fast pace of technological change. We therefore sought to identify:

1. **Adults' relationship with nature.** Our first consideration was what adults in Texas think is “nature,” recognizing that the word is complex and multifaceted. Next, we sought to establish what adults' personal interests are toward nature, the outdoors, and wildlife as a whole and toward particular recreational activities. Recognizing that people define and value nature in different ways, we asked a series of questions about adults' affection for, attraction toward, aversion to, control over, exploitation of, and symbolic use of nature, alongside the ways people view nature for their intellectual development and spirituality. We also made a limited assessment of knowledge about the natural world, comparing it to a nationwide study conducted in 1978.<sup>1</sup>
2. **Benefits of adults' exposure to nature.** We asked adults what they perceive nature provides them. We also asked how important exposure to nature is for their physical and emotional health.
3. **Barriers to and facilitators of contact with nature.** Given the profound shifts to Texas society in the past several decades, we were especially interested in examining what barriers adults identify in their own lives and in the nation as a whole. In light of these barriers, we were also interested in uncovering what facilitates interest and experiences in nature.
4. **Support for nature-related programming, funding, and conservation.** Three additional issues received attention in this survey: 1) perceptions of and support for recreation programming and funding, 2) trade-off preferences between using resources versus conserving them, and 3) support for funding to pay for conservation activities as a whole.<sup>2</sup>

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<sup>1</sup>Kellert, Stephen R., and Joyce K. Berry. “Public Attitudes toward Critical Wildlife and Natural Habitat Issues, Phase III.” Washington, DC: U.S. Department of the Interior, 1979.

<sup>2</sup>These issues were included for two reasons. First, any major attempt at significantly expanding nature-related opportunities and programs for all Texans (and, indeed, all Americans) will inevitably require major new activities and personnel. Second, the establishment of a *Blue Ribbon Panel on Sustaining America's Diverse Fish and Wildlife Resources*, consisting of leaders in industry, non-profit organizations, and government, provided an especially timely opportunity to explore alternative funding sources. The information collected in our study on the subject can be of special value to the deliberations and decisions of this Panel.

We begin with a brief description of the focus groups and survey that inform this chapter, and then follow with results related to the areas of inquiry listed above. A summary of major findings concludes the chapter.

## 2.1 Brief Description of Methods

To understand Texan adults' relationships with nature today, we used two methods—six focus groups with 47 adults conducted in Dallas, Houston, and San Antonio, and an online survey of 2,379 adults living throughout the state. (See a fuller description in Chapter 1.) Our focus groups purposely included a high proportion of minorities, while our survey sample aligned with Census benchmarks (see Table 1.2). The focus group topic guide is included in Appendix C; the survey questionnaire, in Appendix D.

In this chapter,  $N = 2,379$  for all quantitative analyses derived from the Texas survey.

## 2.2 Relationship with Nature

### 2.2.1 What is “Nature”?

“Nature” can mean a number of things to different people. At the beginning of our focus groups and online survey, we asked respondents to tell us what they considered to be nature before we provided a definition.<sup>3</sup> In the focus groups when we asked this question, the most cited associations with “nature” included trees, birds and other animals, and the outside or outdoors. This distribution of responses is illustrated by a word cloud, where the size of the word indicates its frequency relative to other words (Figure 2.1).

Focus group respondents overwhelmingly regarded nature as something separated from and independent of human influence or activity. Nature is “something that was here before we were born: the trees, the water, the mountains, all that” (Hispanic woman, late 50s, HS degree, middle income).<sup>4</sup> Nature is “outside what you do, your way of life” (black man, late 20s, HS degree, low income). Another added that nature by definition must be uncontrolled: “Once you start to control it, I think it stops being nature” (Hispanic man, late 30s, Bachelor’s, middle income).

Nature, for respondents, consisted of places where human activity is limited or secondary, especially anything involving manufacturing and artificial fabrication. Nature also had a quality of being uncultivated. For respondents, that excluded anything “manmade” and “manmade structures or anything like that.... So there’s no plan or structure to it; it just happens” apart from human involvement. Walking trails were clearly planned, “but then everything around it is nature” (Hispanic

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<sup>3</sup>During our focus groups, we never provided a definition of nature; we simply asked respondents what they considered to be nature. In contrast, at the start of the adult survey, we asked respondents to rate the orientation of their pastimes, hobbies, and interests as more indoors- or outdoors-oriented. Next, we asked them whether they think of themselves as a “city-person” or a “country-person” at heart. Third, we asked them to indicate which of 22 categories they considered to be “nature.” After doing so, we requested: *From this point on, please consider “nature” to include wild animals, plants, landscapes, and other features and products of the natural environment.* As the results of Table 2.1 show, our request aligned with what most adults already perceived to be nature.

<sup>4</sup>For focus group participants, “low income” means a household income of less than \$25,000 per year; “middle income,” \$25,000–\$100,000; “high income,” over \$100,000.



man, late 30s, Bachelor's, middle income). When one participant suggested a backyard could be nature, another countered, saying that nature must be “untouched” and remain “the way it is,” filled with “butterflies, bugs, and animals.” He thought of his own backyard as “not natural” because he had altered it (Hispanic man, late 40s, some college, middle income).

Most participants therefore rejected the notion that nature could occur or be associated with what was indoors. Nature is “anything outside the house” (black man, early 30s, HS degree, low income). Another added, “I think of outdoor things. I think of parks and water” (Hispanic woman, late 50s, HS degree, middle income). Despite this close association of nature and the outdoors, some respondents sought to draw a distinction between these two terms. For example, one remarked: “Nature is one thing...and outdoor is outdoor.” He continued, “Just because you go outside doesn't mean that you are actually enjoying nature. You just opened up your door...but how do you actually tie your going outside to nature? It's not the same thing” (black man, early 50s, postgraduate degree, high income).

Immediate environmental conditions appeared to shape participants' conceptions of what nature was. For example, focus groups in the Florida coastal cities of Tampa, Miami, and Jacksonville emphasized the ocean and the beach when describing what nature is. By contrast, adults in two inland Texas focus group locations (Dallas and San Antonio) tended to stress animals and water, although not ocean. A similar pattern occurred in Chicago, where participants most frequently mentioned trees and animals, while in Los Angeles, forests and the ocean were often cited. Across all locations, however, emerged a common perception that nature existed in cities—there just happened to be more of it outside the city.

One pattern that emerged was that *the very definition of nature* could not be separated from *human experiences in it*. The very definition of nature, therefore, was often tied to memorable or influential moments. “When I think of the outdoors, I think of camping...because growing up we spent a lot of time camping out in the woods in tents and things like that” (Hispanic man, late 30s, Associate degree, high income). Others added their memories of camping, fishing, or exploring as children. Nature therefore became, respectively, forests and woods, fish and streams and lakes, and creeks and fields. Still others described where their parents live or where they visit frequently, and the natural features of those places (cacti, juniper, deciduous trees, sand) became what they associate with nature.

Another pattern that emerged was that experiences in nature were described as *deeply social*. Nature in general might consist of elements like trees and animals, but human experiences of nature were nearly always social ones, involving family and friends. One respondent, for example, told of camping in South Padre Island on the beach; the trips were family reunions of sorts, with cousins and grandparents present (white woman, early 70s, HS degree, middle income). Another described his annual trip to the beach with his spouse as an experience that “helps tie us to each other” (PS6-18(2)-01). Or note how one woman described the strong emotional reaction to going to the beach, alongside the memory of who was present:

Just the emotion I personally feel when I go to the beach, the awesomeness of the waves and...knowing the...sea creatures are inside. Most of my family memories are at the beach, spending time together, fishing, doing things... When you think about family reunions, you think about going to the beach. (White woman, late 30s, some college, middle income)

Adults in our focus groups tended to see nature's truest or purest expression in experiences that were out of the ordinary and in places that were far away. For many respondents, “real” nature

could not be found in a city: one respondent thought of things that are “far away, not inner city.” The facilitator asked if a city park came to her mind as being nature. Her response was brief: “No” (Hispanic woman, late 20s, HS degree, low income). As another example, one respondent gave the state of Alaska as an example of “the most beautiful thing that Earth has to offer us that’s nature.” When asked about what makes the state so beautiful, the man offered the Northern Lights, also noting that he has always wanted to see them: “I’ve seen it on TV; I’ve never seen it in person. But I’ve always said if I were to get the extra money and time that I would go for it” (black man, late 30s, HS degree, middle income). The lack of personal experience seemed to make that particular feature of the natural world even more attractive, appealing, and authentic.

The notion that “*authentic*” nature was geographically distant was so strong that this formed a barrier to access for many respondents. (We return to this in Section 2.8.) Indeed, although respondents tended to agree that they had “access to nature” in their city, they nevertheless asserted that finding less cultivated places required residents to “seek it out a little bit” (white man, late 20s, postgraduate degree, high income). If “pure” nature was located far away, then barriers to experiencing nature became obstacles of cost, time, opportunity, and other elements of access. In theory, “Nature’s all around, fulfilling us with life every day” with birds chirping and breezy, cool temperatures (black man, late 40s, HS incomplete, low income). But in practice,

Respondent 4: I feel like you can find it more outside of the city than within the city. Because so much building and we’re causing nature to—I don’t know what the word is. (black man, late 30s, HS degree, middle income)

Respondent 3: —Disappear. (black woman, late 40s, some college, middle income)

Respondent 4: Yeah, basically disappear, because we’re taking a lot of things out of its natural habitat because of the building, the noise. Human. I guess humans, our waste, and things like that, are pushing nature outside of the city.<sup>5</sup>

## Selecting Categories of Nature

In the adult online survey, respondents were presented with 22 categories and selected those that fit into their view of “nature” (Table 2.1). Clearly, many potential items could be part of this list. Given space and time considerations, we sought to provide items that represented different *categories* of nature. We were especially interested in contrasts between items that were a) more cultivated and less cultivated (e.g., plants in the yard versus wild animals); b) more commercially oriented and less commercially oriented (e.g., ski resorts versus national parks); c) more local and more distant (e.g., family vacation destinations versus zoos); and d) more common and less common in daily life (e.g., local parks versus state parks). For example, we asked about places that are often considered to be iconic and special to visit (such as national parks), in contrast to places that are generally closer to population centers and often perceived as less special to visit (such as local parks). (Categories like state parks and national parks likely provide a sense of how respondents would view wildlife refuges and recreation areas.)

Overall, adults surveyed tended to think of nature as *less cultivated, more distant, less commercially oriented, and less common in daily life*. These categories included wild animals, national parks,

<sup>5</sup>As we show in Chapter 3, how these adults viewed nature differed significantly from children’s perceptions. Children tended to see nature—even their special place in the outdoors—as closer to home and as part of a common-place and daily lived experience. Children also appeared to be far less concerned with the degree to which nature is cultivated, influenced by humans, or domesticated.

Table 2.1: What Adults Surveyed Consider to be “Nature”

Categories	Yes, it is nature
Wild animals	88%
National parks	85%
Oceans	82%
Ponds and lakes	81%
State parks	79%
Outdoor gardens	74%
Beach	73%
Insects	69%
Moon, sun, and stars	68%
Plants in the yard	56%
Local parks	54%
Zoos	39%
Pets	31%
Indoor plants	26%
Ski resort	24%
Photographs of animals	20%
Maintained lawns	19%
Home aquarium or terrarium	16%
Paintings of landscapes	16%
My time sightseeing while commuting	14%
Family vacation destination (e.g., theme parks)	11%
My time walking to the car, bus, train	9%

Question wording: For each of the following, please indicate if it’s something that you would consider to be “nature” (check all that apply).

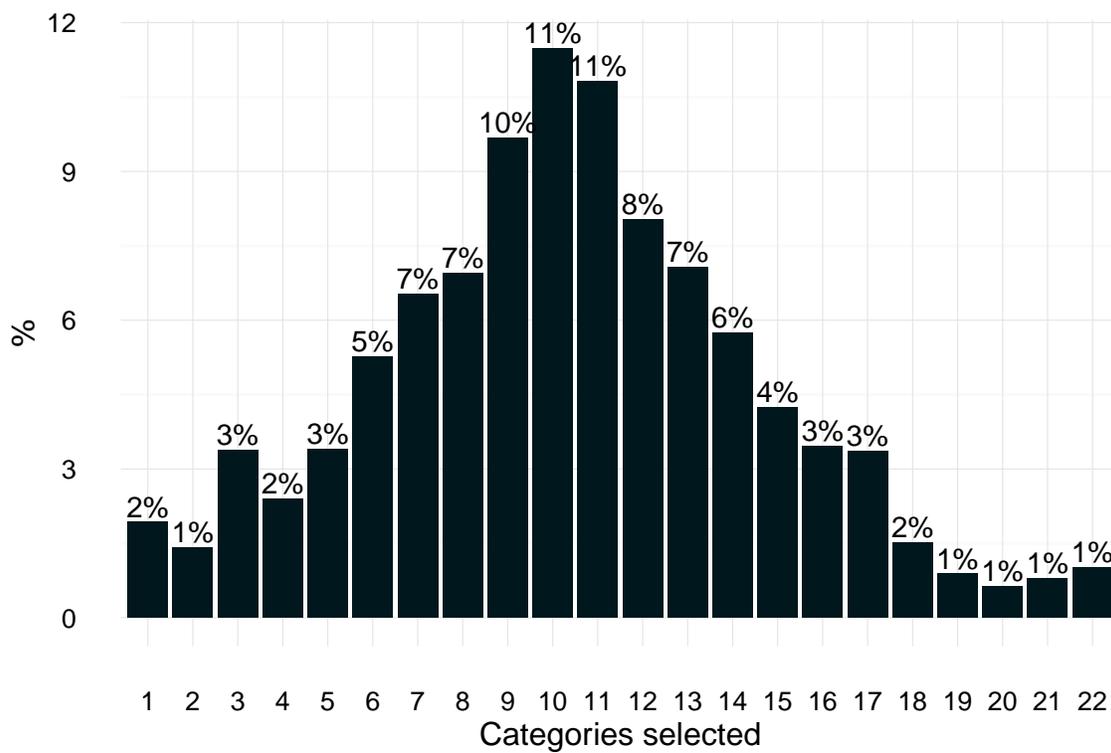
oceans, ponds and lakes, and state parks. In contrast, relatively few adults considered nature to include commuting, family vacation destinations, paintings of landscapes, or a home aquarium or terrarium. Another indication that Texans tend to link “nature” with what is uncultivated and undomesticated can be seen in the difference in responses between wild animals and *photographs* of animals. Whereas nearly all adults thought of wild animals as nature, a small minority classified photographs of animals the same way.

Out of 22 possibilities, the average (mean) number selected was 10.6 categories (with a standard deviation of 4.2). The median was 10 categories. All participants selected at least one category. Roughly half selected 7–13 categories (Figure 2.2).

### 2.2.2 Interests in Nature

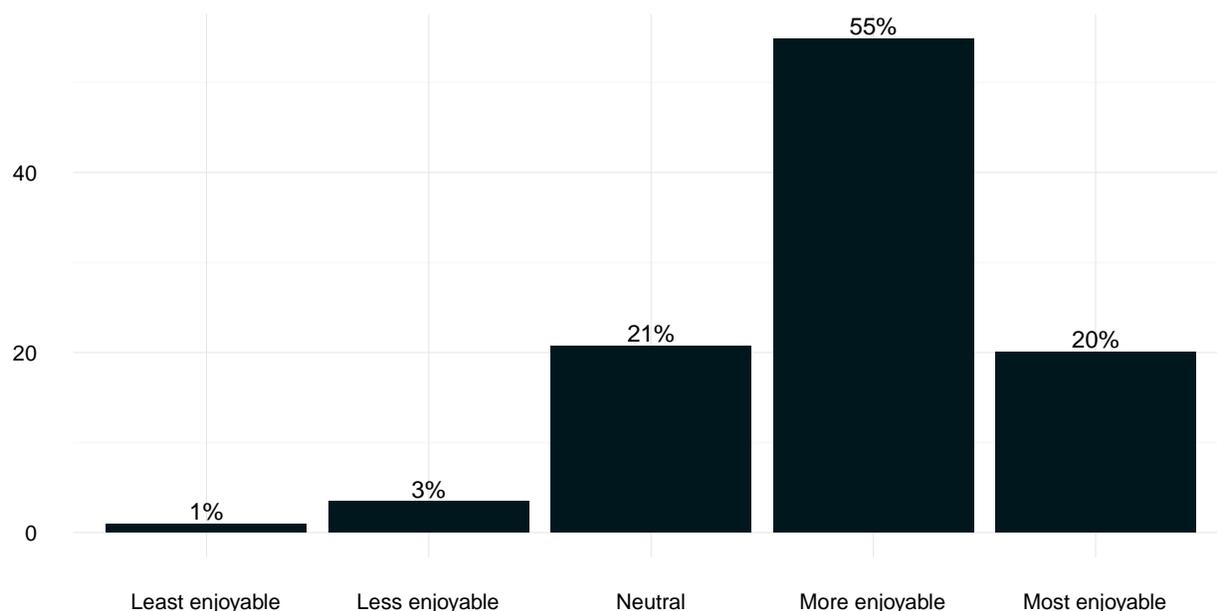
The majority of adults surveyed regarded their interests in nature as either their most enjoyable or among their more enjoyable interests (Figure 2.3). Three-quarters (75 percent) said things of nature are among their more enjoyable interests or are their most enjoyable interests. Most adults reported their interests in nature are growing or have remained unchanged over time (Figure 2.4).

Figure 2.2: Distribution of Number of Nature Categories Selected



Question wording: For each of the following, please indicate if it's something that you would consider to be "nature" (check all that apply).

Figure 2.3: Enjoyment of Interests in Nature Compared with Other Interests



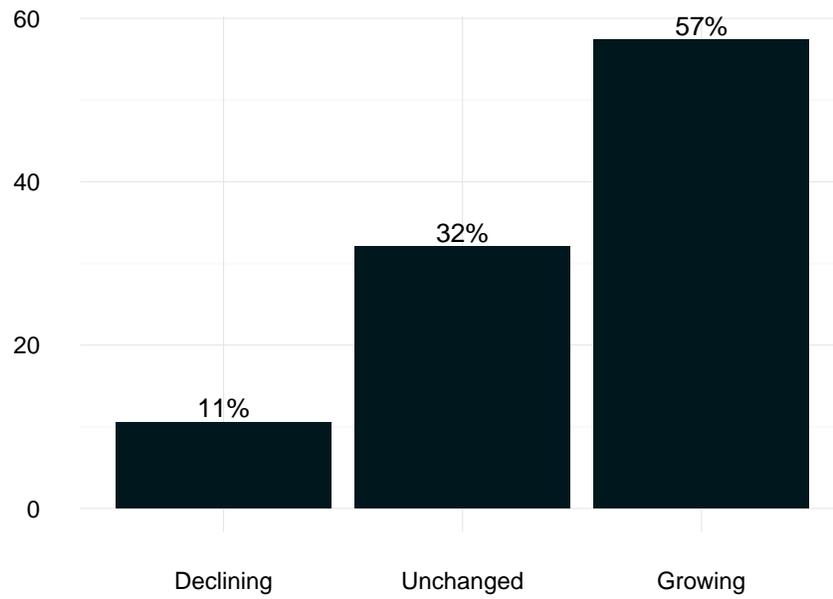
Question wording: How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your most enjoyable interests ...among your more enjoyable interests ...neither more nor less enjoyable than your other interests ...among your less enjoyable interests ...your least enjoyable interests?

Nearly one-half (46 percent) of adults surveyed indicated their interests in nature were more than their parents' interests (Figure 2.5). One-third (33 percent) said they were at least the same.

What is the “profile” of someone whose interest in nature is growing? Figure 2.6 shows how different demographic factors relate to the likelihood that a respondent reported their interest in nature is growing. Points greater than 0 signify that adults in that group were *more likely* report their interest in nature is growing. Points less than 0 signify that adults in that group were *less likely*. The larger the value, whether positive or negative, the greater the relationship between that variable and the outcome. In this analysis, the reference categories are *whites* in comparison to Hispanics, blacks, and Asians; *men* in comparison to women; *35–44-year-olds* in comparison to all other age categories; adults with a *high school degree or less* in comparison to all other levels of educational attainment; adults from households with incomes of *\$50,000–\$74,999* averaged over the last five years in comparison to all other income categories; and *rural residents* in comparison to urban and suburban residents. How much each variable is related to the outcome is net of (i.e., adjusts for) the other variables included. (See Section 1.3 for more detail.)

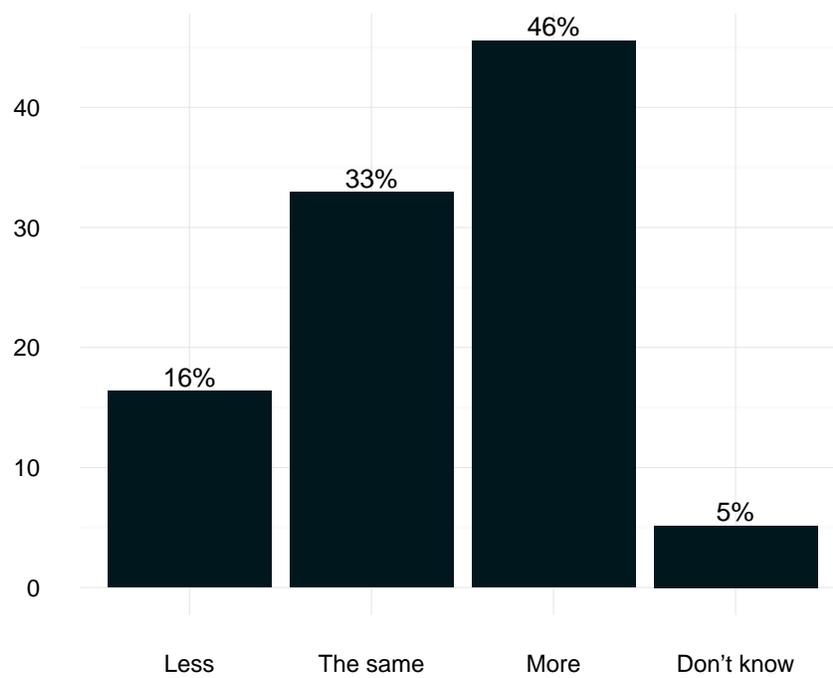
- Relative to white respondents, Hispanics, blacks, and Asians were more likely to report their interests in nature are growing.
- Relative to middle-aged respondents (35–44-year-olds), younger adults were more likely to report their interests were growing, and older adults were less likely.
- Those with higher levels of education and higher incomes were more likely to say their interests in nature are growing.

Figure 2.4: Change in Interests in Nature as Time Goes On



Question wording: As time goes on, do you find your interests in nature growing, declining, or remaining unchanged?

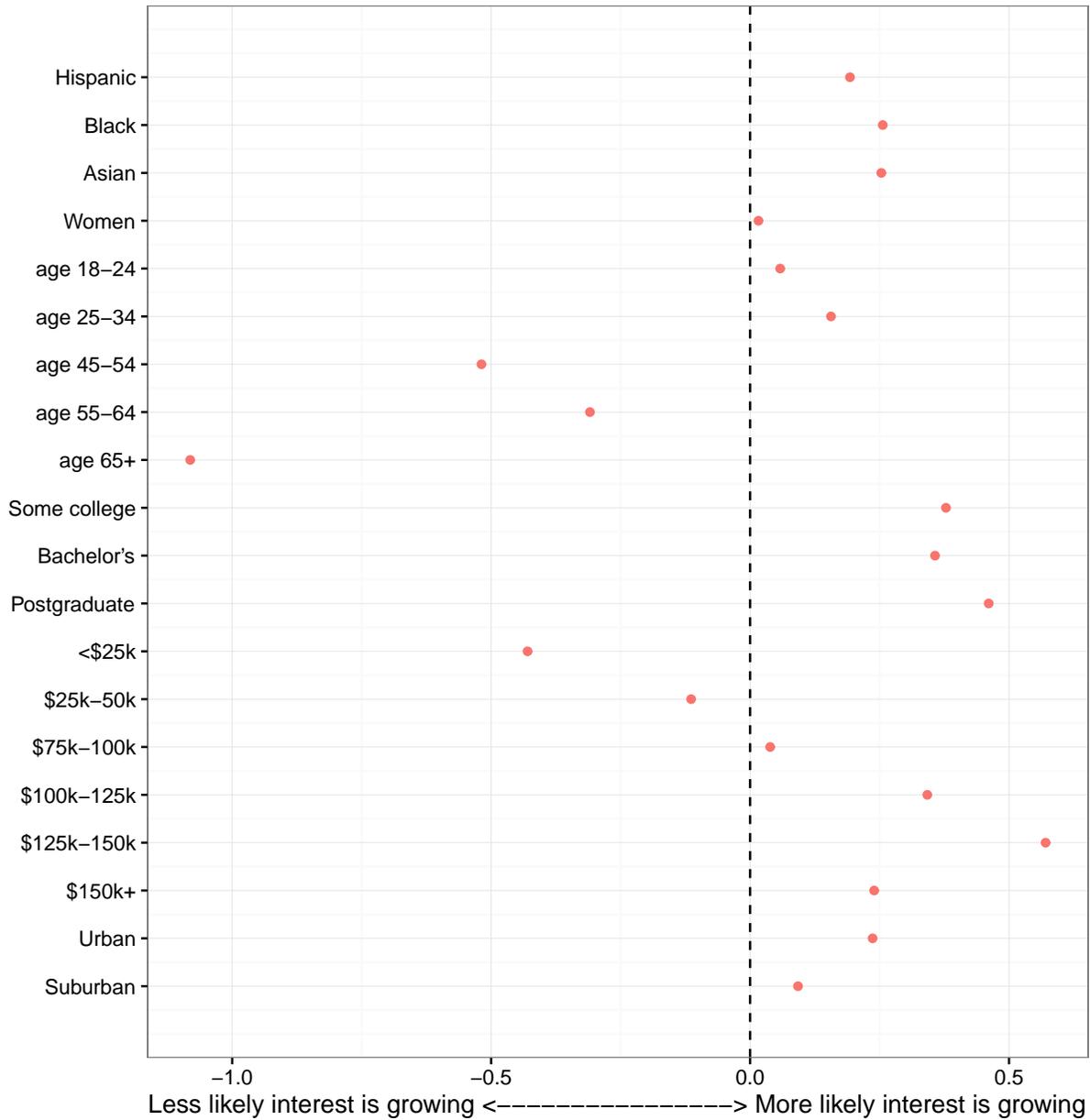
Figure 2.5: Interests in Nature Compared to Parents



Question wording: Would you say your interests in nature are more than, less than, or the same as your parents (or those who raised you)?

- Relative to rural respondents, urban residents were more likely to see their interests in nature as growing; suburban residents were less likely.

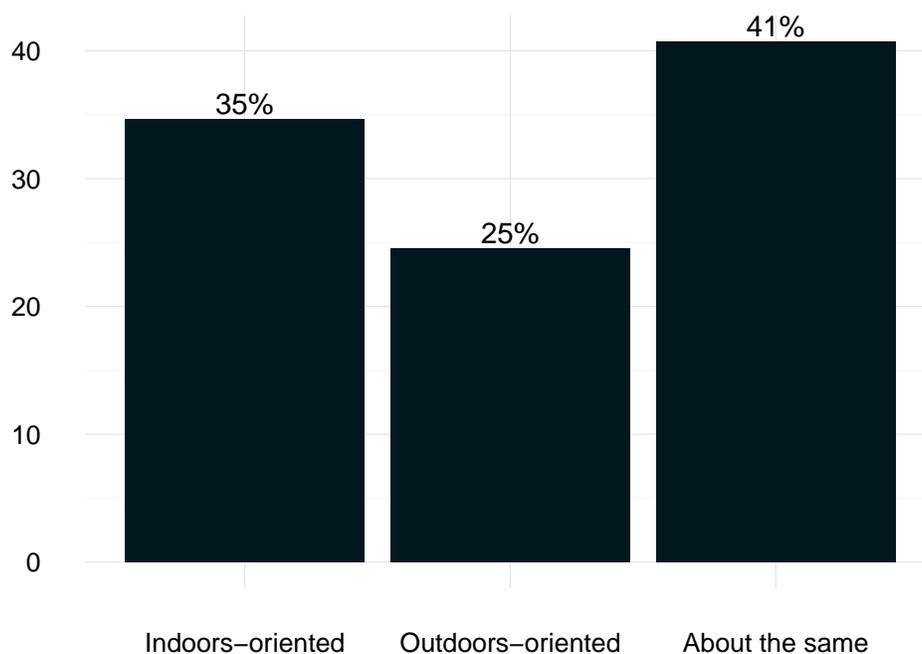
Figure 2.6: Likelihood that Interests in Nature are Growing



Note: The outcome is the likelihood that a respondent reports their interests in nature are growing. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

These results collectively suggest that the Texas public remains highly interested in nature in general. However, *interest* did not automatically translate into *lived experiences*. Thirty-five percent of adults surveyed said their pastimes, hobbies, and interests were indoors-oriented (Figure 2.7).

Figure 2.7: Orientation in Pastimes, Hobbies, Interests



Question wording: In general, would you say your pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented?

One-quarter (25 percent) said they were outdoors-oriented, and two-fifths (41 percent) said they were about equal.

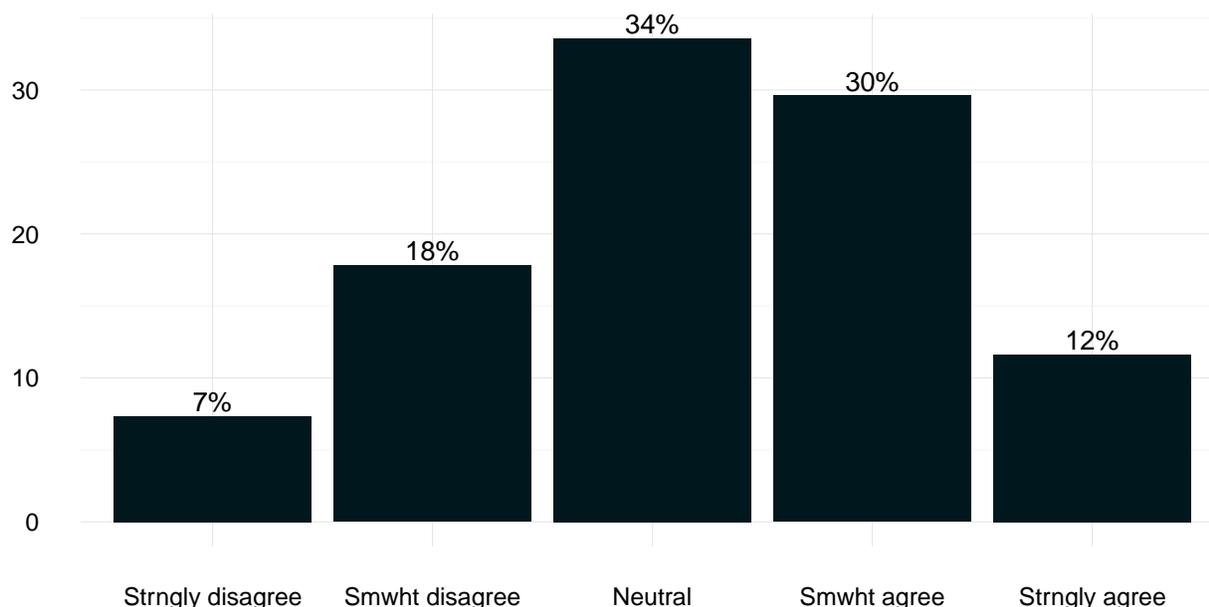
Forty-two percent of adults in Texas agreed there are more important issues in their life than their interest and concerns for nature (Figure 2.8). These results suggest adult Texans feel compelled to give their interests in nature a lower priority and a lower sense of practical urgency, likely rooted in the barriers of time and money, as well as household and employment demands. We explore barriers between interests and behavior below in Sections 2.3.1 and 2.8.

### 2.2.3 Activities in Nature

In our survey, an open-ended question about adults' favorite outdoor- or nature-oriented activity revealed that the most popular included walking, followed by hiking, fishing, camping, and gardening, and activities like going somewhere (to a beach or park) and watching something (Figure 2.9). As our focus groups made clear, one appeal of many of these activities was the chance to explore the outdoors, reflecting the challenge, surprise, and dynamic character of the natural environment. One focus group respondent, for example, emphasized the variety and diversity of nature in comparison to touch screens on a smartphone and indoor activities:

The outdoors can be a park, outdoor can be athletics, it can be games...it can be fishing. There's so much to [do] outdoors. You're almost unlimited outdoor. You're limited indoor. It's different to touch and feel. (Hispanic woman, late 30s, Associate degree, middle income)

Figure 2.8: Other Issues More Important than My Concerns for Nature



Question wording: There are many more important issues in my life than my concerns for nature.

We provided a list of common nature-oriented activities to gauge respondents' interests in each (Figure 2.10). A large majority of adults indicated their interests in taking a walk outdoors; exploring the outdoors; visiting zoos, aquariums, nature centers, natural history museums, and botanical gardens; swimming; and gardening outdoors. While most of the activities elicited at least "some" or "a lot" of interest, a few generated relatively less interest among adult Texans. These included hunting, fishing, and membership in nature organizations. Over three-fifths of Texans (61 percent) reported no interest in hunting, while 15 percent indicated "a lot" of interest in the activity. About half (53 percent) had no interest in belonging to nature-related organizations compared with 11 percent who expressed a great deal of interest. One-third (31 percent) reported no interest in fishing, in contrast to about 36 percent with "a lot" of interest and 33 percent with "some" interest.

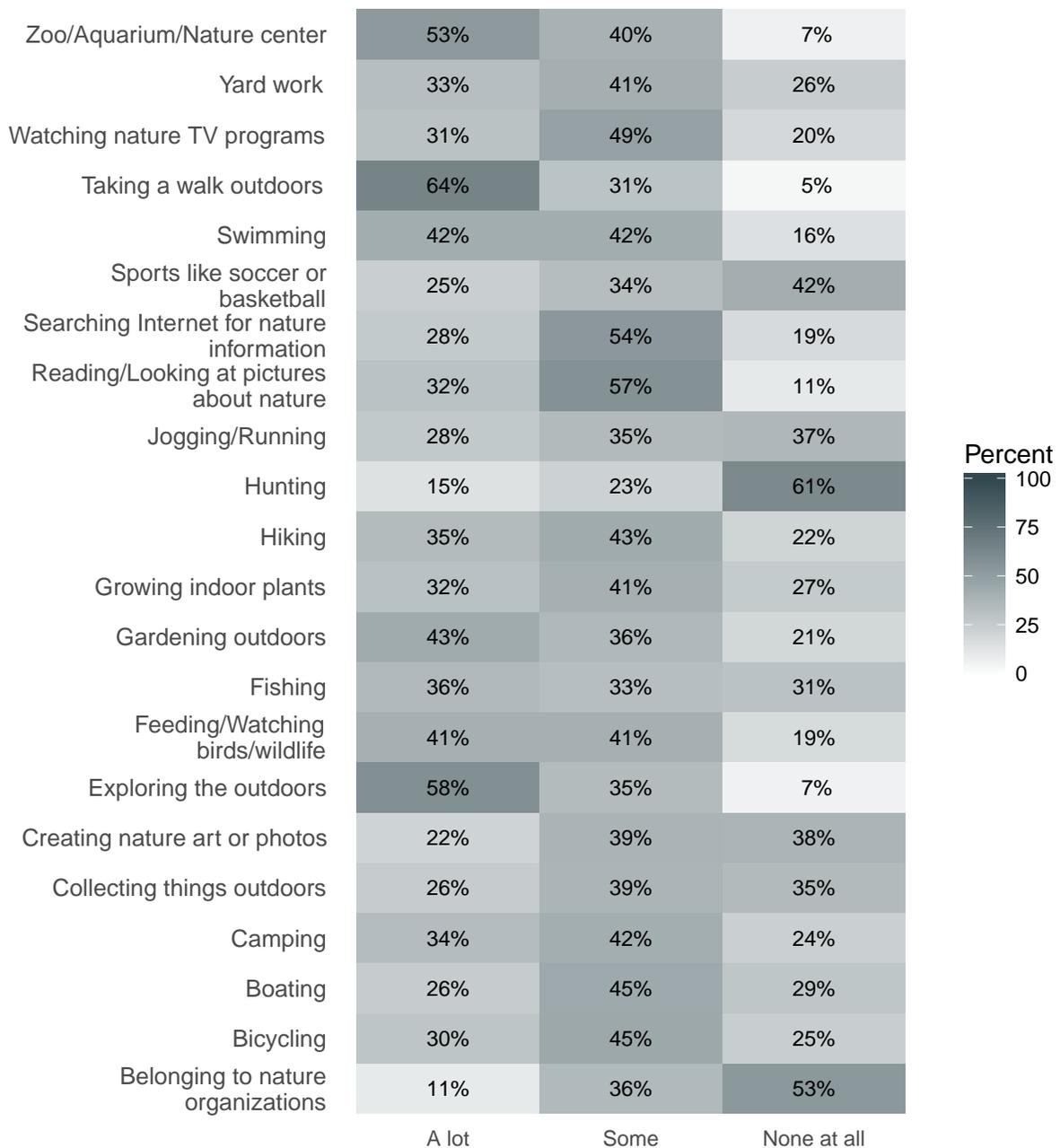
#### 2.2.4 Time Spent on Nature Activities

During a typical week, over half of adults surveyed reported spending between 0 and 5 hours outside in nature, and the majority reported spending fewer than 10 hours outside in nature per week (Figure 2.11). Most respondents indicated being somewhat (39 percent) or very (23 percent) satisfied with the amount of time they spend outdoors experiencing nature (Figure 2.12). Ten percent were neither satisfied nor dissatisfied. Twenty-seven percent were somewhat or very dissatisfied with their degree of weekly contact with the outdoors.

Satisfaction varied by the amount of time respondents reported spending outside. Almost one-half of adults (46 percent) who reported spending the least amount of time outside in nature each week were dissatisfied with this amount (Table 2.2). Forty percent were somewhat or very satisfied, and 14 percent were neutral. Overall, as adults reported spending more time outdoors, they also

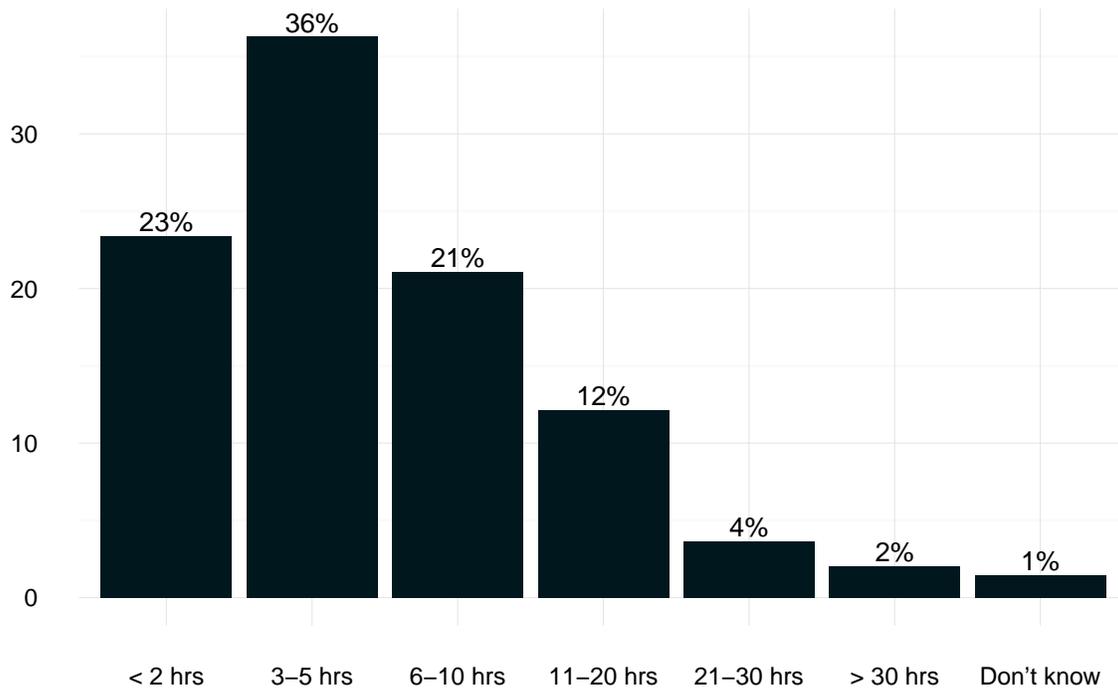


Figure 2.10: Interest in Nature- or Outdoors-oriented Activities



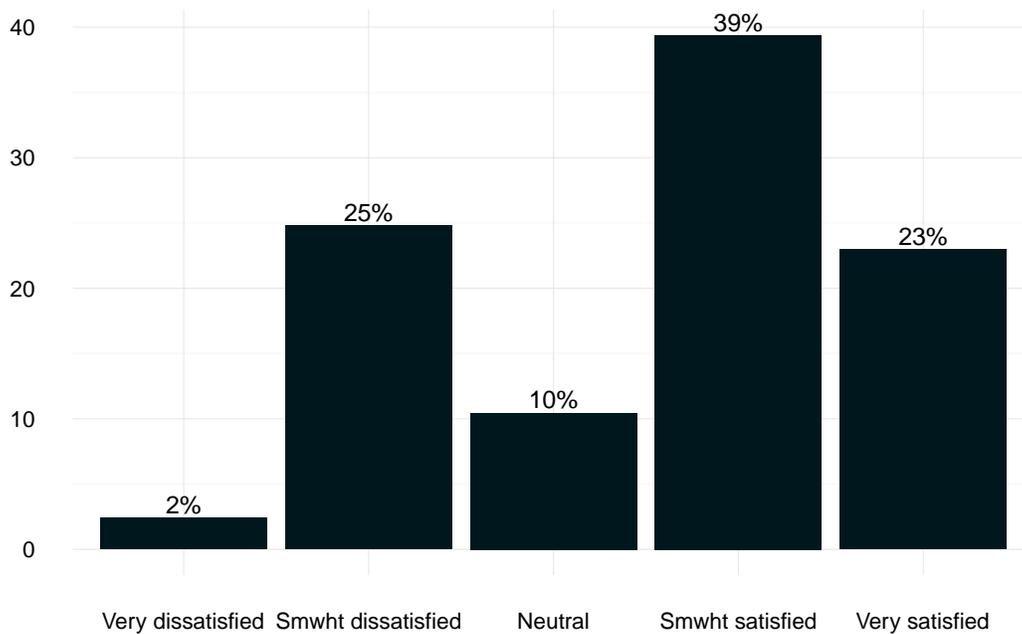
Question wording: How would you rate your interest in each of the following activities? ...A lot ...Some ...Not at all.

Figure 2.11: Hours Spent Outside in Nature in a Typical Week



Question wording: In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.)

Figure 2.12: Satisfaction with Amount of Time Able to Experience Nature



Question wording: On average, how satisfied are you with the amount of time you're able to get outdoors to experience nature?

reported greater satisfaction with that amount of time. Ninety-one percent of adults who reported spending 21 hours or more outside each week said they were somewhat or very satisfied with that amount of time.<sup>6</sup>

Table 2.2: Satisfaction with Time Spent Outdoors Experiencing Nature, by Hours Spent Outside per Week

Categories	< 2 hrs	3-5 hrs	6-10 hrs	11-20 hrs	> 21 hrs	Don't know
Very dissatisfied	6%	2%	1%	1%	0%	0%
Smwht dissatisfied	40%	27%	19%	11%	5%	16%
Neutral	14%	10%	8%	8%	4%	40%
Smwht satisfied	24%	43%	49%	42%	41%	32%
Very satisfied	16%	19%	23%	37%	50%	12%

Note: Columns may not add to 100 percent due to rounding. Question wording: In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.) | On average, how satisfied are you with the amount of time you're able to get outdoors to experience nature?

How does interest in nature relate to the amount of time adults spend in it? As indicated on the bottom-right portion of Table 2.3, those who spend relatively larger amounts of time outside tended to view nature among their most enjoyable interests. It is important to note, however, that significant portions of adults who reported spending very little time outside in nature nevertheless still considered nature to be among their more or most enjoyable interests: 61 percent of respondents who reported spending 2 hours or fewer outside in nature each week rated their interests in nature as among their more or most enjoyable interests.

Table 2.3: Interest in Nature and Hours Spent Outside in Nature per Week

Categories	< 2 hrs	3-5 hrs	6-10 hrs	11-20 hrs	21-30 hrs	> 30 hrs	Don't know
Least enjoyable	2%	1%	0%	0%	0%	0%	3%
Less enjoyable	8%	3%	1%	1%	1%	2%	3%
Neutral	28%	22%	17%	13%	12%	4%	46%
More enjoyable	49%	55%	64%	57%	48%	36%	29%
Most enjoyable	12%	19%	19%	29%	39%	58%	19%

Note: Columns may not add to 100 percent due to rounding. Question wording: In general, would you say your pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented? | In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.)

## 2.3 Adults' Perceptions of Increasing Disconnection from Nature

Despite the relatively high levels of interest in nature among adult Texans, participants in our study perceived growing separation from the natural world in modern society. This view emerged both

<sup>6</sup>For a "profile" of which sub-groups are more or less likely to be dissatisfied with the amount of time they spend outdoors, see Figure 4.41.

in our focus groups and our online survey of adults. (It is also apparent in the study of children and their parents reviewed in the next chapter.) Regardless of whether respondents saw themselves as part of this larger disconnection or a counter-example to it, most expressed a profound sense of *loss* over it.

Nearly all focus group participants in Texas noted that most Americans are interested in nature—a finding that aligns with our survey data—but that Americans as a whole did not align their behaviors with their interests. The public as revealed through its actions, in other words, regarded exposure to nature as a relatively lower priority and even as a dispensable aesthetic and recreational amenity *despite* being interested in it. The evidence focus group participants in Texas cited was broad, including the failure to see the value of nature in and of itself; the growing interest in electronics and indoor activities; and the lack of time people spent outdoors exploring, playing, and enjoying nature. Focus group participants described still other symptoms of disconnection from nature, including pollution of water and air and declining interest in the outdoors among children.

### 2.3.1 Reasons for Disconnection from Nature

Overcoming this disconnection from nature and disinterest in nature required paying attention to four major problems, according to focus group participants.

#### Built Environment

One was the *built environment*, or the physical spaces in which people live, work, and play. Urban and suburban residents alike underscored their dissatisfaction with their physical landscape having become so artificial and human-made. Respondents lamented their subdivisions, the concrete, the constant development and paving over of woods and open spaces. Said one respondent, “we have just apartments, apartments, apartments going up everywhere, and it just sickens me because all the trees that I saw down that street just a year ago are gone for another apartment complex” (white woman, late 60s, HS degree, middle income). One conversation during a focus group focused on whether respondents could find nature in their city, which then revealed the sorts of “nature” available to them:

Respondent 2: I live in the city. No nature. (white woman, late 40s, Bachelor's, middle income)

Respondent 9: Concrete. (black man, early 50s, some college, middle income)

Respondent 2: Buildings everywhere, exactly.

Respondent 9: Pollution.

Respondent 2: They don't leave one little inch of land untouched. It's like, they build everything... Tear down and build it.

Facilitator: So, do you think you can find nature in or around the city?

Respondent 2: In some of the parks.

Facilitator: ...how about the rest of you? Do you feel like you can get to nature in a reasonable amount of time?

Respondent 8: Sure. (white man, early 30s, postgraduate degree, high income)

Respondent 3: Yeah, yeah. (black man, late 40s, HS degree, low income)

Respondent 5: I get to it at my front door. I mean, I got squirrels and birds and butterflies and.... I mean, I feed the squirrels every day, right outside my front door. So, there's lots of nature, if you just look or know what to look for. (white man, late 50s, some college, middle income)

## Competing Priorities

A second major reason for the disconnection from the natural world was *other priorities* that prevent people from living out their interests. Prominent on the list was work: "People have to work longer hours or more jobs to make ends meet that they don't have time to [be outdoors]. So I think it's a combination of the economy and the fact that technology has taken over so much" (Hispanic man, early 40s, Associate degree, high income). Also prominent on the list were responsibilities to care for others—usually children, but sometimes also spouses and partners or parents. One mother described her own children as "just busy all the time." She continued, describing other parents: "Work and home, go put their kids to bed. That's pretty much all they have time for" (white woman, late 30s, some college, middle income).

These competing priorities constrained time. "I think we're so busy with our time... We've got this to do, and this to do, and this to do." It was difficult "to take this time out to go on those walks and to experience [the outdoors]" (Hispanic woman, late 30s, Bachelor's, middle income). In the past "were the times parents really engaged with their kids and got that closeness. It's rare to even find families that eat together anymore.... you don't know what's going on in anybody's life. It's hard to teach them or share any of those experiences" (Hispanic man, late 30s, some college, middle income).<sup>7</sup>

Some focus group participants recognized that a lack of time was a function of implicit or explicit decisions about what to prioritize in life. Those who rated their interest in nature as relatively low sometimes indicated they wished otherwise. "I would like to care more than I do. I don't recycle. I don't know, I guess it's just me being lazy, you know.... I would like to care more than I do right now" (Hispanic woman, late 20s, HS degree, low income). Another explained that her husband prefers to stay inside and watch TV while she would prefer to be outside with people (white woman, early 20s, HS incomplete, low income). Another respondent gently chided other adults to make more time for experiences in nature:

We don't make the time. Because I think the time is there. Everybody has 24 hours in a day, you just need to balance that... [Everyone in my circle of family and friends] loves going to the lakes, even if it's just to drive away for a day and come right back. They'll drive all the way down to South Padre Island and come back the very next day, which is about a six-hour drive.... They're willing to do that just for the sake of being outside and experiencing nature because they have that interest. (Hispanic man, late 50s, some college, middle income)

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<sup>7</sup>The lack of time posed a major barrier for all adults, and even more so for minorities and urban residents. See Figures 2.28, 4.74, and 4.75.

### Declining Direct Dependence

A third major reason for disconnection from the natural world, focus group respondents noted, was *declining dependence on the natural world* compared with the past. “A lot of the things that a hundred years ago you depended on nature... A lot of the things you needed to survive were outdoors. So it was more of a necessity to be outdoors than now” (Hispanic man, late 30s, Associate degree, high income). Others cited other dependencies on nature, such as growing food, jobs associated with natural resources, and differences in housing design and construction. One respondent explained:

[People] were outside working, and the kids were out there with them because back then, not a lot of children went to school, so they were out in the nature with the adults. And I think they probably enjoyed nature more than we do now because what was said about technology: we have so much more of that, why should we think of nature? Why should I think of a garden? (white woman, late 60s, HS degree, middle income)

Many focus group respondents regarded this past dependence on nature as resulting in a higher value placed on the natural world, including plants, herbs, and animals. For example, one respondent suggested: “You know, that tree meant more to them than just landscaping. You know, it provided them food or shade... there was more of a connection, I think” (Hispanic woman, early 40s, Bachelor’s, middle income). To her, this “connection” with nature meant a deep recognition of our dependence on the natural world. For example, she remarked: “This plant is providing me with food, oxygen.” These times were also related to a greater sense of peace and quiet:

Respondent 2: ...you just get so tired of hearing all of the traffic and the TV and people talking. Just to get quiet, to a place that is— (white woman, early 50s, Bachelor’s, middle income)

Respondent 6: —Peaceful— (white man, late 40s, some college, middle income)

Respondent 5: —Takes you back to a simpler time in life. (white man, late 50s, some college, middle income)

### Technology

“*Technology*,” especially electronic devices and media was the fourth major reason for disconnection from nature. As one respondent noted, “younger children like my grandchildren, I don’t think they enjoy nature as much as someone my age.” The reason, in her mind, was clear: younger generations “do not see nature as we do” because “they’re in the house too much on the video games or the telephone or iPads and music” (white woman, late 60s, HS degree, high income). Others agreed that cell phones, video games, and televisions were keeping people—and children in particular—too busy. In previous eras, the lack of electronics “forced” people to do more activities outside: “There was nothing to really tie you to stay inside, so you had no choice but to enjoy the outside” (black man, late 40s, postgraduate degree, high income).

Respondents prioritized direct, unmediated experience with nature over electronically mediated experiences (for example, watching a television show about an animal). Watching a channel is “not really like being in nature...being right there enjoying what God has offered: the green earth, the fresh air, the clear skies, the chirping of the birds, the running water, the quiet and peace” (black man, late 40s, HS incomplete, low income). Another agreed, arguing that television had

“consumed” people who sat inside “instead of going out, enjoying running around, smelling the fresh air, taking your kids to the park. Just sitting outside, enjoying the cool breeze for the night. Letting your windows up, star gazing, and things like that.” She concluded, “I think that television and social media...have taken away those really concrete things of what life is actually all about” (black woman, late 40s, some college, middle income).

### Shifting expectations

Each of these factors in turn combined into what respondents sensed were *shifting expectations of “good” contact with nature*, especially among younger generations. No longer was it normal to spend most of one’s time as a child outdoors. No longer was being inside something with which to be dissatisfied. The standards of what was appropriate for children and adults to know and do in relation to the natural world had changed.

An exchange in one of the focus groups brought up a number of these issues simultaneously:

Respondent 9: I think [technology is] a negative. From my point of view, watching my grandson, he’s always got one of those [video games] in his face. And he’s eight years old, doesn’t know how to ride a bicycle and just drives me crazy. I mean, he doesn’t know how to do anything. (white man, late 60s, HS incomplete, middle income)

Respondent 6: Kids don’t do anything anymore. You don’t see them outside playing like you used it. (white man, late 40s, some college, middle income)

Respondent 3: ...My children don’t get out there like we did. (black man, late 40s, HS degree, low income)

Respondent 2: Climbing trees or— (white woman, early 50s, Bachelor’s, middle income)

Respondent 3: —Once you [did] your homework, you [went] outside. They can do their homework in five minutes and be done, with the Internet. And then they go and get on...the computer or whatever and play games instead of going outside and getting roughed up.

A number of focus group participants indicated a desire to counter this disconnection by instilling what they knew about nature in the next generation, as well as making greater opportunities available for contact with the outdoors. One grandmother frequently urged her daughter not to let the television “babysit the kids” and, instead, to take them places, to walk, to explore, to read, to do research (black woman, early 60s, HS degree, middle income). Various parents described a strong desire to provide opportunities for their children to explore nature and the outdoors. Another respondent remarked on his desire to preserve nature for future generations, “[I] want to make sure it’s there for the next [generation], for my grandkids, for their kids as well” (Hispanic man, late 50s, some college, middle income).

Some focus group participants described a desire to get away and “find” nature for themselves outside of cities and popular tourist destinations. This emphasis on “getting away from it all” was surprising because it was not how most adults actually reported experiencing nature, especially influential experiences in nature. (See Figure 2.13 and Table 2.4 below.) Instead, most adults indicated they had been influenced by other people in their appreciation of nature and their desire for greater exposure to it. The desire to “get away and be alone in nature” seemed to be a reflection

of the general wish to be removed from the noise and congestion of modern life and a wish to experience a more pristine environment with family and friends.

While many focus group participants were dismayed by the disconnection they saw around them, they were also convinced that if people get outdoors, they can be persuaded of its attraction. One respondent was confident that “when you do take them outside, they do enjoy it. You know, it’s just that they don’t take that first step to actually go outside and see what’s out there” (Hispanic man, early 40s, Associate degree, high income).

## 2.4 Influences on Adults' Relationship with Nature

The survey of adults in Texas revealed the people and experiences that have influenced how they view nature. Almost 40 percent of our respondents cited parents as the greatest influence on how they think and feel about nature (Table 2.4). Indeed, 59 percent of surveyed adults cited family members such as parents, grandparents, siblings, and other relatives as being most influential. Another 13 percent of respondents cited friends as the greatest influence. Relatively few adults noted teachers, fish and wildlife professionals, scout leaders, or camp counselors as exercising the greatest influence on their views of nature. These findings underscore the importance of close social and familial relationships in the development of most Texans' connections to the natural world.

Table 2.4: Most Influential Person on How Adults Think or Feel about Nature

Person	%
Parent	39
Other	15
Friend	13
Grandparent	12
Teacher	5
Other relative	5
Brother/sister	3
Fish/wildlife/outdoor professional	3
Camp counselor/Youth group leader	2
Scout leader	2

Question wording: Which one of the following persons most influenced how you think or feel about nature?

The focus group data further illuminated the role of family, particularly parents and grandparents, in developing relationships to nature and wildlife. For example, one mentioned a kind of reverse process where his children’s responsible behaviors toward nature changed his own littering behavior. He noted, “Because of my kids, and they’re going to a school and learning this stuff, they have influence [on] me... I’ve learned to recycle” (Hispanic man, late 40s, some college, middle income). “When I see cardinals,” one recalled, “it reminds me of when my mom would teach me how to ride my bike, and we were in this very big park. Just being surrounded by all the trees just brings back happy memories of just being with my mom” (multiracial man, early 20s, some college, middle income).



- 38 responses, or 25 percent, explicitly mentioned childhood.
- 31 responses, or 21 percent, explicitly mentioned another person or group of people. Of these 31 answers, 20 of them overlapped with mentions of childhood. That is, 11 did *not* explicitly mention childhood.
- Upon eliminating overlapping codes, 67 responses, or 45 percent, could be categorized as explicitly fitting under one of these three themes.<sup>8</sup>

A representative selection of these responses reveals the breadth of nature experiences. The responses reinforce the importance of childhood, exploration, and the presence of familiar people. A sample of these remarks follows:

- “The family camping trips I take every summer with my parents, siblings, and pets.” (white woman, 19, suburban, HS degree, middle income)
- “Hunting with my dad when I was young.” (white man, 57, suburban, some college, middle income)
- “Back when I was just a child, I used to collect insects and look them up in dictionary to study more about them. I always enjoyed different types of trees, rocks, and plants as well. I’d look up different trees or plants to learn more about them and why everything God created all have meaning in life.” (Hispanic woman, 51, suburban, HS degree, high income)
- “Going on field trips with my school and seeing all the cool things that nature has to offer a kid.” (black man, 24, urban, HS degree, low income)
- “Camping trips when I was in Boy Scouts.” (white man, 65, suburban, some college, low income)
- “Going fishing with my mother.” (white woman, 62, urban, some college, low income)
- “Being in Girl Scouts and camping.” (black woman, 34, suburban, Bachelor’s, middle income)
- “I didn’t have a lot of strong relationships growing up that most have with family. My enjoyment came from pets, Animal Planet channel, and the Discovery Channel.” (white woman, 28, rural, some college, low income)
- “Summers in Rocky Mountain National Park as a young man.” (white man, 73, suburban, high income)
- “Seeing the Grand Canyon.” (Hispanic woman, 65, rural, HS degree, middle income)
- “As a kid, I worked in an outdoor garden with my grandparents. During the summer, they would take us to different fields (cotton, peas, and beans). I worked hard there and gained respect for my grandparents and nature.” (black woman, 26, urban, postgraduate degree, low income)
- “I would have to say my religion has influenced my view and feeling about nature the most.” (Multiracial woman, 21, rural, some college, middle income)
- “Having a pet as a young boy.” (Hispanic man, 22, urban, some college, low income)

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<sup>8</sup>Other responses may have also involved childhood (e.g., a trip to a national park) or a social aspect (e.g., playing outdoors as a child); however, we could not be sure this was the case.

## 2.5 Values of Nature, the Outdoors, and Wildlife

As discussed in Chapter 1, our basic theoretical framework originates in the idea of biophilia—that people possess an inherent inclination to affiliate with nature that reflects our history as a species having evolved in largely adaptive response to natural forces and stimuli. Yet like much of human behavior, to be functional and beneficial, this biological inclination must be nurtured and developed through learning and experience.<sup>9</sup>

The tendency to affiliate with nature is revealed in eight ways people are inclined to attach meaning, derive benefit, and in effect value the natural world. These include values of affection, attraction, aversion, control, exploitation, intellect, spirituality, and symbolism. This section reviews the results of questions we asked respondents to the online survey. (Section 3.2 reports results for children, and Section 4.3 and Appendix A report results for these values among different demographic groups.)

Examining these values provides a deeper and more detailed understanding of the meanings and motivations behind adults' interests, attitudes, and behaviors. The findings presented here offer a distinct view of Texan adults. Most appear to have strong feelings of affection and attraction to nature, believe nature gives them peace and spiritual support, and are not averse to different aspects of the natural world. In addition, most adults believe in limits to humankind's efforts to dominate, control, and exploit nature, especially if doing so has significant negative consequences for wilderness and wildlife. Finally, the overwhelming majority of adults in Texas regarded learning about nature as critical in the development of our capacity to reason and exercise intelligence, and held it as important as reading, writing, and mathematics in children's education.

### 2.5.1 Affection for Nature

Affection describes the emotional attachment people may or may not feel toward nature (Figure 2.14). The majority of respondents reported that their love of nature is among their strongest feelings. Additional questions revealed that this affection is complex and multidimensional. For example, the great majority of respondents agreed that certain smells and sounds of the natural world elicit some of their happiest memories. In addition, most adults also cited a personal love of pets. Even so, affection for nature and wildlife appeared to be often subordinated to other competing priorities and demands for the respondent's time and resources. Reflecting the pressure of these choices, many agreed they faced more important issues in life than their concerns for nature and wildlife.

Focus group participants frequently discussed their feelings and memories when the issue of affection for nature and wildlife was raised. For them, a major aspect of their affection for nature reflected the peacefulness and relaxation they enjoyed when in nature. One described sitting on a balcony where he used to live. "I was just sitting out there in the cool of the day and enjoying the peace of nature. At nighttime, it would be so peaceful that you can just—it's soul-searching. It's wonderful. It's a connection to nature" (black man, late 40s, HS incomplete, low income). He concluded with an observation echoed by many focus group participants: namely, once they were able to carve out the time and space, they thoroughly enjoyed nature and its benefits.

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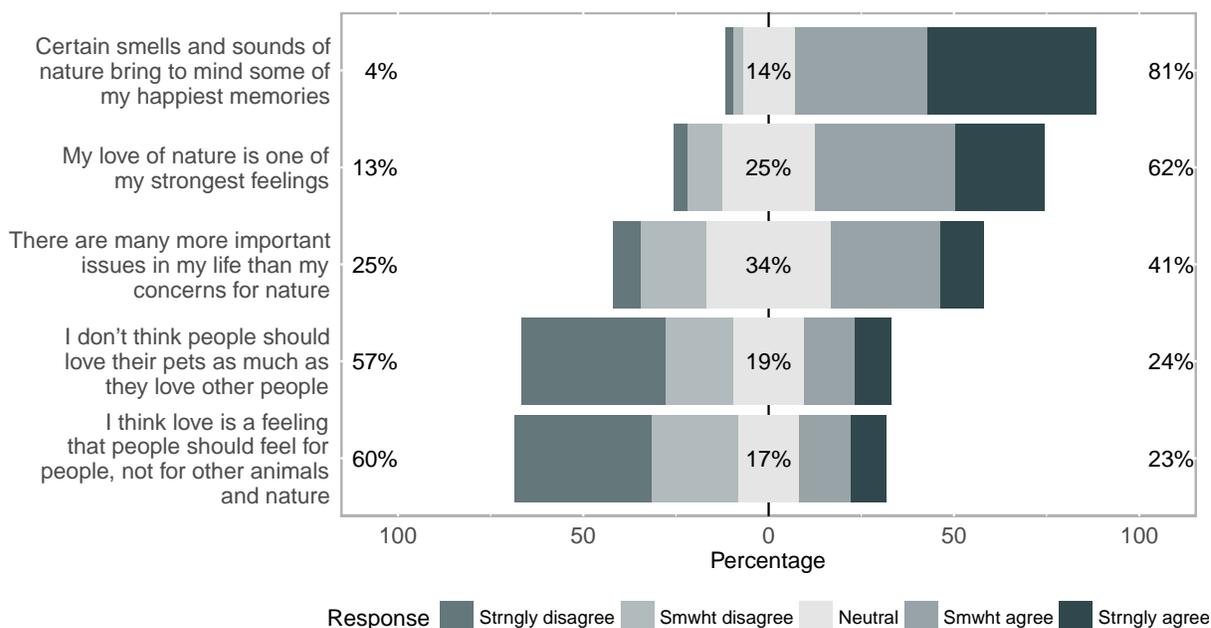
<sup>9</sup>Wilson, Edward O. *Biophilia*. Cambridge, MA: Harvard University Press, 1984. Kellert, Stephen R., and Edward O. Wilson, eds. *The Biophilia Hypothesis*. Washington, DC: Island Press, 1993. Kellert, Stephen R. *Birthright: People and Nature in the Modern World*. New Haven, CT: Yale University Press, 2012.

When respondents did discuss more specific elements of their affection, they frequently focused on water, particularly oceans, streams, rivers, and rain (including smelling it and listening to it). Put a different way, although affection for nature sometimes included animals, it extended far beyond that: Focus group participants mentioned birds, bugs, fish, and pets; they also mentioned feelings of appreciation and awe and freedom and relaxation and respect; they further mentioned their childhood, memories of other times and places, parks, the sky, snow, and the sun.

This affection for nature was closely linked with affection for family and friends. Note, for example, how memories of being with friends are integrally related to memories of nature, and vice versa, in this recollection:

I love going outside at night and just listening to the crickets. Takes me back to when I used to be in middle school, sitting outside, just talking to friends and just hearing the crickets. So...it reminds me back then. And just if I see lightning bugs outside, it reminds me of my grandmother's house, going and catching them as a kid, running around. (Hispanic woman, late 20s, HS degree, low income)

Figure 2.14: Values of Affection



Note: The percentage listed on the left side combines “strongly disagree” with “somewhat disagree.” The percentage listed in the middle reports the neutral category (“neither agree nor disagree”). The percentage listed on the right side combines “strongly agree” with “somewhat agree.”

## 2.5.2 Attraction to Nature

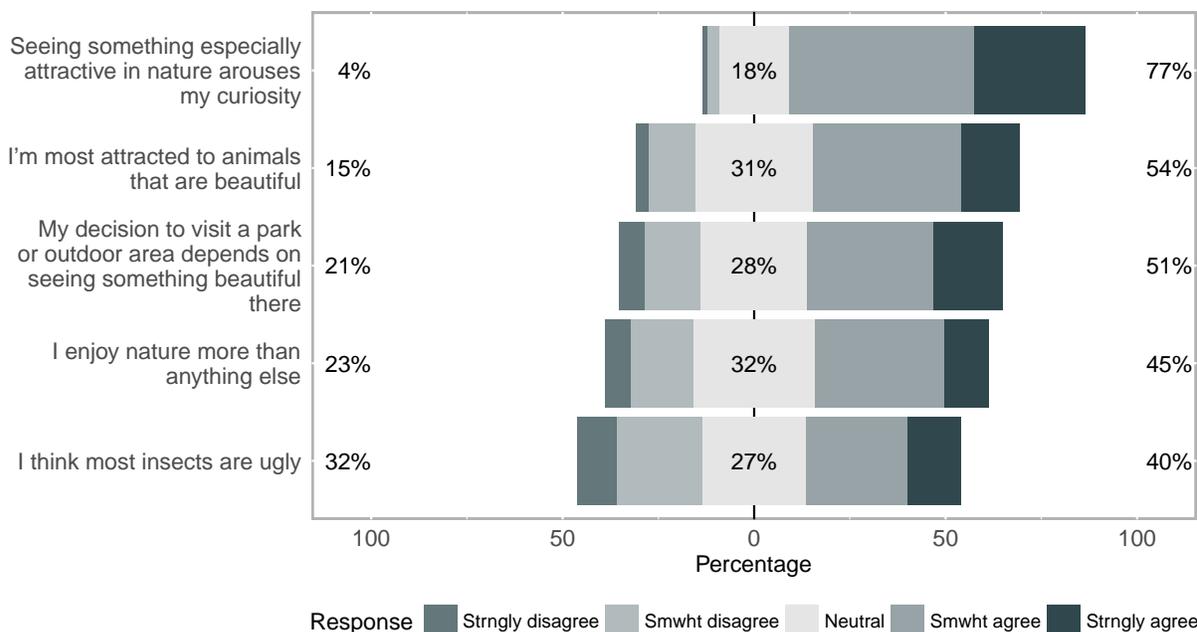
The natural world also held great aesthetic appeal and attraction for many Texans in our study, including a sense and appreciation for its beauty. For example, most adults agreed that seeing something aesthetically attractive in nature arouses their curiosity (Figure 2.15). About half agreed

they are most attracted to animals that are beautiful, and that they enjoy nature more than anything else. The data indicate attraction to nature often involves beauty, but not in all cases: for example, some disagreed that their decision to visit a park or natural area depends on seeing something beautiful there. Furthermore, the aesthetic appeal of the natural world can be biased and selective, with many respondents agreeing most insects are ugly.

In our focus groups respondents mentioned a variety of aspects that attract them to the natural world, including colors, animals, flowers, stars and the moon, the ocean, rain and rainstorms, seasons, the sun, and water. Seeing a picture of tulips drew one respondent in and made him desire to travel to the Netherlands to see them in person (Hispanic man, late teens, some college, middle income). Others shared their desire to visit iconic places like Yosemite National Park or the Grand Canyon or Niagara Falls to see particular vistas or animals. Still others described the attraction they feel to cold water during high temperatures, an attraction that pulls them toward particular rivers, lakes, or creeks (e.g., Hispanic woman, late 50s, some college, middle income).

As these examples suggest, an important part of adults' attraction to these particular places and experiences was their extraordinary aspect. In other words, these places were special and attractive because they were not encountered in daily life. One respondent, for example, described waters in Texas and in Hawaii, going snorkeling, seeing coral reefs. All of this was appealing because "it's different, and it's something that you don't do every day.... It's out of the ordinary and...you've really got to go to certain places to see those things" (black man, late 30s, some college, high income).

Figure 2.15: Values of Attraction



Note: The percentage listed on the left side combines "strongly disagree" with "somewhat disagree." The percentage listed in the middle reports the neutral category ("neither agree nor disagree"). The percentage listed on the right side combines "strongly agree" with "somewhat agree."

### 2.5.3 Aversion to Nature

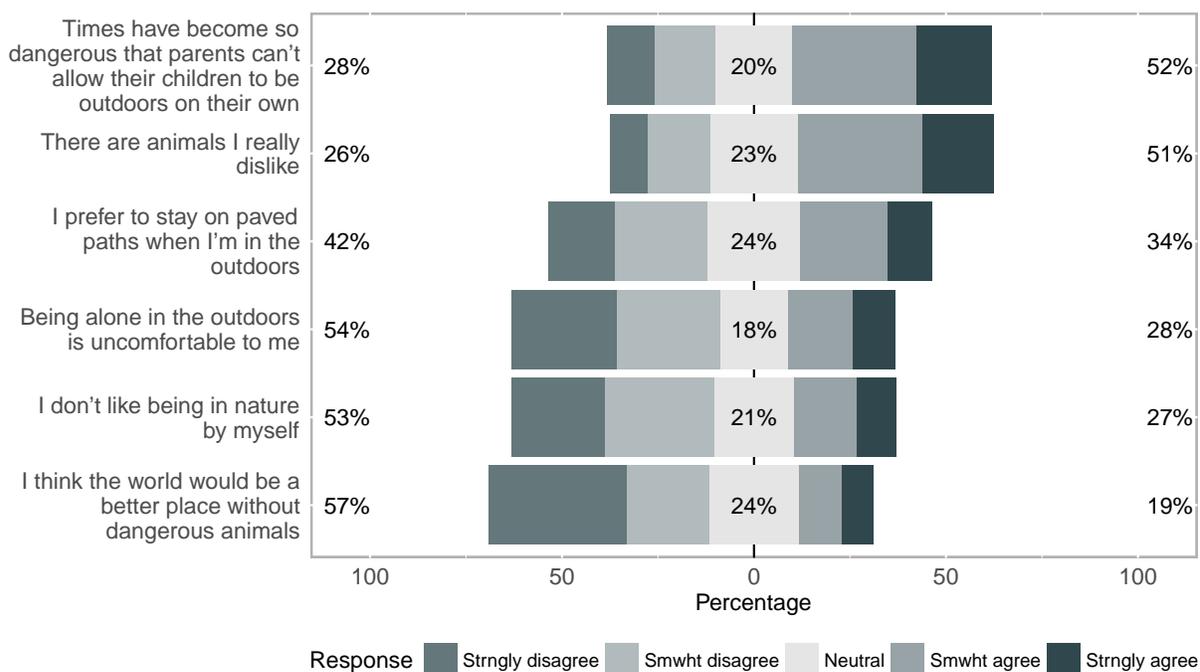
Despite widespread feelings of affection and attraction to nature, humans also have an inclination to avoid aspects of nature that generate feelings of anxiety, threat, and sometimes fear. Many adult Texans also expressed avoidance and fear of aspects of nature and wildlife (Figure 2.16). For example, approximately one-half agreed there are animals they really dislike. A similar proportion associated danger with the outdoors, particularly the fear of allowing children to be outside on their own. About half of respondents indicated being comfortable with being outdoors or in nature alone.

Focus group respondents mentioned a range of animals and insects that frighten them or that they try to avoid, including bears, bobcats, bugs, coyotes, jellyfish, mountain lions, pathogens, possums, sharks, snakes, and spiders. One person had a fear of the ocean because of what was unseen in it (Hispanic man, late 40s, some college, middle income). Others told of being afraid of bad thunderstorms, being stung by bees, or fearing hurricanes. One respondent feared being out at night in the dark: “It’s not just because of people or anything, just my surroundings. I don’t know if there’s animals or creeks or...whatever. Just anything I would need to avoid, I wouldn’t be able to know if it’s dark” (Hispanic woman, early 50s, Bachelor’s, middle income).

One person’s fear was more for his children:

While we’re out camping, I don’t care. I don’t care about snakes. To me, respect nature, it will respect you. But I worry more for my children wandering off in a direction where I’m not there, or not being able to protect them in that situation. Or being at the beach and constantly having to hold them by the hand and not letting them be on their own, because I don’t know what’s in the water. And I don’t care if I get stung, I don’t care if I get bit, I don’t care if I get dragged out to the water. All I care about is their safety. So for me, it would be more fear for my children than for myself. (Hispanic man, late 30s, Bachelor’s, high income)

Figure 2.16: Values of Aversion



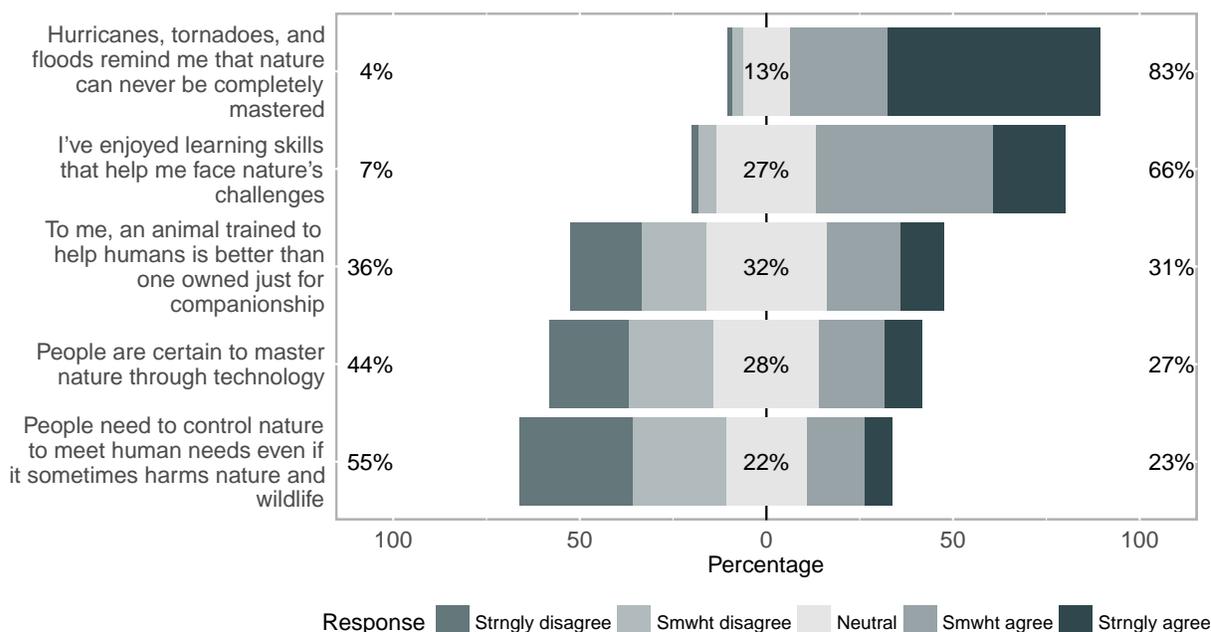
Note: The percentage listed on the left side combines “strongly disagree” with “somewhat disagree.” The percentage listed in the middle reports the neutral category (“neither agree nor disagree”). The percentage listed on the right side combines “strongly agree” with “somewhat agree.”

### 2.5.4 Control over Nature

Control or dominion of nature refers to the exercise of mastery over aspects of the natural world. While one characteristic of modern society and technology is increasing control over nature, most adults in Texas still regarded nature as largely uncontrollable and incapable of ever being completely mastered (Figure 2.17). Even if nature were controllable, many respondents disagreed that people ought to control nature if the consequence were substantial harm to nature and wildlife.

In focus groups smaller elements of the natural world, such as mosquitos or fleas or rodents or weeds, could—and even should—be controlled. While some tried to use “natural” solutions to eliminate pests, on the whole, controlling nature was seen as morally acceptable and even expected—despite affirmations of affection toward nature or attraction to most plants and animals. Other respondents described using air conditioning as a method of controlling their local environment.

Figure 2.17: Values of Control



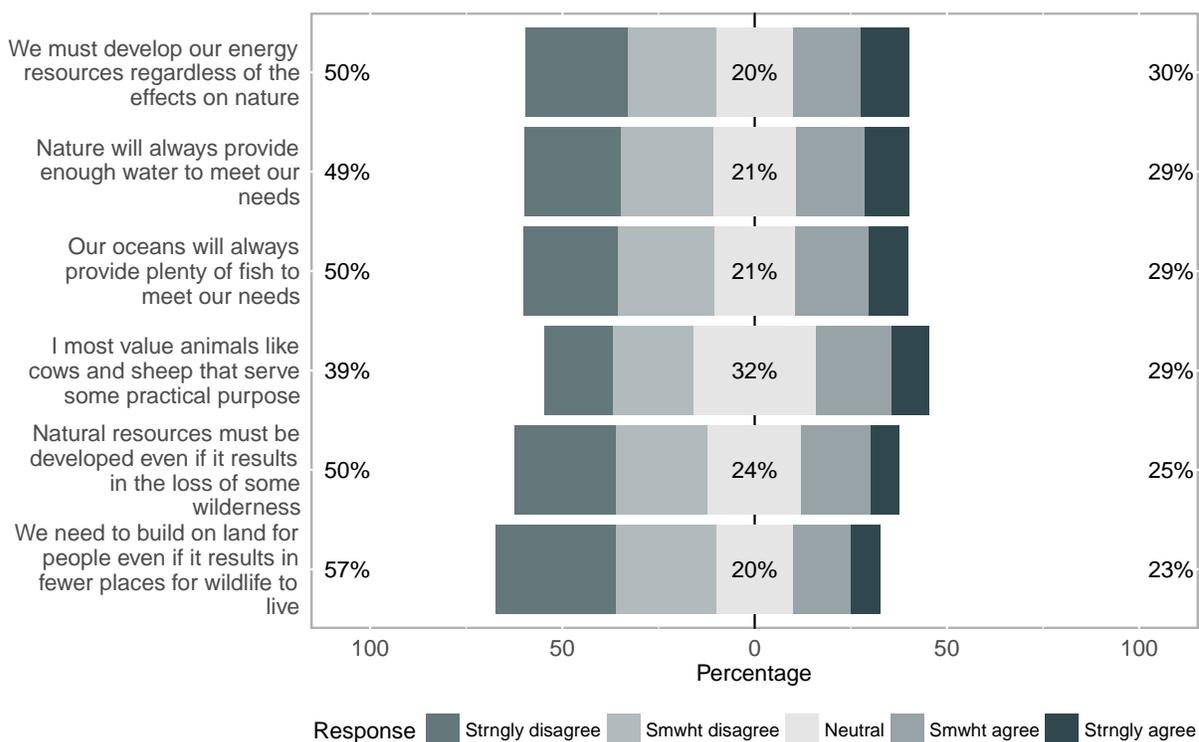
Note: The percentage listed on the left side combines “strongly disagree” with “somewhat disagree.” The percentage listed in the middle reports the neutral category (“neither agree nor disagree”). The percentage listed on the right side combines “strongly agree” with “somewhat agree.”

### 2.5.5 Exploitation of Nature

Humans use the natural world in a variety of ways for diverse material and other practical purposes. The value of exploitation refers to the perception of and support for this utilization of nature. While generally appreciative of the need to utilize the natural world, many adults in Texas disagreed with some aspect of exploitation when it seemed especially excessive and destructive (Figure 2.18). For example, over half of Texans disagreed with using nature if it reduced places for wildlife to live. Across all questions, roughly one-quarter of respondents supported various forms of using natural resources, even when it resulted in adverse consequences on the natural world.

Focus group respondents mentioned a number of ways they make use of the natural world in their daily lives, including food, water, minerals, and vitamins; materials for their houses, furniture, hobbies, and offices; medicine (especially so-called natural remedies like aloe vera or eucalyptus or lavender); and fuel for heating or air conditioning.

Figure 2.18: Values of Exploitation



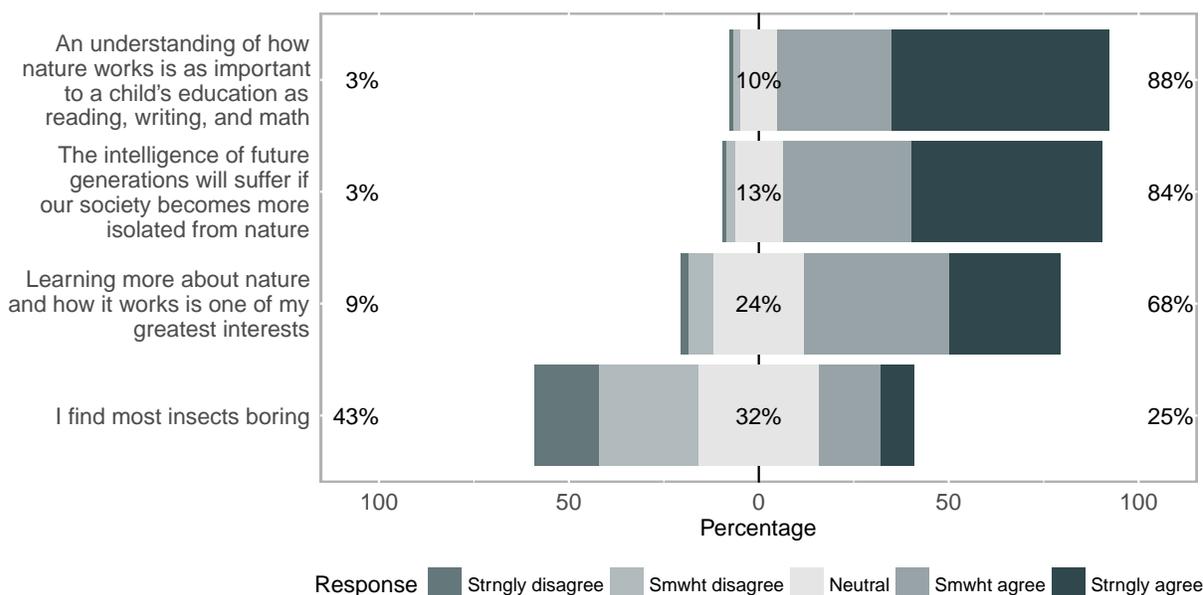
Note: The percentage listed on the left side combines “strongly disagree” with “somewhat disagree.” The percentage listed in the middle reports the neutral category (“neither agree nor disagree”). The percentage listed on the right side combines “strongly agree” with “somewhat agree.”

## 2.5.6 Intellect and Nature

The biophilic dimension of intellect underscores the ways people seek knowledge and understanding of nature, ranging from simple facts to more advanced reasoning. As Figure 2.19 demonstrates, the overwhelming majority of Texans surveyed viewed an understanding of nature as being as important to children’s education as the more conventional subjects of reading, writing, and mathematics. Indeed, the great majority further agreed the intelligence of future generations will suffer if our society becomes isolated from nature. Finally, some two-thirds agreed learning about nature and how it works represents one of their greatest interests. These findings suggest that experiences in nature—according to adults themselves—can assist in promoting learning and critical thinking in the modern world, especially among children.

For focus group respondents learning about nature was important because it created an appreciation for it. For example, one respondent described an opportunity to take a trip to view baby sea turtles and learn more about them: the trip would enable him to teach his grandchildren and “pass on the appreciation for nature that they could inherit for free” (Hispanic man, early 60s, some college, middle income). It was also important because learning about the natural world could directly benefit humanity, for example, to avoid certain poisonous plants or to utilize plants to remedy illnesses.

Figure 2.19: Values of Intellect



Note: The percentage listed on the left side combines “strongly disagree” with “somewhat disagree.” The percentage listed in the middle reports the neutral category (“neither agree nor disagree”). The percentage listed on the right side combines “strongly agree” with “somewhat agree.”

### 2.5.7 Spirituality and Nature

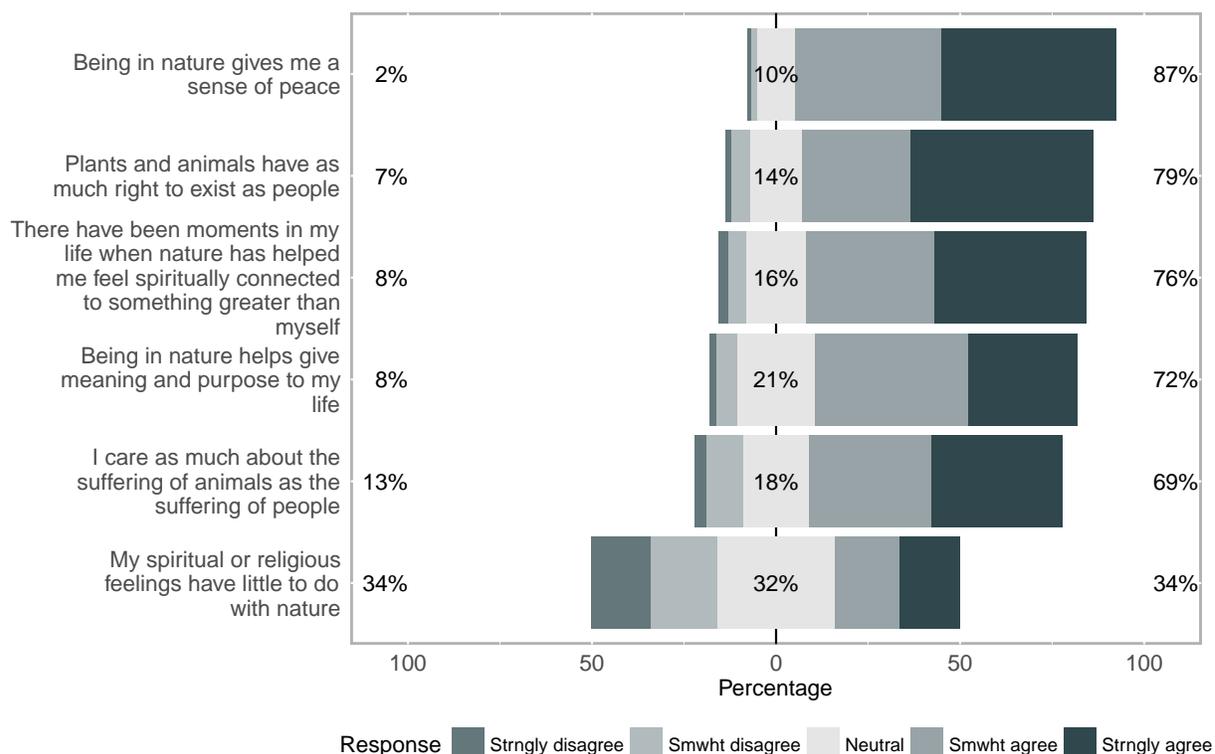
The biophilic value of spirituality emphasizes how by connecting with nature people can potentially obtain a greater sense of meaning and purpose in their lives. An important dimension of spirituality is a sense of peace, and the great majority of adults surveyed agreed being in nature gives them feelings of peacefulness (Figure 2.20). The majority of adult Texans agreed that there have been moments in life when nature helped them to feel spiritually connected to something greater than themselves, and that being in nature contributed to feelings of meaning and purpose to their lives. A more moral aspect of this spirituality may be reflected in most respondents agreeing plants and animals have as much right to exist as people and that they personally care about the suffering of animals as much as the suffering of people.

Focus group respondents had a great deal to say about the link between nature and their spirituality. Again and again, adjectives like serene and peaceful filled the conversations. One participant described sitting on her back patio in the rain: “it’s just really tranquil. It allows me time to think and think about life, and where I’ve been and where I’m going, and where I plan on heading. It just kind of gives me a moment to soul search” (black woman, late 30s, some college, middle income). Another shared that while visiting the mountains of New Mexico, “the spiritual part of me knew that there was something that made all this here.... The spiritual part of you...comes out, knowing that you are alone with something greater than yourself, that just created all of this and you” (Hispanic man, late 40s, some college, middle income). Still another described the serenity he feels in nature: “I don’t know whose God made it all, but I’m damn sure glad he made it” (white man, late 50s, some college, middle income).

Focus group participants commonly thought of nature as separate or somewhat distant from ordinary life. However, when describing the spiritual dimensions of experiences in nature, this division decreased for many: respondents again and again considered themselves to be “part” of nature. As one respondent shared,

I think when you go back to nature...you go back into the wider world. You're not in your sterile environment anymore. You're part of nature, you're not just saying. You know, nature's not something far away, you're in it already. So you get a broader sense of something bigger out there, and you're just a small part of it. (Hispanic man, late 30s, Bachelor's, middle income)

Figure 2.20: Values of Spirituality



Note: The percentage listed on the left side combines “strongly disagree” with “somewhat disagree.” The percentage listed in the middle reports the neutral category (“neither agree nor disagree”). The percentage listed on the right side combines “strongly agree” with “somewhat agree.”

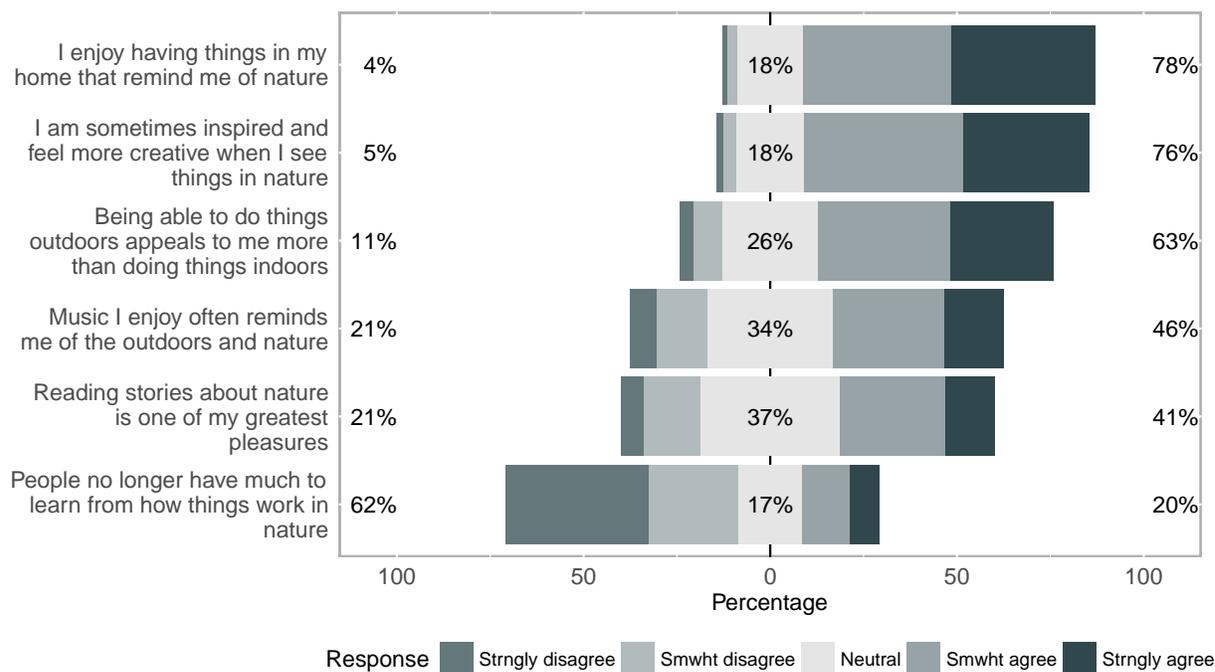
### 2.5.8 Symbolism and Nature

The eighth biophilic value is symbolism, reflecting how the image and representation of nature facilitate communication, thought, and design. Most adults in Texas enjoy surrounding themselves with representations and images of the natural world (Figure 2.21). For example, the vast majority attested to enjoying having things in their homes that remind them of nature, and they indicated

they sometimes feel more inspired and creative by these images of nature. Many agreed that reading stories about nature and music that reminds them of nature are appealing.

Focus group respondents mentioned the representations of nature in literature, architecture, furniture, indoor plants, interior decorations, music, light, and visual art.

Figure 2.21: Values of Symbolism



Note: The percentage listed on the left side combines “strongly disagree” with “somewhat disagree.” The percentage listed in the middle reports the neutral category (“neither agree nor disagree”). The percentage listed on the right side combines “strongly agree” with “somewhat agree.”

## 2.6 Knowledge of Nature and Wildlife

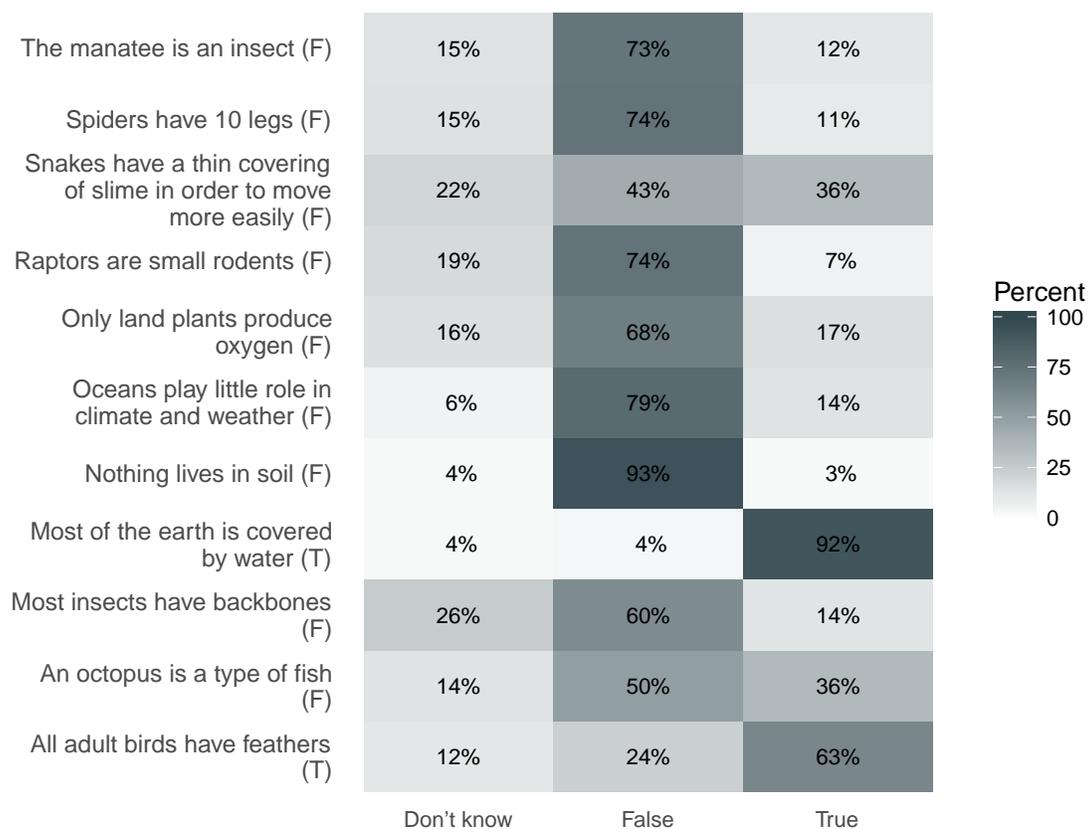
What do Texans know about the natural world? Survey respondents answered the following 11 questions on a quiz about the natural world:

- Spiders have 10 legs (correct answer = false)
- Raptors are small rodents (false)
- All adult birds have feathers (true)
- The manatee is an insect (false)
- An octopus is a kind of fish (false)
- Snakes have a thin covering of slime in order to move more easily (false)
- Most insects have backbones (false)

- Only land plants produce oxygen (false)
- Most of the earth is covered by water (true)
- Oceans play little role in climate and weather (false)
- Nothing lives in soil (false)

The average (mean) score was 7.8 correct answers out of 11. (The median was 8 correct answers.) Three-quarters of adults answered at least 6 questions correctly, and one-quarter gave 10 or more correct responses. (See Figure 2.22.) A very high proportion correctly answered “Nothing lives in the soil” (93 percent correctly answered false), followed by “Most of the earth is covered by water” (92 percent correctly answered true). Adults were most confused about whether or not snakes have a thin covering of slime in order to move more easily: 43 percent gave the correct answer (false), 36 percent gave the incorrect response (true), and 22 percent said they did not know.

Figure 2.22: Quiz of Formal Knowledge about Nature



Note: Rows may not add to 100 percent due to rounding.

Many important social factors influence even a relatively brief test of factual knowledge, and so we examined how respondents' scores change, on average, in relation to these influences. Note that the results below are derived from a regression analysis where each of these factors was adjusted or controlled in the final model.

- Compared to white respondents, Hispanics scored 0.5 points lower on average; blacks, 1.5 points lower; Asians, 0.9 points lower. As noted above, these differences occurred after adjusting, or controlling, for gender, age, formal education, income, location, time outdoors, and interest in nature.
- Women and men scored the same, on average.
- Scores were steady across ages.
- Adults with more formal education performed better on the knowledge questions. Adults with some college scored approximately 0.4 points better than those who have a high school degree or less education. Adults with a Bachelor's degree or a postgraduate degree scored, on average, about 0.6 points higher than adults with a high school degree or less.
- Adults with higher incomes scored lower on the quiz than respondents with middle incomes. The very highest income-earners surveyed (those in households earning \$125,000 or more per year) scored 0.5 points lower than adults in households earning \$50,000–\$75,000 per year.
- Urban respondents scored 0.5 points lower on the knowledge questions than did rural residents. Suburban adults were no different from rural ones.
- Time spent outside in nature was associated with lower quiz scores.
- Compared with adults who ranked their interests in nature as among their least enjoyable, other adults scored 0.5–1.1 points higher. For example, those who put their interest in nature as among their most enjoyable scored 0.5 points higher.

### 2.6.1 Comparison of Quiz Answers in 2016 with 1978

Six knowledge questions asked in 2016 of Texans overlapped with a national study conducted in 1978.<sup>10</sup> Clearly, economic, social, and political conditions in the United States and Texas have changed since then. Much of the focus and content of the 1978 national survey of American adults differed from the 2016 survey of Texan adults; so, too, did much of the question wording and the methodologies used.<sup>11</sup> These differences limit the ability to compare the two sets of results. However, some of the values of and knowledge of nature asked in both studies are sufficiently similar to convey at least a sense of how Texans compare today with Americans as a whole in the past.

The average respondent in 1978 correctly answered 43 percent of all 33 questions asked. By comparison, the average respondent in 2016 correctly answered 71 percent of all 11 questions asked (Table 2.5). Illustrating the changes, in 1978, 26 percent correctly answered a manatee is not an insect, in contrast to 73 percent of Texan adults today. One-half (50 percent) of respondents in 1978 correctly answered a question about the number of spider's legs, in contrast to 74 percent today. For other questions, adults today had responses similar to those encountered in 1978. For example, roughly

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<sup>10</sup>For more information on the 1978 study, see Kellert, Stephen R. "Public Attitudes toward Critical Wildlife and Natural Habitat Issues, Phase I." Washington, DC: U.S. Department of the Interior, 1979. Kellert, Stephen R., and Joyce K. Berry. "Knowledge, Affection, and Basic Attitudes toward Animals in American Society, Phase III." Washington, DC: U.S. Department of the Interior, 1979. Kellert, Stephen R., and Miriam O. Westervelt. "Children's Attitudes, Knowledge, Behaviors toward Animals, Phase V." Washington, DC: U.S. Department of the Interior, 1979.

<sup>11</sup>The 1978 study was a random probability sample of 3,107 adults ages 18 and older across the US, with a response rate of about 60 percent. For more details, see pages 4–12 in Kellert, Stephen R. "Public Attitudes toward Critical Wildlife and Natural Habitat Issues, Phase I." Washington, DC: U.S. Department of the Interior, 1979.

the same number of adults now as then correctly answered that all adult birds have feathers (63 percent in 1978 and 63 percent in 2016), and that most insects do not have backbones (57 percent in 1978 and 60 percent in 2016). More adults in 2016 than in 1978 erroneously thought snakes have a thin covering of slime in order to move more easily: 36 percent incorrectly answered the question today compared with 30 percent in 1978.

Table 2.5: Comparisons of 2016 Study to 1978 Study

	<i>Correct (%)</i>		<i>Wrong (%)</i>		<i>Don't know (%)</i>	
	1978	2016	1978	2016	1978	2016
The manatee is an insect	26	73	23	12	51	15
Raptors are small rodents	12	74	14	7	74	19
Spiders have 10 legs	50	74	18	11	32	15
All adult birds have feathers	63	63	22	24	15	12
Most insects have backbones	57	60	13	14	30	26
Snakes have a thin covering of slime	52	43	30	36	18	22

## 2.6.2 Comparison of Attitudes toward Nature in 1978 and 2016

In addition to comparing knowledge of the natural world, we can also examine attitudes toward nature and wildlife between the 1978 national study and the 2016 Texas study (again recognizing that the sampling frame and composition differ). Nine similarly worded attitude questions toward wildlife and nature are presented:

1. In 1978, 13 percent agreed that love is an emotion that people should feel only for other people, not for animals. In 2016, this proportion had increased to 21 percent of Texans.
2. In 1978, 66 percent agreed they had owned pets as dear to them as another person. In 2016, 59 percent of Texans disagreed that people should not love their pets as much as they love other people.
3. In 1978, 59 percent of respondents disagreed that a dog trained at a task, like herding sheep, is generally a better dog than one owned just for companionship. In 2016, 38 percent disagreed that an animal trained to help humans is better than one owned just for companionship.
4. In 1978, 57 percent disagreed with building on marshes that ducks and other non-endangered wildlife used if the marshes were needed for housing development. In a differently worded 2016 question, 59 percent disagreed that we need to build on land for people even if it resulted in fewer places for wildlife to live.
5. In 1978, 60 percent agreed they would be afraid to touch a snake, and 71 percent said they disliked most beetles and spiders. In 2016, a differently worded question showed 51 percent of adults in Texas agreed there were animals they really disliked.
6. In 1978, 80 percent agreed that rats and cockroaches should be eliminated. In a differently worded 2016 question, 60 percent of adults in Texas disagreed the world would be a better place without dangerous animals.

7. In 1978, 39 percent reported they had read at least one book about animals during the preceding two-year period. In 2016, 56 percent indicated “a lot” of interest in reading about or looking at pictures about nature.
8. In 1978, 78 percent of the national sample reported viewing at least one wildlife-related television program during the preceding two-year period. In 2016, 80 percent reported “a lot” (49 percent) or “some” (31 percent) interest in watching nature-related television programs.
9. In 1978, 11 percent reported membership in a conservation-related organization, while in 2016, 11 percent indicated “a lot” of interest in belonging to nature and wildlife-related organization.

## 2.7 Benefits of Nature

Alongside examining the ways Texans value nature, we explored specific physical and emotional health and material benefits adults perceive they obtain from their exposure to it. When describing the single most important benefit that people derive from the natural world, survey respondents provided open-ended responses, represented in a word cloud (Figure 2.23). These responses emphasized nature’s material advantages, especially the very existence of life, peace, oxygen, water, and beauty.

Focus group discussions revealed how much respondents perceive exposure to nature reduces their stress and anxiety. Contact with the natural world was often related to enhancing feelings of comfort, relaxation, and peace in an increasingly urban world. During these meaningful moments in the outdoors, serenity and calm increased, while worry and anxiety decreased, as this respondent described.

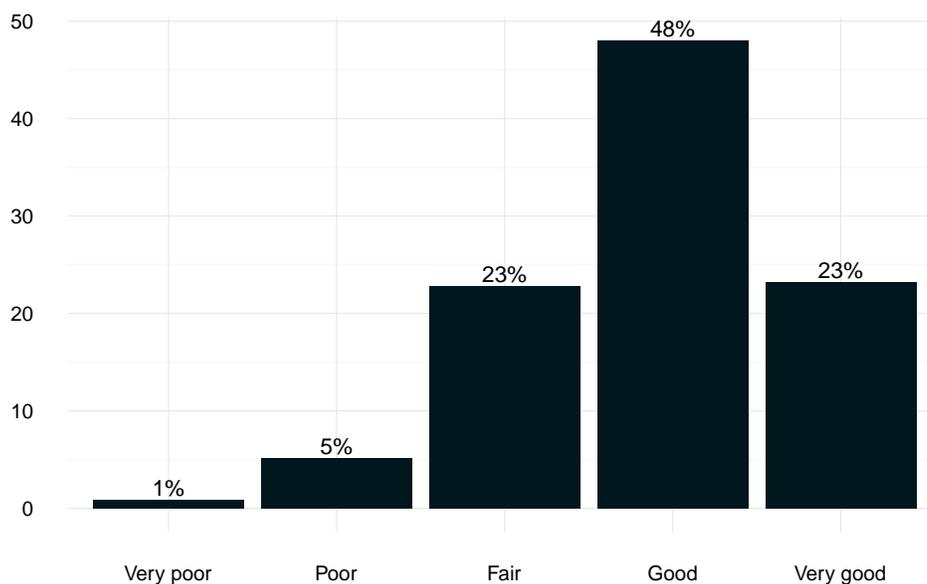
Whenever I’m out, just away from the city and just around nature—even if it’s in a trail—I’m just at ease. It’s like my time. Everything else can wait.... The phone’s off; I’m disconnected. It’s me time. It’s peaceful, it’s relaxing... And just visually, the things that are going on around me: the colors, the butterflies in the sky, and even the stars at night. It’s vibrant, but it’s also very relaxing, peaceful, calming.... It brings your senses alive. (Hispanic woman, early 50s, Bachelor’s, middle income)

### 2.7.1 Health and Quality of Life

The survey respondents tended to rate their physical health and emotional outlook on life as good or very good (Figures 2.24 and 2.25). About three-quarters of Texan adults (71 percent) said their physical health was good or very good; slightly more (79 percent) said their emotional outlook on life was good or very good.

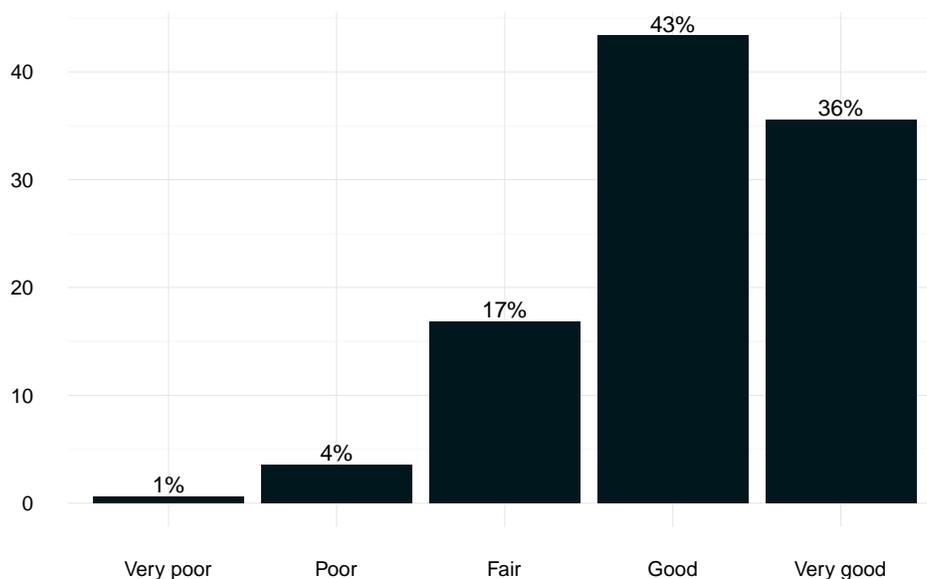


Figure 2.24: Self-reported Physical Health



Question wording: In general, would you say your physical health is ...very good ...good ...fair ...poor ...very poor?

Figure 2.25: Self-reported Emotional Outlook on Life

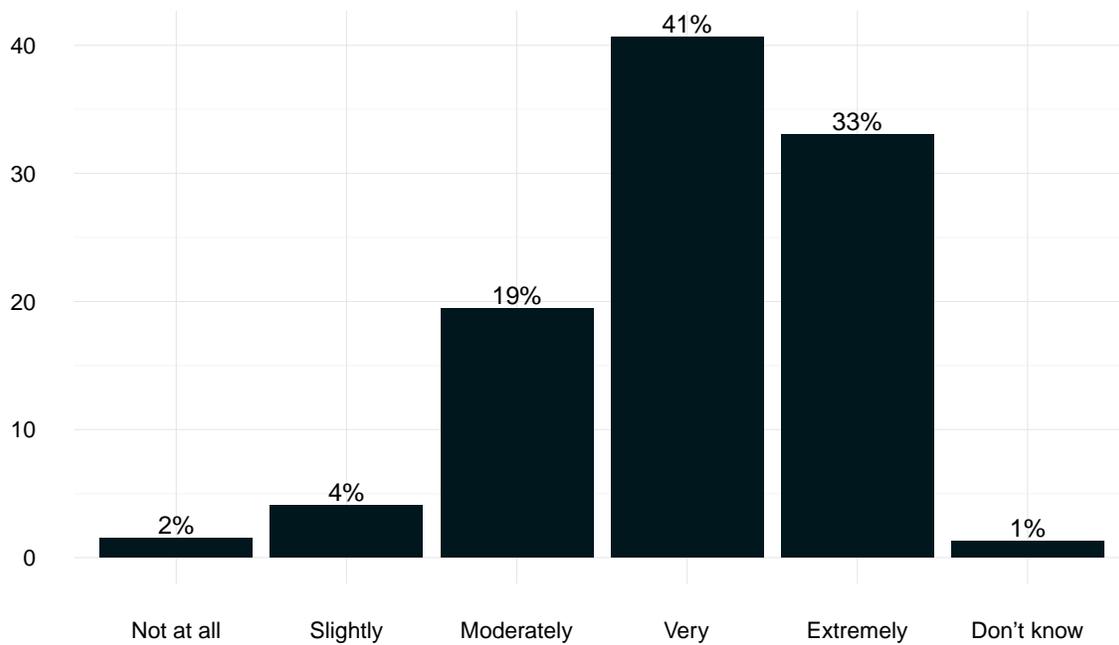


Question wording: In general, would you say your emotional outlook on life is ...very good ...good ...fair ...poor ...very poor?

Seventy-four percent of adults in Texas viewed getting outdoors as very or extremely important for their physical health (Figure 2.26). Six percent perceived nature as being not at all or slightly important for their physical health. A similar result occurred regarding the relation between emotional outlook and exposure to nature (Figure 2.27). Three-quarters (75 percent) of adult Texans regarded getting outdoors and into nature as having a very or extremely important effect on their

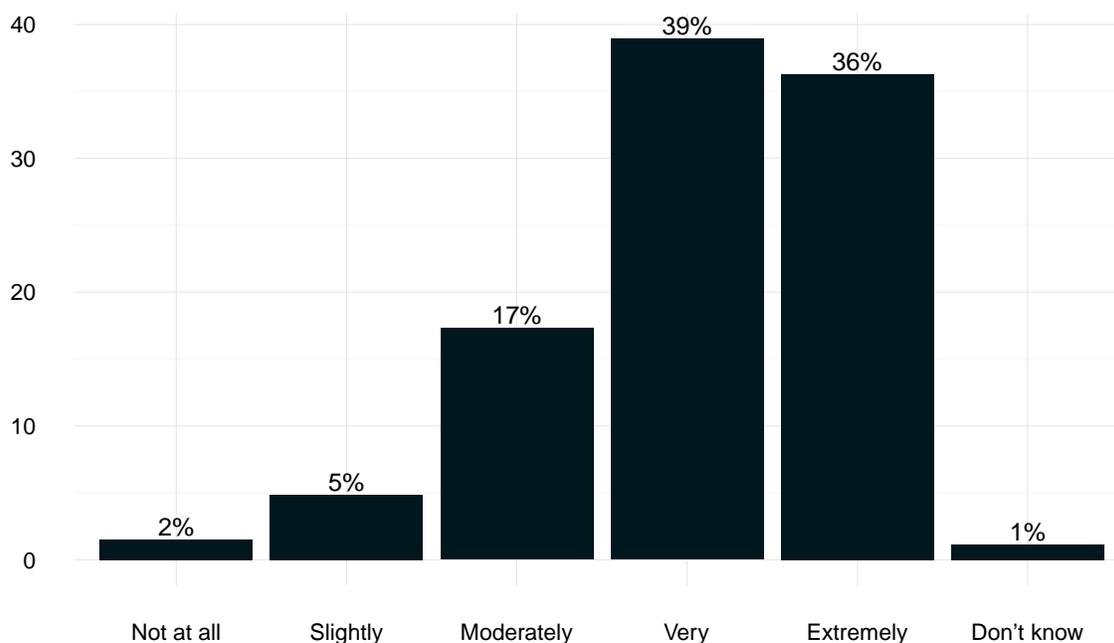
emotional outlook, with less than 10 percent viewing this as slightly or not at all important. These responses indicate widespread awareness among most adults of the importance of nature for fostering emotional as well as physical benefits.

Figure 2.26: Importance of Getting into Nature for Helping Physical Health



Question wording: In your opinion, how important is getting outdoors and into nature for helping your physical health?

Figure 2.27: Importance of Getting into Nature for Helping Emotional Outlook



Question wording: In your opinion, how important is getting outdoors and into nature for helping your emotional outlook on life?

Table 2.6 shows the relationship between self-reported physical health and how important respondents viewed nature as an aid in sustaining their physical health. Most adults (53 percent) with self-reported “very good health” also regarded contact with nature as “extremely important.” Adults with poorer health rated the importance of contact with nature as relatively lower: among adults in “very poor health,” 24 percent saw contact with nature as “extremely important.”

Table 2.6: Perception of Physical Health and the Importance of Nature for Helping It

Importance	Very poor	Poor	Fair	Good	Very good
Not at all	10%	1%	2%	1%	1%
Slightly	17%	8%	8%	3%	2%
Moderately	21%	28%	25%	20%	11%
Very	23%	29%	38%	48%	32%
Extremely	24%	34%	25%	27%	53%
Don't know	6%	0%	3%	1%	1%

Note: Columns may not add to 100 percent due to rounding. Question wording: In your opinion, how important is getting outdoors and into nature for helping your physical health? | In general, would you say your physical health is ...very good ...good ...fair ...poor ...very poor?

Similar results emerged when examining the adult respondents’ emotional outlook (Table 2.7). Most respondents (52 percent) who reported having “very good” emotional outlook also indicated getting outdoors in nature was an “extremely important” aspect of their emotional health. In contrast, 49

percent of those who had “very poor” emotional outlook rated contact with nature as “extremely important” to their emotional outlook.

Table 2.7: Perception of Emotional Outlook and the Importance of Nature for Helping It

Importance	Very poor	Poor	Fair	Good	Very good
Not at all	10%	3%	3%	1%	1%
Slightly	8%	14%	7%	5%	3%
Moderately	18%	17%	22%	20%	12%
Very	10%	38%	32%	48%	32%
Extremely	49%	26%	33%	25%	52%
Don't know	4%	1%	4%	1%	0%

Note: Columns may not add to 100 percent due to rounding. Question wording: In your opinion, how important is getting outdoors and into nature for helping your emotional outlook on life? | In general, would you say your emotional outlook on life is ...very good ...good ...fair ...poor ...very poor?

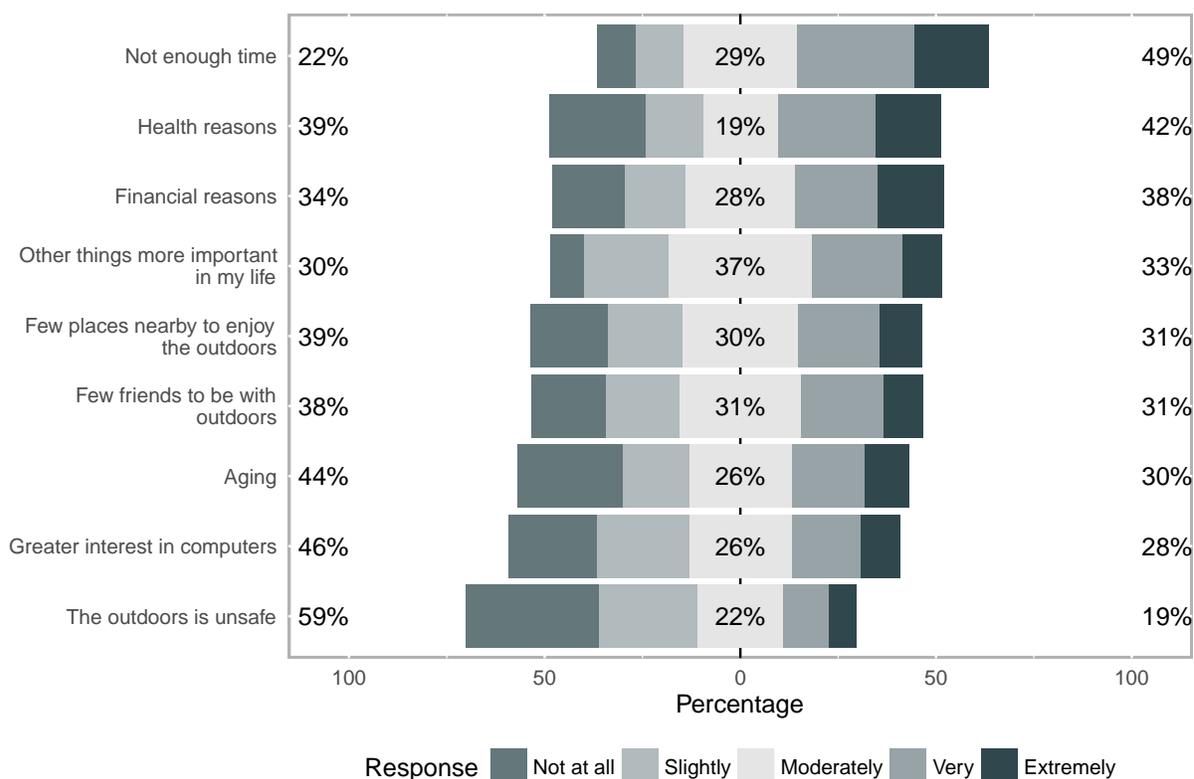
## 2.8 Barriers and Facilitators to Adults' Contact with Nature

The results so far show the strength and breadth of Texan adults' interest in nature, their values toward the natural world, and their optimistic view regarding how exposure to nature affects their physical and emotional health. What, then, explains the gaps between interest and activity, or value and behavior? Put a different way, if adults recognize the benefits of experiencing nature, and they report high interest in contact with the natural world, what prevents them from doing more to foster engagement with nature?

We examine two related sets of factors. One set consists of more *personally focused* barriers and facilitators, such as individual attitudes and peer influences. The other set consists of more *community related* barriers and facilitators, such as the quality of places for outdoor recreation. In this section, we review these salient barriers and facilitators, exploring how they are related and also how they might translate into differences in action.

Adults surveyed perceived a wide range of hindrances to their interest in nature (Figure 2.28). Although no single barrier was cited as “very” or “extremely” important for the majority of adults surveyed, three were most frequently cited—time, health reasons, and financial reasons. Slightly less frequently cited were the presence of other more important issues in respondents' lives, the lack of places nearby to enjoy the outdoors, and an absence of social support (friends to be with outdoors). For adults as a whole, the least important concern was the safety of the outdoors, although Section 4.5 reveals wide variation by race and ethnicity.

Figure 2.28: Adults' Perceived Barriers to Interest in Nature



Note: The percentage on the left side combines “not at all” and “slightly” important. The percentage in the middle reports “moderately important.” The percentage on the right side combines “extremely” and “very” important. Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time ...Health reasons ...Other things are more important in my life ...Few friends to be with outdoors ...Aging ...Greater interest in computers, smart phones, and electronic media ...The outdoors is unsafe ...Not enough places nearby to enjoy the outdoors ...Financial reasons.

Focus group discussions also brought up the barriers of *time*, *money*, and *social support* to adults' greater interest and activity in nature and the outdoors. Participants often cited not having enough time to enjoy nature as much as they would like, particularly in response to the obligations of work, and not having enough money to enjoy nature in especially distant locations. As a result of their own and others' busyness, they also cited the lack of other people with whom to do activities in nature.

Focus group discussions also brought up the barriers of *time*, *money*, and *social support* to adults' greater interest and activity in nature and the outdoors. How do these three barriers compare with the five major reasons for disconnection that respondents described in Section 2.3.1: 1) the built environment, or the places where people live; 2) competing priorities for time, attention, and money; 3) declining dependence on the natural world; 4) technology, especially electronic devices and media; and 5) shifting expectations of “good” or “normal” contact with nature? These five were seen as overarching causes of disconnection from nature as a whole. Particular barriers of time, money, and social support were related to these, but were especially used to describe obstacles to

activities in the outdoors. They were also more or less salient for specific age groups and minority groups.

The focus group discussions emphasized how each of these three factors—time, money, and social support—were related. The modern electronic technologies of cell phones, smart phones, video games, and television competed for one's own time, but also for others' time. One respondent remarked, "Nobody wants to spend time outdoors because they're too busy with all the technology that they got now" (Hispanic man, late 50s, some college, middle income). Participants often cited how these technologies encouraged people to remain indoors and diminished opportunities for interacting with other people and the natural world. One respondent suggested that smart phones almost seem to make time disappear. She said, "Time flies when we're on our phones, and then we didn't do anything" (Hispanic woman, late 30s, some college, middle income). Participants were especially concerned about younger generations, as this focus group exchange illustrates:

Respondent 9: Y'all didn't have [electronics]. You guys went out and played all day long when you were growing up, so...I think for you, fun is being outside. In the younger generations, they've been sitting in front of a TV— (Hispanic man, late 30s, some college, middle income)

Respondent 5: —And a computer and those little game things. (Hispanic woman, late 50s, some college, high income)

Respondent 4: ...Definitely the technology keeps them more inside and their heads buried in a computer, where our generation, we were out there playing baseball and camping and things like that. (Hispanic woman, early 60s, HS degree, middle income)

Financial restrictions related to a lack of time, especially due to adults' tendency to see "true" or "authentic" nature as geographically distant. One respondent remarked, "The economy plays into it. People have to work longer hours or more jobs to make ends meet, [so] they don't have time to do it" (Hispanic man, late 50s, some college, middle income). Others emphasized how experiencing nature in distant locations often depended on having sufficient financial resources to travel. One commented, "If you're not wealthy, you can't afford to go out and travel and those kind of things. A lot of times you sit inside and watch TV or [use] the computer" (white man, late 40s, some college, middle income). Another said that he would like to go on a safari and to the rainforest, "but with the cost of living right now, right now, it's impossible" (black man, late 40s, HS degree, low income). Yet another example of the link between time and money emerged when the facilitator asked a respondent what he would do differently regarding nature if he had more money:

Respondent 8: I think I would probably travel more and go to different places. (white man, early 30s, postgraduate degree, high income)

Facilitator: More natural places?

Respondent 8: More natural places, yeah.... I would say it's more probably the time than even the money... I mean, I have a college roommate that goes on a [weeklong] trip...to Red River, New Mexico, every year, and I've gone once, and it was the best trip I've had. But do I want to allocate my time to go do that, or do some stuff around the house...or do stuff with the family?

As focus group respondents noted, busyness and financial restrictions in turn affected social support for experiencing nature together with others. This was especially true for the adult-child relationship. Parents' busy work schedules, competing interests in electronics, and time to engage

with children all represented obstacles to children's greater exposure to nature. One focus group participant compared children whose parents take them to the shopping mall every weekend to a friend's childhood: "When he was a kid, he used to go hunting and to the lakes and fishing and stuff like that. So I think it has to be with us as parents [allowing] the role of technology" to become more important (Hispanic woman, late 30s, Associate degree, high income). Others cited the growing concern about safety problems associated with letting children play in the outdoors. As one respondent remarked, "It's a lot easier to tell your kid to go to their room and play with their iPad than go to the park with them and have to drive them, sit there, watch them, make sure nobody crazy comes to the park and steals them" (Hispanic man, late 20s, Bachelor's, middle income).

As these quotations suggest, many participants saw the experience of nature as *out of the ordinary* instead of routine. "You have to make a choice to break out of your routine in order to just go do something.... I don't think it's a matter of not having enough time. I think it's a matter of not making the choice to do it" (Hispanic woman, early 50s, Bachelor's, high income). Despite limits on time and financial resources, many indicated that most people (including children) tended to enjoy nature once they get outside: it was a matter of getting them there. Some asserted the importance of committing to doing activities with children and grandchildren, especially visiting zoos, walking on trails, and learning about the natural world through books and pictures.

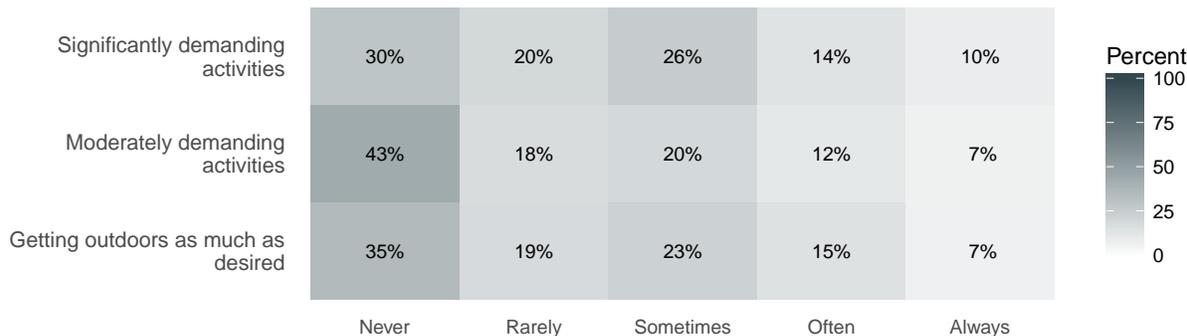
As the results above indicate, barriers to spending more time in nature tended to be more social than physical. When focus group participants did mention naturally occurring barriers, they frequently cited the weather and wildlife such as snakes or insects. For example, one respondent who lived in a city noted most residents tended to stay indoors in the summer in air-conditioned environments. One woman was envious of people in "cooler parts of the country, where you can actually bike and hike and the trails and things like that. I think it just depends on the weather and what's available" (white woman, late 40s, Bachelor's, middle income). Respondents also occasionally mentioned certain places perceived as unsafe because of the wildlife there. One respondent noted he takes his children to parks, "but I take them to safe places. If I wanted to go and actually see raccoons and possums and stuff, I wouldn't take them" (black man, late 40s, HS degree, low income). Yet he mentioned that a "nature park" might be more appealing: "I guess they have them around here somewhere... That is something that probably [would] amaze me, but I just haven't reached it yet."

Physical health can also limit adults' abilities to engage in various activities. Among our respondents, approximately half did not perceive their health as limiting their ability to participate in such demanding activities as climbing hills, working outside, or taking a trip (Figure 2.29). Fifty percent said their health limited them in this regard "never" or "rarely." In contrast, 25 percent of adults in Texas reported that health issues "often" or "always" limited their ability to participate in physically demanding activities.

We also examined the relationship between these perceived barriers and outcomes such as interest in nature and time spent outdoors. The resulting correlation matrix (Figure 2.30) reveals the relationship of these variables to one another and to outcomes. Each cell in the correlation matrix represents the extent and direction of these associations, or correlations, between variables.

- If variable *A* tends to increase when variable *B* increases, the association is positive. If variable *A* tends to decrease when variable *B* increases, the association is negative.
- Blue represents a positive correlation between two variables; red, a negative one.

Figure 2.29: Health Limits on Physical Activities



Note: Rows may not add to 100 percent due to rounding. Question wording: To what extent does your health limit your ability to be involved in each of the following? ...Moderately demanding activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf ...Significantly demanding activities such as working outside, climbing a hill, climbing several flights of stairs, or going on a trip ...Getting outdoors as much as you'd like.

- The tint of the color shows the strength of magnitude: Dark blue shows a correlation that approaches 1 (the highest possible value, a very strong association); light blue shows a correlation that approaches 0 (the lowest possible value, a weak association).
- The coefficients are Spearman rank correlations, given that the measures included have ordinal categories, not linear ones.
- Although we present a full matrix, we do not mean to suggest that each correlation reflects a true causal relationship.

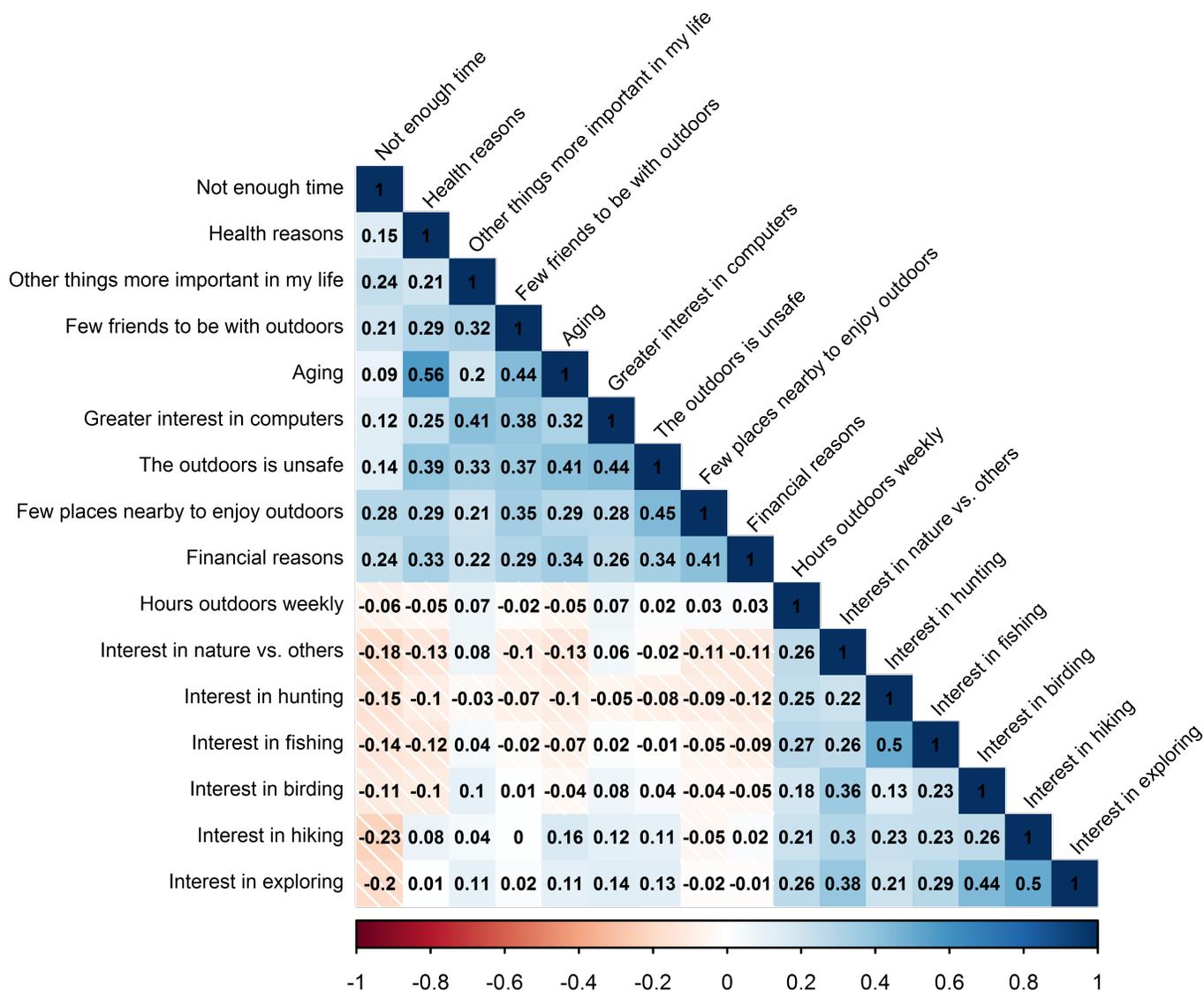
Barriers to adults' interests in nature were highly correlated with one other. For example, respondents for whom interest in computers was an important barrier were likely to think the outdoors is unsafe. Those who saw interest in computers as an important barrier were also likely to view other things as more important in their lives than their concerns for nature.

Those who were concerned about aging were more likely to report they have few friends interested in the outdoors (and to view health reasons as a more important barrier).

The perception that the outdoors is unsafe correlated highly with perceiving few places nearby to enjoy the outdoors—an indication of the connection between the *quality* of places and their *quantity*.

These barriers tended to be negatively related to particular outcomes. For example, a lack of time was negatively related to interest in activities like hunting, fishing, and hiking. A lack of time had a slight negative relationship with self-reported time spent outdoors. Overall, these various barriers had a stronger correlation with interest in activities than in self-reported time spent outdoors on a weekly basis.

Figure 2.30: Correlations of Barriers to Time Outdoors and Interest in Nature

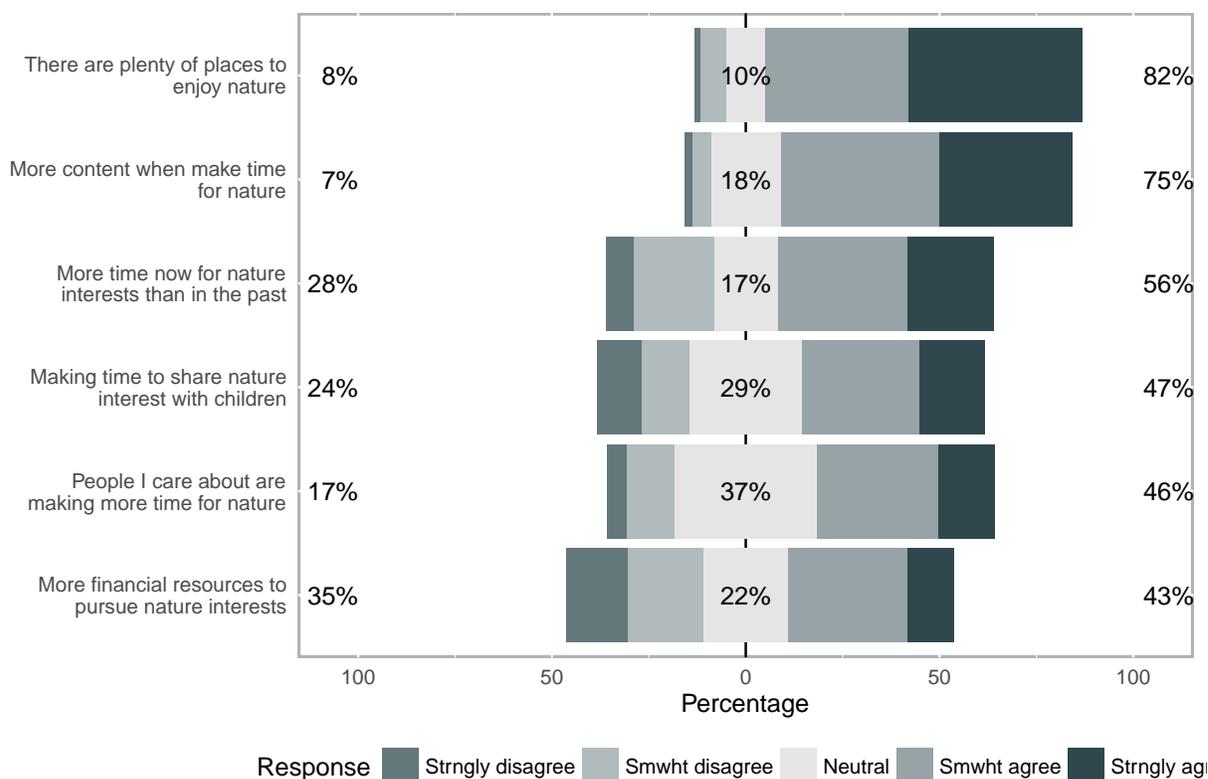


Note: *N* varies slightly for each correlation coefficient due to eliminating “don’t know” responses to particular questions. Question wording: How much do you agree or disagree with the following statements? ...I have more time now for nature interests than in the past ...I have more financial resources now to pursue my nature interests than in the past ...I’m making time to share my interest in nature and the outdoors with children ...I find myself more content when I make time for nature ...People I care about are making more time for nature ...There are plenty of places to enjoy nature. | In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.) | How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your most enjoyable interests ...among your more enjoyable interests ...neither more nor less enjoyable than your other interests ...among your less enjoyable interests ...your least enjoyable interests? | How would you rate your interest in each of the following activities? ...Hunting ...Fishing ...Feeding or watching birds or other wildlife ...Hiking ...Exploring the outdoors.

### 2.8.1 Facilitators to Interest and Activities in Nature

We also examined facilitators to interest and activities in nature (Figure 2.31). Three major factors emerged—time, financial resources, and social support. If *barriers* to contact with nature were the lack of time, the lack of financial resources, and the lack of friends to be with outdoors, then *facilitators* included the presence of additional time for nature interests, greater financial resources to pursue those interests, and the presence of close social ties who were also making more time for nature. Indeed, for as busy as many adults said they were in focus groups, 55 percent of survey respondents agreed they have more time now for their interests in nature now than they did in the past. Almost one-half (46 percent) said they are making more time to share their interests in nature with children. Almost one-half (46 percent) said people they care about are making more time for nature.

Figure 2.31: Adults' Perceived Facilitators to Contact with Nature

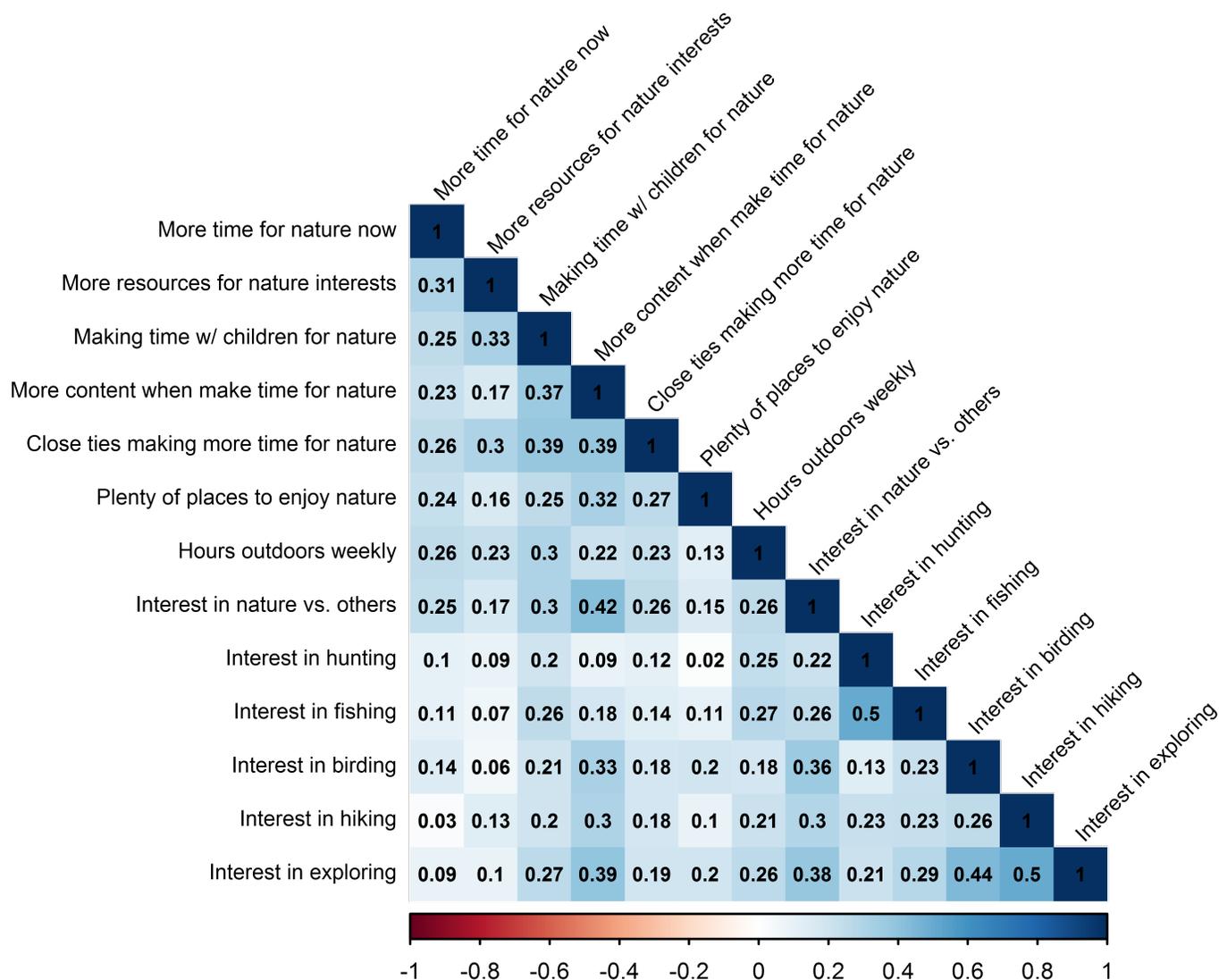


Question wording: How much do you agree or disagree with the following statements? ...I have more time now for nature interests than in the past ...I have more financial resources now to pursue my nature interests than in the past ...I'm making time to share my interest in nature and the outdoors with children ...I find myself more content when I make time for nature ...People I care about are making more time for nature ...There are plenty of places to enjoy nature.

Just as time, financial resources, and social support were interrelated *barriers* to interest in nature, so also were they interrelated *facilitators* of it (Figure 2.32). For example, having more time for nature was positively associated with having the financial resources to pursue interests in nature,

taking time to share these interests with children, and having close social ties who were devoting more time to nature and the outdoors. In contrast, the quantity of places to enjoy nature was weakly correlated with interests and activities in nature, indicating that the mere *presence* of places to be in nature is an insufficient basis for time spent outdoors and interest in nature-oriented recreation activities. Adults who agreed they are more content when they make time for nature were especially likely to be interested in hiking, birding, and exploring.

Figure 2.32: Correlations of Facilitators to Time Outdoors and Interest in Nature



Note: *N* varies slightly for each correlation coefficient due to eliminating “don’t know” responses to particular questions. Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time ...Health reasons ...Other things are more important in my life ...Few friends to be with outdoors ...Aging ...Greater interest in computers, smart phones, and electronic media ...The outdoors is unsafe ...Not enough places nearby to enjoy the outdoors ...Financial reasons. | In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.) | How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your most enjoyable interests ...among your more enjoyable interests ...neither more nor less enjoyable than your other interests ...among your less enjoyable interests ...your least enjoyable interests? | How would you rate your interest in each of the following activities? ...Hunting ...Fishing ...Feeding or watching birds or other wildlife ...Hiking ...Exploring the outdoors.

Comparing these two correlation matrices (Figures 2.32 and 2.30) shows that the strength of correlations to outcomes of interest and time are larger for facilitators than barriers. In other words, *facilitators appear to exert a stronger influence on relationships to and engagement with nature than do obstacles*. Moreover, the two largest facilitators of these outcomes involved social support—namely, friends making more time to be in nature and the outdoors, and respondents making time to share interests in nature with children. We therefore now take a closer look at the role of social support.

### 2.8.2 Social Support: The Role of Family and Friends

The results above indicate the importance of social support on nature-related interests and behaviors. Put a different way, the positive perception of and engagement in nature appears to be profoundly shaped by what other people—friends, family, children, peers, and mentors—regard as important, are currently doing, and perceive is necessary for future generations to lead lives of quality and satisfaction.

When asked about their interests in nature, focus group participants tended to underscore barriers of time and money. Yet when they described memorable experiences outdoors, the motivators to be outside, and their perceptions of nature's value to them, they revealed the crucial role of social support and involvement. Respondents referred to camping with parents, exploring creeks with friends, taking nieces and nephews to parks, hiking with children, surfing and golfing with friends. Indeed, a pattern emerged wherein respondents tended to describe *general* experiences in nature as full of solitude. But when describing *particular* experiences, other people were almost always present, especially family members and friends. “Having fun, activity-wise, you want to be with someone” (black woman, early 30s, HS degree, middle income).

In addition to peer-to-peer encouragement to be outdoors and experience nature, adults mentioned the important role that socializing young children plays in their own lives. Their efforts to raise the next generation seemed to have a reciprocal effect on themselves. Indeed, the desire to encourage children's interest in, respect for, and commitment to nature was highly correlated with the likelihood of respondents *themselves* spending more time outdoors, the perceived importance of contact with nature and wildlife, and interest in activities such as exploring the outdoors, fishing, and hunting (Figure 2.31). One focus group participant said that he does not have any children of his own, but he goes to see his niece: “She's only four years old, so I can hang out with her. I guess we do, do nature, we still go to the park” (white man, late 40s, some college, middle income). As another example of this cycle of reinforcement, a mother commented on her efforts to encourage an interest in her daughter to explore the outdoors:

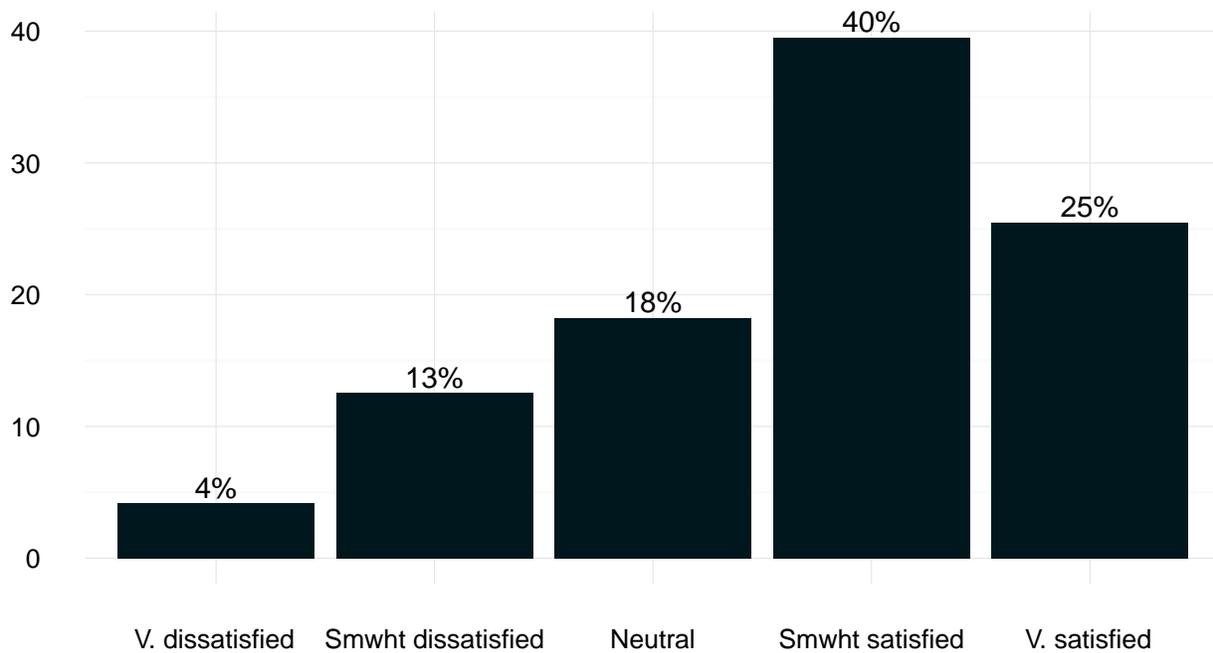
...now that I've become a mom, I see that and I go, “Gosh, I want her to be able to ride her bicycle down the street to the park, and all those types of things.” .... Just being able to re-create those things for her has been what has excited me about the sights, and sounds, and smells, and all those different types of things about nature. (Asian woman, early 40s, postgraduate degree, middle income)

### 2.8.3 Access to Open Spaces and Recreation

Most adults in our study did not perceive a lack of places to experience nature as a barrier to their experience of nature and the outdoors (see Figure 2.28). Instead, most reported they have

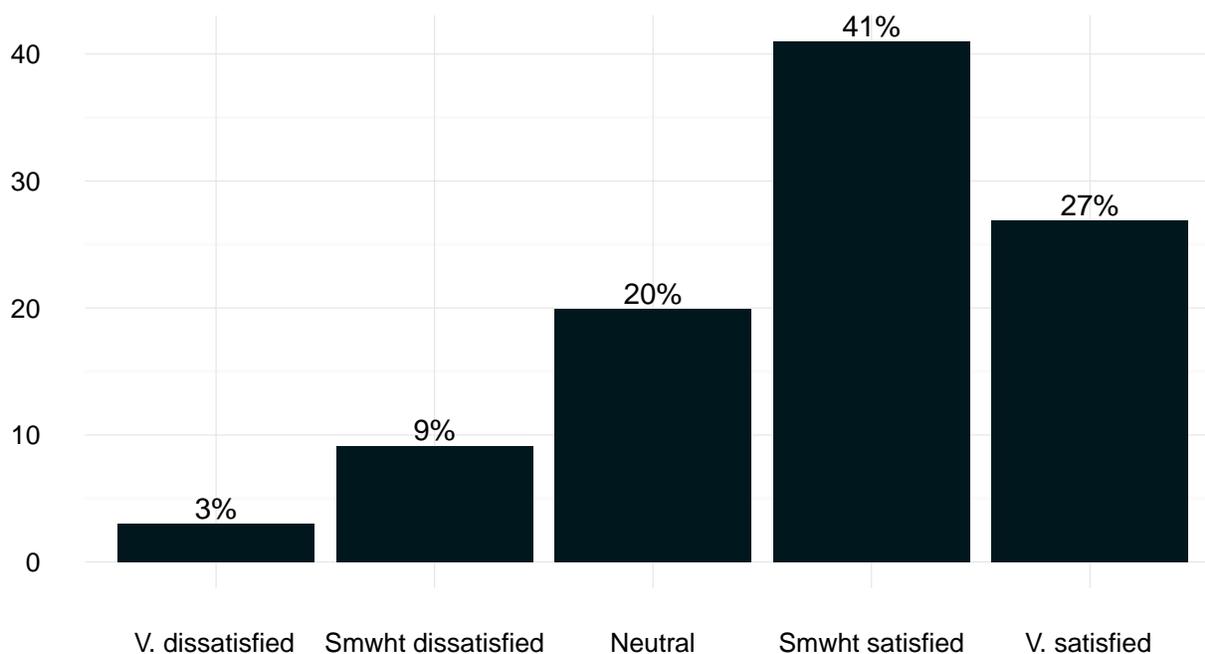
plenty of places nearby to enjoy nature (see Figure 2.31). However, the presence of places did not necessarily equate with satisfaction with them. According to the adult survey, a relatively small minority were “very satisfied” with places for outdoor and nature recreation near where they live, and the majority were somewhat satisfied, neutral, or dissatisfied (Figure 2.33). A similar finding emerged regarding parks and open space. A minority of survey respondents were “very” satisfied with parks and open space near where they live, while the remainder felt less positively (Figure 2.34).

Figure 2.33: Satisfaction with Places for Outdoor and Nature Recreation Near Where Live



Question wording: How satisfied are you with each of the following where you live? ...Places for outdoor and nature recreation.

Figure 2.34: Satisfaction with Parks and Open Space Near Where Live



Question wording: How satisfied are you with each of the following where you live? ...Parks and open space.

The mere quantity of places, however, did not necessarily equate to satisfaction with their quality. One focus group participant described the large, sprawling city where she resided, irritated at “the rat race, so to speak, and everything just being so far. Even if it is close by, just to get there [is difficult], and then the weather is going to be so hot” (white woman, late 40s, Bachelor’s, middle income). A number were particularly concerned about the wildness and “naturalness” (ruggedness) of nearby places. For example, when asked about natural places available to visit just outside their particular city, several participants were dismissive, remarking: “That’s somewhat of nature, but you’re not seeing the different colored butterflies and the cottonmouth snakes in the trees. The only time you’re going to see that [is] if you go to the zoo. And now you got to pay for that” (black man, early 50s, HS degree, low income). The following exchange among focus group participants also addressed the variable of nature’s degrees of wildness, which participants believed was difficult to attain in a city:

Respondent 4: Well you can get [nature] in the city... I just don’t think it will be the same as when you’re out there in the lake, the river. And even the drive out there won’t be the same.... (Hispanic man, late 30s, HS degree, middle income)

Facilitator: So you’re saying you can get a nature experience in the city, but it just won’t be as good a one as outside.

Respondent 4: To me, it wouldn’t. To me, it wouldn’t.

Respondent 1: ...I don’t think there’s a way to enjoy nature in the city, to totally immerse yourself— (Hispanic man, early 40s, Bachelor’s, high income)

Respondent 8: It has a different feel. (Hispanic man, late 40s, some college, middle income)

Respondent 1: —it has a different feel, right. So you can take in certain aspects of nature in certain parts of the city. But not if you go and drive out to, like, a state park, for instance. And you can find a trail, or you can maybe find a lake that you can go swimming in. Or go camping... But not the same way... I mean that's true in any city...

Respondent 6: ...It's like you said, you can't totally immerse yourself into it. (Hispanic woman, late 40s, Bachelor's, high income)

Respondent 8: It depends on the amount of nature you want.

Respondent 6: Yeah.

Respondent 1: You'd be here in the park, you still have your phone.

Respondent 6: Yeah, and you know that Dairy Queen is, like, a mile away. So you're not secluded, I guess. It's not a secluded experience.

## 2.9 Support for Nature-related Programming, Funding, and Conservation

To examine support for nature-related programs and conservation, we asked three related questions in our survey of adults in Texas. First, is there support for increasing the number of programs available for Americans to enjoy nature, the outdoors, and wildlife? Second, do survey respondents perceive current programs for enjoying nature and wildlife are underfunded, adequately funded, or overfunded? The third question focused on the adults' perceptions of regarding the adequacy of current spending levels on improving and protecting the environment: are we spending too much money, too little money, or about the right amount? We also asked three questions in which respondents had to make explicit trade-offs between using natural resources and negatively influencing some aspect of the natural world. The chapter concludes by examining funding options that those surveyed did and did not support using to pay the cost of conservation activities.

### 2.9.1 Overall Perceptions of Programming, Funding, and Spending

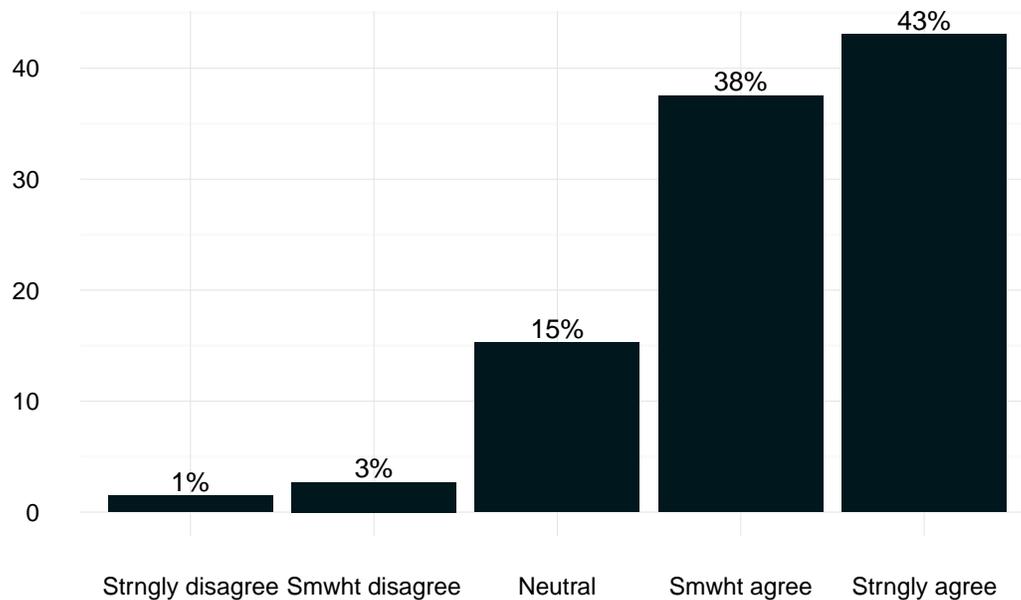
Over three-quarters of adults surveyed in Texas somewhat or strongly agreed, “We need to increase the number of programs available for Americans to enjoy nature, the outdoors, and wildlife” (Figure 2.35). About one-sixth (15 percent) neither agreed nor disagreed. A mere 4 percent disagreed.

Just over one-half of adults surveyed (54 percent) thought programs for Americans to enjoy nature and wildlife are underfunded (Figure 2.36). A little over one-quarter (27 percent) thought they are adequately funded. A very small proportion (4 percent) thought they are overfunded. A relatively larger minority (14 percent) had no opinion on the matter.

Over one-third of adults (37 percent) surveyed thought the US spends too little on improving and protecting the environment (Figure 2.37). Twenty-five percent thought the US spends about

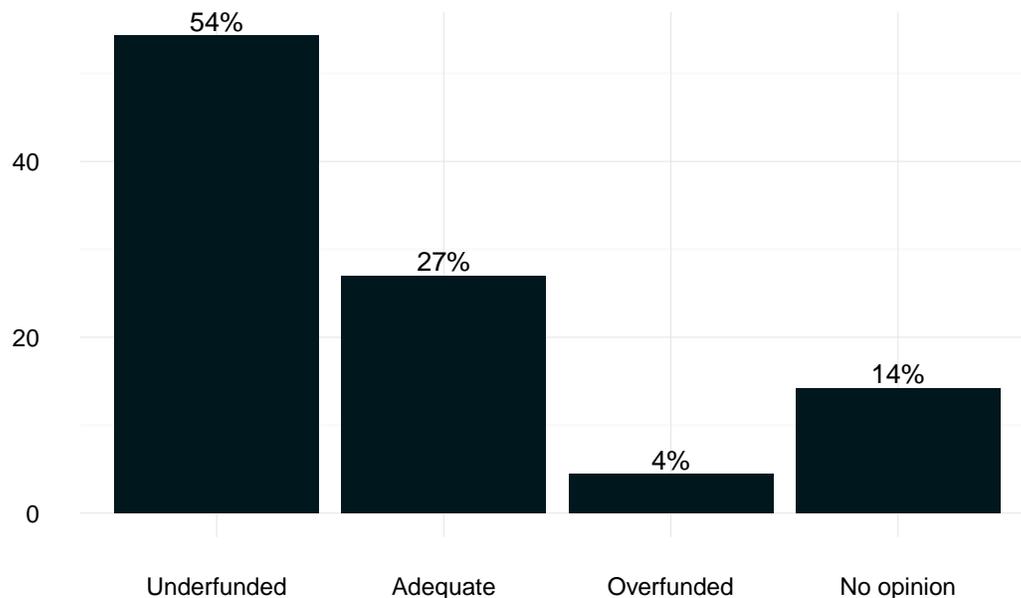
the right amount. Twenty-seven percent thought the US spends too much. Eleven percent of respondents expressed no opinion.

Figure 2.35: Increasing Programs to Enjoy Nature, the Outdoors, and Wildlife



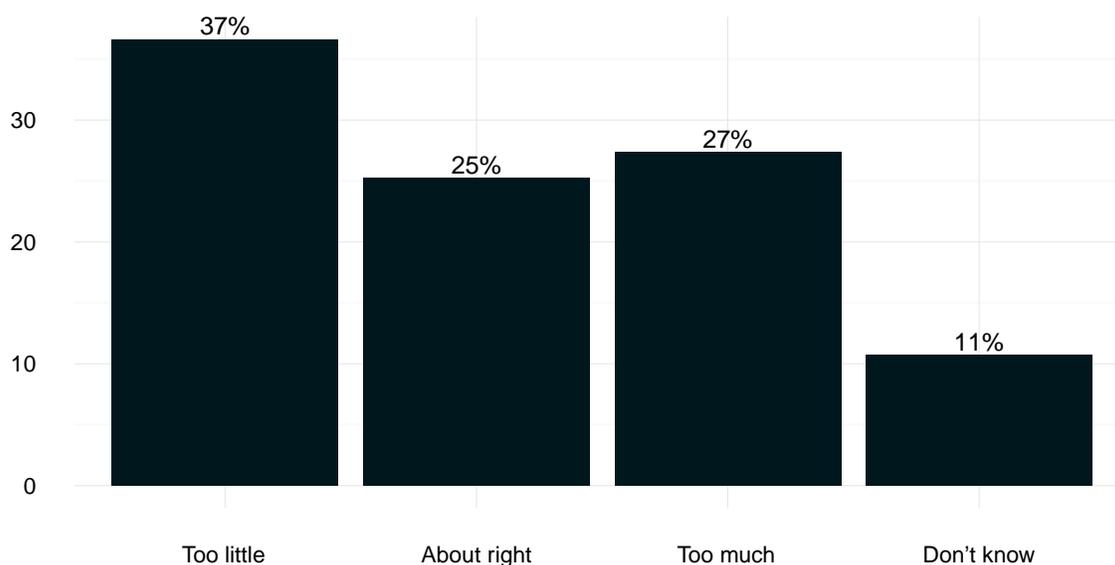
Question wording: In your opinion, do we need to increase the number of programs available for Americans to enjoy nature, the outdoors, and wildlife?

Figure 2.36: Funding for Programs to Enjoy Nature and Wildlife



Question wording: In your opinion, are programs for Americans to enjoy nature and wildlife underfunded, adequately funded, or overfunded?

Figure 2.37: Spending on Improving and Protecting the Environment



Question wording: We are faced with many problems in this country, none of which can be solved easily or inexpensively. On improving and protecting the environment, do you think we are spending too much money, too little money, or about the right amount?

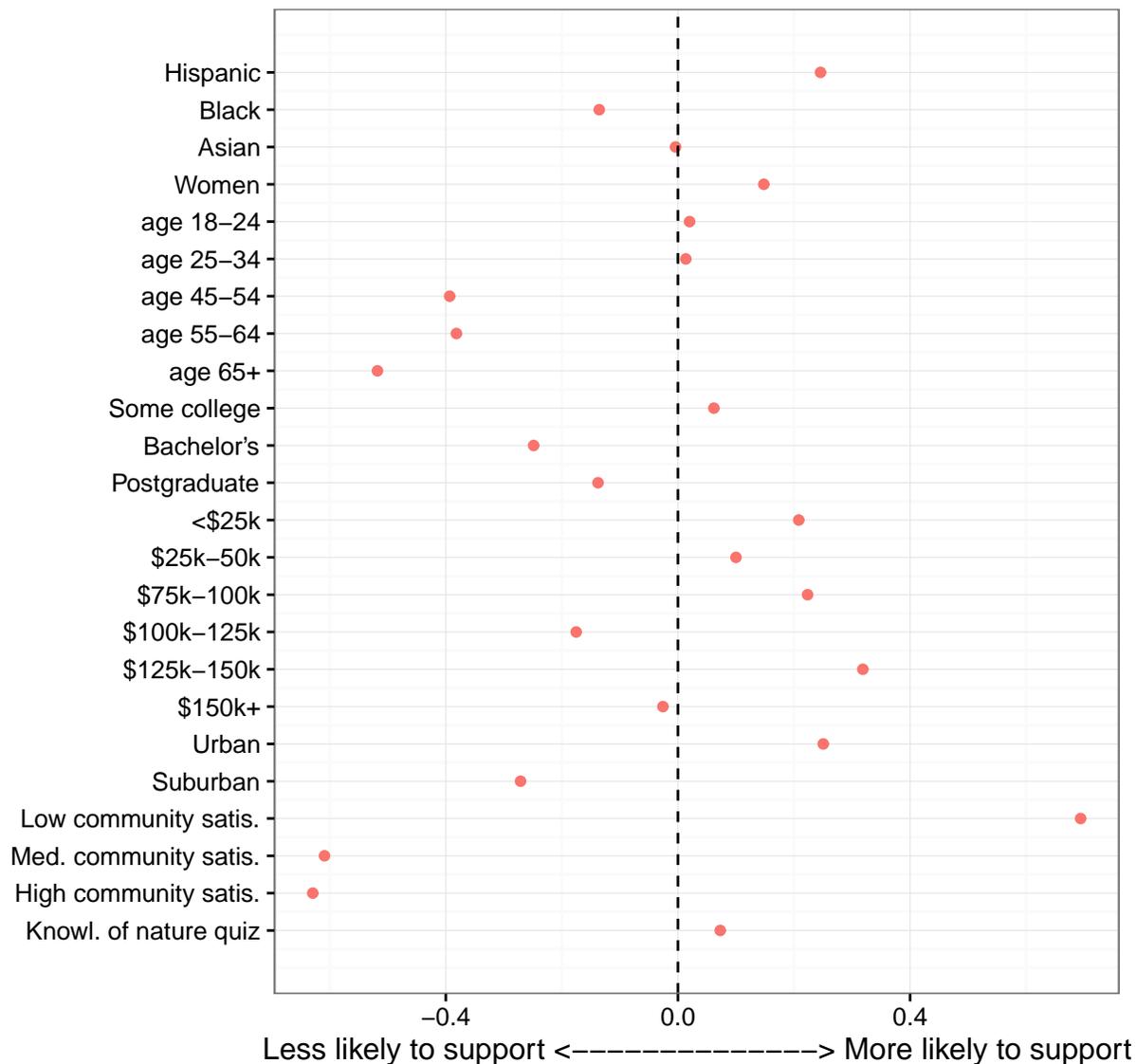
## 2.9.2 Major Predictors of Support for Increasing Nature-related Programs

Which adults were most likely to strongly agree that the number of nature-related programs needs to increase? Figure 2.38 reports how different factors are associated with the likelihood of strongly supporting such an increase. Points greater than 0 signify that adults in that group were *more likely* to strongly agree with the need to increase programs. Points less than 0 signify that adults in that group were *less likely* to strongly agree. The larger the value, whether positive or negative, the greater the relationship between that variable and the outcome. In this analysis, the reference categories are *whites* in comparison to Hispanics, blacks, and Asians; *men* in comparison to women; *35–44-year-olds* in comparison to all other age categories; adults with a *high school degree or less* in comparison to all other levels of educational attainment; adults from households with incomes of *\$50,000–\$74,999* averaged over the last five years in comparison to all other income categories; and *rural residents* in comparison to urban and suburban residents. How much each variable is related to the outcome is net of (i.e., adjusts for) the other variables included. (See Section 1.3 for more detail.)

- Hispanics were more likely than whites to strongly agree on the need to increase the number of nature-related programs. Black adults were less likely to agree than whites. Asian adults were no different.
- Support for increasing programs was stronger among women, and support decreased among older respondents.
- There were slight differences by educational attainment: adults with a Bachelor's degree or postgraduate degree were less likely to support increasing programs, compared with adults with a high school degree or less.

- Compared with middle-income respondents, lower-income respondents were more likely to strongly support increasing the number of programs.
- Suburban residents were less likely to support increasing programming, compared with rural residents. Urban respondents were more likely.
- Adults who reported low satisfaction with their community were about as likely to support increasing programs as adults who reported very high satisfaction with their community.
- Performance on a formal knowledge of nature—measured via a quiz of 11 questions—had essentially no relationship with support for increasing programming (see Figure 2.22).

Figure 2.38: Likelihood of Strongly Agreeing Number of Nature-related Programs Need to be Increased

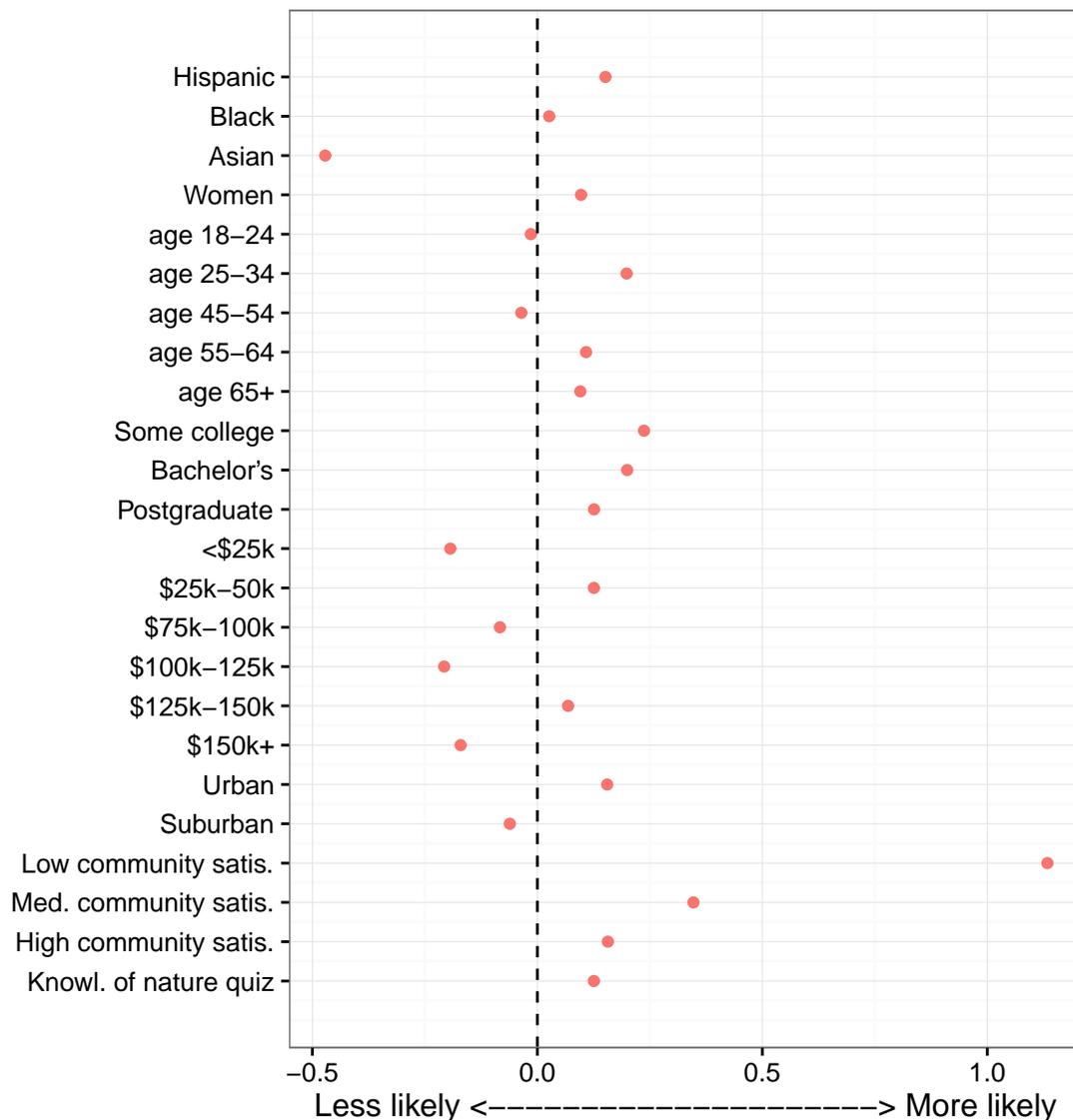


Note: The outcome is whether or not a respondent “strongly agrees” programs to help Americans enjoy nature, the outdoors, and wildlife need to be increased, compared with all other possible responses. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

Similar trends emerged when examining the perception of funding of programs that help Americans enjoy nature and wildlife (Figure 2.39). Again, positive coefficients mean that a particular group was more likely, on average, to think programs are underfunded. Negative coefficients mean group members were less likely to think so, on average.

- Hispanic adults were more slightly more likely than white adults to think current nature and wildlife programs are underfunded. Black adults were the same, and Asian adults were less likely.
- Women and men were not different in their perceptions.
- Compared with 35–44-year-olds, older adults (and slightly younger) were slightly more likely to think current programs are underfunded.
- Adults with higher levels of education were likelier to think current programs are underfunded.
- Support differed across incomes.
- Adults who reported low satisfaction with where they live were far more likely to think current nature and wildlife programs are underfunded.
- Performance on a formal knowledge of nature had essentially no relationship with perceiving current programs are underfunded.

Figure 2.39: Likelihood of Perceiving Nature-related Programs are Underfunded



Note: The outcome is whether or not a respondent thinks current programs to help Americans enjoy nature and wildlife are “underfunded,” compared with all other possible responses. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

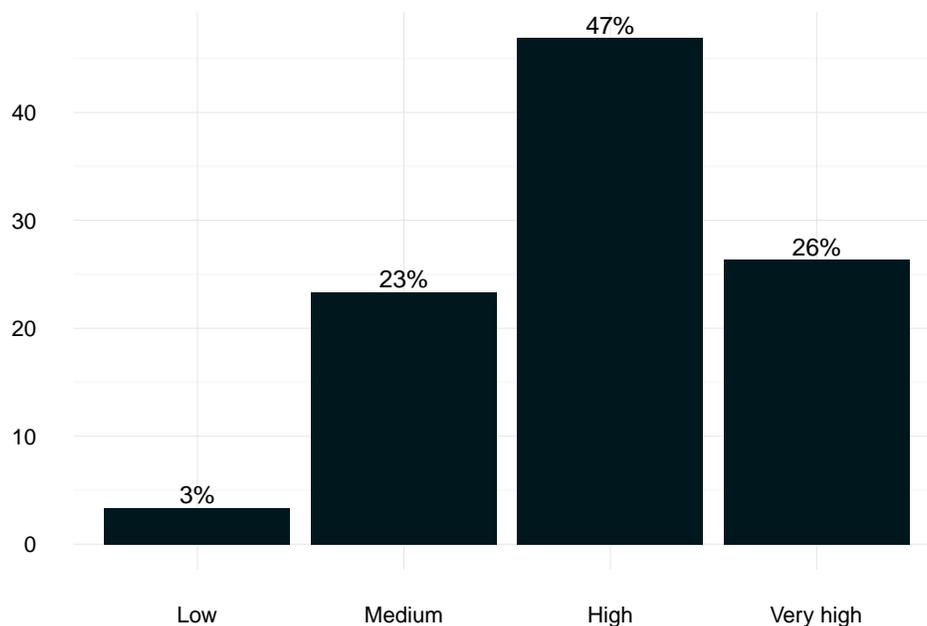
### 2.9.3 A Closer Look at Satisfaction with Community

As seen above, satisfaction with one’s community had a strong association with support for increasing nature-related programs and for perceiving them to be underfunded. These results point to the importance of not only demographic categories in influencing attitudes and opinions, but also of the broader communities in which people live.

To generate respondents’ satisfaction, we took 10 questions that asked about different elements of where they live—including health services, schools and the educational system, access to public transportation, air quality, and safety from crime, among others. We added the answers of each

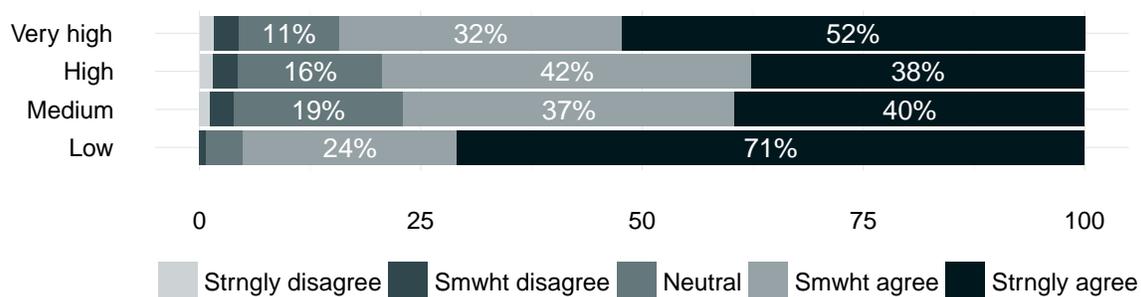
respondent, and then created a 10-point scale, which we then divided into four segments: low, medium, high, and very high satisfaction.

Figure 2.40: Satisfaction with Community Where Respondent Lives



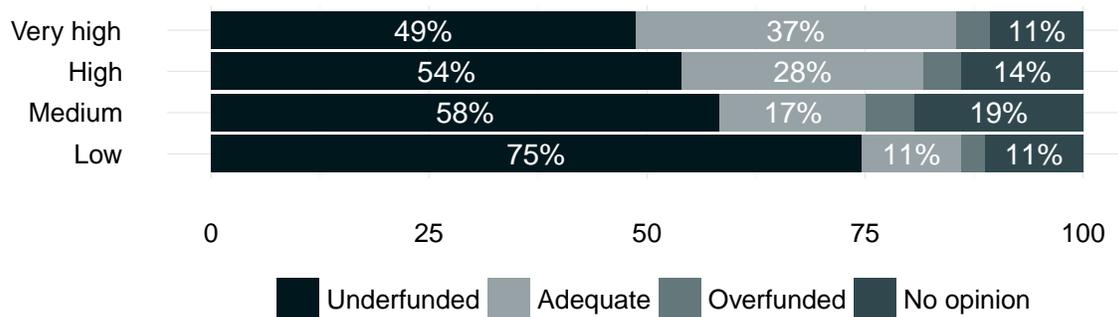
Adults who expressed either low or very high satisfaction with their overall community—including roads, schools, water quality, and more—were likely to want to increase the number of programs available for Americans to enjoy nature (Figure 2.41). Adults who were dissatisfied with their overall community were also the likeliest to think funding for nature and wildlife programs is too low (Figure 2.42). These same adults were also likeliest to think spending on improving and protecting the environment is too low (Figure 2.43).

Figure 2.41: Increasing Programs to Enjoy Nature, the Outdoors, and Wildlife, by Overall Satisfaction with Place Where Live



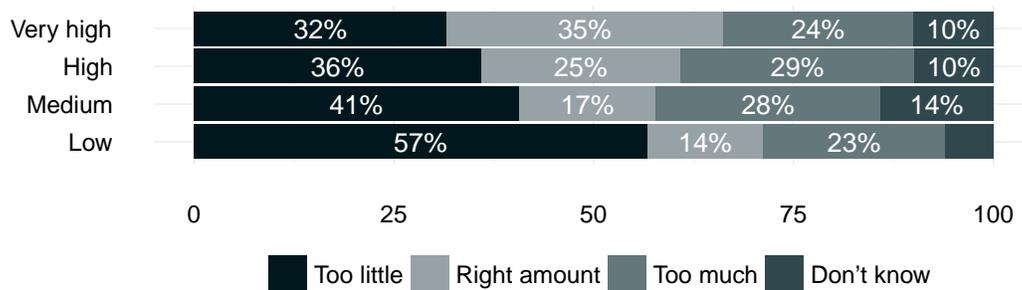
Note: Responses with percentages less than 7 are not reported due to lack of space. The categories on the y-axis refer to respondents' satisfaction with their overall community. Question wording: In your opinion, do we need to increase the number of programs available for Americans to enjoy nature, the outdoors, and wildlife?

Figure 2.42: Funding for Programs to Enjoy Nature and Wildlife, by Overall Satisfaction with Place Where Live



Note: Responses with percentages less than 7 are not reported due to lack of space. The categories on the y-axis refer to respondents' satisfaction with their overall community. Question wording: In your opinion, are programs for Americans to enjoy nature and wildlife underfunded, adequately funded, or overfunded?

Figure 2.43: Spending on Improving and Protecting the Environment, by Overall Satisfaction with Place Where Live

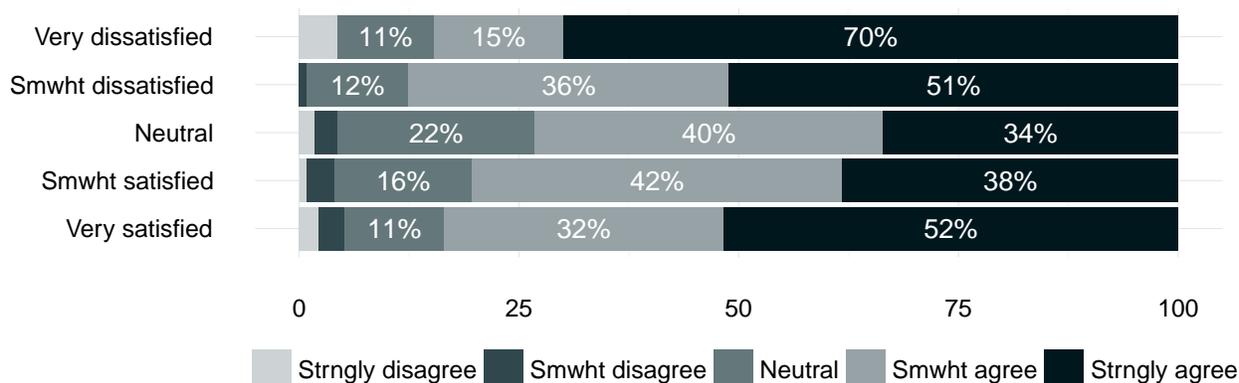


Note: Responses with percentages less than 7 are not reported due to lack of space. The categories on the y-axis refer to respondents' satisfaction with their overall community. Question wording: We are faced with many problems in this country, none of which can be solved easily or inexpensively. On improving and protecting the environment, do you think we are spending too much money, too little money, or about the right amount?

#### 2.9.4 Satisfaction with Parks and Open Spaces

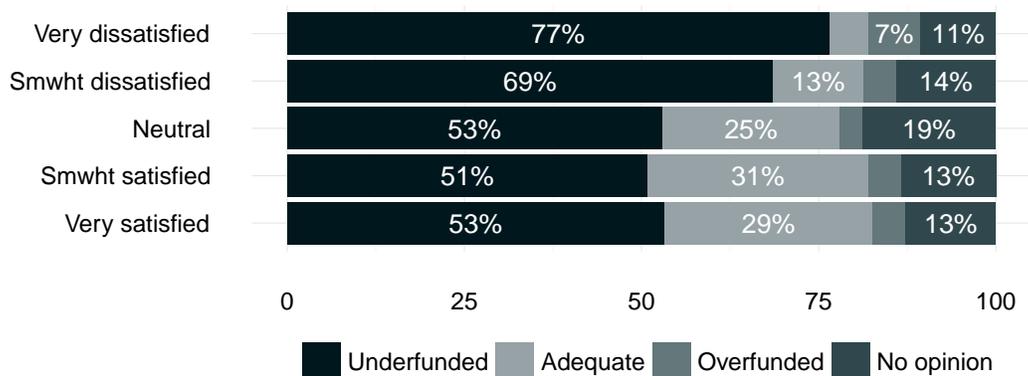
A similar pattern occurred when examining satisfaction of parks and open spaces where adults live. The majority of adults who were very dissatisfied with nearby parks and open spaces strongly agreed of the need to increase the number of nature-related programs (Figure 2.41). They were also likely to think the US spends too little on improving and protecting the environment (Figure 2.46)

Figure 2.44: Increasing Programs to Enjoy Nature, the Outdoors, and Wildlife, by Satisfaction with Parks and Open Space Where Live



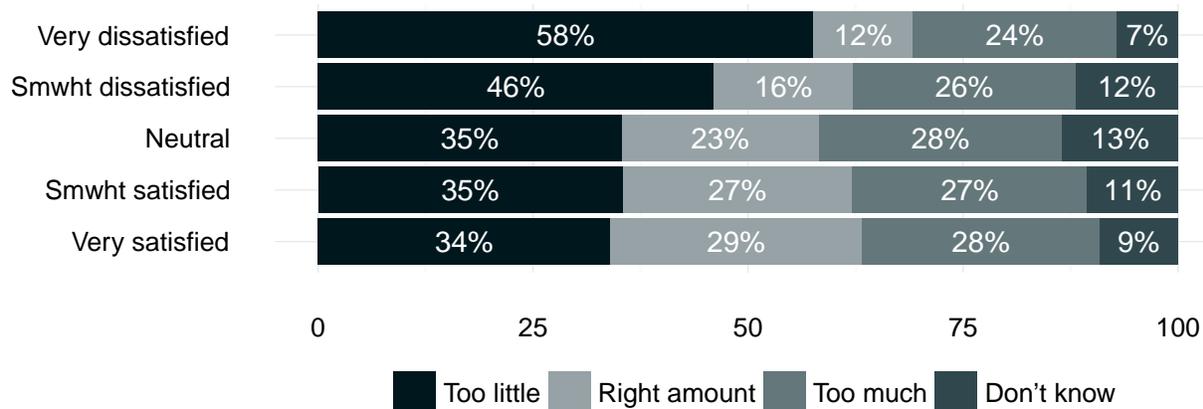
Note: Responses with percentages less than 7 are not reported due to lack of space. Question wording: How satisfied are you with each of the following where you live: Parks and open space?

Figure 2.45: Funding for Programs to Enjoy Nature and Wildlife, by Satisfaction with Parks and Open Space Where Live



Note: Responses with percentages less than 7 are not reported due to lack of space. Question wording: How satisfied are you with each of the following where you live: Parks and open space?

Figure 2.46: Spending on Improving and Protecting the Environment, by Satisfaction with Parks and Open Space Where Live



Note: Responses with percentages less than 7 are not reported due to lack of space. Question wording: How satisfied are you with each of the following where you live: Parks and open space?

### 2.9.5 Perceptions of Programming, Funding, and Spending, by Measures of Biophilic Values

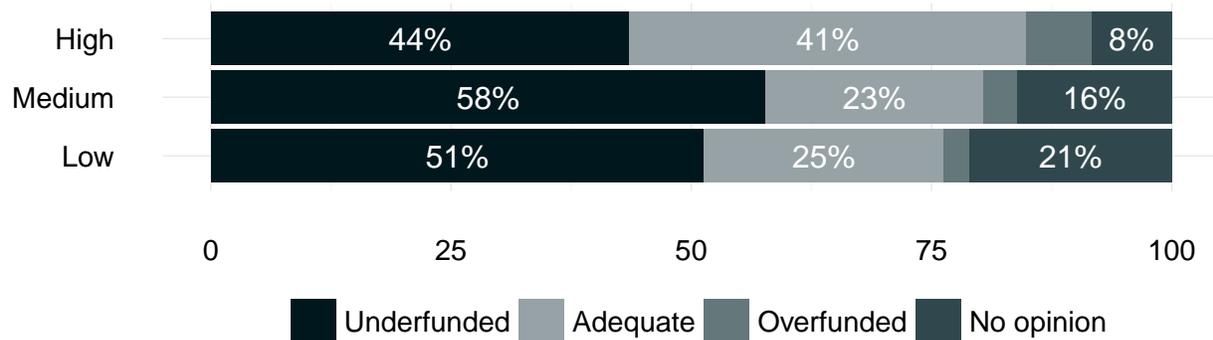
As described in Chapter 1, the biophilia hypothesis postulates that humans have an inherent inclination to affiliate with nature as an adaptive response to natural forces and stimuli. This inclination is a weak tendency that must be nurtured, developed, and learned to become functional and beneficial. Eight expressions of this tendency to affiliate in an adaptive manner with nature include affection, attraction, aversion, dominion, exploitation, reason, spirituality, and symbolism. This section explores how these eight values of nature are related to perceptions of funding and programming.<sup>12</sup>

#### Affection

Affection describes the emotional attachment people may or may not feel toward nature. One of the questions, for example, asked adults how much they agree that their love of nature is one of their strongest feelings. Affection for nature had little direct relationship with perceptions of funding of nature-related programs (Figure 2.47), but those who expressed high affection were more likely to strongly agree on the need to increase programs (Figure 2.48).

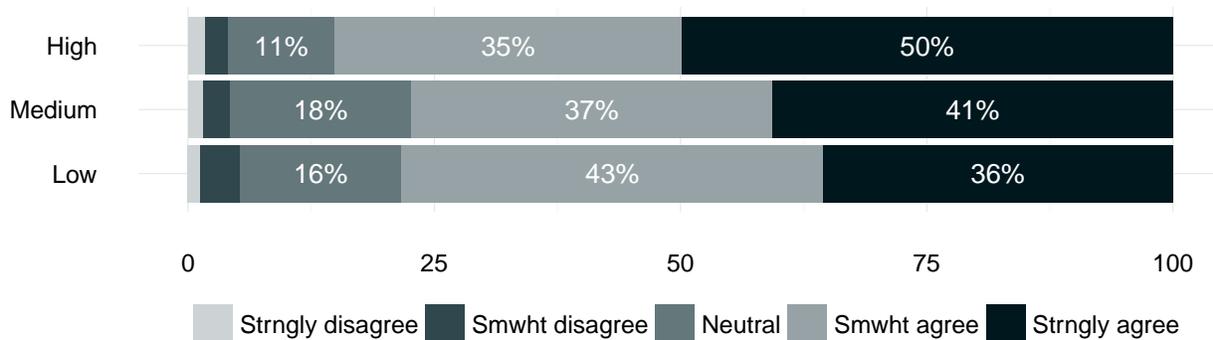
<sup>12</sup>To create a scale for each dimension, we first assigned a numerical value to each possible response for each biophilia question (ranging from 1 to 5, “strongly disagree” to “strongly agree”). Within each grouping of questions, we summed the total for each respondent, and then divided by the number of questions in that grouping. Thus, for each respondent, we determined their overall score for each biophilic value, potentially ranging from 1 to 5. Last, we took the distance between the actual lowest score and the actual highest score, and divided the distance by three, generating equally spaced categories of Low, Medium, and High for each biophilic value.

Figure 2.47: Perceptions of Funding for Programs to Enjoy Nature and Wildlife, by Affection Scale



Note: Responses with percentages less than 7 are not reported due to lack of space.

Figure 2.48: Support for Increasing Programs to Enjoy Nature and Wildlife, by Affection Scale

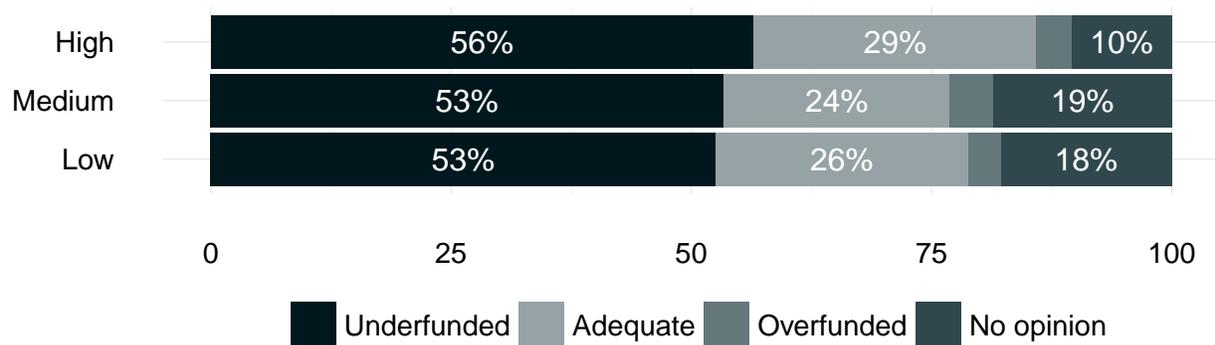


Note: Responses with percentages less than 7 are not reported due to lack of space.

### Attraction

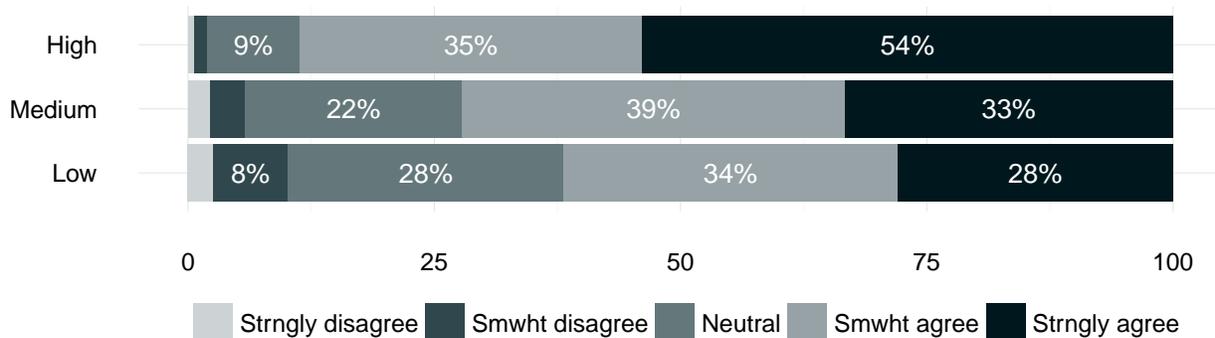
The natural world holds an appeal and aesthetic attraction for people especially related to its perceived beauty. For example, one question asked respondents how much seeing something especially attractive in nature arouses their curiosity. Among adults surveyed, those who had the highest attraction to nature were the likeliest to perceive programs as underfunded (Figure 2.49). A similar pattern emerged when examining attraction to nature and agreement with increasing the number of nature-related programs (Figure 2.50).

Figure 2.49: Perceptions of Funding for Programs to Enjoy Nature and Wildlife, by Attraction Scale



Note: Responses with percentages less than 7 are not reported due to lack of space.

Figure 2.50: Support for Increasing Programs to Enjoy Nature and Wildlife, by Attraction Scale

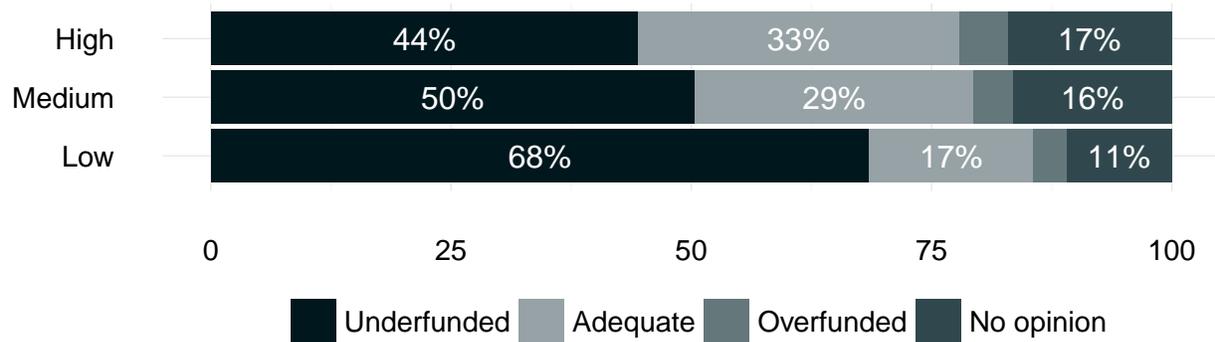


Note: Responses with percentages less than 7 are not reported due to lack of space.

## Aversion

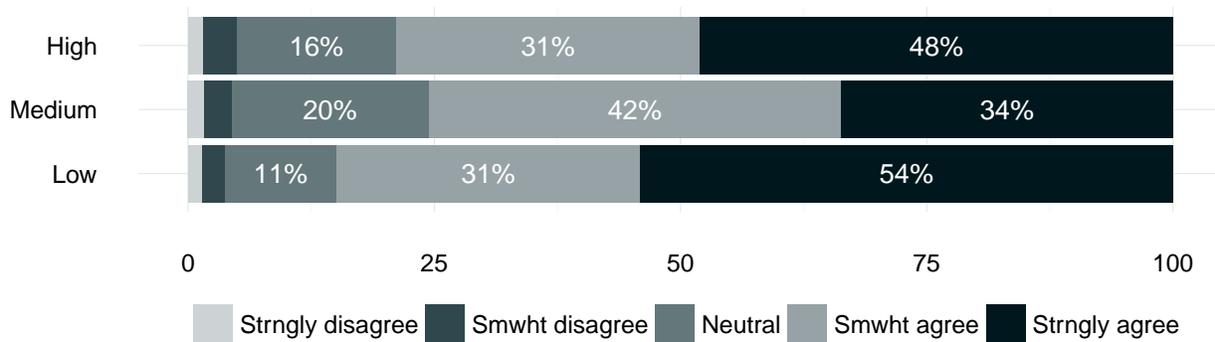
People often avoid aspects of nature that provoke fear, anxiety, and avoidance. For example, some adults find being alone in the outdoors to be especially frightening, or they particularly dislike certain plants and animals. Adults who were least averse to aspects of nature (being alone in the outdoors, disliking dangerous animals, preferring to stay on paved paths outside) were the most likely to think nature-related programs are underfunded (Figure 2.51). The least averse were also most likely to support increasing programs, but so also were those who were highly averse (Figure 2.52).

Figure 2.51: Perceptions of Funding for Programs to Enjoy Nature and Wildlife, by Aversion Scale



Note: Responses with percentages less than 7 are not reported due to lack of space.

Figure 2.52: Support for Increasing Programs to Enjoy Nature and Wildlife, by Aversion Scale

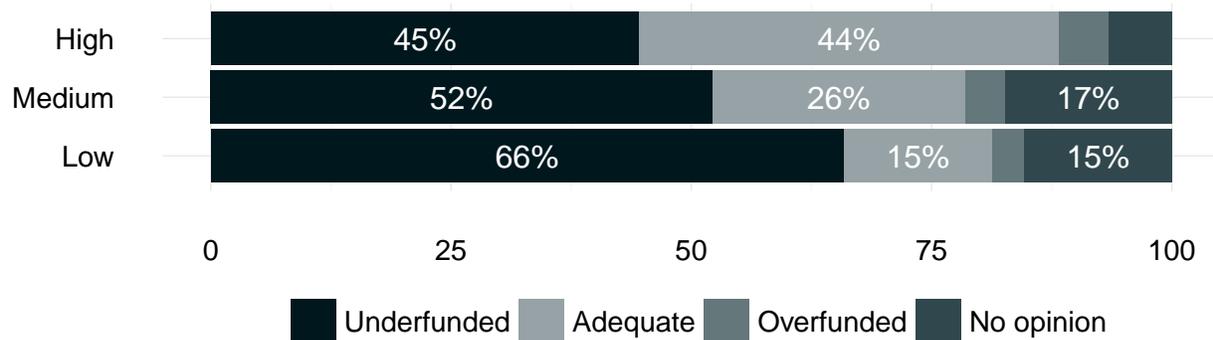


Note: Responses with percentages less than 7 are not reported due to lack of space.

### Control

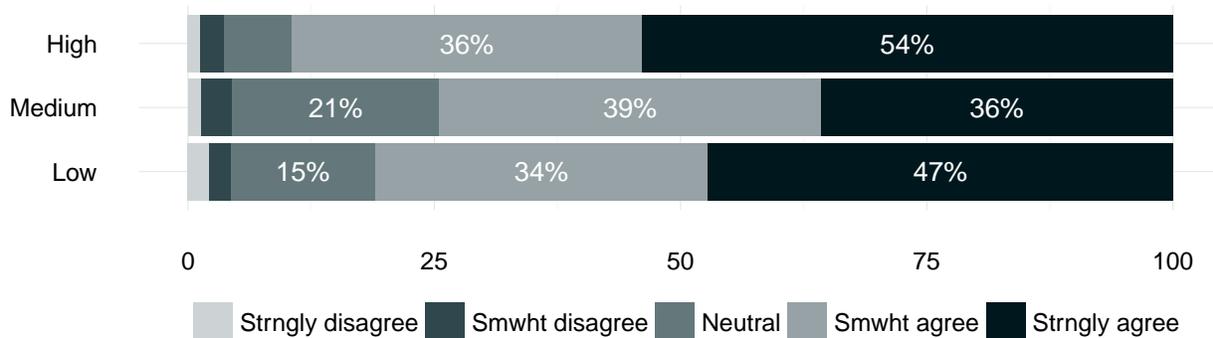
Control refers to the potential in human activity to master and dominate the natural world. For example, some adults surveyed strongly agreed that people need to control nature to meet human needs even if it sometimes harms nature and wildlife. Adults surveyed who scored low on the control scale were more likely to perceive nature and wildlife programs as underfunded (Figure 2.53). Those who expressed the highest values of control were likeliest to support increasing nature and wildlife programs (Figure 2.54).

Figure 2.53: Perceptions of Funding for Programs to Enjoy Nature and Wildlife, by Control Scale



Note: Responses with percentages less than 7 are not reported due to lack of space.

Figure 2.54: Support for Increasing Programs to Enjoy Nature and Wildlife, by Control Scale

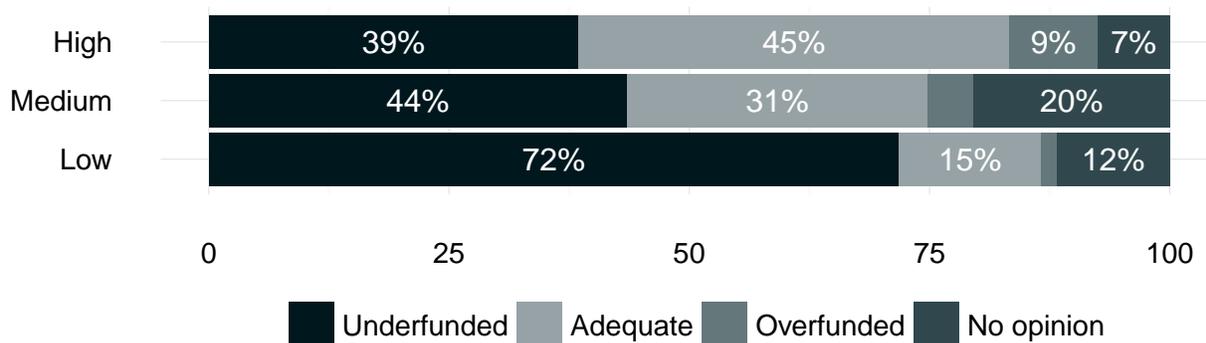


Note: Responses with percentages less than 7 are not reported due to lack of space.

## Exploitation

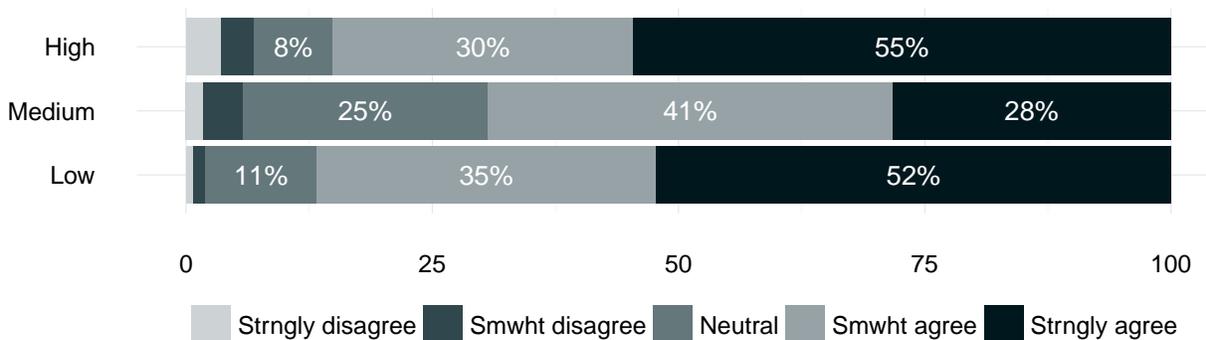
Exploitation refers to support for the material utilization of nature. Adults who did not see nature in an exploitative way—for example, people who strongly disagreed that humans ought to develop energy resources without considering the consequences for nature—were far more likely to regard funding as inadequate (Figure 2.55). General support for increasing programs came from both those who scored low and high on the exploitation scale (Figure 2.56).

Figure 2.55: Perceptions of Funding for Programs to Enjoy Nature and Wildlife, by Exploitation Scale



Note: Responses with percentages less than 7 are not reported due to lack of space.

Figure 2.56: Support for Increasing Programs to Enjoy Nature and Wildlife, by Exploitation Scale

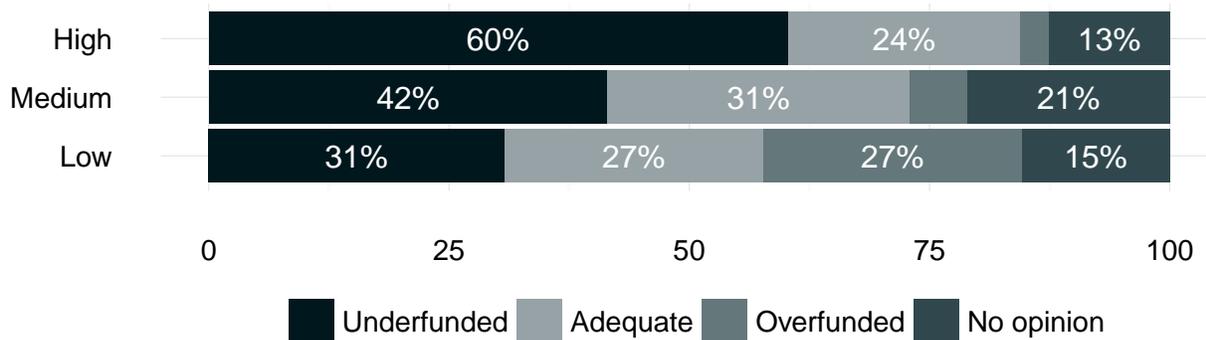


Note: Responses with percentages less than 7 are not reported due to lack of space.

**Intellect**

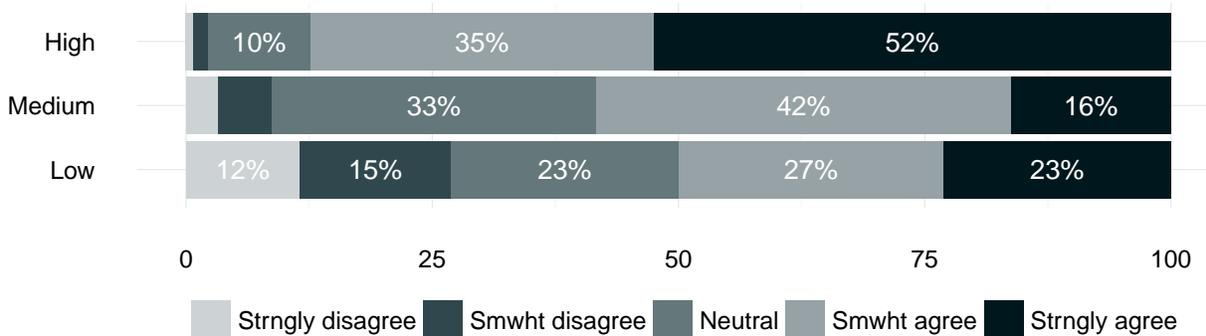
Intellect describes valuing knowledge of nature for its role in intellectual development. Most of those who strongly valued nature for its role in learning perceived nature and wildlife programs to be underfunded (Figure 2.57). Similarly, this same group supported increasing programs to help Americans enjoy nature and wildlife (Figure 2.58).

Figure 2.57: Perceptions of Funding for Programs to Enjoy Nature and Wildlife, by Intellect Scale



Note: Responses with percentages less than 7 are not reported due to lack of space.

Figure 2.58: Support for Increasing Programs to Enjoy Nature and Wildlife, by Intellect Scale



Note: Responses with percentages less than 7 are not reported due to lack of space.

### Spirituality

The spiritual value of nature and wildlife refers to the meaning and purpose people gain through contact with nature. Those who regarded nature as possessing high spiritual value tended to think programs to help Americans enjoy nature and wildlife were underfunded and to support increasing programming (Figures 2.59 and 2.60).

Figure 2.59: Perceptions of Funding for Programs to Enjoy Nature and Wildlife, by Spirituality Scale

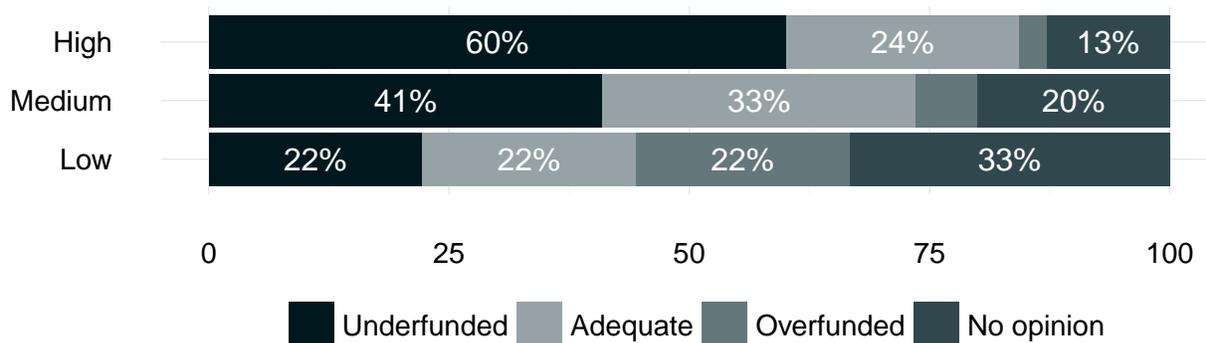
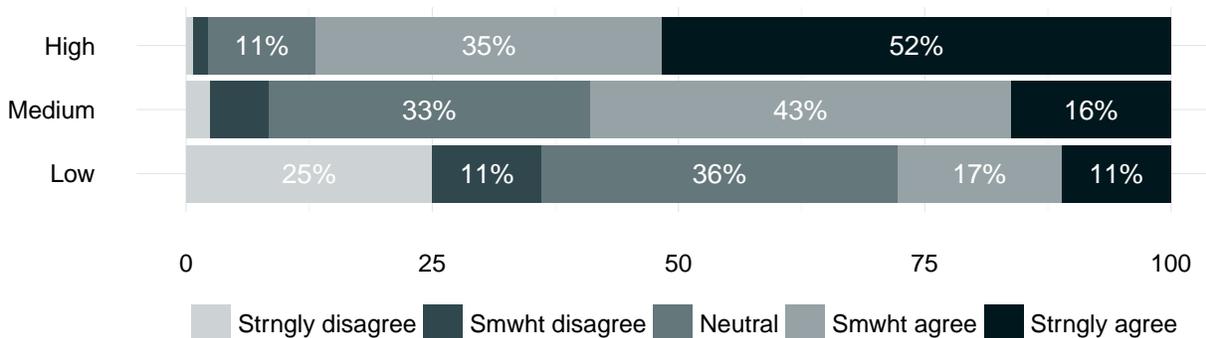


Figure 2.60: Support for Increasing Programs to Enjoy Nature and Wildlife, by Spirituality Scale



### Symbolism

The symbolic value of nature refers to its use as a means for fostering communication, language and culture among people. Adults who were especially interested in the symbolic expression of nature in images, art, stories, decoration, and more were the likeliest to believe nature-related programs are underfunded and to support increasing them (Figures 2.61 and 2.62).

Figure 2.61: Perceptions of Funding for Programs to Enjoy Nature and Wildlife, by Symbolism Scale

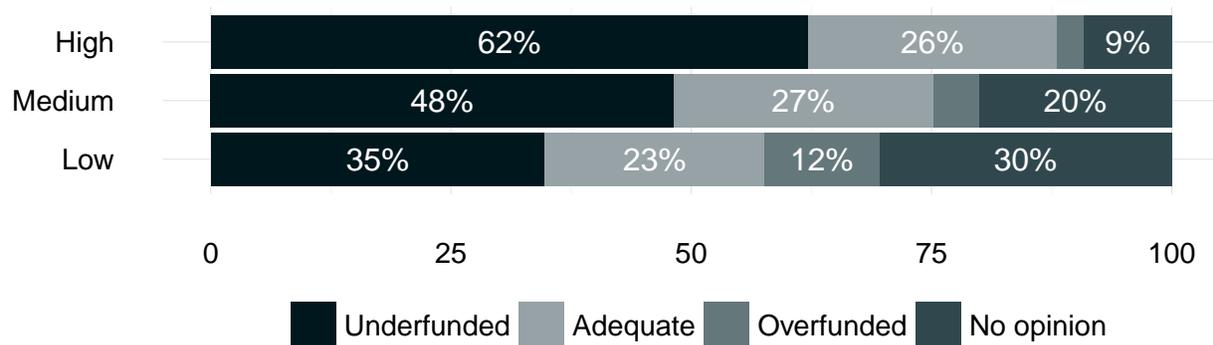
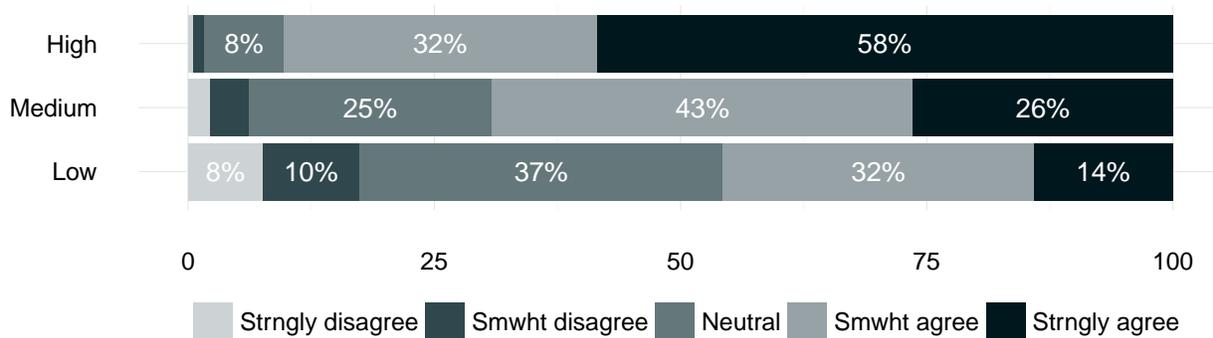


Figure 2.62: Support for Increasing Programs to Enjoy Nature and Wildlife, by Symbolism Scale

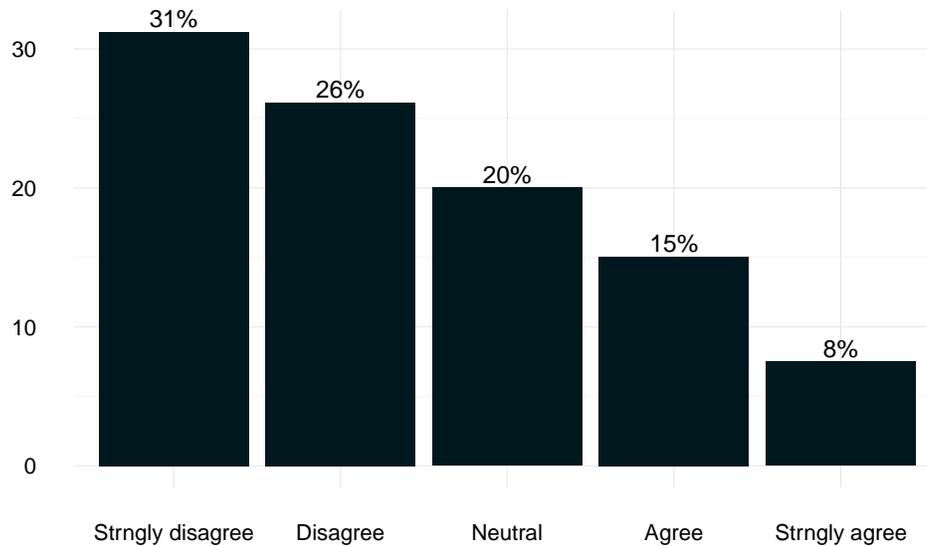


## 2.10 Trade-offs between Using and Conserving Natural Resources

We asked respondents three questions in which they had to make a trade-off between doing some activity or harming some aspect of nature. Over one-half (57 percent) of respondents disagreed with the need to build on land for people even if it results in fewer places for wildlife to live (Figure 2.63). Twenty-three percent agreed, and 20 percent neither agreed nor disagreed. A slightly different question asked adults about people’s need to control nature to meet human needs even if it sometimes harms nature and wildlife (Figure 2.64). The proportions of responses were nearly identical: One-half of adults (55 percent) disagreed; 23 percent agreed; 22 percent were neutral.

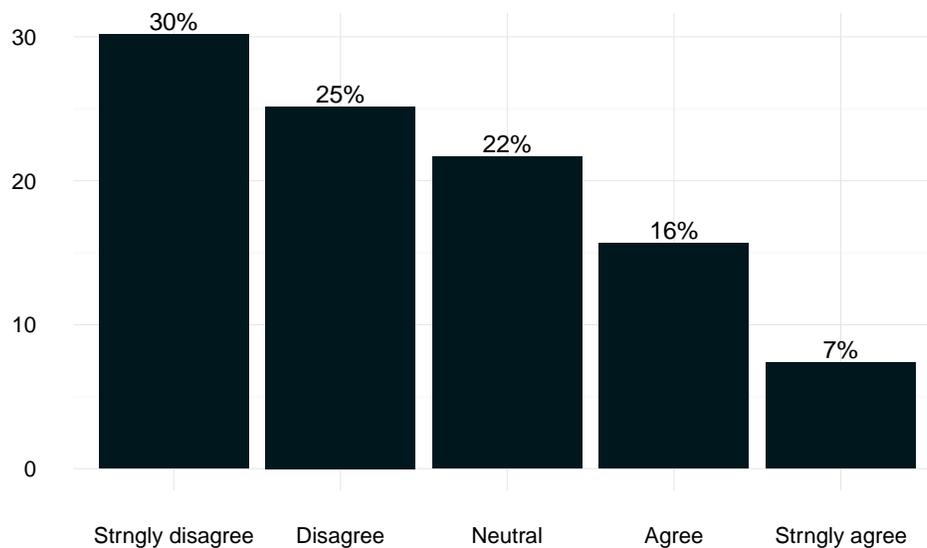
A third trade-off question asked respondents to agree to develop “our energy resources” regardless of its effects on nature (Figure 2.65). One-half (49 percent) disagreed, while 31 percent agreed. Twenty percent neither agreed nor disagreed.

Figure 2.63: Agreement with Building on Land even if it Reduces Habitat



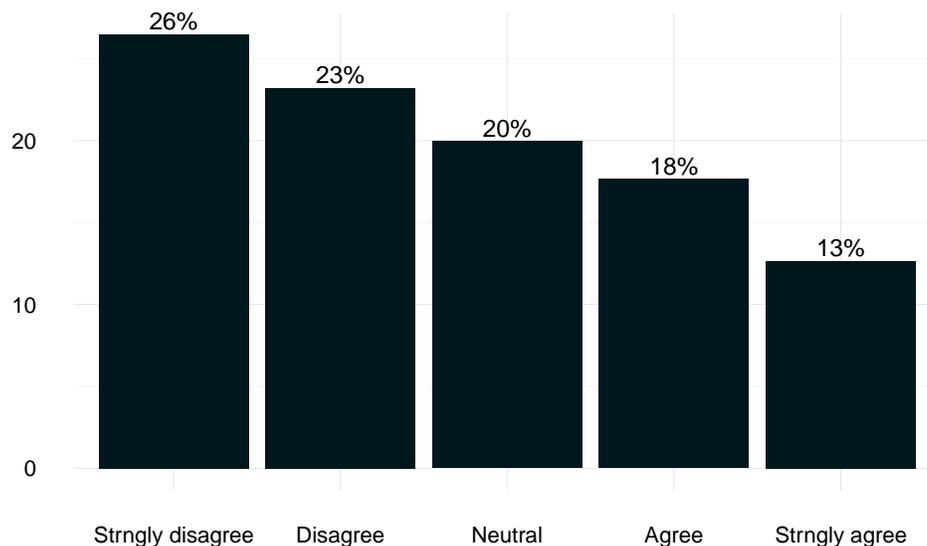
Question wording: To what extent do you agree or disagree with the following statements? ...We need to build on land for people even if it results in fewer places for wildlife to live.

Figure 2.64: Agreement with Controlling Nature to Meet Human Needs even if it Harms Nature and Wildlife



Question wording: To what extent do you agree or disagree with the following statements? ...People need to control nature to meet human needs even if it sometimes harms nature and wildlife.

Figure 2.65: Agreement with Developing Energy Resources Regardless of Effects on Nature



Question wording: To what extent do you agree or disagree with the following statements? ...We must develop our energy resources regardless of the effects on nature.

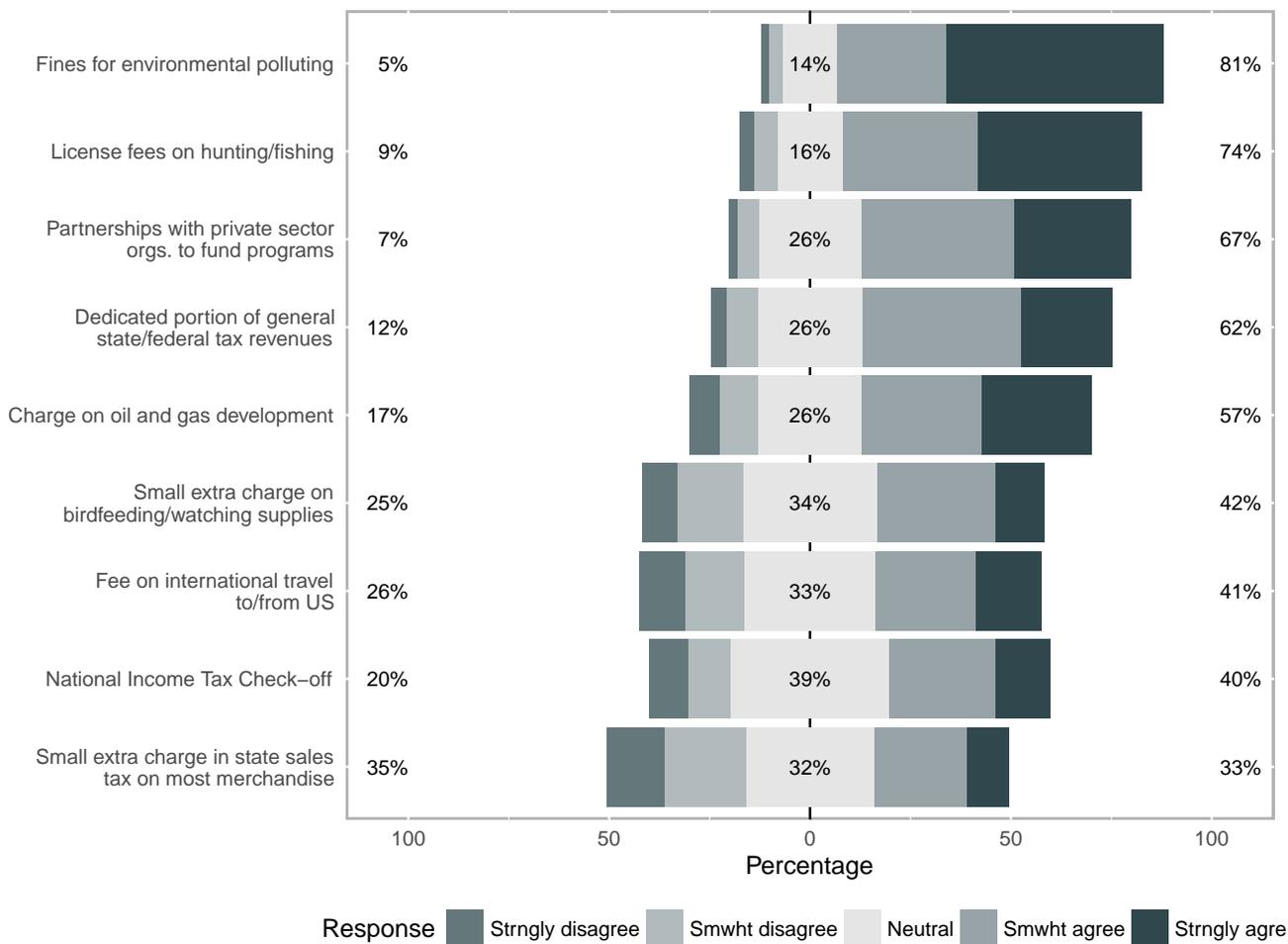
## 2.11 Funding Sources to Pay for Nature and Wildlife Activities

Texans surveyed expressed support for employing a variety of funding options to help pay for the costs of additional programs to increase contact with nature and wildlife (Figure 2.66). The funding source that garnered the greatest support was fines collected for environmental pollution, with over 8 out of 10 adults strongly or moderately supporting this option. The second and third most supported options included additional license fees on hunting and fishing and partnerships with private sector organizations to fund programs: each obtained about 70 percent support. Closely following was a dedicated portion of general tax revenues from state and federal sources, which garnered 65 percent agreement. For these four sources, disagreement was extremely low: 12 percent or fewer adults surveyed disagreed with using these funding sources to help pay for nature- and wildlife-related activities.

A charge on oil and gas development also received support from the majority of adults surveyed in Texas. Additional funding sources that received considerable support but from only a minority of adults, or included a relatively large proportion of neutral responses, were a small charge on bird-watching and bird-feeding supplies, a fee on international travel to and from the United States, and a check-off on national income tax returns. The source that received the least support was an additional charge on state sales tax. Fewer than 40 percent supported this option, 32 percent were neutral, and 36 percent did not support it.<sup>13</sup>

<sup>13</sup>Via referendum, voters in three US states have an additional charge on sales tax for nature-related programs and conservation: Arkansas (0.125 percent), Missouri (two earmarked sales taxes—0.125 percent for conservation of fish, forests, and wildlife and 0.10 percent for parks and soil conservation), and Minnesota (0.375 percent). Legislators in Iowa approved a charge of 0.125 percent. A review of these successful campaigns suggests that state conservation agencies, in collaboration with non-government organizations, made convincing cases that nature and wildlife—rather than being recreational amenities appealing to relatively narrow interest groups—are essential to human fitness, health, and quality of life. See Case, D. J., Kellert, S. R., Wallace, V. K., and D. J. Witter. 2012. “Increasing citizen

Figure 2.66: Funding Sources to Help Pay Cost of Nature and Wildlife Activities



Question wording: Which funding sources do you think should help pay the cost of activities related to nature and wildlife? Hunting and fishing license fees. Small extra charge on bird-feeding/-watching supplies. A charge on oil and gas development. Dedicated portion of general tax revenues from state and federal sources. Fines collected for environmental polluting. Small extra charge in state sales tax on most merchandise. Partnering with private sector organizations to fund programs. National Income Tax Check-off. Fee on international travel to and from the US.

We explored in greater detail support for three diverse sources of funding: 1) license fees on hunting and fishing (i.e., a charge only on particular users), 2) dedicated portion of general state and federal tax revenues (i.e., a charge on all residents), and 3) a charge on oil and gas development (i.e., a charge on industry).

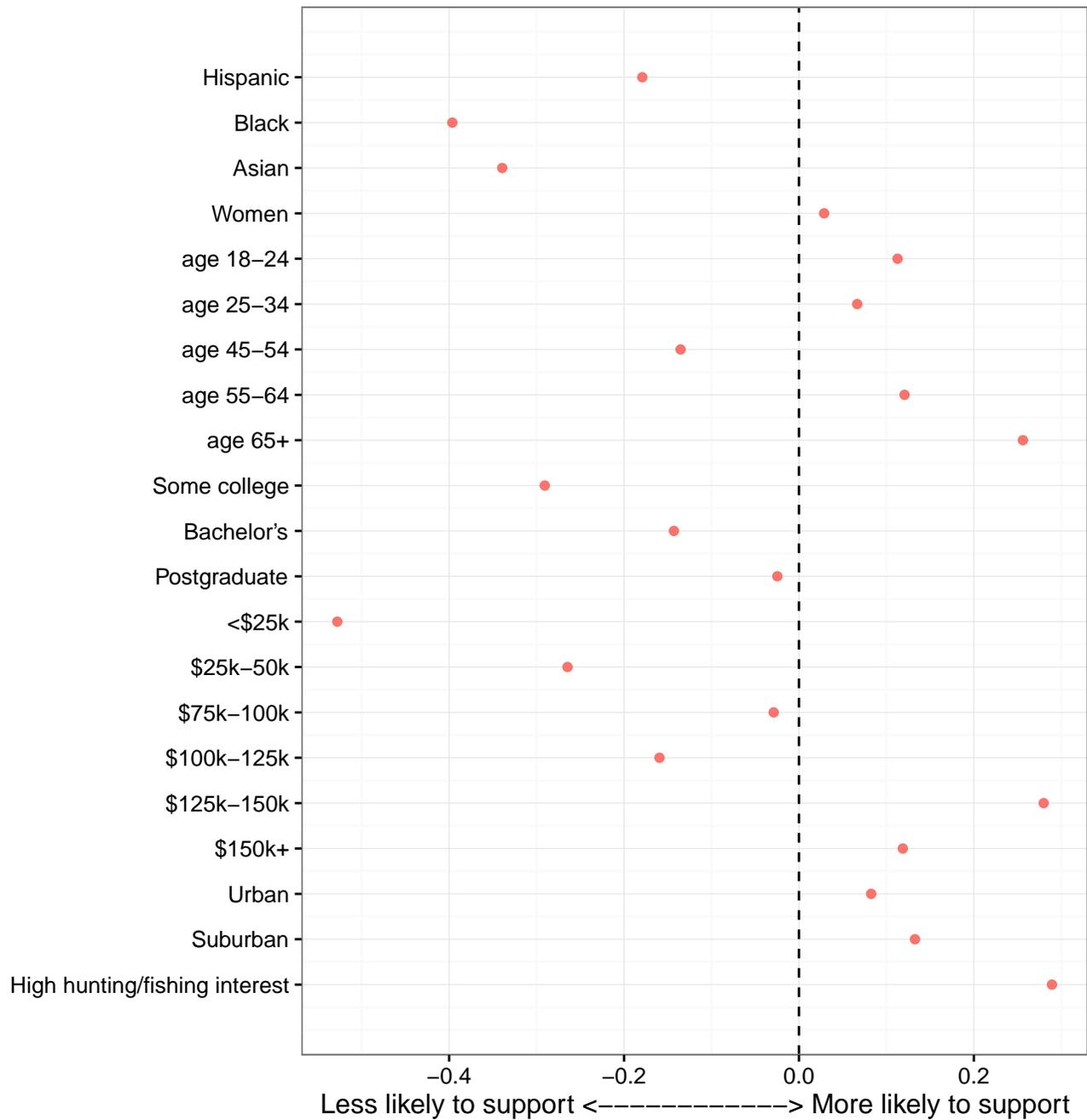
Among adults surveyed in Texas, 41 percent strongly agreed to using license fees on hunting and fishing to help pay the costs of nature and wildlife activities. Figure 2.67 shows which factors are more or less associated with this strong support. Points greater than 0 signify that adults in that group were *more likely* to strongly agree with paying the cost of nature and wildlife activities through license fees on hunting and fishing. Points less than 0 signify that adults in that group were *less likely* to be dissatisfied with the time they spend outdoors in a typical week. The larger the value, whether positive or negative, the greater the relationship between that variable and the outcome. In this analysis, the reference categories are *whites* in comparison to Hispanics, blacks, and Asians; *men* in comparison to women; *35–44-year-olds* in comparison to all other age categories; adults with a *high school degree or less* in comparison to all other levels of educational attainment; adults from households with incomes of *\$50,000–\$74,999* averaged over the last five years in comparison to all other income categories; and *rural residents* in comparison to urban and suburban residents. How much each variable is related to the outcome is net of (i.e., adjusts for) the other variables included. (See Section 1.3 for more detail.)

- Hispanics, blacks, and Asians were less likely to support using license fees, relative to whites.
- Women were about as likely as men to support using license fees as a funding source.
- Compared to middle-aged adults (35–44-year-olds), most other age groups were more supportive.
- Those with the highest levels of education were less supportive of using license fees compared with those who had a high-school degree or less. The exception was respondents with a postgraduate degree.
- Respondents from the highest-income households were more likely to support using license fees from hunting and fishing, compared with middle-income respondents.
- Urban and suburban residents were slightly more supportive than rural residents.
- Respondents with high interest in hunting or fishing were likely to support using license fees to help pay the costs of nature and wildlife activities.

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support for conservation funding,” *Transactions of the North American Wildlife and Natural Resources Conference*, no. 77.

Figure 2.67: Likelihood of Strongly Agreeing to License Fees on Hunting and Fishing



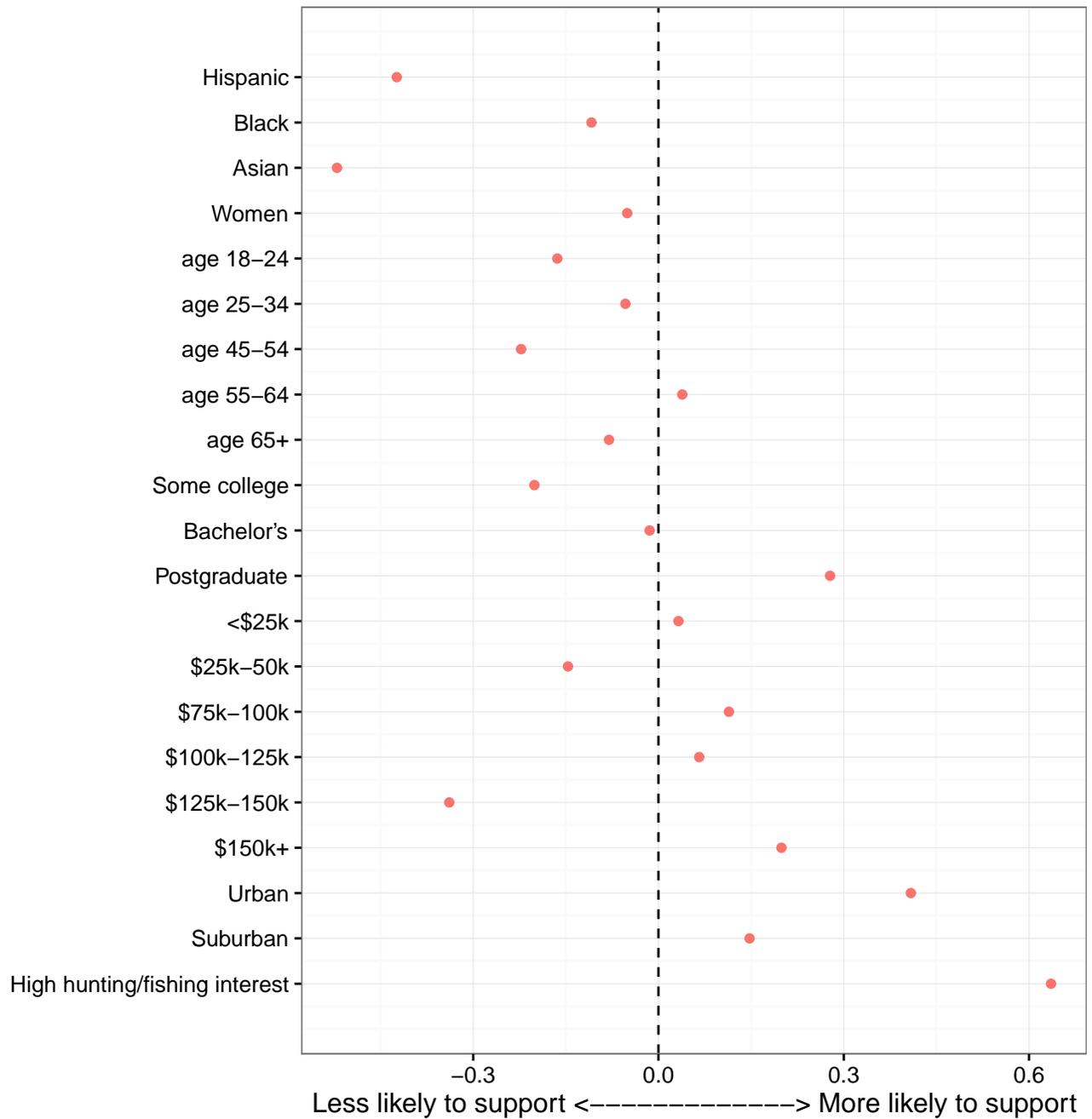
Note: The outcome is whether or not a respondent “strongly agrees” that license fees on hunting and fishing should help pay the cost of activities related to nature and wildlife. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

Another potential source of funding for nature- and wildlife-related activities is a dedicated portion of general state or federal tax revenues. Twenty-seven percent of adult respondents in Texas strongly

agreed with using this source. Figure 2.68 reveals factors associated with strong support for using tax revenues.

- Compared with white respondents, Hispanic, black, and Asian adults were less likely to support the use of this funding source.
- Women were about the same as men in their support.
- Younger adults and older were less likely to support using general tax revenues from state and federal sources, compared with middle-aged adults (35–44-year-olds).
- Compared with middle-income respondents, low-income and high-income respondents were less likely to support this funding source.
- Urban and suburban respondents were more likely to support using tax revenues, compared with rural ones.
- Those with high interest in fishing or hunting were highly likely to support using a dedicated portion of general state or federal tax revenues to pay for nature- and wildlife-related activities.

Figure 2.68: Likelihood of Strongly Agreeing to Using State and Federal Tax Revenues

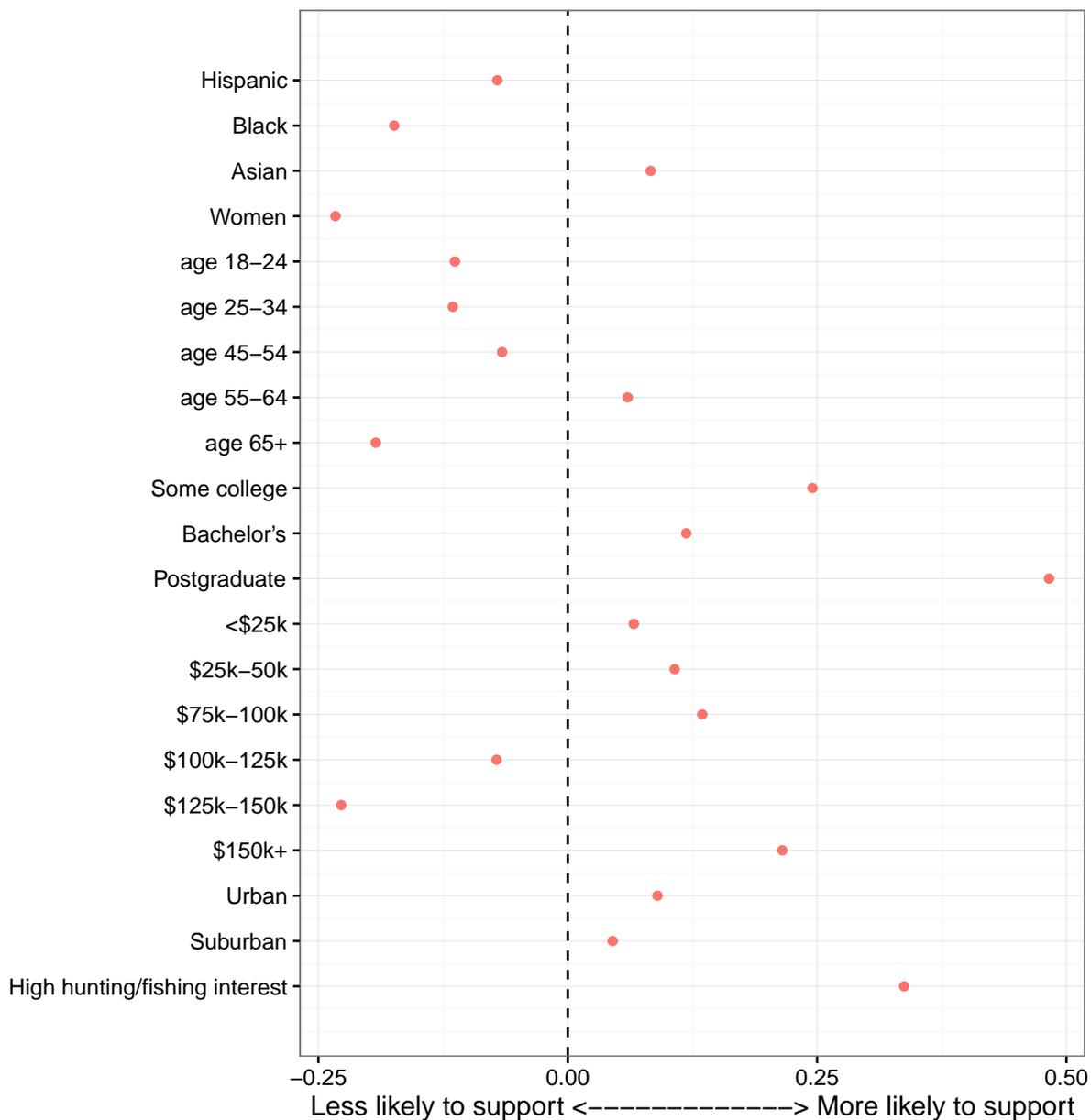


Note: The outcome is whether or not a respondent “strongly agrees” that a dedicated portion of general tax revenues from state and federal sources should help pay the cost of activities related to nature and wildlife. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

A third potential funding source for nature- and wildlife-related programs is a charge on oil and gas development. Twenty-eight percent of adults strongly supported this. The following factors were associated with the likelihood of strongly supporting this funding option (Figure 2.69):

- Hispanic and black respondents were less likely to express strong support for a charge on oil and gas development to support nature and wildlife programs. Asian adults were more likely, relative to white adults.
- Women were less likely to support this option.
- Younger and older adults were less likely to strongly support a charge on oil and gas development compared with middle-aged adults (35–44-year-olds).
- Highly educated respondents were more supportive, on average.
- Low-income respondents were more likely to support this funding source, relative to middle-income respondents.
- Urban residents were more supportive, on average, than rural adults.
- Respondents with high interest in fishing or hunting were highly likely to support devoting a charge on oil and gas development to pay for the cost of activities related to nature and wildlife.

Figure 2.69: Likelihood of Strongly Agreeing to Charge on Oil and Gas Development



Note: The outcome is whether or not a respondent “strongly agrees” that a charge on oil and gas development should help pay the cost of activities related to nature and wildlife. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

## 2.12 Summary of Results

**Perceptions of “nature.”** Adults in our research tended to view authentic, immersive, and unforgettable nature as wild, uncultivated, and set apart from human influences. Viewing and experiencing what respondents considered to be “pure” nature required, in their minds, significant commitments of time and resources, apart from more normal work and family responsibilities.

**Interest in nature.** Adults ranked their interests in nature as among their more enjoyable or most enjoyable interests. Most also perceived that their interests were as strong as or even stronger than their parents’ interests. Most said their interests in nature were stable or increasing. Still, adults were about twice as likely to say their pastimes, hobbies, and interests were indoors-oriented than to say they were outdoors-oriented.

**Activities in nature.** Adults in Texas cited a range of favorite activities in nature, including walking outdoors, exploring the outdoors, visiting zoos and aquariums, and gardening outdoors.

**Time spent in nature.** The majority of adult Texans surveyed reported spending less than 10 hours per week outdoors in nature. Most indicated they were satisfied with this degree of contact with the natural environment. Nearly one-half of those who reported spending very little time outdoors in nature each week felt satisfied, although satisfaction did increase among people who reported spending more time outdoors in nature.

**Multidimensional appreciation for nature.** Adults valued nature in a variety of ways, including affection for nature and wildlife, aesthetic attraction, using symbols of nature, and finding spiritual inspiration in nature. A great majority of adults in Texas linked learning about nature with the intellectual development of children and future generations. Relatively few adults reported a desire to exploit or control the natural world, especially if doing so had negative consequences for wildlife and habitat.

**Benefits of nature.** Most adults recognized that exposure to nature confers a variety of benefits to their physical health, psychological wellbeing, and social development. They recognized that these benefits occur for themselves personally and for society as a whole.

**Disconnection from nature.** Participants revealed concern about an increasing separation and disconnection from nature in American society as a whole. Five major causes of this disconnection emerged: 1) the built environment, or the physical places where people live; 2) competing priorities for time, attention, and money; 3) increasing isolation from the natural world; 4) technology, especially electronic devices and media; and 5) shifting expectations about what “good” or “normal” connection to nature is and ought to be. Many were concerned that problems were particularly harmful to younger generations’ ability and opportunity to experience and benefit from the natural world.

**Barriers to activities in nature.** Alongside more general causes of disconnection from nature, adults emphasized three particular barriers to their activities in nature: 1) a lack of time, 2) a lack of financial resources, and 3) a lack of social support.

**Social support.** Most adults’ influential, memorable, and routine experiences in nature occurred with other people present. Adults whose family and friends were making more time for nature tended to spend more time outdoors in nature each week, were more interested in a range of outdoor activities, and supported increasing programs to help Americans enjoy nature, the outdoors, and wildlife.

**Access to nature.** Most adults were satisfied with the availability of and accessibility to parks and open spaces they have where they live. Yet due to the widely held impression or expectation that nature needs to be wild and remote in order to be “authentic,” many adults viewed the open spaces and parks near where they live as less “natural” and, sometimes by implication, less desirable. Distant places were often seen as more natural yet less accessible due to issues of time, expense, and geography.

### 2.12.1 Summary of Support for Nature-related Programming and Funding among Adult Texans

- Most adults surveyed agreed with the need to increase the number of programs available for Americans to enjoy nature, the outdoors, and wildlife.
- The majority of adults surveyed thought current recreation-oriented conservation programs are underfunded. A relatively smaller minority thought they are adequately funded. Very few perceived them to be overfunded.
- One-third of adults surveyed thought “too little” money is being spent on improving and protecting the environment. About one-quarter said current spending is adequate, and one-quarter said current spending was too much.
- The highest levels of support for increasing nature-related programs and funding came from whites and Hispanics, younger adults, middle-income adults, and urban residents. High levels of support also came from what might be an unexpected group, namely, adults who value nature for its resources and who believe nature can be controlled—that is, respondents who ranked highly on scales of exploitation and control.
- Dissatisfaction with one’s community aligned closely with perceptions of funding and spending. Adults who were dissatisfied with the place where they live across an array of measures were highly likely to perceive nature-related programs as underfunded and to support increasing them.
- Adults surveyed were most supportive of using funding sources derived from fines for environmental pollution, license fees on hunting and fishing, partnerships with private sector organizations, dedicated portions of general state and federal tax revenues, and a charge on oil and gas development.
- One of the funding sources that received the lowest support was a small charge on state-level sales tax for most merchandise: about one-third of adults surveyed agreed this should help pay the cost of activities related to nature and wildlife. Other potential funding sources that received relatively low support included a fee on international travel to and from the US, a national income tax check-off, and a small extra charge in state sales tax on most merchandise.

## Chapter 3

# Children and Parents: Results

This chapter of the report examines 261 interviews with children and a paired survey of one of their parents in Texas. We focused our research on children 8–12 years of age, often referred to as “middle childhood,” for several reasons. First, these are important formative years in children’s developing relationship with the natural world. Previous research and theory suggest children of this age group develop particular interests in and values toward nature that influence them through the rest of their lives. Second, children at this age are becoming physically capable and self-aware to the point of exercising far greater autonomy and independence from their parents, yet still in relative proximity to their homes and communities and within the protective umbrella of parents and families. Finally, children at this age begin to try new activities and to solidify their interests, providing particular opportunities for program and behavioral interventions intended to enhance children’s connections with nature and wildlife. Even though we focused on middle childhood, we do not mean to suggest other age periods are unimportant in children’s relationship to nature. What precedes middle childhood certainly matters, when interests in nature begin to emerge and are cultivated through patterns of behaviors and interactions with others. What follows middle childhood is equally important, especially as adolescents pursue outdoor interests in potentially distant and challenging settings in the company of peers.

Throughout the data collection, our focus was on *children*. As a result, the analyses that follow emphasize children’s own perceptions, experiences, and voices, as well as what parents report about their children. We sought foremost to report “nature” as children see and experience it. We emphasized three basic dimensions:

1. **Children’s relationship with nature.** We were especially interested in how children perceive “nature” and how it figures in their lives. How interested are children in nature? What do they think of as “nature”? What kinds of direct and indirect contact do children have with the natural world and how extensive are these interactions? How do they generally perceive these nature-related experiences and activities? What do children know about the natural world, and what is the source of their knowledge and understanding? Do children care about particular plants and animals? If so, what and why? Do they have particularly memorable experiences in nature? If so, what are these experiences, and where and with whom do they happen?
2. **Effects of children’s exposure to nature.** A number of important questions guided our research with respect to the effects of contact with nature. These included, what do

children and parents perceive are the effects of contact with nature on children’s physical, psychological, and social wellbeing? What are the apparent impacts of exposure to nature and wildlife on children’s maturation and learning?

- 3. Barriers to and facilitators of contact with nature.** We were especially interested in exploring the extent and source of potential barriers and enablers in children’s contact with the natural world. What are the obstacles children face today in their contact with nature and wildlife? Has the emergence of electronic media and other indoor pursuits affected children’s interest in and contact with the outdoors? How important are parents, friends, and communities in facilitating interests and experiences?

Each of these topics was examined among our entire sample of 8–12-year-old children. We also explored differences and similarities across an array of demographic distinctions, including age, gender, race and ethnicity, location (urban–suburban–rural), education, and income. In addition to the three major topics of relationships, benefits, and obstacles, our research examined other important questions, including:

- What is the apparent influence and role of parents in children’s perceptions, interests, and relationships to nature and wildlife?
- What is the relationship between children’s physical, mental, and social health and development and their interests and experiences of nature?
- What is the current level of children’s knowledge of the natural world, and to what extent does education appear to have influenced this understanding?

At the chapter’s conclusion, we summarize major results and offer a way of thinking about how some of these pieces fit together by providing a causal model of children’s relationships to nature.

### 3.1 Brief Description of Methods

We examined children’s relationships to nature through a novel technique, pairing an online survey of 261 parents in Texas with a web-camera–interview of one of their children, for a total of 522 respondents. Parents and children who were invited to participate fulfilled sampling quotas according to community type, gender, race, and ethnicity. Parents completed an online survey of 64 questions, while children 8–12-years-old were asked 25 questions by specially trained staff. (For more detail, see Section 1.2.3.) The child interview schedule is included in Appendix E; the parent questionnaire, in Appendix F.

In this chapter,  $N = 261$  for all analyses, except for analyses broken out by race and ethnicity. For those analyses only,  $N = 221$  since children who are Asian, of two or more races, or are American Indian, Alaska Native, Native Hawaiian, or other Pacific Islander are excluded due to small sample size.

All results presented—including quotations, word clouds, tables, plots, and graphs—are from interviews or surveys fielded *only in Texas*.

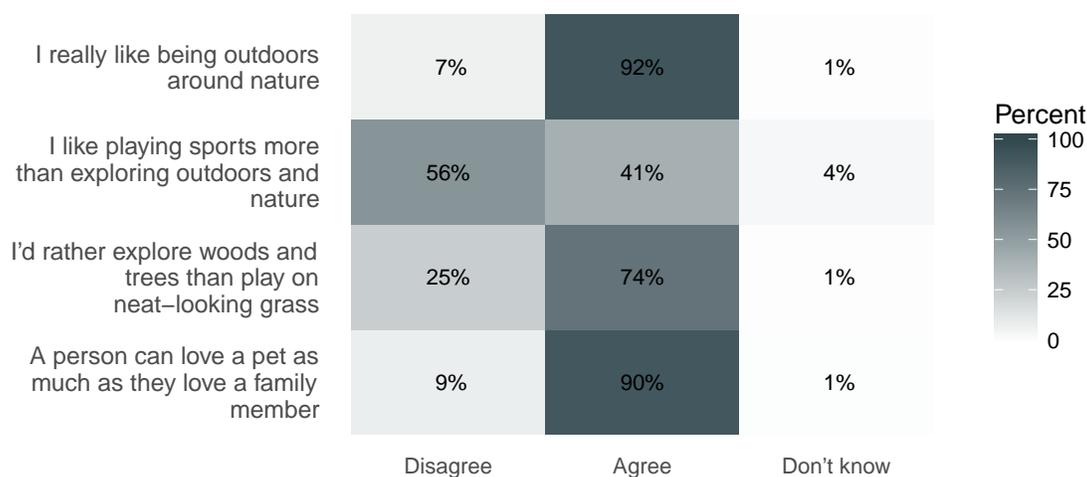
## 3.2 Children's Relationships with Nature

This section provides a review of children's relationships to nature. These findings are generally presented for children in our study as a whole, with some additional analysis by demographics when the results are salient. We begin with a description of children's attitudes and values of nature.

The tendency to affiliate with nature is revealed in the various ways that people are inclined to attach meaning, derive benefit, and in effect value the natural world. This section reviews values of affection, attraction, aversion, exploitation, intellect, and symbolism among children. (See results among adults in Sections 2.5 and 4.3 and Appendix A.) Given the time constraints of interviewing children, each value contains a smaller number of questions than we asked adults; we also adapted the wording to the children's age range.

Overall, the great majority of children in our sample felt affection for and attraction toward nature (Figure 3.1). Nearly all (92 percent) agreed they "really like" being in the outdoors around nature. In addition, nearly all (90 percent) agreed that a person can love a pet as much as they love a family member. Seventy-four percent said they prefer to explore woods and trees than play on neat-looking grass. Preference for nature experience even prevailed over interest in playing sports, but the margin was more narrow, with 41 percent agreeing they like playing sports more than exploring outdoors and nature.

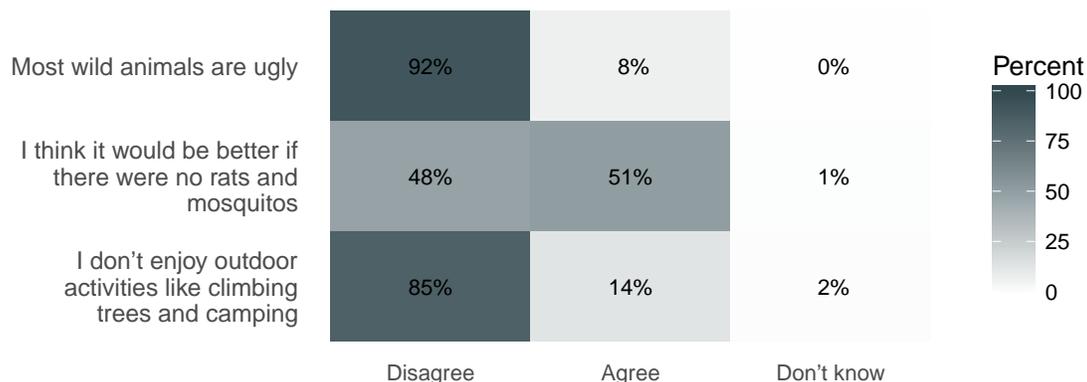
Figure 3.1: Children: Values of Affection and Attraction to Nature



Note: Rows may not add to 100 percent due to rounding. Question wording: Please tell me if you agree or disagree with each of the following ideas.

Children mostly rejected aversive attitudes toward nature (Figure 3.2). Nearly all (92 percent) disagreed that most animals are ugly. Over four-fifths (85 percent) disagreed that they do not enjoy outdoor activities like climbing trees and camping. One-half of children (51 percent) agreed it would be better to have no rats or mosquitos.

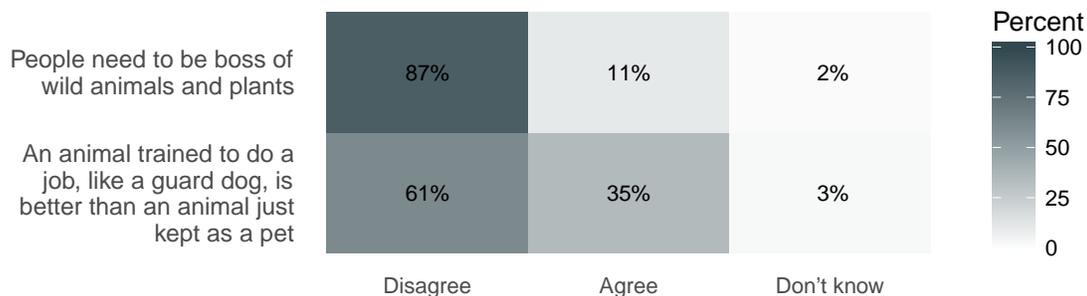
Figure 3.2: Children: Values of Aversion to Nature



Note: Rows may not add to 100 percent due to rounding. Question wording: Please tell me if you agree or disagree with each of the following ideas.

Regarding controlling nature, the great majority of children 8–12-years-old (87 percent) rejected the idea that people need to be the “boss” of wild animals and plants (Figure 3.3). Most (61 percent) rejected the idea that an animal trained to do a job is better than an animal just kept as a pet.

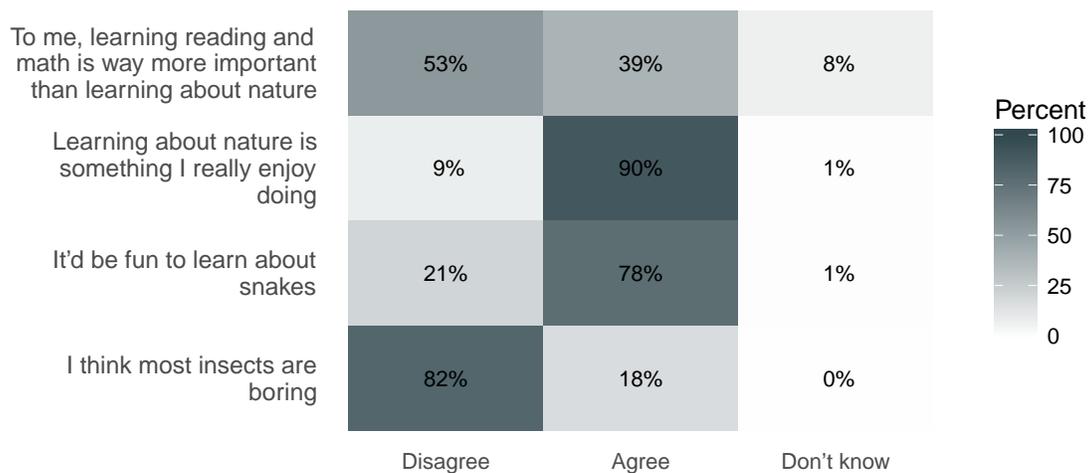
Figure 3.3: Children: Values of Control of Nature



Note: Rows may not add to 100 percent due to rounding. Question wording: Please tell me if you agree or disagree with each of the following ideas.

Children placed a high value on learning about nature (Figure 3.4). Nearly all (90 percent) said they “really” enjoy learning about nature. Seventy-eight percent agreed that it would be “fun” to learn about snakes. Eighty-two percent disagreed to finding most insects boring. Children were about evenly divided over learning reading and math versus learning about nature: 53 percent disagreed that learning reading and math is more important than learning about nature, 39 percent agreed, and 8 percent did not know.

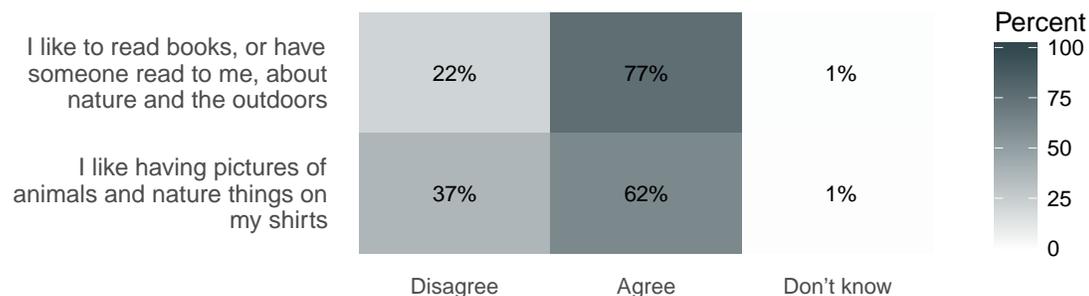
Figure 3.4: Children: Values of Intellectual Interest in Nature



Note: Rows may not add to 100 percent due to rounding. Question wording: Please tell me if you agree or disagree with each of the following ideas.

Most children valued symbolic representations of nature (Figure 3.5). Three-quarters (77 percent) said they like to read books about nature, or have someone read to them books about nature. Three-fifths (62 percent) agreed they like having pictures of animals and other elements of nature on their shirts.

Figure 3.5: Children: Values of the Symbolic Representation of Nature



Note: Rows may not add to 100 percent due to rounding. Question wording: Please tell me if you agree or disagree with each of the following ideas.

### 3.2.1 Popularity and Familiarity of Activities in the Outdoors

When children were asked their favorite thing to do outdoors in nature, they frequently mentioned activities involving their friends and other close people, including sibling and parents (Figure 3.6). In terms of activities, children commonly mentioned soccer, biking, football, running, and swimming. Although children rarely used the word explicitly, the act of *exploring* the outdoors emerged,



a bag that we used to carry things. I set it down and when I picked it back up I had ants all over me.” (Boy, white, age 12, suburban)

“Basketball. I play with my dad in the park. It is my favorite because I get to spend time with my dad.” (Boy, black, age 11, suburban)

“Explore and have fun. I explore with my friends and my dog at the park, the backyard, or on the playground.” (Girl, white, age 8, rural)

“Fishing is my favorite because you can catch fish, you can learn about different fish, and tactics on how to catch different fish. I go fishing about two times a week.” (Boy, Asian, age 10, urban)

“I like building stuff out of what I have and adventuring through the trees and forest and stuff. I usually with rocks throw them in the creek and make little steps out of them. I use straws and grass and stuff like sticks (sometime I have my cousin help)... When I go adventuring I go through creeks, streams, barns, basically anything that is old. These are my favorite because it is mysterious about what you will find. I really like the fun of it, you get to figure out how to do it and learn stuff from it. You get to find stuff that maybe you haven't see before.” (Girl, white, age 11, suburban)

“I like climbing trees. I don't get to do it all that often, but I like the view I get from up there a lot.” (Girl, Hispanic, age 9, suburban)

“I like playing pirates with sticks and rocks. I play it a lot by my house.” (Girl, black, age 8, urban)

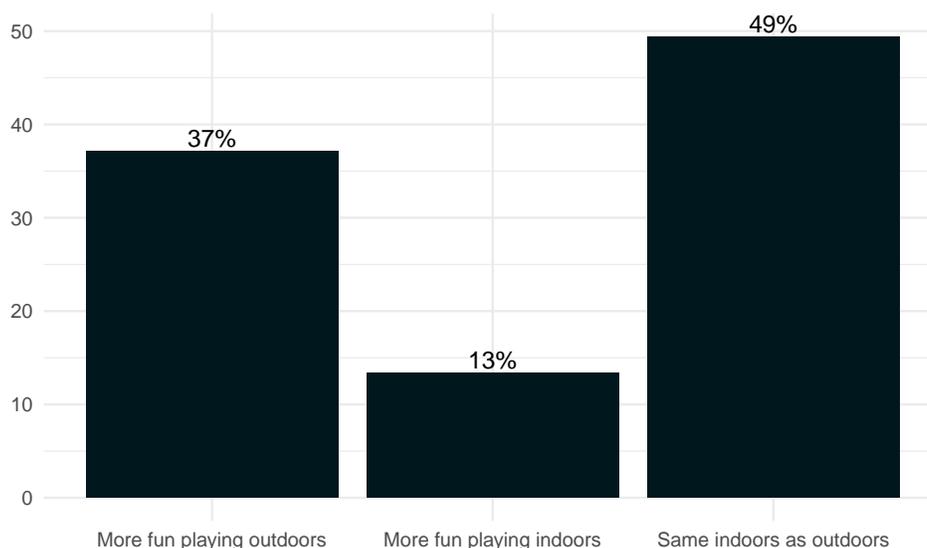
“I like playing soccer. I've been playing soccer for three years. I play with my friends and brother and sister and teammates. I like it because it is fun to play with other people.” (Boy, Hispanic, age 11, urban)

“I like running and looking at all the different things I see outside, like plants, flowers, and I like the butterflies that pass by our house and lady bugs.” (Girl, black, age 9, suburban)

“I like to fish, because I did it once with my grandpa. I really like it, because we caught a lot of fish and it was fun. My brother caught a fish, and then caught another fish with the fish he had caught. We were fishing at my grandfather's farm.” (Boy, white, age 8, suburban)

Further reinforcing the connection between the outdoors and fun and play, we asked children in our study where they have the most fun (Figure 3.7). Just under 40 percent said they have more fun playing outdoors than indoors. Just under half said they have the same amount of fun playing indoors as playing outdoors. A small minority of children (13 percent) said they enjoy playing indoors more than outdoors.

Figure 3.7: Children: More Fun Playing Indoors or Outdoors



Question wording: When you think about the things that you like to do for fun when you play indoors and outdoors, do you have more fun ...playing outdoors ...playing indoors ...or do you have as much fun playing indoors as playing outdoors?

Hispanic children were most likely to say they have more fun playing outdoors, with about one-half selecting that answer (Table 3.1).

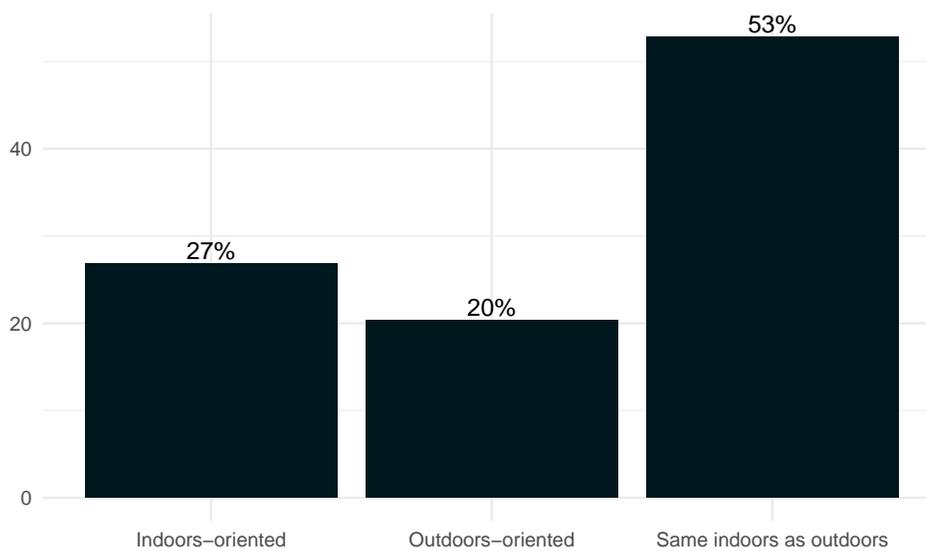
Table 3.1: Children: More Fun Playing Indoors or Outdoors, by Race and Ethnicity

Category	White	Hispanic	Black
More fun playing outdoors	40%	48%	38%
More fun playing indoors	8%	20%	17%
Same indoors as outdoors	52%	32%	46%

Note: Columns may not add to 100 percent due to rounding. Question wording: When you think about the things that you like to do for fun when you play indoors and outdoors, do you have more fun ...playing outdoors ...playing indoors ...or do you have as much fun playing indoors as playing outdoors?

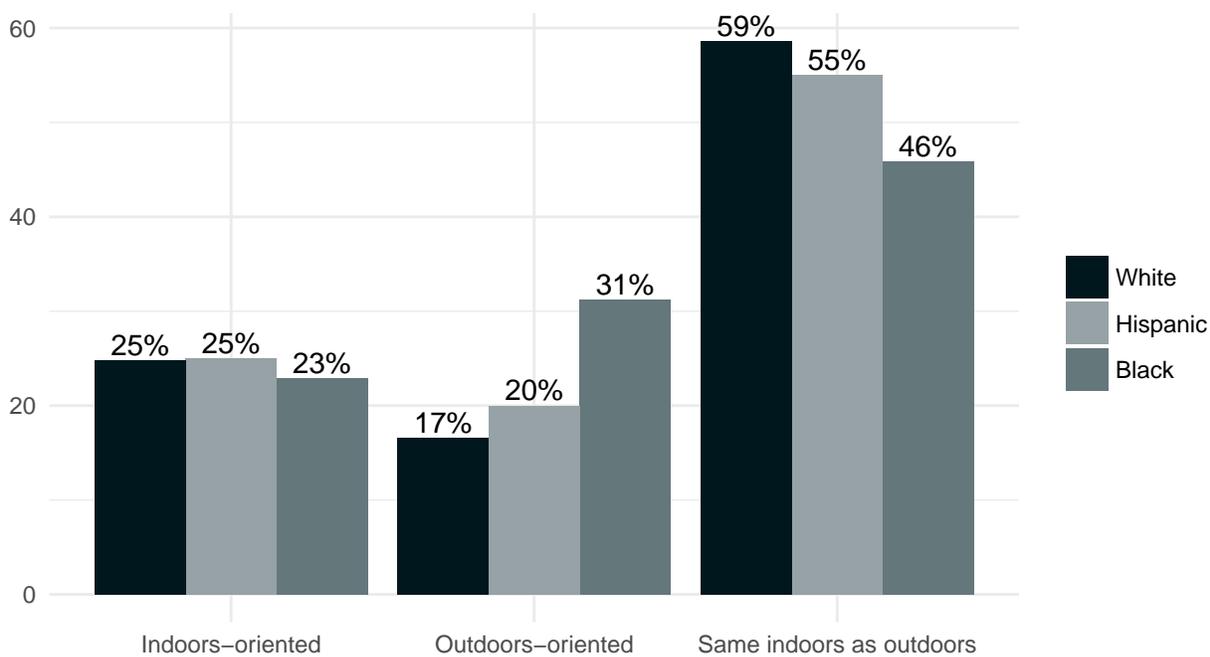
Despite most children's clear preference *away* from having more fun playing indoors, their own orientation in their pastimes, hobbies, and recreational interests (as reported by their parents) tended toward the indoors. One-fifth of parents said their child's pastimes, hobbies, and recreational interests were more outdoors-oriented (Figure 3.8). One-quarter said more indoors-oriented. About one-half said they were about the same. Ethnoracial differences on this question were relatively minor (Figure 3.9).

Figure 3.8: Parents: Child More Indoors- or Outdoors-Oriented



Question wording: In general, would you say your child's pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented?

Figure 3.9: Parents: Child More Indoors- or Outdoors-Oriented, by Race and Ethnicity

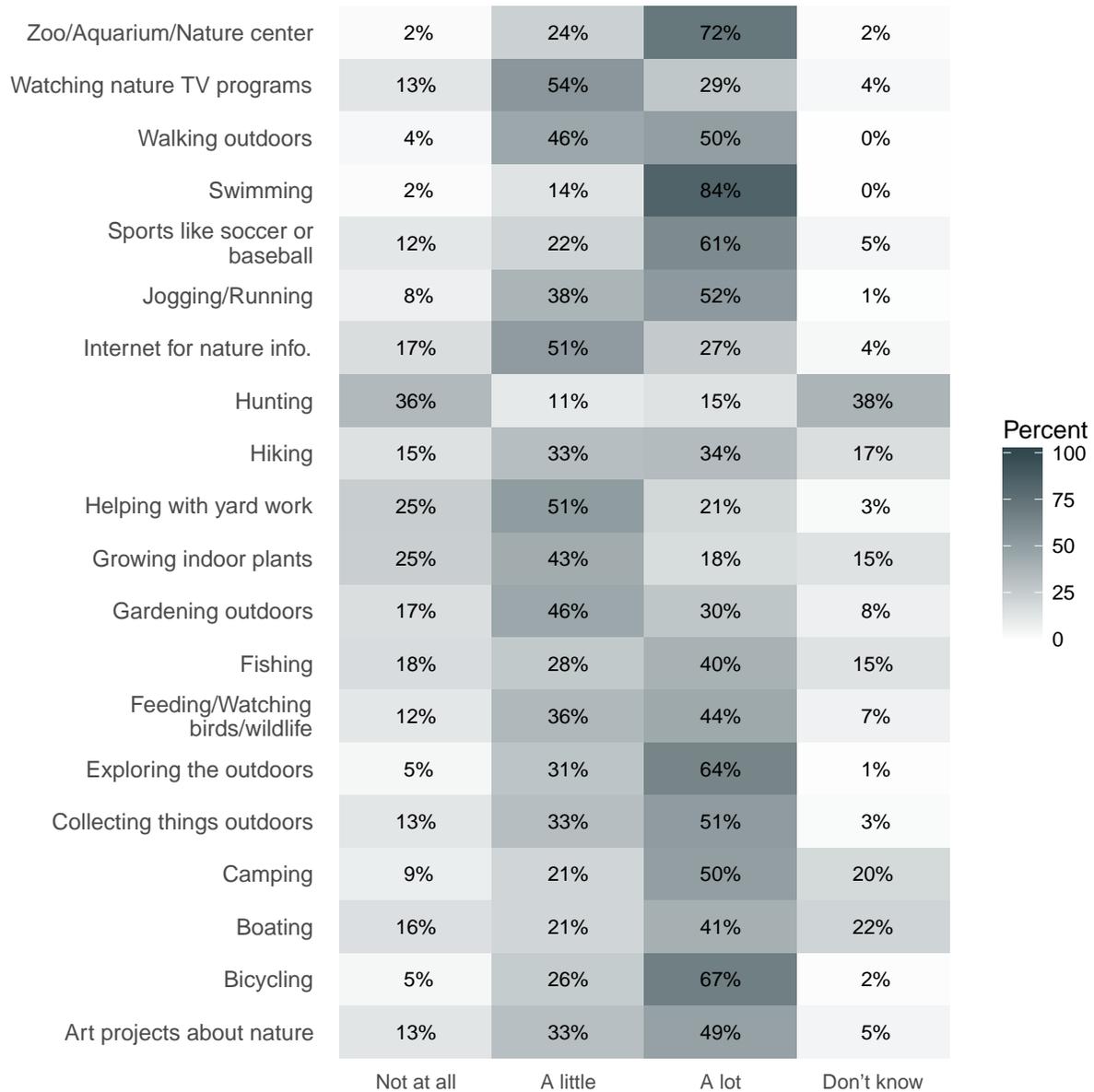


Question wording: In general, would you say your child's pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented?

## Popularity and Familiarity of Common Activities

Children indicated how much they like a number of common activities (Figure 3.10). Their answers reflected both how much they like the activity (what we call *popularity*) and whether they know about the activity (what we call *familiarity*).

Figure 3.10: Children: Popularity and Familiarity of Common Activities



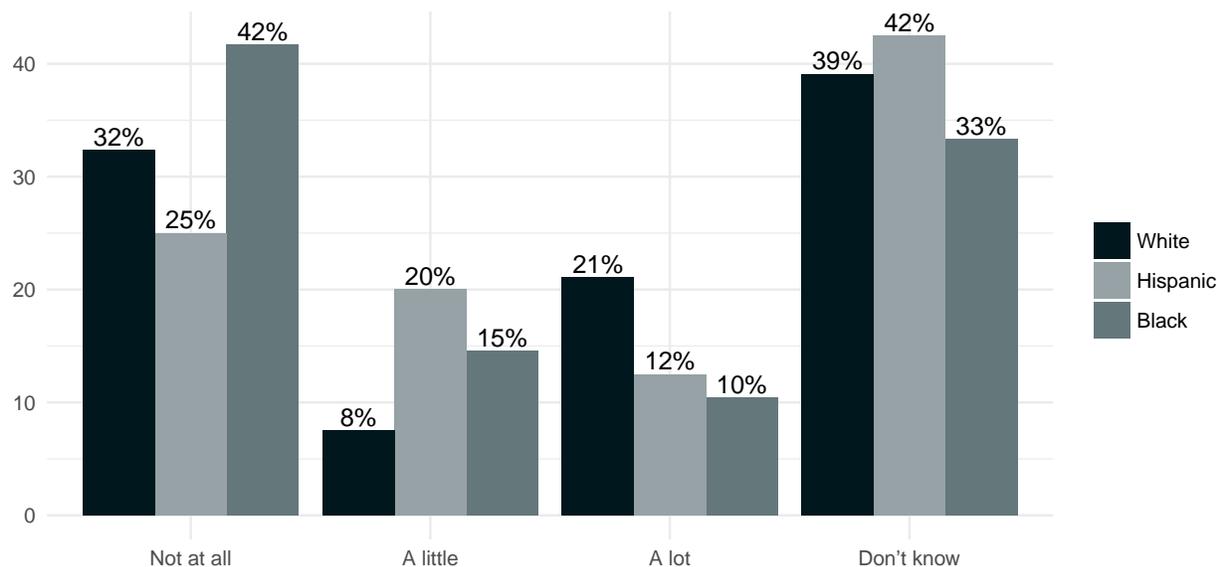
Note: Rows may not add to 100 percent due to rounding. Question wording: How much do you like each of the following activities?

For children in our study, the most commonly liked or popular outdoor activities were swimming; visiting zoos, aquariums, and nature centers; bicycling; exploring the outdoors; and sports like soccer, baseball and basketball. The least commonly liked included hunting, helping with yard work, growing indoor plants, fishing, gardening outdoors, and boating. Hunting was also the least familiar activity among the children, with 38 percent saying they did not know how much they like it. Other activities with which children were unfamiliar included boating, camping, hiking, growing indoor plants, and fishing.

The next several charts examine differences in the popularity of activities, by race and ethnicity, including hunting, fishing, feeding or watching birds or other wildlife, exploring the outdoors, and camping.

Across ethnoracial groups, the popularity and familiarity of hunting differed (Figure 3.11). Black children reported liking hunting the least (42 percent said they did not like it at all). High proportions of all children (over one-third) reported not knowing whether or not they like hunting.

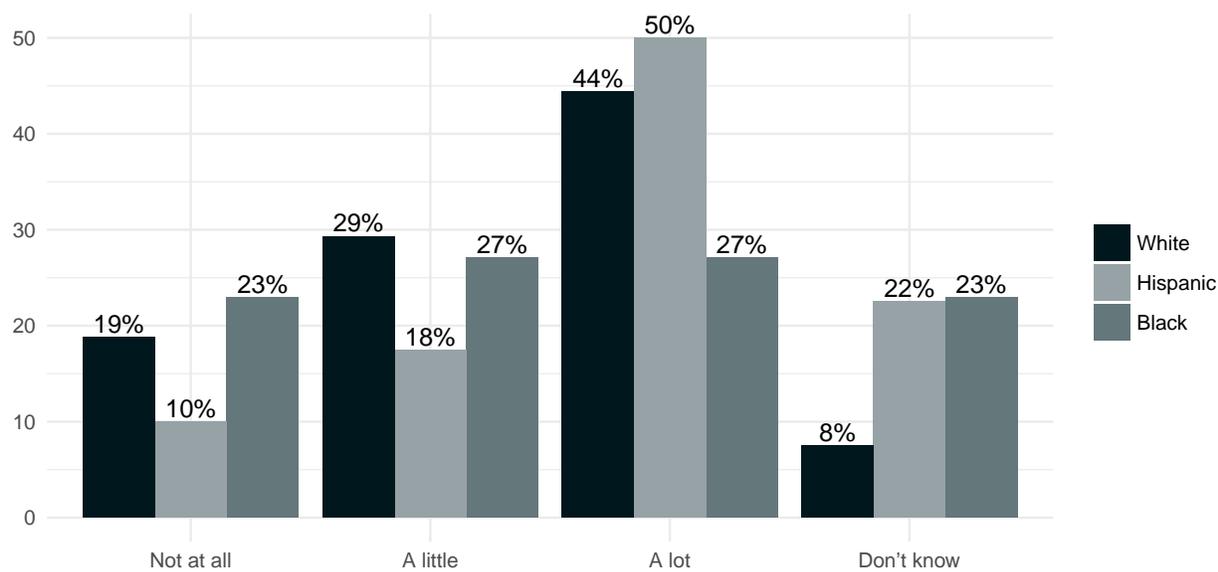
Figure 3.11: Children: Popularity and Familiarity of Hunting, by Race and Ethnicity



Question wording: How much do you like each of the following activities? ...Hunting.

Fishing was relatively more popular than hunting among children in our sample (Figure 3.12). However, about one in four black children said they do not like fishing at all, compared with about two in 10 white children and one in 10 Hispanic children. Fishing was most popular among Hispanic children (50 percent like it “a lot”), followed by Hispanic (44 percent) and black (27 percent) children. Black and Hispanic children were relatively likely to be unfamiliar with fishing compared with white children.

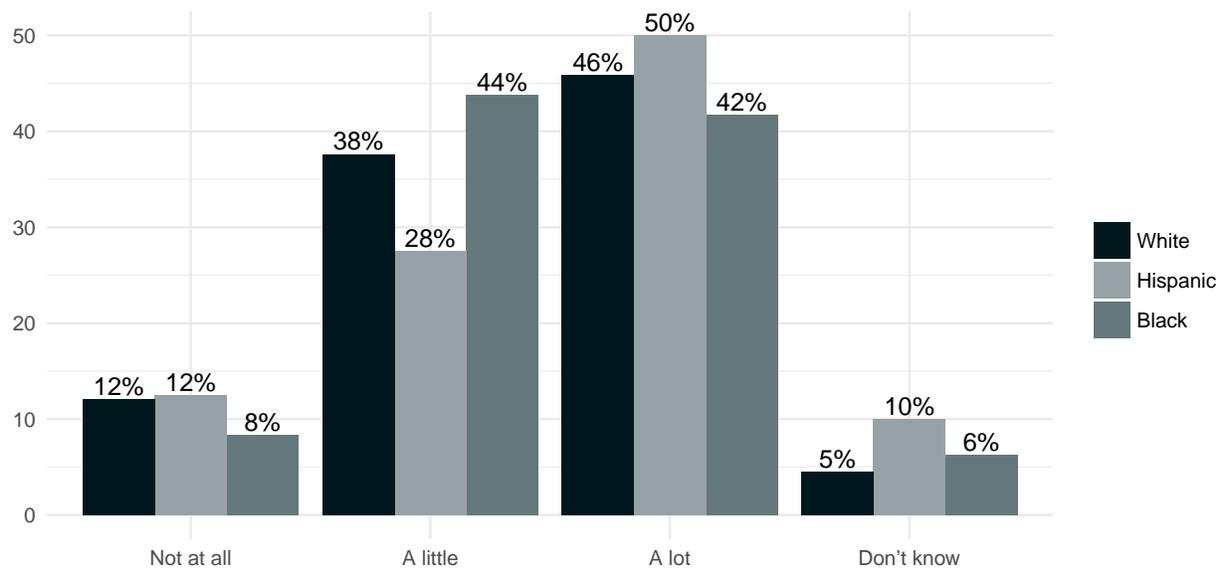
Figure 3.12: Children: Popularity and Familiarity of Fishing, by Race and Ethnicity



Question wording: How much do you like each of the following activities? ...Fishing.

Feeding or watching birds or other wildlife was a popular activity for over two-fifths of the children interviewed (Figure 3.13). Relatively few children were unfamiliar with it or disliked it.

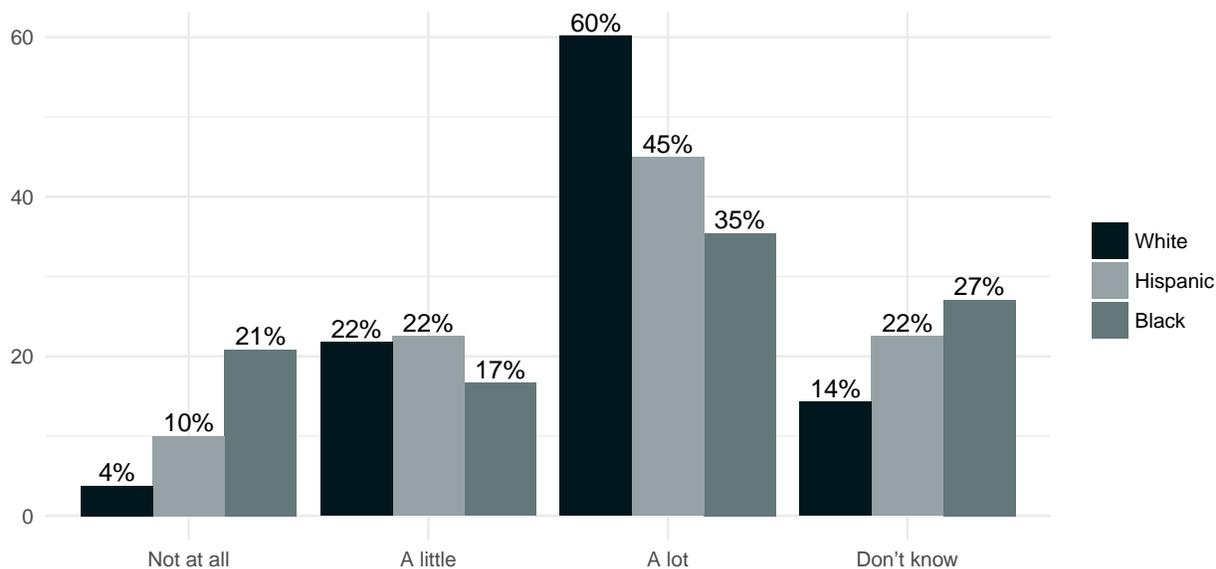
Figure 3.13: Children: Popularity and Familiarity of Feeding or Watching Birds or Other Wildlife, by Race and Ethnicity



Question wording: How much do you like each of the following activities? ...Feeding or watching birds or other wildlife.

The popularity of camping varied by ethnoracial groups (Figure 3.14). Over 20 percent of black children said they did not like it (compared with around 10 percent of other children). About 40 percent of black and Hispanic children said they liked it “a lot,” compared with 60 percent of white children.

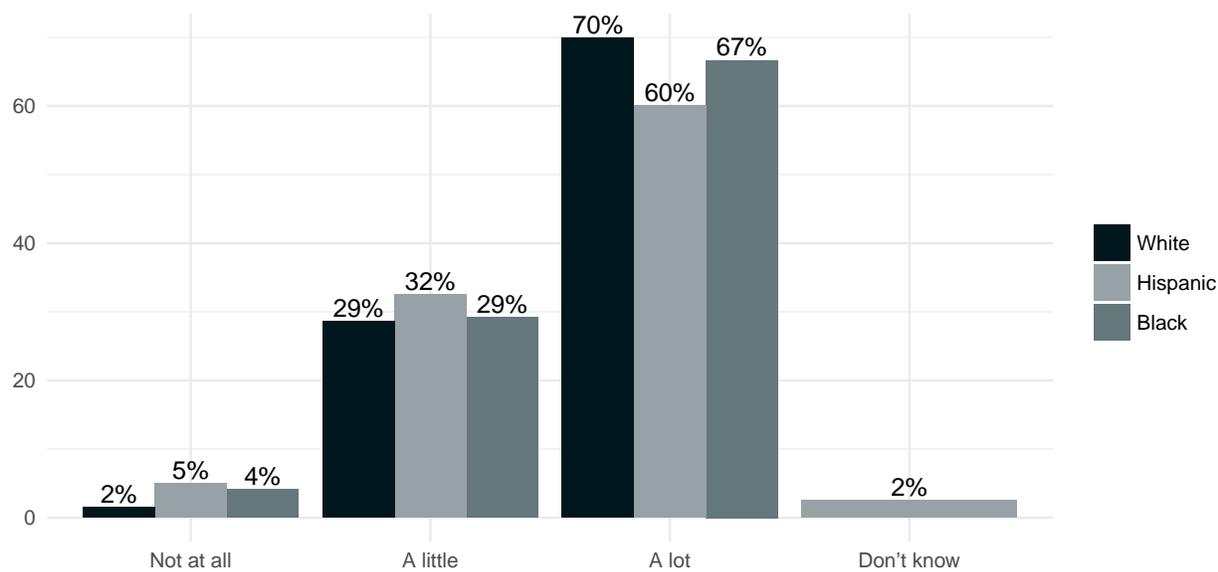
Figure 3.14: Children: Popularity and Familiarity of Camping, by Race and Ethnicity



Question wording: How much do you like each of the following activities? ...Camping.

In line with our finding that play often involves an element of discovery, exploring the outdoors was a popular activity (Figure 3.15). Around 70 percent of white, Hispanic, and black children reported liking exploring “a lot.” Very few did not like it or did not know.

Figure 3.15: Children: Popularity and Familiarity of Exploring the Outdoors, by Race and Ethnicity



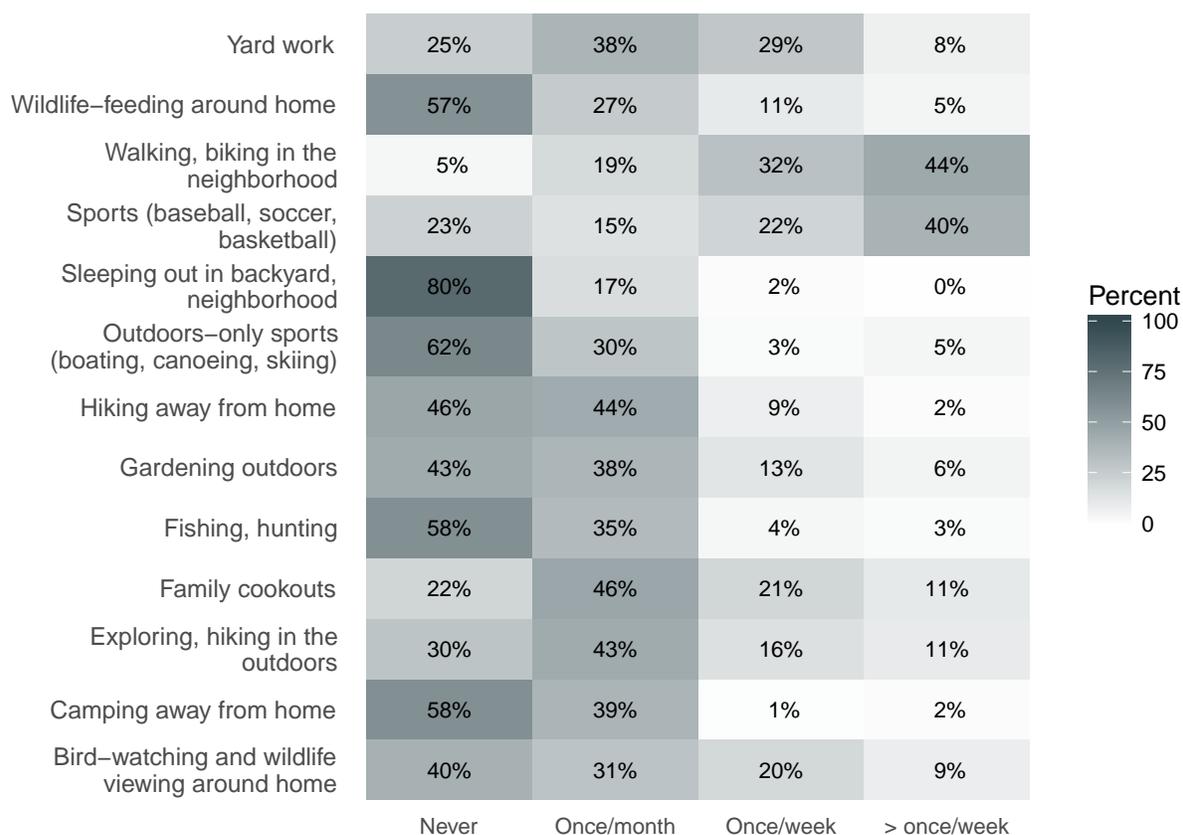
Question wording: How much do you like each of the following activities? ...Exploring the outdoors.

### Frequency of Participating in Common Activities with Family Members

As seen above, different activities have different levels of popularity and familiarity among children. We asked children's parents to estimate how often their child participates with a parent or other family members in 13 different activities (Figure 3.16).

Among children in Texas, by far the most frequent activities were walking or biking in the neighborhood or playing sports (such as basketball, baseball, soccer, or tennis). Also relatively common were family cookouts and exploring or hiking the outdoors. The least frequent activities were sleeping-out in the backyard or neighborhood, followed by outdoors-only sports like boating, canoeing, or skiing; fishing and hunting; and camping away from home. These results illustrate a number of important points, one of which is that geographically distant activities occurred rarely for children in our study.

Figure 3.16: Parents: Child's Participation with Family in Common Activities



Note: Rows may not add to 100 percent due to rounding. Question wording: During an average month, season and weather permitting, how often does your child participate with you or other family members in each of the following outdoor activities? ...Gardening outdoors ...Helping with yard work ...Sports such as basketball, baseball, soccer, tennis ...Outdoors-only sports such as boating, canoeing, skiing ...Walking or biking in the neighborhood ... Fishing or hunting ...“Sleeping-out” in the backyard or neighborhood ...Family “cook-outs” around home or the neighborhood ...Camping-out in places away from home ...Exploring or hiking in the outdoors ...Going hiking in places away from home ...Bird-watching and other wildlife viewing around home ...Wildlife feeding around home.

### 3.2.2 How Children Spend Their Time

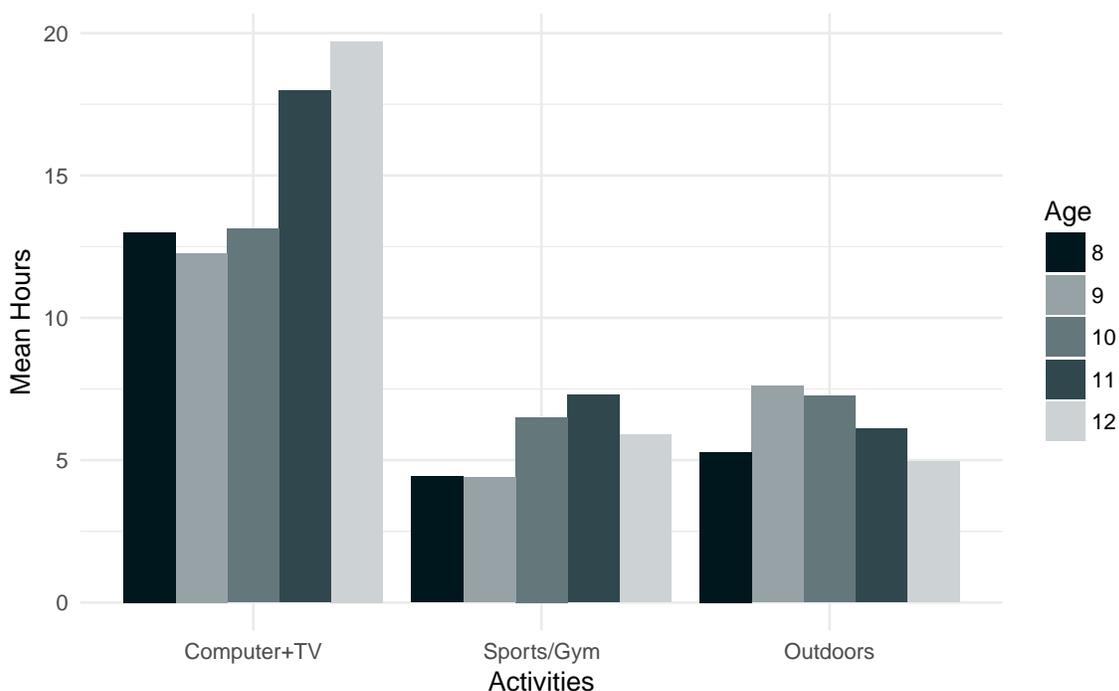
Parents of the children who were interviewed answered a series of questions that provided a broad sense of how their children spend their time during an average week with respect to the outdoors, electronic media, and sports. Given that these were self-reports, not direct observation, they ought to be viewed as a rough gauge of how 8–12-year-old children in our sample allocate their time.

According to parents' reports, the average child in our sample spent 7.5 hours per week watching TV and 8.0 hours using a computer, computer note pad, or smart phone. Combining these into time spent with electronic media, parents on average reported that their child spends 15.4 hours watching TV or using computers each week. Time spent with electronic media increased with age, rising from approximately 13 hours per week among 8-year-olds to 19 hours for 12-year-old children (Figure 3.17). According to their parents, children in our study also spent approximately 5 hours

each week participating in organized sports and gym classes. Hours rose slightly among the oldest children in our sample.

Time spent in nature and the outdoors averaged 6.1 hours in a typical week, and declined slightly with age. In effect, parents reported their children on average devoted about 21 hours each week to a combination of electronic media, television, and sports-related activities compared with six hours in outdoor activities. However, the differences were less among younger children, suggesting early middle childhood may be an especially opportune time for encouraging interest in and benefits derived from the outdoors and nature.

Figure 3.17: Parents: Time Child Spends Weekly in Hours, by Age



Question wording: On average in a typical week, about how many hours does your child participate in outdoor activities when weather allows (not including organized sports)?

Some differences emerged in time outdoors when examining ethnoracial groups (Table 3.2). White and Hispanic children spent slightly more hours in outdoor activities in a typical week than black children.

Table 3.2: Parents: Time Child Spends Weekly in Outdoor Activities, by Race and Ethnicity

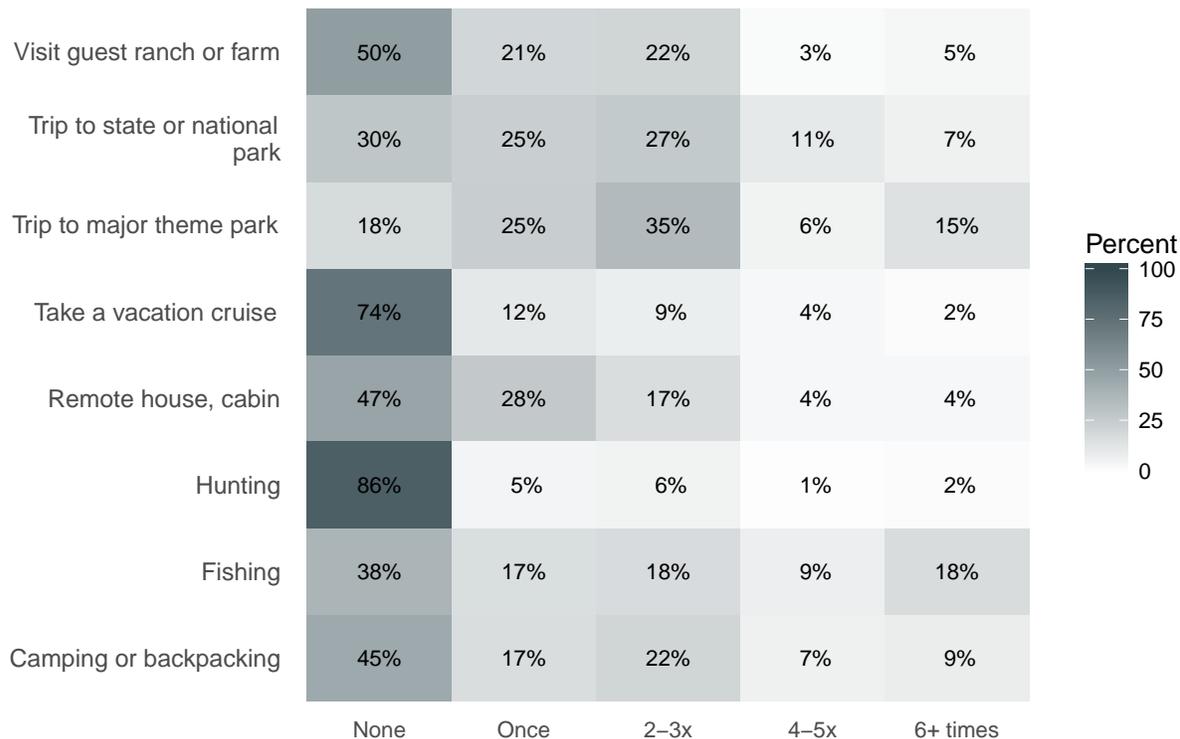
Outdoor Categories	White	Hispanic	Black
< 2 hrs	14%	28%	25%
3-5 hrs	44%	32%	44%
6-10 hrs	25%	22%	25%
11-20 hrs	12%	12%	6%
21-30 hrs	5%	2%	0%
> 30 hrs	0%	2%	0%

Note: Columns may not add to 100 percent due to rounding. Question wording: On average in a typical week, about how many hours does your child participate in outdoor activities when weather allows (not including organized sports)?

### 3.2.3 Going on Nature-oriented Trips

In addition to regular time spent at parks or in general outdoor activities, children also go on nature-oriented trips. During the prior two years, the average child in our study had participated in 1–4 trips camping or backpacking, visiting a guest ranch or farm, fishing, hunting, or visiting a state park or a national park. The most common activities were a trip fishing, visiting a major theme park, taking a trip to a state or national park (Figure 3.18). The least common activities were hunting, taking a vacation cruise, renting a house or cabin on a lake or in a remote area, and visiting a guest ranch or farm.

Figure 3.18: Parents: Number of Nature-oriented Trips Child Has Taken in Past Two Years



Note: Rows may not add to 100 percent due to rounding. Question wording: How often has your child taken each of the following trips with family or friends during the past two years? ...Camping or backpacking ...Renting a house or cabin on a lake or in a remote area ...Visiting a guest ranch or farm ...Taking a vacation cruise ...Fishing ...Hunting ...Trip to major theme park ...Trip to state or national park.

Eighty-one percent of black children in our study took four or fewer nature-oriented trips in the past two years—that is, trips camping or backpacking, visiting a guest ranch or farm, fishing, hunting, or visiting a state or national park (Table 3.3). In contrast, only 30 percent of white children took fewer than five nature-oriented trips. Indeed, 34 percent of white children took 10 or more trips, compared with 6 percent of black children. These results indicate wide variation by ethnoracial group in the number of distinct nature-oriented experiences.

Table 3.3: Parents: Number of Nature-oriented Trips Child Has Taken in Past Two Years, by Race and Ethnicity

Categories	White	Hispanic	Black
No trips	8%	18%	19%
1-4 trips	22%	32%	62%
5-9 trips	36%	20%	12%
10-14 trips	17%	20%	4%
15+ trips	17%	10%	2%

Note: Columns may not add to 100 percent due to rounding. Question wording: How often has your child taken each of the following trips with family or friends during the past two years? ...Camping or backpacking ...Visiting a guest ranch or farm ...Fishing ...Hunting ...Trip to state or national park.

As a partial assessment of the effect of financial resources on trip participation, we examined the relation of number of trips taken by household income (Table 3.4). Children from low-income households tended to have taken fewer trips with family and friends, while children from middle- and high-income households had taken more than the average number of trips.

Table 3.4: Parents: Number of Nature-oriented Trips Child Has Taken in Past Two Years, by Household Income

Categories	< \$25k	\$25k-\$50k	\$50k-\$75k	\$75k-\$100k	\$100k-\$125k	> \$125k
No trips	44%	13%	12%	4%	8%	12%
1-4 trips	56%	36%	47%	23%	30%	31%
5-9 trips	0%	31%	30%	46%	20%	27%
10-14 trips	0%	16%	2%	14%	20%	16%
15+ trips	0%	4%	9%	12%	22%	14%

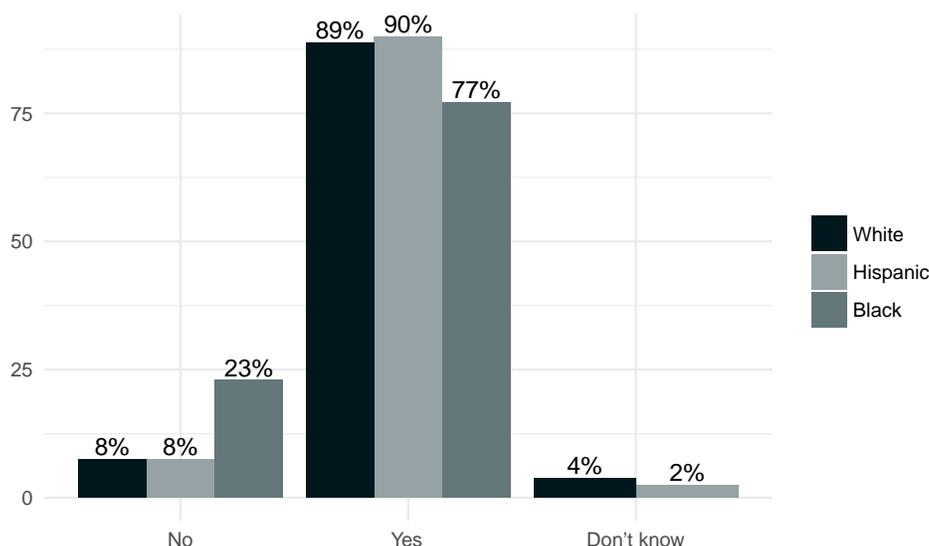
Note: Columns may not add to 100 percent due to rounding. Question wording: How often has your child taken each of the following trips with family or friends during the past two years? ...Camping or backpacking ...Visiting a guest ranch or farm ...Fishing ...Hunting ...Trip to state or national park.

Because ethnoracial differences may be related to differences in household incomes, we examined if one or the other—or both—were related to the number of nature-oriented trips. After further analysis, even when adjusting for household income, non-white children took fewer nature-oriented trips than white children during the prior two years.

### 3.2.4 Caring for Plants and Animals

The great majority of children in our study reported that they care for a special plant or animal (Figure 3.19). About 90 percent of white and Hispanic children reported taking care of a plant or animal, as well as 77 percent of black children.

Figure 3.19: Children: Care for Special Animals and Plants, by Race and Ethnicity



Question wording: Are there special animals or plants you like to take care of? ...If yes, please tell me which plants or animals, and why you like to take care of them.

Among the animals receiving care, children most frequently cited dogs, followed by cats, plants in general, an unspecified pet or animal, fish, flowers, birds, rabbits, turtles, and hamsters. Children surveyed reported feeding, playing with, and watering these animals and plants. Children cited a number of reasons for caring for these plants and animals, reflected in these responses:

“I like taking care of dogs and plants. I take care of my dog by feeding her, taking her out for walks, and bathing her. I take care of her because she’s sweet and makes me happy when I’m upset. I take care of indoor plants, I don’t know what it is though. I fill up the bowl to water the plant.” (Girl, black, age 11, suburban)

“I like to take care of cacti, Christmas trees, cobras, and snakes. I take care of the plants by...watering them, and we give them light from the inside. The only pet I have is Emily. She is my cat at my mom’s house. Also my crabs, but all they do is sleep. I like taking care of them because I really like to live around nature and pets.” (Boy, white, age 8, suburban)

“I like to take care of dogs because they need water and food so they can stay healthy.” (Boy, Hispanic, age 10, urban)

“I take care of ladybugs and butterflies. I love butterflies wings and their colors and I know about how they’re formed. I like ladybugs because I like the shape of them and their color and I know a lot about them.” (Girl, black, age 9, suburban)

“My school gave me a baby cabbage, and I grew it indoors. I had a special lamp and everything. I liked taking care of it because it was always growing, and it wasn’t like a plant where you have to water it often. You had to water it once a week, and we experimented with how much we watered it.” (Girl, white, age 10, urban)

"I would like to take care of reptiles and plants—any kind except poison ivy. Because reptiles are like dinosaurs to me, and I'd like to see how they behave and how they react to different kinds of things." (Boy, Hispanic, age 10, suburban)

"Dogs, vegetable plants, flowers and frogs. I want to be a veterinarian when I grow up. And vegetables and plants help our bodies." (Girl, black, age 9, suburban)

"I like to take care of things I planted, plus an apple tree. I like to take care of my dogs too." (Boy, white, age 10, rural)

"I don't have a dog yet, so I don't know what I would do yet." (Boy, Asian, age 12, suburban)

"At the zoo I got to take care of goats and horses. But personally I like taking care of horses. I owned a pony that was fun, but he ended up dying. It stayed at my cousin's, where he and I would go take care of him over breaks and during summer time." (Girl, white, age 12, suburban)

"A special animal I take care of is my fish and the plant I take care of. We named her Petunia. We have to take care of her, and it was always my responsibility to water her, I usually put her in the sunlight. We moved her into the kitchen because we have a giant window by the sink. I like taking care of them because it is really fun [and]...important to take care of the pet. When you are an adult you have more responsibility." (Girl, Hispanic, age 8, urban)

### 3.2.5 Attitudes toward the Outdoors

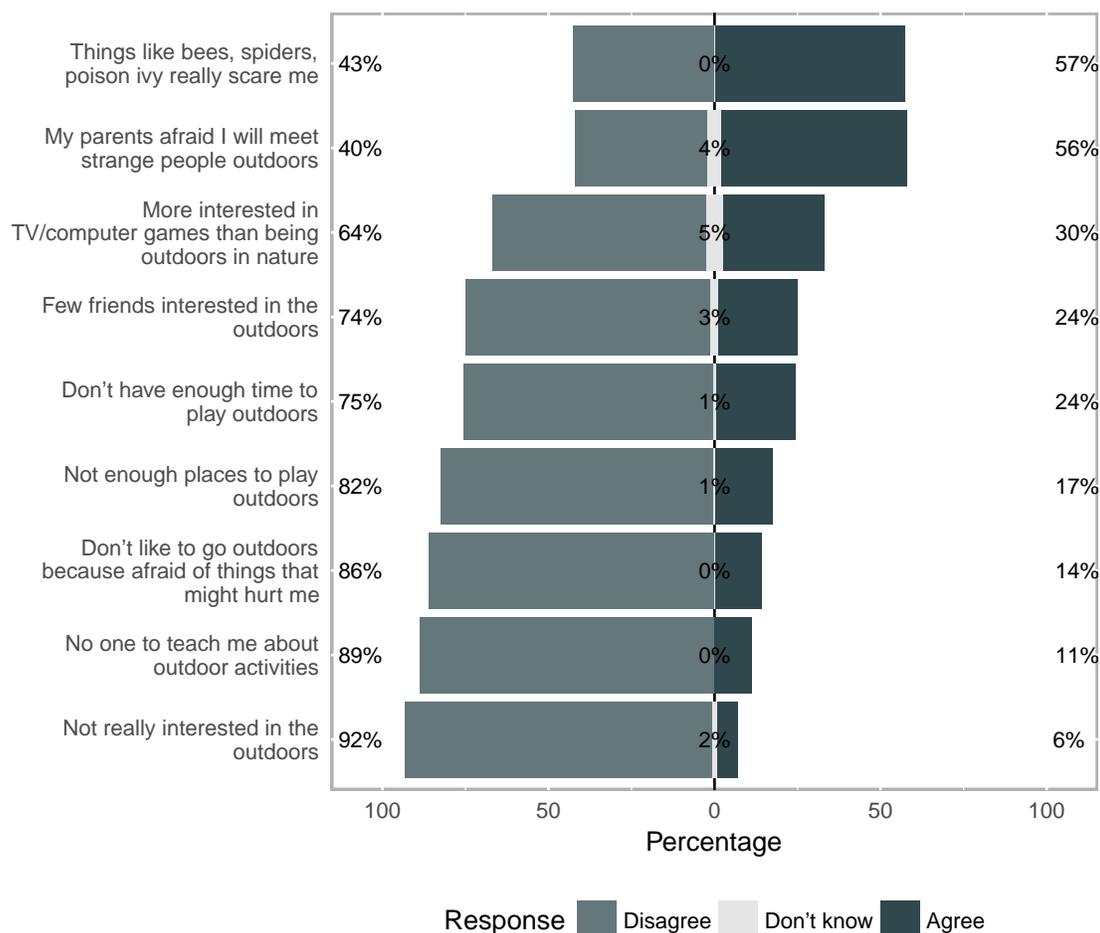
As seen above, children in our sample valued nature in terms of affection, attraction, and intellectual development. They also had a positive orientation toward various recreational activities. To gain further insights into children's perspectives, we asked them to report various attitudes about the outdoors (Figure 3.20). It is important to note that although many of these questions can be interpreted as regarding barriers to the outdoors, we simply asked children whether or not they agree with statements: one should not presume, for example, that children's fear of things like bees, spiders, and poison ivy is necessarily a relevant barrier to time spent outdoors. (We test the correlations, or associations, of these questions explicitly in Section 3.4, Figure 3.38.)

Nearly three-fifths (57 percent) of children interviewed reported feeling scared by things like bees, spiders, and poison ivy. Fifty-six percent picked up on wider societal concerns, noting their parents are afraid that they will meet strange people outdoors. However, 86 percent *disagreed* that they do not like to go outdoors because they are afraid of things that might hurt them. Hence, while children expressed concern about some environmentally- and socially-based fears in the outdoors, these did not seem to be synonymous with—or automatically imply—a desire to avoid the outdoors.

Nearly all children said they had at least some interest in the outdoors. (That is, 92 percent disagreed that they are not interested in the outdoors.) However, just under one-third (30 percent) said they were more interested in television and computer games than being outdoors in nature.

Just under one-quarter (24 percent) agreed they had few friends who are interested in the outdoors; a smaller proportion (11 percent) said they had no one to teach them about outdoor activities.

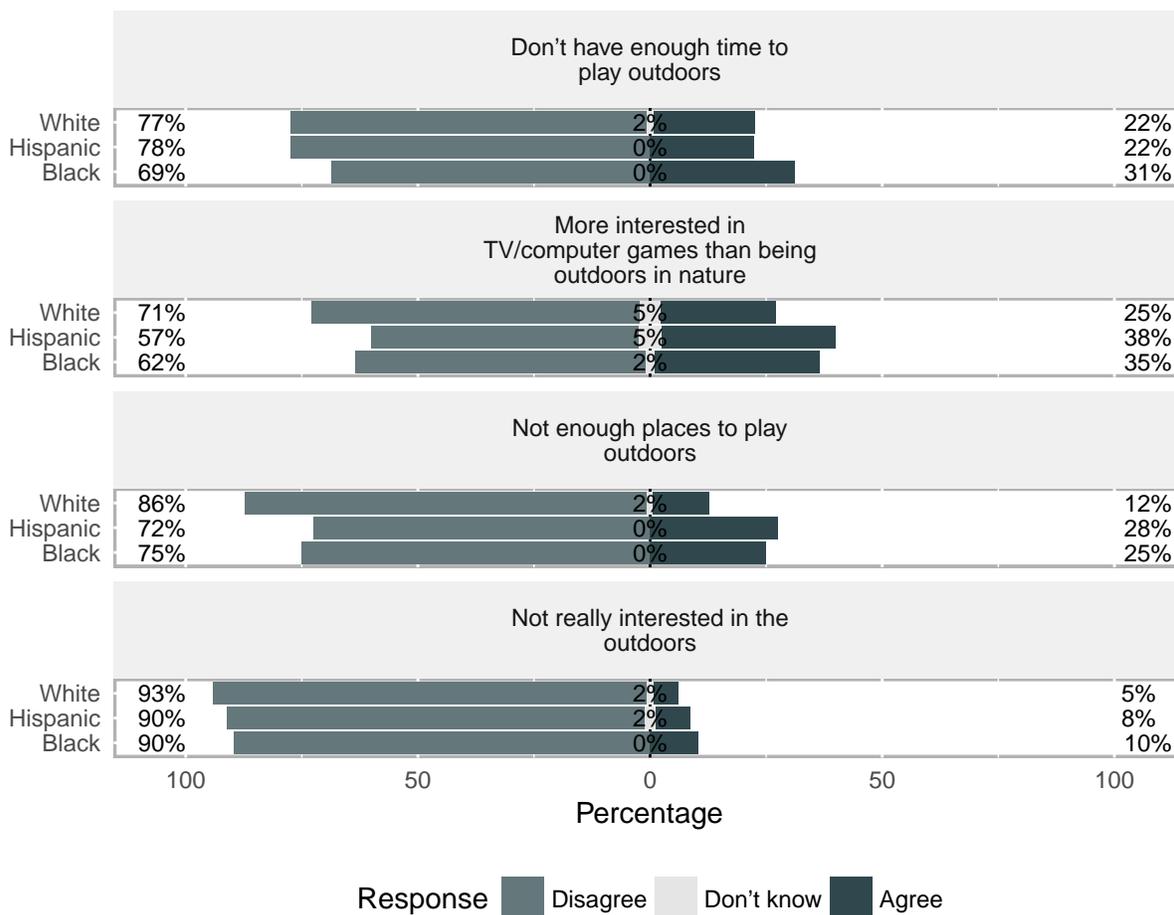
Figure 3.20: Children: Perceptions of the Outdoors



Note: The percentage on the left side represents “disagree”; the percentage in the middle, “don’t know”; the percentage on the right side, “agree.” Question wording: Do you agree or disagree with each of these ideas? ...I’m not really interested in the outdoors ...I don’t have enough time to play outdoors ...Things like bees, spiders, and poison ivy really scare me ...Few of my friends are interested in the outdoors ...I don’t have enough places to play outdoors ...There are few people to teach me about nature and the outdoors ...My parents are afraid of my meeting strange people outdoors ...I’m more interested in TV and computer games than being outdoors in nature ...I don’t like to go outdoors because I am afraid of things that might hurt me.

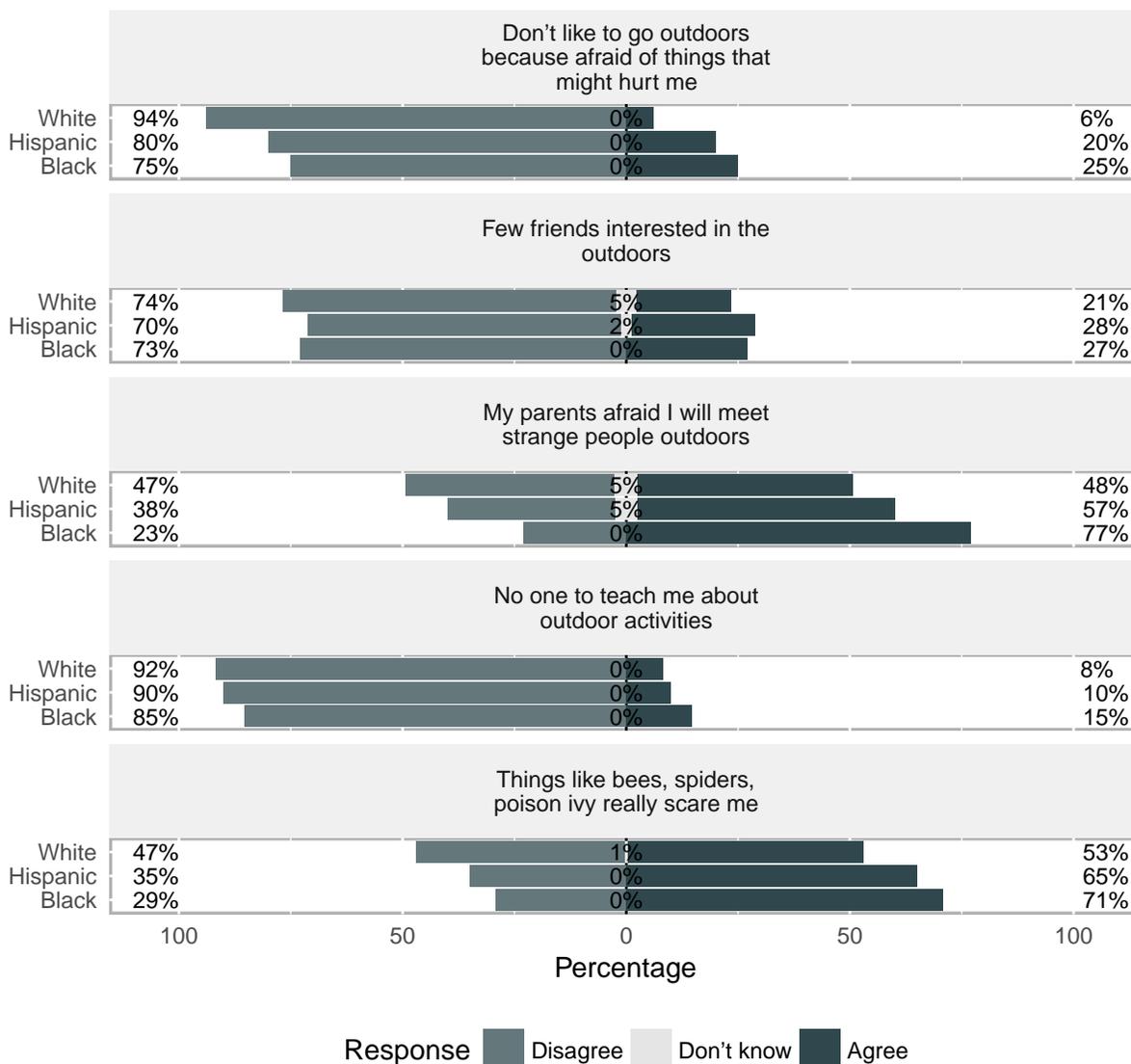
Depending on the topic, children’s attitudes toward the outdoors were similar or diverged across ethnracial groups. Figure 3.21 generally shows agreement among children in terms of their interest in the outdoors and the amount of places to play. Black children were likelier to report they do not have enough time to play outdoors. Both black and Hispanic children were likelier to report being more interested in television and computer games, as well as not having enough place to play outdoors. Figure 3.22 shows relatively more variation. Black and Hispanic children were likelier to report they have few friends interested in the outdoors. (Note, however, that the great majority of children interviewed reported they have someone to teach them about outdoor activities.) Black and Hispanic children were also likelier to say their parents are afraid they will meet strange people outdoors, and that things like bees, spiders, and poison ivy scare them. However, these factors did not appear to instill the children in our sample with fear of going outdoors.

Figure 3.21: Children: Perceptions of the Outdoors, by Race and Ethnicity, part 1



Note: The percentage on the left side represents “disagree”; the percentage in the middle, “don’t know”; the percentage on the right side, “agree.” Question wording: Do you agree or disagree with each of these ideas? ...I’m not really interested in the outdoors ...I don’t have enough time to play outdoors ...I don’t have enough places to play outdoors ...I’m more interested in TV and computer games than being outdoors in nature.

Figure 3.22: Children: Perceptions of the Outdoors, by Race and Ethnicity, part 2

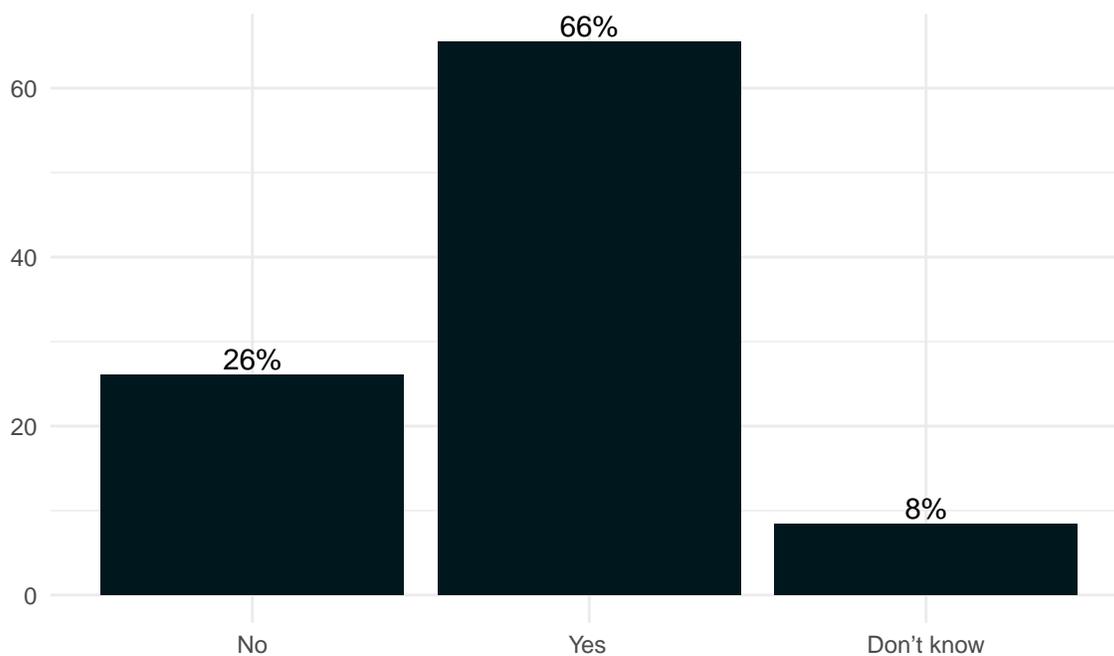


Note: The percentage on the left side represents “disagree”; the percentage in the middle, “don’t know”; the percentage on the right side, “agree.” Question wording: Do you agree or disagree with each of these ideas? ...Things like bees, spiders, and poison ivy really scare me ...Few of my friends are interested in the outdoors ...There are few people to teach me about nature and the outdoors ...My parents are afraid of my meeting strange people outdoors ...I don’t like to go outdoors because I am afraid of things that might hurt me.

### 3.2.6 Special Places in Nature

One of the ways children experience connection to nature is by connecting to a particular place. Among children studied, two-thirds reported having a place outdoors that is special to them (Figure 3.23). Ethnoracial differences were slight (Table 3.5).

Figure 3.23: Children: Special Place in the Outdoors



Question wording: Is there any place outdoors that is special to you?

Table 3.5: Children: Special Place in the Outdoors, by Race and Ethnicity

Categories	White	Hispanic	Black
No	24%	25%	27%
Yes	69%	65%	69%
Don't know	7%	10%	4%

Note: Columns may not add to 100 percent due to rounding. Question wording: Is there any place outdoors that is special to you?

Children had an opportunity to describe this special place in an open-ended manner, which the interviewer recorded by typing the child's responses. Children tended to describe these special places as relatively local, including their back or front yard, their own house, or a park (Figure 3.24). As for *why* these places hold special significance, children emphasized that these places give them opportunities to play, explore, and be with friends and family. A sample of their answers follows.

"A camp...that I went to with my whole school. I went with a bunch of my friends, and we got to stay in a cabin together and learn about animals, so it was really fun." (Girl, black, age 12, suburban)

"I like going to the waterfall by our house in the woods, and I like playing all around there. I like it because we go there a lot, and I like to play there." (Boy, multiracial, age 10, urban)



"I like our backyard and the trampoline, because I can jump really high on it and play games on there with my brothers and friends." (Boy, white, age 10, suburban)

"I like the woods because there are a lot of trees, and sometimes there are animals and there is so much nature in there." (Girl, white, age 8, suburban)

"The park by my house." (Boy, black, age 9, urban)

"I like the woods because I get to climb trees and try new things when I'm out there exploring." (Girl, white, age 8, suburban)

"It is a grass that is right next to my mailbox, because it is in perfect condition. I also like staring at the tree across the street because it is really pretty. The tree is special mostly because I can see it from my old room, and it is really pretty during spring and summer. It has purple-pink flowers." (Girl, Hispanic, age 12, urban)

"It is the tree in our front yard. I like to climb it and stay up there. I like to look at our house and watch my siblings and dad playing. It is special because it is one of the only trees I can climb and helps me calm down and get a hold of myself." (Boy, white, age 12, rural)

"The football field I get to shine, because I'm good at football. I get to tackle people and run the ball. I also won a championship. We won one this year. I play quarterback, running back, safety, and cornerback." (Boy, black, age 9, suburban)

"The park because it makes me calm down. The park has an obstacle course and slides. I likes to go once a week." (Girl, black, age 10, urban)

Although most children cited special places close to home, a portion listed more distant locations. Again, the children in our study typically associated the specialness of these distant places with opportunities for play, exploration, and being with family and friends. It is important to note that even though these places were geographically distant, children nevertheless described them as *familiar*. Three distinct reasons emerged. First, children experienced these special places with family and friends—not by themselves. Second, the special places often belonged to family members, such as a creek at a relative's house or a garden cultivated by a grandparent. Third, these places became familiar because the children returned to them again and again. A sample of children's descriptions of these more distant special places follows:

"It's in Colorado. It's a mountain, and my family goes up there every two years. We get to relax together and enjoy nature together." (Girl, white, age 12, suburban)

"The lake where we go fishing. The lake is special because that is where we can catch fish and make memories. I go with my pappa. We go a few times a month." (Girl, white, age 10, rural)

"The woods and river, because I've done a lot there with my dad: we've caught a lot of fish and have gone camping. One day, I can look back and remember all those times I've spent out there. In the summer, we change up the places, but we re-visit most places." (Boy, white, age 12, suburban)

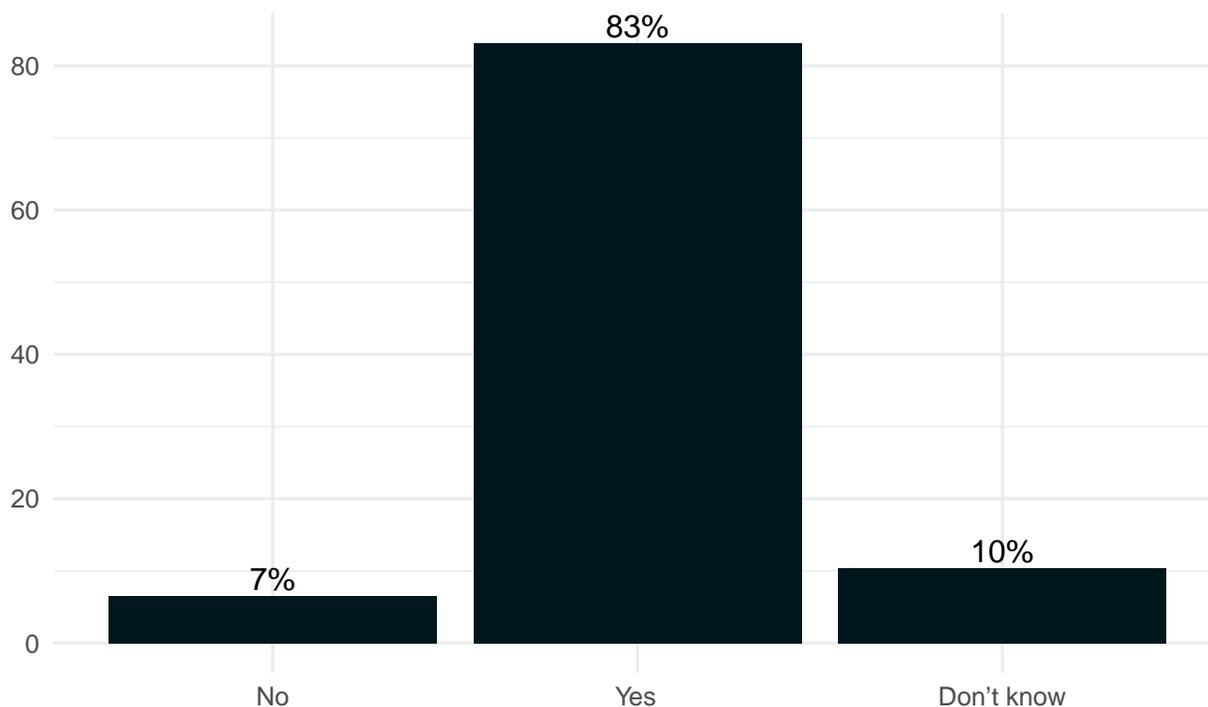
"Where we go camping because that's where I make most of my memories, get to learn to new things, and get to know my family and friends." (Girl, Hispanic, age 10, suburban)

“For summer camp last year I went to a campsite in North Carolina... It was an overnight [camp], and it was a week long. There were no parents and technology. We had camp leaders. We swam, fished, explored, and did the merit badge course.” (Boy, Asian, age 12, urban)

### Unforgettable Time in the Outdoors

Over 80 percent of children interviewed reported having a time in the outdoors they will never forget (Figure 3.25). Ethnoracial differences were relatively small (Table 3.6).

Figure 3.25: Children: Unforgettable Time in the Outdoors



Question wording: Have you ever had a time in the outdoors that you will never forget?

Table 3.6: Children: Unforgettable Time in the Outdoors, by Race and Ethnicity

Categories	White	Hispanic	Black
No	8%	2%	6%
Yes	83%	92%	81%
Don't know	9%	5%	12%

Note: Columns may not add to 100 percent due to rounding. Question wording: Have you ever had a time in the outdoors that you will never forget?



"I was with my Mom and my big sister when I learned how to ride the big purple bike, it was four years ago. I learned how to ride it in my neighborhood." (Girl, black, age 9, suburban)

"It was just yesterday when me and my sister were walking around our house, over and over exploring. We found trees on the fence line that we had never saw, and we found a lost toy in our neighbor's yard, which I don't know how [it got there] because it was on their property, but we got it back. I will never forget because I got to have fun with my sister." (Boy, white, age 8, rural)

"It was the first day that I moved here. I was walking with my neighbors in a field with grass. I found out that they like everything I like—playing football and stuff. I will never forget because being outside in nature helped us bond together, like playing in the grass and nature." (Boy, black, age 11, suburban)

"My class went on a field trip and we went outside to play at the zoo. It was last year, I think. It was just free play." (Girl, Asian, age 9, suburban)

"I went on a canoe to this island in Texas, and there were a bunch of birds on it and they called it Bird Island. I was there with a bunch of my friends. It was one of my friends' ranches, and we had a big weekend full of jet-skiing and riding in boats." (Boy, white, age 11, urban)

"My friends and family went camping in the summer, and we stayed four nights. We got to cook our own food by the fire or grill and roast marshmallows. We went to the field where there were butterflies, and we went swimming in the lake where I learned front flip in the water." (Girl, Hispanic, age 10, suburban)

"The beach in Galveston. I was 8 or 9. We played in the water and splashed in the water. I will never forget because we get to play in the water and splash people. I went with my family." (Boy, black, age 11, suburban)

"The one time me and my brother and my cousin were playing in my papa's creek. We got wet, and we found fossils and all kinds of stuff. We even found tadpoles and weird insects and stuff, which I did not touch. I will never forget, because that was the day I got soaked, and I fell into the creek." (Girl, white, age 11, suburban)

"I went camping with my best friend and her mom. We stayed in the cabin and put up a tent in the cabin. We had a blow-up mattress that we slept on. We had chili. We went to a monument, but I forgot what the name was. It was really fun because I got to hang with my friend, and she lives far away so I don't get to see her a lot. It was the first time I went camping. Also I went to Disney World. I went there for my 7th birthday, and we stayed there for 10 days. On my birthday, I got to go to Cinderella's castle, and I got to meet all of the Disney princesses." (Girl, white, age 9, suburban)

"When I first went camping, because it was so exciting, and it was just fun to look around and explore. It was about five years ago! I saw a rabbit for the first time in my life." (Boy, white, age 8, suburban)

"When I was riding my bike for the first time, and I got it right. I was at my dad's house. It was memorable because I didn't need help." (Boy, Hispanic, age 10, urban)

“When we went outside in our front yard. We found two lizards that were hurt, and we put them on the tree. Then we came back that next month, and they were all healed. I was with my friend Cally. I will never forget because we helped the lizards heal.” (Girl, white, age 10, rural)

Because our study was conducted at one point in time, it remains unclear how much these special experiences will increase children's later interest in nature or influence their behaviors. (It is also unclear how much their prior engagement with the natural world prompted these memorable encounters.) We did find, however, that most children who reported special times outdoors also reported having a special place in the outdoors (Table 3.7). At minimum, it appears that experiences in nature and connection with nature tend to go hand in hand for most children.

Table 3.7: Children: Unforgettable Time in the Outdoors, by Special Place Outdoors

Response Categories	No special place	Yes special place	Don't know
No unforgettable time	13%	5%	0%
Yes unforgettable time	74%	88%	73%
Don't know	13%	7%	27%

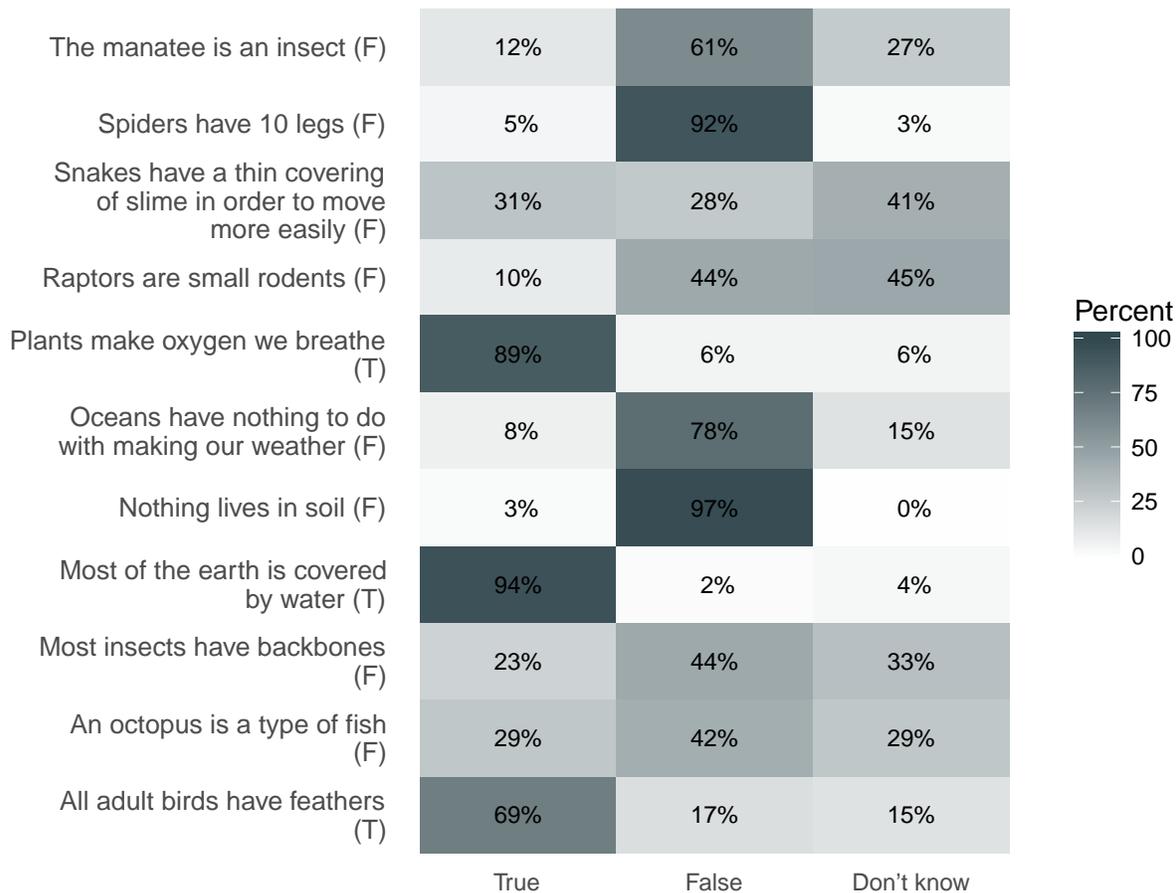
Note: Columns may not add to 100 percent due to rounding. Question wording: Have you ever had a time in the outdoors that you will never forget? | Is there any place outdoors that is special to you?

### 3.2.7 Learning about Nature

Children in our study were highly interested in various dimensions of nature, including plants, animals, and places. How much did they know about the natural world, and where did they obtain their information? Although our study did not focus on an in-depth exploration of knowledge of and learning about nature and wildlife, we conducted a limited inquiry of children's factual knowledge of the natural world and asked their parents to report on educational programs at school. We asked children to answer 11 true/false questions about the natural world, including the following:

- Spiders have 10 legs (correct answer = false)
- Raptors are small rodents (false)
- All adult birds have feathers (true)
- The manatee is an insect (false)
- An octopus is a kind of fish (false)
- Snakes have a thin covering of slime in order to move more easily (false)
- Most insects have backbones (false)
- Only land plants produce oxygen (false)
- Most of the earth is covered by water (true)
- Oceans play little role in climate and weather (false)
- Nothing lives in soil (false)

Figure 3.27: Children: Quiz of Formal Knowledge about Nature



Note: Rows may not add to 100 percent due to rounding.

The average (mean) score on this 11-question knowledge quiz was 7.4. (The median was 7.) Three-fourths of children scored 6 or higher. As Figure 3.27 shows, nearly all children correctly noted that spiders do *not* have 10 legs, that things *do* live in the soil, and that most of the earth *is* covered by water (Figure 3.27). Children were most confused about whether raptors are small rodents (45 percent “don’t know”), whether snakes have a thin covering of slime (41 percent “don’t know”), whether most insects have backbones (33 percent “don’t know”), and whether an octopus is a type of fish (29 percent “don’t know”).

As there is no comparison group asked the same questions, it is difficult to draw confident conclusions regarding the level of knowledge revealed. However, we can compare a few identical questions asked to a small sample ( $N = 267$ ) of children 6–18-years-old enrolled in public school in Connecticut, asked in 1978.<sup>1</sup>

<sup>1</sup>Kellert, Stephen R. “Children’s Attitudes, Knowledge, and Behaviors toward Animals, Phase V.” Washington, DC: U.S. Department of the Interior, 1979. See especially pages 23–36.

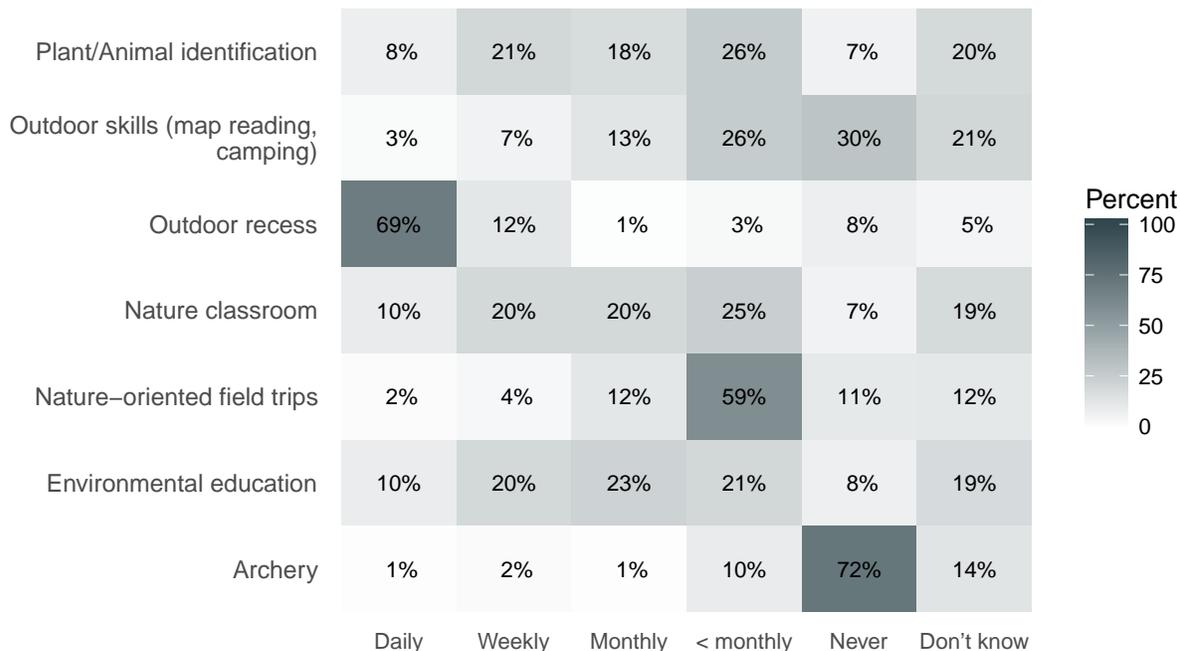
- In 1978, 78 percent of the children surveyed correctly answered the question about the number of spider's legs in contrast to 92 percent today.
- In 1978, 66 percent of the children recognized that snakes are not covered with a thin layer of slime, compared with 28 percent today.
- Looking at just the 5th graders in the 1978 samples (a sub-group that corresponds closest to 8–12-year-olds), 62 percent correctly said insects do not have backbones; this compares with 44 percent in the current sample.

Demographic and socioeconomic differences affect access to formal knowledge about the natural world. After adjusting for factors such as place of residence and parents' level of education, the following differences emerged:

- Girls, on average, scored two-thirds of a point lower than boys.
- Each year of growing older boosted the average quiz score by a quarter-point over the preceding year. That is, 12-year-olds averaged one point higher on the quiz than 8-year-olds.
- Black children, on average, scored 0.6 points lower on the knowledge quiz than white children.
- Parental educational attainment had no effect on the total score.
- Time spent in outdoor activities each week had no effect on the total score.

One of the places children learn factual knowledge about the natural world is school (Figure 3.28). Just over one-half (53 percent) of the parents surveyed said their child has environmental education courses daily, weekly, or monthly. Nearly half (47 percent) reported their child spends time identifying plants and animals daily, weekly, or monthly. Other forms of knowledge acquisition—such as reading a map, camping, or going on a field trip—parents said occur far less frequently.

Figure 3.28: Parents: Frequency of Child's School Programs about Nature and the Outdoors



Question wording: How often does your child's school offer programs about nature and the outdoors, such as: ...nature classroom/study ...environmental education ...outdoor skills such as map reading or camping ...archery ...identification of plants and animals ...nature- or outdoor-oriented field trips ...recess?

Other places children learn about the natural world include formal programs and more informal experiences. Table 3.8 shows children's participation in outdoor programs in the prior two years. Almost one-half of white children had gone on a hiking or camping trip, followed by 40 percent of Hispanic children and 19 percent of black children. A similar pattern can be seen with Scouts and 4-H, with participation rates quadrupled for white children compared with black children. About one in six children interviewed have attended a nature camp in the past two years. Relatively more black children have participated in nature camps—27 percent, compared with about 15 percent of white and Hispanic children.

Table 3.8: Parents: Child's Participation in Outdoor Programs, by Race and Ethnicity

Participated?	White	Hispanic	Black
Hiking, camping trips	47%	40%	19%
Scouts, 4-H	26%	22%	6%
Outdoor adventure programs	23%	22%	23%
Nature camps	16%	15%	27%

Note: Figures are the percentages of parents who answered "yes" to each category. Question wording: Did your child participate in any of the following outdoor programs during the past 2 years (select all that apply)? ...Outdoor programs like Scouts or 4-H ...Hiking and camping trips ...Nature camps ...Outdoor adventure programs.

### Who Teaches Children about Nature?

We asked children in an open-ended question who teaches them about nature. Children overwhelmingly mentioned family members, especially a parent (a mother or father), followed by a teacher. The subject matter was diverse; a sample of children's comments shows this range:

"Sometimes my mom, but mostly my uncle when I was young. They teach me about animals because they had a forest behind their backyard. I saw some rabbits and birds. One time I saw a deer, and I couldn't believe my eyes when I saw it." (Boy, black, age 10, suburban)

"The school. I learn about how the process of the water and the plants and stuff. I learn by teachers, by reading from books, and doing activities. We go outside and collect leaves or dirt or something like that." (Girl, white, age 10, rural)

"Mostly my teachers. I learn that people can at one point restore nature, so hopefully we don't destroy nature. For example, we tear down trees to make paper - hopefully we stop doing that at some point. We learn this by mostly by science books. Last year one thing said...lots of trees would be reduced by 25%. (Boy, Hispanic, age 12, urban)

"My dad teaches me about biking, hiking, and a lot of outdoor things." (Girl, Hispanic, age 9, urban)

"My parents teach me about some types of animals and plants, sometimes how plants grow, sometimes what it means when a plant is discolored or dead. Some of my aunts and uncles teach me more about animals and what they do and why they do things, and where they live." (Boy, white, age 12, suburban)

"Tour guides, troop leader, my mom sometimes, my dad, and my grandma. I am in a Girl Scout troop. I learn to be kind and treat others the way you want to be treated and to have fun. My family teaches me things like leaves, birds, and animals." (Girl, white, age 9, urban)

"My mom and dad teach me. My dad teaches me stuff like how to survive and how to build a campfire. My mom tells me about how to climb trees." (Boy, Asian, age 9, urban)

"Usually I go outside a lot at PE in school. We play games at school. Usually they are games we could play here. I have a friend across the street who is also at school, so it gives us ideas of what to play. We play games like this one that is basically keep-away, but you use a different ball than a football. We play football, soccer, street hockey, toss the ball around, and toss the ball up high in the air and count until we catch it. We play a lot of different games." (Boy, white, age 12, suburban)

"TV programs...like how animals survive, what animals eat, and that female praying mantises are much bigger than boys. Female praying mantises eat male praying mantises. Mom looks up stuff about nature like what type of trees that I see so I can help it grow." (Girl, white, age 8, rural)

"Summer camps where they taught me about the outdoors a little. We went out into the forest, went on a nature walk, and we learned what trees, plants, and the animals do in the forest." (Girl, black, age 10, urban)

### 3.3 Benefits of Contact with Nature

Both children and their parents associated exposure to nature with a variety of physical, psychological, and social benefits. This occurred across ethnoracial groups, age groups, and residential locations.

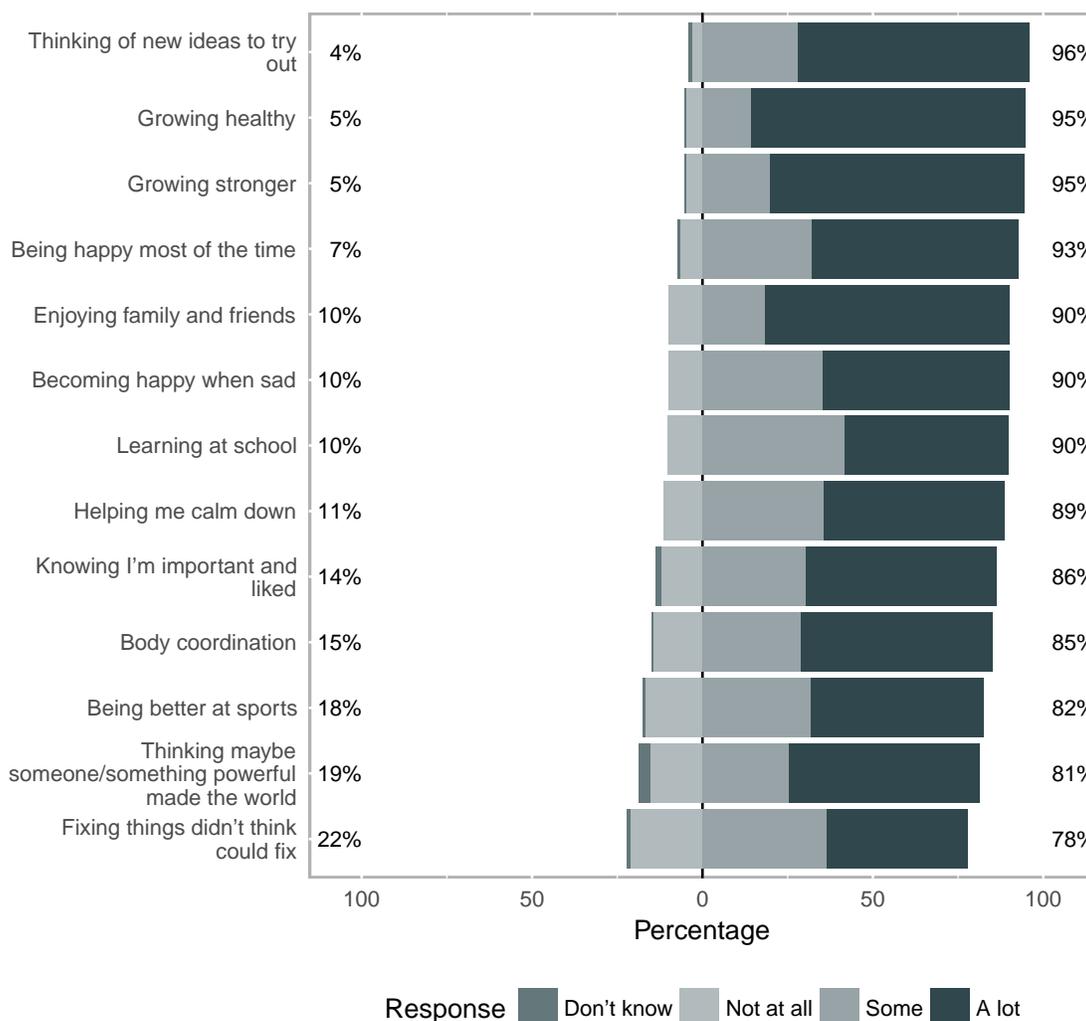
#### 3.3.1 Physical, Psychological, and Social Effects

Nearly all the children in our sample viewed playing in the outdoors and nature as helping them to develop and mature *physically* (Figure 3.29). Nearly all reported that play in nature helps them “a lot” (or at least “some”) to grow healthy and stronger and to enjoy family and friends. The great majority also perceived exposure to nature as having enhanced their coordination and ability to play sports. Like their child, most parents regarded contact with nature as enhancing their child’s physical health and happiness (Figure 3.30). The parents surveyed especially cited contact with nature as having fostered their child’s physical health and strength and coordination.

In terms of *psychological* benefits, nearly all children reported a link between playing in the outdoors and creativity, or thinking of new ideas to try out. The great majority of children studied—9 in 10—also indicated the outdoors and nature had contributed to their happiness, helping them to be happy when they were sad and helping them to be calm and deal with anxiety. In addition, a significant majority—8 in 10—reported playing in nature assisted them in being able to solve problems. Similarly, most parents reported an array of benefits associated with their child’s exposure to nature. Nine in 10 parents said contact with nature makes their child happier. The great majority of parents also saw major positive influences on their child’s creativity, resourcefulness, ability to take action, and ability to face and deal with obstacles. Most parents viewed their child’s contact with nature as significantly advancing the child’s ability to understand and solve problems, cope with challenge and adversity, and make difficult decisions.

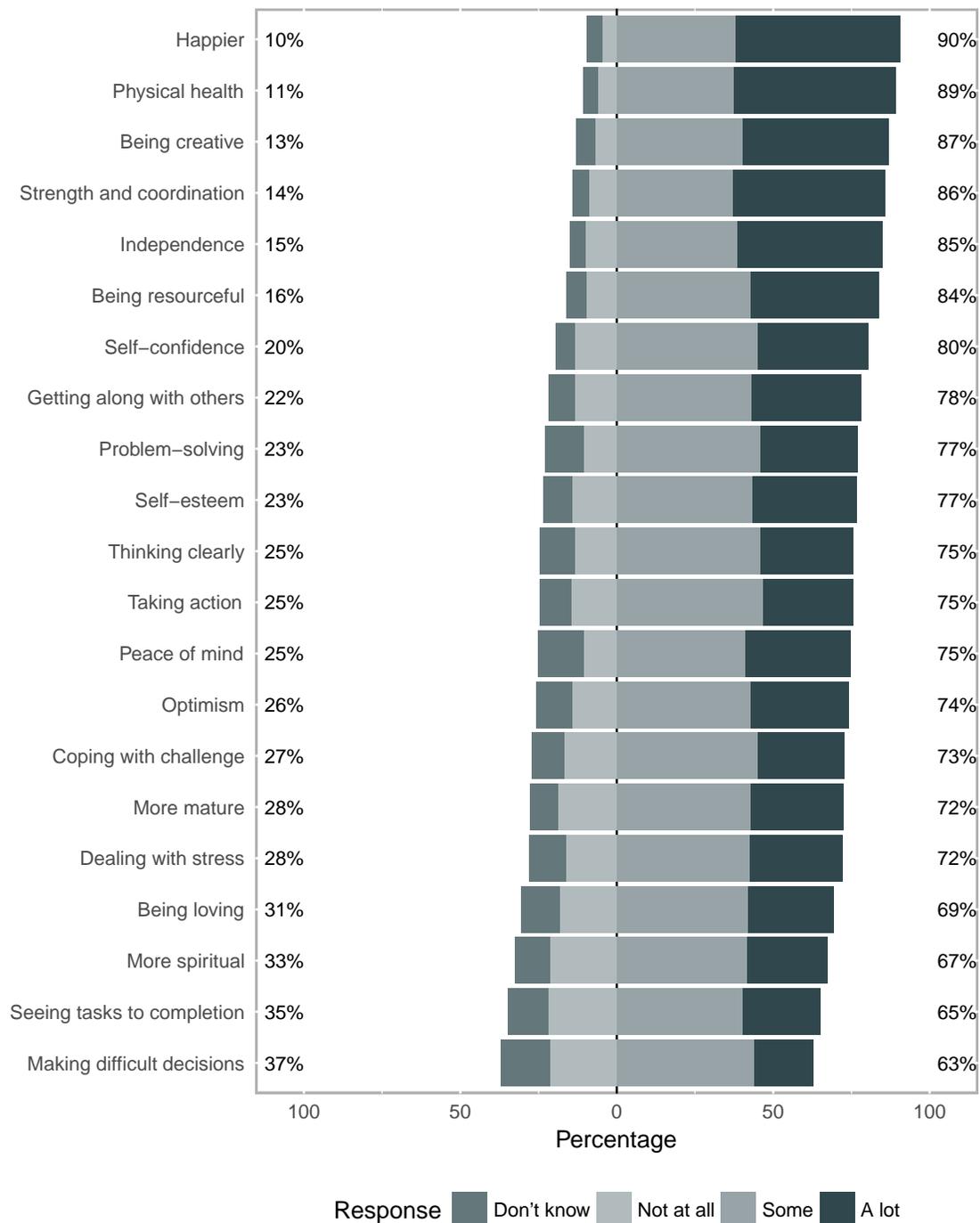
The benefits of play in the outdoors and nature further extended to *social* gains. As noted, children’s play in nature—far from being an isolated or individual activity—often involves family, friends, and community. In line with this, the children studied viewed playing in the outdoors as helping them to enjoy family and friends (90 percent) and reinforcing their sense of being liked and important to others (86 percent). Most children (90 percent) also perceived playing in nature helped them to learn at school. Parents also reported that exposure to nature facilitated their child’s social development. These benefits included independence and self-confidence, getting along with others, and being affectionate and loving. A smaller percentage of parents, yet still a majority, viewed contact with nature as contributing to their child’s spirituality.

Figure 3.29: Children: Influence of Playing in Nature on Growing Up



Note: The percentage listed on the left side is the total of “don’t know” and “not at all.” The percentage listed on the right side is the total of “some” and “a lot.” Question wording: How much do you think playing in the outdoors and nature has helped you with each of these parts of growing up? ...Growing healthy ...Growing stronger ...Helping me learn at school ...Helping me make my arms, legs, and body do what I want them to do ...Helping me be better at sports ...Helping me be happy most of the time ...Helping me become happy when I’m sad ...Helping me fix things that I didn’t think I could fix ...Helping me think of new ideas I’d like to try out ...Helping me calm down ...Helping me enjoy my family and friends.

Figure 3.30: Parents: Influence of Contact with Nature on Child’s Development



Note: The percentage listed on the left side is the total of “don’t know” and “not at all.” The percentage listed on the right side is the total of “some” and “a lot.” Question wording: How much has contact with nature influenced your child’s development in each of the following ways? ...Being resourceful ...Understanding/solving problems ...Taking action ...Seeing tasks to completion ...Making difficult decisions ...Dealing with stress ...Coping with challenge/adversity ...Getting along with other people ...Thinking clearly ...Being creative ...Increased self-esteem ...Increased self-confidence ...Increased peace of mind ...Improved physical health ...Improved strength and coordination ...Increased independence ...Increased optimism ...Happier ...Being spiritual ...More mature ...Being affectionate/loving.

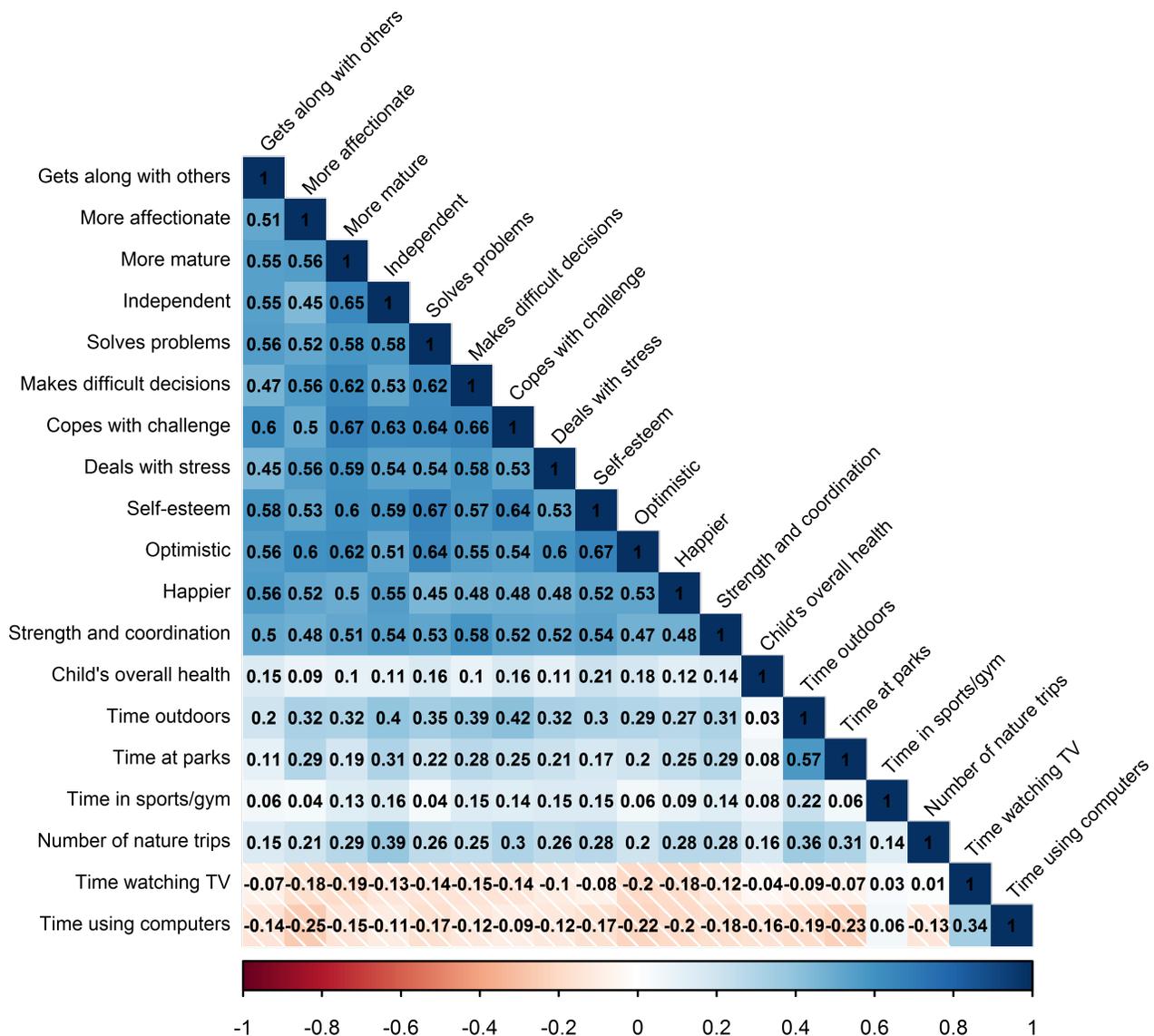
These physical, psychological, and social benefits associated with children's experiences of nature were often related to one another, and to a variety of other measures of children's interest in the outdoors. This association is reflected in a correlation matrix that reveals the interconnection of many of these variables (Figure 3.31). Each cell in the correlation matrix represents the extent and direction of these associations, or correlations, between variables.

- If variable *A* tends to increase when variable *B* increases, the association is positive. If variable *A* tends to decrease when variable *B* increases, the association is negative.
- Blue represents a positive correlation between two variables; red, a negative one.
- The tint of the color shows the strength of magnitude: Dark blue shows a correlation that approaches 1 (the highest possible value, a very strong association); light blue shows a correlation that approaches 0 (the lowest possible value, a weak association).
- The coefficients are Spearman rank correlations, given that the measures included have ordinal categories, not linear ones.
- Although we present a full matrix, we do not mean to suggest that each correlation reflects a true causal relationship.

The correlation matrix reveals strong and positive relationships among the various measures of benefits of contact with nature reported by the parents. For example, according to the parents, children whose contact with nature helped them get along with others also tended to solve problems and see tasks to completion. Moreover, children whose contact with nature helped them to get along with others were also perceived by their parents as being physically healthier. A somewhat weaker—but still positive—relationship was found between measures of children's health and nature's perceived influence on their development (perhaps not surprising given the many factors that influence a child's health).

The correlation matrix also reveals the relatively strong association of perceived benefits derived from contact with nature and children's contact with the outdoors, as measured by time spent at parks, nature trips, and participation in other activities such as sports and electronic media (time watching TV and using computers). For example, there is a positive relationship between a child's health and social-psychological development and their number of nature-oriented trips in the prior two years, as well as their time spent in sports and gym class. Conversely, the time children devote to watching television or using computers is negatively related with the benefits derived from contact with nature and their overall reported health. Given the limitation of this study occurring at a single point in time, the direction of causality remains unclear—in other words, whether children who spend more time being active in the outdoors are healthier as a consequence of these activities, or whether children who are healthier tend to spend more time in nature.

Figure 3.31: Parents: Correlations of Perceived Benefits of Contact with Nature and Other Outcomes



Note: *N* varies slightly for each correlation coefficient due to eliminating “don’t know” responses to particular questions. Question wording: How much has contact with nature influenced your child’s development in each of the following ways? ...Getting along with other people ...Being affectionate/loving ...More mature ...Increased independence ...Understanding/solving problems ...Making difficult decisions ...Coping with challenge/adversity ...Dealing with stress ...Increased self-esteem ...Increased optimism ...Happier ...Improved strength and coordination. | Overall, how would you rate your child’s health? | How much time does your child play in a nearby park or open space in an average week when weather allows (not including organized sports)? | On average in a typical week, about how many hours does your child participate in outdoor activities when weather allows (not including organized sports)? | How much time does your child play in a nearby park or open space in an average week when weather allows (not including organized sports)? | In an average week, how many hours does your child participate in formally organized sports, including sports practice and gym classes at school? | How often has your child taken each of the following trips with family or friends during the past 2 years? | In an average week, how much does your child watch TV? | In an average week, how much does your child use a computer, computer note pad, or smart phone, including time spent playing video games?

### 3.3.2 Health Improvements

We asked parents if their child’s contact with nature or outdoor activities had contributed to improvements in their child’s health ailments. Thirty percent of parents answered affirmatively, and a sample of what those parents wrote follows:

“I think [he] is calmer and more focused when he spends time outdoors plus he gets along better with siblings.” (Parent of boy, white, age 11, suburban)

“Anxiety: Ava often stresses about time, schedule, etc. When we are outdoors, those types of restraints seem to not bother her quite [as much].” (Parent of girl, white, age 8, rural)

“His autism tends to keep his interests more limited to individual activities. He enjoys outdoor activities that don’t require a lot of interaction with others; but there are ways for him to participate along with others at the same time, like kayaking with other kids while at camp. His socialization improves when he is enjoying the activity.” (Parent of boy, white, age 10, suburban)

“I think running and playing more outside has helped strengthen her lungs and reduced her need for her inhaler.” (Parent of girl, black, age 9, suburban)

“I believe gardening helps the immune system.” (Parent of girl, white, age 10, suburban)

“I think that it helps with his extreme hyperactivity and lack of focus. I think that it helps his overall mental well being and improves confidence.” (Parent of boy, white, age 12, suburban)

“I think he is happier when he spends time outside. I also find he is more self-confident and more creative when he has been outdoors. He learns more, and we enjoy spending time together when planting flowers or going hiking. He just recently planted four tree sprigs all by himself, so he will get to see those grow.” (Parent of boy, white, age 10, suburban)

“She had a brief episode of high blood pressure. We changed her diet and made her exercise more outdoors.” (Parent of girl, black, age 12, suburban)

“I believe he realizes that there is more to explore than just being in the house. Today’s kids are so caught up with the video gaming system they don’t really explore nature as much as we did as kids.” (Parent of boy, black, age 8, suburban)

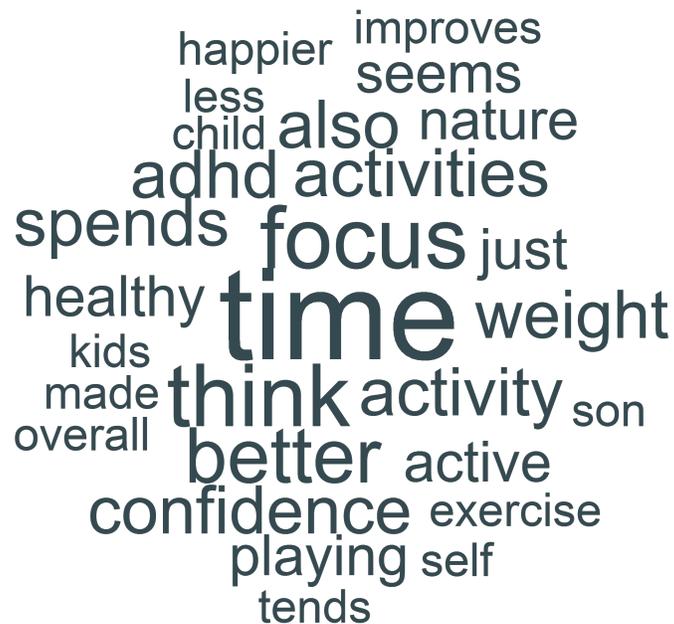
“Outdoor activity helps calm my child and helps her to focus.” (Parent of girl, white, age 10, urban)

“I just notice that any time I can successfully get him to someplace that seems more natural (less of a sculpted playground environment), he has a good time. Also, he seems able to focus more once he’s finally coped with the fact that that is the activity that we are doing. The transition part is the hardest—getting there.” (Parent of boy, Asian, age 12, urban)

The word cloud reports the particular health improvement parents reported (size indicates relative frequency) (Figure 3.32). As the figure indicates, parents most often reported improvements in a child’s physical health (such as weight loss, reduction in allergies, and increased physical fitness)

and psychological wellbeing (including greater happiness and self-esteem and reductions in anxiety and attention deficit hyperactivity disorder [ADHD]). Some mentioned improvements in social development, such as better interactions with others and improved learning.

Figure 3.32: Parents: Improvements to Child's Ailments from Contact with Nature



Question wording: Do you think your child's contact with nature or outdoor activities has contributed to the improvement of any ailments your child experienced? If yes, please briefly list/describe the ailment(s) and improvement connected with outdoor activity.

### 3.4 Barriers to Children's Contact with Nature

A number of potential barriers exist to children's contact with nature and the outdoors. To explore the issue further, we asked parents to estimate the importance of a range of potential barriers to their child playing more outdoors. We generally encountered four kinds of barriers: 1) competing interests, 2) time, 3) social relationships (especially with family members and friends), and 4) the accessibility of places to play outdoors.

For parents, one of the most important barriers to their child playing more outdoors was accessibility in terms of concerns for safety (Figure 3.33). Two-fifths of parents viewed this as a very or extremely important obstacle. Equally important was a lack of time for both parents and children, with about two-fifths of parents seeing these as very or extremely important. Social relationships formed a third barrier, especially a lack of adults to accompany their child, and—to a relatively lesser extent—few friends interested in the outdoors. Competing interests formed a fourth barrier: 30 percent of parents reported their child was more interested in computers and television. In parents' eyes, a relatively minor barrier was their child's worries about getting lost. On first glance, concerns about their child's health also appears to be a relatively minor barrier, but this overall figure obscures significant ethnoracial differences, as seen below.

Figures 3.34 and 3.35 report ethnoracial differences in what parents perceived are barriers to their child playing more outdoors. As seen in Figure 3.34, a sizable minority of parents of black children—roughly two-fifths—saw their child's lack of interest as an important barrier. In comparison, half as many parents of white children said a lack of interest was an important barrier for their child.

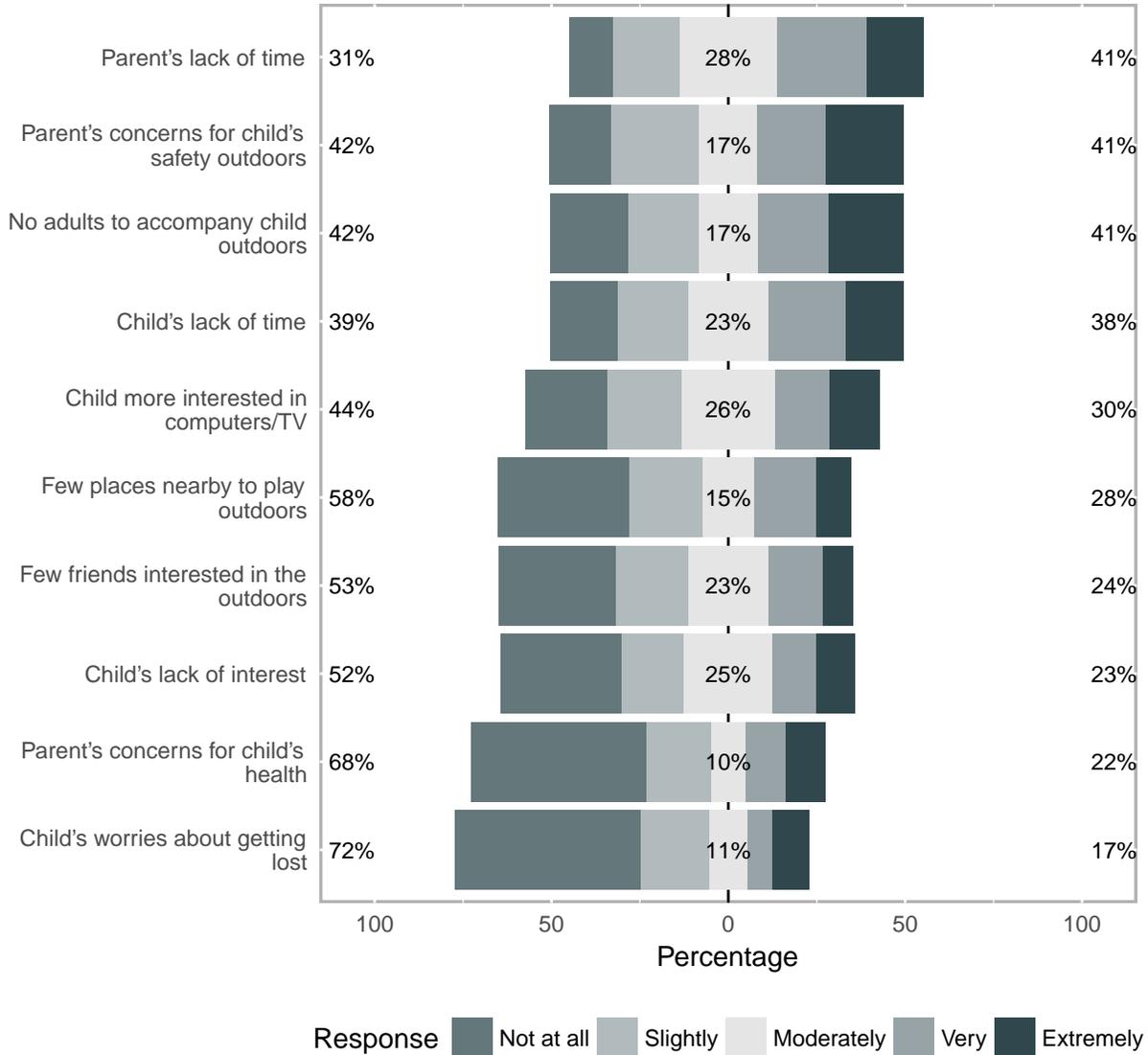
In regards to social relationships, parents of minority children were much likelier to mention these as important impediments to their child playing more outdoors. For example, a lack of friends interested in the outdoors was an important barrier for 35 percent of black children's parents. Parents of Hispanic and black children were much likelier to see a lack of adults to accompany their child outdoors as an important barrier to their child's playing more outdoors.

Ethnoracial differences also emerged in terms of time and access to nature (Figure 3.35). Parents of minority children were relatively more concerned about their own lack of time. Access to nature in terms of the number of places nearby to play was of higher importance to parents of minority children. Access to nature in terms of health concerns and safety concerns were also of higher importance to parents of minority children. Three-quarters of parents of black children were very or extremely concerned for their child's safety—in contrast to one-quarter of white children's parents.

The perceived importance of barriers differed across residential location (Figures 3.36 and 3.37). In most cases urban parents ranked barriers as more important than suburban or rural parents did. Of particular concern were a child's lack of interest in the outdoors and greater interest in computers and television. A lack of social support was also prominent, including few friends or adults to support the child's interest in nature. In terms of access to nature, urban parents saw as barriers few places nearby to play and concerns for their child's safety.

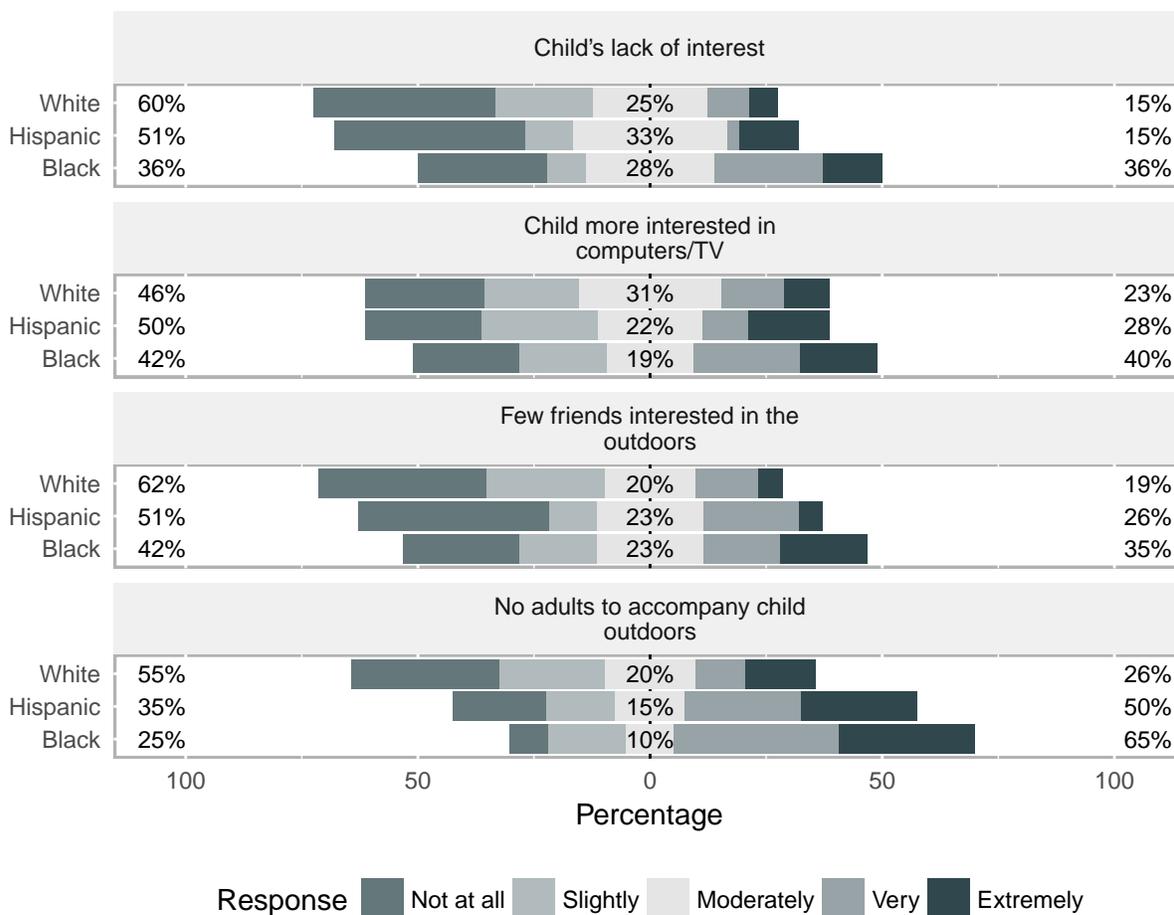
Many of the obstacles and impediments to children's outdoor play are interrelated with one another. A correlation matrix reveals how the most salient barriers—interest, social relationships, time, and

Figure 3.33: Parents: Importance of Barriers to Child’s Playing More Outdoors



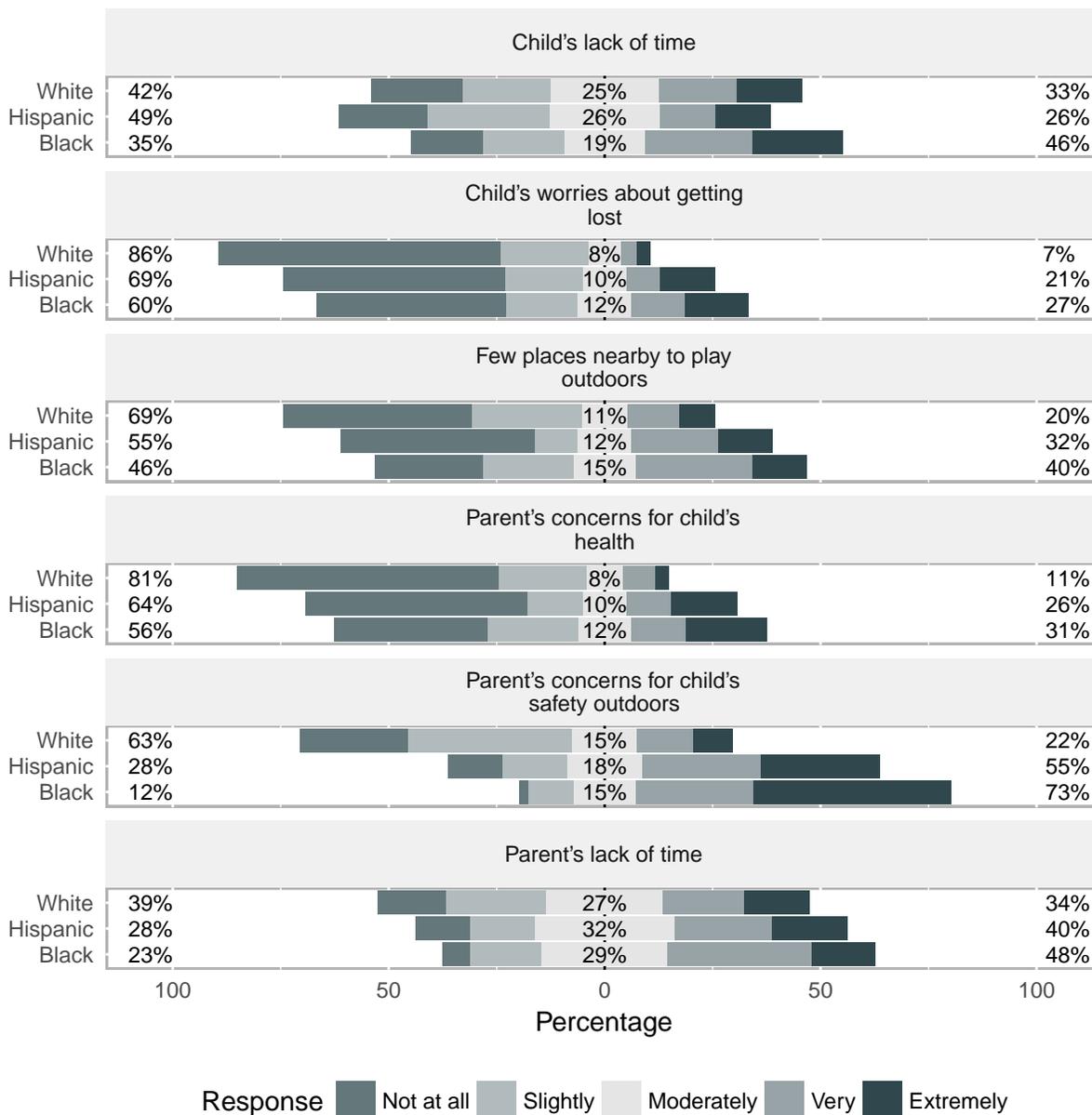
Note: The percentage listed on the left side is the total of “not at all important” and “slightly important.” The percentage listed in the middle is “moderately important.” The percentage listed on the right side is the total of “extremely important” and “very important.” Question wording: How important is each of the following in keeping your children from playing more outdoors? ...Lack of interest on her/his part ...Lack of time in his/her schedule ...Lack of time in my schedule ...Few of their friends are interested in the outdoors ...Few places in neighborhood to play outdoors ...My concerns for my child’s safety in the outdoors ...My child’s worries about getting lost ...My child is more interested in computers and television ...Health concerns for my child ...No adults to accompany my child in the outdoors.

Figure 3.34: Parents: Interest and Relational Barriers to Child Playing More Outdoors, by Race and Ethnicity



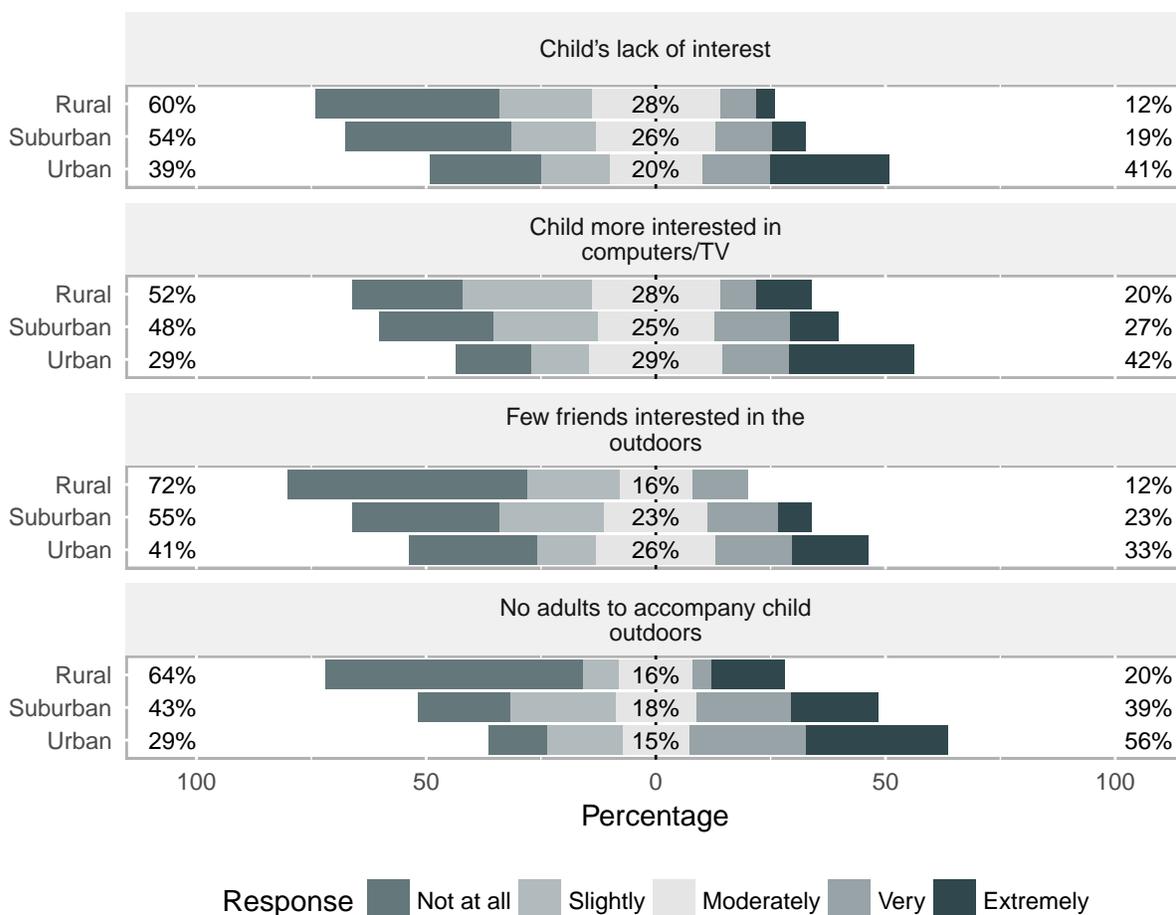
Note: The percentage listed on the left side is the total of “not at all important” and “slightly important.” The percentage listed in the middle is “moderately important.” The percentage listed on the right side is the total of “extremely important” and “very important.” Question wording: How important is each of the following in keeping your children from playing more outdoors? ...Lack of interest on her/his part ...Few of their friends are interested in the outdoors ...My child is more interested in computers and television ...No adults to accompany my child in the outdoors.

Figure 3.35: Parents: Access and Time Barriers to Child Playing More Outdoors, by Race and Ethnicity



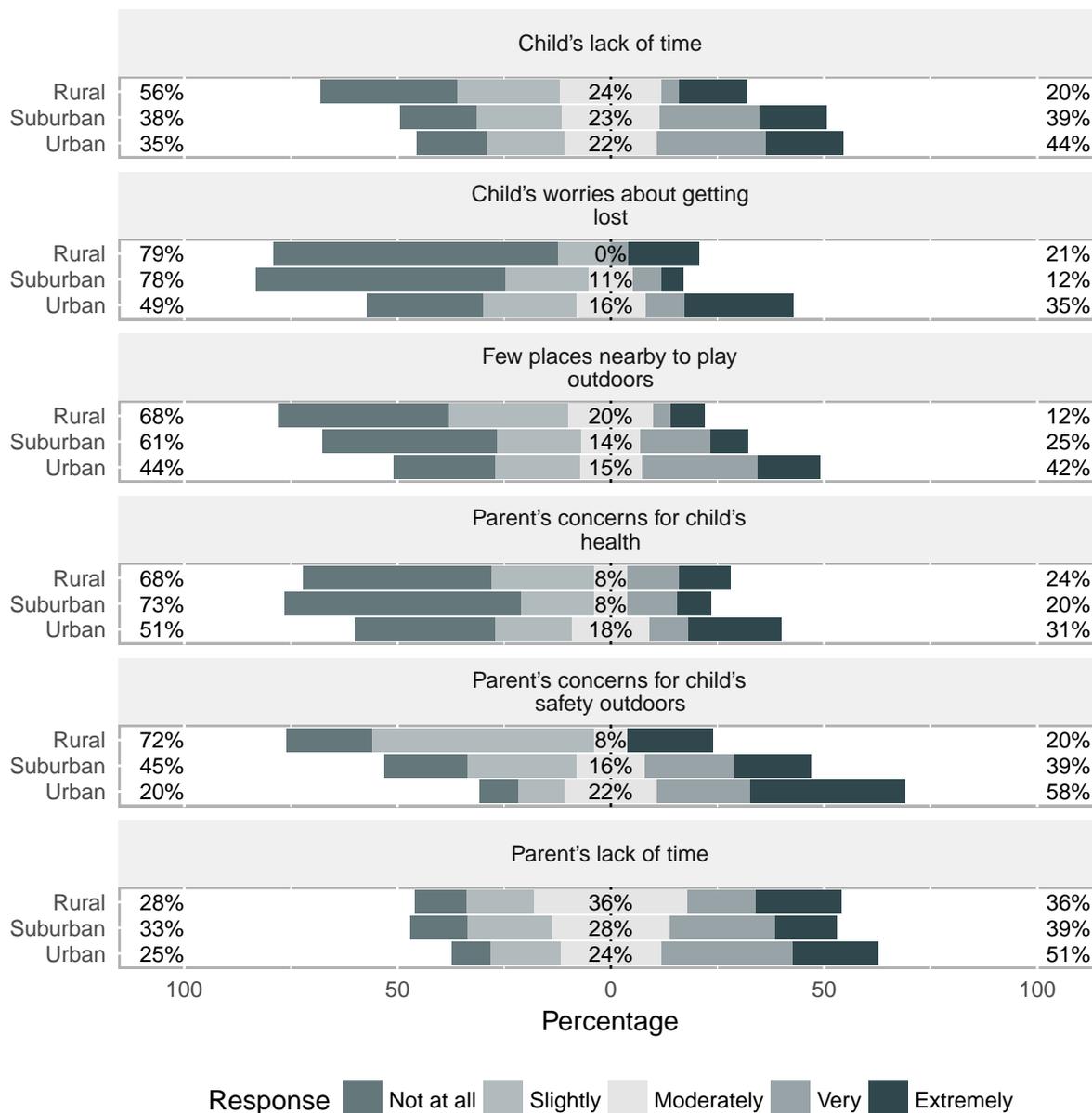
Note: The percentage listed on the left side is the total of “not at all important” and “slightly important.” The percentage listed in the middle is “moderately important.” The percentage listed on the right side is the total of “extremely important” and “very important.” Question wording: How important is each of the following in keeping your children from playing more outdoors? ...Lack of time in his/her schedule ...Lack of time in my schedule ...Few places in neighborhood to play outdoors ...My concerns for my child's safety in the outdoors ...My child's worries about getting lost ...Health concerns for my child.

Figure 3.36: Parents: Interest and Relational Barriers to Child Playing More Outdoors, by Location



Note: The percentage listed on the left side is the total of “not at all important” and “slightly important.” The percentage listed in the middle is “moderately important.” The percentage listed on the right side is the total of “extremely important” and “very important.” Question wording: How important is each of the following in keeping your children from playing more outdoors? ...Lack of interest on her/his part ...Few of their friends are interested in the outdoors ...My child is more interested in computers and television ...No adults to accompany my child in the outdoors.

Figure 3.37: Parents: Access and Time Barriers to Child Playing More Outdoors, by Location



Note: The percentage listed on the left side is the total of “not at all important” and “slightly important.” The percentage listed in the middle is “moderately important.” The percentage listed on the right side is the total of “extremely important” and “very important.” Question wording: How important is each of the following in keeping your children from playing more outdoors? ...Lack of time in his/her schedule ...Lack of time in my schedule ...Few places in neighborhood to play outdoors ...My concerns for my child’s safety in the outdoors ...My child’s worries about getting lost ...Health concerns for my child.

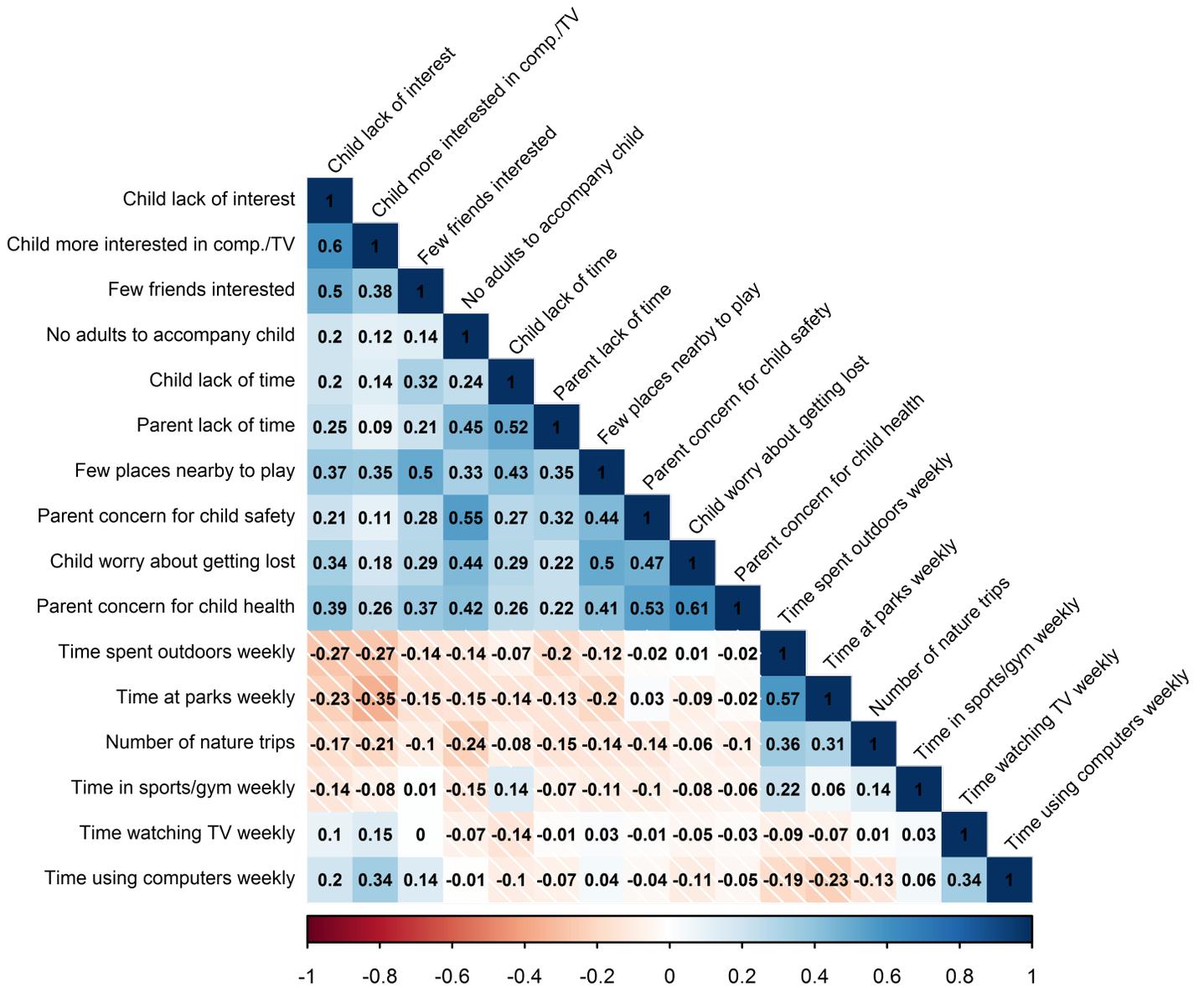
access—form overlapping and reinforcing barriers for children (Figure 3.38).<sup>2</sup> For example, a child's lack of interest in the outdoors is strongly associated with that child's being more interested in computers and television. Both of these in turn are associated with limited social support (having few friends interested in the outdoors and a lack of adults to accompany the child). Interest and social support in turn are reinforced by parents' and children's lack of time and lack of accessibility to the outdoors. The barriers are negatively related to important outcomes, such as time spent outdoors:

- **Interest.** Children who lacked interest in the outdoors and were more interested in computers and TV spent less time engaged in outdoor activities, playing in parks, and participating in nature-related trips. They also tended to watch TV and use computers more. Greater interest in computers and television had the largest negative relationship with time spent in outdoor activities.
- **Social relationships.** Children who lacked the support of friends and parents tended to spend less time outdoors and at parks. Note also that having few friends interested in the outdoors tended to occur in places where there are few places nearby to play outdoors—and in places where parents are concerned for their child's safety.
- **Time.** According to parents' reporting, their own lack of time is strongly related to whether they reported their child lacks time for the outdoors. In turn, a lack of time on parents' part has a negative relationship with how much time their child spends outdoors and at parks. However, parents' and children's lack of time has only a very small association with the number of nature trips taken (whether positive or negative), indicating that regular exposure to the outdoors is distinct from planned trips.
- **Access to nature and the outdoors.** Parents reported that concerns about children's access to nature (especially safety) were major obstacles. In particular, they mentioned a lack of nearby places, concern for safety, and concern for health. Still, these variables showed a relatively weak—even nonexistent—relationship with time spent outdoors or at parks and nature trips. Access to nature appears to represent a more general and diffuse (rather than specific) impediment to children's involvement in nature. The data suggest access to nature is a relatively less important barrier to children's time outdoors than the collective and interactive effect of relationships with friends and family, available time, and level of interest.

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<sup>2</sup>As above, we used a Spearman rank correlation, which treats each variable as ordinal and does not make any assumptions about the distribution of each variable. The size and shade of each circle shows how large the association is between two variables. The color indicates whether the association is positive or negative.

Figure 3.38: Parents: Correlations of Barriers and Various Outcomes for Children



Note: N varies slightly for each correlation coefficient due to eliminating “don’t know” responses to particular questions. Question wording: How important is each of the following in keeping your child from playing more outdoors? ...Lack of interest on her/his part ...Lack of time in his/her schedule ...Lack of time in my schedule ...Few of their friends are interested in the outdoors ...Few places in neighborhood to play outdoors ...My concerns for my child’s safety outdoors ...My child’s worries about getting lost ...My child is more interested in computers and television ...Health concerns for my child ...No adults to accompany my child in the outdoors. | How much time does your child play in a nearby park or open space in an average week when weather allows (not including organized sports)? | On average in a typical week, about how many hours does your child participate in outdoor activities when weather allows (not including organized sports)? | How often has your child taken each of the following trips with family or friends during the past 2 years? | In an average week, how many hours does your child participate in formally organized sports, including sports practice and gym classes at school? | In an average week, how much does your child watch TV? | In an average week, how much does your child use a computer, computer note pad, or smart phone, including time spent playing video games?

### 3.4.1 Parental Influence: A Closer Look

The questions above—special times in nature, special places in the outdoors, and who teaches children about nature—indicate the important role of *parents* for children’s exposure to nature. Children, as we have seen, tend to care for the plants and animals that their parents provide. They also tend to go on the trips their parents plan.

Parents influence their children in other ways, too, by modeling interest and activity in nature for their children. Parents whose pastimes are more outdoors-oriented were likelier to have children who play outside more (Table 3.9). For example, 39 percent of parents who called themselves indoors-oriented have children who play outdoors two hours or less per week. In comparison, 12 percent of parents who call themselves outdoors-oriented have children who play outdoors less than two hours per week. Put a different way, according to parental reports,

- Children of parents who are indoors-oriented spent on average 3.8 hours outdoors each week.
- Children of parents who are outdoors-oriented spent on average 8.3 hours outdoors each week.
- Children of parents whose are both indoors- and outdoors-oriented spent on average 6.7 hours outdoors each week.

Table 3.9: Time Child Spends Weekly Outdoors, by Parent’s Orientation to Indoors or Outdoors

Categories	Indoors-oriented	Outdoors-oriented	Same indoors as outdoors
< 2 hrs	39%	12%	15%
3-5 hrs	43%	38%	43%
6-10 hrs	16%	29%	27%
11-20 hrs	3%	12%	12%
21-30 hrs	0%	7%	3%
> 30 hrs	0%	2%	1%

Note: Columns may not add to 100 percent due to rounding. Question wording: On average in a typical week, about how many hours does your child participate in outdoor activities when weather allows (not including organized sports)? | In general, would you say your pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented?

Parents’ lack of time also had real consequences for children in our study (Table 3.10). Seventy percent of parents who said their own lack of time was an important barrier to their child playing outside more reported their child spent five hours or fewer outdoors each week—20 percentage points higher than parents whose lack of time was an unimportant barrier. Put a different way, according to parental reports,

- Children of parents who said their own lack of time is an important barrier spent on average 5.4 hours outdoors each week.
- Children of parents who said their own lack of time is an unimportant barrier spent on average 8.0 hours outdoors each week.
- Children of parents who said their own lack of time is a moderately important barrier spent on average 5.3 hours outdoors each week.

Table 3.10: Time Child Spends Weekly Outdoors, by Barrier Posed by Parent’s Lack of Time

Categories	Unimportant	Moderately important	Important
< 2 hrs	14%	22%	25%
3-5 hrs	36%	44%	45%
6-10 hrs	28%	24%	21%
11-20 hrs	15%	10%	6%
21-30 hrs	6%	0%	2%
> 30 hrs	1%	0%	1%

Note: Columns may not add to 100 percent due to rounding. “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.” Question wording: On average in a typical week, about how many hours does your child participate in outdoor activities when weather allows (not including organized sports)? | How important is each of the following in keeping your child from playing more outdoors? ...lack of time in my schedule.

Parents’ orientations in their pastimes, hobbies, and recreational interests were also related to their child’s interest in TV and computer games (Table 3.11). For children of parents whose interests are more indoors-oriented, 55 percent said they were more interested in electronic media than being outdoors in nature. In comparison, only 25 percent of children whose parents are outdoors-oriented said they were more interested in electronic media than being outdoors in nature.

Table 3.11: Child’s Interest in Electronic Media than Outdoors, by Parent’s Orientation to Indoors or Outdoors

Categories	Indoors-oriented	Outdoors-oriented	Same indoors as outdoors
Not more interest in e-media	45%	81%	75%
More interest in e-media	55%	19%	25%

Note: Columns may not add to 100 percent due to rounding. Question wording: I’m more interested in TV and computer games than being outdoors in nature. | In general, would you say your pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented?

In sum, despite the rise of many other influences on children’s learning and development in our society—schools, peer-groups, non-profit organizations, electronic media, and computers—it appears for 8–12-year-old children, parents and family continue to have a significant influence on their perceptions of and contact with nature.

### 3.4.2 Access to the Outdoors: A Closer Look

Our study shows that for most children and parents, contact with nature happens in largely local, nearby places that parents and children perceive as safe and familiar. The vast majority of children perceived they have enough places to play outdoors. Variations emerged, with black children (75 percent) and Hispanic children (72 percent) less likely to report enough places to play outdoors compared with white children (Table 3.12).

Table 3.12: Children: Enough Places to Play Outdoors, by Race and Ethnicity

Category	White	Hispanic	Black
False	12%	28%	25%
True	88%	72%	75%

Note: Columns may not add to 100 percent due to rounding. Question wording: Do you agree or disagree with each of these ideas? ...I don’t have enough places to play outdoors.

Children’s perceptions of having enough places to play also varied somewhat by residential location. A relatively smaller percentage of urban children reported having enough places to play outdoors—78 percent, compared with 92 percent of rural children (Table 3.13).

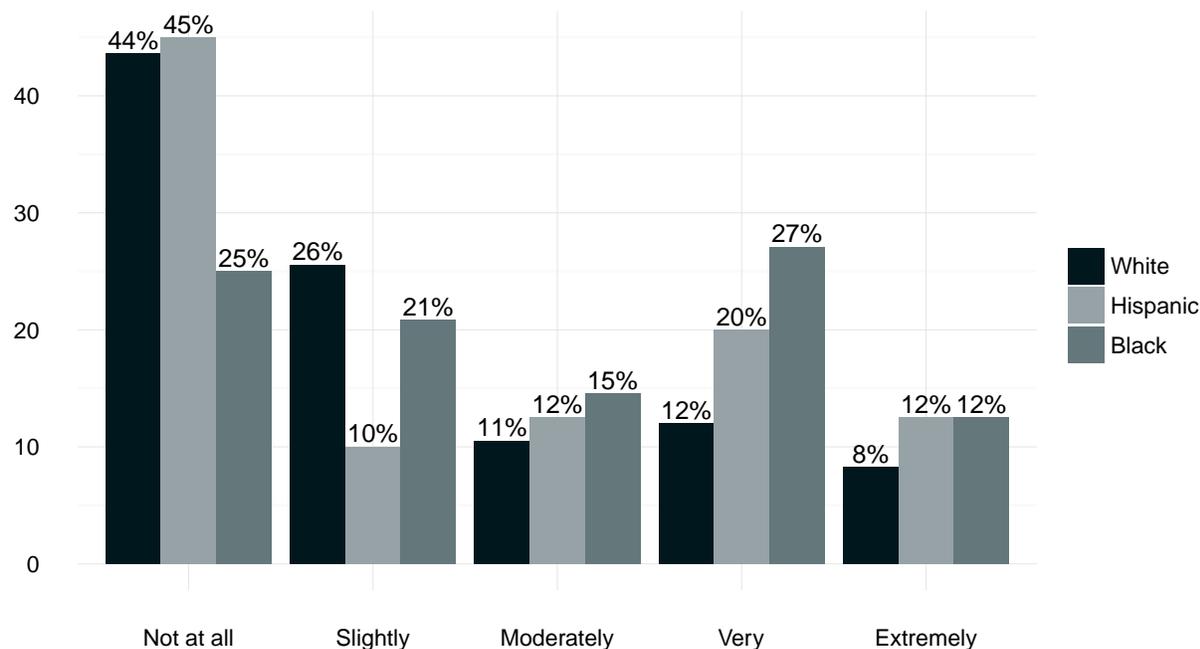
Table 3.13: Children: Enough Places to Play Outdoors, by Location

Category	Urban	Suburban	Rural
False	22%	17%	8%
True	78%	83%	92%

Note: Columns may not add to 100 percent due to rounding. Question wording: Do you agree or disagree with each of these ideas? ...I don’t have enough places to play outdoors.

While children generally perceived they have enough places to play outdoors, their parents tended to view the situation differently, especially across ethnoracial groups (Figure 3.39). Combining the categories “not at all” and “slightly,” 70 percent of parents of white children viewed a lack of places as an *unimportant* barrier, compared with 46 percent of black children’s parents. In contrast, parents of Hispanic and black children were more likely to view a lack of places as “very” or “extremely” important: 39 percent of black children’s parents saw a lack of places as a very or extremely important barrier, compared to 20 percent of white children’s parents.

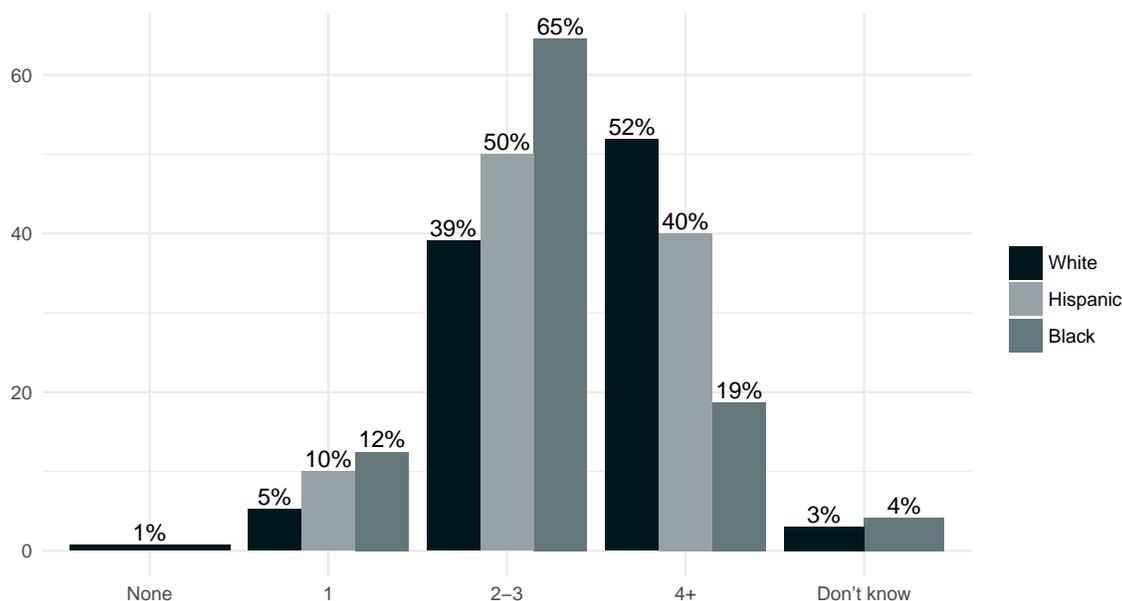
Figure 3.39: Parents: Importance of Few Neighborhood Places to Play as Barrier, by Race and Ethnicity



Question wording: How important is each of the following in keeping your child from playing more outdoors? ...Few places in neighborhood to play outdoors.

Some differences emerged in the number of parks and open spaces reported within two miles of where participants live (Figure 3.40), especially among parents who reported four or more parks: 52 percent of white children's parents noted four or more parks, compared with 19 percent of black parents. It is unclear whether these differences are due to actual differences in the number of spaces or in perceptions of differences. Either way, the results speak to a gap in access to nearby nature.

Figure 3.40: Parents: Parks and Open Spaces within Two Miles, by Race and Ethnicity

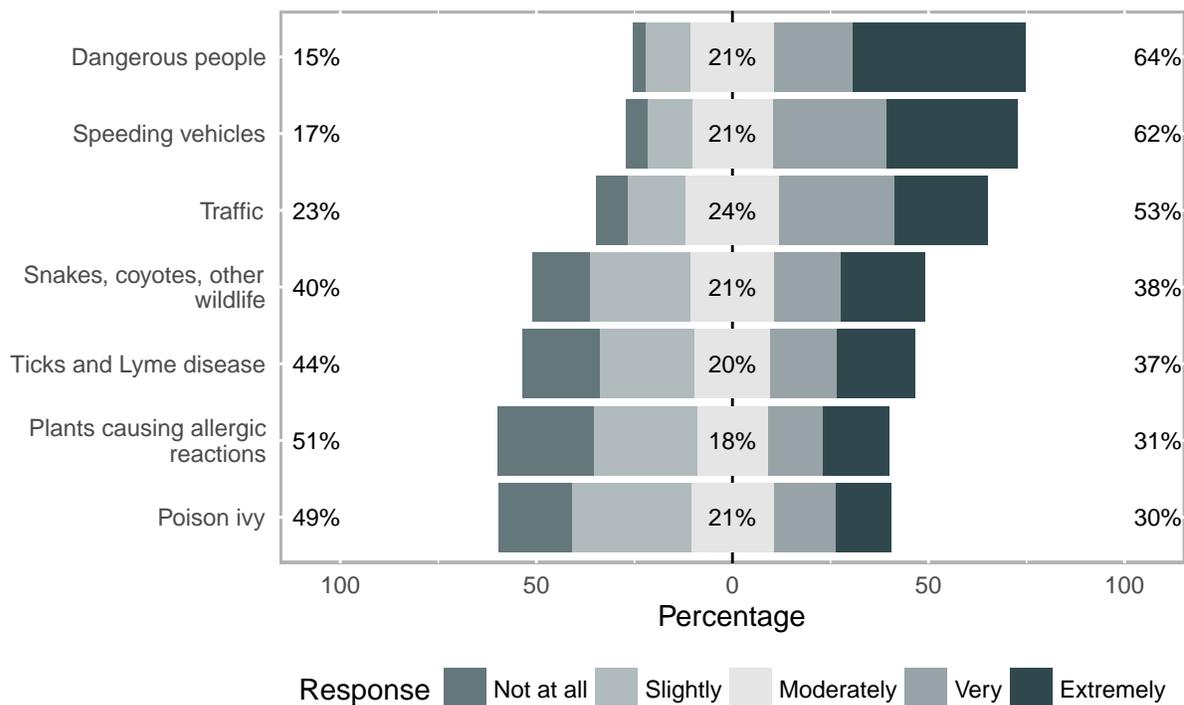


Question wording: How many parks and significant open spaces are within 2 miles of your home?

Potentially related to parents' perceptions of how many parks and open spaces are nearby are their perceptions of the *safety* of those places. (Indeed, the mere presence of physical open space does not necessarily mean those places are viewed as safe and inviting.) As seen in Figure 3.33, the top barrier to children's contact with nature among parents was their own concerns for their child's safety in the outdoors. To understand what exactly worries parents, we asked them to rate how concerned they were about various safety issues for their child.

Parents' concerns for their child's safety were primarily *social* concerns, not environmental ones (Figure 3.41). Parents' top concern was dangerous people (64 percent), followed by speeding vehicles (62 percent) and traffic (53 percent). Relatively fewer parents reported concern over environmental elements like snakes, coyotes, and other wildlife (38 percent); ticks and Lyme disease (37 percent); plants causing allergic reactions (31 percent); and poison ivy (30 percent).

Figure 3.41: Parents: Importance of Safety Concerns for Their Children

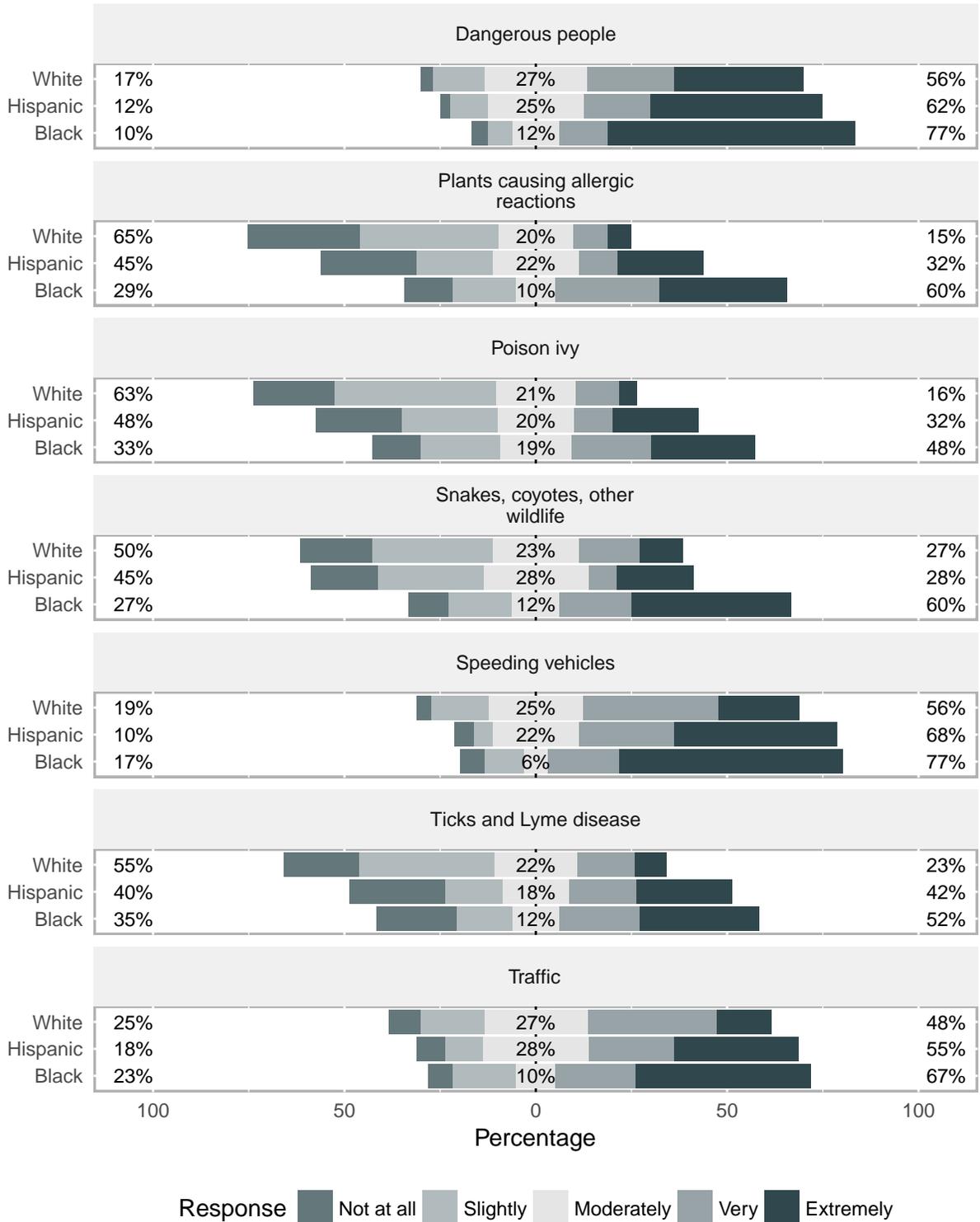


Note: The percentage listed on the left side is the total of “not at all important” and “slightly important.” The percentage listed in the middle is “moderately important.” The percentage listed on the right side is the total of “extremely important” and “very important.” Question wording: How great a concern to you are the following safety issues for your child?

The extent of these safety concerns varied depending on race and ethnicity (Figure 3.42). Dangerous people, speeding vehicles, and traffic were of greater concern than factors like poison ivy and plants causing allergic reactions. The level of concern associated with each item, however, differed. The majority of parents of black children (77 percent), for example, were very or extremely concerned about dangerous people (compared with 56 percent of white children’s parents). Concern about speeding vehicles was relatively more even.

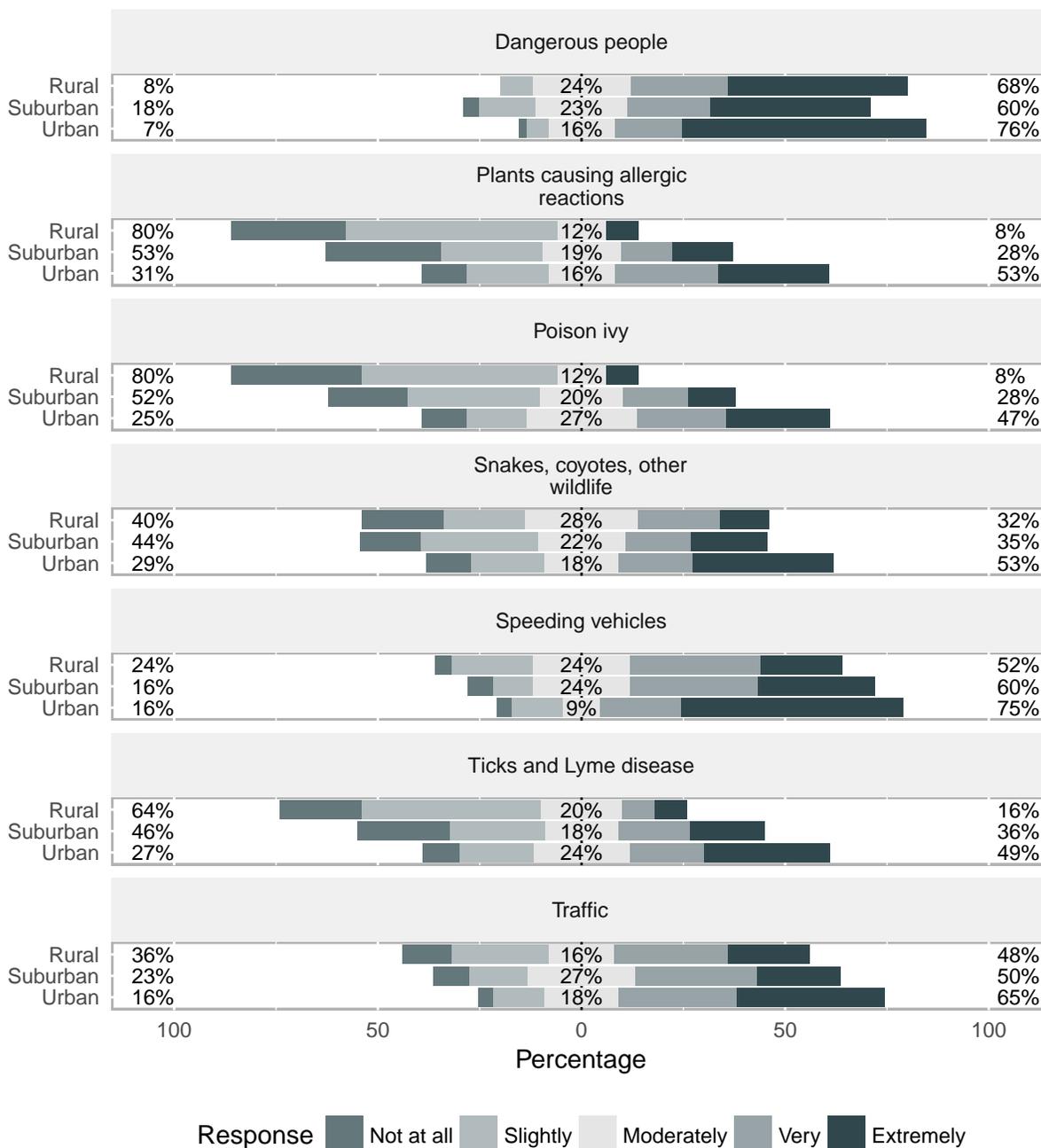
The extent of safety concerns also varied depending on location (Figure 3.43). In general, urban and rural parents were most concerned about their child’s safety, followed by suburban parents. Yet with all groups, social concerns like dangerous persons and cars were more widely shared than environmental dangers.

Figure 3.42: Parents: Importance of Safety Concerns for Their Child, by Race and Ethnicity



Note: The percentage listed on the left side is the total of “not at all important” and “slightly important.” The percentage listed in the middle is “moderately important.” The percentage listed on the right side is the total of “extremely important” and “very important.” Question wording: How great a concern to you are the following safety issues for your child?

Figure 3.43: Parents: Importance of Safety Concerns for Their Child, by Location



Note: The percentage listed on the left side is the total of “not at all important” and “slightly important.” The percentage listed in the middle is “moderately important.” The percentage listed on the right side is the total of “extremely important” and “very important.” Question wording: How great a concern to you are the following safety issues for your child?

### 3.4.3 Health Concerns: A Closer Look

For parents, concerns about their child’s health were relatively unimportant obstacles to their child’s playing more outdoors. As noted above, 68 percent of parents reported that their concerns for their child’s health were “not at all” or only “slightly” important (Figure 3.33). We presented parents with a series of health issues that might keep their child from playing more outdoors, such as anxiety, asthma, diabetes, obesity, and vision problems. Overwhelmingly, parents did *not* view these health items as influential barriers (Table 3.14). This pattern held across race, ethnicity, location, and gender of the child. The modest exception was allergies: 17 percent of parents saw these as posing a moderately, very, or extremely important barrier to their child playing more outdoors.

Table 3.14: Parents: Importance of Health Barriers to Child Playing More Outdoors

	Not at all	Slightly	Moderately	Very	Extremely	Don’t know
Allergies	61%	22%	7%	6%	4%	0%
Anxiety	87%	7%	4%	1%	2%	0%
Asthma	85%	4%	4%	4%	3%	0%
Autism	95%	1%	2%	2%	1%	0%
ADD/ADHD	90%	3%	3%	2%	1%	0%
Bone/Joint/Muscle problems	94%	3%	1%	0%	1%	0%
Brain concussion	94%	0%	2%	1%	2%	0%
Depression	93%	3%	2%	1%	1%	0%
Diabetes	97%	0%	0%	1%	2%	0%
Epilepsy	97%	1%	1%	2%	0%	0%
Hearing problems	97%	0%	0%	1%	1%	0%
Mental issues	94%	2%	1%	1%	2%	0%
Leg/Back problems	94%	2%	1%	2%	1%	0%
Obesity	90%	2%	3%	3%	3%	0%
Speech/Language problems	95%	2%	2%	1%	1%	0%
Vision problems	92%	3%	2%	2%	1%	0%

Note: Rows may not add to 100 percent due to rounding. Question wording: How important is each of the following in keeping your children from playing more outdoors? ...Health concerns for my child.

## 3.5 Summary of Results

### Children's Relationship to Nature:

- We consistently found most 8–12-year-olds held strong positive, sustained, and diverse interests in nature, which they described as including wildlife, forests, and mountains—and also back yards, parks, and swimming pools. They also thought of nature as the plants and animals where they lived, such as dogs, cats, gardens, and flowers. Most of the children had a broad and eclectic view of activities related to nature, including swimming, biking, visiting zoos, aquariums and nature centers, and exploring the outdoors.
- For most children, “nature” was not removed from daily life but was woven through it. For most children, their favorite place outdoors, an unforgettable memory in nature, and their preferred activities occurred in their front and back yards, in nearby parks and open spaces, at local schools, and nearby woods, lakes and creeks. Children cited geographically distant places when they had become familiar due to repeated visits with family, friends, and trusted adults.
- Contact with nature was very often a social experience involving family and friends.
- For most children in our study, contact with nature involved play activities, often with friends. “Play” often included elements of exploration or discovery, even if children did not specifically use those terms. Indeed, experiences in nature often seemed to *become* special when something unexpected, unanticipated, and new happened.
- Relatively high proportions of children responded that they liked activities like hunting, fishing and boating “not at all.” Relative to other recreational activities high proportions of children in our study were also unfamiliar with these activities suggesting that providing opportunities for children to try these could help them decide how much they like them.
- Special times in nature were important to the great majority of children studied. These nearly always involved other people. Their memories included encountering a particular insect in the backyard, catching fish with a grandparent, climbing trees with a brother or sister, closely observing certain wildlife species, wading in a creek with friends and relatives, and more. A majority of children also reported connection to nature via having a special physical place outdoors and holding in memory an unforgettable time in nature. While these two are related, experiences did not automatically create connections.
- The great majority of children studied had cared for some animal or plant important to them. These caring activities appear to be important in children's developing capacities for empathy and compassion.

### Benefits of Contact with Nature:

- Contact with the natural world often exerted major, positive, and diverse physical, psychological, and social consequences on the children studied. The experience of nature frequently helped the children create and reinforce their social relationships with family and friends and at school.

### Barriers to Contact with Nature:

- Children participated in electronic media and organized sports to a substantially greater extent than activities in nature and the outdoors, and this participation increased with age.

- The examples and models parents set in their lives clearly influenced their child's contact with nature. Parents' orientation to the indoors and their lack of time formed a considerable obstacle to children participating more in nature and the outdoors.
- Parents were especially concerned about socially based safety concerns for their children, including dangerous people, speeding vehicles, and traffic. However, it is important to note that these had virtually no direct relationship (correlation) with parents' reports of their child's time spent outdoors, time spent at parks, or number of nature trips. More salient factors were children's lack of interest, lack of social support (such as adults to accompany the child and other friends interested in nature), and lack of access to nearby nature.

Race and ethnicity:

- Many differences across ethnoracial groups were relatively minor. For example, the majority of children (no matter their race or ethnicity) reported being interested in nature, having people to teach them about outdoor activities, having enough time to play outdoors, being interested in learning about the natural world, having affection and attraction toward nature, and taking care of a special plant or animal.
- However, some notable differences emerged. Compared with white children, black children spent less time outdoors and went on far fewer nature-oriented trips (such as camping, fishing, hunting, or visiting a state or national park) in the prior two years. Black and Hispanic children and parents were more concerned about the social dangers of the outdoors such as strange people, traffic, and speeding vehicles. Parents of black children (and to a lesser extent, Hispanic children) saw a lack of places in the neighborhood to play as a greater barrier than parents of white children. Parents of minority children were especially concerned about their child's safety in the outdoors.

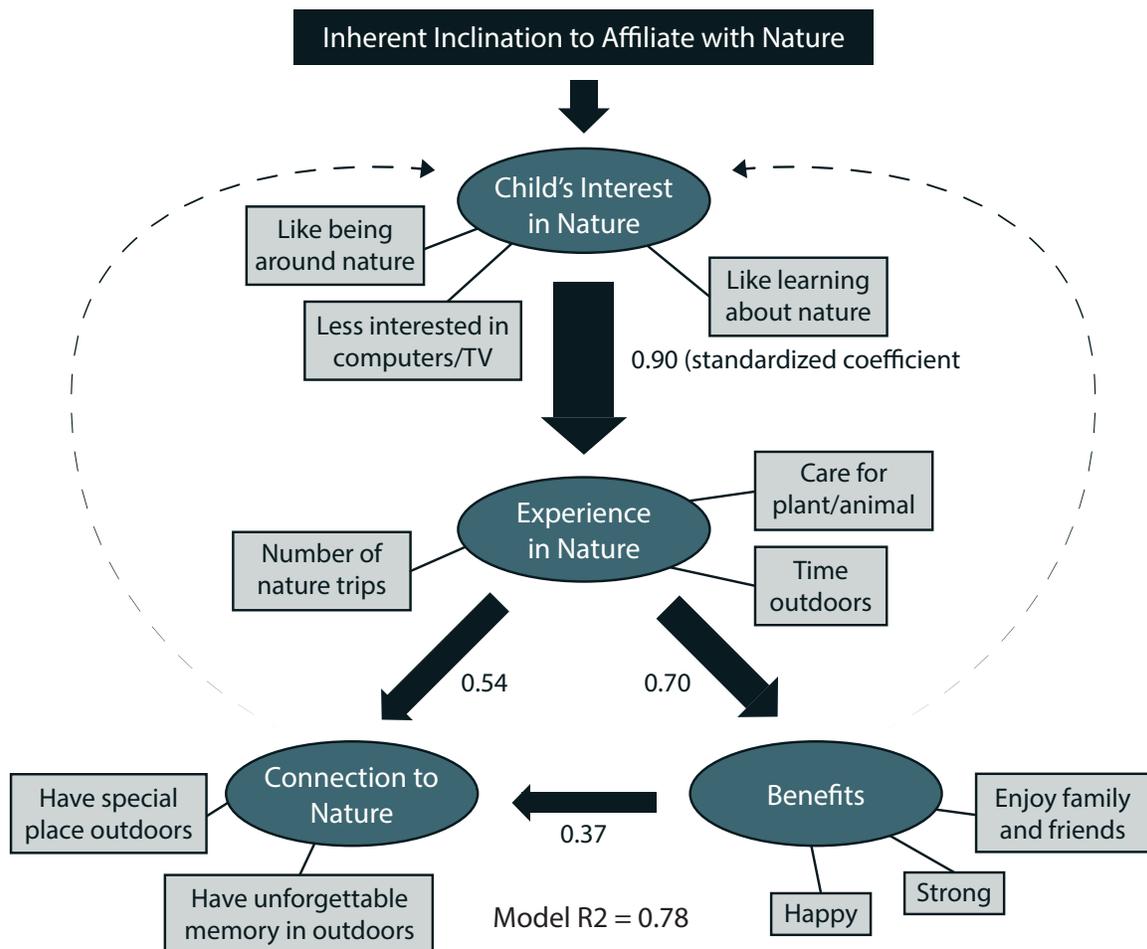
### 3.5.1 Putting the Pieces Together: A Causal Model

Based on our overall theoretical framework originating in the concept of biophilia combined with the major results of our study, we developed a causal model to help describe our findings. Specifically, we examined how the major components of our research on children and nature interconnected and fit together. The major components of our research include the following:

- The biophilia hypothesis postulates that people possess an inherent inclination to affiliate with nature. This inclination developed over time as humans adapted to primarily natural forces and stimuli. This inherent affinity for nature, however, is a tendency that must be nurtured, developed, and learned to become functional and beneficial. As our results have demonstrated, for this to occur, contact with nature must be recurrent and engaging, rather than occasional or sporadic. It must also be supported by others, most particularly families and friends. Third, it must occur in *places that children and parents regard as safe, accessible, and familiar*.
- Interest in nature among children is an indicator of biophilia. As the findings reveal, children across all demographic and socio-economic divisions possess broad, strong, and wide interests in exploring and learning about nature, and being in the outdoors.

- Interest in nature typically leads to experiences in nature, including spending time outdoors, going on nature-related trips, and caring for special plants and animals. Experiences depend on many factors, of course, but interest is a major influence.
- Secure and familiar experiences in nature generate benefits, including enjoyment of friends and family, happiness, and physical strength. Experiences by themselves are not the same as connections to nature, since the meaning and enjoyment of experiences can differ in quality, familiarity, and frequency. Still, under the right conditions, experiences generate a sense of relationship to nature, including attachment to special places and unforgettable outdoor experiences.
- Social support for contact with nature is integral to the enjoyment and experience of nature. We consistently found the social component of being with family and friends was an important dimension of children’s interests, activities, and enjoyments of the natural world as reflected in unforgettable times, having a special place to play in nature, and caring for plants and animals.

Figure 3.44: Model of Child’s Relationship with Nature



Based on these assumptions and findings, our causal model of children’s relationship with nature is depicted in Figure 3.44. To test this hypothesized model, we assigned specific survey questions *from the national data (771 children and 771 parents)* to each component, and then used a statistical

test of relationships within and among these components. This test is called Structural Equation Modeling. The measures used to assess each variable included the following:

*Child's interest in nature:*

- I really like being in the outdoors around nature. (child-reported)
- I really enjoy learning about nature. (child-reported)
- I'm more interested in TV and computer games than being outdoors in nature. (child-reported)

*Experience in nature:*

- The number of trips the child has taken with family or friends in the past two years: camping or backpacking, visiting a guest ranch or farm, fishing, hunting, or visiting a state or national park. (parent-reported)
- The typical time the child spends outdoors weekly. (parent-reported)
- Whether or not the child cares for a special plant or animal. (child-reported)

*Physical, mental, social benefits:*

- Playing in the outdoors and nature has helped child...grow strong. (child-reported)
- Playing in the outdoors and nature has helped child...become happy when child is sad. (child-reported)
- Playing in the outdoors and nature has helped child...enjoy family and friends. (child-reported)

*Connection to nature:*

- Child has had an unforgettable time in the outdoors. (child-reported)
- Child has a favorite place outdoors. (child-reported)

The arrows and standardized coefficients between each component in the model depicted in Figure 3.44 reveal the positive strength of the relationship. For example, interest in nature has a large positive association with experience in nature. Additionally, experience in nature has a slightly smaller but still positive association with benefits obtained from and connections to nature. The perception of nature's benefits has a small positive association with connections to nature.<sup>3</sup>

We calculated a statistic that evaluates the overall relationship among model components, producing a score that ranges from 0 to 1. At 1, the estimated model and the data change exactly together.<sup>4</sup> The value for our full model was a high 0.78. In other words, this model appears to be a plausible explanation for relationships between the components.

Finally, we explored whether experiences, benefits, and connections appear to increase children's subsequent interest in nature. The model shows this possibility with dashed arrows leading back to a child's interest in nature. Because our survey and interviews were conducted only at one point in time, we cannot explicitly test whether a child's interest grows (or shrinks) as a result of more

<sup>3</sup>The numbers represent standardized coefficients. An increase of one standard deviation in a child's interest in nature correlates with nearly a one-standard-deviation increase in experience in nature. An increase of one standard deviation in experience in turn produces smaller but still significant increases in benefits and connection.

<sup>4</sup>In technical terms, the model's covariance fully matches the collected data's covariance.

experiences, greater perceptions of benefits, and stronger connection to nature. Further research can examine this possibility.

## Chapter 4

# Race, Ethnicity, and Other Demographic Differences: Results

This chapter examines relationships to nature, the outdoors, and wildlife among various socio-demographic groups in Texas. Demographic differences among Texans cover a wide range of expressions, including race, ethnicity, age, gender, education, income, residential locations, and more. While we discuss the influence of all of these factors to some extent, we focus on race and ethnicity for two major reasons. First, a significant and increasing proportion of Texas's population consists of three major groups of minorities—blacks, Hispanics, and Asians. Second, these minority populations have historically been relatively underserved by fish and wildlife and environmental conservation organizations. Many factors account for this disparity, including lack of contact and familiarity with these groups and limited resources to develop and pursue outreach programs. Our research strives to increase a wider understanding of the differences and similarities within and across these groups.

In addition to our primary focus in this chapter on how various ethnoracial groups relate to nature and wildlife, we review residential location and age. Our focus on *location* stems from the reality that during the past half century, Texans have moved in significant numbers from rural areas to urban and suburban locations. Urban areas typically include relatively higher proportions of non-whites, while suburban and rural areas often have relatively larger proportions of whites. Urbanization is projected to increase in Texas and in the US as a whole.

In terms of *age*, from a life-course perspective, shifts in exposure to and experience of nature could change significantly as adults begin working full-time jobs, have children, grow intellectually, decline physically, seek to establish legacies, retire, and so on.<sup>1</sup> From a generational perspective, different generations have had profoundly different experiences with the natural world, which could result in a range of different outcomes. Given that we examine cross-sectional data, it is difficult to tease out which differences are due to generational shifts and which are due to aging over the life course.

Similar to the presentation of results in Chapters 2 and 3 on adult Texans and children and their parents, we begin with findings related to respondents' relationships to nature, followed by how their

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<sup>1</sup>For a background on life course theory, see Glen H. Elder, Jr. 1998. "The Life Course as Developmental Theory." *Child Development* vol. 69(1): 1–12.

perceptions of the benefits of contact with the natural world. Next, we consider impediments and facilitators to contact with nature. The chapter concludes with a summary of major findings.

## 4.1 Brief Description of Methods

Results in this chapter originate from six focus groups conducted in Dallas (2), Houston (2), and San Antonio (2), as well as a survey of 2,379 adults in the state. Both methods included an oversample of minorities. (For more detail on how data were gathered on adults, see Section 1.2.) When examining sub-groups, as this chapter does, the size of each sub-group is of particular importance. In this chapter, the number of participants shifts depending on the type of analysis.

- $N = 2,379$  for all analyses derived from the Texas survey reporting income, gender, and education.
- $N = 2,248$  for all analyses derived from the Texas survey reporting age, since the number of participants in each discrete age over 70-years-old is too small for confident analysis.
- $N = 2,303$  for all analyses derived from the Texas survey reporting ethnoracial groups, since the numbers of respondents who identified as American Indian, Alaska Native, Native Hawaiian, other Pacific Islander, or other race are too small for confident analysis, and since combining these groups into one category would render the category meaningless.

All results presented—including tables, plots, and graphs—are from interviews or surveys fielded *only in Texas*. However, in a handful of places we provide a comparison to the national survey results of 5,550 Americans to show relevant differences and similarities. The national results are clearly denoted by the term “NATIONAL” in the chart’s or table’s caption.

## 4.2 Relationships to Nature

### 4.2.1 What is “Nature”?

Variation emerged in what members of various racial and ethnic groups perceived as constituting “nature” (Table 4.1). For example, nearly all white adult Texans regarded wild animals to be nature. By contrast, about one-quarter of Hispanic and black adults did *not* consider wild animals to be nature. Across all categories, Hispanic and black respondents—and, to a lesser extent, Asian adults—were less inclined than white respondents to mark the 22 categories provided as aspects of nature. Across ethnoracial groups, differences in what constitutes “nature” significantly diminished when some degree of substantial human activity was involved. Consider the differences among wild animals (from 78–91 percent of respondents), zoos (34–42 percent), and photographs of wild animals (16–22 percent).

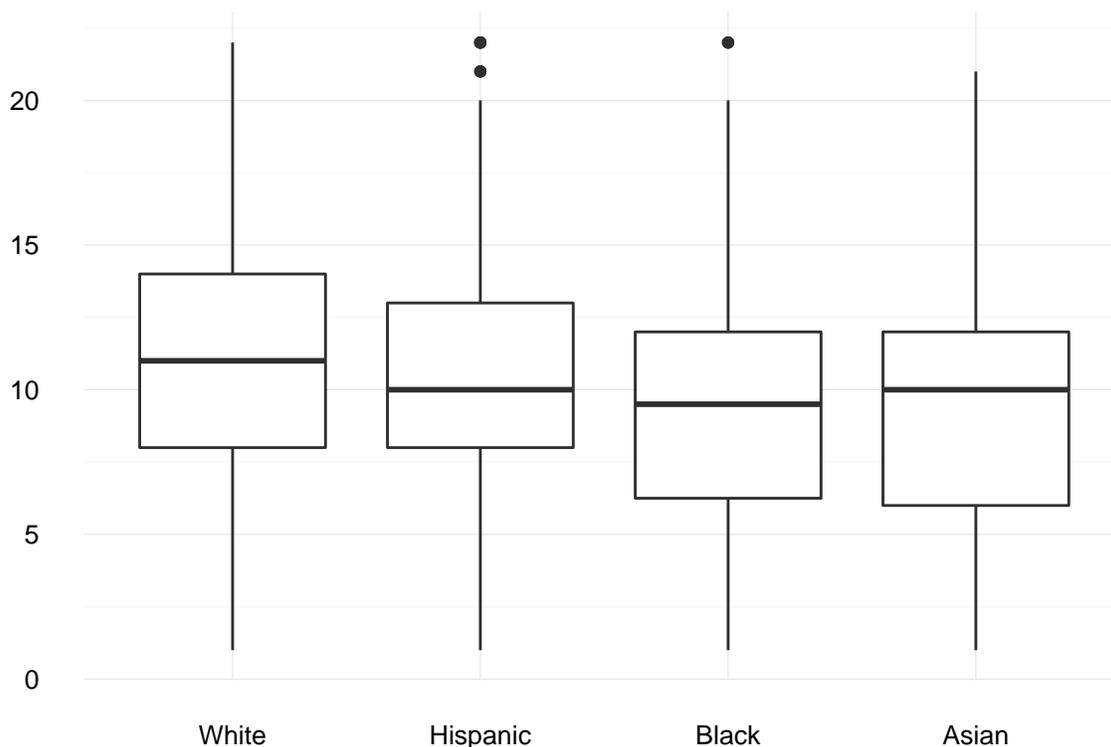
Table 4.1: What is “Nature”? by Race and Ethnicity

Category	White	Hispanic	Black	Asian
Wild animals	91%	89%	78%	79%
National parks	89%	82%	77%	83%
State parks	86%	74%	66%	74%
Oceans	86%	81%	71%	74%
Ponds and lakes	84%	80%	71%	71%
Outdoor gardens	76%	73%	70%	70%
Insects	73%	69%	63%	44%
Beach	73%	76%	61%	65%
Moon, sun, and stars	69%	71%	61%	62%
Plants in the yard	58%	55%	52%	53%
Local parks	58%	51%	51%	47%
Zoos	40%	37%	42%	34%
Pets	30%	34%	25%	25%
Ski resort	29%	19%	22%	18%
Indoor plants	27%	26%	25%	29%
Photographs of animals	19%	22%	16%	19%
Maintained lawns	19%	20%	19%	15%
Home aquarium or terrarium	16%	17%	15%	14%
My time sightseeing while commuting	15%	14%	14%	15%
Paintings of landscapes	14%	18%	14%	15%
My time walking to the car, bus, train	10%	7%	12%	12%
Family vacation destination (e.g., theme parks)	9%	12%	15%	15%

Question wording: For each of the following, please indicate if it’s something that you consider to be “nature.” ...Yes  
...No.

Across ethnoracial groups, the distribution of how many categories respondents selected shifted slightly (Figure 4.1). As seen in the middle bar of each box, the median for white adults was 11 categories; for Hispanic and Asian adults, 10; for black adults, 9. The bottom of the box represents the lower quartile: For Hispanic adults, 25 percent selected between 1 and 8 categories; meanwhile, 25 percent of black adults selected between 1 and 6 categories. In comparison, for white adults, 25 percent selected between 1 and 8 categories.

Figure 4.1: Number of Nature Categories Selected, by Race and Ethnicity

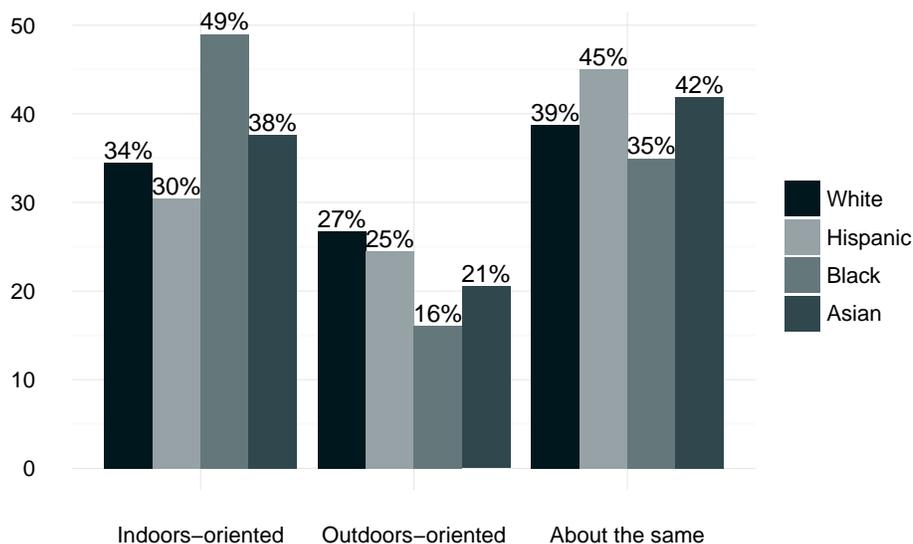


Note: The bottom of the box represents the first quartile (25 percent of responses fall beneath this line). The top of the box represents the third quartile (75 percent of responses fall beneath this line). The horizontal line inside the box represents the second quartile (i.e., the median). The upper whisker extends to the highest value that is within 1.5 times the distance between the first and third quartiles (called the inter-quartile range). The lower whisker extends to the lowest value that is within 1.5 times the distance between the first and third quartiles. Data beyond the end of the whiskers are outliers and plotted as points. Question wording: For each of the following, please indicate if it's something that you consider to be "nature." ...Yes ...No.

### 4.2.2 Orientation to Nature

As reported in Chapter 2, Figure 2.7, one-quarter of all adult Texans (25 percent) indicated their primary pastimes, hobbies, and recreational interests tended to be outdoors-oriented, in contrast to 35 percent who selected indoors-oriented and 41 percent who selected both indoors- and outdoors-oriented. White adults were most likely to select being outdoors-oriented, and black adults were most likely to select being indoors-oriented (Figure 4.2).

Figure 4.2: Orientation in Pastimes, Hobbies, and Interests, by Race and Ethnicity



Question wording: In general, would you say your pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented?

Roughly the same proportions of urban, suburban, and rural residents—about one-quarter—reported being outdoors-oriented (Table 4.2). Urban, suburban, and rural respondents were about as likely to think of themselves as indoors-oriented in their pastimes, hobbies, and interests.

Table 4.2: Orientation in Pastimes, Hobbies, and Interests, by Location

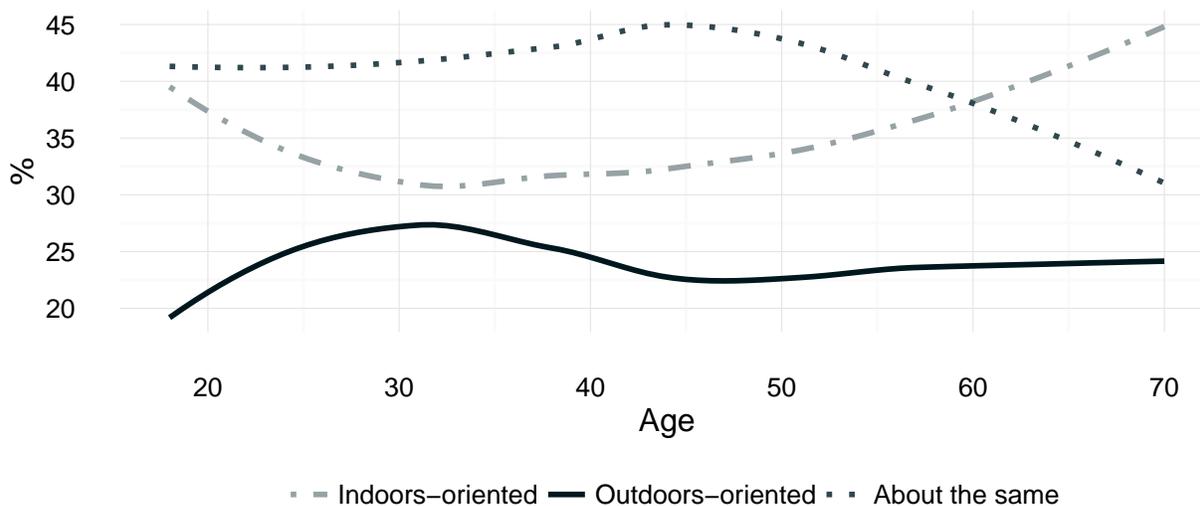
Categories	Urban	Suburban	Rural
Indoors-oriented	34%	37%	30%
Outdoors-oriented	23%	24%	30%
About the same	43%	39%	40%

Question wording: In general, would you say your pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented?

Orientation to the outdoors was highest among younger adults in our sample, and then it declined, on average, for respondents over 30 years of age (Figure 4.3).<sup>2</sup>

<sup>2</sup>Data points are smoothed using the LOESS smoothing method (locally weighted smoothing, also called LOWESS). This approach does not presume in advance that the data fit a particular distribution, such as linear or exponential. Rather, this non-parametric smoother finds a curve of best fit according to nearby (“local”) data points.

Figure 4.3: Orientation in Pastimes, Hobbies, and Interests, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: In general, would you say your pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented?

### 4.2.3 Comparison of Nature Interests to Other Interests

As reported in Chapter 2, Figure 2.3, the majority of adults in Texas described their interests in nature as among the most enjoyable if not most enjoyable interests in their lives: 20 percent said their interests in nature were their most enjoyable. By race and ethnicity, Asian adults were especially inclined to perceive contact with nature as among their most enjoyable interests relative to other groups (Table 4.3). Thirty-one percent held this view, compared with 20 percent of white and Hispanic respondents, and 14 percent of black respondents. Black adults were most likely to report their interests in nature were their least enjoyable or among their less enjoyable. In the nation as a whole, Hispanics were likeliest to put their interests in nature as their most enjoyable (Table 4.4).

Table 4.3: How Nature Interests Compare with Other Interests, by Race and Ethnicity

Categories	White	Hispanic	Black	Asian
Least enjoyable	1%	0%	5%	1%
Less enjoyable	3%	3%	7%	3%
Neutral	20%	22%	23%	12%
More enjoyable	56%	54%	51%	53%
Most enjoyable	20%	20%	14%	31%

Question wording: How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your least enjoyable interests ...among your less enjoyable interests ...neither more nor less enjoyable than your other interests ...among your more enjoyable interests ...your most enjoyable interests?

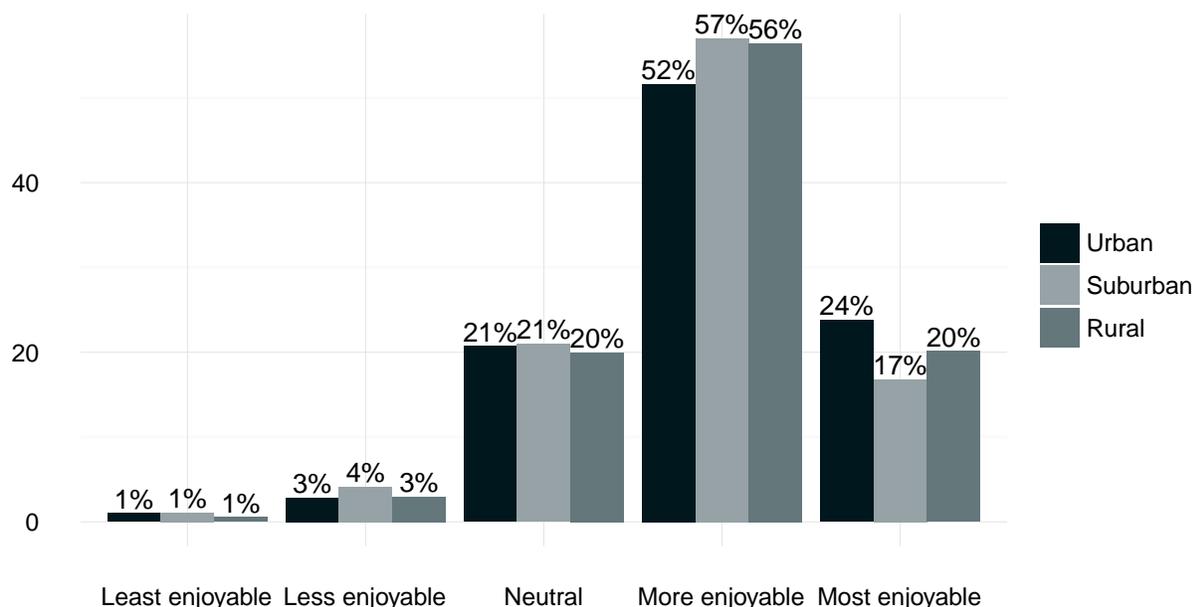
Table 4.4: NATIONAL: How Nature Interests Compare with Other Interests, by Race and Ethnicity

Categories	White	Hispanic	Black	Asian
Least enjoyable	1%	1%	3%	2%
Less enjoyable	3%	3%	6%	4%
Neutral	22%	15%	29%	24%
More enjoyable	50%	45%	41%	48%
Most enjoyable	24%	36%	20%	22%

Question wording: How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your least enjoyable interests ...among your less enjoyable interests ...neither more nor less enjoyable than your other interests ...among your more enjoyable interests ...your most enjoyable interests?

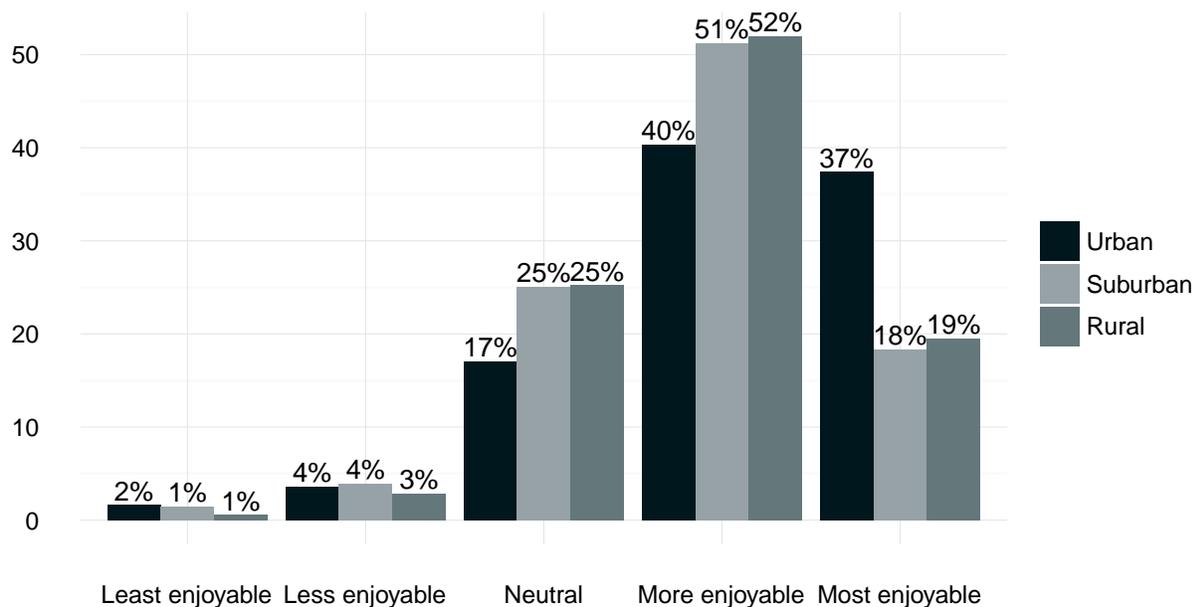
Across residential locations, very few adults surveyed in Texas saw their interests in nature as among their least or less enjoyable (Figure 4.4). Those who placed their interests in nature as their *most* enjoyable were likely to be urban residents: 24 percent did so, compared with 17 percent of suburban respondents and 20 percent of rural ones. At a national level the enjoyment of nature among urban residents was even more pronounced (Figure 4.5).

Figure 4.4: How Nature Interests Compare with Other Interests, by Location



Question wording: How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your least enjoyable interests ...among your less enjoyable interests ...neither more nor less enjoyable than your other interests ...among your more enjoyable interests ...your most enjoyable interests?

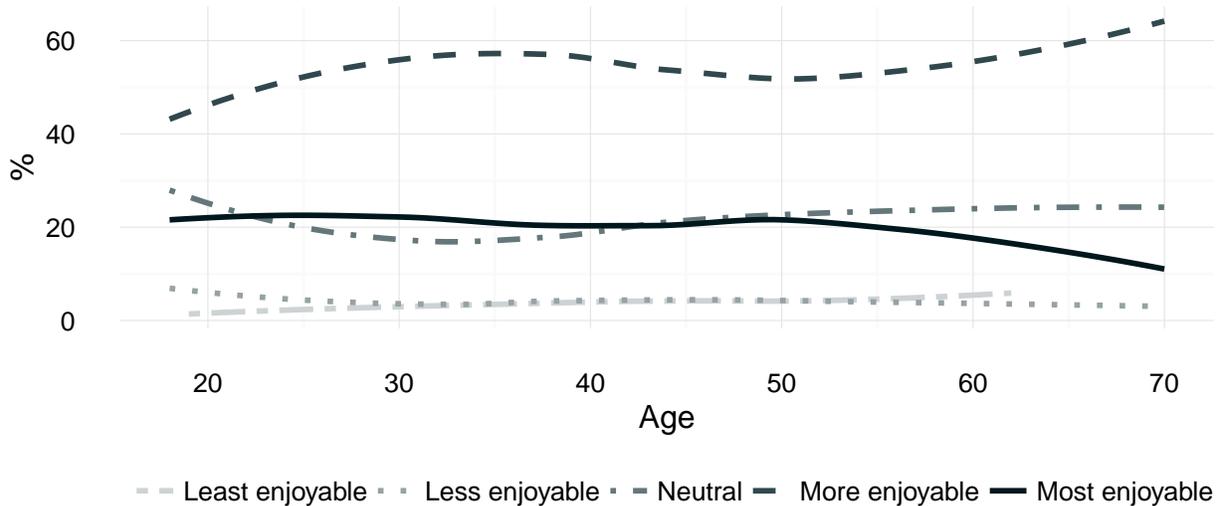
Figure 4.5: NATIONAL: How Nature Interests Compare with Other Interests, by Location



Question wording: How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your least enjoyable interests ...among your less enjoyable interests ...neither more nor less enjoyable than your other interests ...among your more enjoyable interests ...your most enjoyable interests?

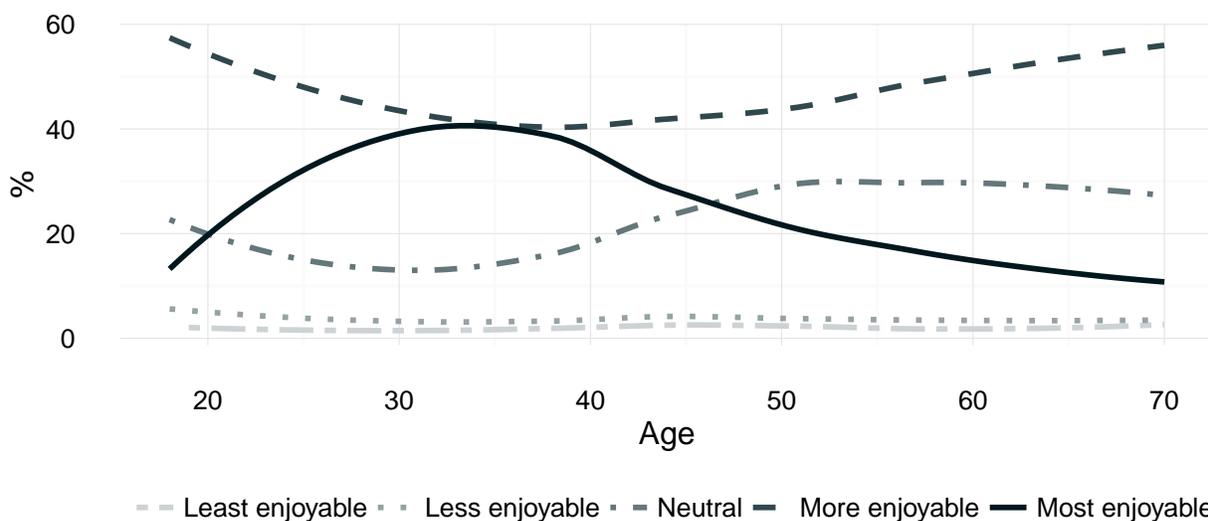
Figure 4.6 shows changes in adults' relative enjoyment of their interests in nature by age. (The solid line represents "most enjoyable"; the dashed line above it represents "more enjoyable.") Enjoyment of nature interests was steady among 18–30-year-olds, and then it declined slightly among older adults in our sample. At a national level the relative enjoyment of nature was especially high among adults in their 30s (Figure 4.7).

Figure 4.6: How Nature Interests Compare with Other Interests, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your least enjoyable interests ...among your less enjoyable interests ...neither more nor less enjoyable than your other interests ...among your more enjoyable interests ...your most enjoyable interests?

Figure 4.7: NATIONAL: How Nature Interests Compare with Other Interests, by Age

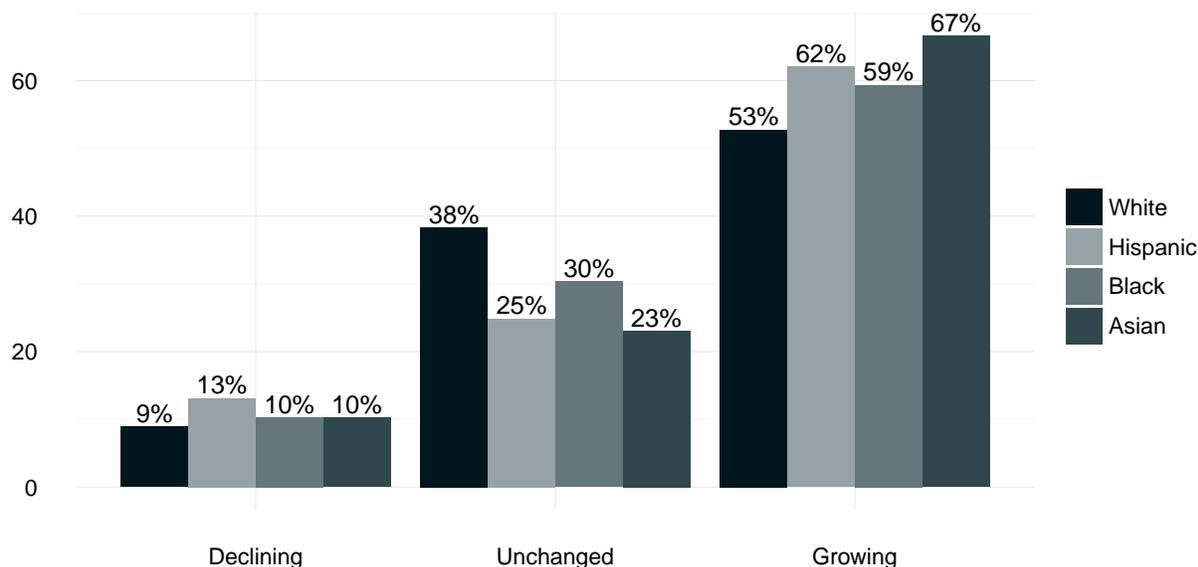


Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your least enjoyable interests ...among your less enjoyable interests ...neither more nor less enjoyable than your other interests ...among your more enjoyable interests ...your most enjoyable interests?

#### 4.2.4 Change in Interests in Nature

A small proportion of adults in Texas perceived their interests in nature as declining (Figure 4.8). Asian adults were likeliest to report an increasing interest in nature: 67 percent indicated this to be the case, followed by 62 percent of Hispanic adults.

Figure 4.8: Change in Interests in Nature as Time Goes On, by Race and Ethnicity

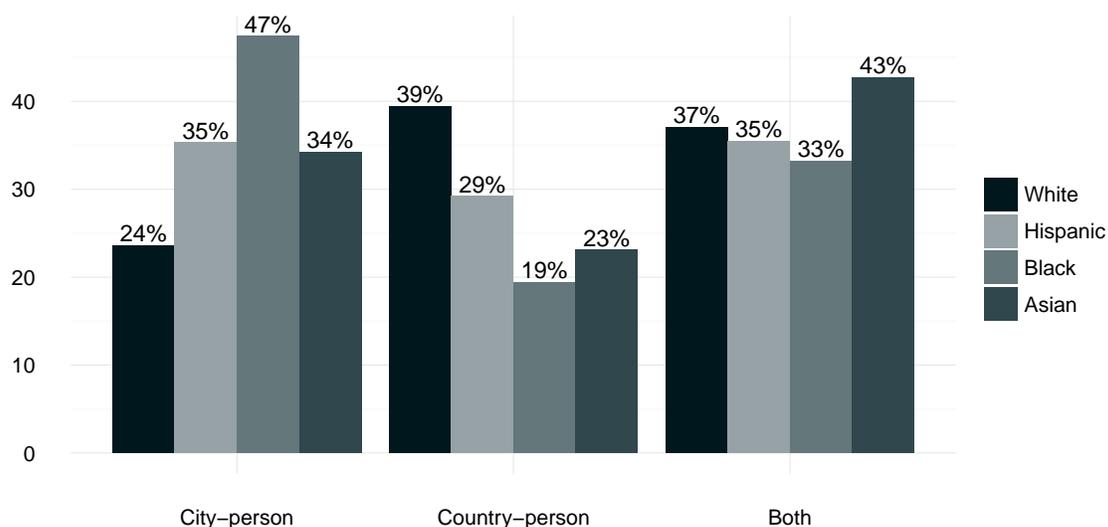


Question wording: As time goes on, do you find your interests in nature growing, declining, or remaining unchanged?

#### 4.2.5 Variation of “City” or “Country” Identity

Almost one-half of black adults considered themselves to be a “city-person,” compared with 24 percent of white adults (Figure 4.9). Conversely, 39 percent of white adults considered themselves to be a “country-person,” a figure approximately twice the rate found among black and Asian adults.

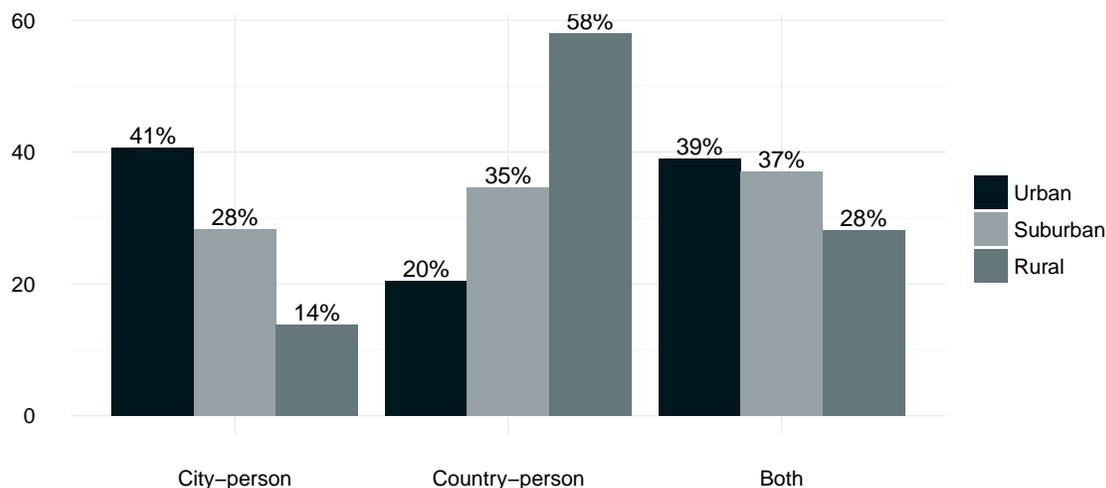
Figure 4.9: Identity as a “City” or “Country” Person, by Race and Ethnicity



Question wording: In general, do you tend to think of yourself as ...a “city-person” at heart ...a “country-person” at heart ...both a “city- and a country-person” at heart?

How respondents identified their orientation to the city or the country differed by residential location—although perhaps not to the degree expected (Figure 4.10). Over one-half of rural respondents identified as a “country-person,” compared with one-third of suburban respondents and one-fifth of urban respondents. About two-fifths of urban residents thought of themselves as a “city-person.”

Figure 4.10: Identity as a “City” or “Country” Person, by Location

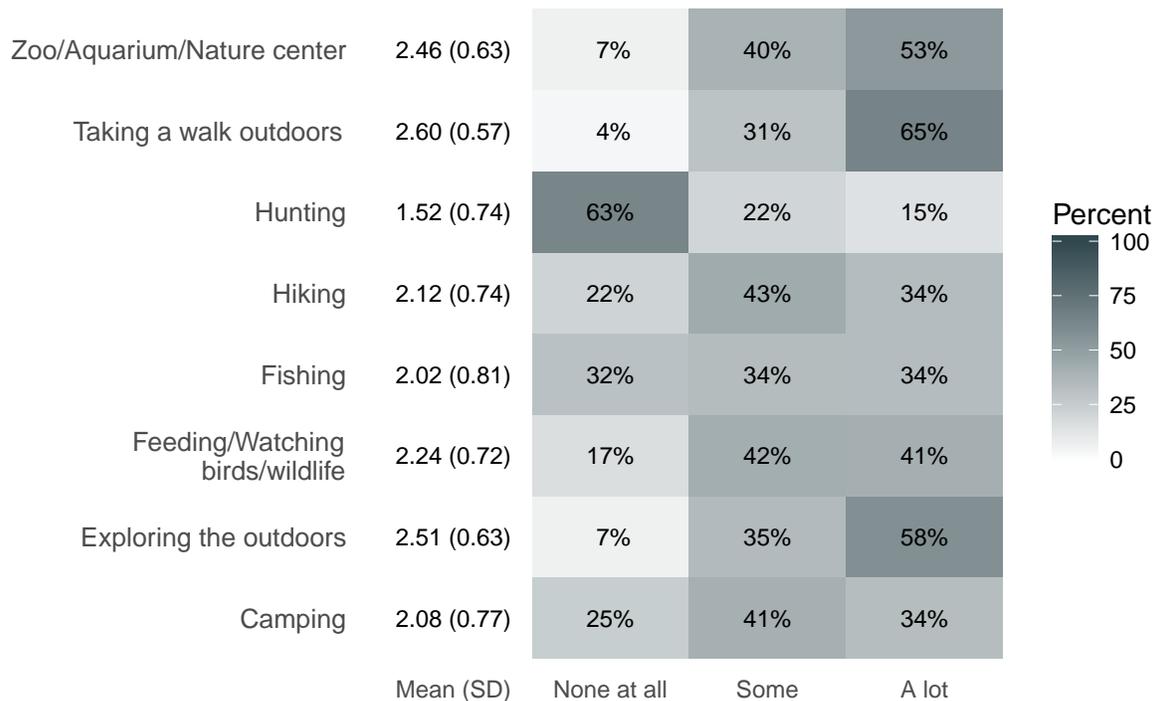


Question wording: In general, do you tend to think of yourself as ...a “city-person” at heart ...a “country-person” at heart ...both a “city- and a country-person” at heart?

#### 4.2.6 Interest in Nature-Related Activities

In this section, we explore interest across ethnoracial groups in eight distinct types of nature-related activities: hunting; fishing; feeding or watching birds or other wildlife; exploring the outdoors; camping; hiking; taking a walk outdoors; and visiting a zoo, aquarium, nature center, natural history museum, or botanical garden. (Figure 4.11 reports interest in these activities for adults as a whole.) Not only are these activities useful to examine because of variation in interest, but each one also provides insight into different types of interactions with nature as well as different settings. Zoos and aquariums tend to be more cultivated and curated settings. Hiking and hunting, meanwhile, tend to happen in relatively less cultivated places, and they may occur farther from home. These different activities also tend to require different levels of equipment and financial investments. In addition, hunting and fishing are important management activities to conservation agencies, and they directly and indirectly provide funding for conservation.

Figure 4.11: Interest in Nature- or Outdoors-Oriented Activities, Adults Overall

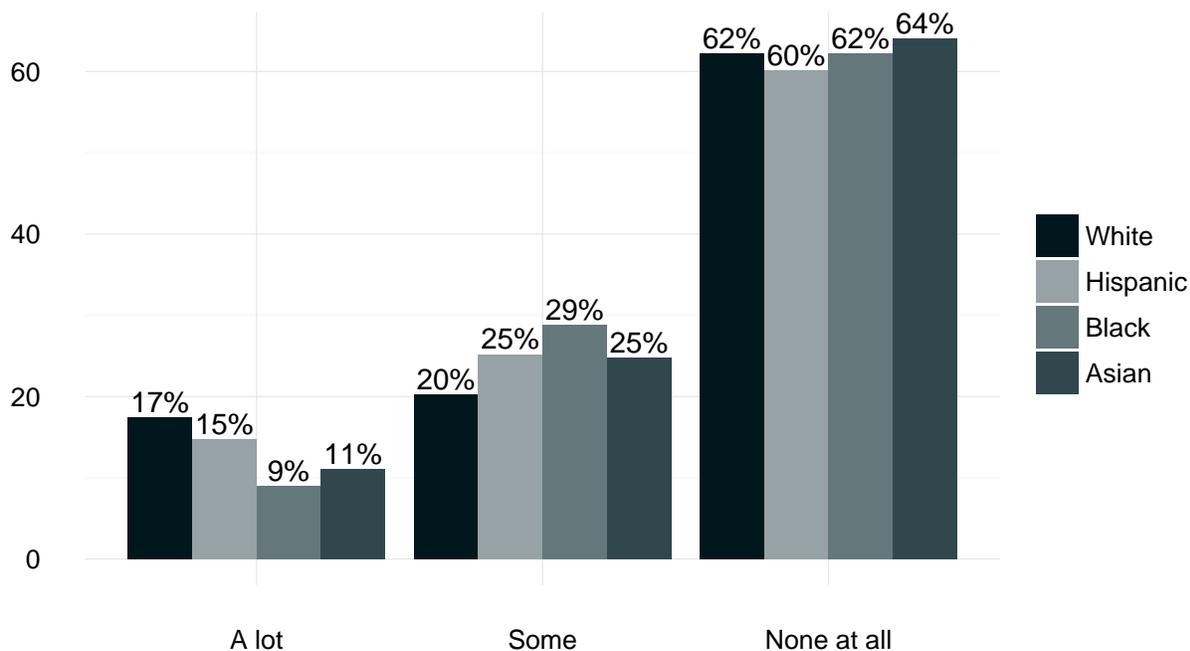


Note: This is a truncated list showing interest among adults as a whole, to be used as a comparison in the analyses that follow. The complete list may be found in Figure 2.10. Question wording: How would you rate your interest in each of the following activities? ...Camping ...Hiking ...Hunting ...Fishing ...Exploring the outdoors ...Feeding or watching birds or other wildlife ...Visiting a zoo, aquarium, nature center, natural history museum, or botanical garden ...Taking a walk outdoors.

### Interest in Hunting

As Figure 4.12 shows, interest in hunting was highest among white adults (17 percent), followed by Hispanic (15 percent), Asian (11 percent), and black adults (9 percent). Twenty-nine percent of black adults expressed at least “some” degree of interest in hunting. Almost two-thirds of all adults indicated no interest in hunting.

Figure 4.12: Interest in Hunting, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...hunting.

Rural adults were likeliest to report interest in hunting (23 percent), compared with urban residents (15 percent) and suburban residents (13 percent) (Table 4.5). This result differs from the national results, in which a slightly higher proportion of urban residents expressed high interest in hunting compared to rural residents (Table 4.6).

Table 4.5: Interest in Hunting, by Location

Categories	Urban	Suburban	Rural
A lot	15%	13%	23%
Some	25%	23%	20%
None at all	60%	64%	58%

Question wording: How would you rate your interest in each of the following activities? ...hunting.

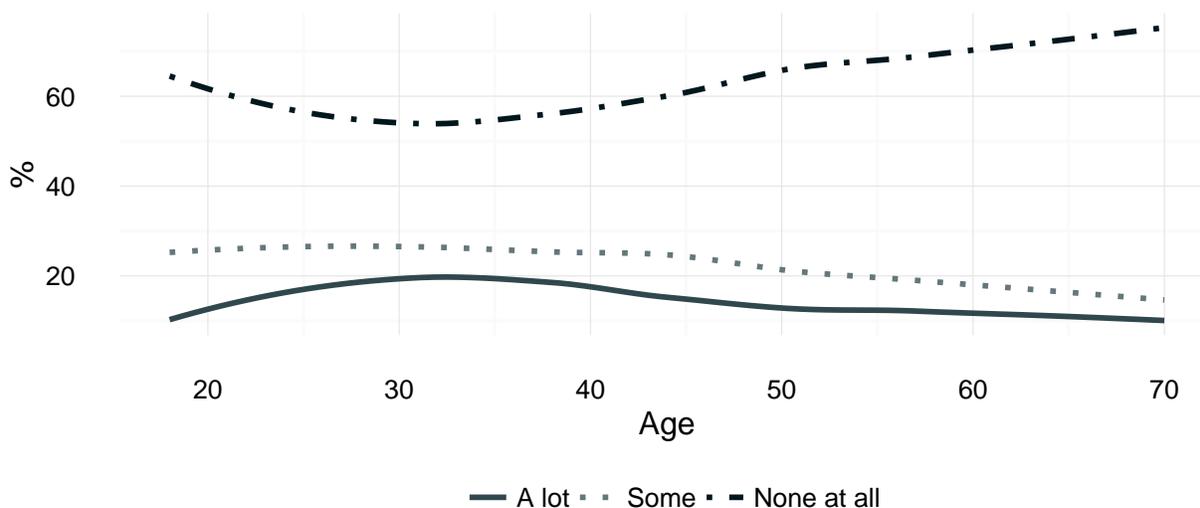
Table 4.6: NATIONAL: Interest in Hunting, by Location

Categories	Urban	Suburban	Rural
A lot	16%	9%	14%
Some	24%	17%	19%
None at all	60%	75%	68%

Question wording: How would you rate your interest in each of the following activities? ...hunting.

Interest in hunting was higher among the youngest adults in the survey, with about one-fifth expressing “a lot” of interest (Figure 4.13). The proportion of adults who said they have no interest in hunting increased, going from about 60 percent to nearly 80 percent.

Figure 4.13: Interest in Hunting, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ...hunting.

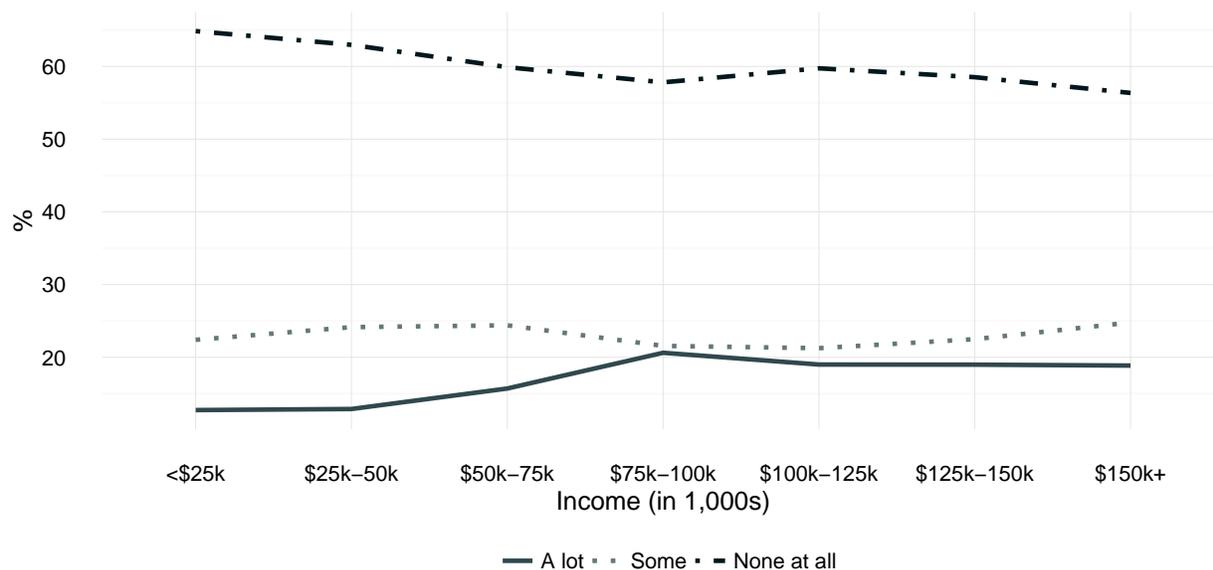
Interest in hunting was strongest among men (Table 4.7), with 22 percent reporting “a lot” of interest. Conversely, two-thirds of women (68 percent) indicated no interest in hunting. Interest in hunting was rose slightly as household income increased (Figure 4.14).

Table 4.7: Interest in Hunting, by Gender

Categories	Men	Women
A lot	22%	11%
Some	27%	21%
None at all	52%	68%

Question wording: How would you rate your interest in each of the following activities? ...hunting.

Figure 4.14: Interest in Hunting, by Income

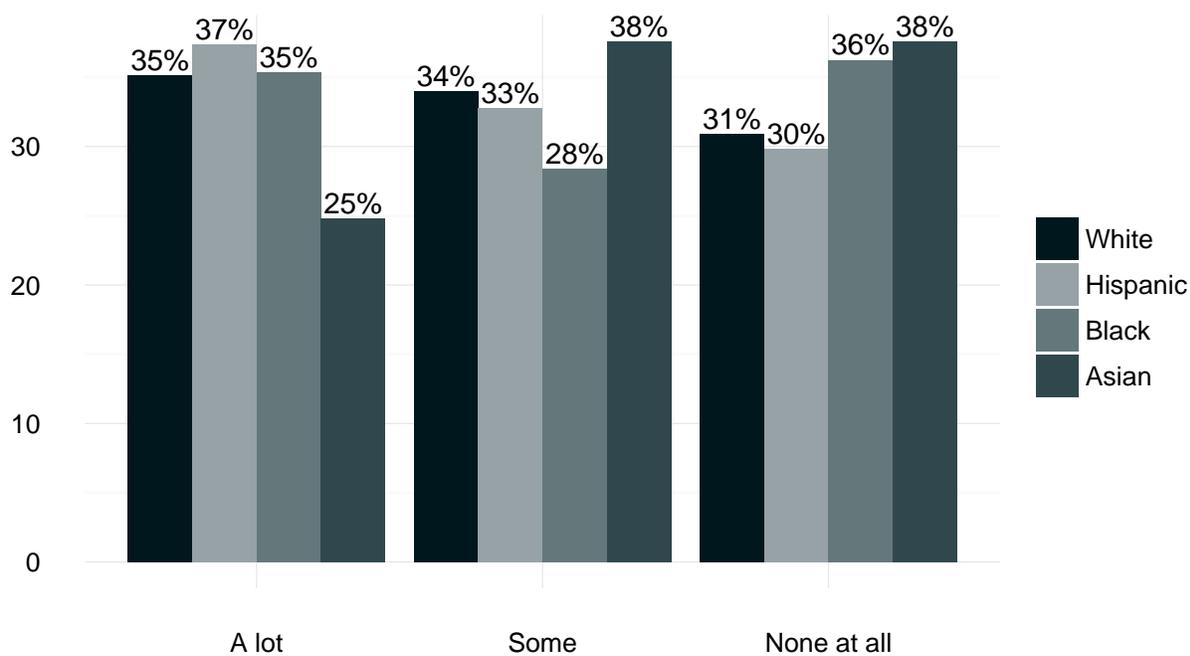


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...hunting. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

### Interest in Fishing

Interest in fishing varied relatively little across ethnoracial groups (Figure 4.15). About one-third of Texans expressed high interest in fishing, except for Asian adults. Interest in fishing was highest among rural residents and lowest among suburban adults (Table 4.8). In the nation as a whole, interest was more evenly distributed across residential locations (Table 4.9). Interest was steady across ages (Figure 4.16). Seventy-two percent of men had at least “some” interest in fishing, compared with 66 percent of women (Table 4.10).

Figure 4.15: Interest in Fishing, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...fishing.

Table 4.8: Interest in Fishing, by Location

Categories	Urban	Suburban	Rural
A lot	35%	33%	45%
Some	34%	34%	29%
None at all	31%	33%	26%

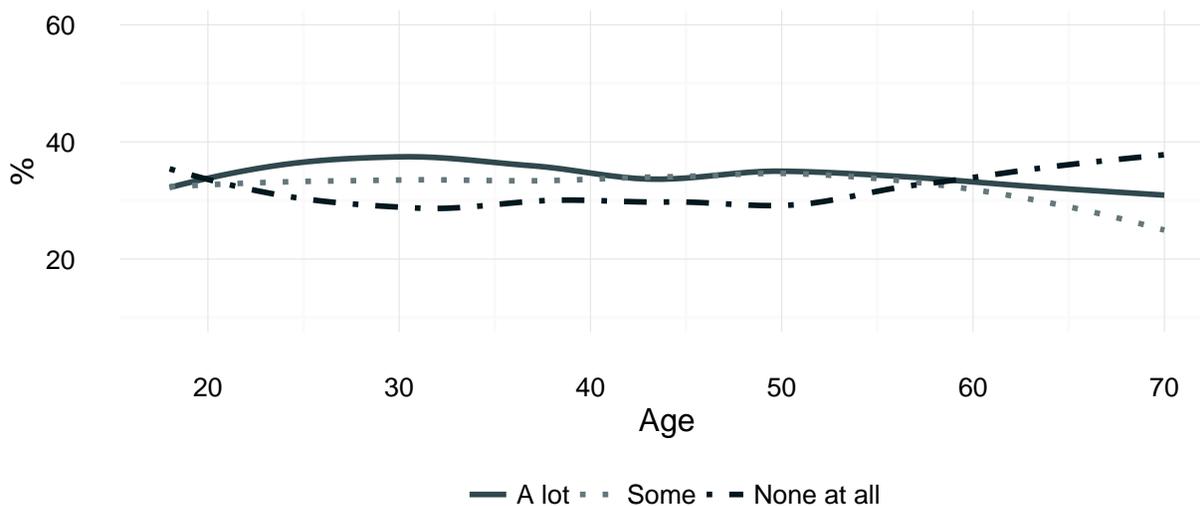
Question wording: How would you rate your interest in each of the following activities? ...fishing.

Table 4.9: NATIONAL: Interest in Fishing, by Location

Categories	Urban	Suburban	Rural
A lot	32%	24%	32%
Some	34%	32%	33%
None at all	34%	43%	35%

Question wording: How would you rate your interest in each of the following activities? ...fishing.

Figure 4.16: Interest in Fishing, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ...fishing.

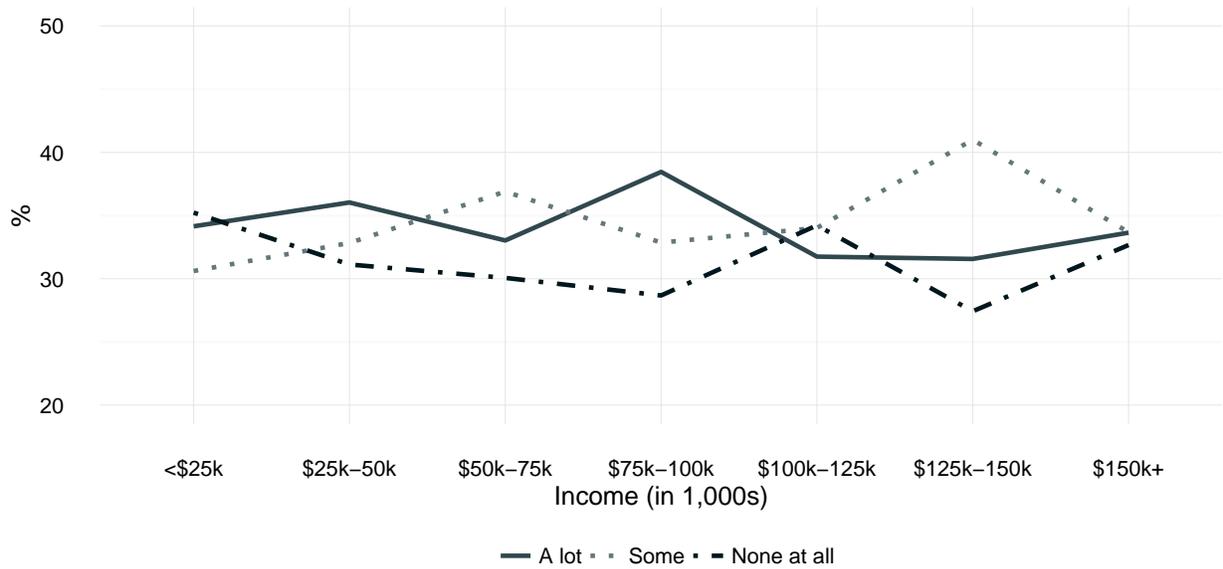
Table 4.10: Interest in Fishing, by Gender

Categories	Men	Women
A lot	40%	32%
Some	32%	34%
None at all	27%	34%

Question wording: How would you rate your interest in each of the following activities? ...fishing.

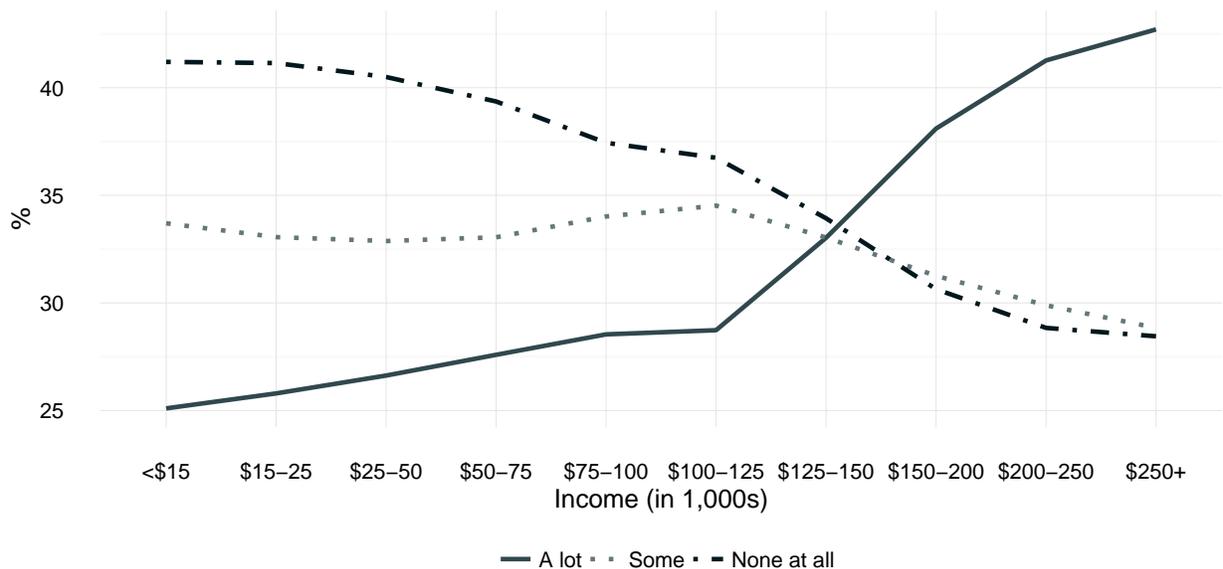
In Texas interest in fishing was stable across household incomes, with about one-third of respondents expressing high interest (Figure 4.17). In contrast, at the national level interest in fishing sharply increased among respondents from higher income households (Figure 4.18).

Figure 4.17: Interest in Fishing, by Income



Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...fishing. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

Figure 4.18: NATIONAL: Interest in Fishing, by Income

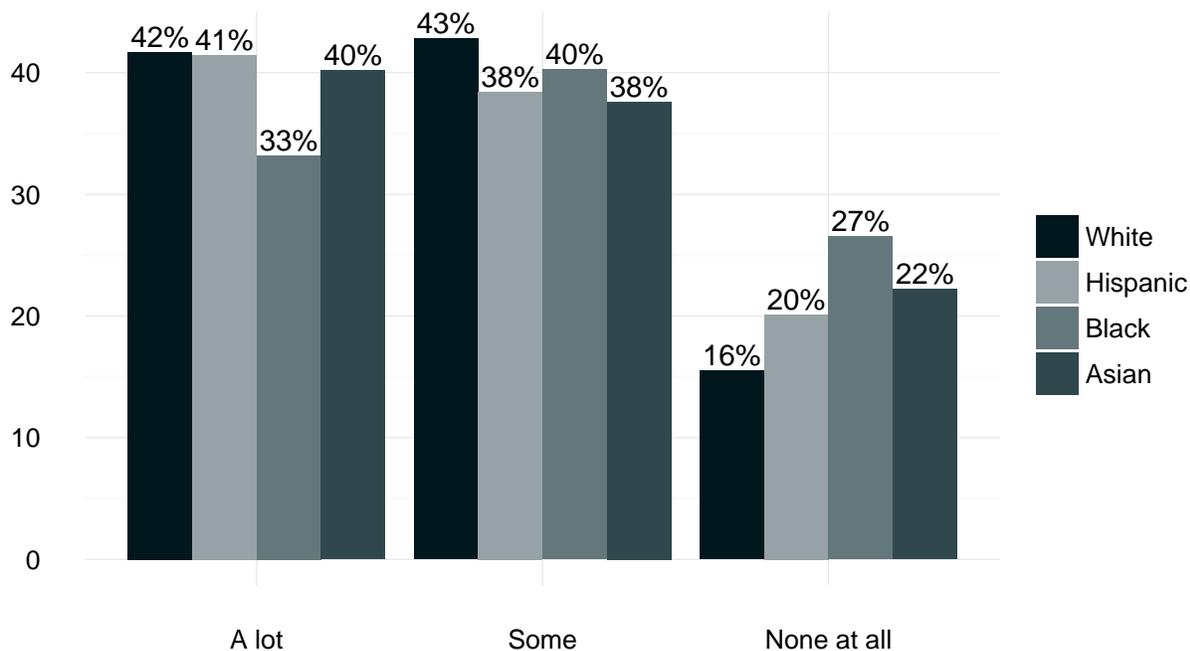


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...fishing. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

### Interest in Feeding or Watching Birds or Other Wildlife

Whites, Hispanics, and Asians expressed the highest interest in watching and feeding birds or other wildlife (Figure 4.19). In contrast, black respondents were the least likely to have interest in this activity: 27 percent had no interest at all.

Figure 4.19: Interest in Bird/Wildlife Watching/Feeding, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...feeding or watching birds or other wildlife.

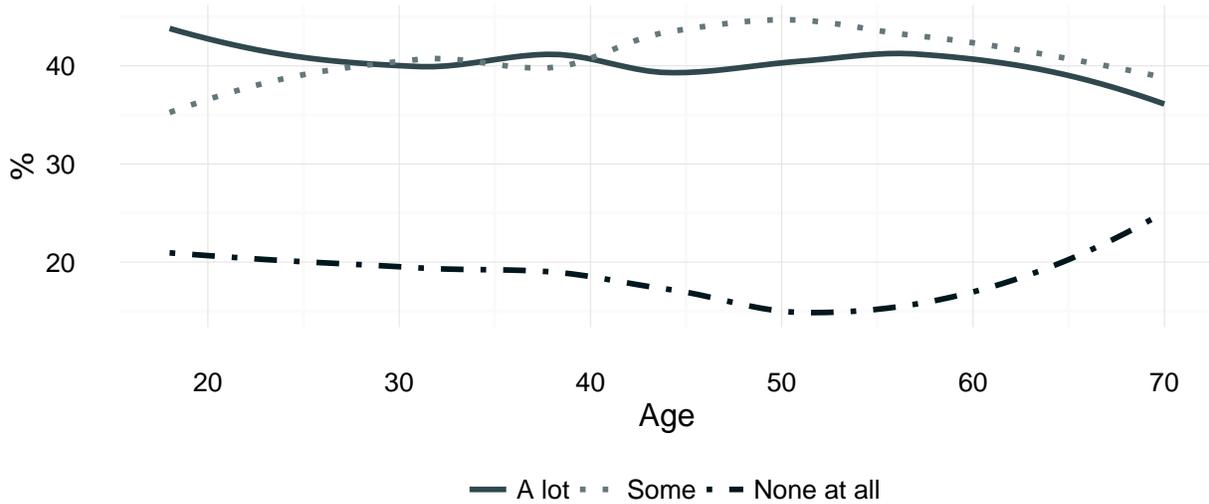
Differences were minimal across residential location, with about two-fifths expressing strong interest (Table 4.11). Across ages, interest in this activity was relatively stable (Figure 4.20). Slightly more women expressed high interest in it than men (Table 4.12). Interest in watching or feeding birds or other wildlife was relatively stable across household income (Figure 4.21).

Table 4.11: Interest in Bird/Wildlife Watching/Feeding, by Location

Categories	Urban	Suburban	Rural
A lot	41%	39%	43%
Some	41%	40%	40%
None at all	18%	20%	16%

Question wording: How would you rate your interest in each of the following activities? ...feeding or watching birds or other wildlife.

Figure 4.20: Interest in Bird/Wildlife Watching/Feeding, by Age



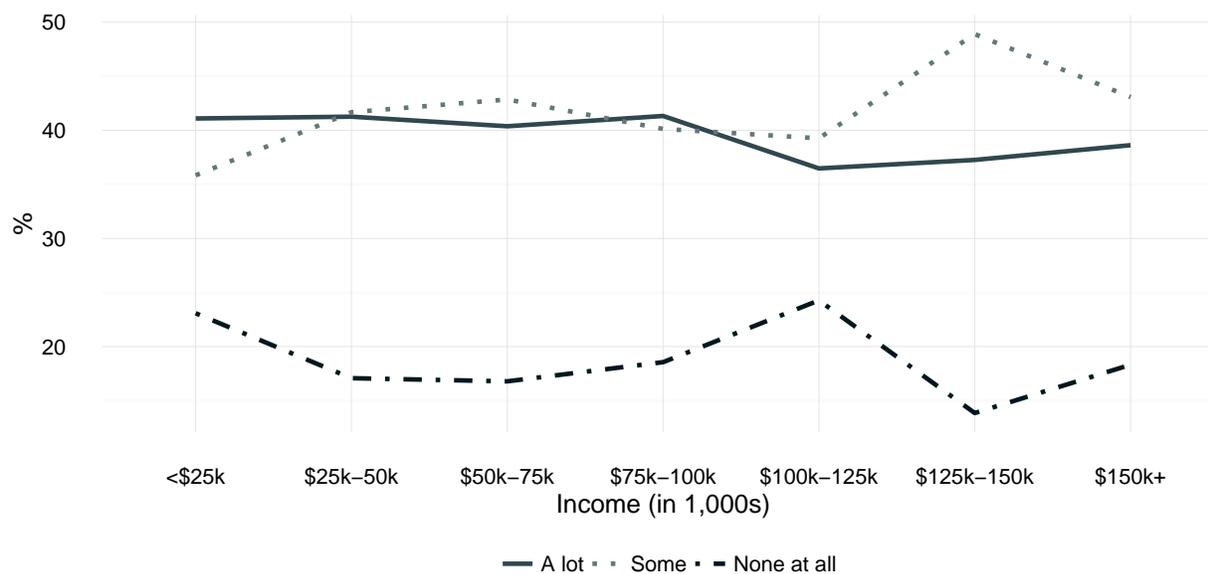
Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ...feeding or watching birds or other wildlife.

Table 4.12: Interest in Bird/Wildlife Watching/Feeding, by Gender

Categories	Men	Women
A lot	37%	43%
Some	44%	39%
None at all	20%	18%

Question wording: How would you rate your interest in each of the following activities? ...feeding or watching birds or other wildlife.

Figure 4.21: Interest in Bird/Wildlife Watching/Feeding, by Income

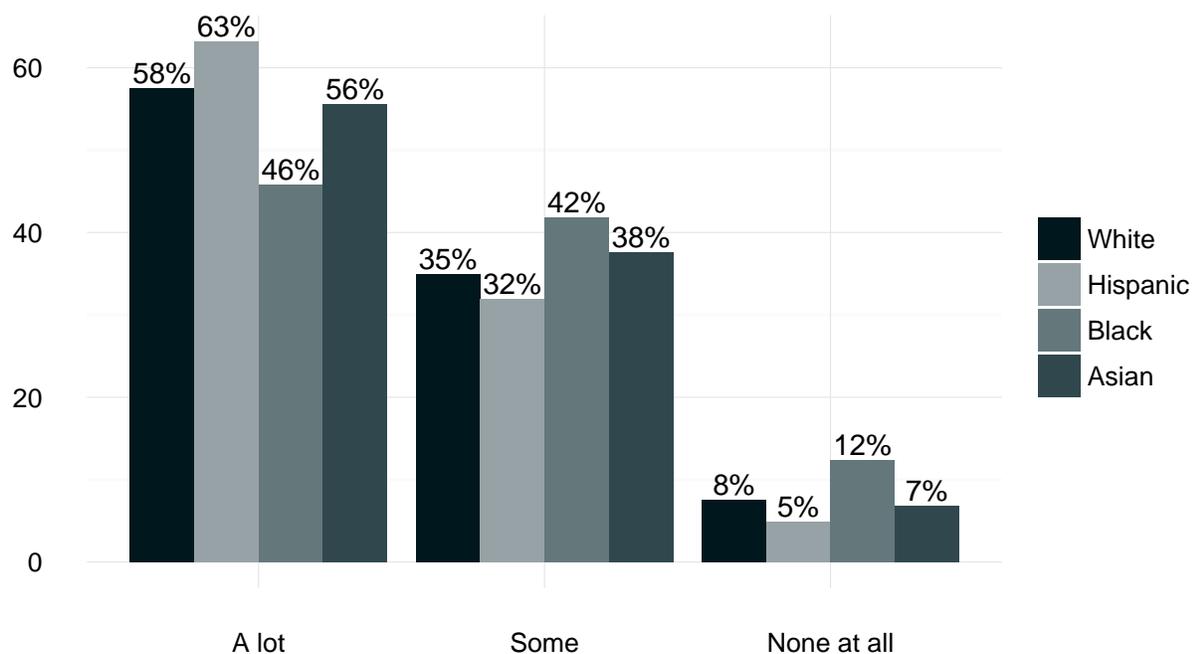


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...feeding or watching birds or other wildlife. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

### Interest in Exploring the Outdoors

As seen in Figure 4.11, interest in exploring the outdoors was relatively high across all adults surveyed: 93 percent expressed “some” or “a lot” of interest in this nature-related activity. Figure 4.22 shows the strongest interest in exploring the outdoors occurred among Hispanics (63 percent reported “a lot” of interest), followed by white (58 percent), Asian (56 percent), and black adults (46 percent). Twelve percent of black adults reported no interest at all in exploring the outdoors—about twice the percentage found among Hispanics and Asians.

Figure 4.22: Interest in Exploring the Outdoors, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...exploring the outdoors.

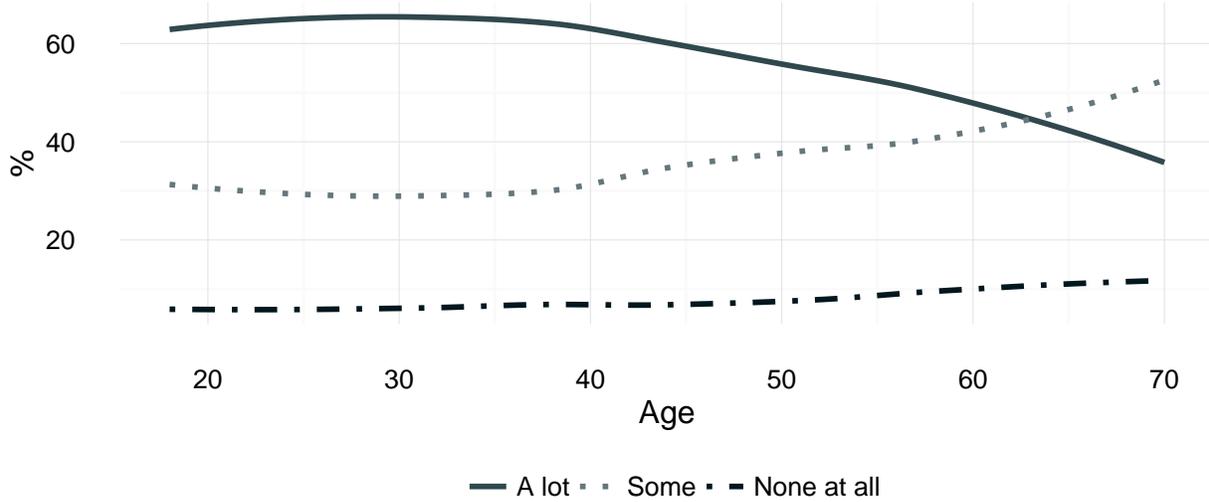
Roughly similar interest in exploring the outdoors occurred among residents (Table 4.13). By age, interest in exploring the outdoors was highest among adults in their 20s (over 60 percent reported “a lot” of interest) and lowest among older Texans (about 40 percent of 70-year-olds reported high interest) (Figure 4.23). Interest in exploring the outdoors was virtually identical among women and men: over one-half reported high interest (Table 4.14). Interest in exploring the outdoors crossed household income levels, with strong interest remaining stable at 50–60 percent (Figure 4.24).

Table 4.13: Interest in Exploring the Outdoors, by Location

Categories	Urban	Suburban	Rural
A lot	60%	57%	58%
Some	34%	35%	37%
None at all	6%	9%	5%

Question wording: How would you rate your interest in each of the following activities? ...exploring the outdoors.

Figure 4.23: Interest in Exploring the Outdoors, by Age



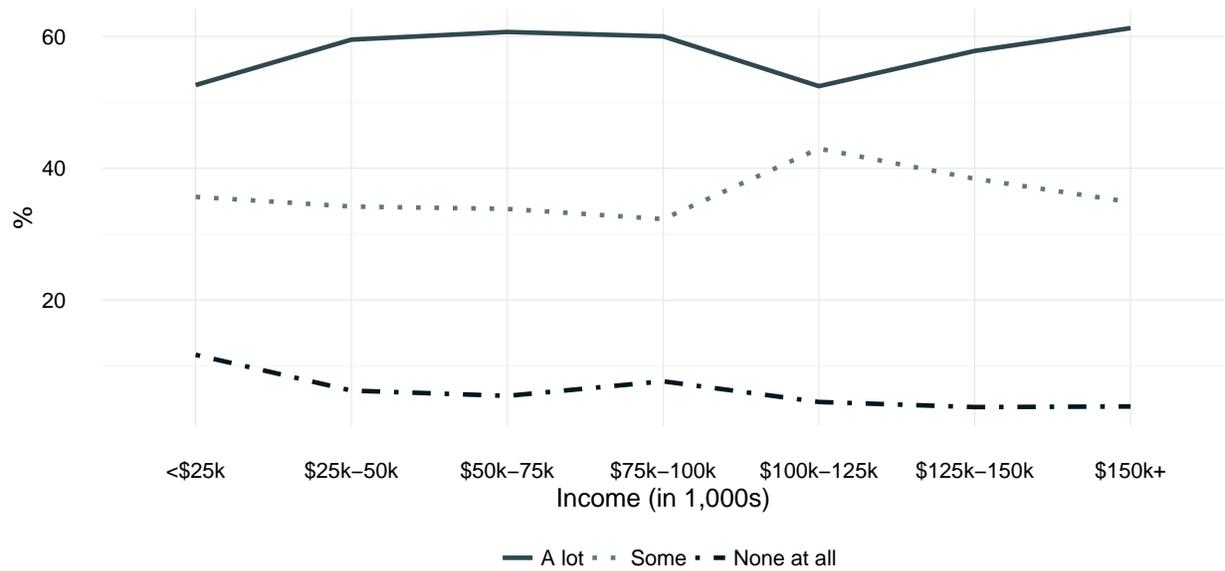
Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ...exploring the outdoors.

Table 4.14: Interest in Exploring the Outdoors, by Gender

Categories	Men	Women
A lot	56%	60%
Some	37%	33%
None at all	8%	7%

Question wording: How would you rate your interest in each of the following activities? ...exploring the outdoors.

Figure 4.24: Interest in Exploring the Outdoors, by Income

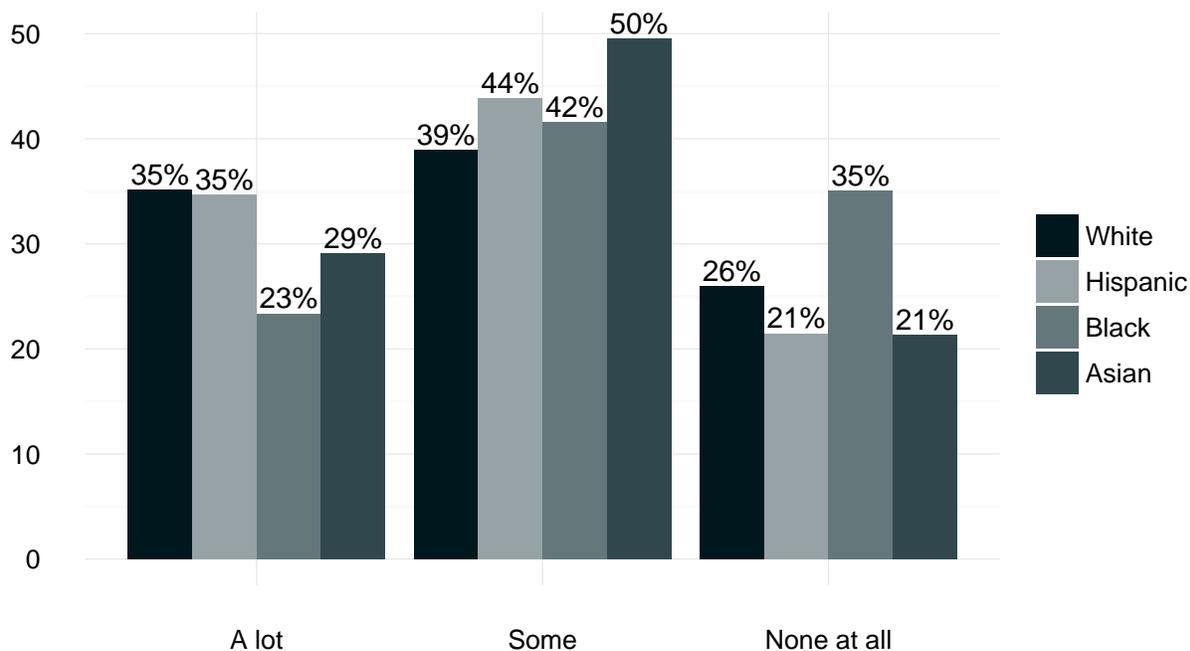


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...exploring the outdoors. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

### Interest in Camping

Notable differences emerged among ethnoracial groups in interest in camping (Figure 4.25). Hispanic and white adults expressed the highest interest (35 percent). Over one-third (35 percent) of black adults had no interest in camping, followed by 26 percent of white respondents.

Figure 4.25: Interest in Camping, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...camping.

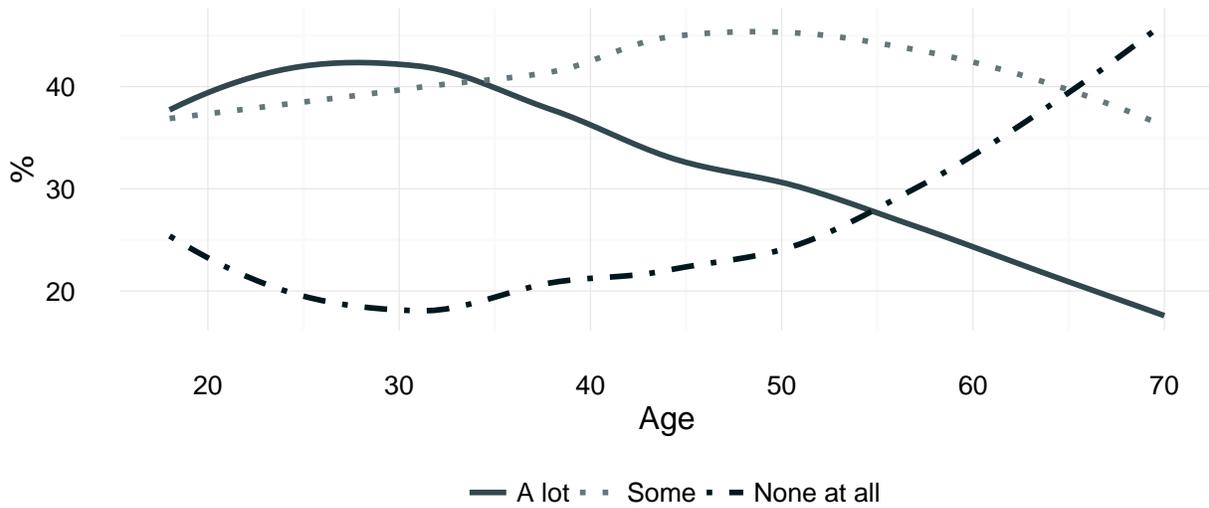
Interest in camping was highest among urban and rural residents: 37 percent indicated they have “a lot” of interest (Table 4.15). Interest in camping was highest among adults in their mid-20s to mid-30s, and then declined among older adults (Figure 4.26). Men were relatively more interested in camping: 40 percent expressed high interest, compared with 31 percent of women (Table 4.16). Interest in camping was stable across household income (Figure 4.27). Across the nation as a whole, interest in camping increased with household income (Figure 4.28).

Table 4.15: Interest in Camping, by Location

Categories	Urban	Suburban	Rural
A lot	37%	30%	37%
Some	39%	43%	40%
None at all	24%	27%	23%

Question wording: How would you rate your interest in each of the following activities? ....camping.

Figure 4.26: Interest in Camping, by Age



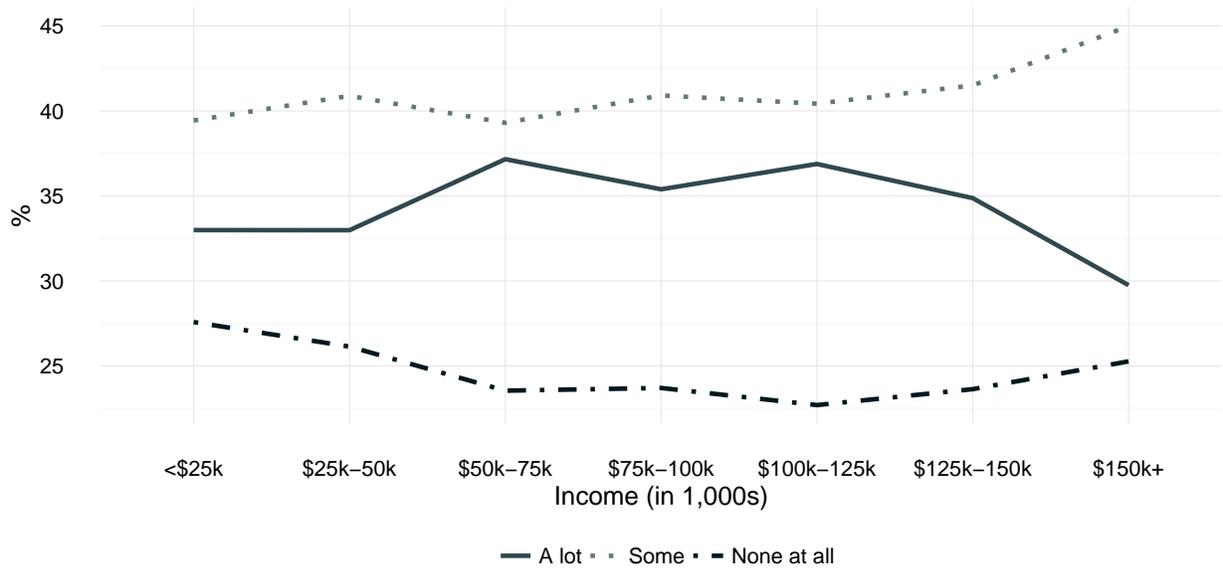
Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ....camping.

Table 4.16: Interest in Camping, by Gender

Categories	Men	Women
A lot	40%	31%
Some	40%	41%
None at all	21%	28%

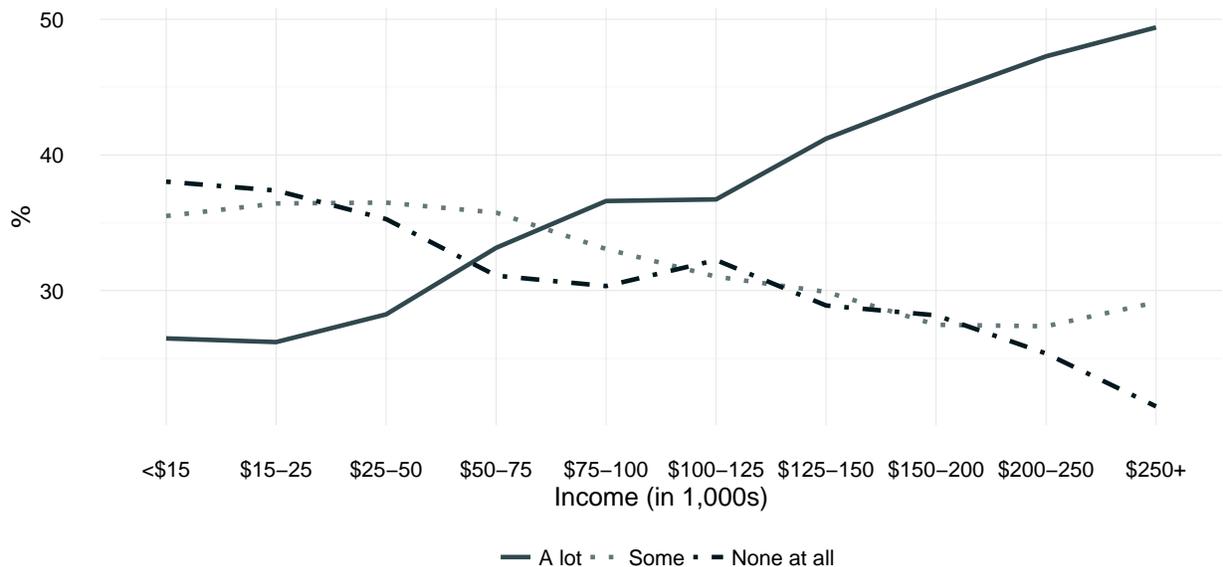
Question wording: How would you rate your interest in each of the following activities? ....camping.

Figure 4.27: Interest in Camping, by Income



Note: Income figures in 1,000s. Question wording: Which of the following income categories best describes your total annual household income averaged over the past 5 years? | How would you rate your interest in each of the following activities? ....camping.

Figure 4.28: NATIONAL: Interest in Camping, by Income

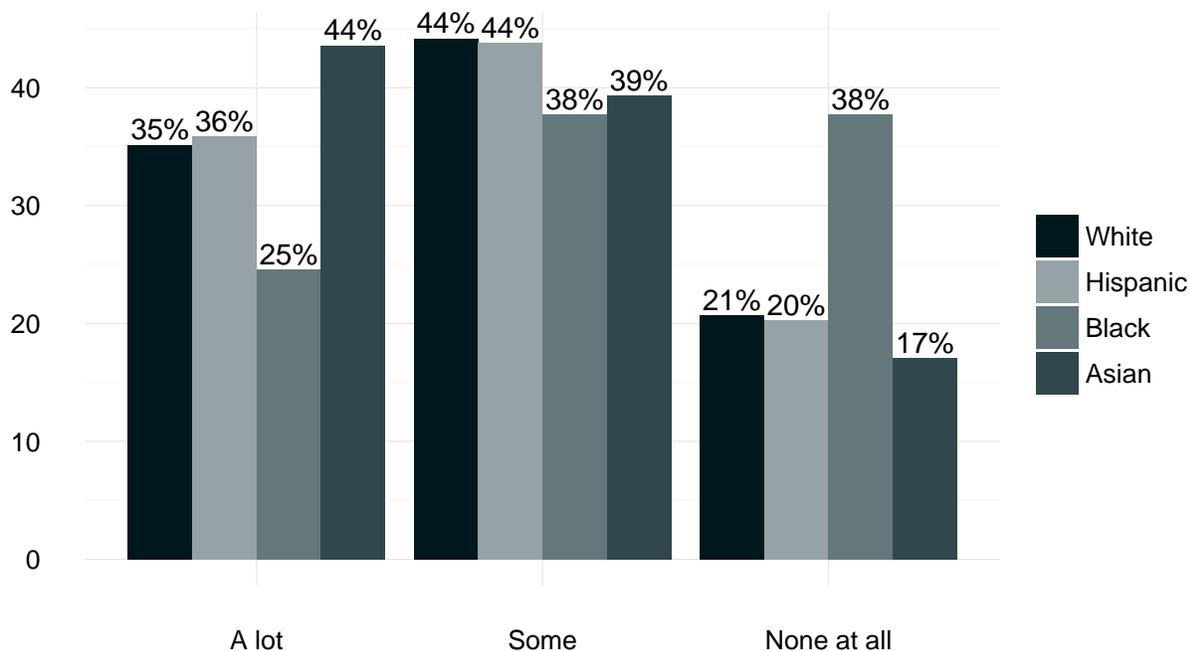


Note: Income figures in 1,000s. Question wording: Which of the following income categories best describes your total annual household income averaged over the past 5 years? | How would you rate your interest in each of the following activities? ....camping.

## Interest in Hiking

Substantial ethnoracial differences emerged not only in camping, but also in hiking (Figure 4.29). A sizable minority of Asian, Hispanic, and white adults indicated strong interest in hiking. By contrast, 25 percent of black adults reported “a lot” of interest in hiking. Also, 38 percent of black adults indicated no interest at all in hiking, a figure roughly double the proportion reported by white, Hispanic, and Asian respondents.

Figure 4.29: Interest in Hiking, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...hiking.

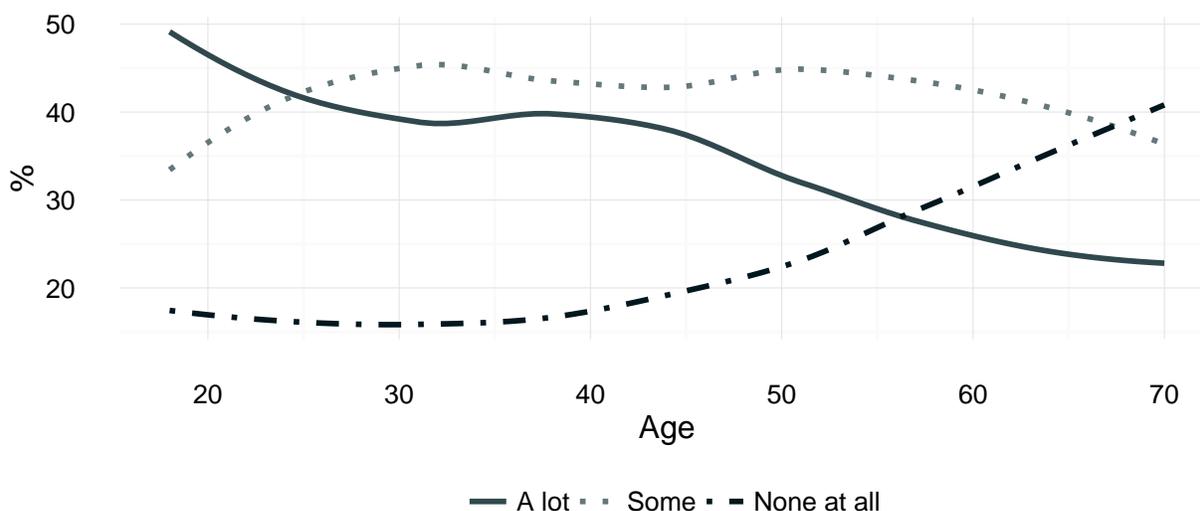
Interest in hiking was highest among urban residents (36 percent indicated they have “a lot” of interest), followed by suburban (35 percent) and rural residents (29 percent) (Table 4.17). Across all residential locations, one-fifth of the respondents reported no interest at all in hiking. Interest in hiking was highest among adults in their late teens and 20s, with 40 percent reporting strong interest (Figure 4.30). This interest swiftly declined, with 20 percent of adults in their 60s reporting “a lot” of interest in hiking.

Table 4.17: Interest in Hiking, by Location

Categories	Urban	Suburban	Rural
A lot	36%	35%	33%
Some	45%	41%	45%
None at all	20%	24%	22%

Question wording: How would you rate your interest in each of the following activities? ...hiking.

Figure 4.30: Interest in Hiking, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ...hiking.

Women and men were nearly indistinguishable in terms of their interest in hiking (Table 4.18), with approximately one-third expressing a great deal of interest and approximately one-quarter no interest at all in hiking.

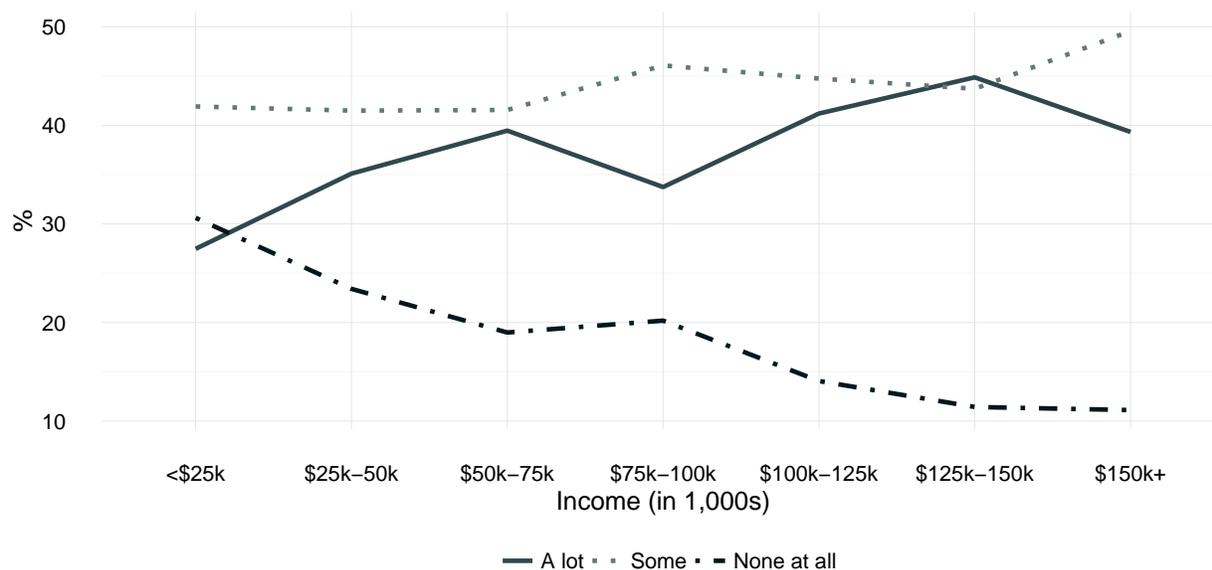
Table 4.18: Interest in Hiking, by Gender

Categories	Men	Women
A lot	37%	33%
Some	43%	43%
None at all	20%	24%

Question wording: How would you rate your interest in each of the following activities? ...hiking.

Interest in hiking increased in line with respondents' household income (Figure 4.31). Around 25 percent of adults from low-income households reported high interest in hiking, compared with 40 percent of adults from high-income households.

Figure 4.31: Interest in Hiking, by Income

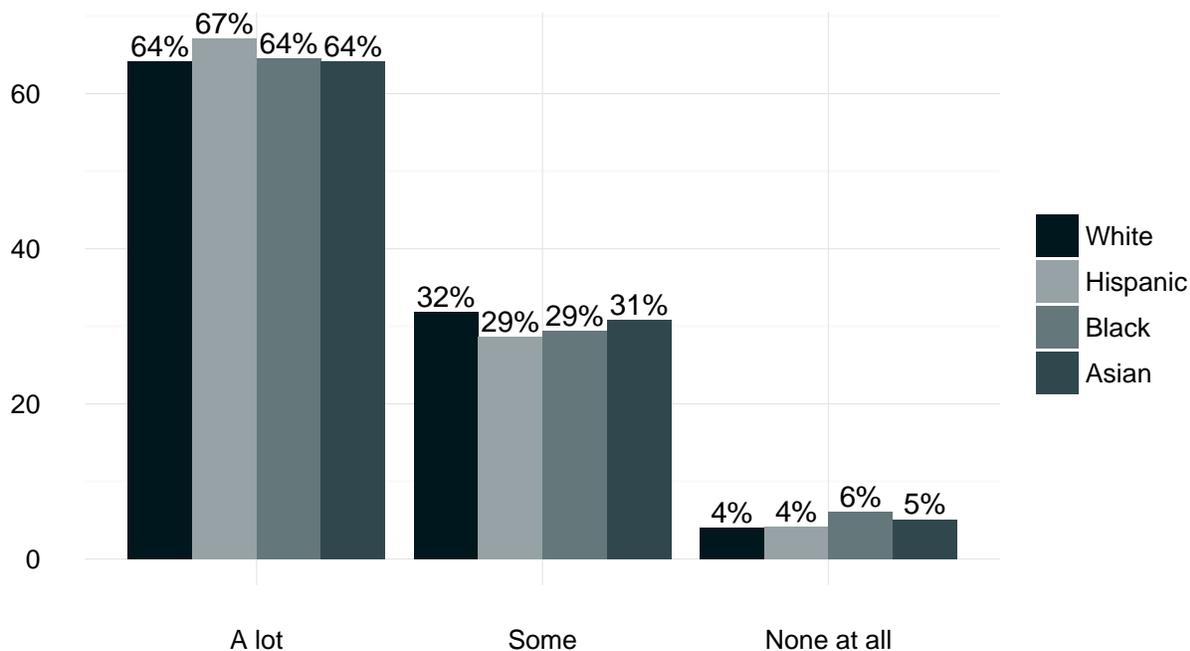


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...hiking. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

### Interest in Walking Outdoors

In contrast to substantial differences among groups in hiking interest, relatively fewer differences emerged among ethnoracial groups in interest in walking outdoors (Figure 4.32). About 65 percent of all adults expressed high interest in this activity. Across groups, very few expressed no interest.

Figure 4.32: Interest in Walking Outdoors, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...taking a walk outdoors.

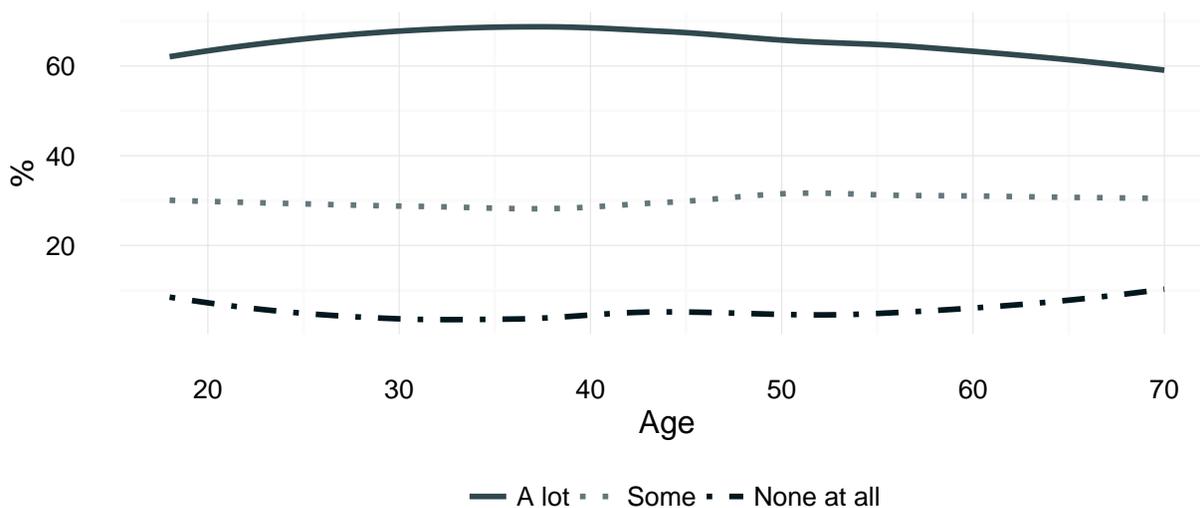
Interest in walking outdoors was roughly similar among urban residents (64 percent indicated they have “a lot” of interest), suburban residents (64 percent), and rural residents (68 percent) (Table 4.19). Interest in walking outdoors was steady across ages (Figure 4.33).

Table 4.19: Interest in Walking Outdoors, by Location

Categories	Urban	Suburban	Rural
A lot	64%	64%	68%
Some	32%	30%	30%
None at all	4%	5%	3%

Question wording: How would you rate your interest in each of the following activities? ....taking a walk outdoors.

Figure 4.33: Interest in Walking Outdoors, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ....taking a walk outdoors.

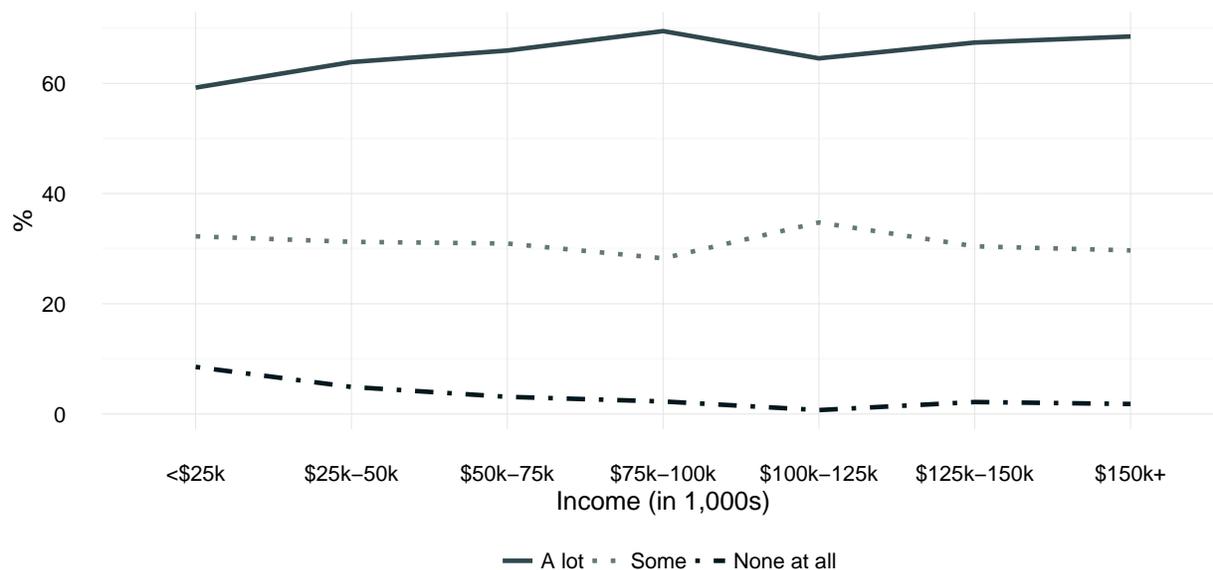
Women were more interested in walking outdoors: 67 percent expressed high interest, compared with 59 percent of men (Table 4.20). Interest in walking outdoors scarcely changed across household income (Figure 4.34).

Table 4.20: Interest in Walking Outdoors, by Gender

Categories	Men	Women
A lot	59%	67%
Some	35%	29%
None at all	6%	4%

Question wording: How would you rate your interest in each of the following activities? ....taking a walk outdoors.

Figure 4.34: Interest in Walking Outdoors, by Income

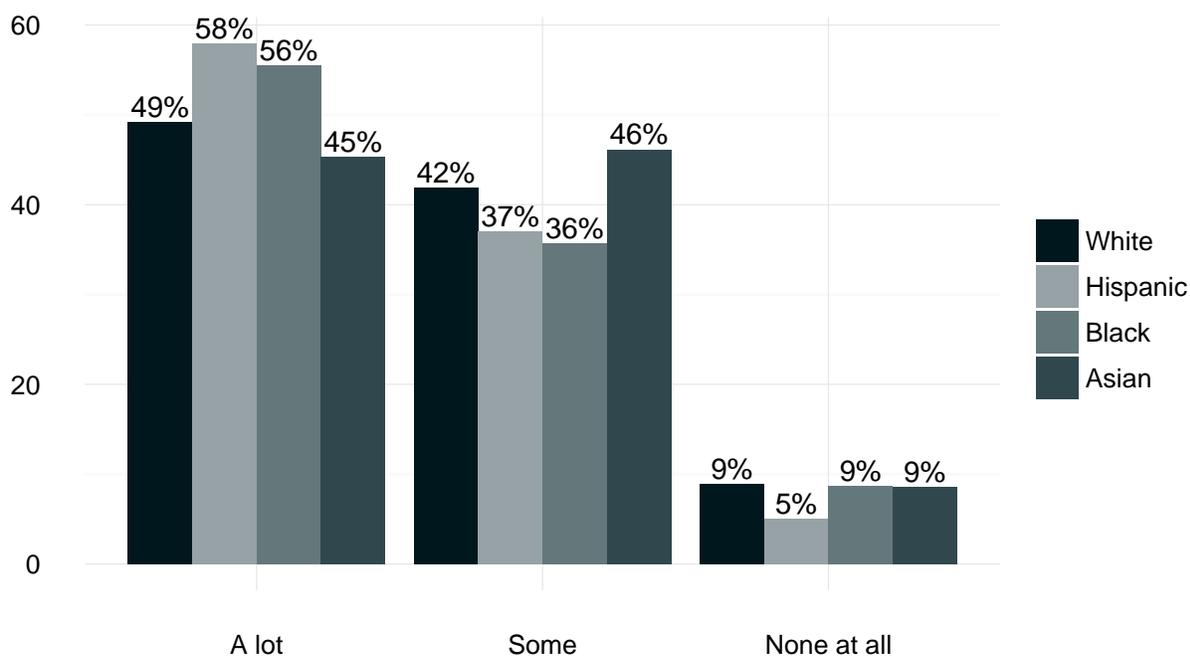


Note: Income figures in 1,000s. Question wording: Which of the following income categories best describes your total annual household income averaged over the past 5 years? | How would you rate your interest in each of the following activities? ....taking a walk outdoors.

### Interest in Visiting Nature-Education Settings

Although we recognize that adults may have a number of reasons to visit, we use the term “nature-education settings” to refer to zoos, aquariums, nature centers, natural history museums, and botanical gardens. Members of all ethnoracial groups surveyed expressed a high degree of interest in visiting these settings. More than one-half of Hispanic adults (58 percent), 56 percent of blacks, 49 percent of white, and 45 percent of Asian adults expressed high interest in visiting these places (Figure 4.35).

Figure 4.35: Interest in Visiting Nature-Education Settings, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...visiting a zoo, aquarium, nature center, natural history museum, or botanical garden.

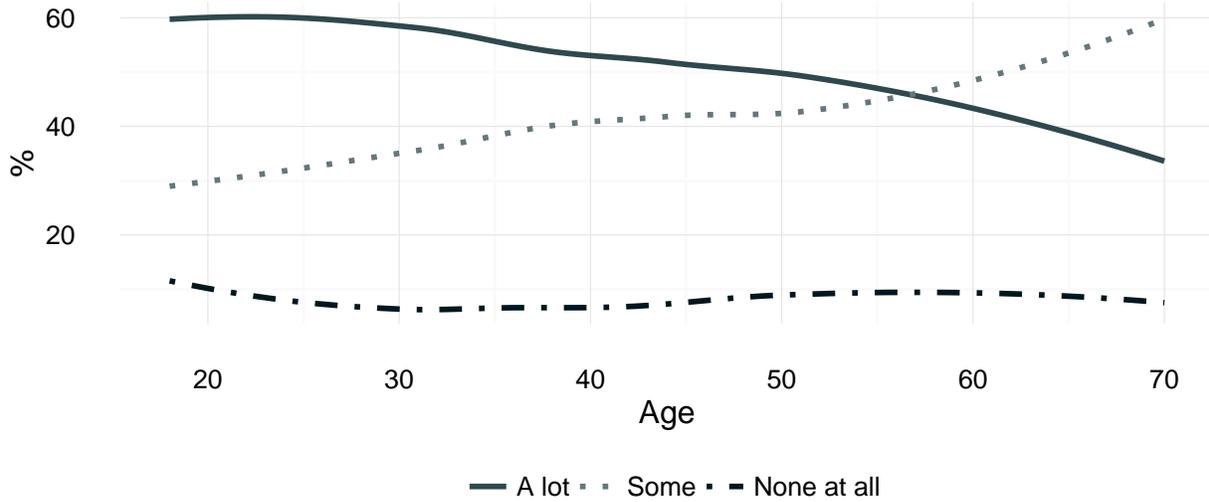
About 90 percent of urban, suburban, and rural respondents expressed at least “some” interest in visiting nature-education centers (Table 4.21). Young adults reported the greatest interest in visiting nature-education centers (around 60 percent), with this figure declining by about 25 percentage points among older adults (Figure 4.36). With respect to gender, women were far more likely to report a good deal of interest in visiting nature-education centers: 61 percent indicated “a lot” of interest, compared with 41 percent of men (Table 4.22). Across incomes, interest in visiting zoos, aquariums, nature centers, natural history museums, and botanical gardens was relatively stable (Figure 4.37).

Table 4.21: Interest in Visiting Nature-Education Settings, by Location

Categories	Urban	Suburban	Rural
A lot	53%	54%	49%
Some	40%	39%	43%
None at all	7%	7%	8%

Question wording: How would you rate your interest in each of the following activities? ...visiting a zoo, aquarium, nature center, natural history museum, or botanical garden.

Figure 4.36: Interest in Visiting Nature-Education Settings, by Age



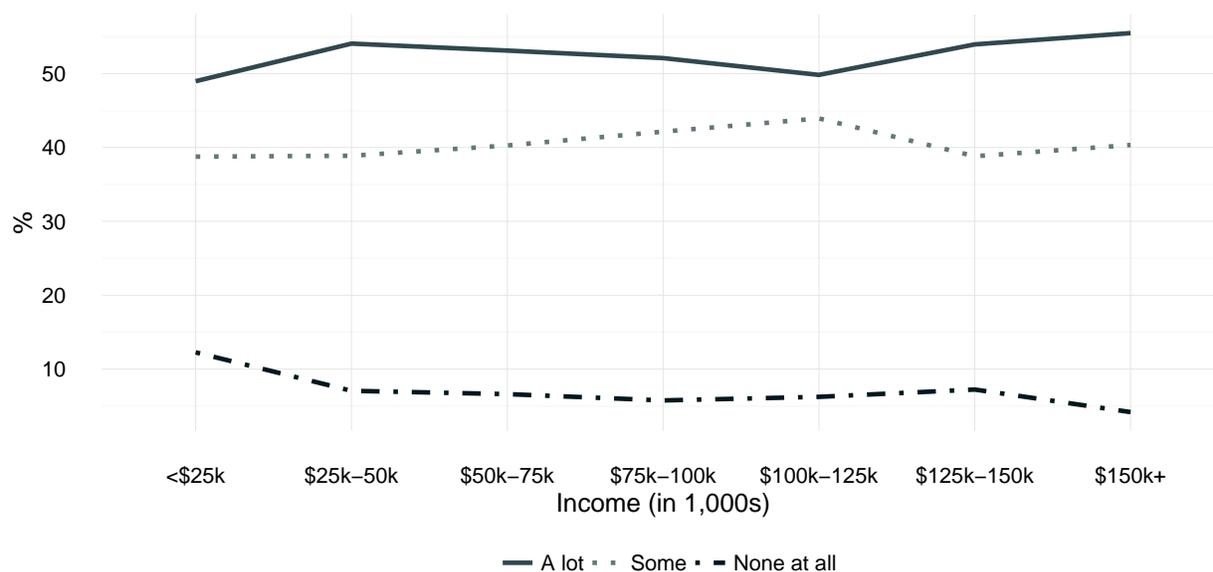
Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ...visiting a zoo, aquarium, nature center, natural history museum, or botanical garden.

Table 4.22: Interest in Visiting Nature-Education Settings, by Gender

Categories	Men	Women
A lot	41%	61%
Some	48%	34%
None at all	11%	5%

Question wording: How would you rate your interest in each of the following activities? ...visiting a zoo, aquarium, nature center, natural history museum, or botanical garden.

Figure 4.37: Interest in Visiting Nature-Education Settings, by Income

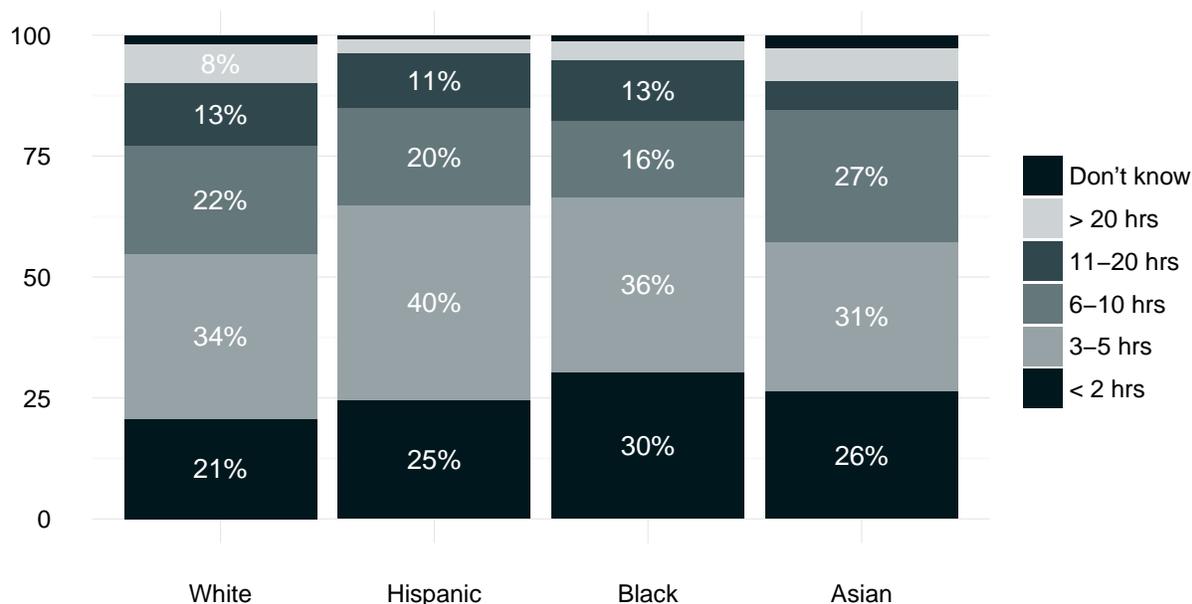


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...visiting a zoo, aquarium, nature center, natural history museum, or botanical garden. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

#### 4.2.7 Time Spent Outside in Nature

Across all ethnorracial groups, three-quarters of adults reported spending fewer than 10 hours outside in nature in a typical week (Figure 4.38). One-third (30 percent) of black adults reported spending fewer than two hours outside in a typical week, compared with about one-fifth (21 percent) of white adults. Across ethnorracial groups, most adults reported being satisfied with the amount of time they spent in outside in nature (Table 4.23): Roughly 70 percent said they were somewhat or very satisfied; in contrast, between 20 and 30 percent reported being somewhat or very dissatisfied.

Figure 4.38: Hours Spent Outside in Nature in a Typical Week, by Race and Ethnicity



Responses with percentages less than 7 are not reported due to lack of space. Question wording: In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.)

Table 4.23: Satisfaction with Amount of Time Able to Experience Nature, by Race and Ethnicity

Categories	White	Hispanic	Black	Asian
Very dissatisfied	3%	1%	3%	1%
Somewhat dissatisfied	25%	27%	17%	22%
Neutral	11%	8%	12%	13%
Somewhat satisfied	39%	41%	38%	34%
Very satisfied	21%	23%	30%	30%

Note: Columns add to 100. Question wording: On average, how satisfied are you with the amount of time you're able to get outdoors to experience nature?

Across residential location, approximately three-quarters of respondents reported spending fewer than 10 hours outside in nature in a typical week (Figure 4.39). About one-quarter reported spending fewer than 2 hours outside in nature. Those who spent 11 or more hours outdoors each week were slightly likelier to live in rural areas. Across residential location, about 60 percent of adults surveyed were somewhat or very satisfied with the amount of time they spend outdoors experiencing nature each week (Table 4.24). Suburban respondents were likeliest to express dissatisfaction with the amount of time they are able to get outdoors to experience nature—30 percent did so.

Figure 4.39: Hours Spent Outside in Nature in a Typical Week, by Location



Responses with percentages less than 7 are not reported due to lack of space. Question wording: In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.)

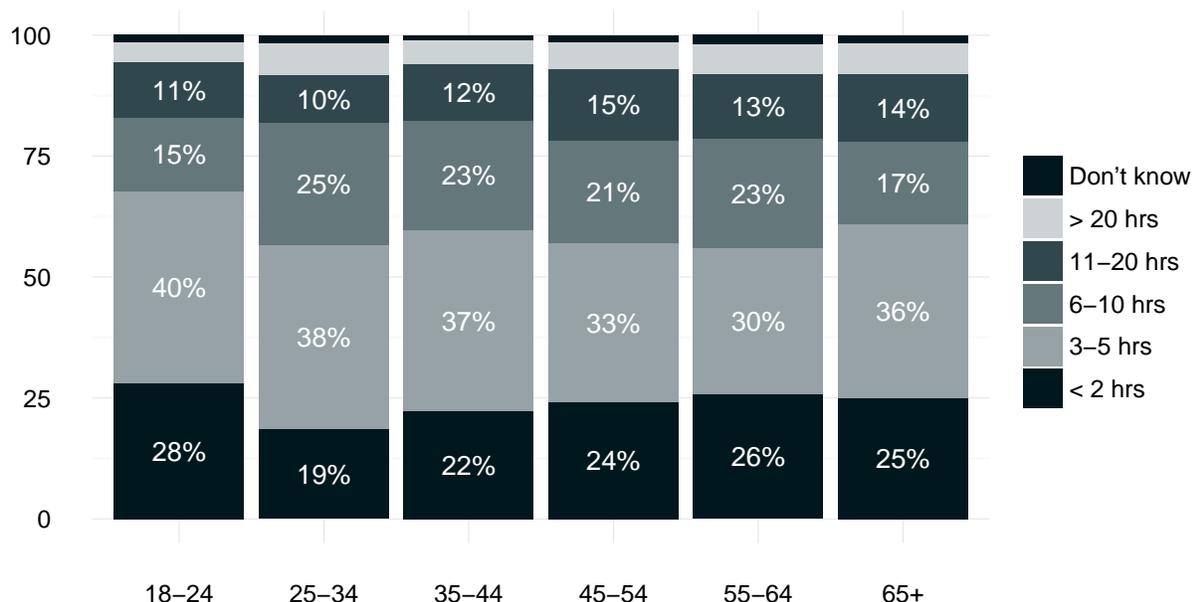
Table 4.24: Satisfaction with Amount of Time Able to Experience Nature, by Location

Categories	Urban	Suburban	Rural
Very dissatisfied	2%	3%	1%
Smwht dissatisfied	23%	27%	21%
Neutral	8%	13%	8%
Smwht satisfied	37%	40%	44%
Very satisfied	29%	17%	25%

Note: Columns add to 100. Question wording: On average, how satisfied are you with the amount of time you're able to get outdoors to experience nature?

Across age categories, over three-quarters of adults reported spending fewer than 10 hours outside in nature in a typical week (Figure 4.40). Dissatisfaction with time spent outdoors was stable across age groups (Table 4.25).

Figure 4.40: Hours Spent Outside in Nature in a Typical Week, by Age Category



Responses with percentages less than 7 are not reported due to lack of space. Question wording: In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.)

Table 4.25: Satisfaction with Amount of Time Able to Experience Nature, by Age Category

Categories	18-24	25-34	35-44	45-54	55-64	65+
Very dissatisfied	2%	2%	2%	3%	2%	2%
Smwht dissatisfied	27%	23%	24%	24%	28%	23%
Neutral	12%	7%	10%	12%	10%	15%
Smwht satisfied	32%	39%	40%	43%	41%	44%
Very satisfied	27%	28%	24%	18%	19%	16%

Note: Columns add to 100. Question wording: On average, how satisfied are you with the amount of time you're able to get outdoors to experience nature?

Which adults were most likely to be “very” or “somewhat” dissatisfied with the amount of time they spend outdoors experiencing nature? Figure 4.41 reports how different factors are associated with the likelihood of providing such a response. Points greater than 0 signify that adults in that group were *more likely* to be dissatisfied. Points less than 0 signify that adults in that group were *less likely* to be dissatisfied. The larger the value, whether positive or negative, the greater the relationship between that variable and the outcome. In this analysis, the reference categories are *whites* in comparison to Hispanics, blacks, and Asians; *men* in comparison to women; *35-44-year-olds* in comparison to all other age categories; adults with a *high school degree or less* in comparison to all other levels of educational attainment; adults from households with incomes of *\$50,000-\$74,999* averaged over the last five years in comparison to all other income categories; and *rural residents*

in comparison to urban and suburban residents. How much each variable is related to the outcome is net of (i.e., adjusts for) the other variables included. (See Section 1.3 for more detail.)

- Those who were likelier to be dissatisfied include white adults, women, those with relatively higher levels of education, suburban residents, and those who spend very little time outdoors.
- Those who were likelier *not* to be dissatisfied include Hispanic, black, and Asian adults; men; those with lower educational attainment; and those who spend more time outdoors.

#### 4.2.8 Influence of Other People on How Groups of Adults Think about Nature

Adults have been formed by the views of and their experiences with other people. Of particular interest for this study is who was most influential in shaping adults' thoughts and feelings about nature. Across ethnoracial groups, the most influential person tended to be a parent (Table 4.26). Approximately 40 percent of white and Hispanic adults identified a parent as the most influential person in helping to form their views about nature, while 27 percent of black adults and 33 percent of Asian adults cited a parent. For Asian adults, friends played a relatively larger role, while for blacks they played a smaller role. Grandparents were relatively more influential for black adults. Fish and wildlife professionals played an influential role for a relatively larger proportion of black and Asian adults in Texas.

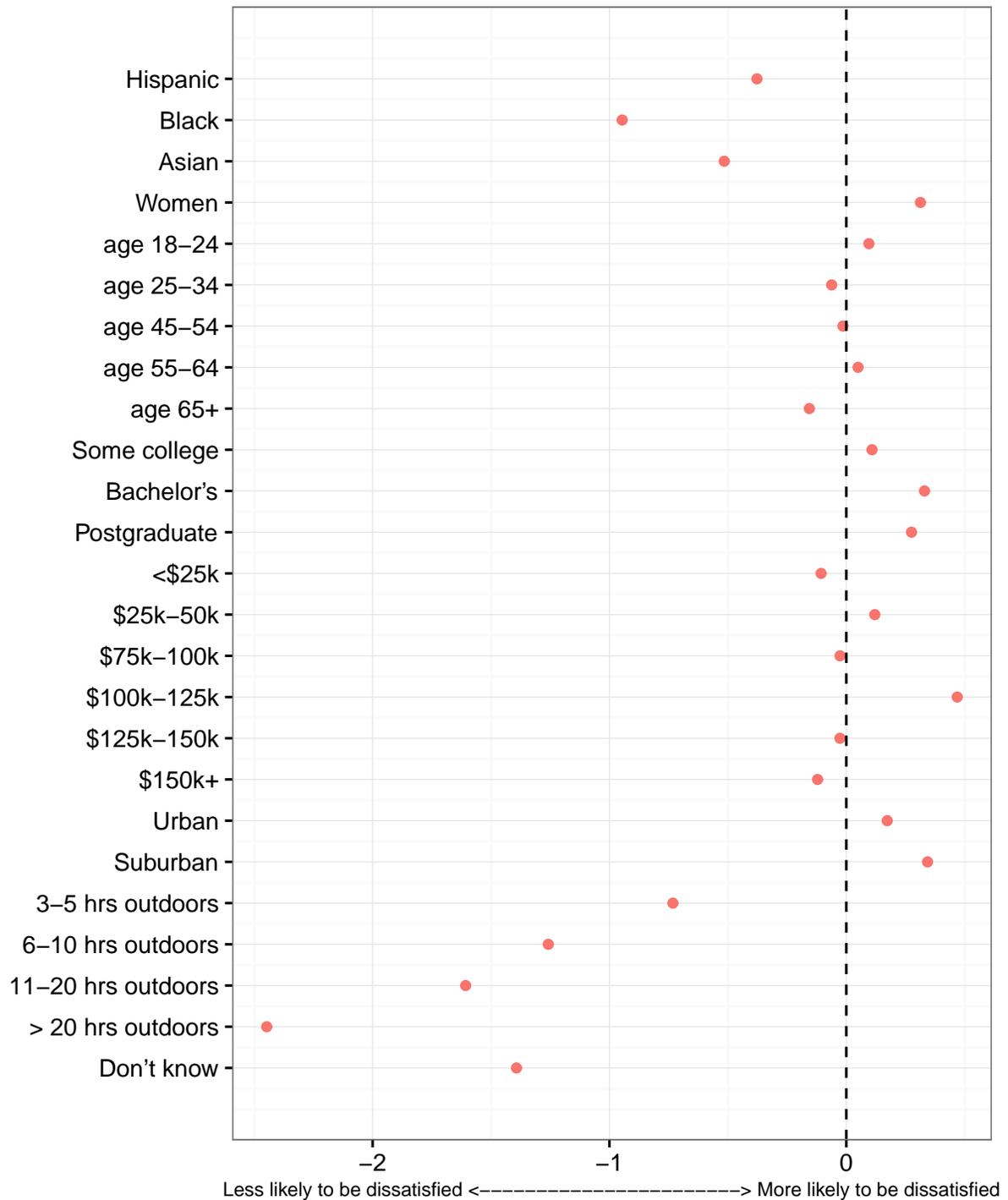
Table 4.26: Most Influential Person on How Adults Think or Feel about Nature, by Race and Ethnicity

Person	White	Hispanic	Black	Asian
Parent	42%	39%	27%	33%
Other	14%	15%	19%	21%
Friend	13%	15%	5%	20%
Grandparent	13%	10%	15%	7%
Teacher	4%	6%	8%	6%
Other relative	4%	5%	6%	3%
Brother/sister	3%	4%	4%	4%
Fish/wildlife/outdoor professional	3%	2%	8%	7%
Scout leader	2%	1%	3%	0%
Camp counselor/Youth group leader	2%	2%	5%	0%

Note: Columns add to 100. Question wording: Which one of the following persons most influenced how you think or feel about nature?

Regardless of whether people were raised in a rural, suburban, or urban area, adults were likeliest to select a parent as the influential person in how they think and feel about nature, especially those who grew up in rural areas (Table 4.27).

Figure 4.41: Likelihood of Being Dissatisfied with Amount of Time Able to Experience Nature



Note: The outcome is whether or not a respondent is “very dissatisfied” or “somewhat dissatisfied” with the amount of time they are able to get outdoors to experience nature, compared with all other possible responses. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

Table 4.27: Most Influential Person on How Adults Think or Feel about Nature, by Location Where Grew Up

Person	Urban	Suburban	Rural
Parent	40%	38%	42%
Friend	14%	13%	12%
Other	13%	18%	12%
Grandparent	11%	10%	17%
Teacher	7%	5%	4%
Other relative	5%	5%	3%
Brother/sister	4%	3%	4%
Fish/wildlife/outdoor professional	3%	3%	3%
Camp counselor/Youth group leader	2%	3%	1%
Scout leader	2%	2%	2%

Note: Columns add to 100. Question wording: Which one of the following persons most influenced how you think or feel about nature?

Across age categories, one-third or more selected a parent as their most influential person (Table 4.28). Younger adults were slightly likelier to think of a friend or a sibling, while older adults were likelier to think of a grandparent or other relative.

Table 4.28: Most Influential Person on How Adults Think or Feel about Nature, by Age Category

Person	18-24	25-34	35-44	45-54	55-64	65+
Parent	33%	43%	39%	40%	46%	33%
Other	20%	12%	16%	13%	14%	15%
Friend	15%	16%	13%	13%	8%	11%
Grandparent	9%	12%	11%	18%	11%	12%
Teacher	8%	4%	6%	6%	4%	5%
Other relative	5%	3%	6%	3%	8%	4%
Brother/sister	4%	5%	2%	4%	2%	2%
Fish/wildlife/outdoor professional	2%	3%	3%	2%	3%	6%
Camp counselor/Youth group leader	2%	2%	2%	1%	2%	5%
Scout leader	1%	1%	2%	1%	2%	6%

Note: Columns add to 100. Question wording: Which one of the following persons most influenced how you think or feel about nature?

### 4.3 Values of Nature, the Outdoors, and Wildlife

The overall tendency to affiliate with nature (biophilia) is reflected in eight more specific yet basic values. In alphabetical order these are affection, attraction, aversion, control, exploitation, intellect, spiritual, and symbolic association with the natural world. We focus on variations in these (biophilic) values of nature among racial and ethnic groups, residential location, and age. Further

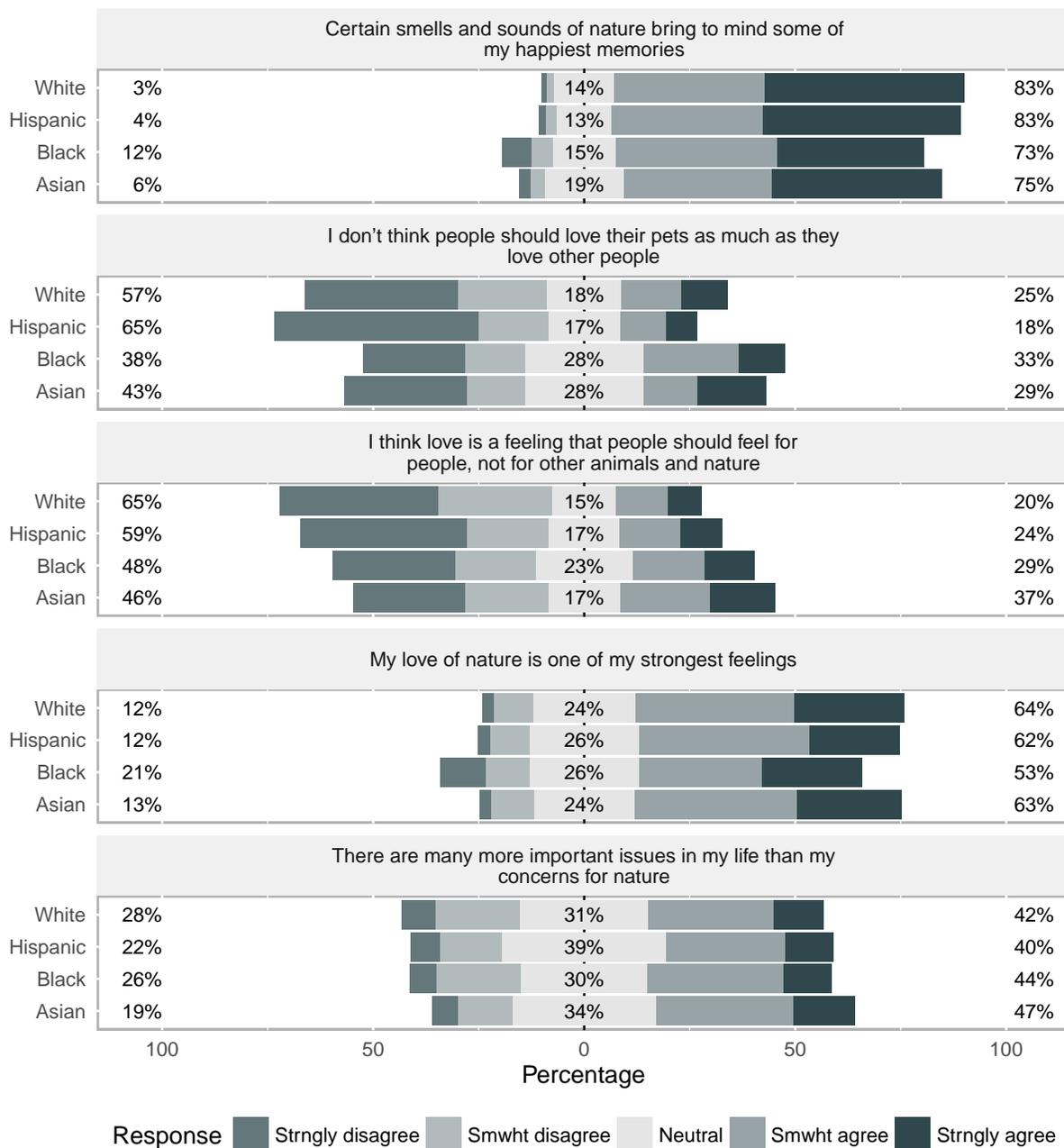
analyses, broken out by education level, household income, and gender, are located in Appendix A.

### 4.3.1 Affection

The value of affection toward nature and wildlife focuses on feelings of emotional attachment for diverse aspects of the natural world, even sometimes reflected in such strong feelings as a love for particular species and landscapes. Adults across all ethnoracial groups expressed strong feelings of affection for varying aspects of the natural world (Figure 4.42). Some 70–80 percent agreed that certain smells and sounds of nature bring to mind some of their happiest memories, and approximately 50–60 percent reported that love of nature is one of their strongest feelings. Nevertheless, respondents (especially black and Asian adults) reported more important issues in their lives than their concerns for nature.

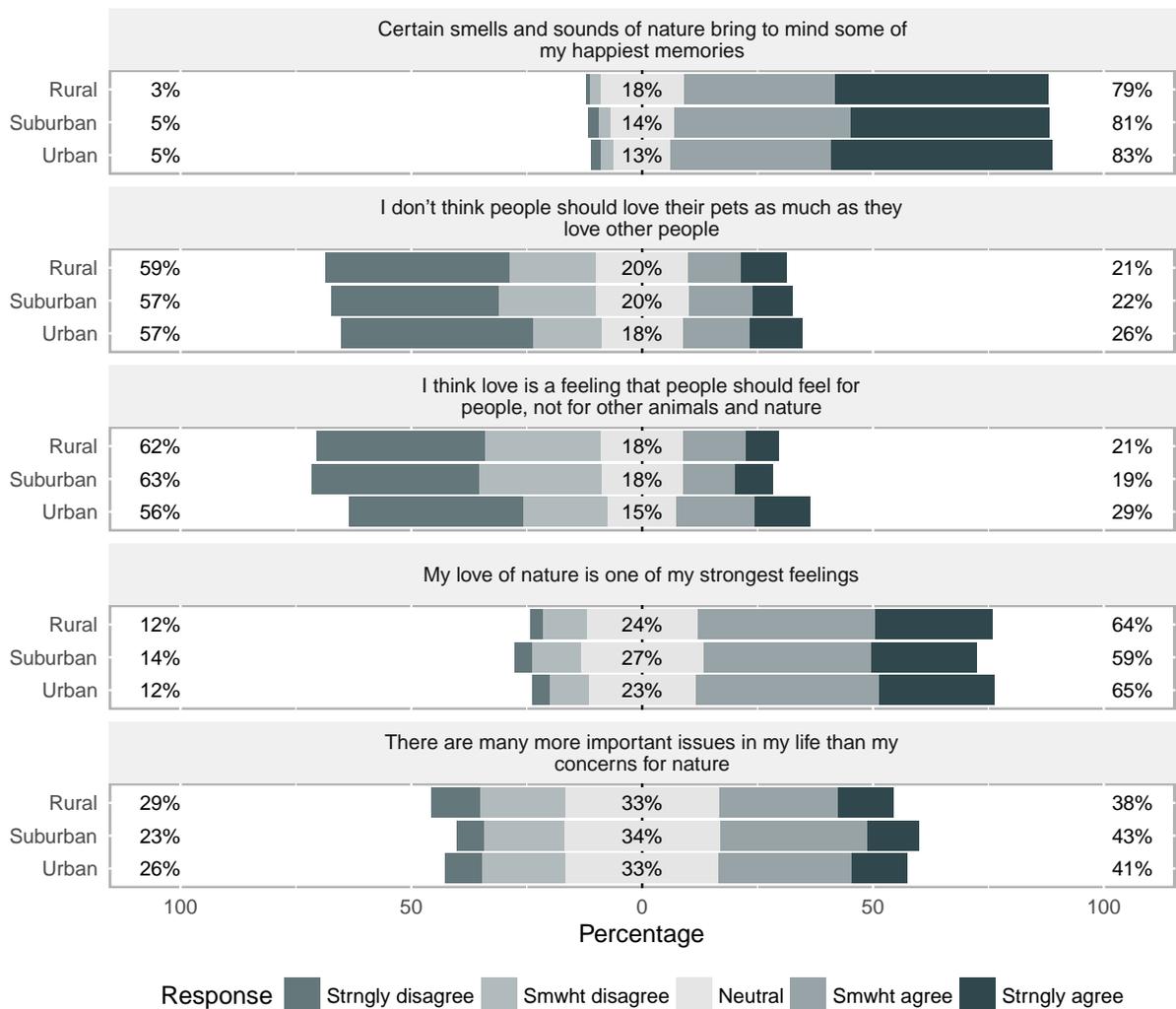
Across residential location, differences emerged over the perceived appropriateness of “loving” a nonhuman animal like a pet in a way analogous to how people perceive and relate to other humans (Figure 4.43). Urban residents were more likely to believe people should not love their pets or nature as much as they love other people. Slight differences also emerged in the presence of more important issues than respondents’ concerns for nature. Across ages, most adult respondents largely agreed that “certain smells and sounds of nature bring to mind some of my happiest memories,” and most agreed that the love of nature is one of their strongest feelings (Figure 4.44).

Figure 4.42: Values of Affection, by Race and Ethnicity



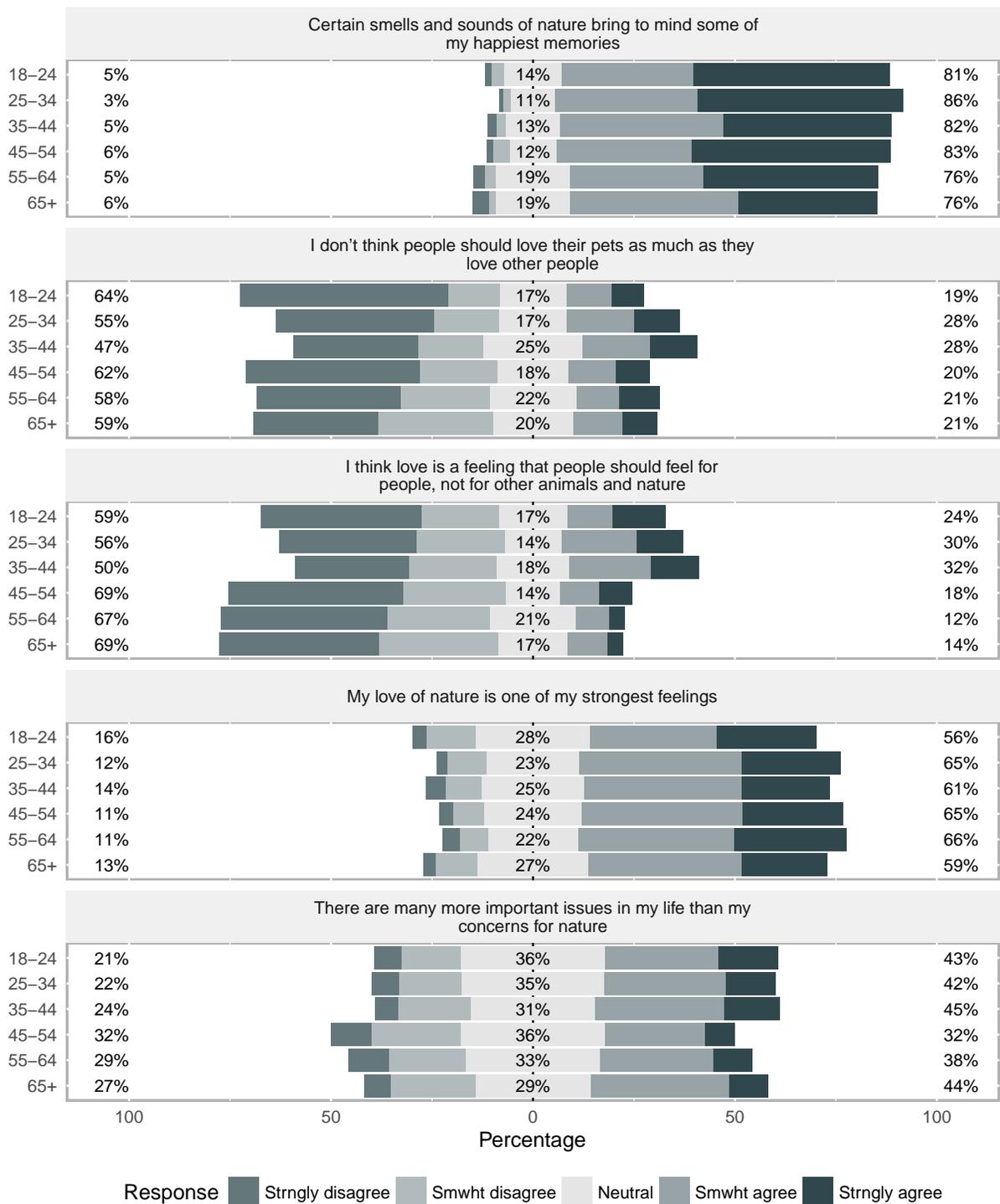
Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.43: Values of Affection, by Location



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.44: Values of Affection, by Age Category



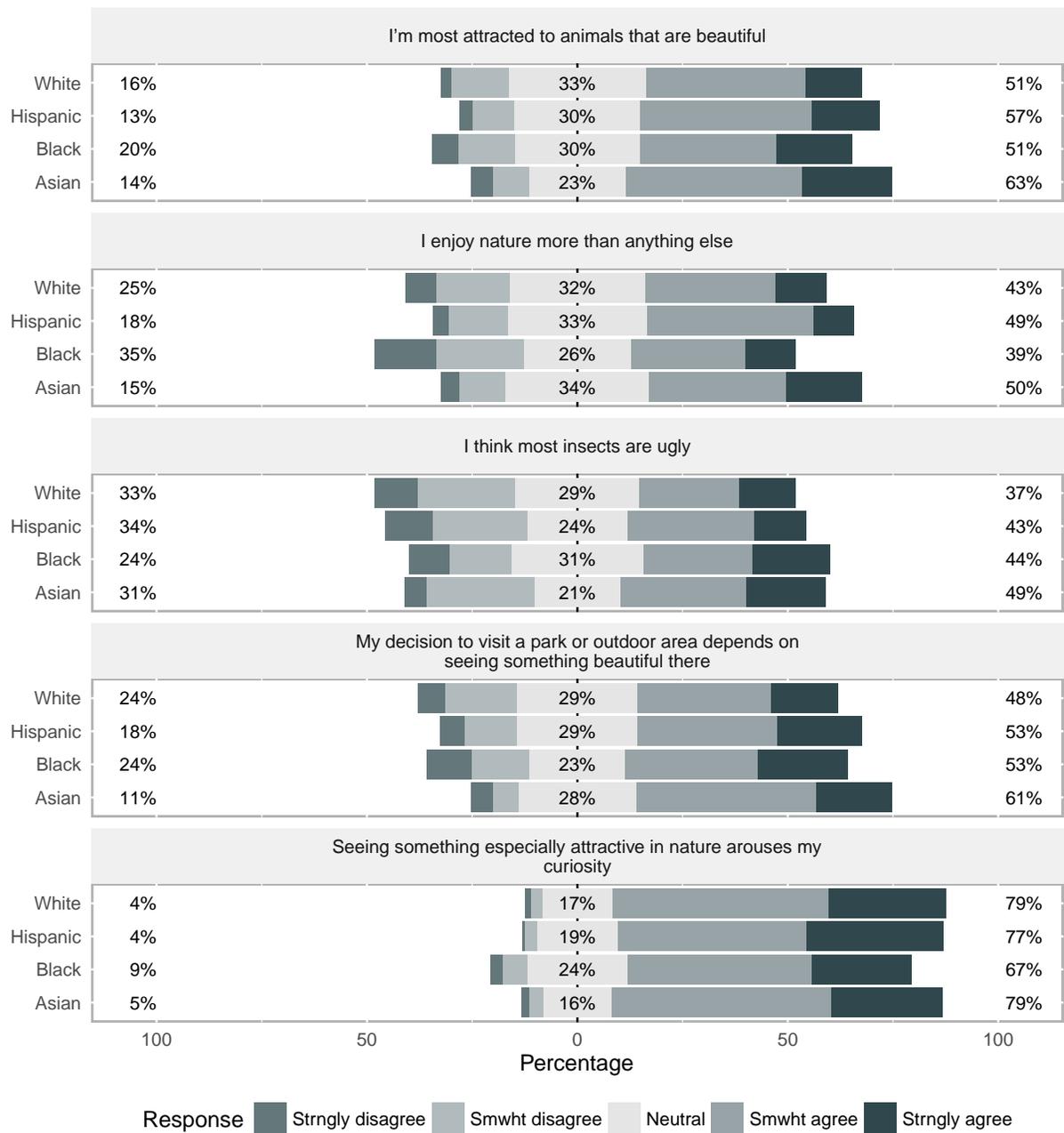
Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

### 4.3.2 Attraction

Attraction to nature can vary, from a relatively basic aesthetic appeal and curiosity to a deep appreciation for the perceived beauty of the natural world, including other species, particular landscapes, and other aspects of nature and wildlife. Sixty-one percent of Hispanics in comparison to 43 percent of whites, 46 percent of Asians, and 36 percent of blacks indicated they “enjoyed nature more than anything else” (Figure 4.45). A great majority of adults agreed that seeing something attractive in nature arouses their curiosity. The motivation for visiting parks or outdoor areas to see something beautiful there differed: this motivation was stronger for Hispanic and Asian adults than for black and white adults.

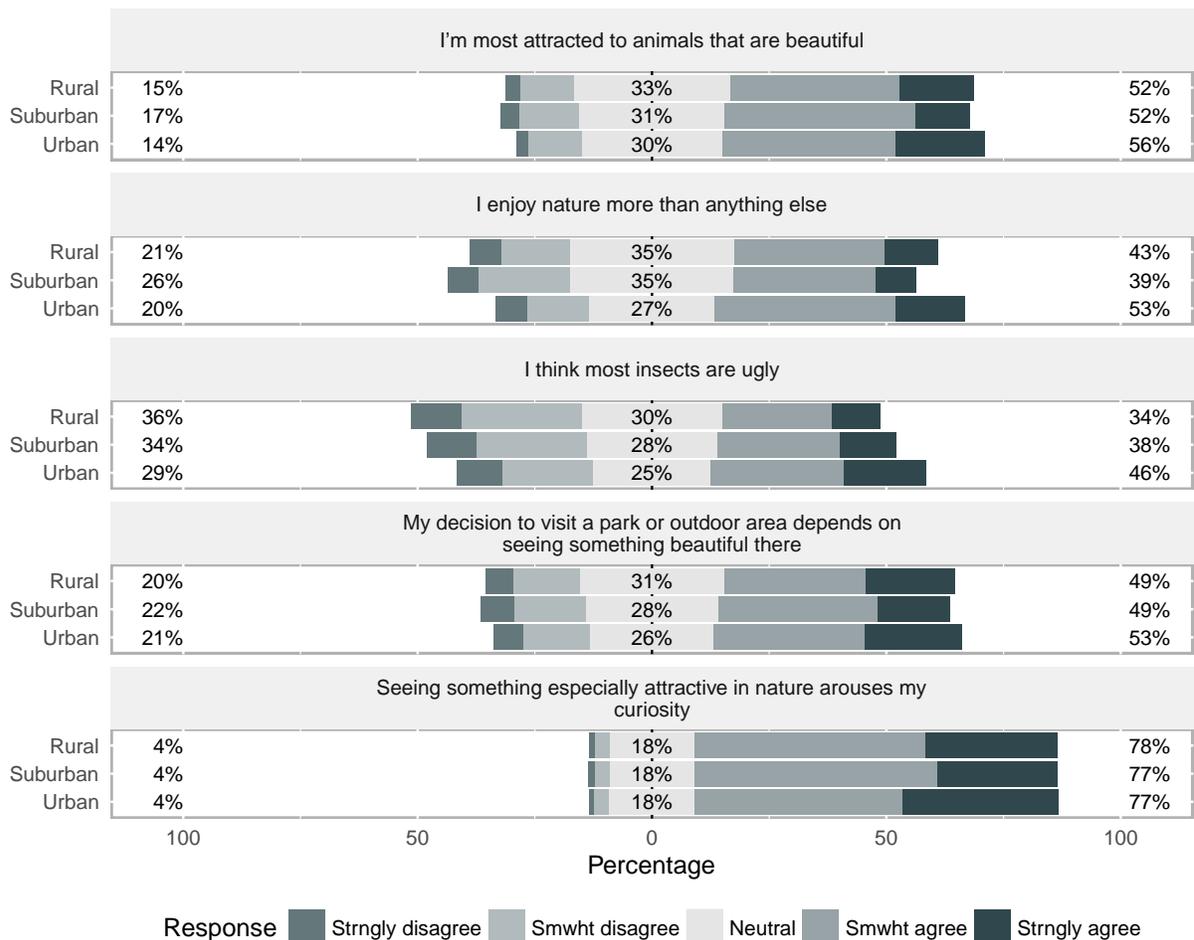
Few differences emerged across residential location (Figure 4.46). Suburban respondents were the least likely to agree with enjoying nature more than anything else. Adults of all ages revealed a widespread pattern of attraction to the aesthetic appeal of nature (Figure 4.47). Younger adults were particularly attracted to animals, parks, and outdoor areas that are beautiful.

Figure 4.45: Values of Attraction, by Race and Ethnicity



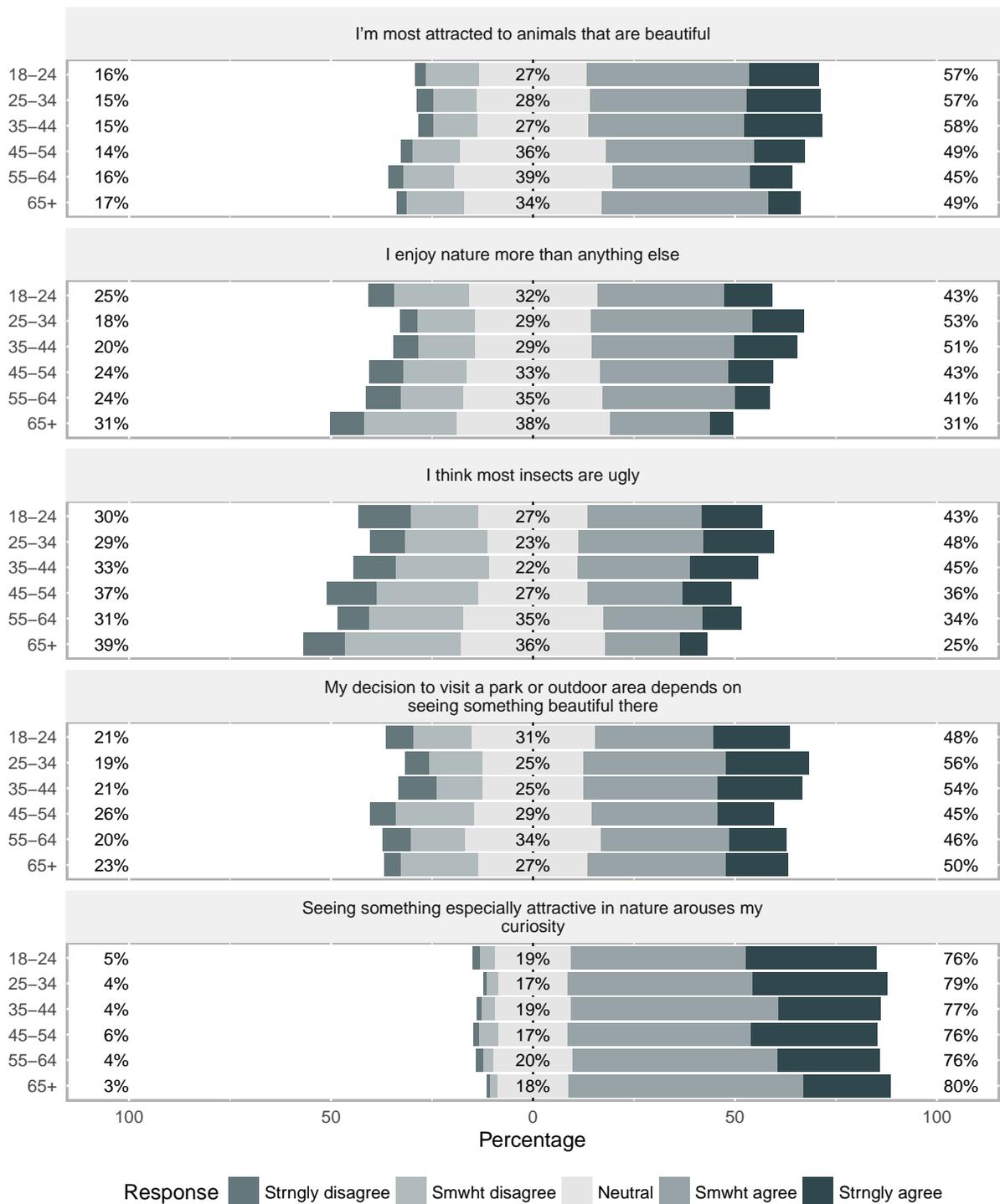
Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.46: Values of Attraction, by Location



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.47: Values of Attraction, by Age Category



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

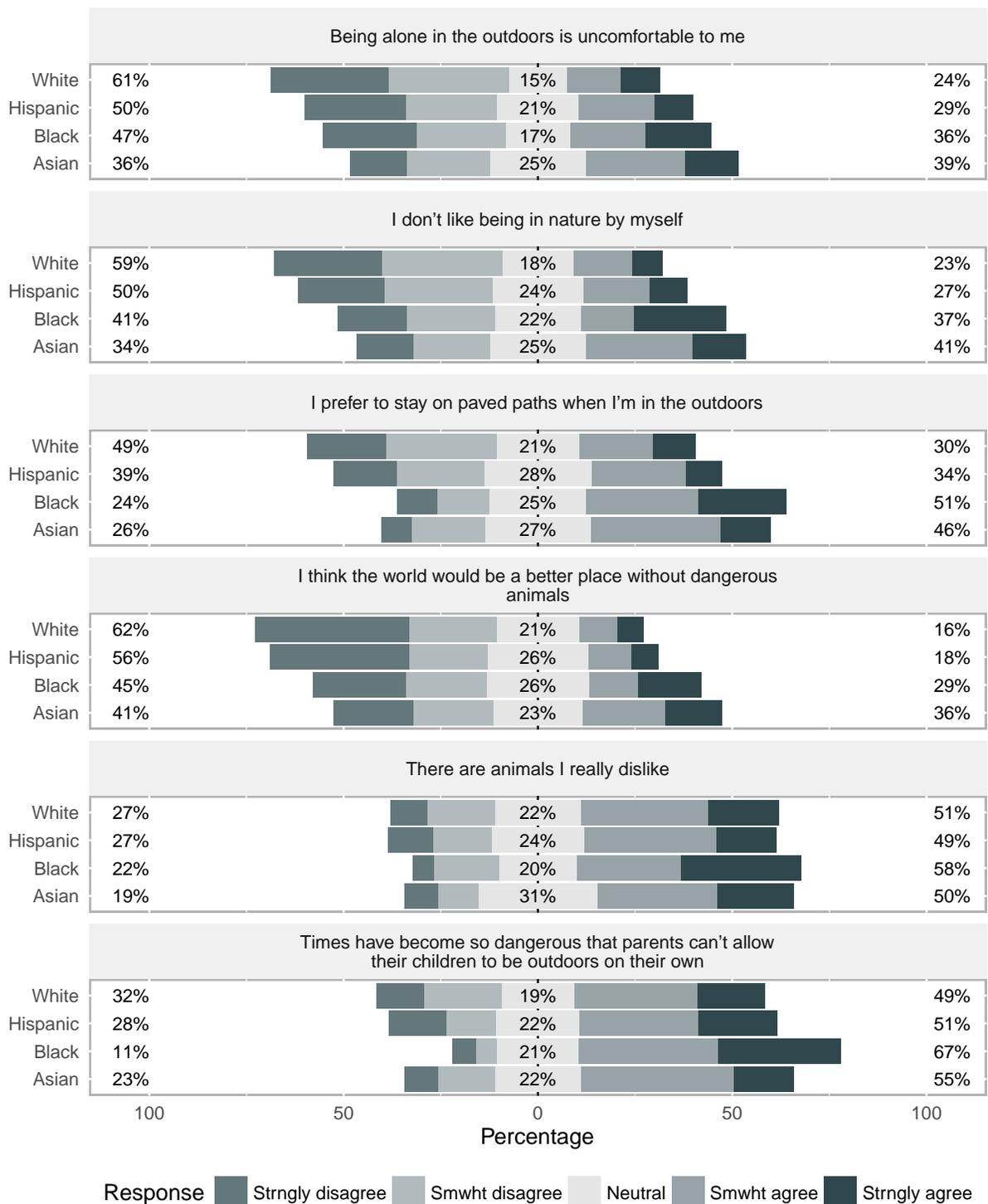
### 4.3.3 Aversion

Avoiding and at times fearing contact with certain aspects of the natural world is a tendency in humans and, indeed, in all species. A strong and consistent pattern of differences emerged among ethnoracial groups in aversion toward nature and wildlife (Figure 4.48). As differences in safety concerns among parents indicate (see Chapter 3) and as results show below (Section 4.5), it is difficult to disentangle aversion to the natural world from aversion to the people and places found outdoors. Ultimately, we think that both are important to note and respond to.

With that important qualification in mind, one-quarter of white adult respondents reported being uncomfortable alone in nature, and would prefer paved paths when being outdoors. By contrast, one-third to two-fifths of Hispanic and black respondents reported being uncomfortable alone in the outdoors. Similar proportions of black, Asian, and Hispanic adults also reported a preference for staying on paved paths outdoors. A majority of black, Asian, and Hispanic adults also expressed dislike for certain animals, and they were far more likely than white adults to indicate the world would be a better place without dangerous animals. Higher proportions of black and Hispanic adults agreed that times have become so dangerous that parents cannot allow their children to be outdoors on their own.

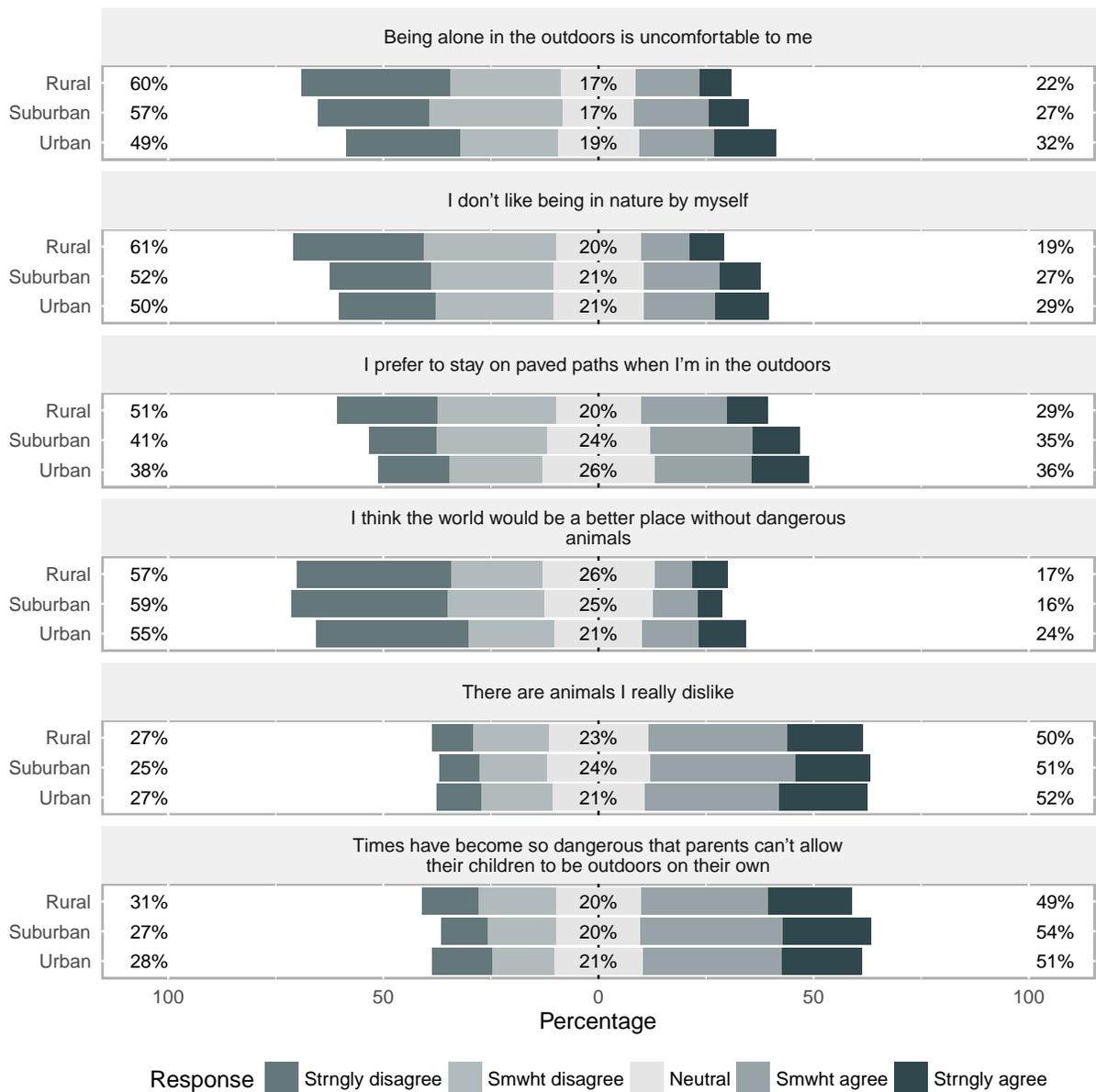
Across residential location, aversion to particular aspects of nature was slightly more apparent among urban adults (Figure 4.49). Urban residents were likelier to agree that being alone in the outdoors is uncomfortable to them, and to prefer to stay on paved paths when in the outdoors. A similar proportion was concerned about allowing children to be outdoors on their own. Age differences emerged most strongly in questions about being outdoors on one's own (Figure 4.50).

Figure 4.48: Values of Aversion, by Race and Ethnicity



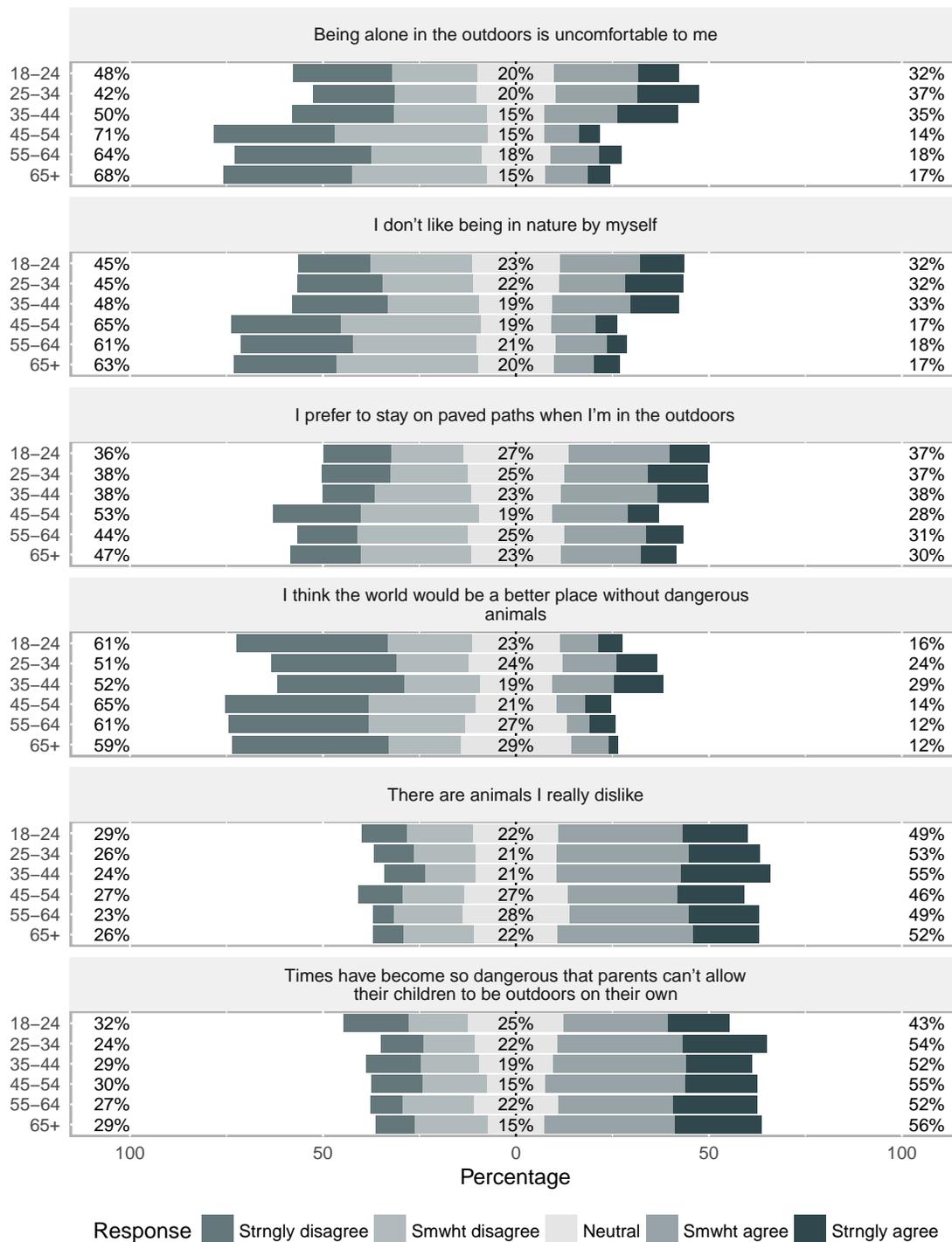
Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.49: Values of Aversion, by Location



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.50: Values of Aversion, by Age Category



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

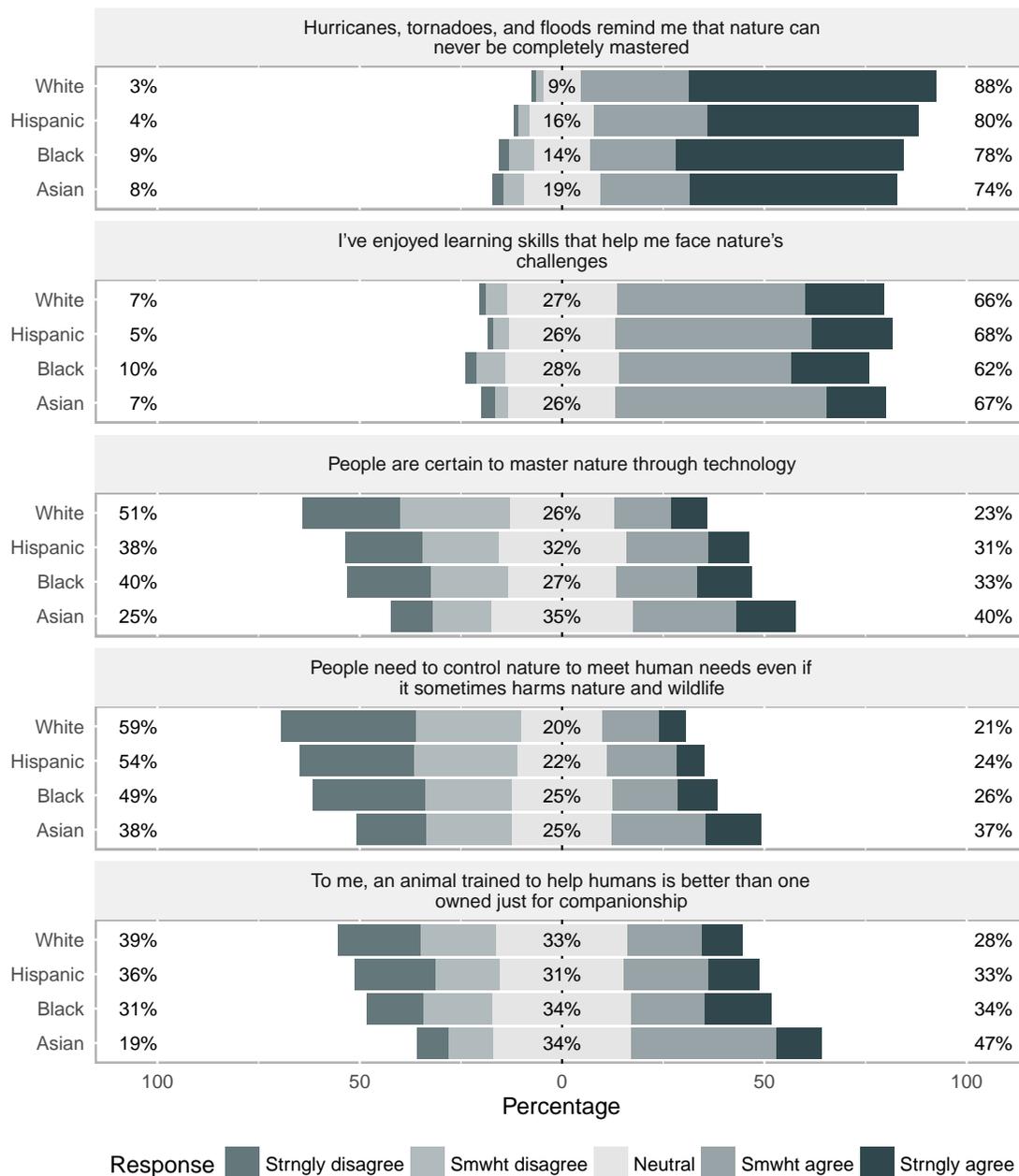
#### 4.3.4 Control

Control describes the tendency to master, dominate, and at times subjugate nature. Across ethno-racial groups, diverse thoughts emerged regarding the human ability to control and master nature (Figure 4.51). On the one hand, the majority of adults agreed that hurricanes, tornadoes, and floods remind them that nature can never be completely mastered. However, adults were much more evenly split on the need for people to control nature to meet human needs, even if it sometimes harms nature and wildlife. Yet adults were also split over whether people are “certain” to master nature through technology.

Regardless of where respondents lived, the great majority of adult Texans agreed certain naturally occurring events such as hurricanes and floods could never be completely mastered (Figure 4.52). Rural residents tended to be the most skeptical about the ability of people to master nature through technology, and they were the most inclined to disagree that people should control nature to meet human needs if it harmed nature and wildlife.

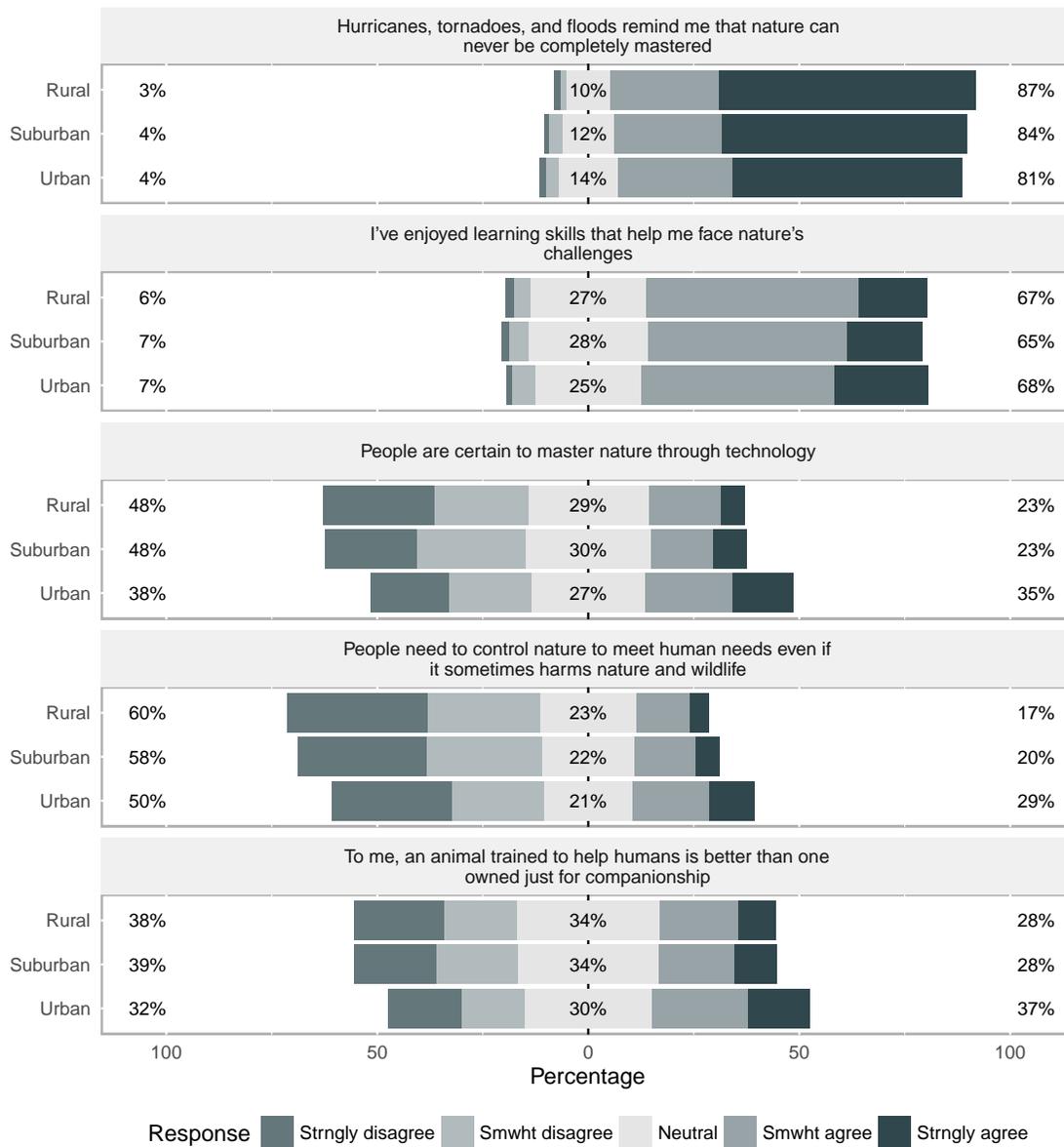
Among age groups, most expressed confidence in the ability of humans to control nature even if it inflicted environmental harm (Figure 4.53). This view peaked among adults in their late 20s through early 40s. Forty percent of younger adults agreed people are certain to master nature through technology, compared with a much smaller 15 percent among older adults. Middle-aged adults were also the most likely to prefer animals trained to help humans rather than owned just for companionship.

Figure 4.51: Values of Control, by Race and Ethnicity



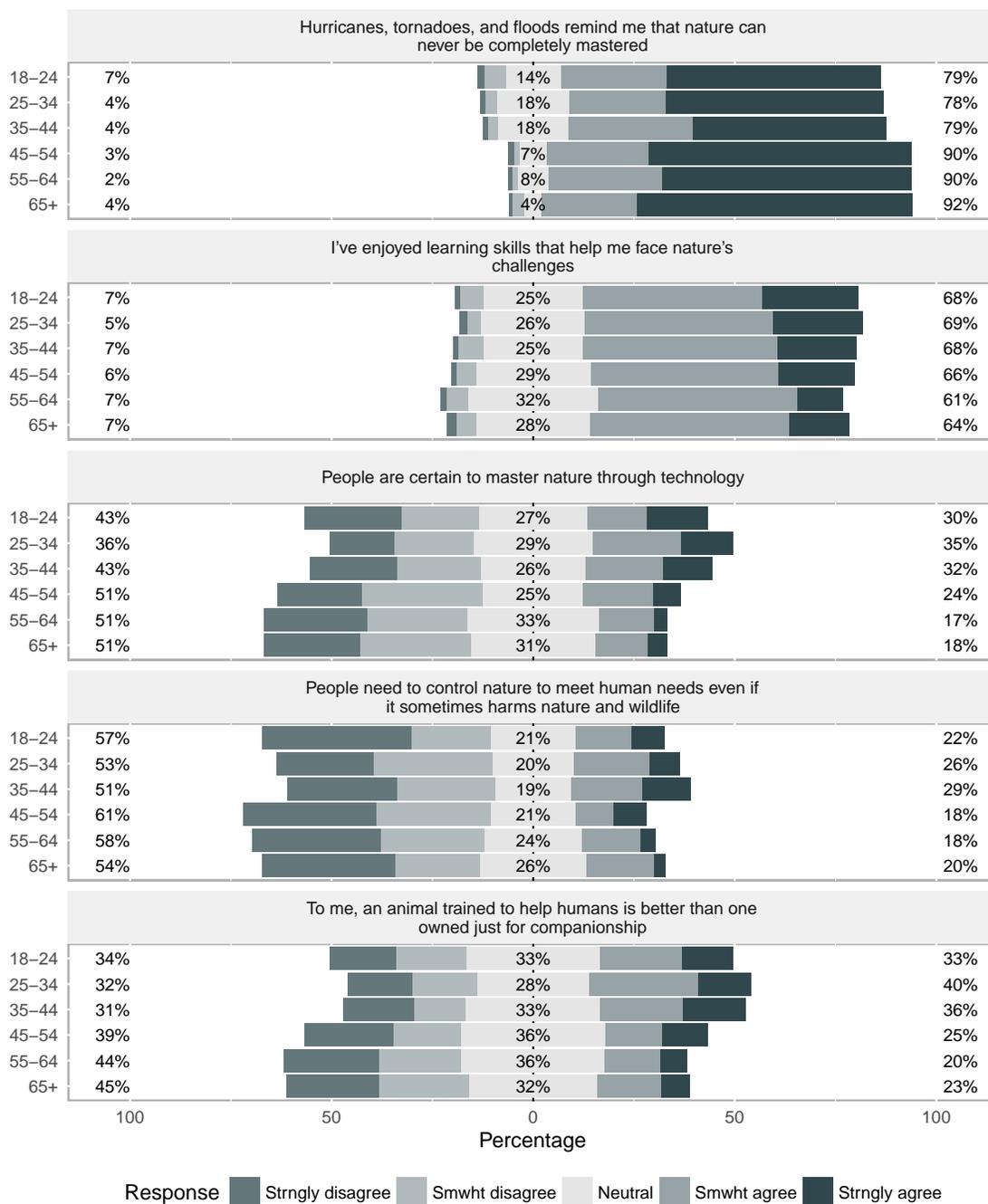
Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.52: Values of Control, by Location



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.53: Values of Control, by Age Category



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

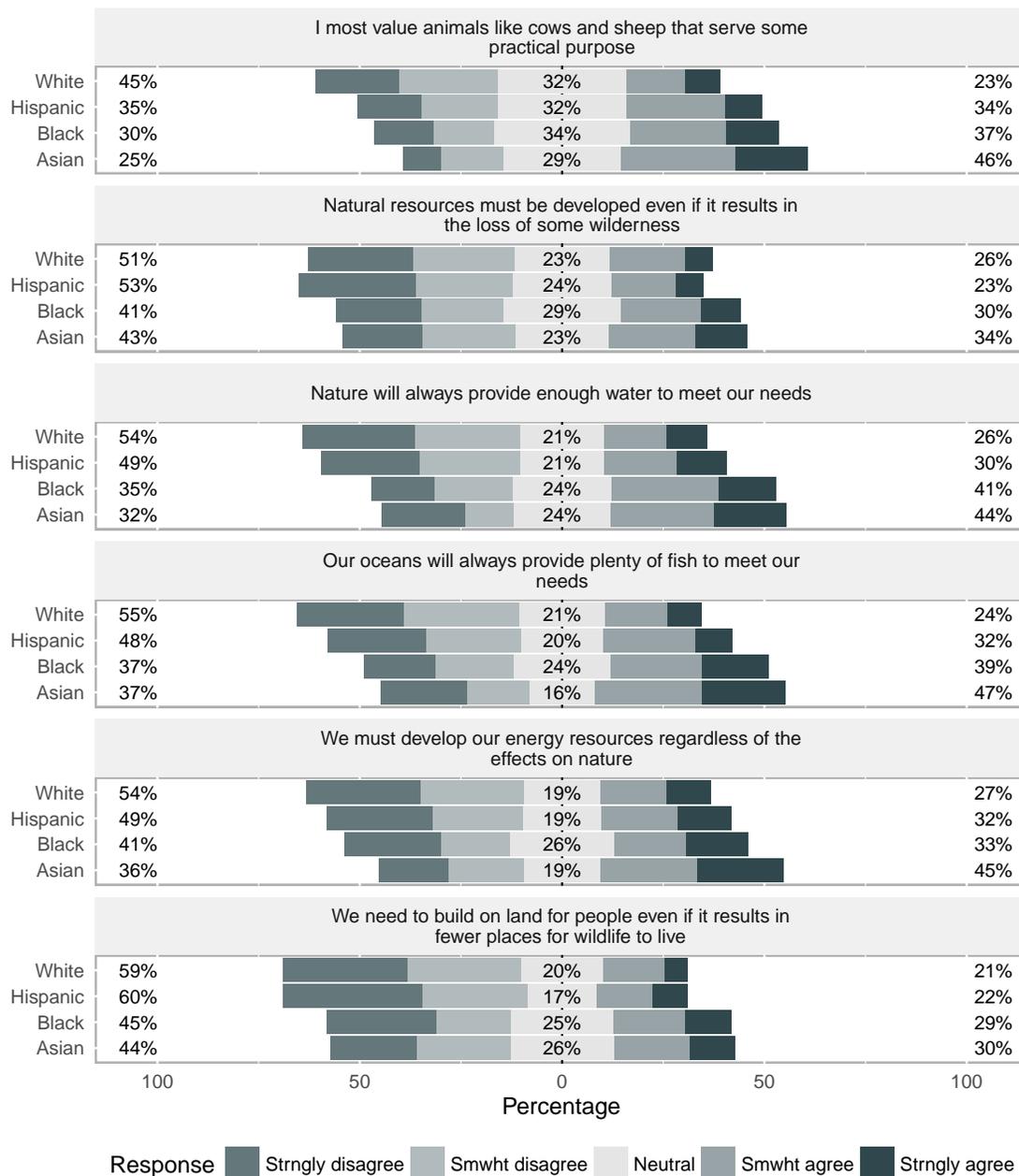
### 4.3.5 Exploitation

The extraction of material benefits and resources from the natural world is an ancient and necessary biological function. Most members of various ethnoracial groups recognized the need to limit human exploitation and extraction of natural resources, and were opposed to levels of resource utilization that resulted in significant harmful effects on nature and wildlife (Figure 4.54). White and minority respondents differed: For example, one-quarter of white adult respondents supported land, energy, and natural resource development if it resulted in substantial adverse impacts on nature, wildlife, and wilderness; in contrast, some one-third to two-fifths of Hispanic, black, and Asians respondents were in support. Also, white respondents were the least likely to prefer animals such as domesticated livestock because they especially served some practical purpose.

Across residential location, the strongest support for utilizing the natural world for human purposes occurred among urban residents (Figure 4.55). A sizable minority—around two-fifths—supported the development of natural and energy resources even at the expense of wilderness, regarded nature as always providing sufficient water and aquatic resources to meet human needs, and believed humans needed to develop land even when it resulted in fewer places for wildlife. Two-fifths of urban residents also valued animals the most that served some practical purpose. These proportions contrasted the most with those of rural residents. For example, one-fifth of rural adults supported utilizing the natural world to serve a variety of human needs and purposes.

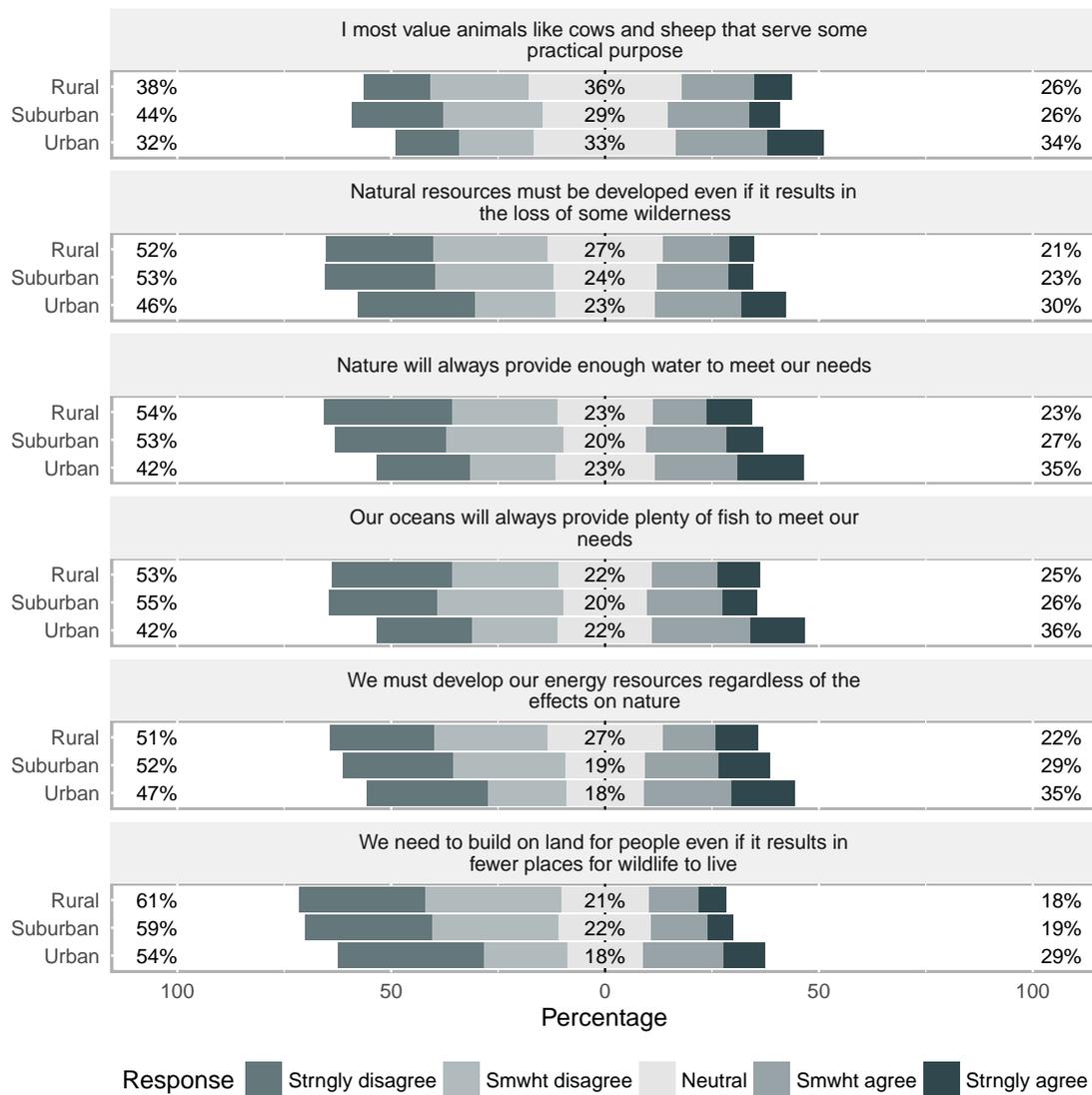
With respect to age differences, adults in their mid-20s to mid-40s were the most likely to support exploiting nature to serve human purposes (Figure 4.56). For example, between two-fifths and one-half of adults of this age group supported developing natural, energy, and land resources even if it resulted in substantial negative impacts on wilderness, wildlife, and nature. This group was also the most inclined to believe the oceans will always provide plenty of aquatic resources to meet human needs. By comparison, around 20 percent of older adults endorsed the need to build on and exploit land resources that result in the loss of wildlife habitat.

Figure 4.54: Values of Exploitation, by Race and Ethnicity



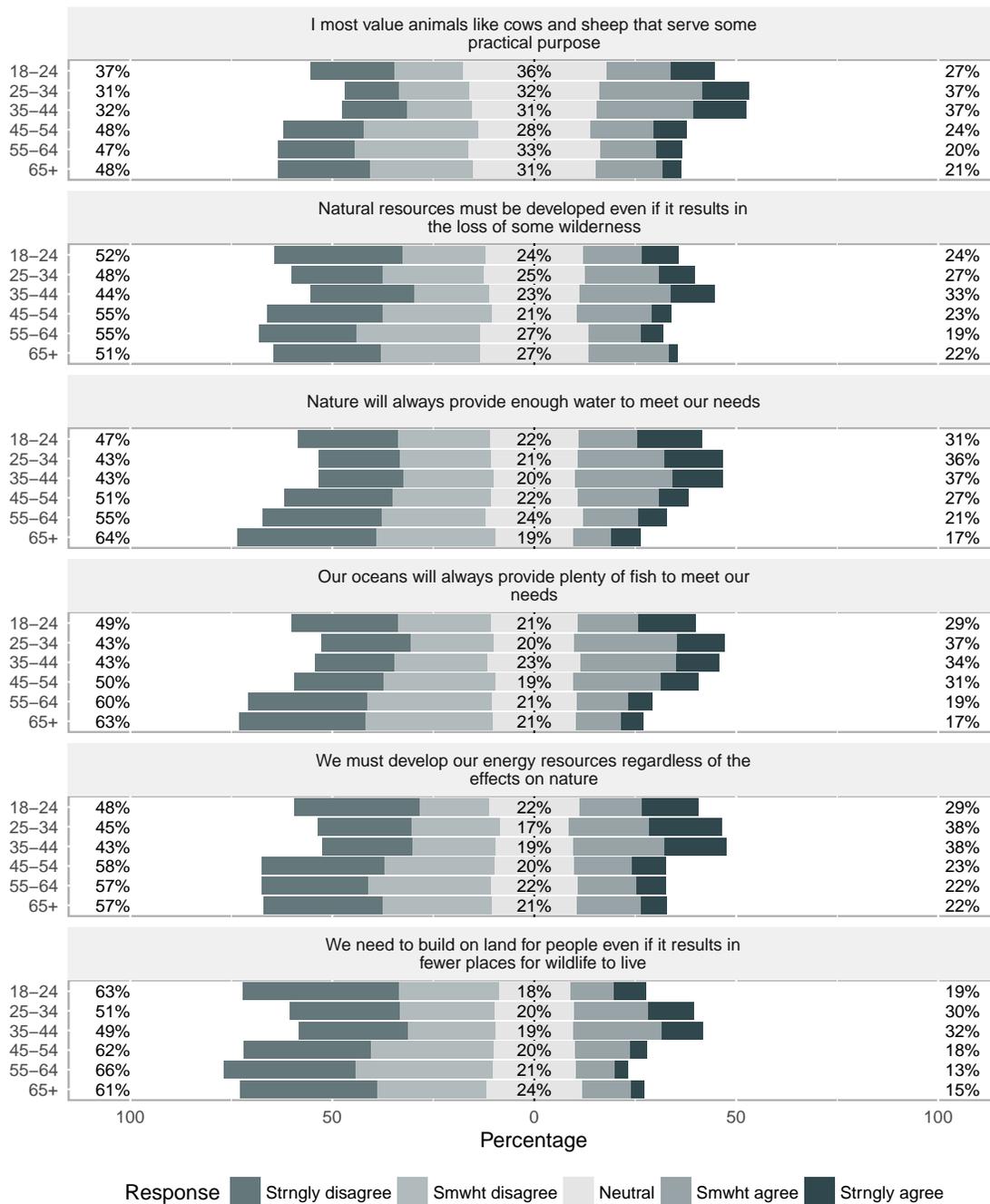
Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.55: Values of Exploitation, by Location



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.56: Values of Exploitation, by Age Category



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

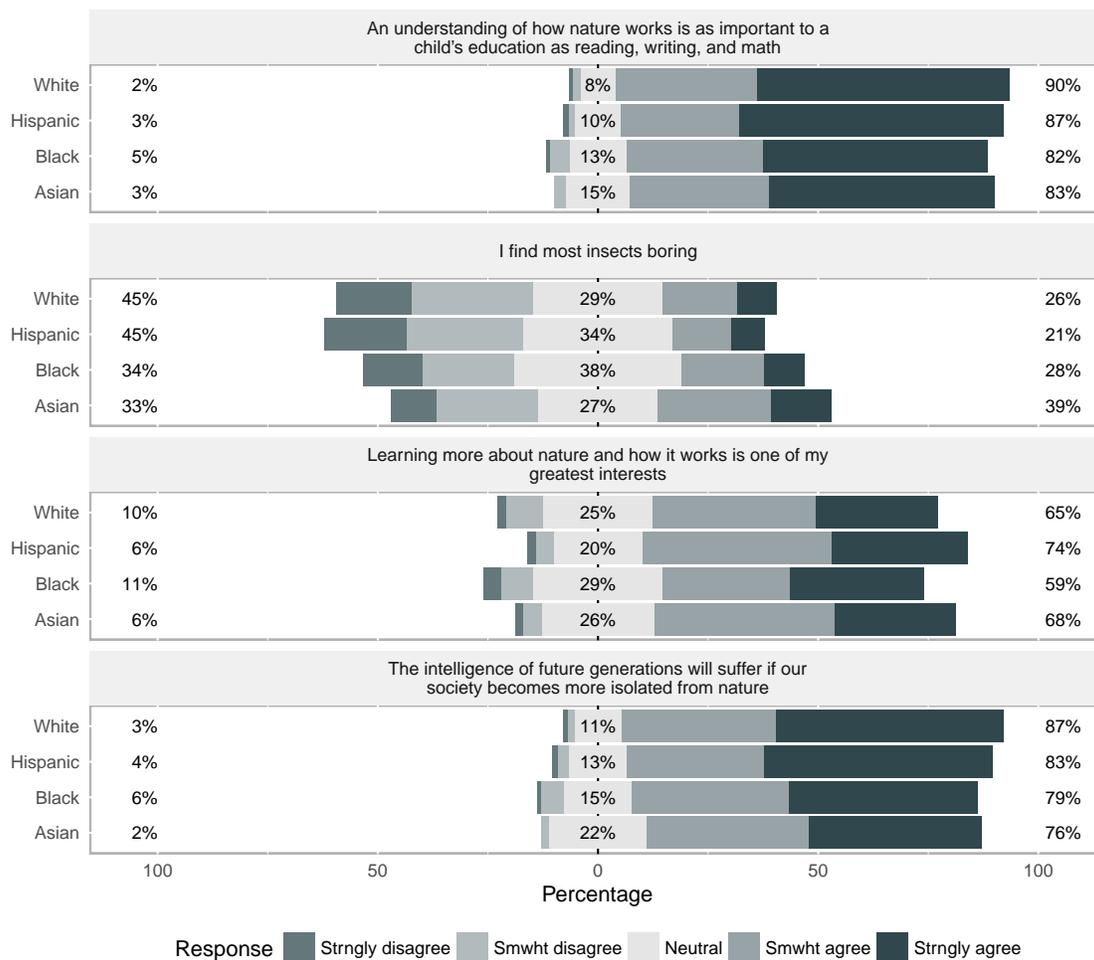
### 4.3.6 Intellect

The natural world provides a source of knowledge and understanding that in addition to the intrinsically valuable understanding of the world it provides, has also long served as a basis for the development of human intellect, cognitive capacity, reason, critical thinking, problem solving, imagination and creativity. The recognition of the intellectual value of nature was evident among all ethnoracial groups (Figure 4.57). Some 80–90 percent of all adults supported the view that “an understanding of how nature works is as important in a child’s education as reading, writing, and math”, and some 80 percent agreed the “intelligence of future generations will suffer if our society becomes isolated from nature.” In a different line of questioning, the majority of adults said that they themselves were interested in learning how nature works. However, adults were split in their interest in insects: one-third of adults in our sample agreed insects were boring, one-third were neutral, and one-third disagreed that they were boring.

Regardless of location, the overwhelming majority of respondents recognized a clear connection between the development of human intellect and the experience of nature (Figure 4.58). Nearly 90 percent of rural, suburban, and urban respondents agreed that understanding nature is as important as traditional subjects like reading and math, and over 80 percent believed isolation from nature would result in harming the intelligence of future generations. Regarding personal interest in learning about nature, 60 to 70 percent of adult respondents indicated learning about nature as one of their greatest interests. Still, 34 percent of urban residents indicated they found insects boring, compared with 23 percent of rural and suburban residents.

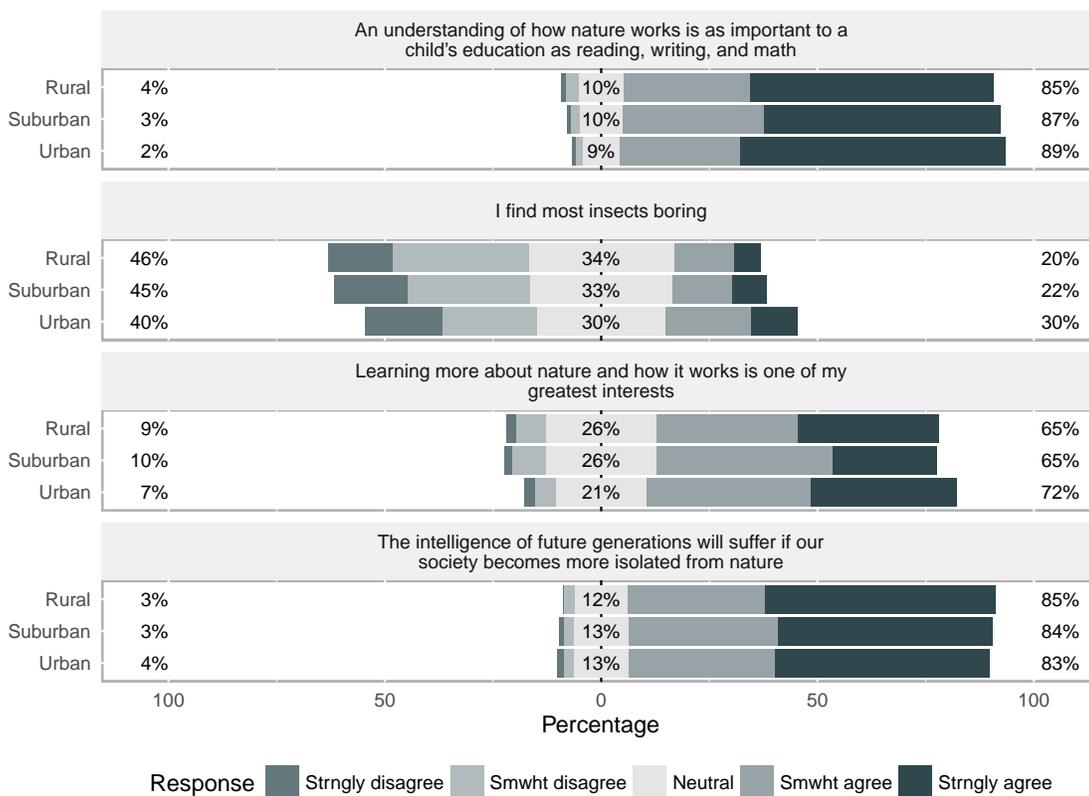
Age differences were minor regarding the value of learning about nature and the importance of the natural world as a source of human intelligence (Figure 4.59). The desire to learn about how nature works appeared to be strongest among middle-aged adults (25–44-year-olds), although this same group was slightly more inclined to find insects boring.

Figure 4.57: Values of Intellect, by Race and Ethnicity



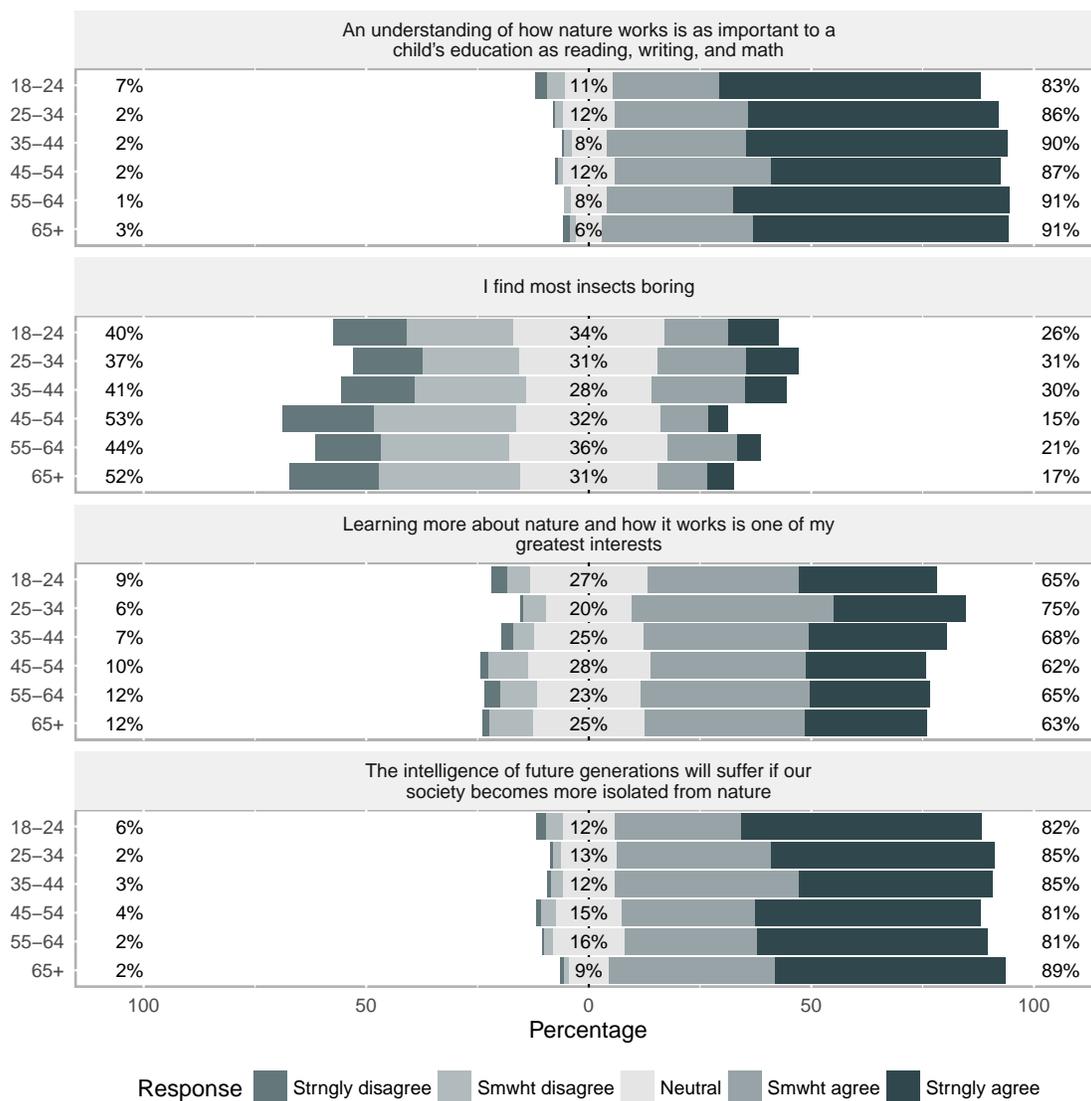
Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.58: Values of Intellect, by Location



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.59: Values of Intellect, by Age Category



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

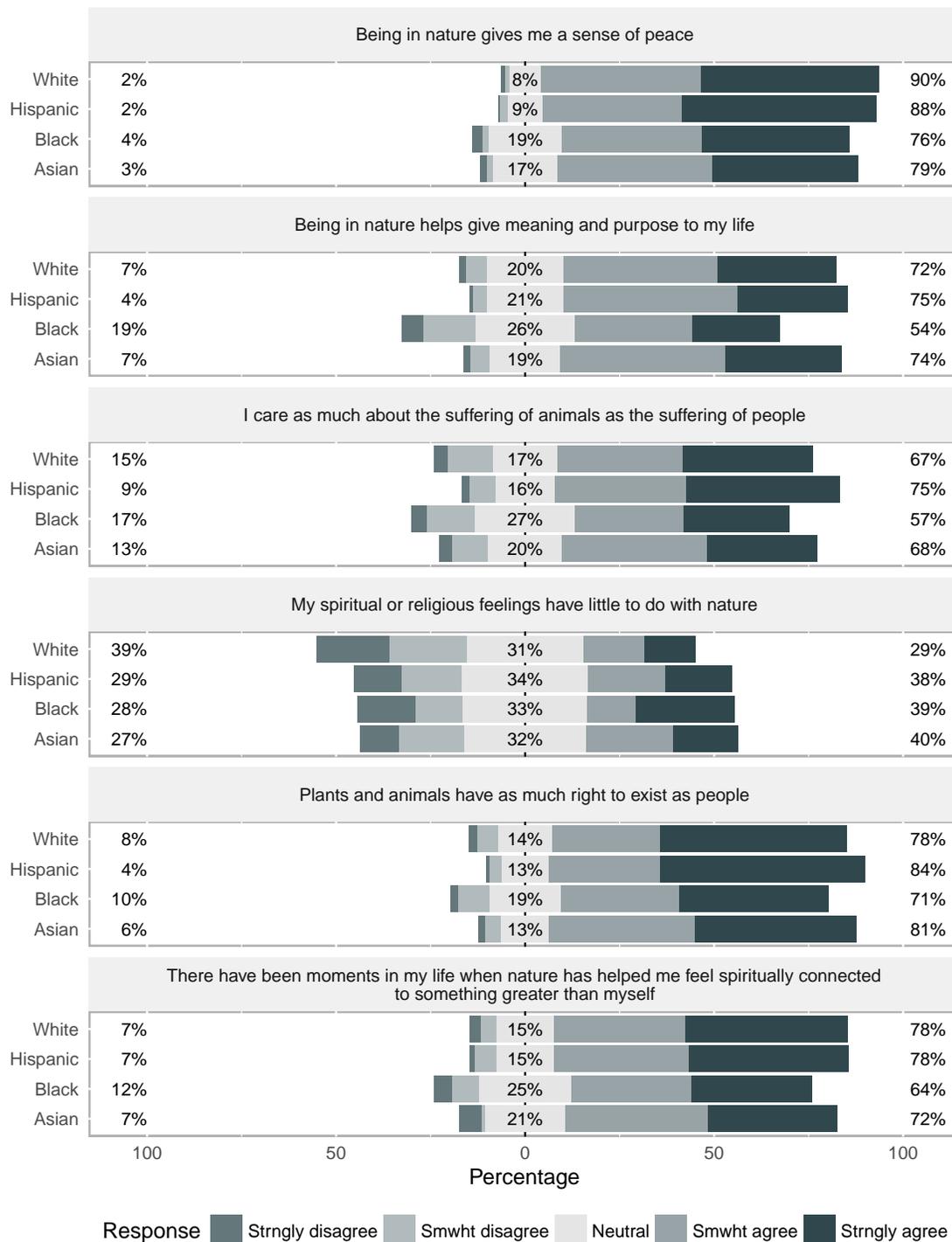
### 4.3.7 Spirituality

A basic value of nature is finding meaning and purpose in life through feelings of connection to a larger world of creation beyond human experience. The spiritual value of nature was strongly evident among ethnoracial groups (Figure 4.60). For example, approximately 80 percent of all adults endorsed the view that “being in nature gives me a sense of peace,” approximately 70 percent agreed that “being in nature helps gives meaning and purpose to my life,” and approximately 70 percent agreed that “there have been moments in my life when nature has helped me feel spiritually connected to something greater than myself.” The connection between nature and spiritual or religious feelings differed slightly.

Residential location had little influence on holding a spiritual value of nature (Figure 4.61). Across location, nearly 90 percent of adults surveyed agreed that being in nature gives them a greater peace of mind, and approximately 70 percent that being in nature gives meaning and purpose to their lives. Also, about 70 percent of urban respondents supported the view that caring for the suffering of animals is as important as caring for the suffering of other people—roughly the same as found among suburban and rural residents. The connection between nature and spiritual or religious feelings differed.

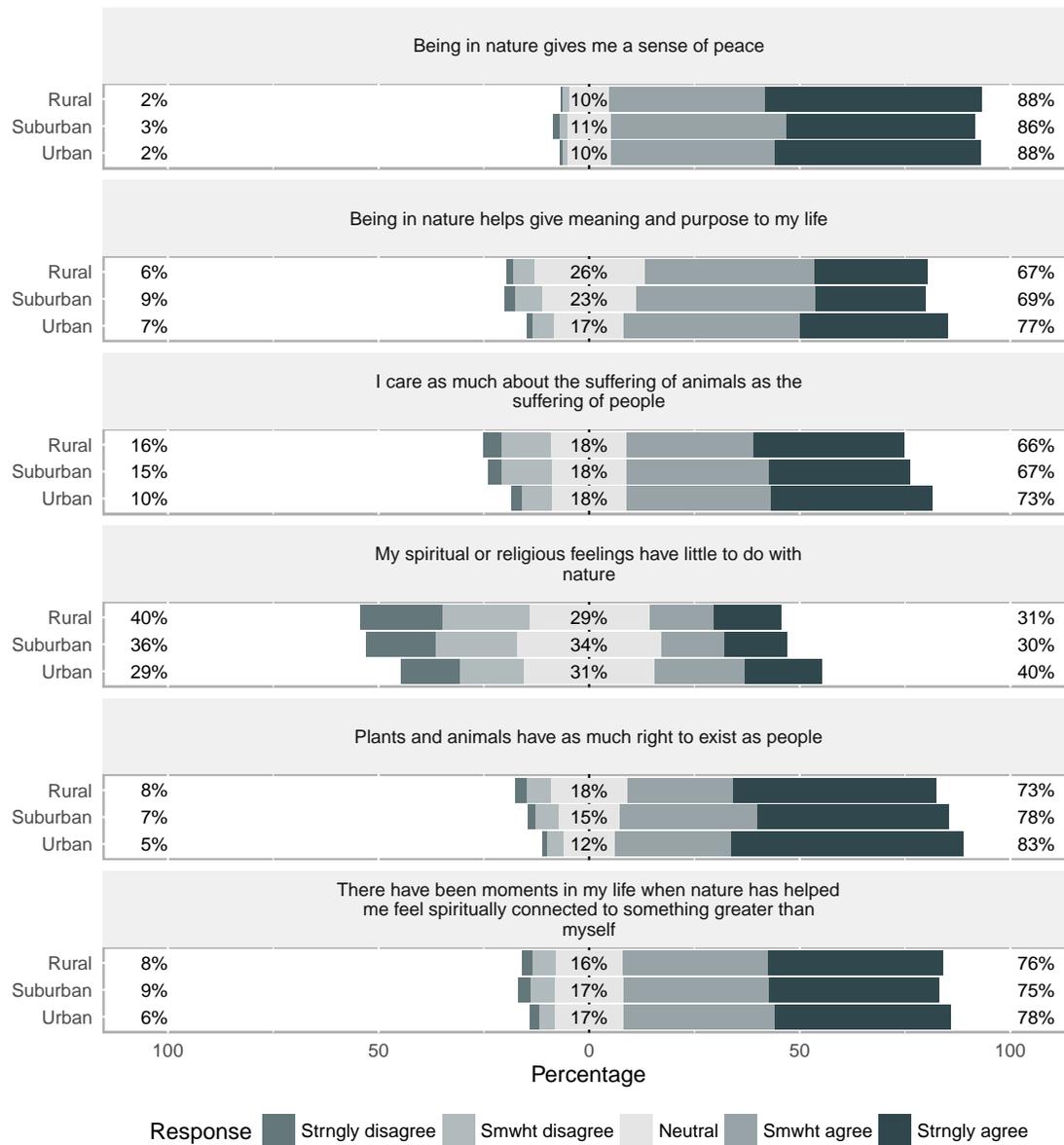
The great majority of adults regardless of age reported finding meaning, purpose, and peace through contact with nature (Figure 4.62). Three-quarters indicated they had experienced moments in nature that helped them feel spiritually connected to something larger than themselves. Substantial differences occurred in the perceived relationship between religion and spiritual feelings toward nature. Roughly one-half of younger adults perceived no connection between religious affiliation and their spiritual feelings for nature, while a similar proportion of older adults *did* see this connection.

Figure 4.60: Values of Spirituality, by Race and Ethnicity



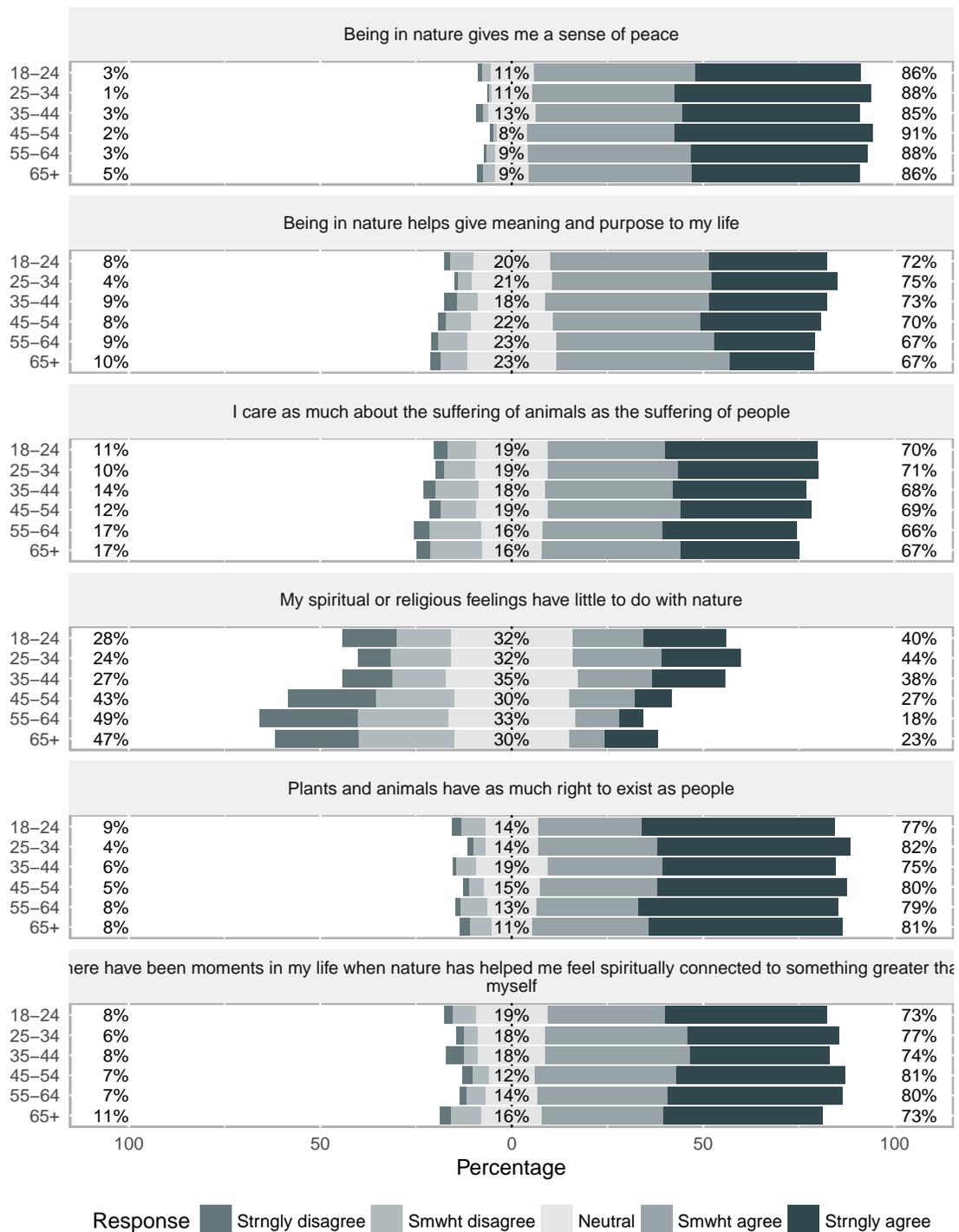
Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.61: Values of Spirituality, by Location



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.62: Values of Spirituality, by Age Category



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

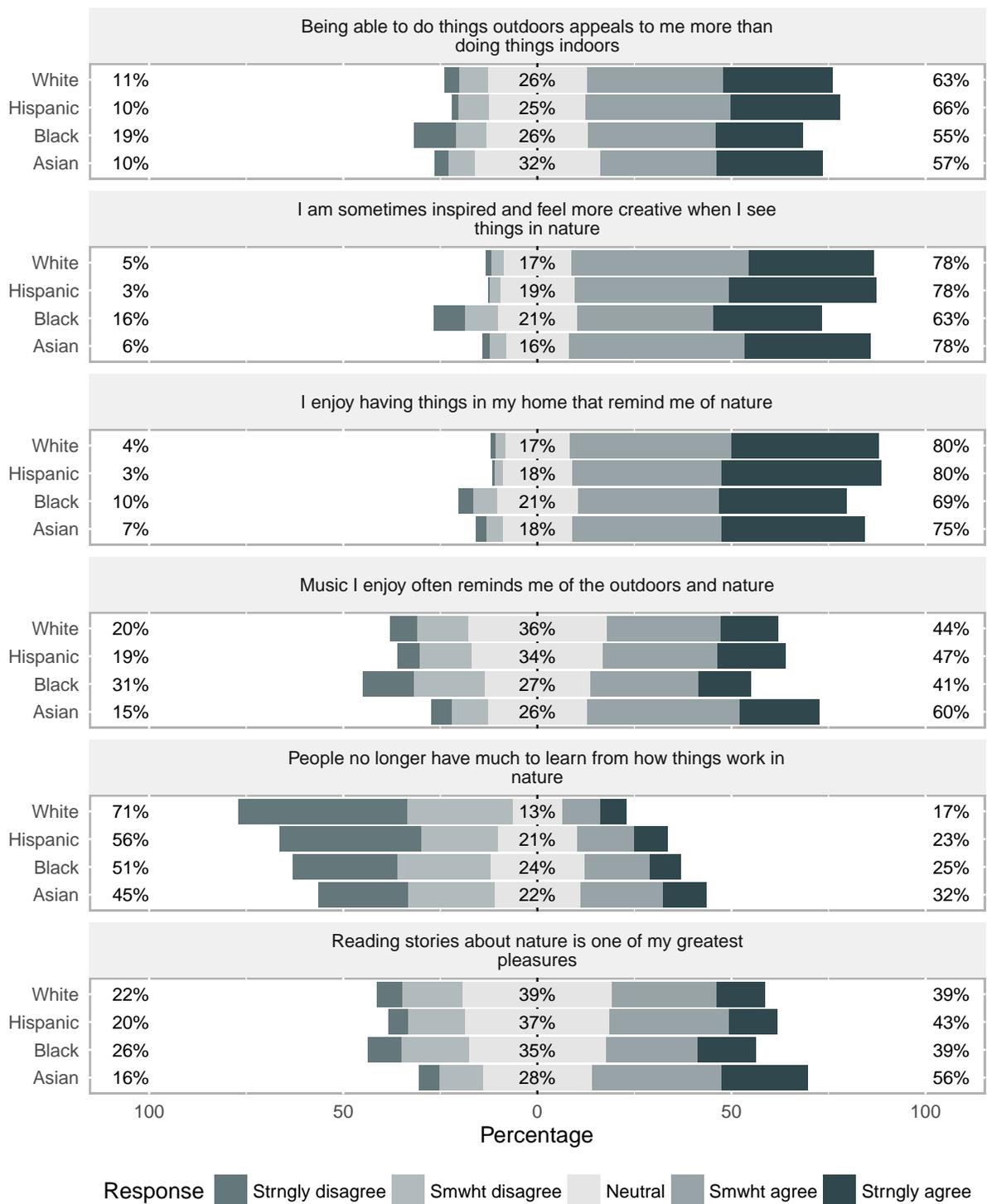
### 4.3.8 Symbolism

The symbolic value of nature reflects how people use the image and representation of the natural world to help advance communication, culture, language, and design. This symbolic capacity is indicative of the particularly symbolic ability of people to utilize the image and representation of nature to facilitate abstract thought and communication. Most respondents recognized the importance of this value of nature, especially in the design of their homes, in being creative, and in communicating meaning through stories (Figure 4.63). White respondents were especially likely to disagree that people no longer have much to learn from how things work in nature.

Across residential location, the majority of adults agreed that nature inspires their creativity, and that they enjoy having things in their homes that remind them of nature (Figure 4.64). For urban residents, this symbolic association with nature tended to be most strongly associated with the experience of music (56 percent) and reading books (54 percent). Suburban and rural respondents were likeliest to disagree that people no longer had much to learn about the natural world.

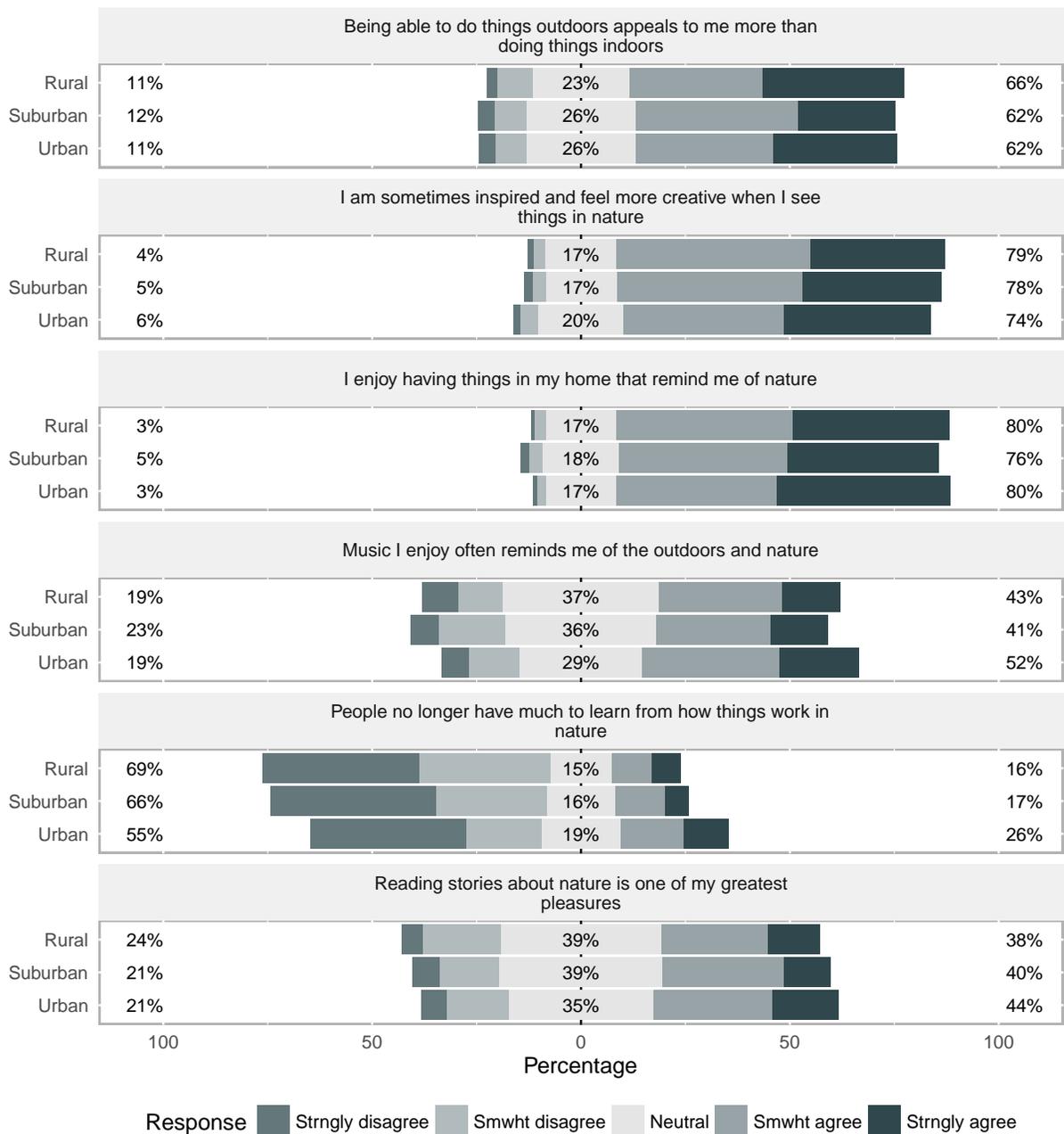
Among age groups, the great majority of especially young adults reported being inspired and most creative when exposed to nature, and enjoyed having things associated with the natural world in their homes (Figure 4.65). Older adults were the most likely to support the idea that people have much to learn about how things work from studying nature.

Figure 4.63: Values of Symbolism, by Race and Ethnicity



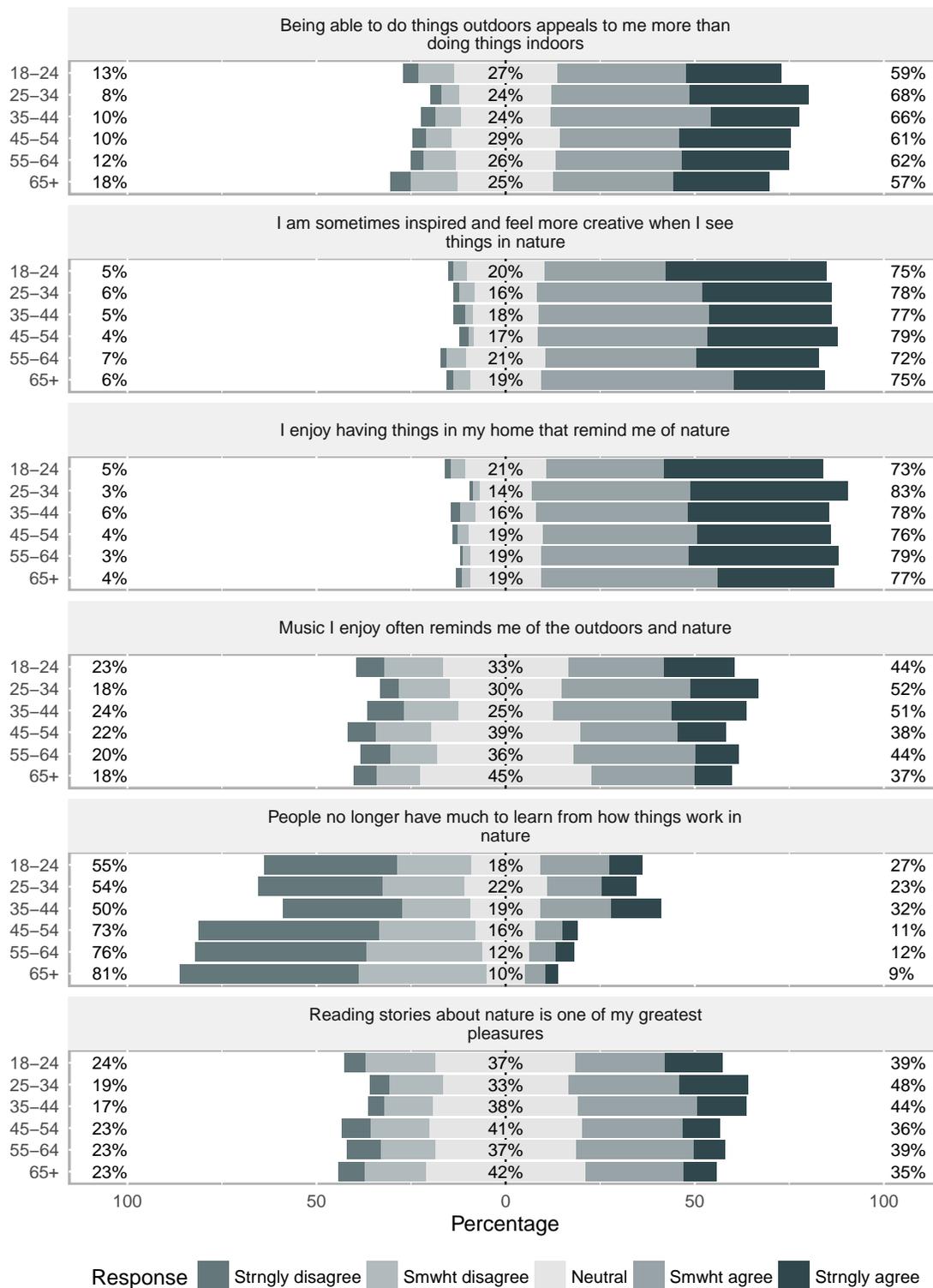
Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.64: Values of Symbolism, by Location



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

Figure 4.65: Values of Symbolism, by Age Category



Note: The percentages on the left side of the chart combine responses “strongly disagree” and “somewhat disagree.” The percentage in the middle reports “neither agree nor disagree.” The percentages on the right side combine responses “strongly agree” and “somewhat agree.”

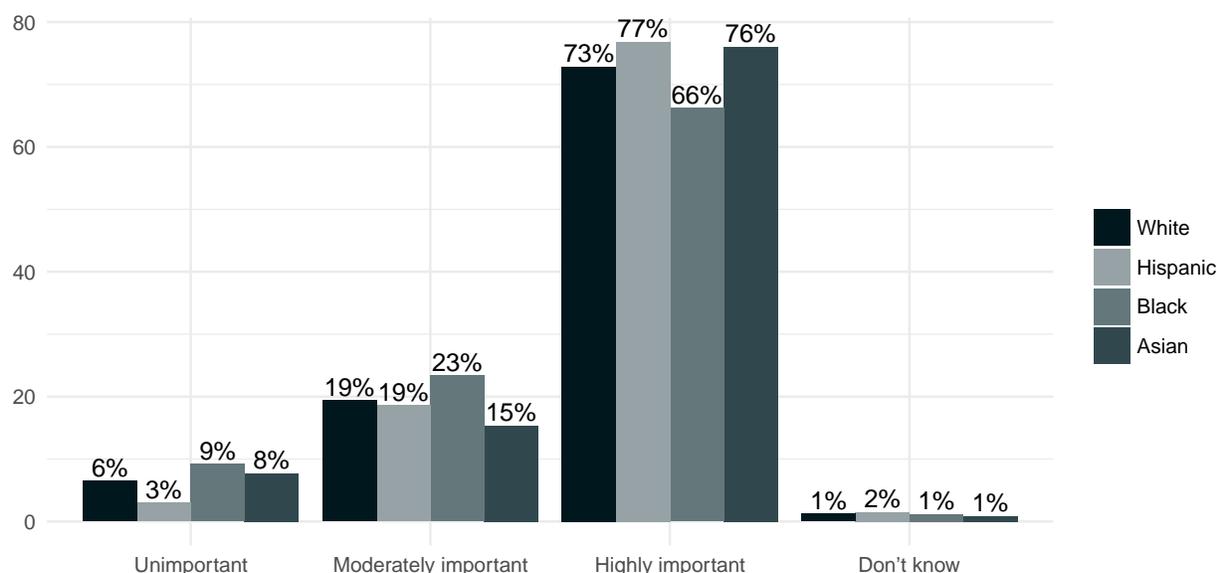
## 4.4 Benefits of Contact with Nature and the Outdoors

As reported in Chapter 2, 75 percent of adults in Texas agreed that getting outdoors and into nature is very or extremely important for their physical health (Figure 2.26). Moreover, 76 percent reported getting outdoors was important for their emotional outlook on life (Figure 2.27). This section examines variation in these perceptions across race and ethnicity, age, and residential location.

### 4.4.1 Physical Health

Across ethnoracial groups, the great majority of adults reported that the experience of nature was a very or extremely important influence on their physical health (Figure 4.66). Approximately 70 percent of white, black, and Asian adults noted an important connection between exposure to nature and physical health. An even higher 84 percent of Hispanic adults endorsed this view. Scarcely any respondents cited contact with nature as unimportant for their physical health; in addition, virtually no respondents had no opinion on the matter.

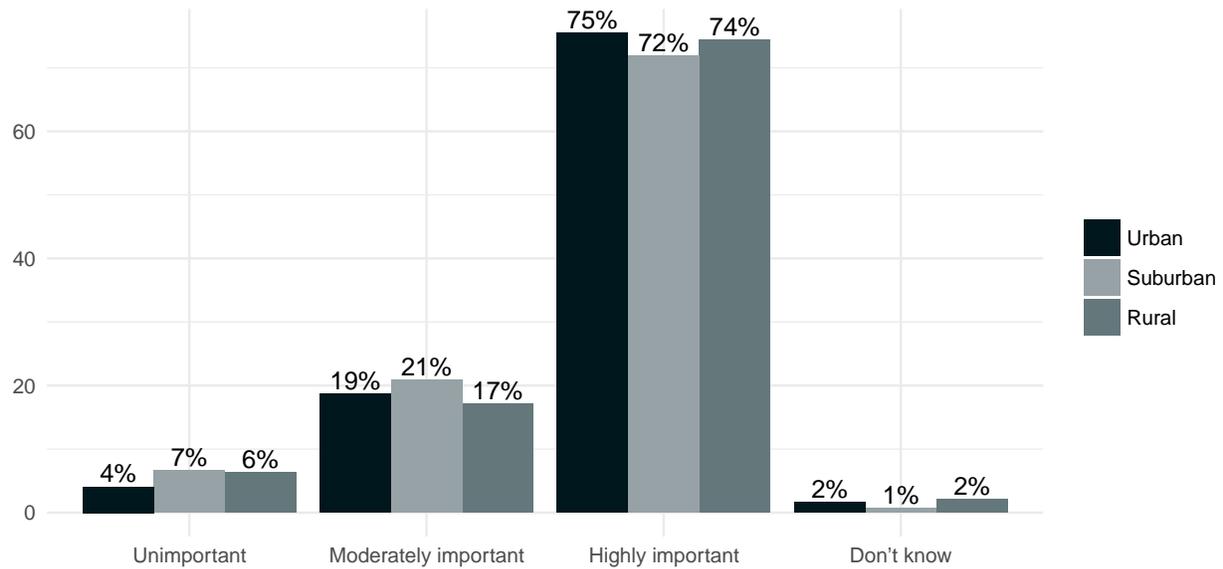
Figure 4.66: Importance of Nature for Helping Physical Health, by Race and Ethnicity



Question wording: In your opinion, how important is getting outdoors and into nature for helping your physical health? “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

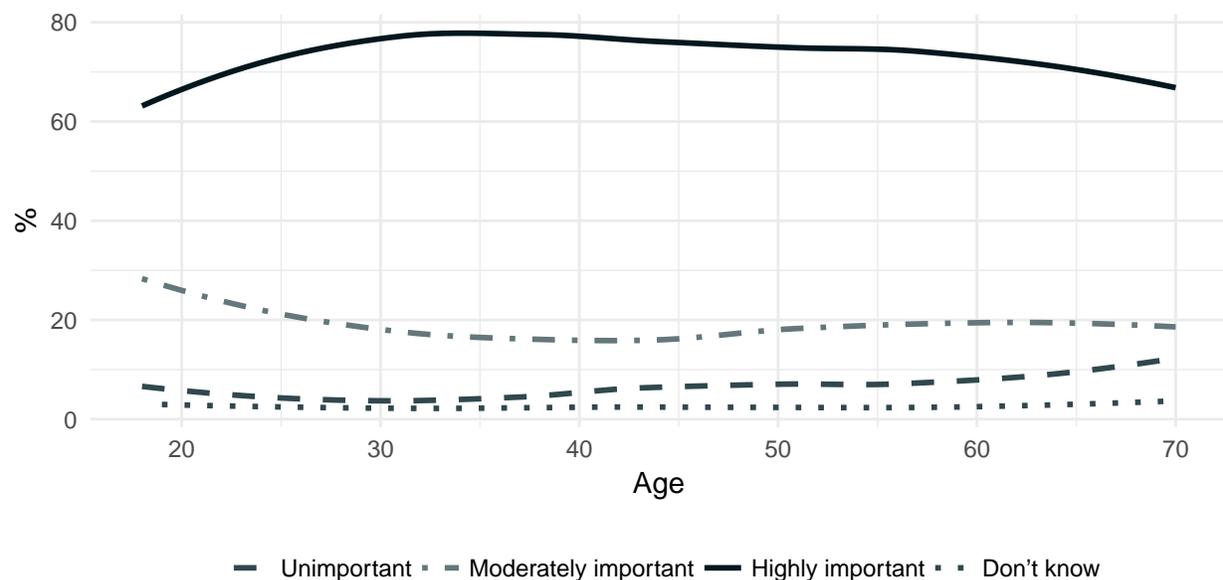
Urban residents were likeliest to perceive an important connection between exposure to nature and their physical health (Figure 4.67). In terms of age, roughly 80 percent of 30-year-olds mentioned an important connection between getting into nature and their physical health (Figure 4.68). The majority of older adults saw exposure to nature as important for their physical health, but at a lower rate of about 70 percent.

Figure 4.67: Importance of Nature for Helping Physical Health, by Location



Question wording: In your opinion, how important is getting outdoors and into nature for helping your physical health? “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

Figure 4.68: Importance of Nature for Helping Physical Health, by Age

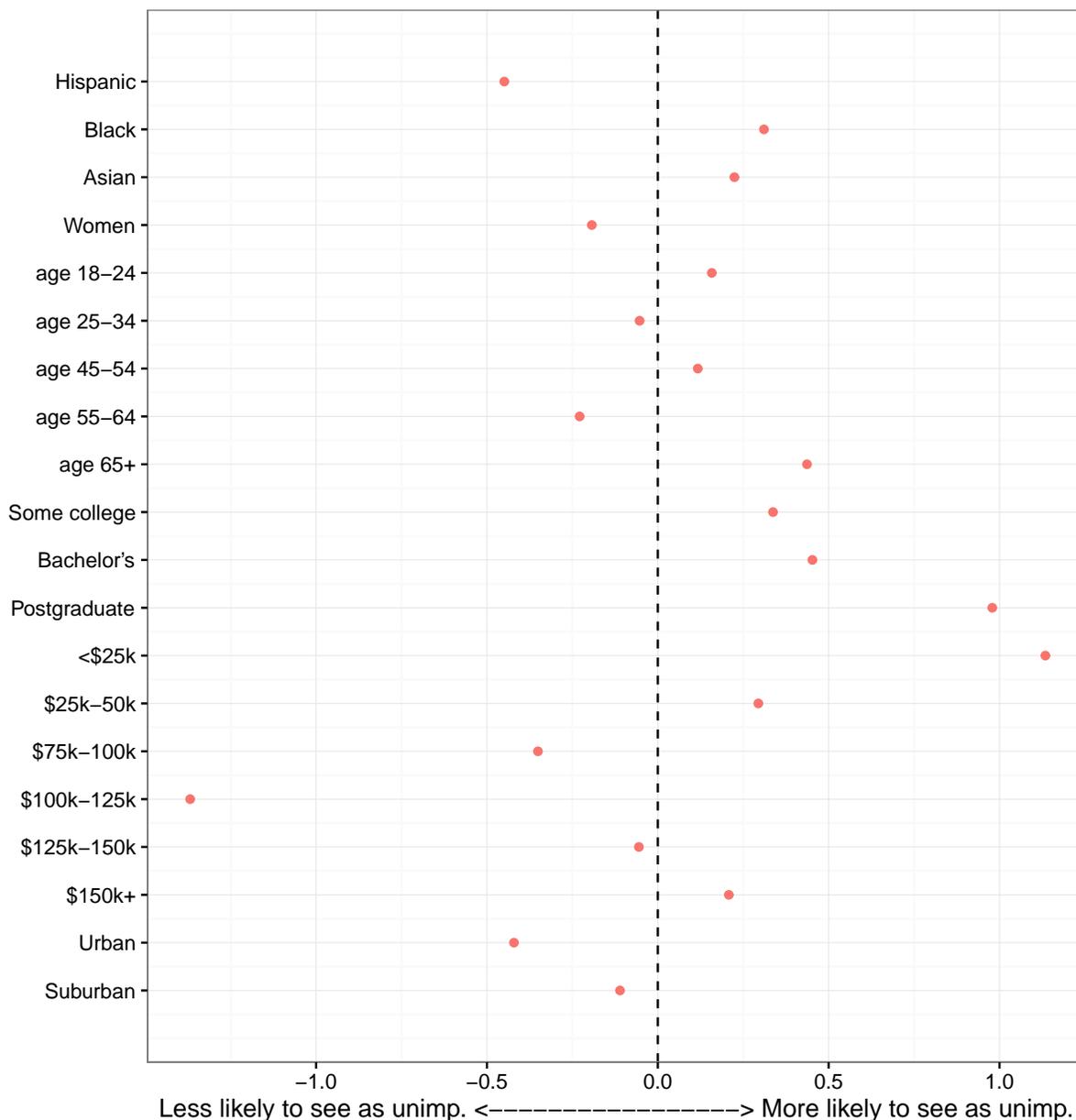


Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: In your opinion, how important is getting outdoors and into nature for helping your physical health? “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

Figure 4.69 shows which respondents were likelier to see nature as *unimportant* for their physical health (including those who responded “don’t know”). Points greater than 0 signify that adults in that group were *more likely* to see nature as unimportant for their physical health. Points less than 0 signify that adults in that group were *less likely*. The larger the value, whether positive or negative, the greater the relationship between that variable and the outcome. In this analysis, the reference categories are *whites* in comparison to Hispanics, blacks, and Asians; *men* in comparison to women; *35–44-year-olds* in comparison to all other age categories; adults with a *high school degree or less* in comparison to all other levels of educational attainment; adults from households with incomes of *\$50,000–\$74,999* averaged over the last five years in comparison to all other income categories; and *rural residents* in comparison to urban and suburban residents. How much each variable is related to the outcome is net of (i.e., adjusts for) the other variables included. (See Section 1.3 for more detail.)

- Black and Asian adults, those with higher levels of education, and those from low-income households were slightly likelier to see contact with nature as unimportant for their physical health. By far the largest predictors among the factors included were income and education.
- Hispanic adults, younger adults, and urban respondents were less likely to see contact with nature as unimportant for their physical health.

Figure 4.69: Likelihood of Viewing Nature as Unimportant to One’s Physical Health



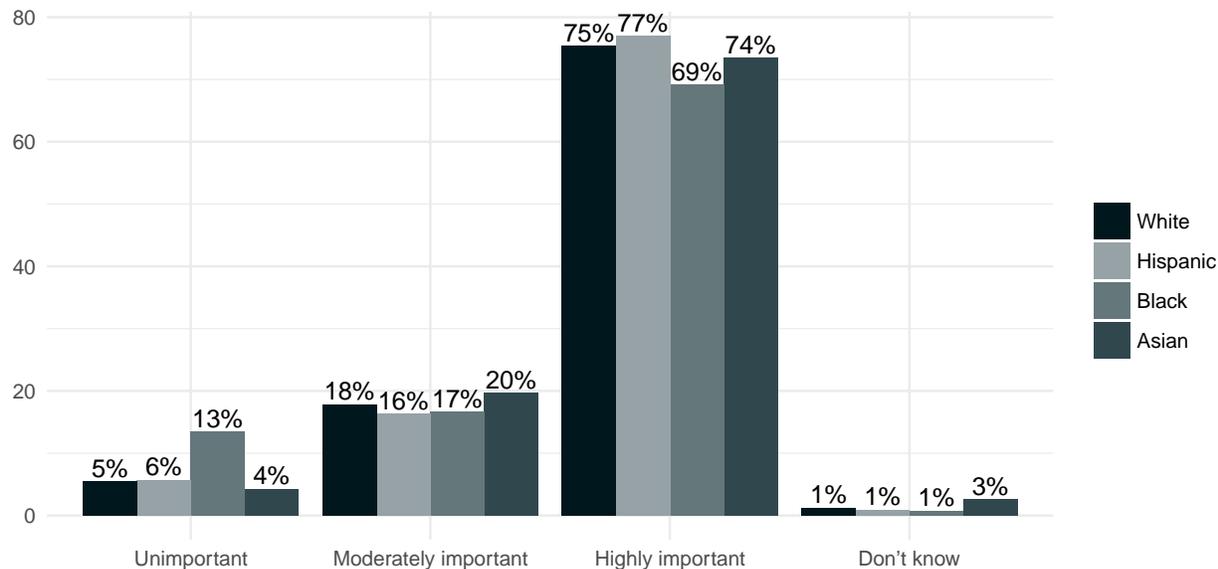
Note: The outcome is the likelihood that a respondent views nature as very unimportant or slightly unimportant for their own physical health or does not know. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

### 4.4.2 Emotional Outlook

The great majority of adults also perceived an important connection between getting outdoors into nature and their emotional outlook on life (Figure 4.70). Modest differences occurred among ethnoracial groups. The largest proportion who perceived a positive connection between emotional

outlook and exposure to nature were Hispanic adults (83 percent), followed by 76 percent of white adults, 67 percent of black adults, and 70 percent of Asian adults. Relatively few adults regarded the connection between nature and their emotional outlook to be unimportant.

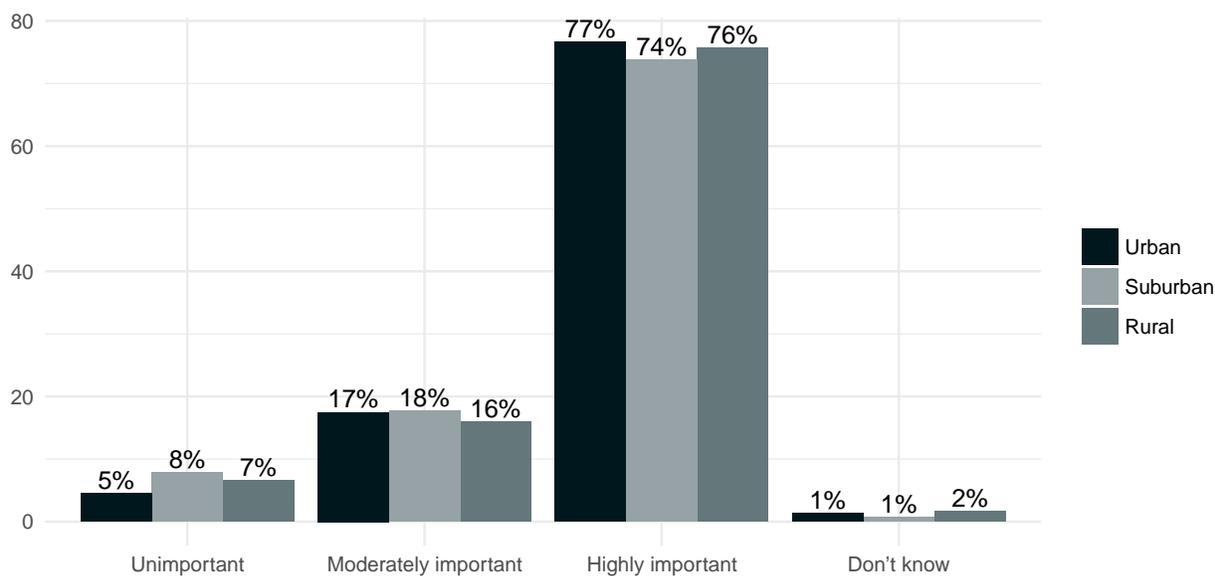
Figure 4.70: Importance of Nature for Helping Emotional Outlook, by Race and Ethnicity



Question wording: In your opinion, how important is getting outdoors and into nature for helping your emotional outlook on life? “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

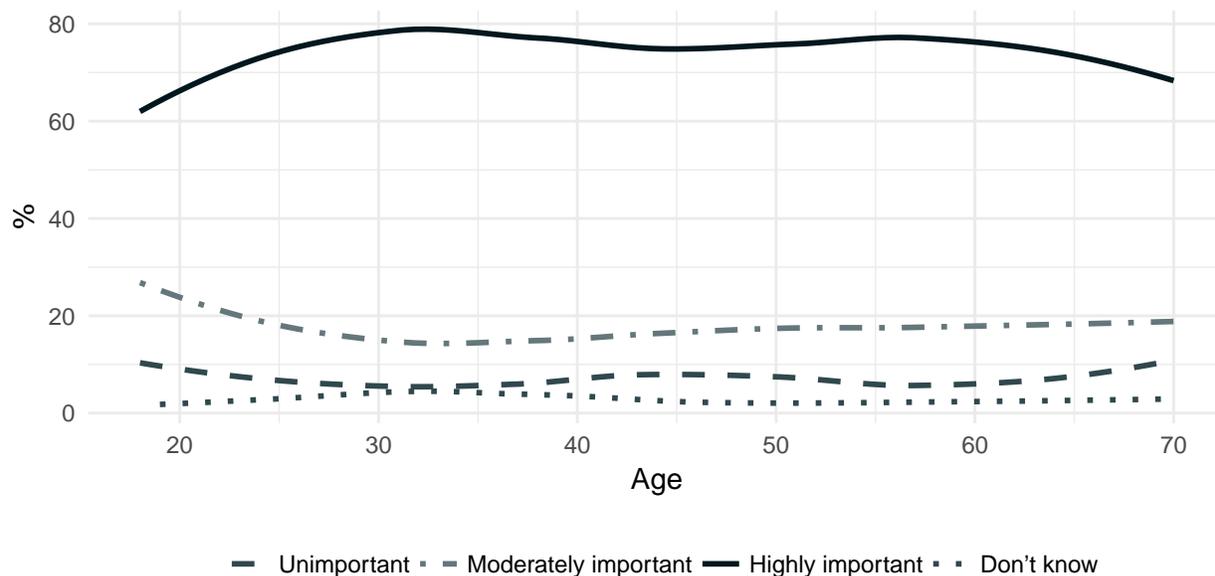
Differences across location were relatively small (Figure 4.71). Urban residents were the most likely to report a perceived important connection between exposure to nature and their emotional outlook on life. There were few differences by age (Figure 4.72).

Figure 4.71: Importance of Nature for Helping Emotional Outlook, by Location



Question wording: In your opinion, how important is getting outdoors and into nature for helping your emotional outlook on life? “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

Figure 4.72: Importance of Nature for Helping Emotional Outlook, by Age

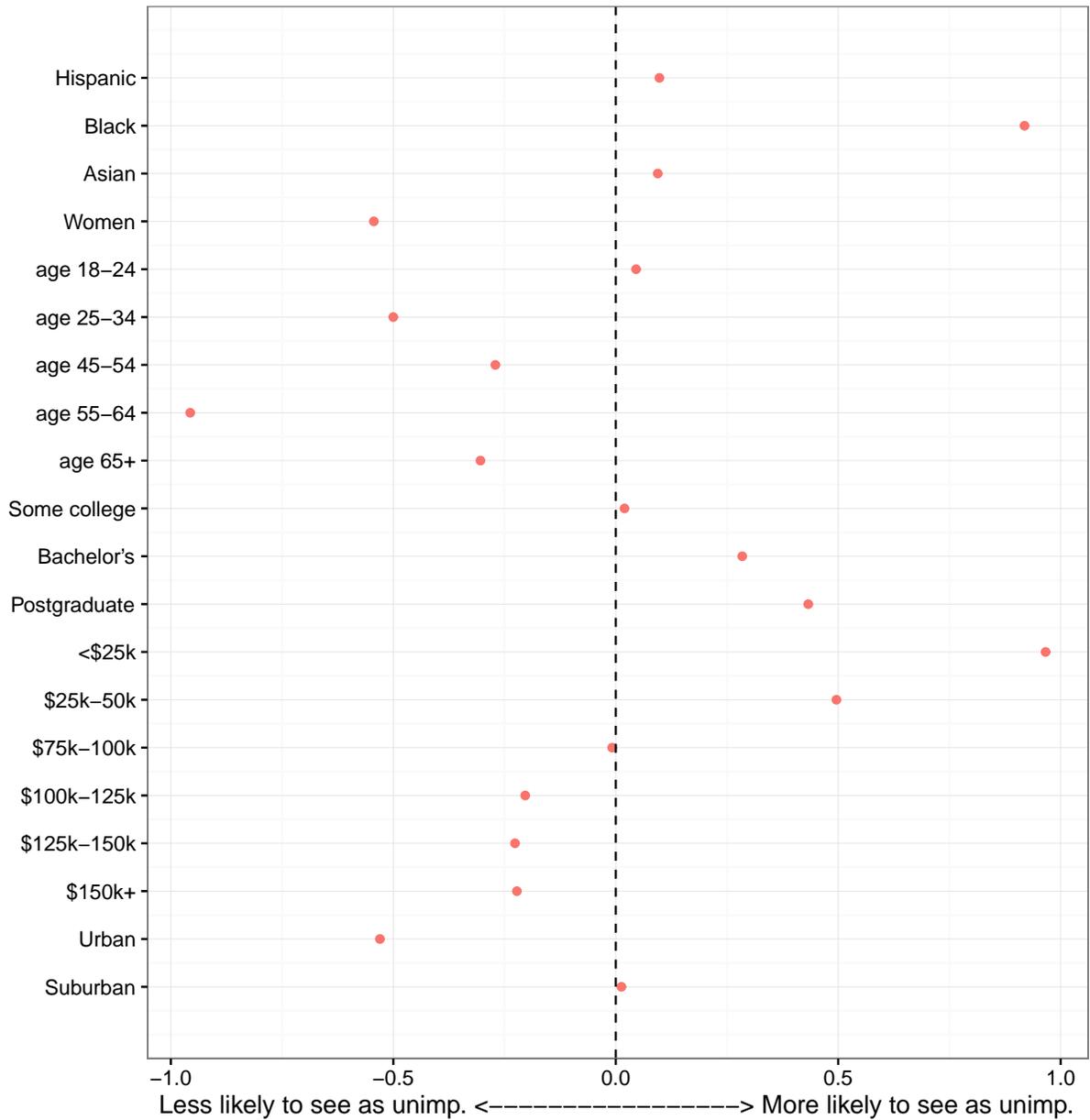


Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: In your opinion, how important is getting outdoors and into nature for helping your emotional outlook on life? “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

Figure 4.73 shows which groups of adults were likelier to see exposure to nature and the outdoors as unimportant for their emotional outlook (including those who responded “don’t know”). Points greater than 0 signify that adults in that group were *more likely* to see nature as unimportant for their emotional outlook. Points less than 0 signify that adults in that group were *less likely*. The larger the value, whether positive or negative, the greater the relationship between that variable and the outcome. In this analysis, the reference categories are *whites* in comparison to Hispanics, blacks, and Asians; *men* in comparison to women; *35–44-year-olds* in comparison to all other age categories; adults with a *high school degree or less* in comparison to all other levels of educational attainment; adults from households with incomes of *\$50,000–\$74,999* averaged over the last five years in comparison to all other income categories; and *rural residents* in comparison to urban and suburban residents. How much each variable is related to the outcome is net of (i.e., adjusts for) the other variables included. (See Section 1.3 for more detail.)

- Black adults and lower-income respondents were likelier to see contact with nature as unimportant for their emotional outlook.
- Women, older adults, higher-income respondents, and urban residents were less likely to see contact with nature as unimportant for their emotional outlook on life.

Figure 4.73: Likelihood of Viewing Nature as Unimportant to One’s Emotional Outlook



Note: The outcome is the likelihood that a respondent views nature as “very unimportant” or “slightly unimportant” for their own emotional outlook or does not know. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

## 4.5 Barriers and Facilitators to Interests in and Contact with Nature

This chapter first examined the relationships of various groups of adults toward nature and wildlife, and then highlighted the physical and emotional benefits associated with contact with the natural world. In this section, we conclude with a consideration of the barriers and facilitators to greater experience in and beneficial exposure to the natural world. We first examine general barriers to interest in and contact with nature encountered by racial and ethnic groups. This is followed by a more detailed analysis of three particular barriers: 1) the perception of the outdoors as unsafe or dangerous; 2) the lack of time necessary to enjoy nature; and 3) the lack of sufficient access to nature in relatively nearby open spaces, including the financial resources required to do so. This section concludes with the consideration of facilitators that might increase contact with nature. We underscore the role of social relationships, particularly family and friends, in influencing contact with nature.

### 4.5.1 Barriers

Figure 4.74 lists a number of potential obstacles to adults' interests in nature, broken out by ethnoracial groups. Overall, white adults rated these barriers as less important on the whole than nonwhite respondents. Hispanics and Asians were more likely to indicate the importance of financial reasons as a barrier. Hispanic adults were more likely to note the importance of health reasons and a lack of time. The perception that the outdoors is unsafe was noted as at least moderately important by about two-thirds of Hispanic, black, and Asian respondents.

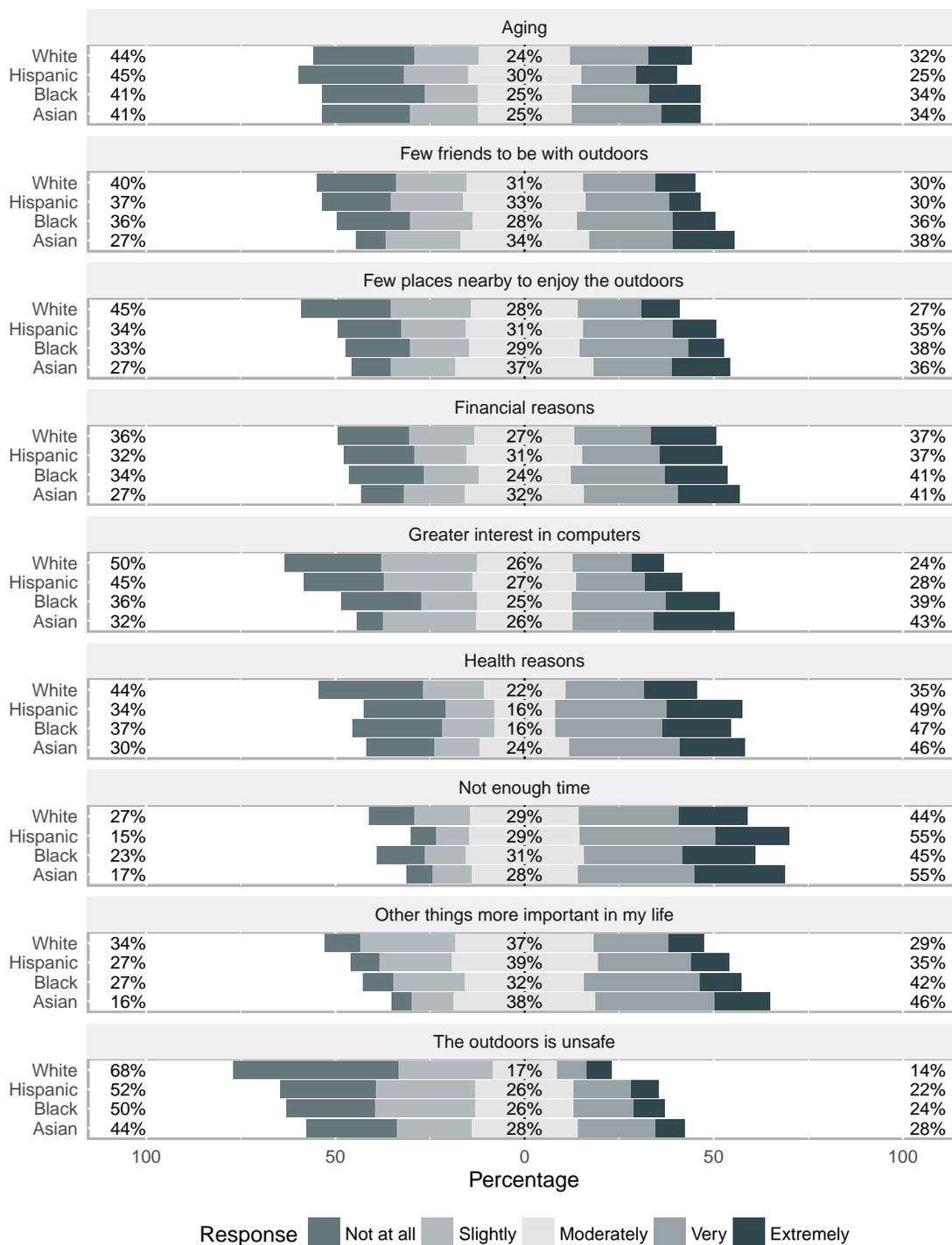
Answers varied somewhat according to residential location (Figure 4.75). Urban residents were likelier to report having few friends to be with outdoors, few places nearby to enjoy outdoors, and greater interest in computers. Urban residents were also likelier to cite health reasons and not having enough time as important barriers.

We examined more closely three barriers to interest in nature, including 1) the safety or danger of the outdoors; 2) the lack of time for nature; and 3) the lack of adequate places and financial barriers to access them.

### Safety of the Outdoors

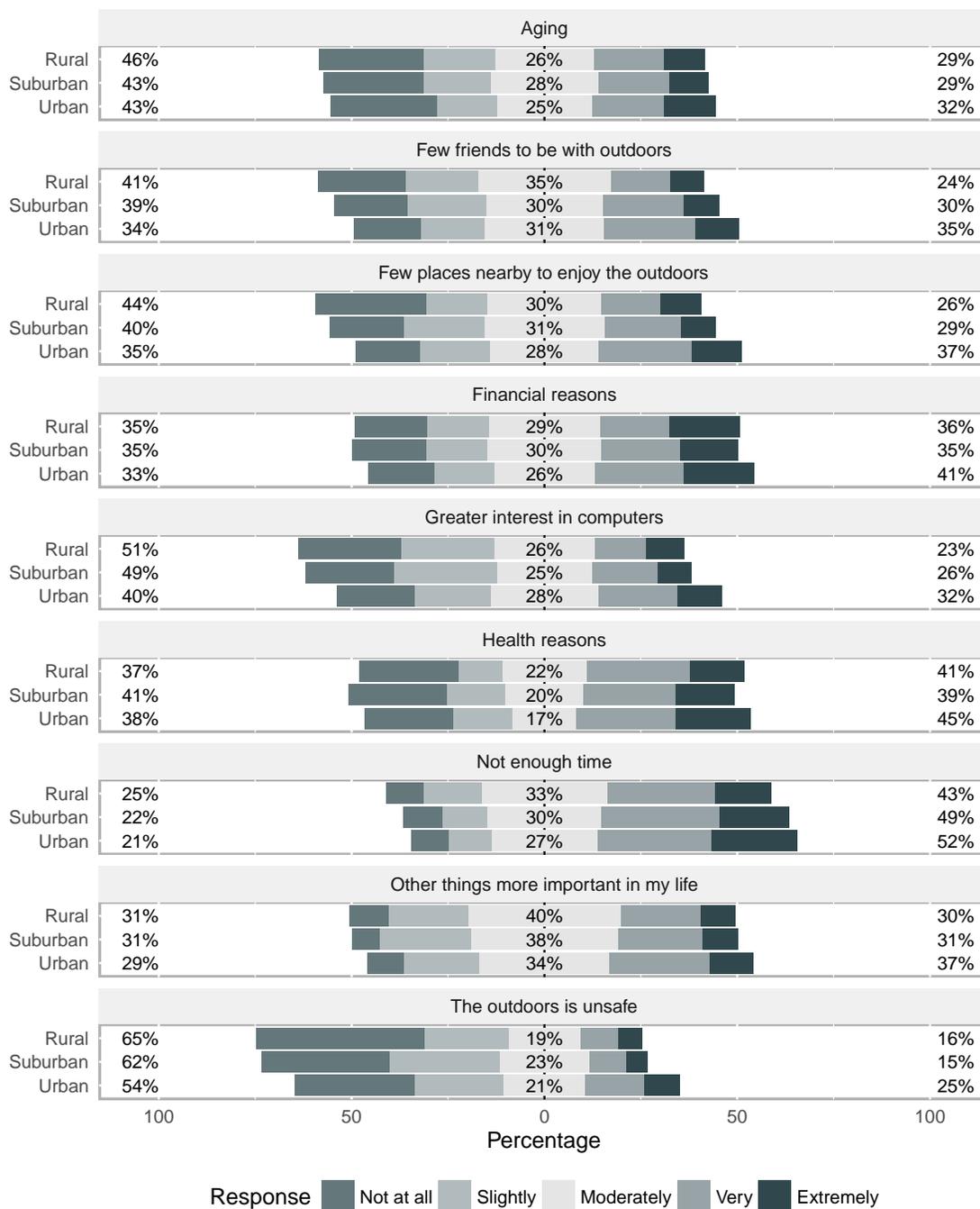
The perceived safety of the outdoors emerged as a major obstacle to spending more time in the outdoors among minority groups *and* among urban residents (Figures 4.74 and 4.75). The majority of white respondents—over two-thirds—perceived this factor as a barrier of relatively minor importance, in contrast to a majority of black, Asian, and Hispanic respondents, who regarded this concern as moderately, very, or extremely important (Figure 4.76). Moreover, as Figure 4.48 showed above, most minority respondents, especially 61 percent of black adults, agreed that times have become so dangerous that parents cannot allow their children to be outdoors on their own.

Figure 4.74: Importance of Potential Barriers to Interest in Nature, by Race and Ethnicity



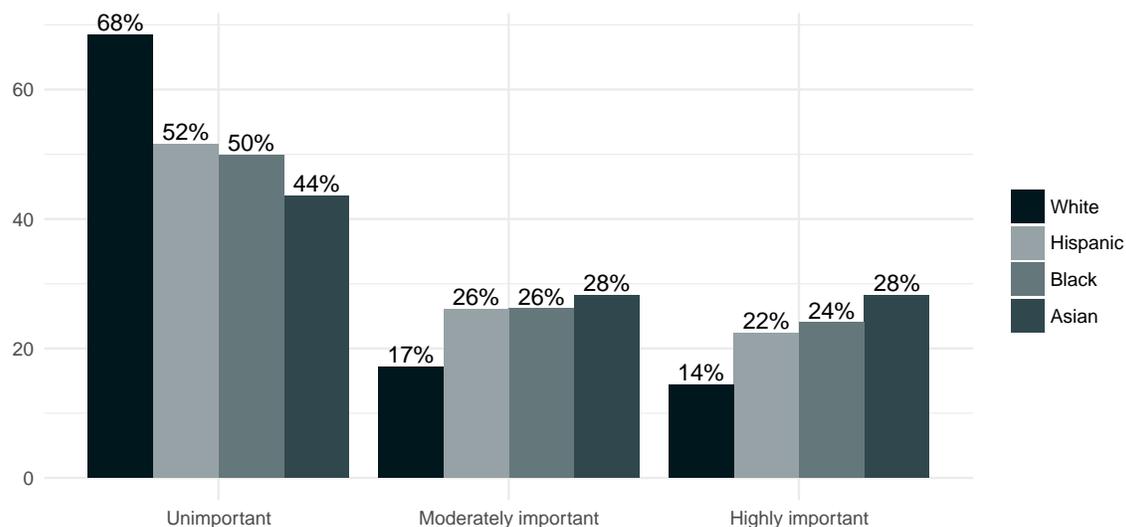
Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time ...Health reasons ...Other things are more important in my life ...Few friends to be with outdoors ...Aging ...Greater interest in computers, smart phones, and electronic media ....The outdoors is unsafe ...Not enough places nearby to enjoy the outdoors ...Financial reasons.

Figure 4.75: Importance of Potential Barriers to Interest in Nature, by Location



Note: The percentages on the left side of the chart combine responses “not at all important” and “slightly important.” The percentage in the middle reports “moderately important.” The percentages on the right side combine responses “very important” and “extremely important.” Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time ...Health reasons ...Other things are more important in my life ...Few friends to be with outdoors ...Aging ...Greater interest in computers, smart phones, and electronic media ....The outdoors is unsafe ...Not enough places nearby to enjoy the outdoors ...Financial reasons.

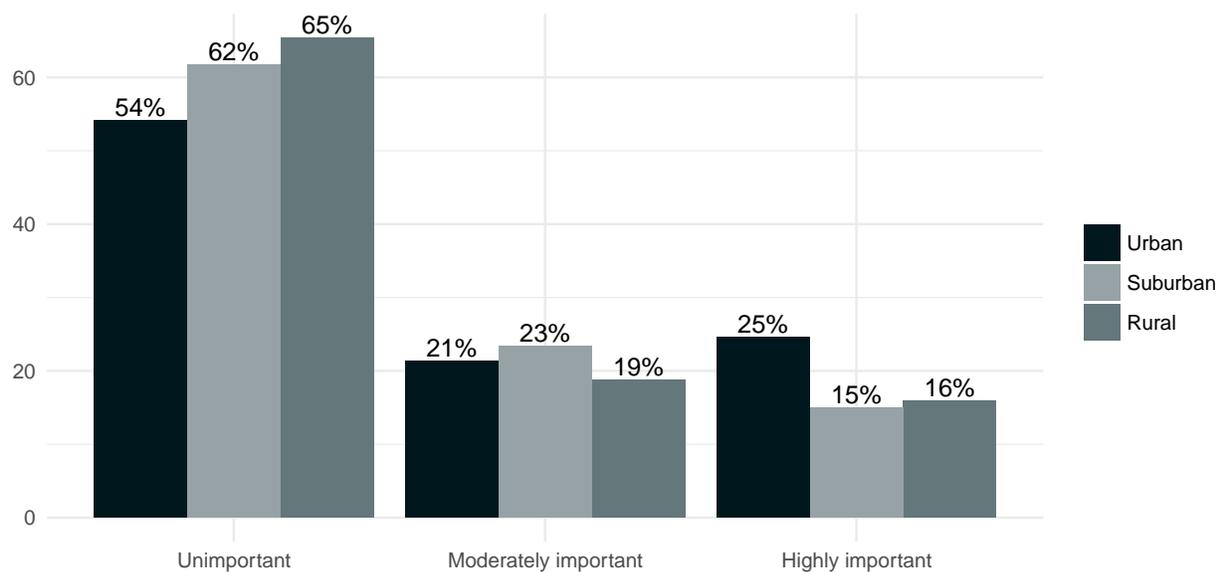
Figure 4.76: Safety of the Outdoors as a Barrier to Nature Interest, by Race and Ethnicity



Note: “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.” Question wording: How important is each of the following in hindering your interests in nature today? ...The outdoors is unsafe.

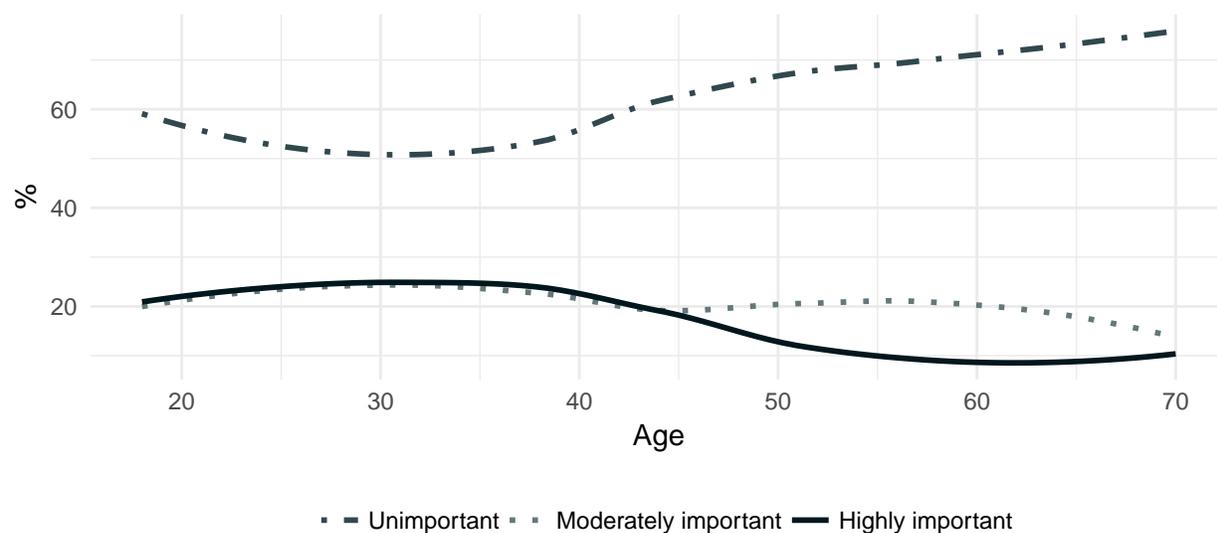
Regarding the influence of where respondents lived, the safety of the outdoors was perceived to be a minor barrier for the majority of rural and suburban residents (Figure 4.77). By contrast, 29 percent of urban residents cited the safety of the outdoors as a very or extremely important obstacle to their greater interests in nature. The perceived safety of the outdoors in hindering interest in nature also varied by age (Figure 4.78). Concern regarding this obstacle peaked among adults in their 30s, reaching about 35 percent of adults surveyed, and then declined to approximately 15 percent among older adults. The influence in childrearing may have been an important factor here.

Figure 4.77: Safety of the Outdoors as a Barrier to Nature Interest, by Location



Question wording: How important is each of the following in hindering your interests in nature today? ...The outdoors is unsafe. “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

Figure 4.78: Safety of the Outdoors as a Barrier to Nature Interest, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How important is each of the following in hindering your interests in nature today? ...The outdoors is unsafe. “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

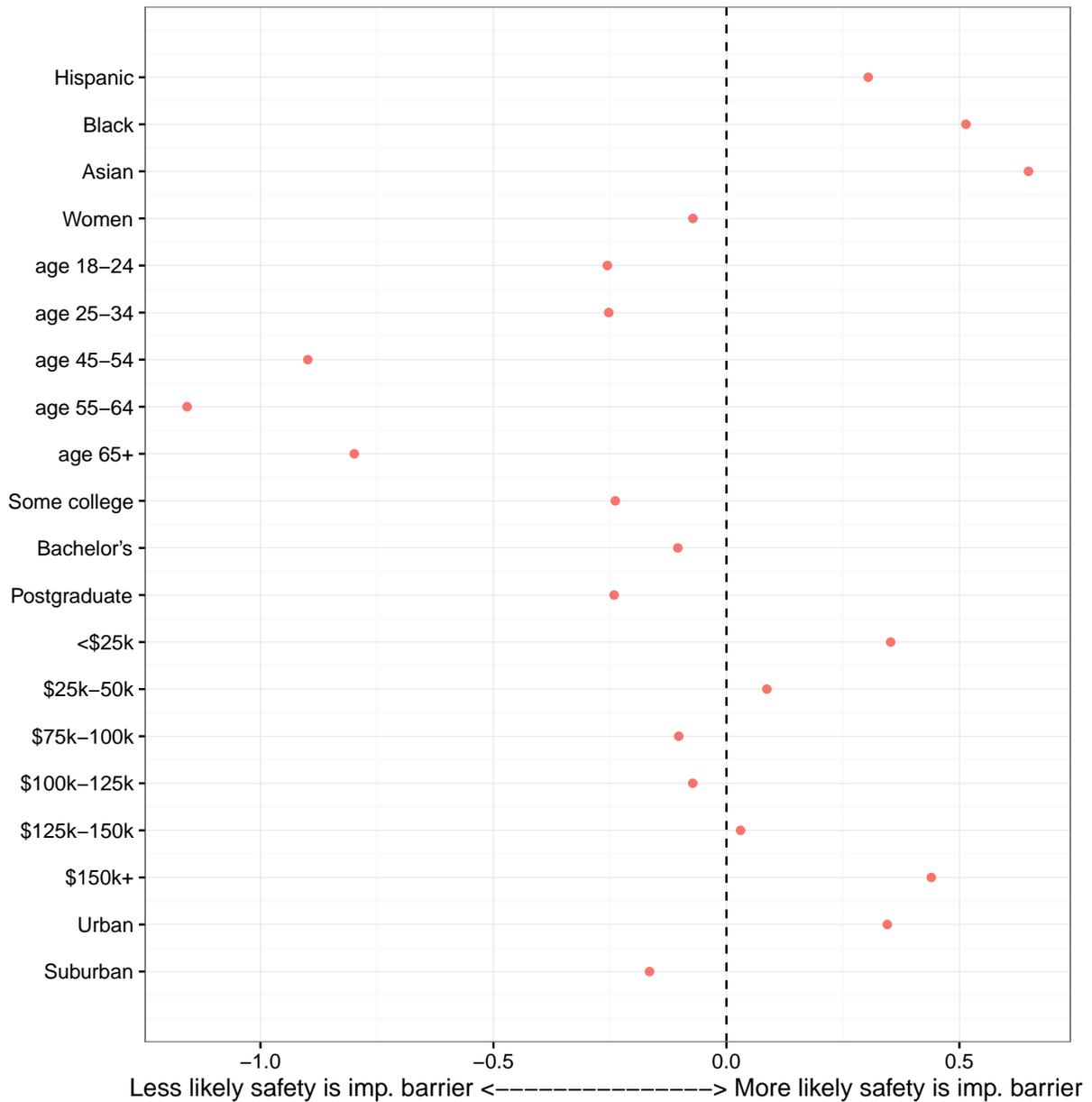
Figures 4.76, 4.77, and 4.78 reveal that the barrier of the safety of the outdoors changes across ethnoracial groups, age, and residential location. One possibility is that these three factors simply duplicate one another: For example, perhaps ethnoracial differences are merely proxies for residential location; or perhaps each of these factors have independent effects. To test this, we conducted a logistic regression to show—simultaneously—how different demographic factors predict the likelihood that a respondent perceives the safety of the outdoors to be a “very” or “extremely” important hindrance to their interest in nature (Figure 4.79).

Points greater than 0 signify that adults in that group were *more likely* to say the safety of the outdoors is a very or extremely important barrier to their interests in nature. Points less than 0 signify that adults in that group were *less likely*. The larger the value, whether positive or negative, the greater the relationship between that variable and the outcome. In this analysis, the reference categories are *whites* in comparison to Hispanics, blacks, and Asians; *men* in comparison to women; *35–44-year-olds* in comparison to all other age categories; adults with a *high school degree or less* in comparison to all other levels of educational attainment; adults from households with incomes of *\$50,000–\$74,999* averaged over the last five years in comparison to all other income categories; and *rural residents* in comparison to urban and suburban residents. How much each variable is related to the outcome is net of (i.e., adjusts for) the other variables included. (See Section 1.3 for more detail.)

- Relative to whites, Hispanics, blacks, and Asians were more likely to view the safety of the outdoors as a very or extremely important hindrance to their interests in nature.
- Older adults were much less likely to say the same.
- Higher-income respondents were likelier to perceive the safety of the outdoors as an important hindrance to their interests in nature.
- Relative to rural respondents, urban and suburban residents were likelier to see the safety of the outdoors as an important hindrance to their interests in nature.

The results clearly show that race and ethnicity, age, and residential location are independently related to the outcome. Put a different way, each of these “matters” in some way for the extent to which respondents view the safety of the outdoors as a hindrance or barrier to their interests in nature.

Figure 4.79: Likelihood that the Safety of the Outdoors is an Important Barrier to Interests in Nature



Note: The outcome is the likelihood that a respondent perceives that the outdoors is unsafe is a very or extremely important hindrance to their interests in nature today. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

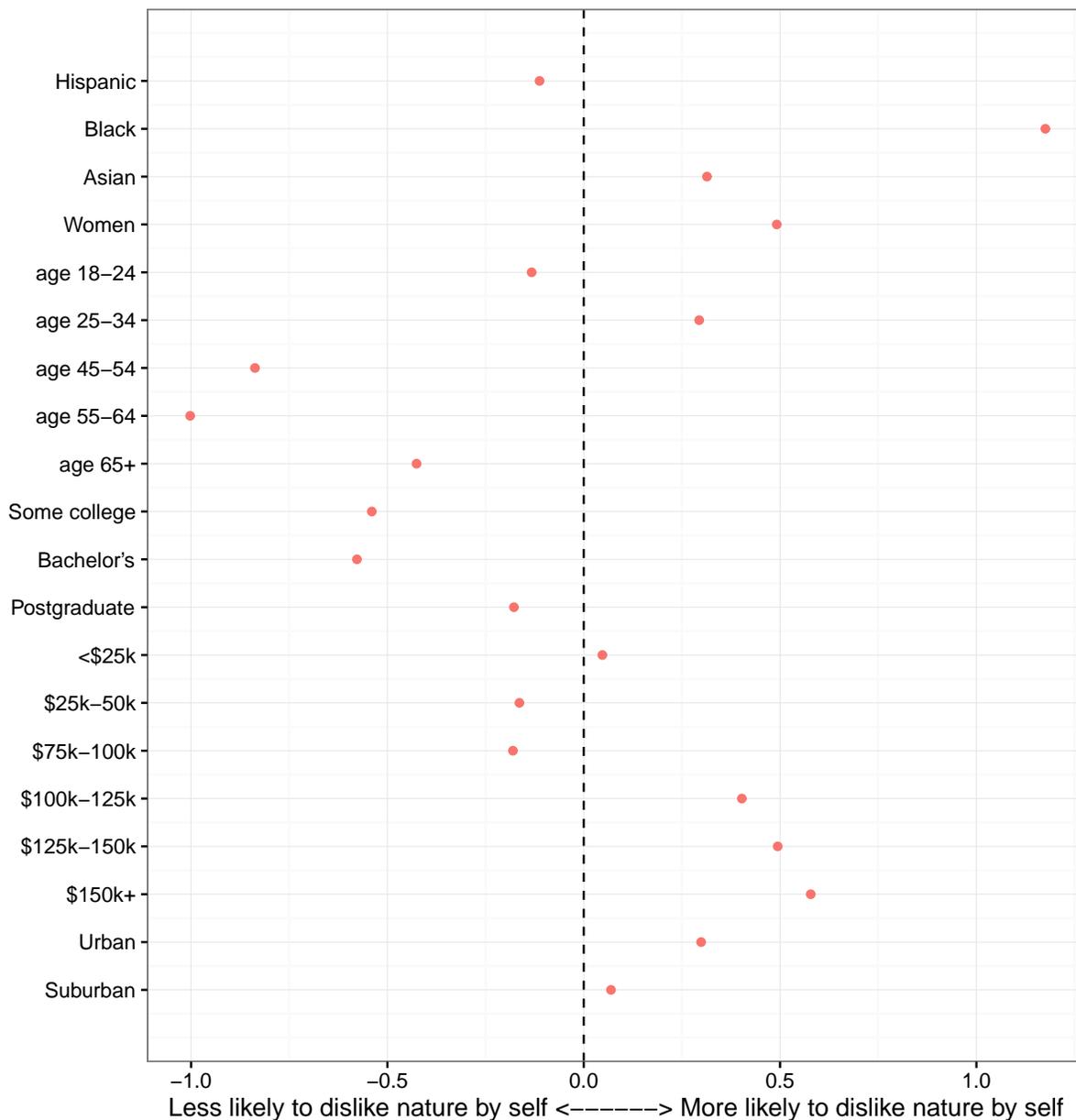
Figure 4.80 reports a similar analysis. This time, instead of examining a question about “the outdoors” in general being unsafe, we examined a more pointed question—the likelihood that a respondent strongly agreed to disliking being in nature alone. This question potentially accesses both concerns about safety and also a desire to have a more social experience in nature. Points greater than 0 signify that adults in that group were *more likely* to strongly agree to disliking

being in nature alone. Points less than 0 signify that adults in that group were *less likely*. The larger the value, whether positive or negative, the greater the relationship between that variable and the outcome. In this analysis, the reference categories are *whites* in comparison to Hispanics, blacks, and Asians; *men* in comparison to women; *35–44-year-olds* in comparison to all other age categories; adults with a *high school degree or less* in comparison to all other levels of educational attainment; adults from households with incomes of *\$50,000–\$74,999* averaged over the last five years in comparison to all other income categories; and *rural residents* in comparison to urban and suburban residents. How much each variable is related to the outcome is net of (i.e., adjusts for) the other variables included. (See Section 1.3 for more detail.)

- Blacks and Asians were more likely to dislike being in nature by themselves compared to whites.
- Women were more likely to be averse to being alone in nature.
- Older respondents were less likely to dislike being alone in nature.
- Compared with middle-income respondents, high-income respondents were more likely to dislike being in nature alone.
- Urban and suburban residents were likelier to be averse to being in nature by themselves, compared with rural residents.

These results again show that race and ethnicity, age, and residential location are independently related to aversion to being in nature alone. In other words, residential location is not merely a proxy for being a minority, or vice versa; nor is residential location merely a proxy for age.

Figure 4.80: Likelihood of Disliking Being in Nature Alone

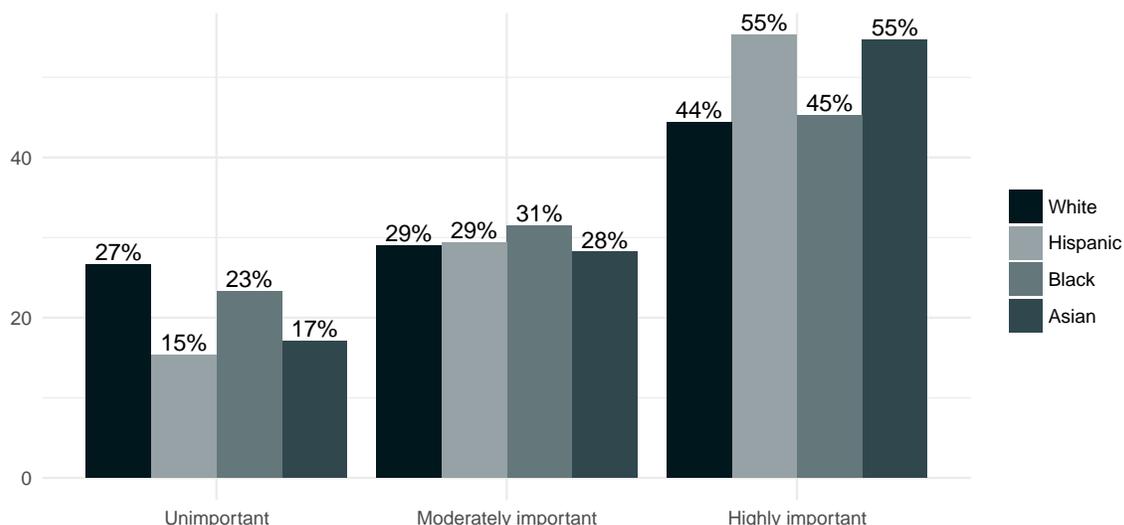


Note: The outcome is the likelihood that a respondent strongly agrees that “I don’t like being in nature by myself.” The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

### Time for Nature

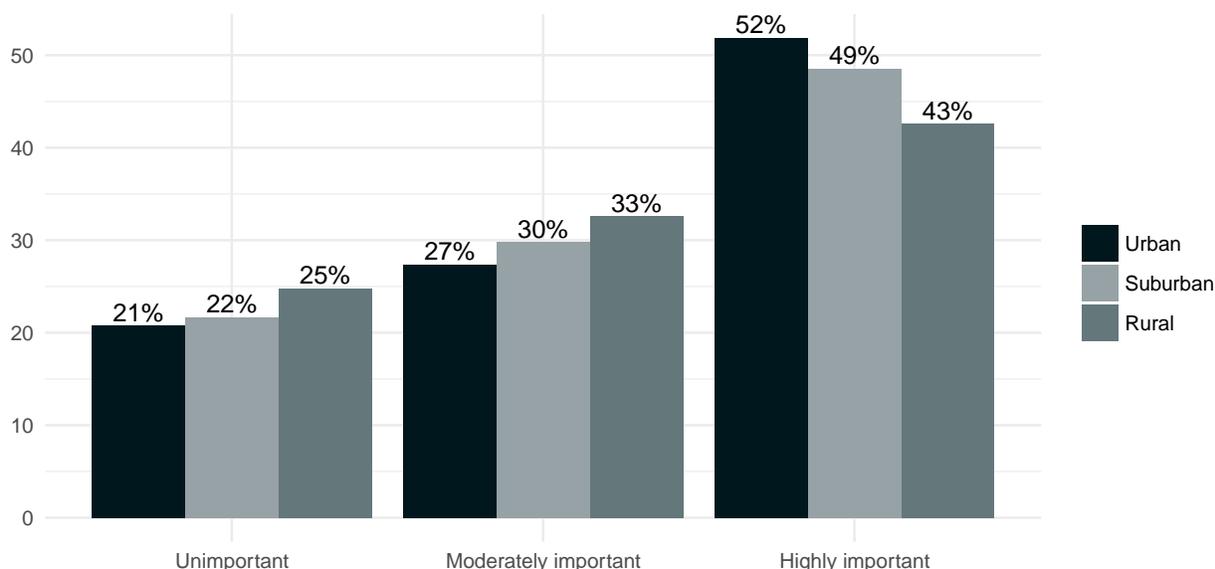
Despite the relatively strong and widespread interest in nature expressed by adults of all racial and ethnic backgrounds, the lack of time was especially important for Hispanic, Asian, and black adults (Figure 4.81). For urban adults, too, a lack of time was especially salient (Figure 4.82).

Figure 4.81: Lack of Time as a Barrier to Nature Interests, by Race and Ethnicity



Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time. “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

Figure 4.82: Lack of Time as a Barrier to Nature Interests, by Location

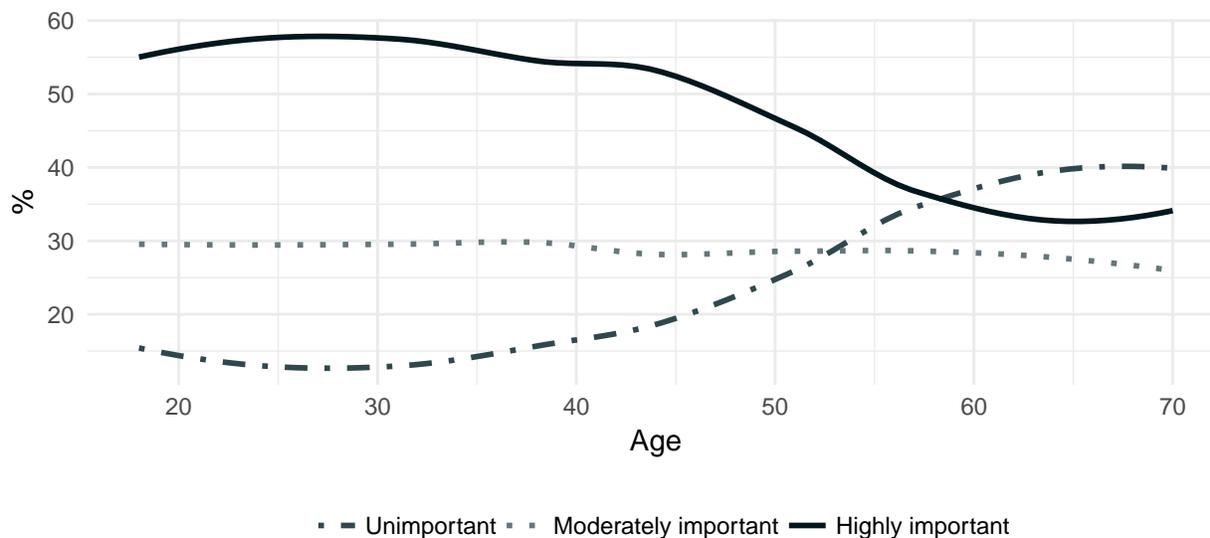


Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time. “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

Analysis by age suggests a lack of time is highly dependent on an adults’ stage in life (Figure 4.83). The majority of young adults regarded lack of time as a major hindrance to their interests in nature.

However, in the mid-30s, the importance of lack of time declined dramatically, with only about 20 percent of adults in their late-60s regarding this as an important barrier.

Figure 4.83: Lack of Time as a Barrier to Nature Interests, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time. “Unimportant” combines “not at all important” and “slightly important.” “Important” combines “very important” and “extremely important.”

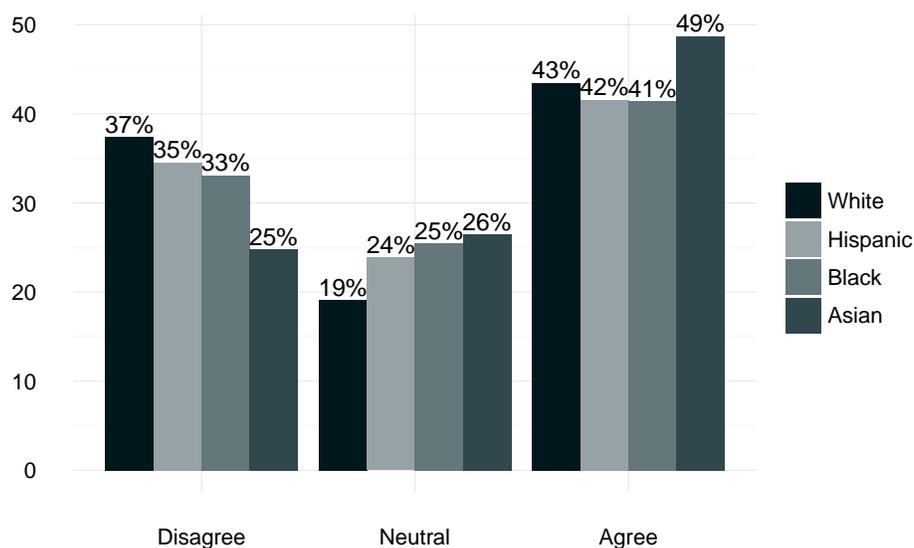
## 4.5.2 Facilitators

In this section we examine four facilitators of interest in and contact with nature: access to financial resources, access to places to enjoy nature and satisfaction with those places, and social support for contact with nature.

### Access to Nature: Financial Resources

Outdoor activities typically require some degree of financial expenditure for equipment, transportation costs, license fees, and sometimes time from work. Fifty-one percent of Hispanic adults agreed they have more financial resources now to pursue their interests in nature (Figure 4.84). In contrast, 34 percent of black adults agreed. (A sizable minority of blacks—42 percent—disagreed with this statement.)

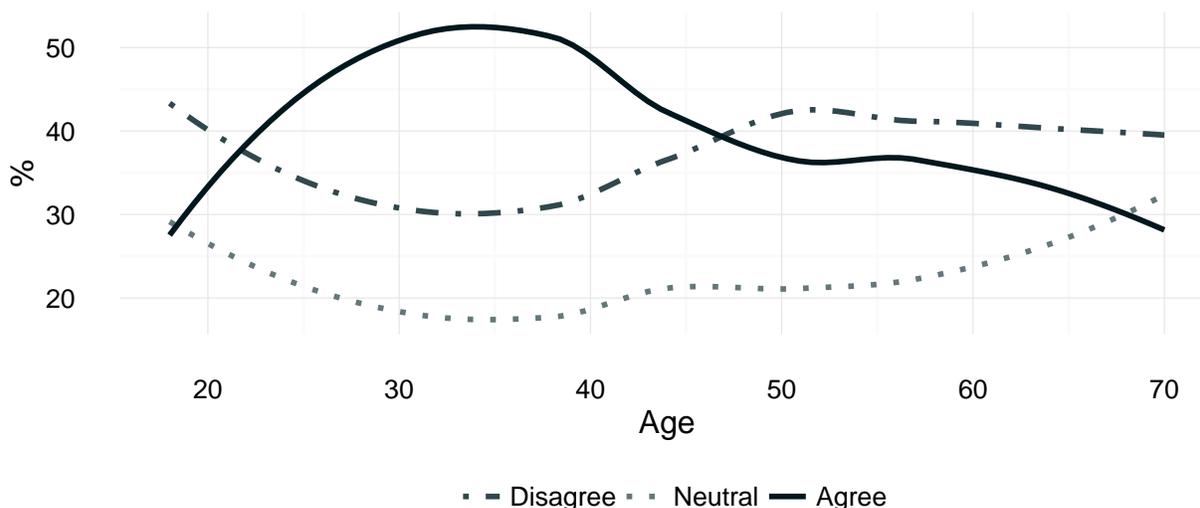
Figure 4.84: More Financial Resources to Pursue Interests in Nature, by Race and Ethnicity



Question wording: I have more financial resources now to pursue my nature interests than in the past. “Disagree” combines “strongly disagree” and “somewhat disagree.” “Agree” combines “strongly agree” and “somewhat agree.”

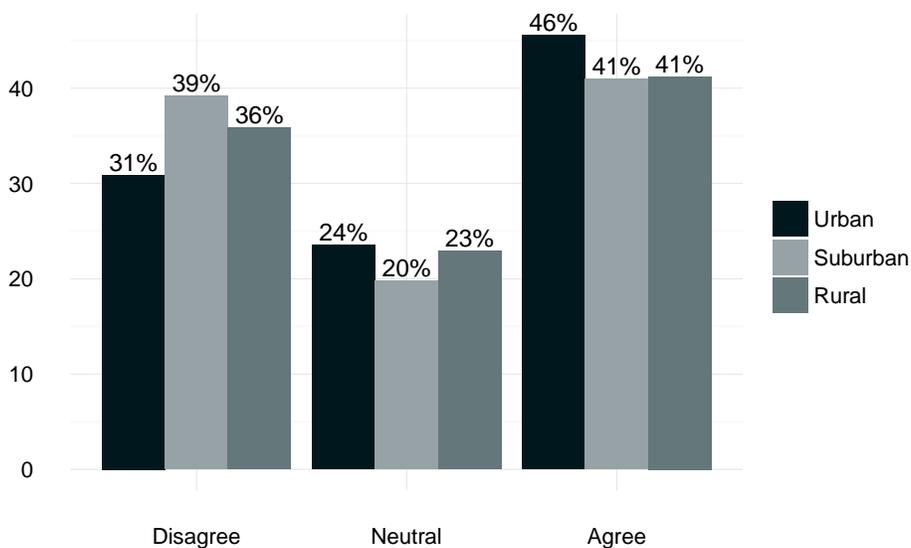
The availability of financial resources varied by age (Figure 4.85). The very youngest adults surveyed, alongside adults in their 50s were least likely to agree they had more financial resources to pursue their interests in nature: about one-third agreed. In contrast, the majority of adults in their 30s said they had sufficient financial resources to pursue their nature interests (nearly 60 percent agreed). With respect to residential location, the majority of urban residents (53 percent) agreed they have more financial resources to pursue their nature interests, followed by suburban (40 percent) and rural residents (33 percent) (Figure 4.86).

Figure 4.85: More Financial Resources to Pursue Interests in Nature, by Age



Question wording: I have more financial resources now to pursue my nature interests than in the past. “Disagree” combines “strongly disagree” and “somewhat disagree.” “Agree” combines “strongly agree” and “somewhat agree.”

Figure 4.86: More Financial Resources to Pursue Interests in Nature, by Location



Question wording: I have more financial resources now to pursue my nature interests than in the past. “Disagree” combines “strongly disagree” and “somewhat disagree.” “Agree” combines “strongly agree” and “somewhat agree.”

**Access to Nature: Satisfaction with Places to Enjoy Nature**

“Access” to nature includes not only the financial resources a person has available, but also includes the quantity and quality of places to enjoy the outdoors and wildlife. We explored adults’ per-

ceptions of the *general* availability of places to enjoy nature and their satisfaction with *particular* open spaces near where they live. The majority of adults somewhat or strongly agreed that there are “plenty of places to enjoy nature” (Table 4.29). About 80 percent of all adults agreed to this statement. Over one-half of Hispanic respondents (57 percent) strongly agreed there are plenty of places to enjoy nature. Scarcely any adults reported that there are *not* plenty of places to enjoy nature.

Table 4.29: Agreement that There Are “Plenty” of Places to Enjoy Nature, by Race and Ethnicity

Categories	White	Hispanic	Black	Asian
Strngly disagree	2%	1%	2%	4%
Smwht disagree	6%	9%	3%	6%
Neutral	10%	10%	9%	10%
Smwht agree	38%	36%	34%	41%
Strngly agree	44%	45%	52%	38%

Note: Columns add to 100. Question wording: How much do you agree or disagree with the following statements?  
...There are plenty of places to enjoy nature.

We also asked specifically about places for outdoor and nature recreation *where respondents live*. A similar result emerged, with most adults indicating satisfaction with the availability of places for outdoor and nature recreation where they live (Table 4.30). Still, a sizable minority were ambivalent or expressed dissatisfaction. Black, Hispanic, and Asian respondents were likelier to be neutral or dissatisfied than white respondents.

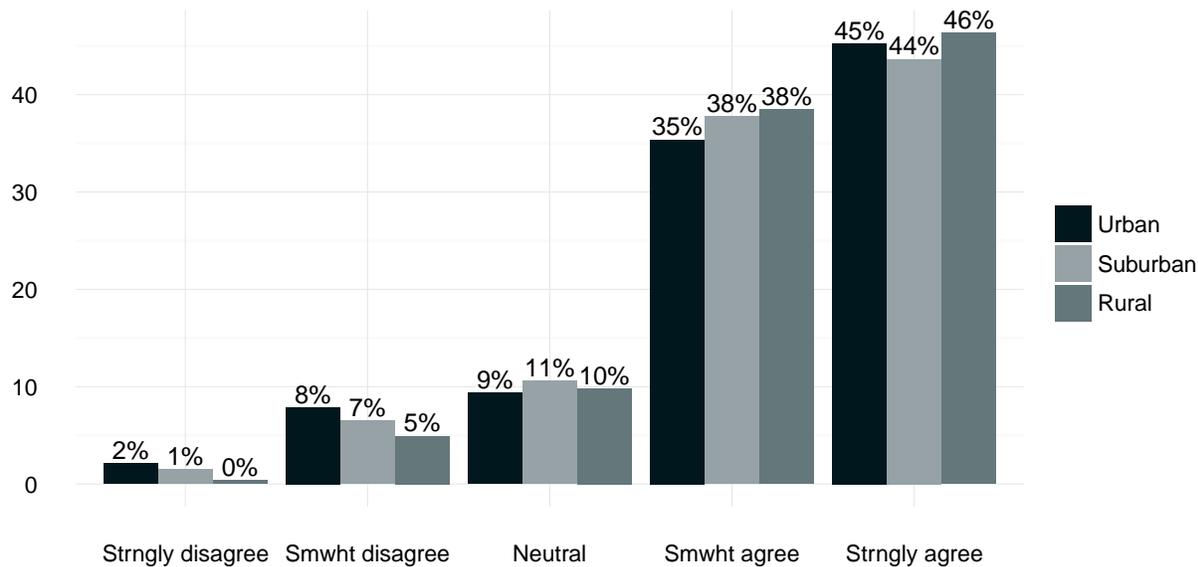
Table 4.30: Satisfaction with Places for Outdoor and Nature Recreation, by Race and Ethnicity

Categories	White	Hispanic	Black	Asian
Very dissatisfied	4%	3%	6%	5%
Smwht dissatisfied	13%	15%	9%	7%
Neutral	17%	18%	23%	24%
Smwht satisfied	39%	40%	35%	45%
Very satisfied	27%	24%	28%	19%

Note: Columns add to 100. Question wording: How satisfied are you with each of the following where you live?  
...Places for outdoor and nature recreation.

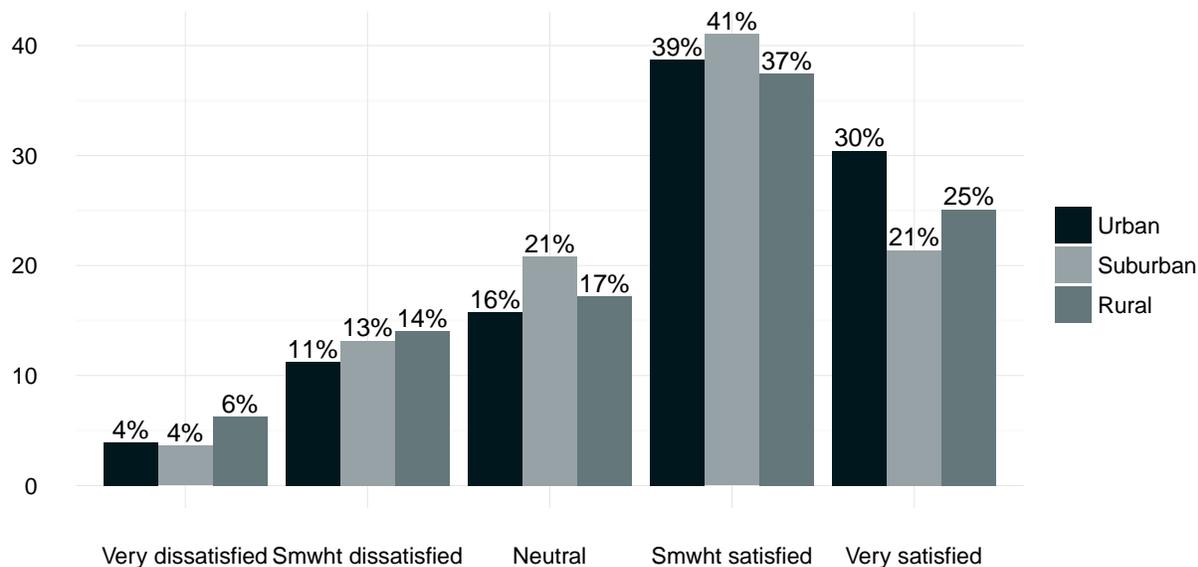
Few differences emerged among urban, suburban, and rural adults in terms of the quantity of places nearby (Figure 4.87). The highest percentages of those supporting this view were rural and urban respondents (both at 52 percent). Satisfaction with nearby places for outdoor and nature recreation was relatively lower (Figure 4.88). One-third of urban and rural respondents were very satisfied, followed by 28 percent of suburban residents. The majority of respondents were somewhat satisfied, neither satisfied nor dissatisfied, or dissatisfied.

Figure 4.87: Agreement that There Are “Plenty” of Places to Enjoy Nature, by Location



Question wording: How much do you agree or disagree with the following statements? ...There are plenty of places to enjoy nature.

Figure 4.88: Satisfaction with Places for Outdoor and Nature Recreation, by Location



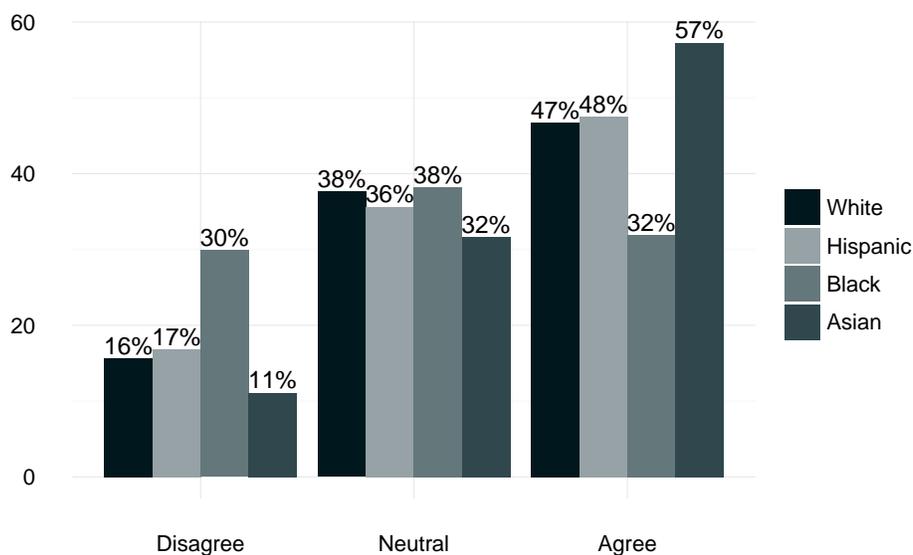
Question wording: How satisfied are you with each of the following where you live? ...Places for outdoor and nature recreation.

## Social Support: The Role of Family and Friends

In Chapter 2, we examined the correlation between respondents' social influences (their family and friends) and the time they spent outdoors, their interest in such outdoor activities as fishing and hiking, and the perceived importance of nature and the outdoors relative to other interests (Figure 2.31). Social support—particularly the influence of friends, family, and children—had one of the highest associations with various nature-related interests and activities. In examining ethnoracial groups, we again found the role of family and friends to be an especially important influence, indicating how much engagement with nature is a highly social activity. That is, positive perception of and engagement in nature is profoundly shaped by what other people—friends, family, peers, mentors, and community members—regard as important, are currently doing, and believe future generations will require to lead lives of quality and satisfaction.

Fifty-five percent of Hispanic adults agreed that people they care about are making more time for nature (Figure 4.89). Among Asian and white respondents, the corresponding figure was roughly 50 percent. Forty percent of black respondents agreed to this statement.

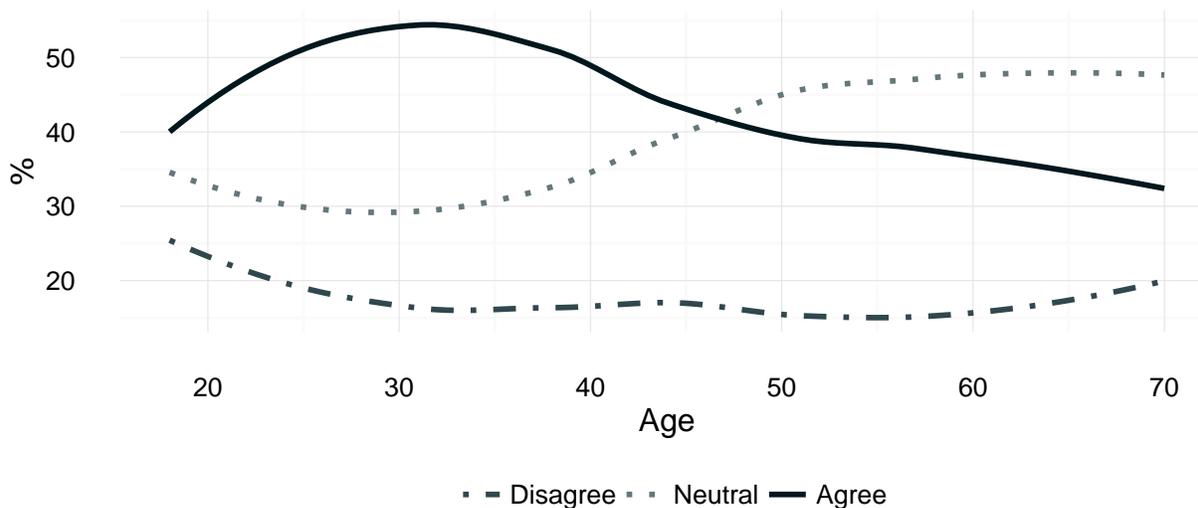
Figure 4.89: Friends and Family Making More Time for Nature, by Race and Ethnicity



Question wording: How much do you agree or disagree with the following statements? ...People I care about are making more time for nature. “Disagree” combines “strongly disagree” and “somewhat disagree.” “Agree” combines “strongly agree” and “somewhat agree.”

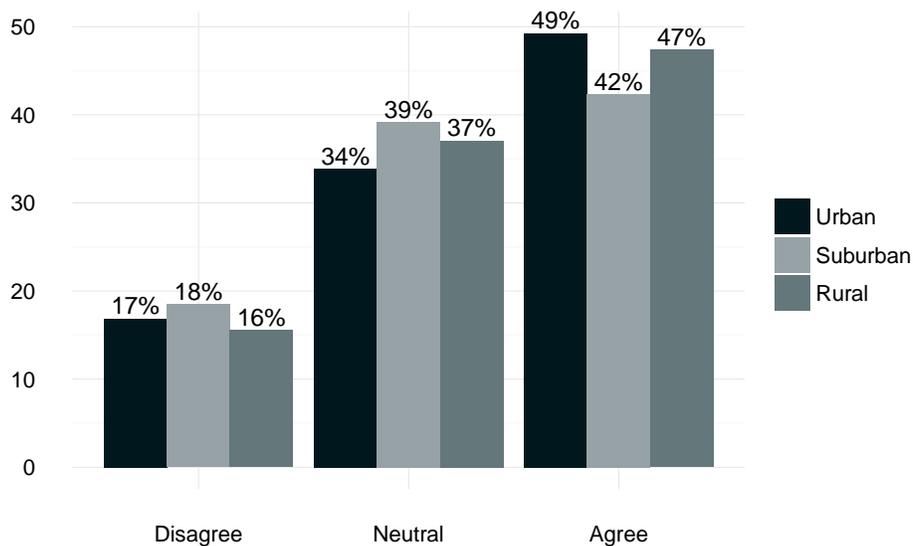
Adults in their 30s were the most likely (60 percent) to indicate people they care about are making more time for experiencing nature (Figure 4.90). Relatively fewer older adults agreed (less than 40 percent). Urban respondents were the most likely (56 percent) to indicate people close to them are making more time for nature (Figure 4.91), compared with 45 percent of suburban and rural respondents.

Figure 4.90: Friends and Family Making More Time for Nature, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How much do you agree or disagree with the following statements? ...People I care about are making more time for nature. “Disagree” combines “strongly disagree” and “somewhat disagree.” “Agree” combines “strongly agree” and “somewhat agree.”

Figure 4.91: Friends and Family Making More Time for Nature, by Location



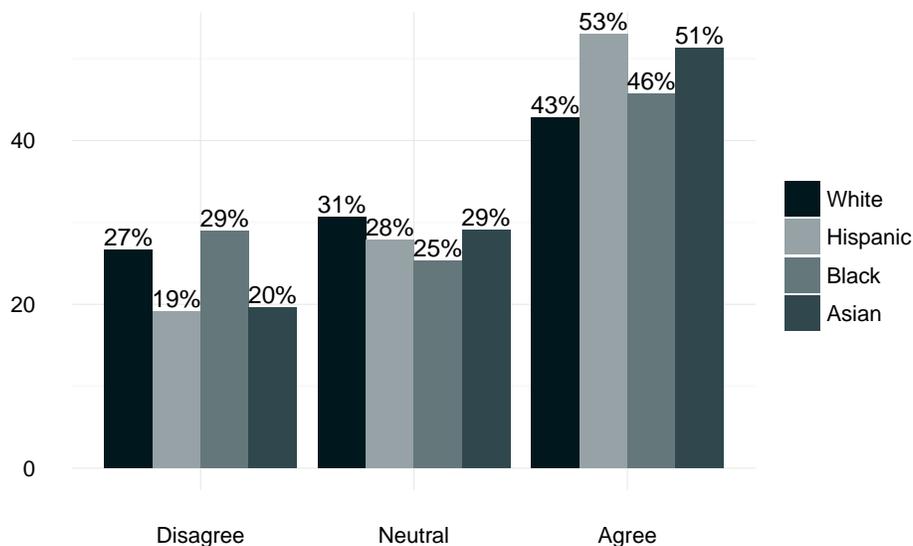
Question wording: How much do you agree or disagree with the following statements? ...People I care about are making more time for nature. “Disagree” combines “strongly disagree” and “somewhat disagree.” “Agree” combines “strongly agree” and “somewhat agree.”

As reported in Chapter 2, Figure 2.31, the desire to encourage children’s interest in, respect for, and commitment to nature was highly correlated with the likelihood of respondents themselves

spending more time outdoors, the perceived importance of contact with nature and wildlife, and interest in activities such as exploring the outdoors, fishing, hunting, and hiking.

Among ethnoracial groups, 56 percent of Hispanic respondents agreed that they are making time to share their interest in nature and the outdoors with children. By contrast, 50 percent of Asian adults, 44 percent of white adults, and 43 percent of black adults agreed. About one-quarter of white and black respondents indicated they are *not* making more time to share their interest in nature with children.

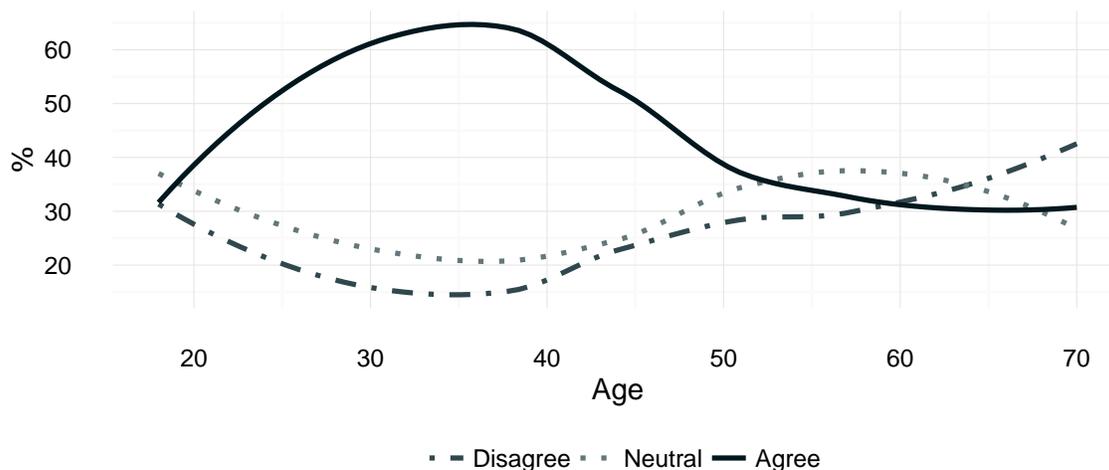
Figure 4.92: Sharing Interest in Nature with Children, by Race and Ethnicity



Question wording: How much do you agree or disagree with the following statements? ...I'm making time to share my interest in nature and the outdoors with children. "Disagree" combines "strongly disagree" and "somewhat disagree." "Agree" combines "strongly agree" and "somewhat agree."

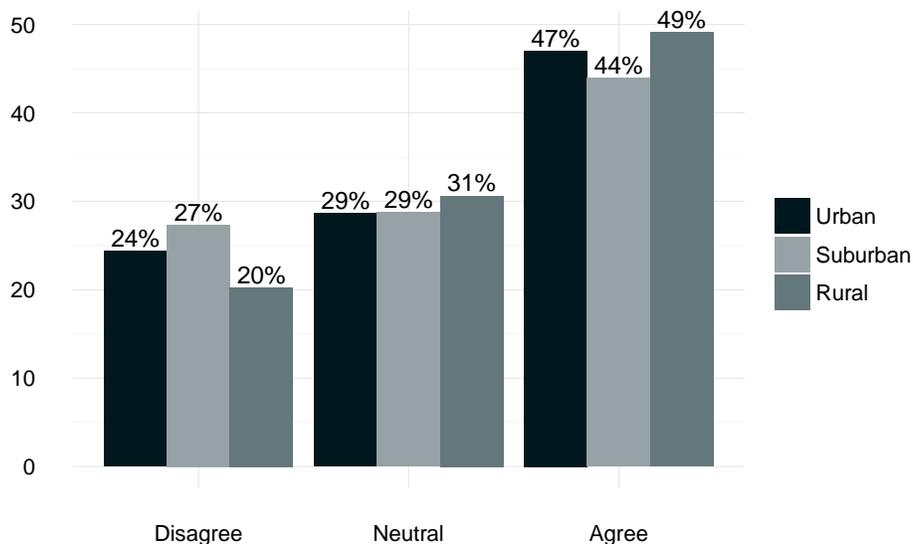
The influence of age and life stage can be seen in responses to this question about sharing interests in nature with children (Figure 4.93). Sharing interest in nature with children rose sharply for adults in their 20s and 30s, peaking at around 65 percent. Then the percentage declined: 40 percent of 50-year-olds said they are making time to share their interest in nature with children, compared with 30 percent of 70-year-olds. Across location, the highest percentage (57 percent) of people making time to share their interest in nature with children were in urban areas, compared with roughly 40 percent of suburban and rural respondents (Figure 4.94).

Figure 4.93: Sharing Interest in Nature with Children, by Age



Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How much do you agree or disagree with the following statements? ...I’m making time to share my interest in nature and the outdoors with children. “Disagree” combines “strongly disagree” and “somewhat disagree.” “Agree” combines “strongly agree” and “somewhat agree.”

Figure 4.94: Sharing Interest in Nature with Children, by Location



Question wording: How much do you agree or disagree with the following statements? ...I’m making time to share my interest in nature and the outdoors with children. “Disagree” combines “strongly disagree” and “somewhat disagree.” “Agree” combines “strongly agree” and “somewhat agree.”

## 4.6 Summary of Results

**Benefits of nature for physical health and emotional outlook.** Overall, adults across race and ethnicity, age, and location saw nature as important for their physical health and emotional outlook.

**More similarity than difference across race and ethnicity.** On the whole, our analyses showed far more similarity across ethnoracial groups than substantial difference, including widespread interest in nature and recognition of its benefits. These included associating certain smells and sounds of nature with happy memories, feeling curious about something especially attractive in nature, believing learning how nature works is as important as other subjects, believing societal intelligence depends on staying connected to nature, finding peace in nature, and feeling spiritually connected to something greater. Time spent outside in nature each week was relatively low for all groups, and most were somewhat or very satisfied with their amount of time spent outdoors. In short, differences across groups, when they did emerge, tended to be small separations of 5–10 percentage points that would lead to relatively minor adjustments in programming or policies.

**Important variation by race and ethnicity.** Important differences across ethnoracial groups, however, did emerge in three distinct yet arguably related areas. Prominent among them were concerns about the safety of the outdoors, aversion to being alone in nature, and the presence of other important issues in life. Certain recreational activities also revealed substantial differences in interest—especially hiking, camping, and watching or feeding birds or other wildlife. A third major difference was that minority respondents were likelier than whites to support using natural resources despite potential negative consequences or tradeoffs. Within ethnoracial groups, black adults were likeliest to report their pastimes and hobbies were indoors-oriented, citing a lack of social support for their interests, a lack of financial resources to pursue their interests in nature, and dissatisfaction with places in their community for outdoor recreation. Black adults were also especially concerned about the dangers of parents letting their children be outdoors on their own.

**More difference than similarity across residential location and age.** Residential location and age were the two demographic categories that consistently distinguished adults. For example, virtually all respondents agreed with the importance of learning about how nature works for a child’s and a society’s intellectual development; however, attitudes toward personally learning about nature differed dramatically by age and location. Urban residents and younger adults were also more supportive of using natural resources despite tradeoffs with the physical environment. Urban residents were likeliest to see the safety of the outdoors as a barrier to their interests in nature.

**High interest and support in nature among 25–40-year-olds.** Across a number of questions, adults in their late-20s through late-30s expressed the strongest interest in nature (including enjoyment of nature and interest in a variety of activities). This group also reported the most amount of time spent outdoors, held the most financial resources to pursue interests in nature, and supported increasing the number of conservation programs. One reason seems to be that socializing children into an appreciation for nature has a reciprocal effect on these adults, who are likely to be raising children.

**Varied interest in activities across household income.** Interest in camping and hiking increased significantly among high-income respondents. By contrast, interest in walking outdoors, watching or feeding birds or other wildlife, exploring the outdoors, and visiting nature-education centers garnered broad interest across all income levels.

**Independent effects of race and ethnicity, age, and residential location.** As seen in analyses throughout this chapter and the larger report, race and ethnicity, age, and location are often related to one another but are distinct. Each had an independent relationship with various outcomes of interest; they were not simply proxies or stand-ins for one another. For example, Hispanic, black, and Asian adults were likelier to indicate the safety of the outdoors is an important barrier to their interests in nature—a result that holds even when adjusting for (or controlling for) residential location and age. This suggests the need to take each of these three factors into careful consideration when creating programs and setting policy, as the next chapter describes.

## Chapter 5

# Major Findings and Recommendations: Connecting Texans and Nature

The prior three chapters of this report have described detailed results from a study of 2,948 Texan adults, children, and parents through interviews, focus groups, and surveys. The chapters so far, in other words, have focused on the first task of *The Nature of Americans*: to deepen the understanding of Texans' relationship with, evaluation of, and experience with nature. We started with the basic premise of the biophilia hypothesis, namely, that people possess an inherent affinity for contact with nature through diverse ways and that this affinity has to be developed and nurtured. From there, we have shown what this relationship with the natural world looks like in today's society, what benefits emerge from it, and what impedes and facilitates contact with nature.

This chapter shifts the emphasis toward *The Nature of Americans*' second task: to deepen Texans' connection with nature. We do so by distilling major findings about the American public and by generating recommendations. The core premise to these recommendations is that connection to nature is not a dispensable amenity but, rather, is essential to the health, prosperity, productivity, quality of life, and social wellbeing of all. In other words, the conservation of species, the protection and restoration of habitats, and the provision of healthy streams and clean air are inextricably linked to human flourishing. This implies that what follows has profound consequences for American society in general and a variety of sectors.

We certainly do not presume to know all the changes needed to support and grow a public that is more deeply and actively engaged with nature, the outdoors, and wildlife. Hence, the recommendations offered here are some necessary first—but far from final—steps toward bold and important changes. Additional steps will involve 1) incorporating these findings into communications and outreach efforts, 2) additional analysis of this study's rich data, 3) application of the findings of this study and other studies in innovative ways, 4) focused research into new areas, and 5) bridge-building inside and outside of the conservation and environmental communities.

In some of the recommendations below, we specifically address the “conservation and environmental communities”—that is, agencies and organizations working to conserve the natural environment and to promote experiences with the natural world, the outdoors, and wildlife. Most of the recommen-

dations are addressed to those in “various sectors,” including conservation, healthcare, education, recreation, community development, urban planning, and more.

## 5.1 Major Findings and Recommendations

### 1. Texans face a significant gap between their interests in nature and their efforts, abilities, and opportunities to pursue those interests.

Five interrelated, society-wide forces disconnect adults and children from nature in daily life. 1) Physical places, or a built environment, generally discourage contact with the natural world. 2) Competing priorities for time, attention, and money prevent contact with nature from becoming routine and habitual. 3) Declining direct dependence on the natural world allows Texans to orient their lives to other things. 4) New technologies, especially electronic media, distract and captivate. 5) Shifting expectations about what “good” contact to nature ought to be mean adults are generally satisfied with the relatively little time they spend outdoors in nature.

Some groups—especially minorities, younger adults, and urban and suburban residents—encounter additional barriers, including discomfort being outdoors alone, a lack of financial resources, and a lack of social support, such as adults to accompany children outside or friends to encourage other adults to make time for nature. Two-thirds of adults surveyed agreed that there were more important issues in their lives than their concerns for nature. Furthermore, most Texans reported spending relatively little time outside in nature each week, and most were satisfied with that amount.

*1. Pay close attention to—and respond to—adults’ existing concerns about younger generations’ disconnection from nature.*

The presence of a gap between a general interest in nature and a connection to nature is not foreign to most adults. In each of the focus groups we conducted, by far the most poignant moments occurred when we asked how interest in nature today compared with interest in the past. Middle- and older-aged adults expressed deep concern that American society in general and younger generations in particular are disconnected from nature: overly reliant on electronic media, unaware of how the natural world works, and unacquainted with the simple enjoyment of being outdoors. To underscore the point, *adults in our study were not calling for merely another recreational or educational program. Alleviating their concerns and fulfilling their desires will require a profound restructuring of how they and their children, grandchildren, nieces, nephews, and friends live their lives.* Listen closely to how particular communities and groups experience disconnection from nature—and how they seek to adjust their lifestyles in response.

*2. Emphasize regular, recurrent, and routine engagement with nature, the outdoors, and wildlife.*

While people may possess an inherent affinity for nature and wildlife, for this connection to become an important component of their learning and development, it must be nurtured and reinforced. Our research indicates that sporadic and occasional contact with the natural world is insufficient to instill in children and adults the curiosity, wonder, and connection they require for nature to become a meaningful part of their lives and to bestow a range

of physical and psychological benefits to their learning and development. Securing these outcomes requires that the experience of nature become a repeated and recurrent part of lives at home, school, work, and at play. We see an opening to promote making contact with nature habitual—a more routine part of daily and weekly life, rather than a once-a-month, once-a-year, or even a once-a-lifetime activity.

*3. For adults and children, promote nature not only as a place for experiences, but also as a place for involvement and care.*

A clear distinction emerged in our study between experiences in nature and connection to nature. *Experiences* were the actual activities people did—the time they spent outside or the trips or activities they undertook. *Connections* to nature were different: They involved a sense of being connected to a place, to an unforgettable memory outdoors, or to a particular species. This connection often instilled a sense of responsibility and commitment toward the natural world. For adults and children alike, connection seemed to emerge when nature was not passively enjoyed but, rather, was something to be involved in via exploration, care and responsibility, observation, learning, and familiarity with a particular landscape. We encourage the conservation and environmental communities to continue their efforts to promote a deep connection with nature via activities like hunting and fishing. However, we also encourage these communities to find additional ways. Given that many adults may only have access to relatively curated places (like parks, zoos, and aquariums), these places should enhance their existing efforts to deepen engagement among a diverse public. We recommend providing opportunities for adults and children to take responsibility for the natural world in places and ways that are appropriate to the contexts and settings in which they live, work, and play (such as classrooms, play areas, yards, offices, living rooms, parks, gardens, and more). This could involve planting and caring for native plants not only during early childhood, but also during adolescence and into adulthood and older age. Some examples include creating and maintaining habitats for fish, birds, and other wildlife in suburban environments or launching community gardens in both urban and rural areas.

## 2. Experiences in nature are deeply social.

Developing strategies for addressing the interest–action gap begins with the reality that for the majority of adults, children, and parents, experiences in nature are not primarily marked by solitude. Instead, influential, meaningful, and durable moments in nature and connections to special places typically occur in the company of others, especially family and friends. When describing influential or memorable moments in nature, respondents revealed again and again that these experiences occur—and are remembered—because they connect people to one another.

*4. Assure adults and children that time in nature can be (and even ought to be) social.*

For participants in our study, the interests, action, and influences of other people have shaped and are currently shaping their own interests and actions around nature. For children and adults alike, these are overwhelmingly people who are close to them, especially family members and friends. While most adults reveal that they spend time in nature with others, many nevertheless describe experiences in nature as requiring some amount of solitude to be “authentic” to some (perceived) external standard. Nature experienced alone can be a powerful thing for many, but this is the exception, not the primary way adults and children experience nature. The *default* design and promotion of programs and natural areas should nurture op-

opportunities for people to forge connections with nature together. This may in turn alleviate the concerns of people who are wary of being alone outdoors.

*5. Recruit pre-existing groups to programs.*

Instead of merely inviting individuals to participate in a program or activity, recruit pre-existing groups—groups of people who are already connected to one another through a common interest, activity, or lifestyle. Doing so boosts the likelihood that people who would not normally participate will feel more comfortable doing so by lowering the social risks of isolation and helping to lower fears of not fitting in. In addition, by increasing the social familiarity of the setting or activity, participants can more readily focus on building familiarity and comfort with the natural environment. It also appears that involving close ties creates richer, more memorable experiences in nature: for children and adults alike in our study, memorable experiences in nature seemed to occur because of (not in spite of) the presence of particular other people.

*6. Reach adults through children.*

Our research shows that adults who are making time to share their interest in nature with children themselves tend to spend more time outdoors, rate their interests in nature as among their more or most enjoyable interests, and report higher interest in exploring the outdoors. In other words, the act of socializing children to have interest in, respect for, and commitment to nature appears to have a reciprocal effect on the adults who do the socializing. Programs should encourage parents and other trusted adults to participate in activities together with children. We see particular potential among adults who are over 50 years old—a group that was concerned about younger generations and reported having additional time for their interest in nature, yet was much less likely to indicate sharing their interests in nature with children. Cross-generational programs could promote conservation activities not just among younger generations, but also among older ones. Programs could encourage greater adult participation outdoors with children and friends, emphasizing that these can be relatively simple, close-to-home activities. Boosting adult participation could also have the effect of diminishing parental concerns about their child’s safety.

*7. Support mentorship that extends beyond the parent–child relationship.*

While parents play an important role in influencing their children’s views and connections to the natural world, there are other people in children’s lives that can also support or play this role. Other influential figures that influence how people relate to the natural world included friends, grandparents and other family members, and teachers. These findings indicate the need to support not only parent–child mentorship, but also friend–friend, grandparent–child, conservation professional–adult, and so on.

**3. Adults and children differ in where they locate unforgettable, authentic nature.**

For children, nature is located quite literally right out the door, and special places outdoors and unforgettable memories often consisted of nearby yards, woods, creeks, and gardens. Adults, to be sure, describe nature as consisting of the trees, beaches, animals, flowers, and lakes near where they lived. But in contrast to children, adults tend to set a high and even impossible standard for what they perceived to be “authentic” and “pure” nature, believing that it requires solitude and travel to faraway places, which reinforces their perceptions of the inaccessibility of nature. In our experience, existing programs and promotional campaigns often help to foster this understanding. We think this is dangerous for two reasons. First, it

sets adults up to fail, especially those who lack the time and money to access such experiences. Second, it affords little connection between what happens locally with what happens in relatively distant places. We therefore see a major need to adjust experiences in nature and widely shared *expectations* of those experiences in nature to emphasize the routine and the habitual aspects of engagement.

*8. Carefully consider how different sectors promote what “good” connection with nature is or ought to be.*

Many of the experiences portrayed in television programming, marketing campaigns, magazines, and billboards are those that few Texans will be able to do even once in their lifetimes. Even visiting national parks or national wildlife refuges are rare events for most people. Different sectors (especially the conservation and environmental communities) ought to assure Texans that the natural world does not need to be completely untouched or remote to be “authentic”—nor does exposure to nature require vast amounts of time and income. Note that promoting local connections need not be mutually exclusive with conserving more distant places or wildlife: our research provides no evidence that Texans base their perceptions of what should be conserved by evaluating whether they will have the opportunity to visit that place. The public values iconic sites, and they value experiences there, but Texans also believe they ought to be able to incorporate nature into their daily lives in ways that do not require large amounts of travel, time, and money.

*9. Deepen local experiences in nature near home.*

Most children’s contact with nature, including unforgettable times outdoors and the experience of special places in the natural world, occurs relatively close to home. Given that children do spend most of their time near their home and school, experiences there should provide opportunity for doing the things in which children already express interest—for example, climbing trees, exploring woods, and learning about the natural world through firsthand observation. Open spaces, parks, playgrounds, backyards, and schoolyards should provide more opportunities for unstructured play and exploration. Given that adults tend to think of “pure” or “authentic” nature as geographically distant, more engaging experiences close to home could help to bring out the beauty, wonder, and complexity of the natural world around them. These opportunities could also illuminate how nearby natural places and processes (such as water supply and quality, weather patterns, migration routes, erosion, and more) link with distant processes and places.

*10. For children and adults, use geographically local or familiar activities as a bridge to geographically distant or unfamiliar activities.*

Sociological and psychological research demonstrates that people tend to want to do what they already know how to do. Expanding interest and participation, then, requires using existing interests in familiar activities as bridges into other ones. Both children and adults expressed high interest in visiting places like zoos and aquariums that teach, allow for exploration, and promote social interactions. These nature-education centers can serve as gateways and entry points to activities outside of those places. This further suggests the importance of training and providing teachers, docents, and interpretive guides who can interact successfully with a diverse range of audiences to spark interest and participation and who can provide suggestions to parents of ways to encourage involvement at home through, for example, the care of special plants or animals. Furthermore, we suggest that programs use overlapping interests between children and adults to promote inter-generational participation, leveraging our finding that

children learn about and experience nature most often with family members, such as parents, aunts and uncles, sisters and brothers, and grandparents.

#### 4. **Access to nature is as much about the quality of places as their quantity.**

The vast majority of adults agreed that there are “plenty” of places to enjoy nature—a finding that held across race and ethnicity and residential location. However, when asked about places near where they live, minorities and urban residents perceived fewer places *nearby* to enjoy the outdoors. In addition, parents of minority children reported that there were fewer parks nearby compared with parents of white children. In terms of the quality of places, overall, less than one-third of adults were “very satisfied” with places for outdoor and nature recreation near where they live. The social safety of places (traffic, speeding vehicles, dangerous people, etc.) was an important concern for all parents and children, and even more so for minorities and urban residents.

*11. Provide socially safe and satisfying places outdoors, especially for urban and minority adults and children.*

Our research provides general insights into what produces dissatisfaction with parks and open spaces, including traffic, speeding vehicles, dangerous people, and noise. Other concerns centered on the physical environment, especially the lack of opportunities to explore and to find peacefulness. Many sub-groups said they dislike or feel uncomfortable being alone in the outdoors. Spend time and effort listening to the *particular* concerns that may be present in specific locations and among specific groups. Program planners and communications professionals should also pay attention to how they label and frame activities. For example, among certain minority groups, interest in hiking paled in comparison to interest in taking a walk outdoors, likely due to differences in perceptions about the social and geographic familiarity and safety of the two activities.

*12. Work to lower the perceived costs of participation in recreational activities.*

The majority of adults in our focus groups presumed that high-quality nature experiences mainly occur in environments that are remote, difficult to access, and relatively undeveloped. Accessing these types of places requires 1) financial resources (to pay for specialized equipment and training, as well as the cost of transportation) and 2) time, both of which are in short supply. Perhaps not surprising, then, for adults in our survey, interest in activities that often require significant discretionary income and leisure time increased in tandem with household income. In contrast, activities that take place more locally—such as taking a walk outdoors, visiting nature-education centers, or watching or feeding birds and other wildlife—did not appear to evoke the same perceptions of inaccessibility and, thus, seemed to prompt interest from a diverse array of adults.

#### 5. **Texans value nature in remarkably broad, diverse ways.**

One of the most striking and consistent findings of our study of Texans today was their broad, diverse valuation of nature—a pattern that held across demographic differences of age, race and ethnicity, residential location, educational attainment, income level, and gender. The great majority of adults and children we studied enjoy contact with the natural world through multiple dimensions, including affection and attraction, intellectual development, spirituality, and symbolism. They express complex, nuanced attitudes toward controlling the nature world and using its resources for different purposes.

*13. Promote experiences in nature that match Texans' multidimensional values of nature.*

Adults appreciate and value multiple aspects of nature, each of which can be intrinsically satisfying and beneficial in and of themselves. Children ages 8–12 particularly told us of their interest in learning about nature and how the natural world works. Still, experiences and programs that only teach formal knowledge about the natural world speak to only one way Texans interact with and enjoy nature. Our research suggests that attracting a broader, more diverse, and larger number of participants to programs depends on promoting and speaking to a range of values, including:

- Affection and even love for nature, the outdoors, and wildlife
- Appreciation of nature's aesthetic appeal and beauty
- Enhancement and enrichment of intellectual development and human knowledge
- Appreciation of the many practical ways people materially benefit from the natural world if utilized in a sustainable fashion
- Ability to cope with a variety of threats, risks, and at times dangers characteristic of the natural world, while concurrently appreciating and respecting the strength and power of species and systems in nature
- Realization that any species' survival and evolutionary development depends on exercising a degree of mastery and control over nature without harming it
- Observation of how nature fosters the ability of humans to communicate, be creative, and design basic elements of their world
- Feelings of peacefulness and, for many, spiritual connection to the natural world of which humans remain an integral and essential part.

*14. Broaden programming to include a range of outcomes.*

The public overwhelmingly thinks that acquiring formal knowledge of nature and outdoor skills is good: the great majority of adults thought knowing how nature works is highly important, children expressed interest in learning about things like snakes and insects, and places like nature-education centers attracted interest from all demographic groups. Yet adults and children alike also revealed they desire a range of outcomes from their engagement with nature, including discovery, peace, challenge, curiosity, beauty, love for places and wildlife, and more. Programs ought to offer participants more ways to engage with nature than only acquiring formal knowledge.

**6. Texans support nature-related programming, funding, and conservation.**

Across major demographic groups, adults supported nature-related programming, funding, and conservation. The majority of adults surveyed believe programs to help Americans enjoy nature and wildlife are underfunded. Most support increasing the number of these programs. A majority of adults support using a variety of funding sources to pay for nature and wildlife activities. Furthermore, most adults, when faced with trade-offs such as building on land even if it results in fewer places for wildlife to live, opt to protect habitat and wildlife. Children and adults on the whole both disagree that people need to be dominant over wild animals and plants.

*15. For adults, promote conservation efforts as a way to improve their overall community and quality of life.*

Adults who were highly satisfied with the fundamental human services where they live, such as schools and water quality, were highly likely to support increasing the number of nature and wildlife programs. So too were adults who were highly dissatisfied with these aspects of their local community. This finding indicates one of the ways Texans link what happens in their community with what happens in nature. In addition, we believe a significant expansion of funding for nature- and outdoors-related programs, including wildlife conservation, will be achieved when various sectors effectively link nature, wildlife, and the outdoors to the public's self-interest in health, productivity, and quality of life—which this research suggests is already intuitive to the vast majority of Texans.

## **7. Texans' relationship with nature is complex and nuanced.**

Across many questions, such as time spent outdoors and general interest in nature, Texans of all types were similar. However, clear and substantial differences emerged across and within race and ethnicity, residential location, and age in two particular areas—interest in particular recreational activities, and barriers to those interests. For example, interest in activities like camping and hiking differed dramatically across groups, while interest in activities like fishing, walking outdoors, and visiting nature-education centers was more widely shared. In addition, minorities, younger respondents, and urban residents were especially concerned about the lack of nearby places to enjoy nature, competing interest from computers, health issues, lack of time, and lack of social support for their interests in nature. Black children had participated in far fewer nature-oriented trips (such as hiking or fishing) than white children had. Undoubtedly, further differences would become salient when designing and implementing programs in particular neighborhoods and among particular groups. These results point to the level of cultural competency required for various sectors to reach new constituencies and work to connect all people to nature. As The Nature of Americans study demonstrates, seeking to understand these nuances requires long-term time, effort, and attention.

*16. Set clear goals and objectives.*

Members of various sectors should clearly define what exactly they are trying to do, affect, or accomplish, and how they anticipate their efforts will influence that particular outcome. At a basic level, clearly stating what exactly the goal is narrows the target, and the conversations, programs, and policies that lead up to that target. As an example, consider how promoting interest in nature is related to but distinct from promoting time spent outdoors; both of these in turn are distinct from valuing nature in particular ways; each of these three is in turn distinct from participation in fishing or hunting or camping trips.

*17. Question one-size-fits-all and “silver-bullet” diagnoses and prognoses.*

Avoid unfounded generalizations or presumptions that what works for one group in one place will work for all groups in all places. As our research shows, connection to nature often looks and operates profoundly differently across places and groups. Members of various sectors can gain understanding by placing themselves in the lives and neighborhoods of the constituencies they seek to serve. Also recognize that multiple causal pathways can produce the same outcome; therefore, less time should be spent searching for “silver-bullet” solutions that purportedly would have a one-to-one effect on some outcome for all groups.

*18. Be explicit about common assumptions, and consider revising them.*

Based on our experience, one common assumption in the conservation and environmental communities is that more is inherently better: more time spent outdoors, more visitors to a refuge or park, more memberships to organizations, and so on. But what is the threshold for experiences in nature? What is the minimum required? Is more always better? A second common assumption is that the public is best viewed as a large number of individuals who change their decisions based on the information presented to them. Yet our study demonstrates the powerful role of intergenerational transmission of knowledge and values from family, teachers, and other influential adults. Our study also illustrates the influential effect of social networks on individuals' interests. It further begins to suggest the effect of community context on what people do and do not do. A third common assumption is that providing (more) information will change people's behaviors. Our study questions the effectiveness of merely providing more information, since Texans are already aware and persuaded of nature's benefits and importance—and since most are already concerned about younger generations' disconnection from nature.

*19. Use differences across age and stages of life to tailor programs and policies.*

Our research revealed tremendous variation by age in how Texans value and experience nature. For the children in our study, time spent outdoors shrank as time spent on electronic media and organized sports rose with age. Younger adults, on average, reported spending more time outside in nature than older adults. Adults in their 30s were the most interested in fishing and hunting; interest in hiking declined steeply among older adults. Older adults were relatively more comfortable being in nature by themselves and more likely to link their spiritual or religious feelings together with nature. Further differences emerged in satisfaction with time spent outdoors, perceptions of financial resources to devote to nature interests, personal influences on thoughts and feelings about nature, the presence or absence of competing issues in life, time devoted to sharing interests in nature with children, attitudes toward using natural resources, and so on. Despite these differences, age does not often emerge as a salient factor affecting programs, policies, and campaigns related to nature. It should.

*20. Clearly state, trace, test, and analyze causal pathways.*

We urge members of the conservation and environmental communities in particular to be as explicit in their social analysis as they are in their ecological analysis. We are particularly concerned about unverified explanations for particular outcomes, such as support for nature-related programming. We found that feelings of affection toward wildlife were indeed related to this support—but we also found that adults with strong values of control toward and exploitation of nature supported the same programs. These two findings almost certainly indicate different causal pathways at work that, nonetheless, produce the same outcome. Designing a communications strategy around only affection for nature would therefore overlook a swathe of potential supporters. Furthermore, beyond merely observing that one action tends to produce a certain outcome, we urge careful attention to *why and how* one factor affects another via the identification of generalizable processes and mechanisms. What exactly was it that drew neighborhood residents to visit a particular wildlife refuge on multiple occasions? Why was a certain media campaign so popular? How were so many different stakeholders able to work together to conserve a particular species? Under which settings is a particular program or policy most effective? Such questions demand robust, nuanced social science research. This study, we hope, provides an example of this type of research and also fertile ground for additional work.

## 8. Texans perceive tremendous benefit from experiences in nature.

Across demographic categories, the vast majority of adult Texans surveyed reported that nature is highly important for their physical health and emotional outlook. Most noted that certain smells and sounds of nature bring to mind some of their happiest memories, that being in nature provides a sense of peace, and that being in nature helps to give meaning and purpose to their lives. In addition, nearly all the 8–12-year-old children in our study said contact with nature made them happier and healthier and deepened their relationships—in short, that exposure to nature promoted their physical, psychological, and social wellbeing. Their parents agreed with this assessment, with a sizable minority reporting that contact with nature had improved some aspect of their child’s health.

*21. Join parents, children, and adults alike in recognizing that expenditures on children’s engagement with nature are fundamentally important investments.*

For the children, parents, and other adults in our study, nature is an important and fundamental part of growing up. Most adults cited the role of childhood experiences in nature in shaping how they think and feel—and even who they are today. The great majority of parents cited nature’s influence on their child’s growing healthy and stronger, feeling confident and independent, and making and deepening social relationships—results that children also overwhelmingly affirmed. Indeed, we found that interest in nature is highly positively associated with experiences in nature, which in turn are positively associated with particular benefits and connection to special places and unforgettable memories. Thus, expenditures on enhancing children’s connections with nature represent an investment no different than expenditures on health care, formal education, and other services that improve quality of life. Our data suggest the return will be substantial over time.

*22. Build partnerships among professionals in healthcare, education, urban planning, conservation, community development, and other sectors.*

When Texans connect with nature, they bond with their families and friends, develop intellectually, and find respite and rejuvenation. Linking Texans to nature creates lasting memories, provides outlets for children and adults to explore, and facilitates moments of joy. It positively affects the physical, psychological, and social wellbeing of children. It creates places where Texans want to live, work, and flourish. These outcomes provide a powerful justification for forging partnerships across sectors as diverse as healthcare, education, urban planning, conservation, recreation, and community development so that every one might work toward connecting Texans and nature.

## 5.2 Conclusion

Dr. Stephen R. Kellert, a principal investigator in this collaborative study with DJ Case & Associates, was hopeful and enthusiastic that the study findings would provide important insights to improving human health and wellbeing. In fact, he wrote extensively on his vision for applying the findings of the study. In a note to a colleague, he wrote:

...The very critical and challenging work will be translating these understandings into a practical and implementable reality... We never embarked upon the national initiative with the intention of only doing another research project, even if at a large national

scale. Our goal has always been how we can foster real, substantive, sustainable, and relevant change. We believe our nation faces a challenge to the future of nature and wildlife not unlike the crisis that faced our nation toward the end of the 19th century when the focus then was unbridled exploitation and massive habitat loss. Today, the crisis facing us is precipitated more by an ominous and increasing disconnect from the natural world, a rapidly urbanizing nation, and changing demographics and historic relations to wildlife. Ironically, this is all occurring at a time when scientific evidence is evermore indicating that ongoing contact with nature and wildlife is not a dispensable amenity but rather critical to the health, wellbeing, and economy of our nation. I am certain the results of the national initiative will help us to address this great 21st-century challenge.

Central to Dr. Kellert's hopes for this study was transformative action. Connecting all Texans and all Americans with nature must be a vibrant, ongoing effort propelled by all members of the public. We live in a remarkable age when quarter centuries seem to pass in the blink of an eye; the state of the natural world and our place within it cannot afford for us to act slowly. As Dr. Kellert continually urged throughout his career, we must act now to ensure that present and future generations are connected with nature.

Overcoming these forces and barriers will require ambitious solutions that break out of existing silos and the inertia of merely adjusting existing programs. Members of the conservation and environmental communities can no longer rely on pre-existing social expectations, uncritically repeat many of the programs that have worked in the past, or simply rely on providing more information extolling the benefits of nature.

But lest the situation seem hopeless and over-determined, recall the source of these issues is not faceless: the world in which children and adults live is a world that they themselves have helped to create and therefore can help to change. The deep potential is already present for various sectors—conservation, healthcare, education, and so on—to step in and propose ambitious solutions to shape a society that matches what most Texans themselves personally value.

## Appendix A

# Analyses of Biophilic Values by Gender, Income, and Education

This appendix contains additional analyses of the eight biophilic values—affection, attraction, aversion, control, exploitation, intellect, spirituality, and symbolism—broken out by gender, household income, and educational attainment. For each graphic, the percentage on the left side is a combination of “strongly” and “somewhat” disagree. The percentage reported in the middle represents those who neither agree nor disagree. The percentage reported on the right side is a combination of “strongly” and “somewhat” agree.  $N = 2,379$  for all analyses derived in this section.

## A.1 Affection

Figure A.1: Values of Affection, by Gender

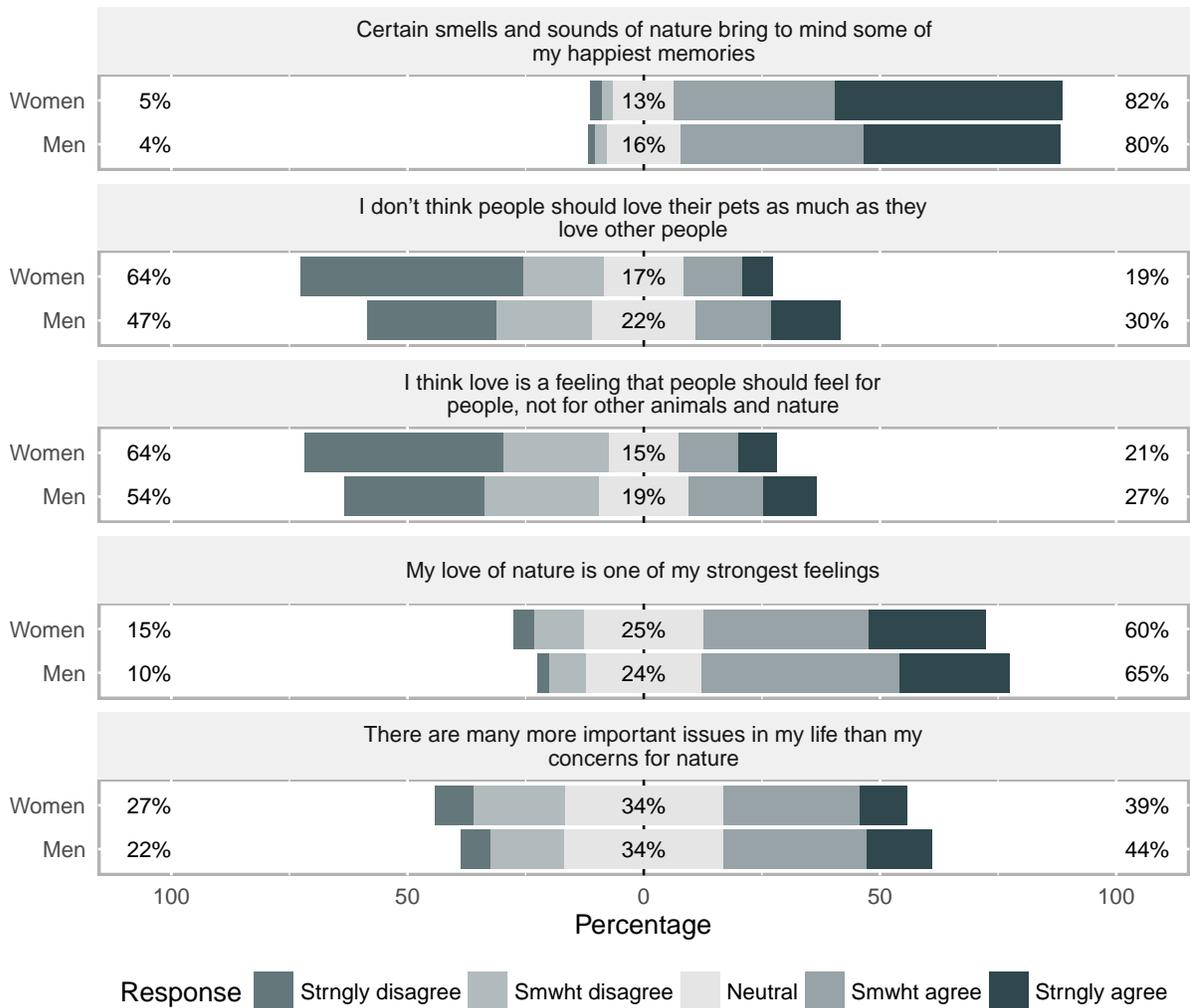


Figure A.2: Values of Affection, by Income

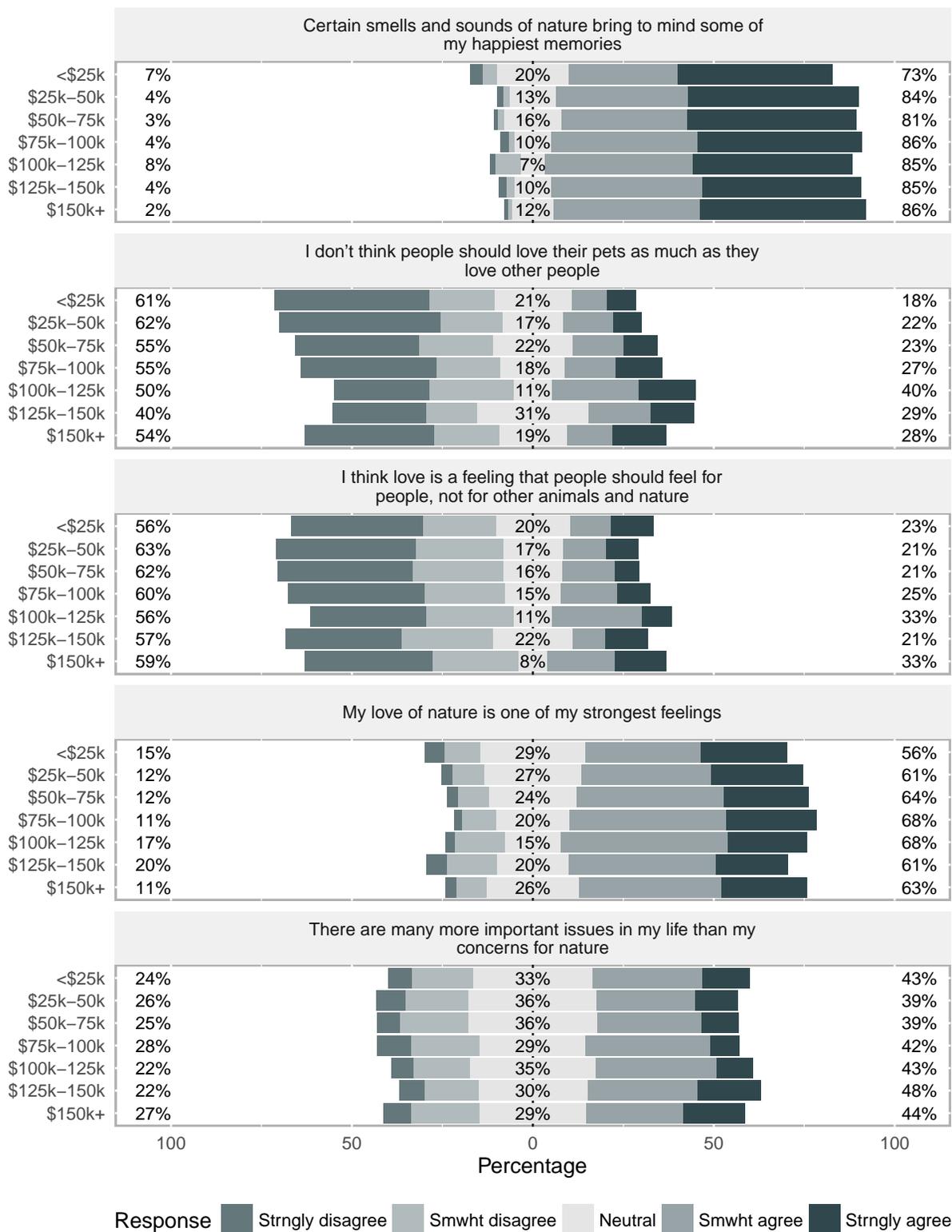
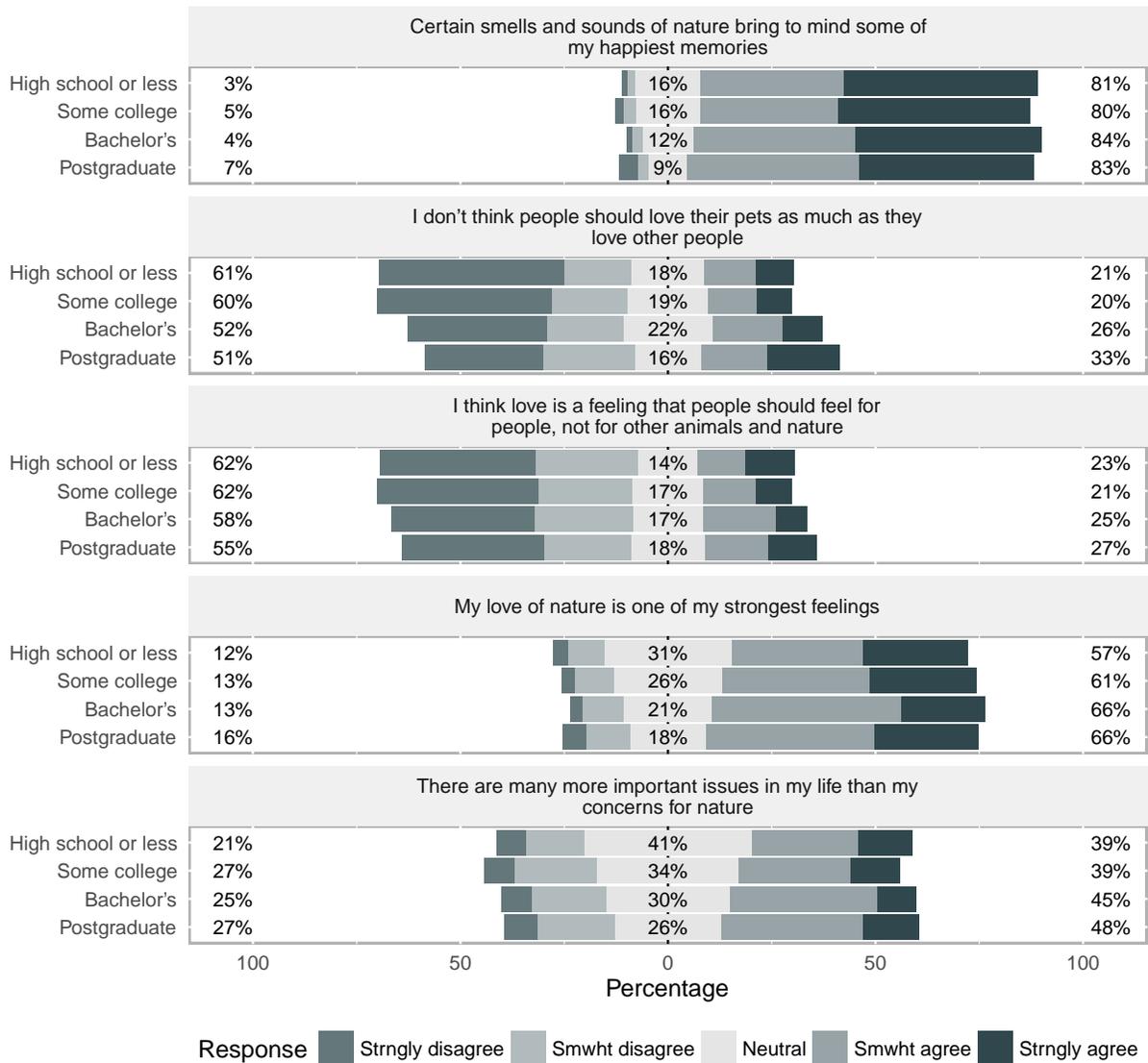


Figure A.3: Values of Affection, by Educational Attainment



## A.2 Attraction

Figure A.4: Values of Attraction, by Gender

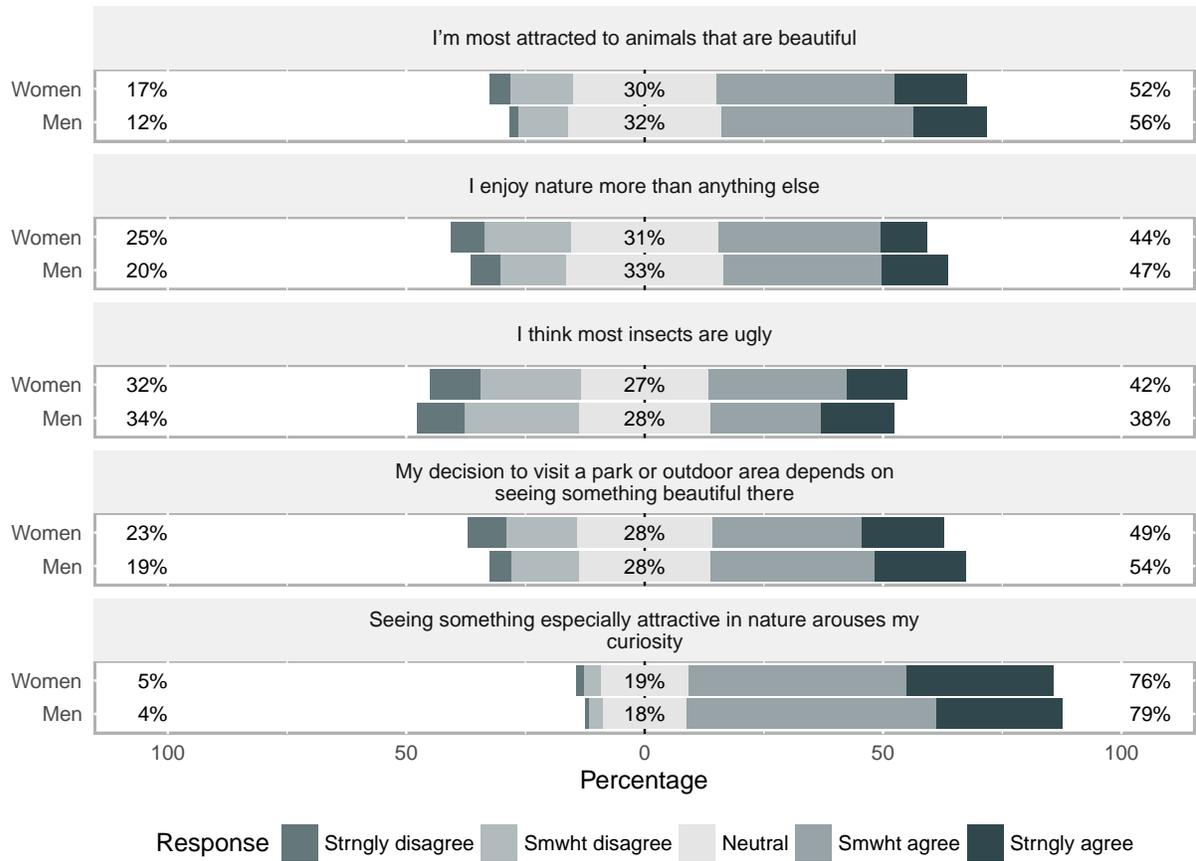


Figure A.5: Values of Attraction, by Income

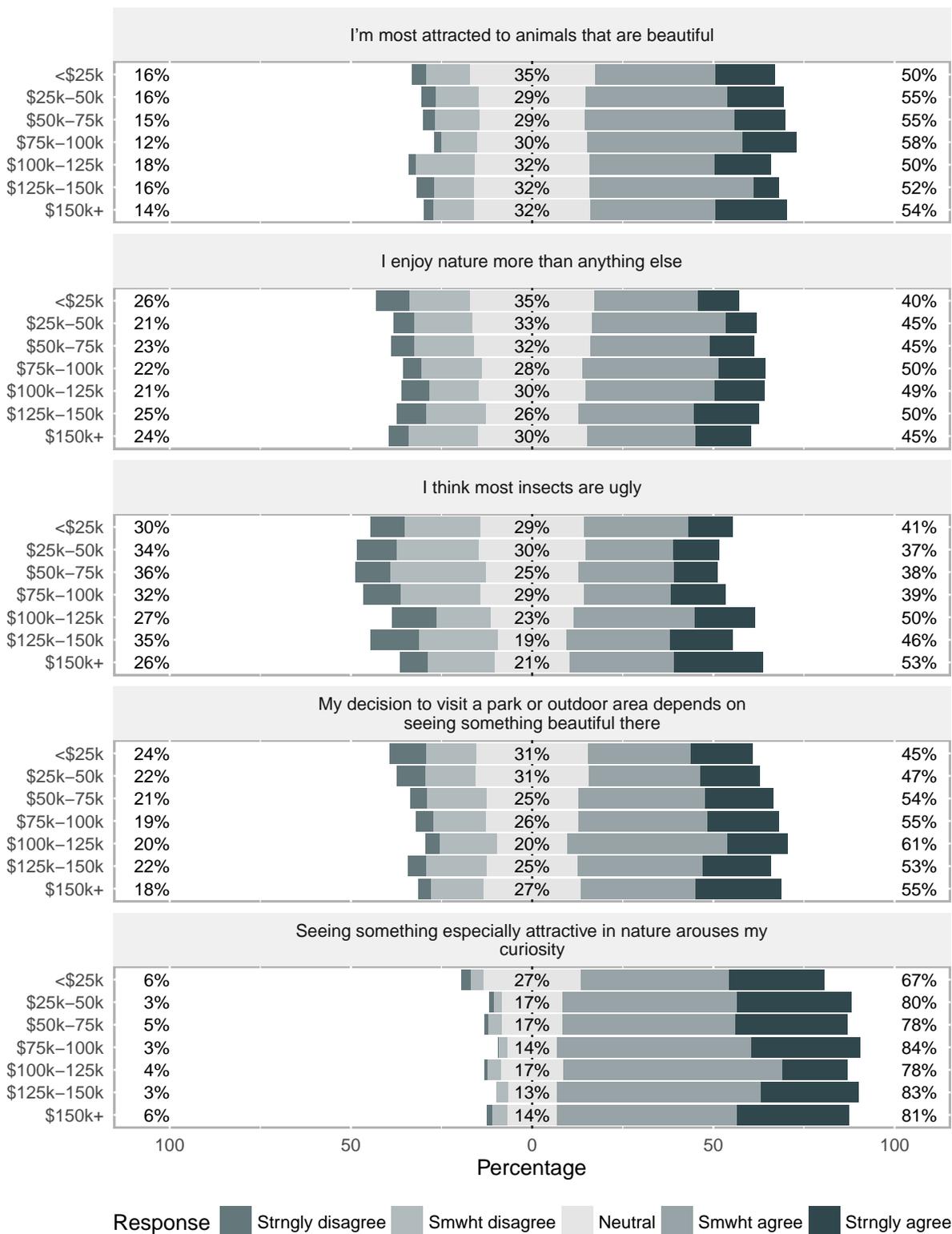
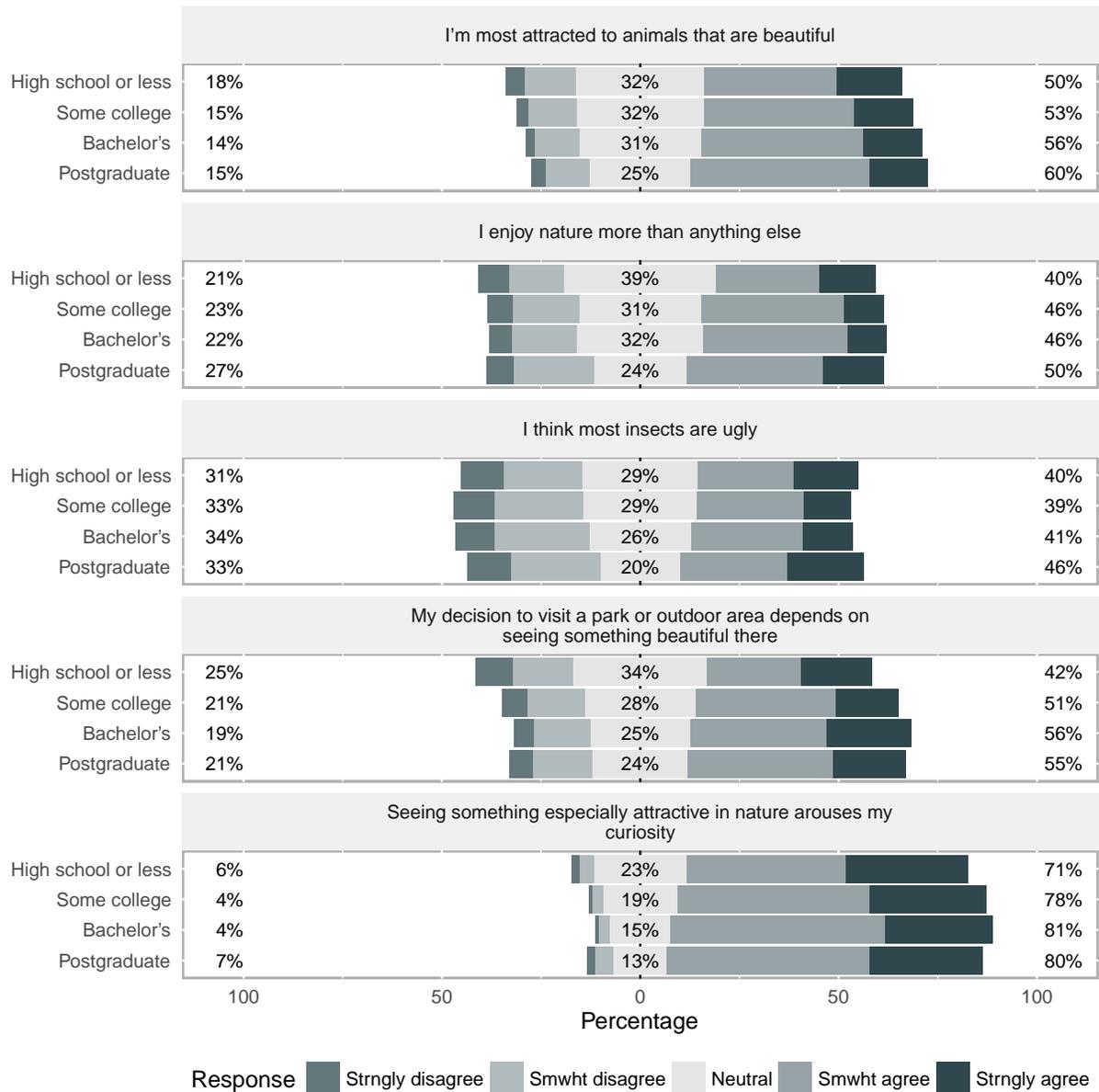


Figure A.6: Values of Attraction, by Educational Attainment



### A.3 Aversion

Figure A.7: Values of Aversion, by Gender

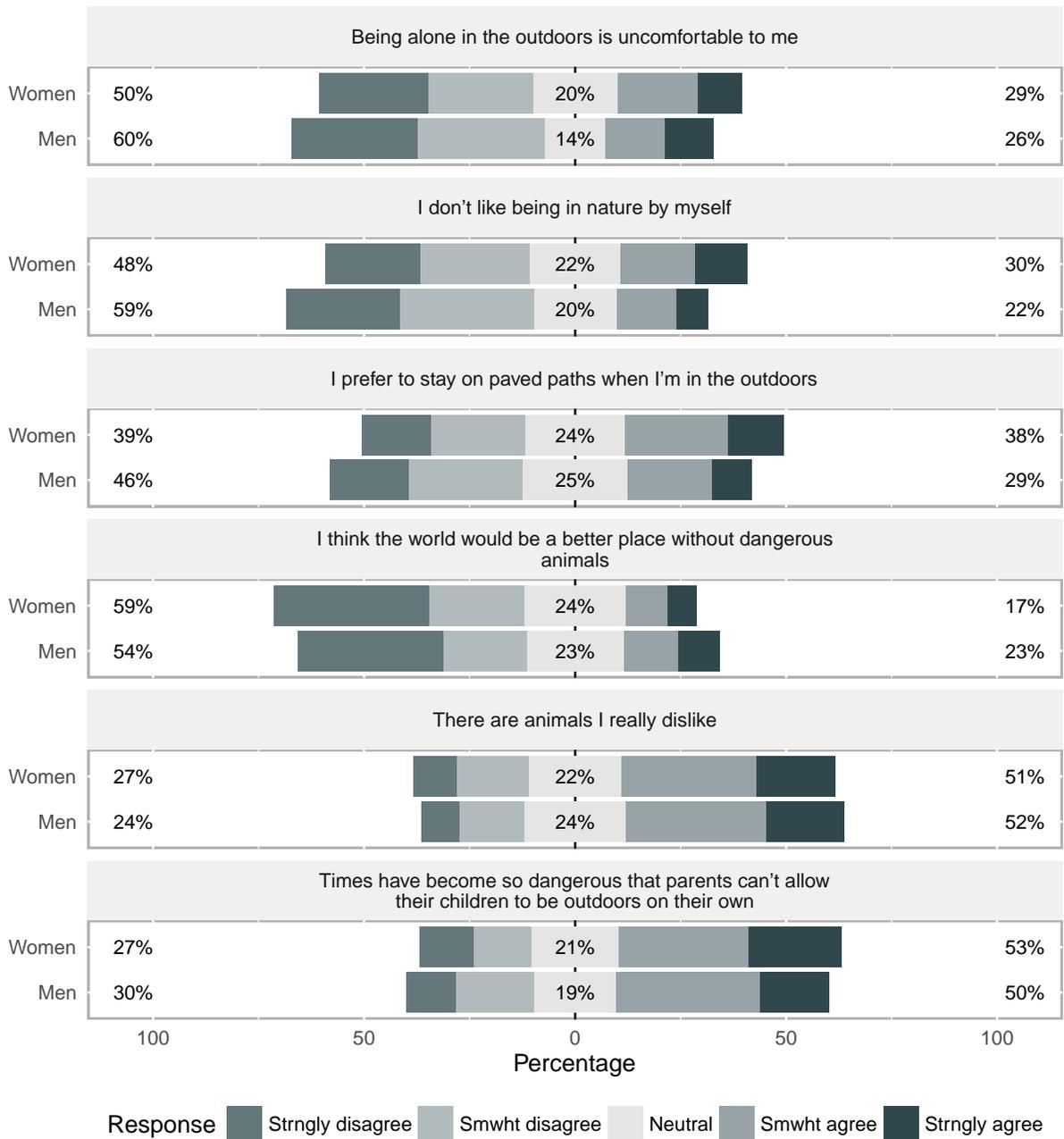


Figure A.8: Values of Aversion, by Income

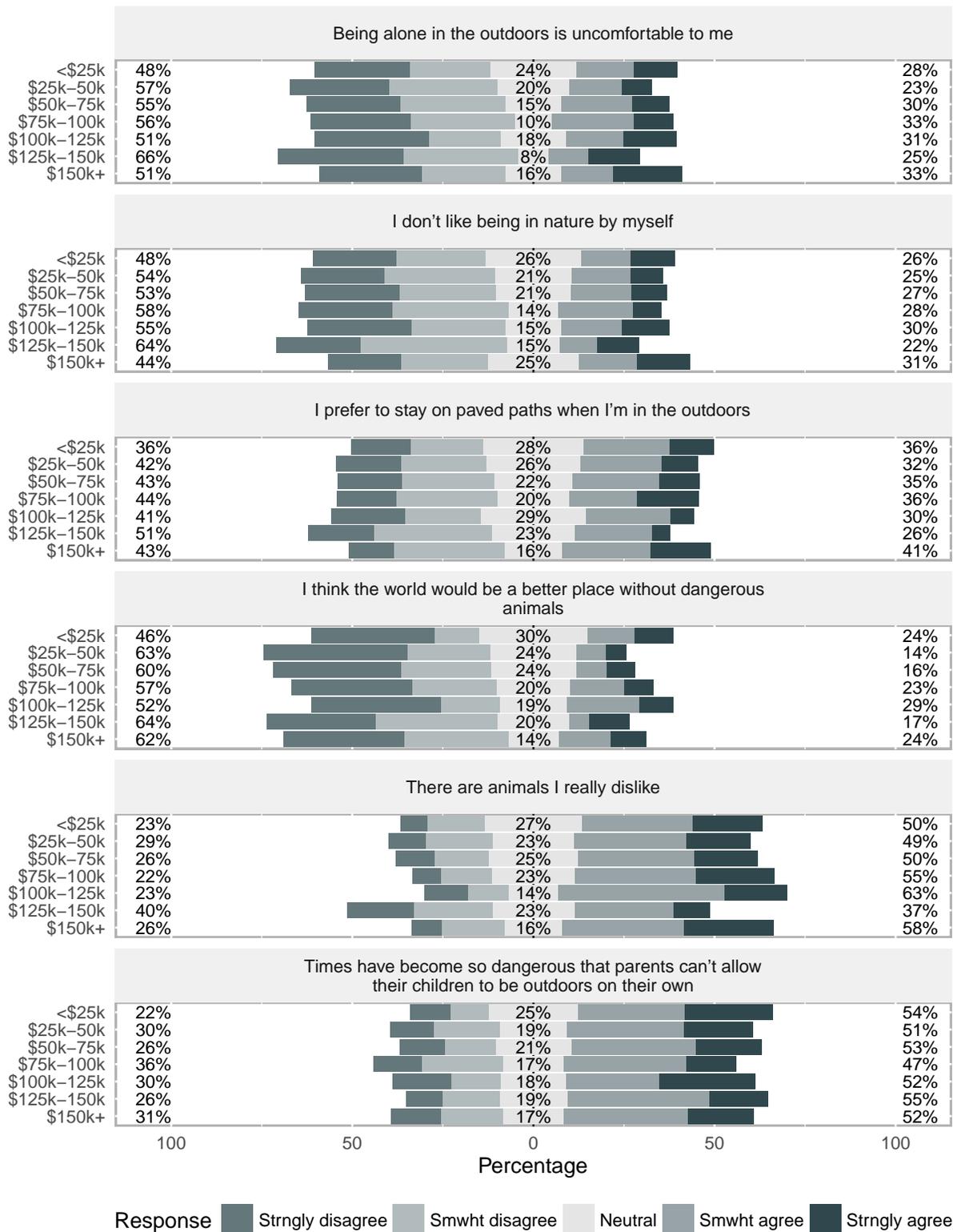
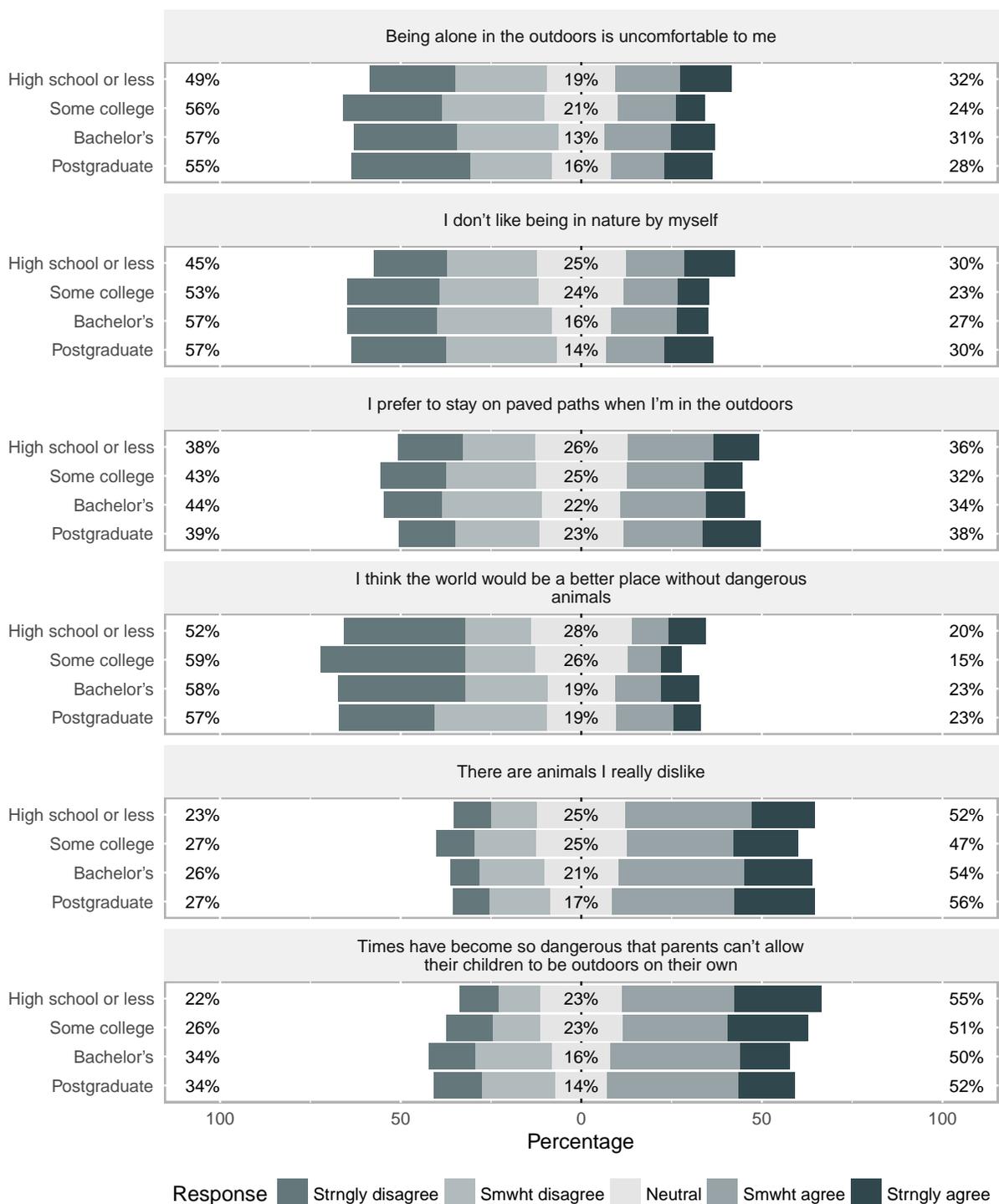


Figure A.9: Values of Aversion, by Educational Attainment



## A.4 Control

Figure A.10: Values of Control, by Gender

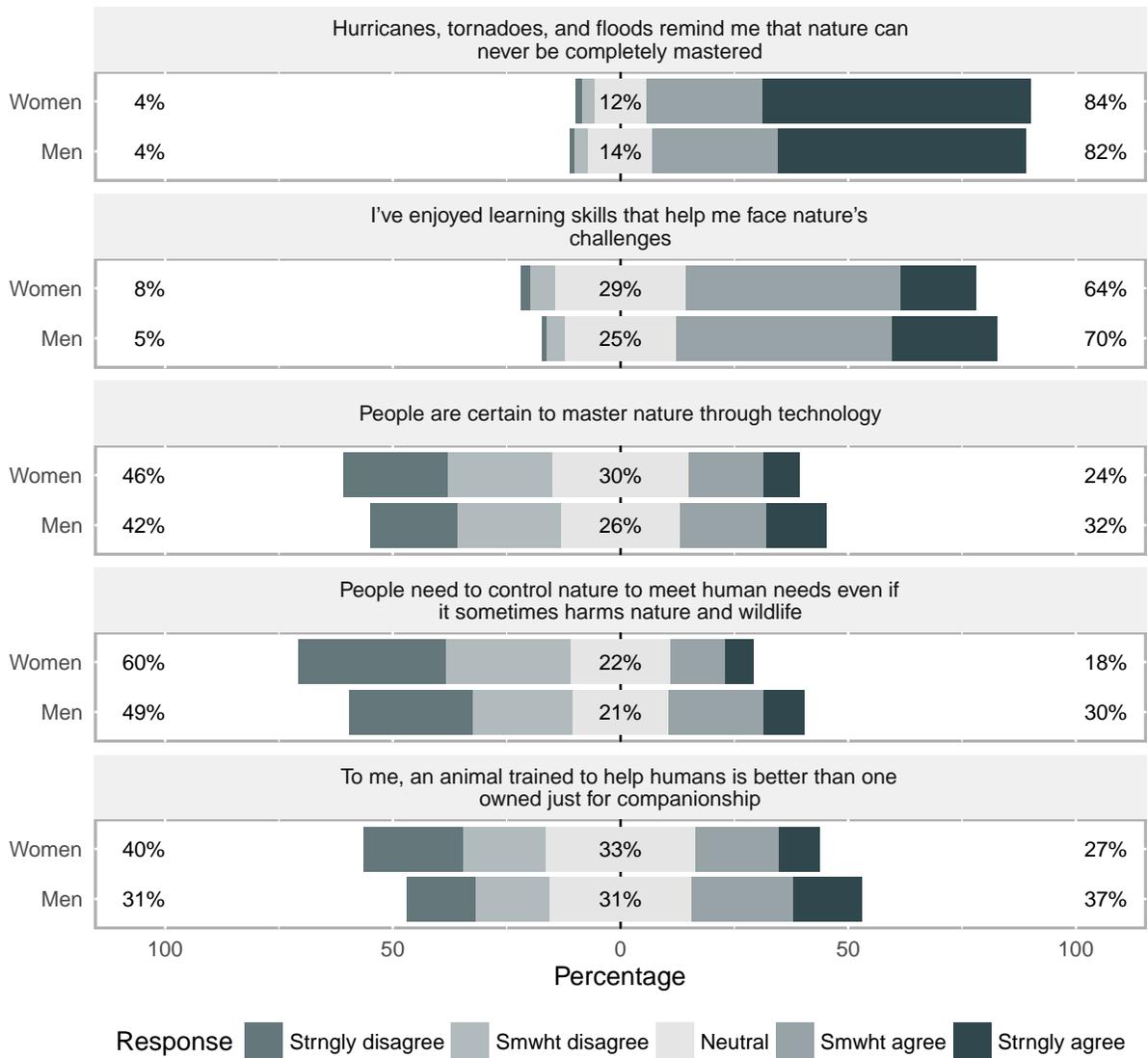


Figure A.11: Values of Control, by Income

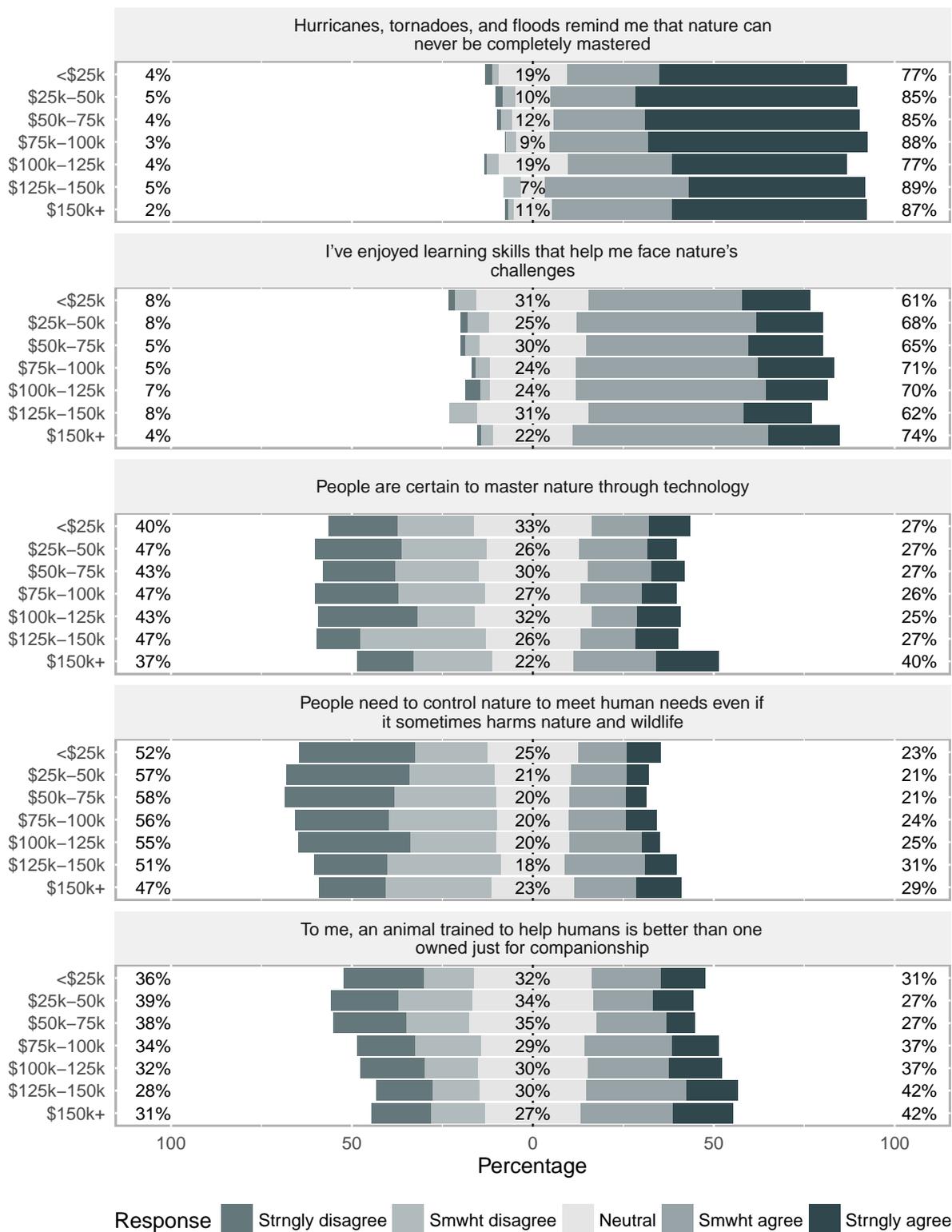
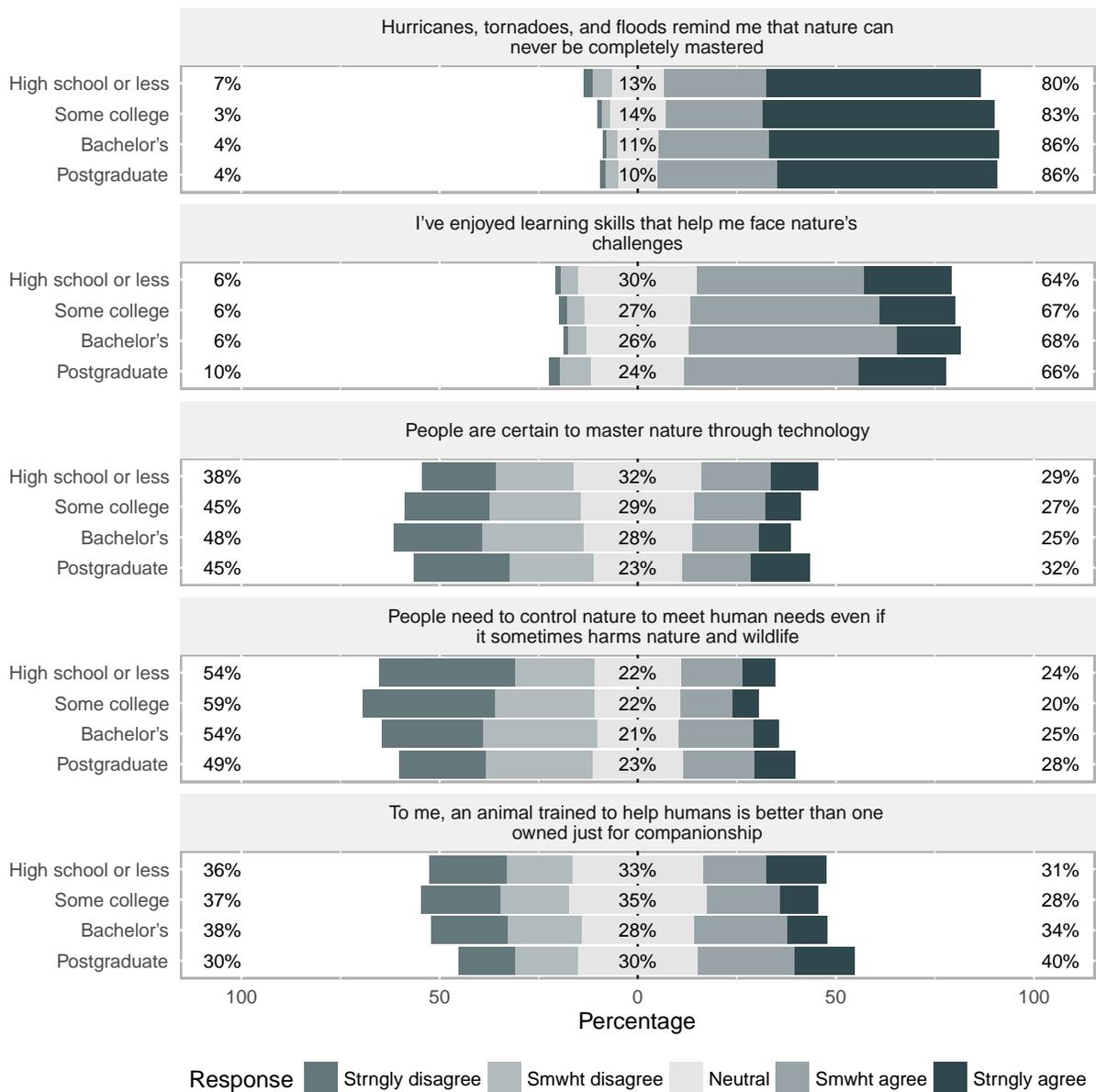


Figure A.12: Values of Control, by Educational Attainment



## A.5 Exploitation

Figure A.13: Values of Exploitation, by Gender

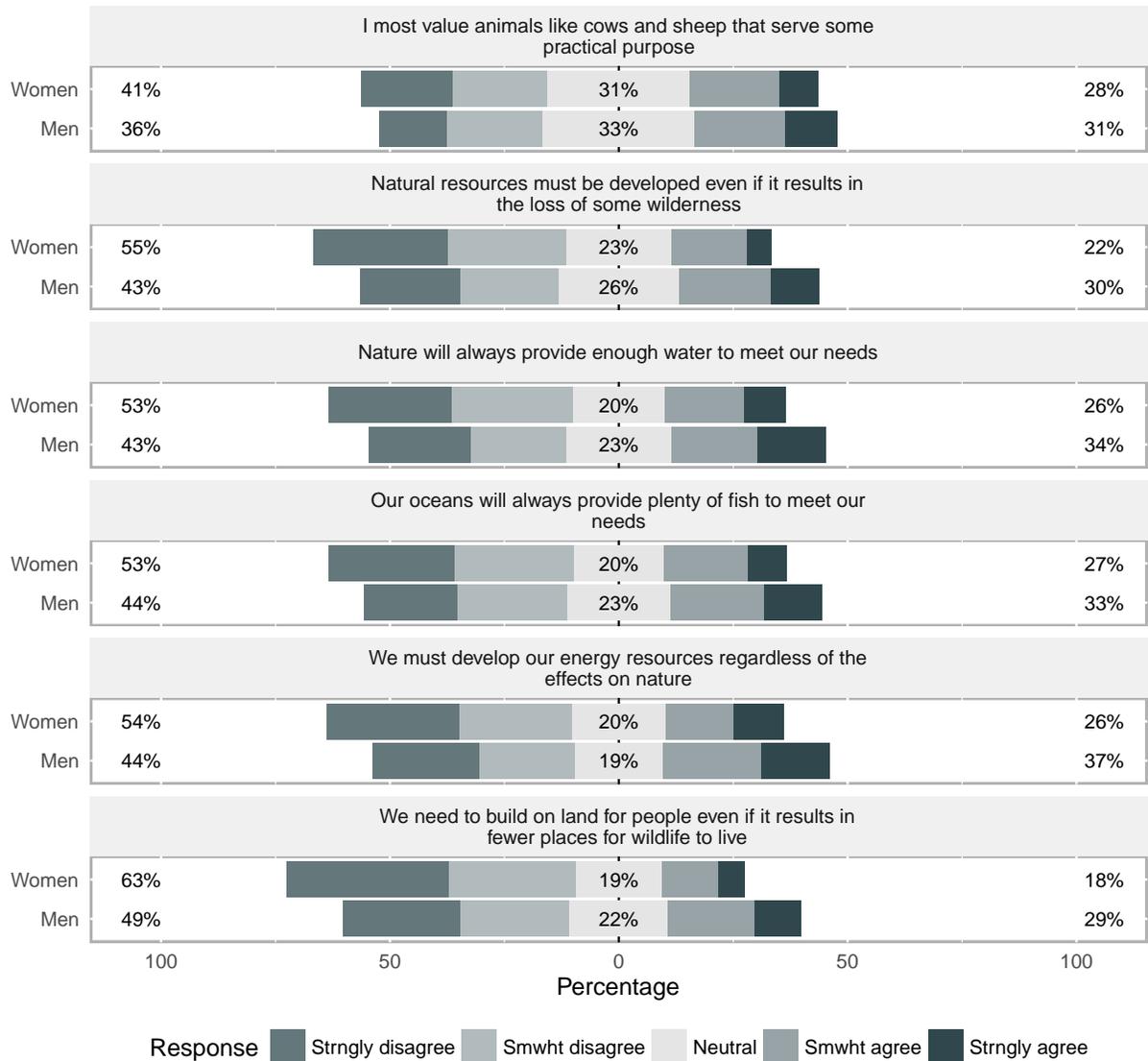


Figure A.14: Values of Exploitation, by Income

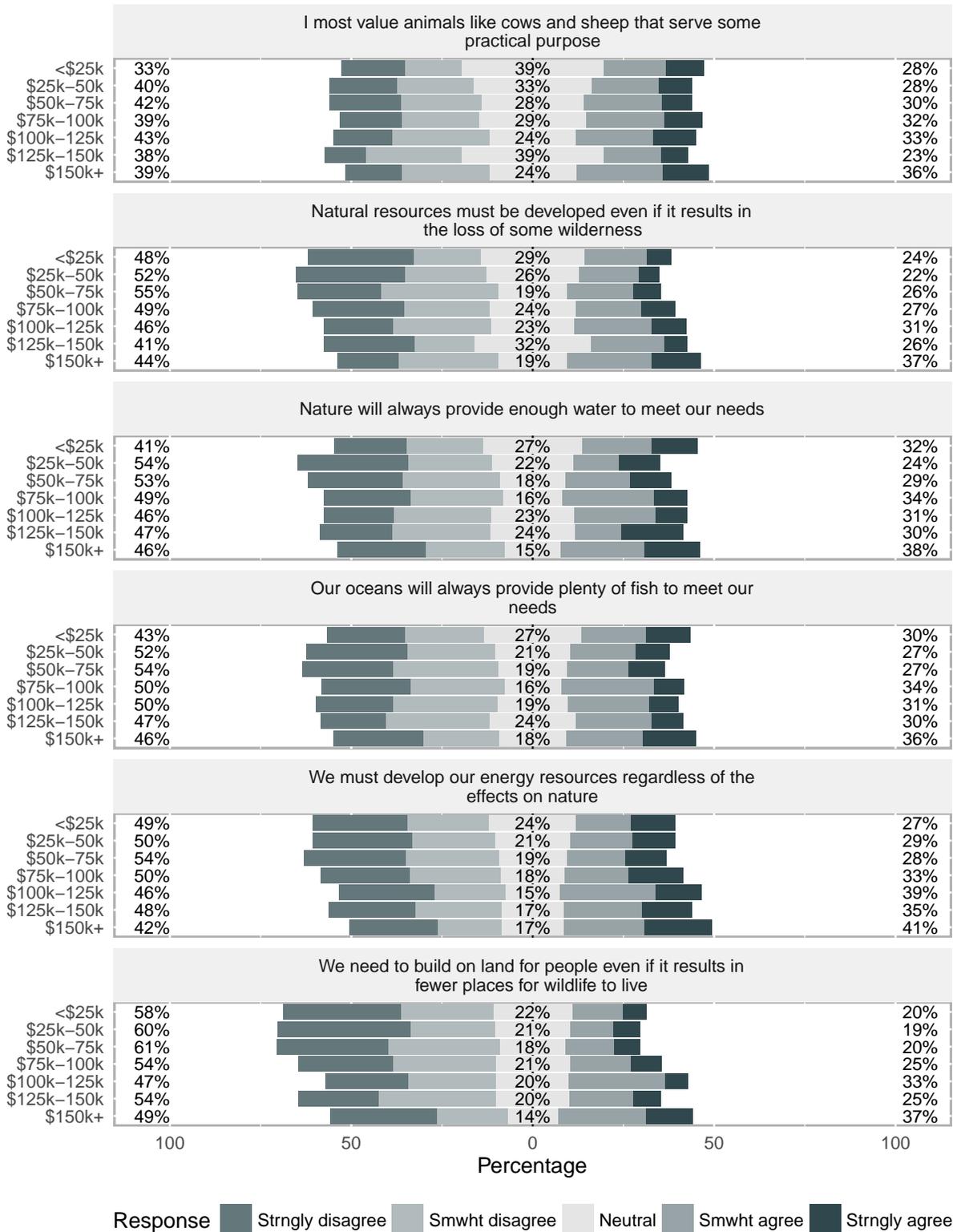
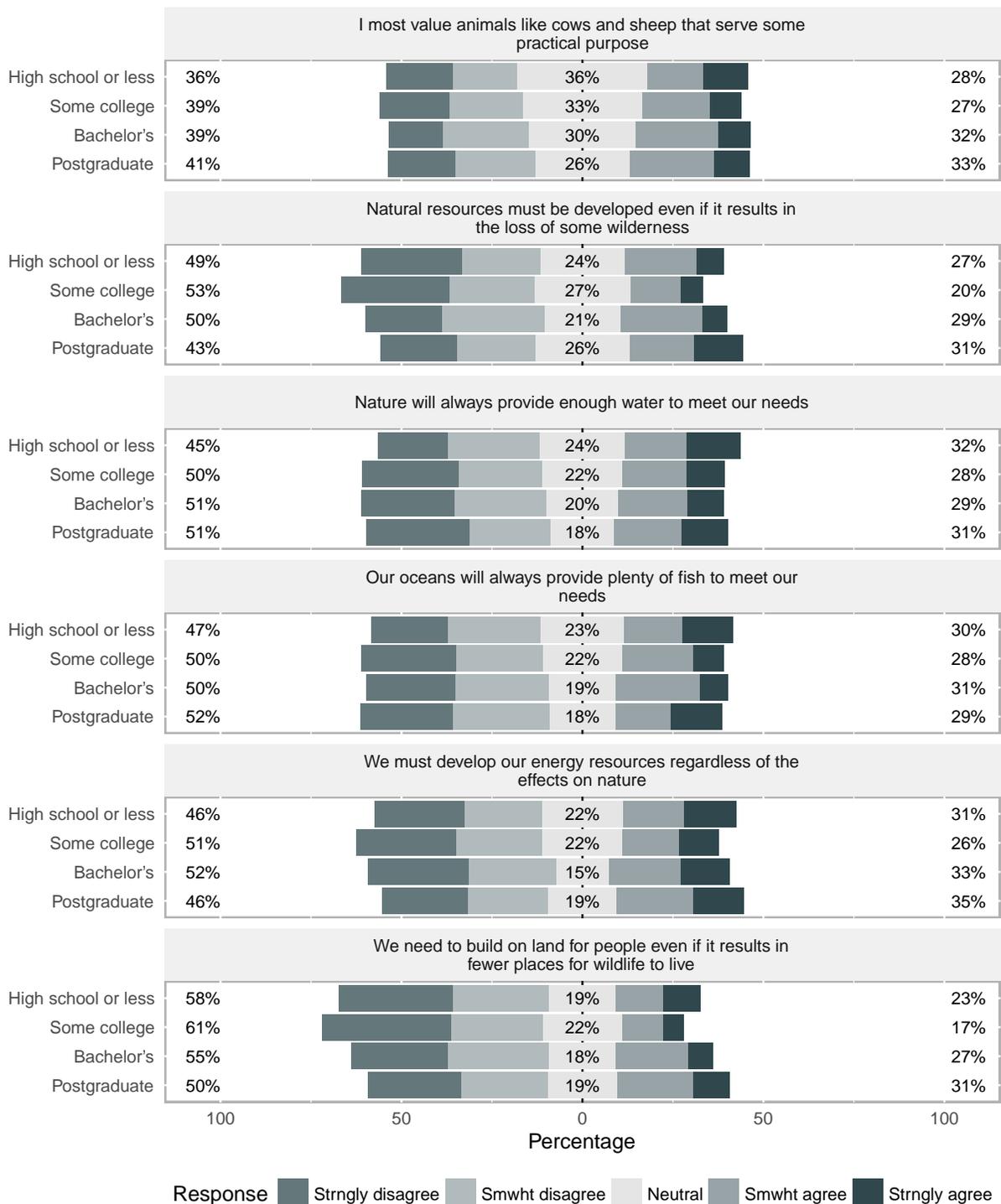


Figure A.15: Values of Exploitation, by Educational Attainment



## A.6 Intellect

Figure A.16: Values of Intellect, by Gender

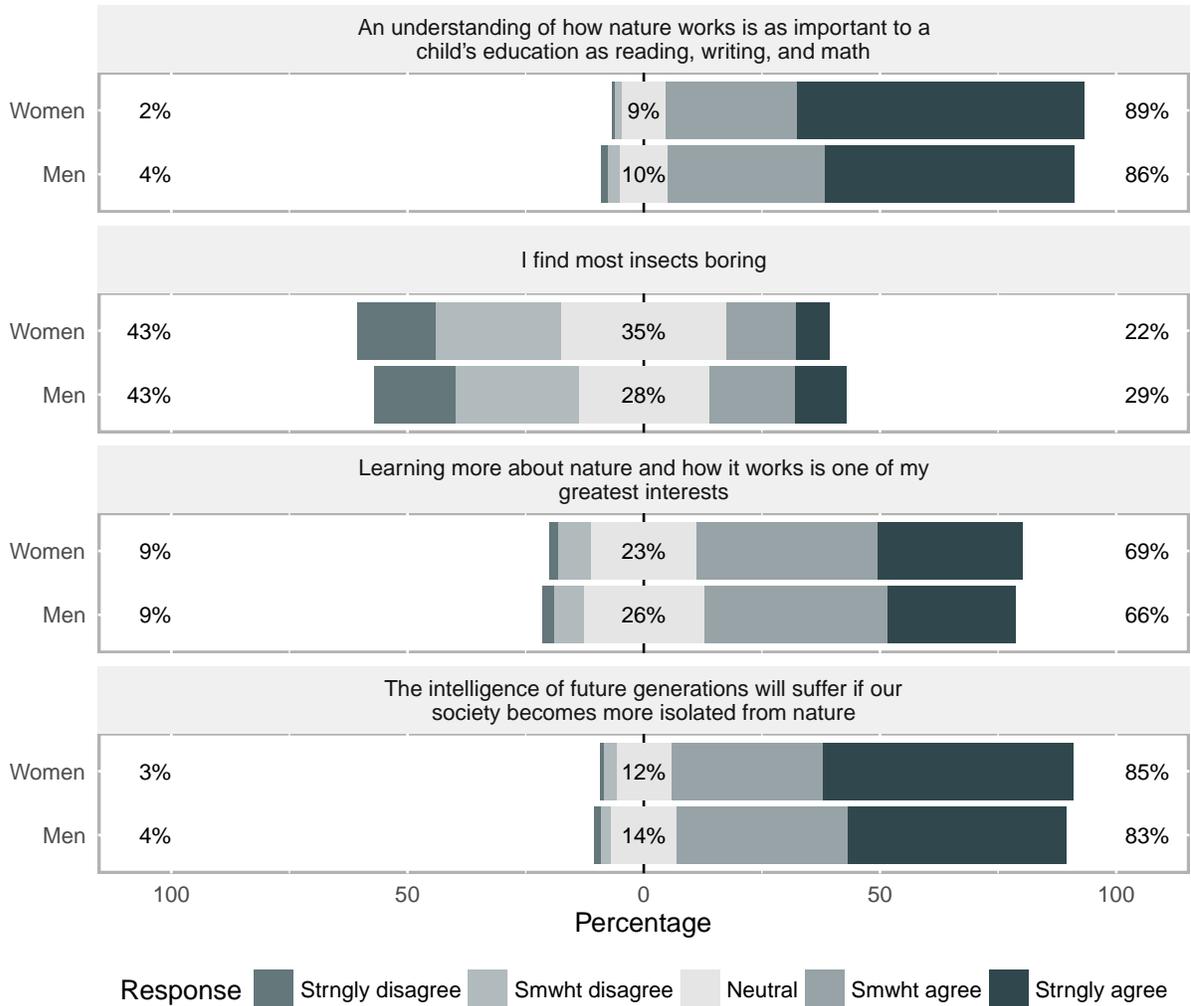


Figure A.17: Values of Intellect, by Income

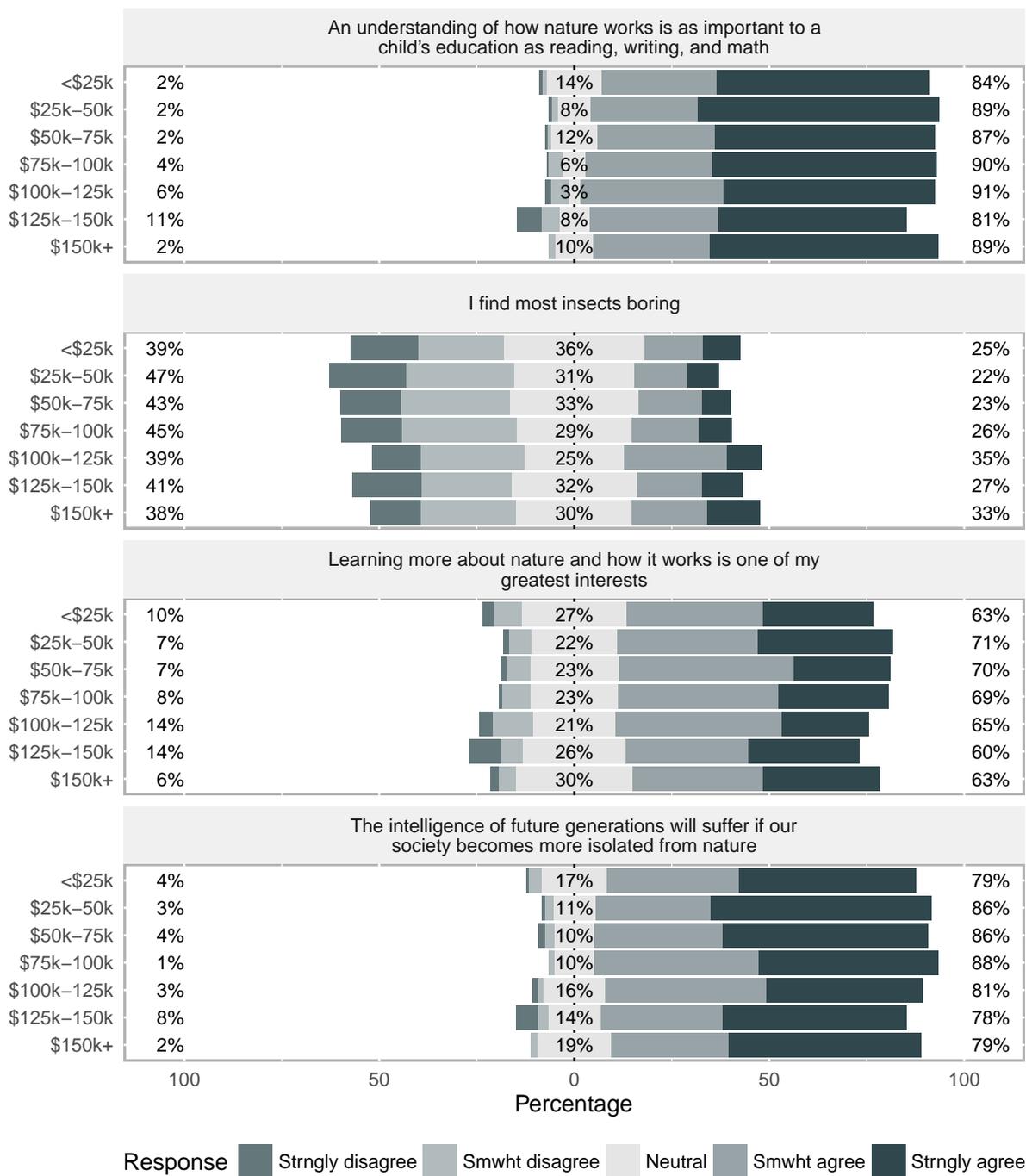
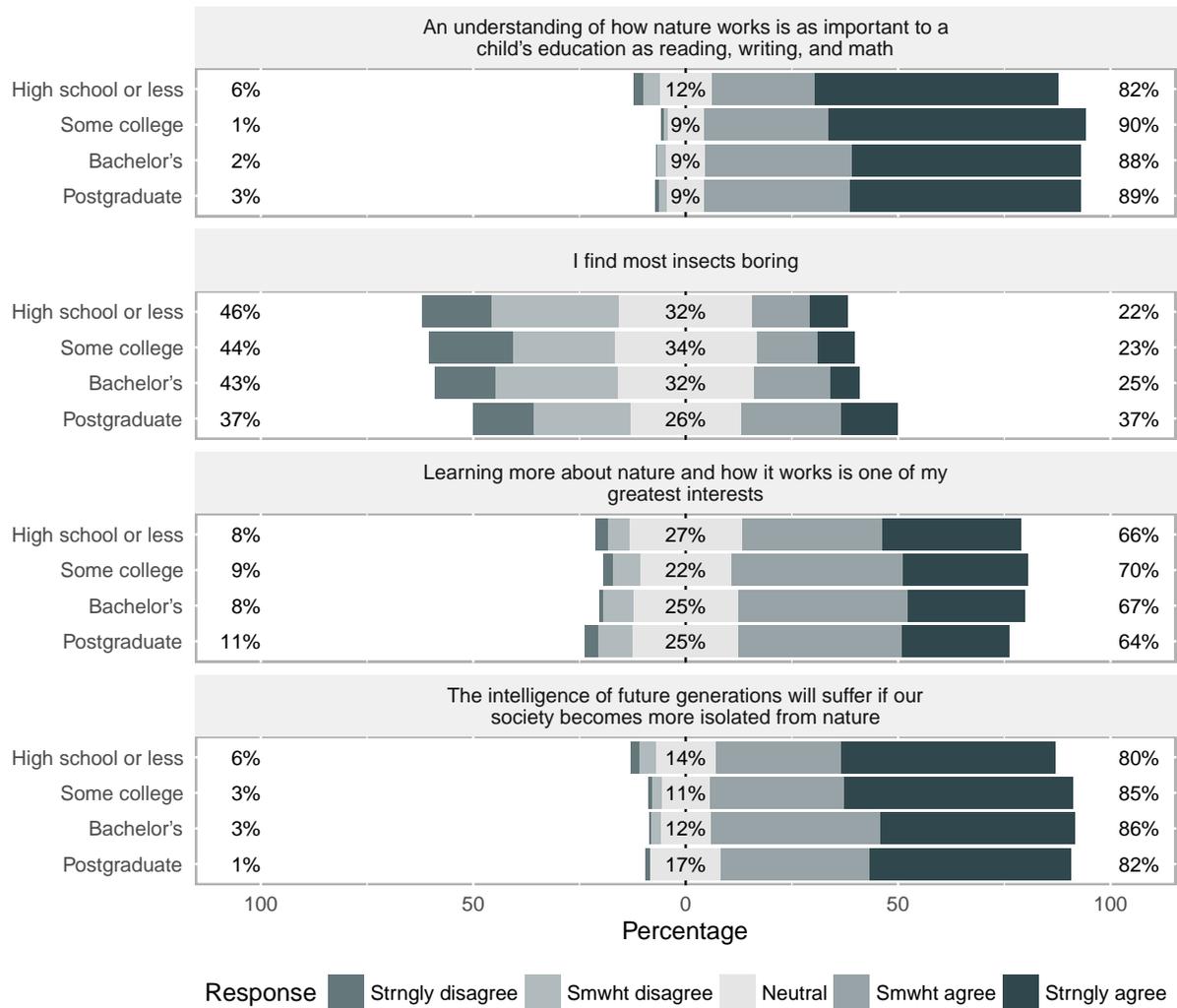


Figure A.18: Values of Intellect, by Educational Attainment



## A.7 Spirituality

Figure A.19: Values of Spirituality, by Gender

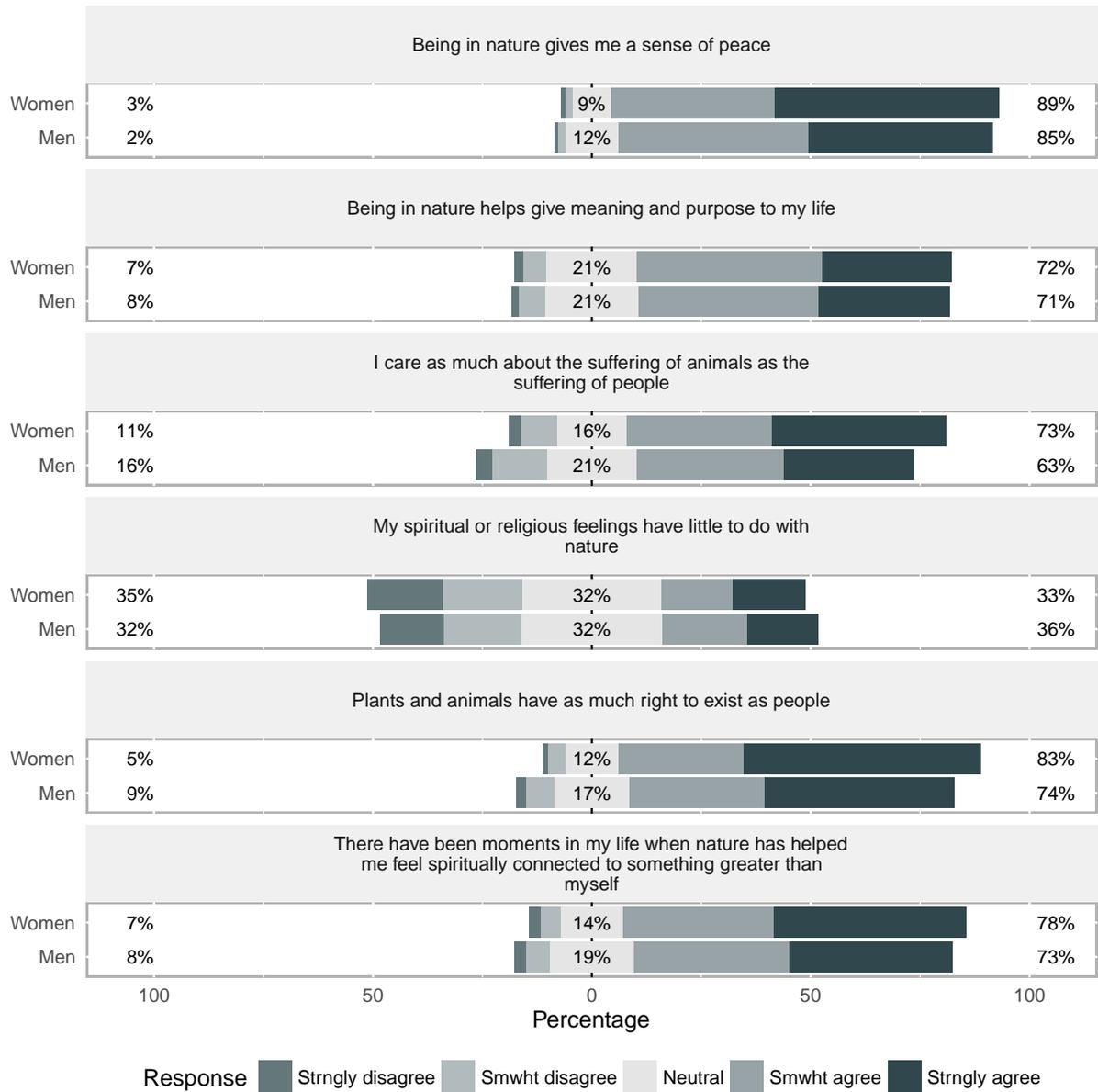


Figure A.20: Values of Spirituality, by Income

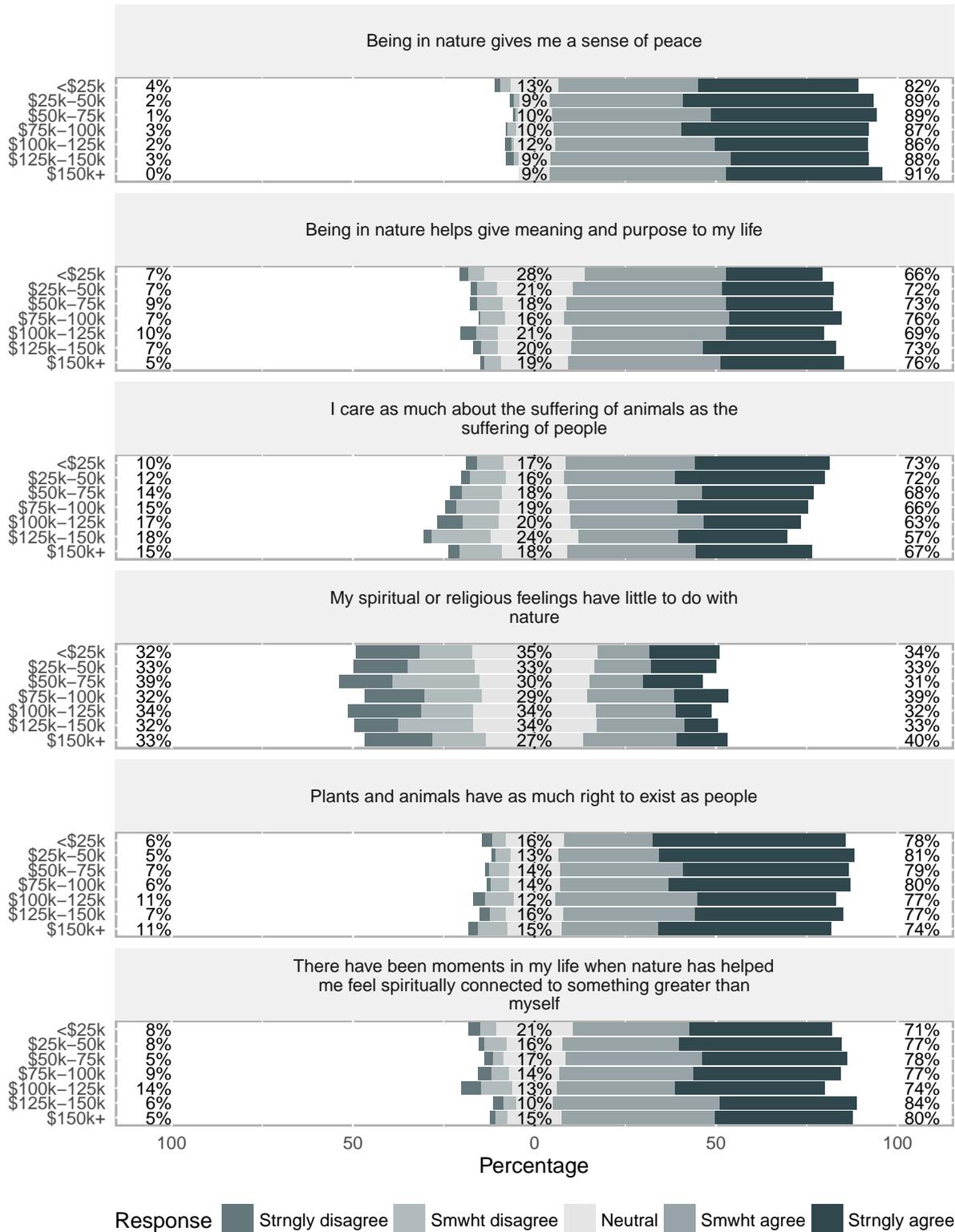
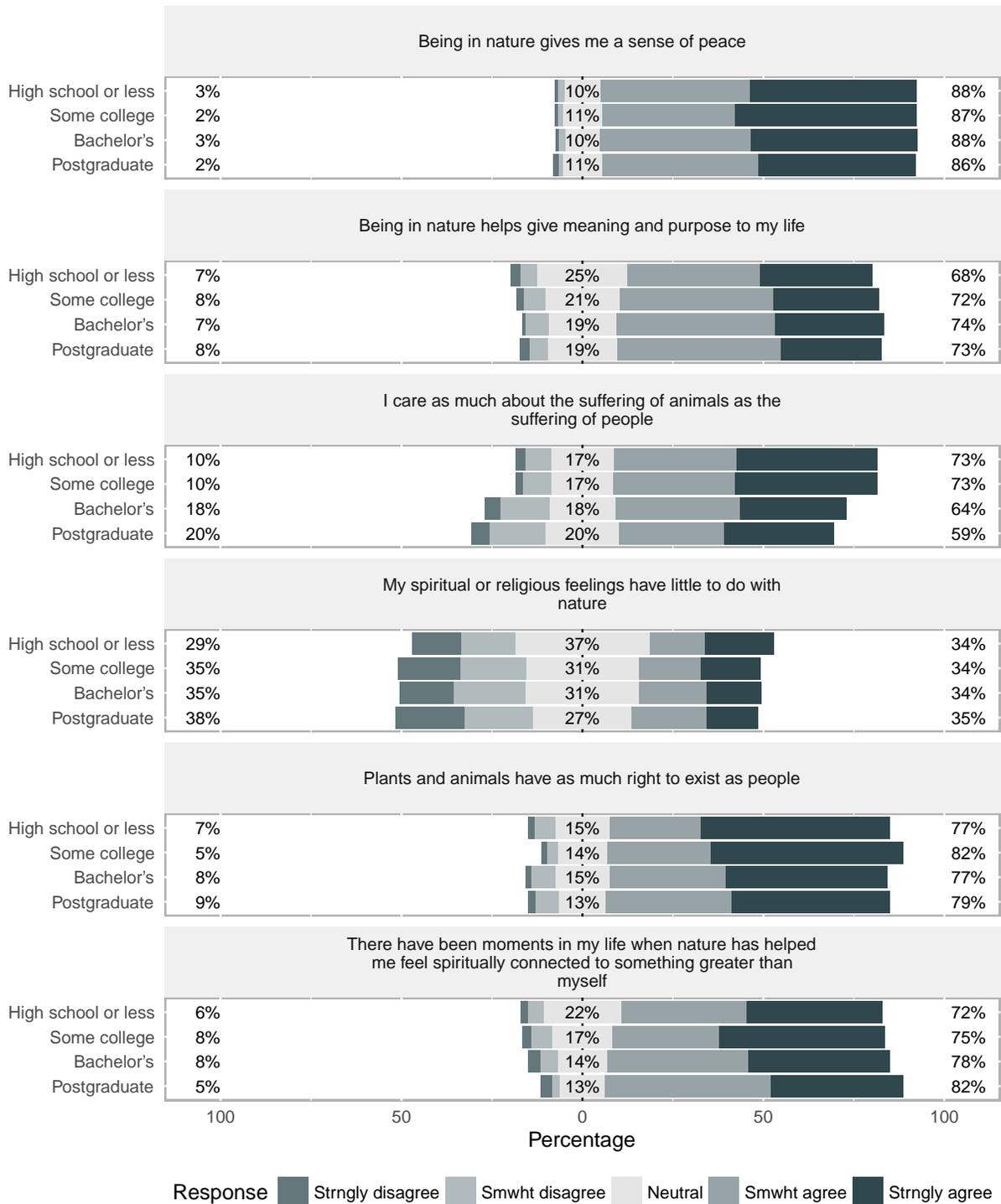


Figure A.21: Values of Spirituality, by Educational Attainment



## A.8 Symbolism

Figure A.22: Values of Symbolism, by Gender

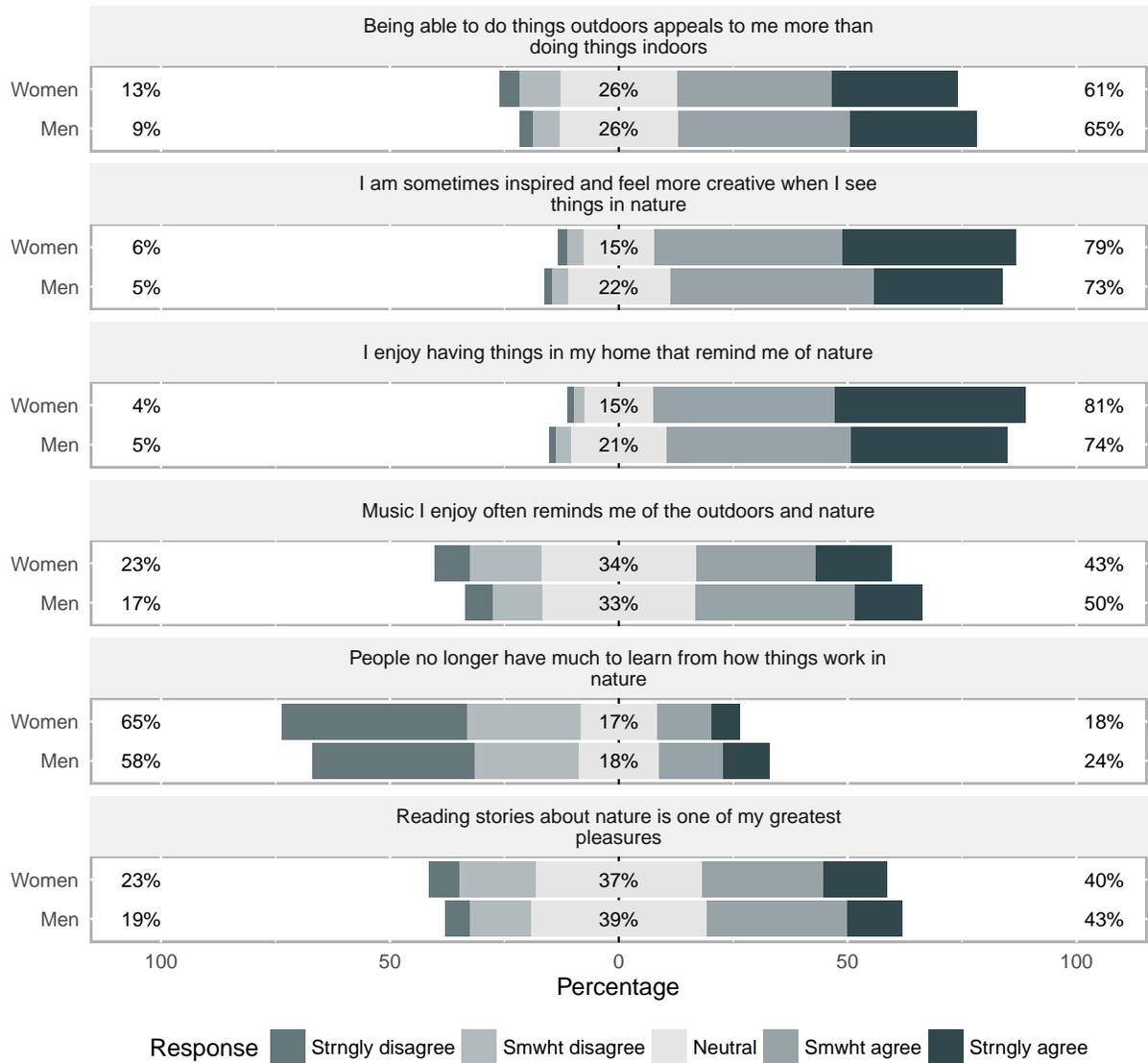


Figure A.23: Values of Symbolism, by Income

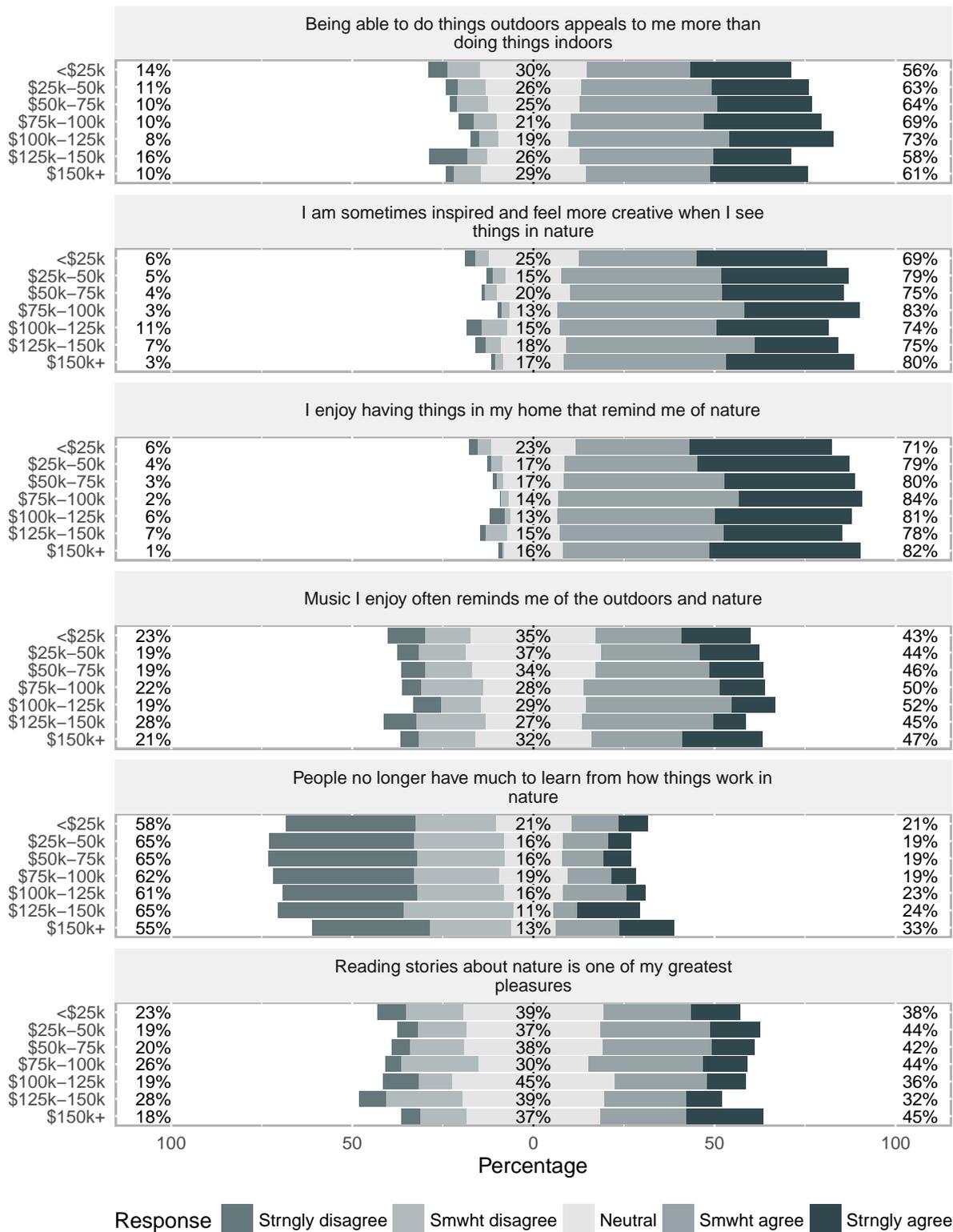
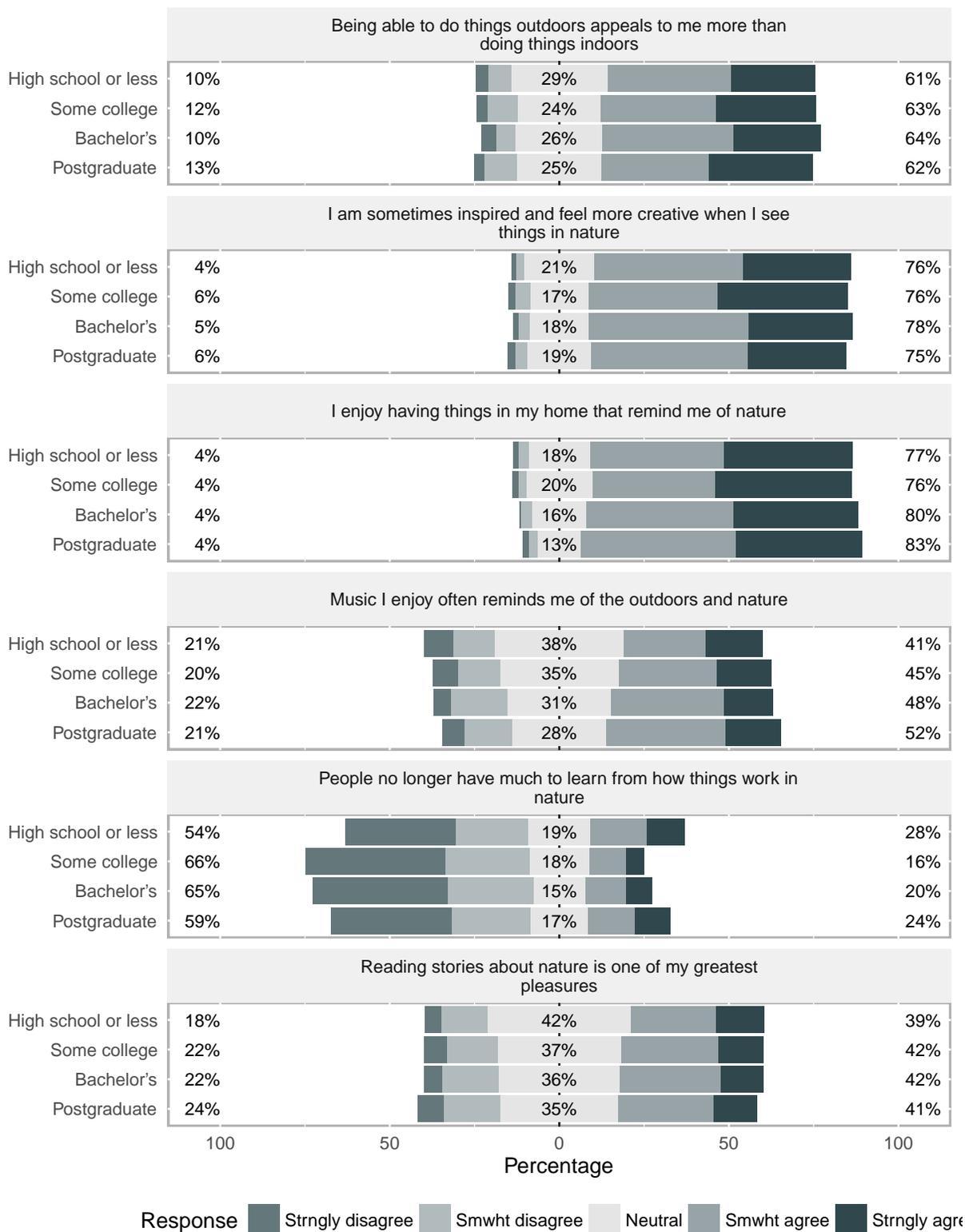


Figure A.24: Values of Symbolism, by Educational Attainment

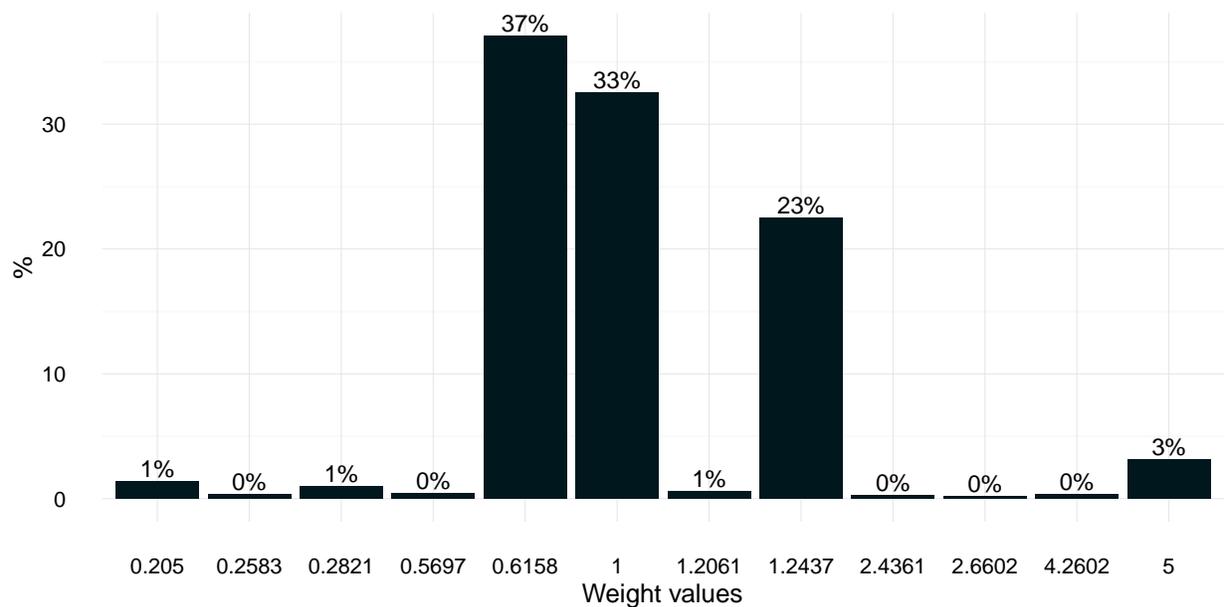


## Appendix B

# Comparisons of Unweighted Sample and Weighted Sample

In this appendix we present comparisons of eight variables from the survey of adults to show the consequences of weighting the dataset. As noted in Section 1.2, we applied a relatively small frequency weight to the adult analyses in this report. This weight helped to make the composition of the participants more demographically representative of the state as a whole. By comparing an array of questions, we show here that using weighted data has little, if any, effect on the results, the major findings, or the recommendations we put forward.

Figure B.1: Histogram of Weight Variable



## B.1 Interests in Nature

Table B.1: Unweighted Sample: Interests in Nature Compared with Other Interests

Categories	White	Hispanic	Black	Asian
Least enjoyable	1%	1%	5%	1%
Less enjoyable	3%	3%	8%	3%
Neutral	20%	23%	23%	12%
More enjoyable	57%	53%	49%	53%
Most enjoyable	19%	20%	15%	31%

Table B.2: Weighted Sample: Interests in Nature Compared with Other Interests

Categories	White	Hispanic	Black	Asian
Least enjoyable	1%	0%	5%	1%
Less enjoyable	3%	3%	7%	3%
Neutral	20%	22%	23%	12%
More enjoyable	56%	54%	51%	53%
Most enjoyable	20%	20%	14%	31%

Question wording: How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your most enjoyable interests ...among your more enjoyable interests ...neither more nor less enjoyable than your other interests ...among your less enjoyable interests ...your least enjoyable interests?

## B.2 Orientation to Indoors and Outdoors

Table B.3: Unweighted Sample: Orientation in Pastimes, Hobbies, and Interests

Categories	White	Hispanic	Black	Asian
Least enjoyable	1%	1%	5%	1%
Less enjoyable	3%	3%	8%	3%
Neutral	20%	23%	23%	12%
More enjoyable	57%	53%	49%	53%
Most enjoyable	19%	20%	15%	31%

Table B.4: Weighted Sample: Orientation in Pastimes, Hobbies, and Interests

Categories	White	Hispanic	Black	Asian
Least enjoyable	1%	0%	5%	1%
Less enjoyable	3%	3%	7%	3%
Neutral	20%	22%	23%	12%
More enjoyable	56%	54%	51%	53%
Most enjoyable	20%	20%	14%	31%

Question wording: In general, would you say your pastimes, hobbies, and recreational interests are ...more indoors-oriented ...more outdoors-oriented ...about the same indoors- and outdoors-oriented?

### B.3 Identity as a City or Country Person

Table B.5: Unweighted Sample: Identity as a “City” or “Country” Person

Categories	White	Hispanic	Black	Asian
City-person	23%	35%	49%	34%
Country-person	39%	27%	20%	23%
Both	38%	38%	31%	43%

Table B.6: Weighted Sample: Identity as a “City” or “Country” Person

Categories	White	Hispanic	Black	Asian
City-person	24%	35%	47%	34%
Country-person	39%	29%	19%	23%
Both	37%	35%	33%	43%

Question wording: In general, do you tend to think of yourself as ...a “city-person” at heart ...a “country-person” at heart ...both a “city- and a country-person” at heart?

### B.4 Time Spent Outdoors

Table B.7: Unweighted Sample: Hours Spent Outside in Nature in a Typical Week

Categories	White	Hispanic	Black	Asian
< 2 hrs	22%	26%	33%	26%
3-5 hrs	35%	40%	36%	31%
6-10 hrs	23%	21%	17%	27%
11-20 hrs	12%	10%	8%	6%
> 21 hrs	7%	2%	5%	7%
Don’t know	2%	1%	1%	3%

Table B.8: Weighted Sample: Hours Spent Outside in Nature in a Typical Week

Categories	White	Hispanic	Black	Asian
< 2 hrs	21%	25%	30%	26%
3-5 hrs	34%	40%	36%	31%
6-10 hrs	22%	20%	16%	27%
11-20 hrs	13%	11%	13%	6%
> 21 hrs	8%	3%	4%	7%
Don't know	2%	1%	1%	3%

Question wording: In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.)

## B.5 Satisfaction with Time Spent Outside

Table B.9: Unweighted Sample: Satisfaction with Amount of Time Able to Experience Nature

Categories	White	Hispanic	Black	Asian
Very dissatisfied	4%	2%	3%	1%
Smwht dissatisfied	27%	24%	14%	22%
Neutral	11%	9%	11%	13%
Smwht satisfied	39%	44%	37%	34%
Very satisfied	20%	22%	34%	30%

Table B.10: Weighted Sample: Satisfaction with Amount of Time Able to Experience Nature

Categories	White	Hispanic	Black	Asian
Very dissatisfied	3%	1%	3%	1%
Smwht dissatisfied	25%	27%	17%	22%
Neutral	11%	8%	12%	13%
Smwht satisfied	39%	41%	38%	34%
Very satisfied	21%	23%	30%	30%

Question wording: On average, how satisfied are you with the amount of time you're able to get outdoors to experience nature?

## B.6 Most Influential Person

Table B.11: Unweighted Sample: Most Influential Person on How Adults Think or Feel about Nature

Person	White	Hispanic	Black	Asian
Parent	42%	38%	27%	33%
Other	15%	15%	19%	21%
Grandparent	13%	12%	15%	7%
Friend	12%	13%	7%	20%
Other relative	4%	6%	5%	3%
Teacher	4%	7%	8%	6%
Brother/sister	3%	3%	5%	4%
Fish/wildlife/outdoor professional	3%	3%	7%	7%
Camp counselor/Youth group leader	2%	2%	4%	0%
Scout leader	2%	1%	3%	0%

Table B.12: Weighted Sample: Most Influential Person on How Adults Think or Feel about Nature

Person	White	Hispanic	Black	Asian
Parent	42%	39%	27%	33%
Other	14%	15%	19%	21%
Friend	13%	15%	5%	20%
Grandparent	13%	10%	15%	7%
Teacher	4%	6%	8%	6%
Other relative	4%	5%	6%	3%
Brother/sister	3%	4%	4%	4%
Fish/wildlife/outdoor professional	3%	2%	8%	7%
Scout leader	2%	1%	3%	0%
Camp counselor/Youth group leader	2%	2%	5%	0%

Note: Columns add to 100. Question wording: Which one of the following persons most influenced how you think or feel about nature?

## B.7 Importance of Nature for Physical Health

Table B.13: Unweighted Sample: Importance of Getting into Nature for Helping Physical Health

Categories	White	Hispanic	Black	Asian
Extremely important	34%	34%	32%	32%
Very important	39%	42%	37%	44%
Moderately important	19%	18%	21%	15%
Slightly important	5%	3%	7%	3%
Not at all important	2%	1%	0%	5%
Don't know	1%	1%	1%	1%

Table B.14: Weighted Sample: Importance of Getting into Nature for Helping Physical Health

Categories	White	Hispanic	Black	Asian
Extremely important	33%	34%	30%	32%
Very important	40%	43%	36%	44%
Moderately important	19%	19%	23%	15%
Slightly important	5%	2%	9%	3%
Not at all important	2%	1%	0%	5%
Don't know	1%	2%	1%	1%

Question wording: In your opinion, how important is getting outdoors and into nature for helping your physical health?

## B.8 Perception of Funding Levels

Table B.15: Unweighted Sample: Funding Levels of Programs for Americans to Enjoy Nature and Wildlife

Categories	White	Hispanic	Black	Asian
Under-funded	55%	58%	49%	41%
Adequately funded	25%	27%	29%	42%
Over-funded	5%	3%	5%	2%
No opinion	15%	13%	17%	15%

Table B.16: Weighted Sample: Funding Levels of Programs for Americans to Enjoy Nature and Wildlife

Categories	White	Hispanic	Black	Asian
Under-funded	54%	57%	51%	41%
Adequately funded	27%	25%	27%	42%
Over-funded	5%	3%	7%	2%
No opinion	14%	14%	15%	15%

Question wording: In your opinion, are programs for Americans to enjoy nature and wildlife underfunded, adequately funded, or over-funded?

## Appendix C

# Focus Group Topic Guide

Hello, I'm \_\_\_\_\_, and I'll be your moderator for tonight's focus group. Our topic is nature—your interests and involvement in nature, if any. We're not trying to “sell you” anything or convince you of anything. Our sponsors are just seeking your opinions, ideas, and interests. We are doing a series of these focus groups across the country to learn about how Americans view nature. People's views vary across a number of different factors, and the sponsors of this study want to be sure to try to understand views of people from a variety of different backgrounds. They think this will enrich the study and their understanding of the American public more broadly—and so we are delighted that you could join us here today.

Our final report will contain your opinions, but they will not be attached to your names in any way. So, whatever your thoughts about or experiences with nature are, your opinions will remain anonymous. And any personal information you provide tonight will never be associated with your name. That's why there are numbers on your name tent. When we create transcripts of this meeting for our researchers, all they will see is the number from your card, not your name.

The process will be for me to ask a series of questions, and then we'll discuss your thoughts and opinions by taking turns around the table. It's that simple. At the very end I will hand out this very short survey and ask you to complete it before you leave. There are no right or wrong answers, so feel free to speak your mind. We very much appreciate you being here, and will be mindful of the clock and your time, so we'll dismiss promptly at \_\_\_\_\_ p.m. Before you leave, be sure to see \_\_\_\_\_ for your participation incentive we promised; it's our way of saying thank you for sharing your valuable time and important thoughts and ideas. Are there any questions before we begin?

Before we begin, I have a statement that I am required to read to you. Paperwork Reduction Act Statement: In accordance with the Paperwork Reduction Act (44 USC 3501), please note the following information. I work for DJ Case and Associates, and we are conducting these focus groups on behalf of the U.S. Fish and Wildlife Service and other partners. The results of these focus groups will help improve the design and delivery of new or existing programs aimed at engaging the public in nature-related activities. Your response is voluntary. We may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a currently valid Office of Management and Budget (OMB) control number. We estimate that it will take you about 2 hours to participate in the focus group. OMB has reviewed and approved these focus groups and assigned OMB Control Number 1090-0011, which expires July 31, 2015. You may send comments

on any aspect of this information collection to the Information Collection Clearance Officer, U.S. Fish and Wildlife Service, 1849 C Street, NW (Mail Stop BPHC), Washington DC 20240. I have a copy of this statement if you would like to see it.

**Discussion Item 1: Ice-breaker.**

To get started, I'd like to go around the room and learn a little more about each of you. If you would, please tell us, very briefly in just a sentence or two:

- Your first name,
- And share with the group a hobby you enjoy.

**Discussion Item 2: What is “nature”?** As I mentioned, we're very interested in your involvement with nature. And before I get any more specific—what comes to your mind when you think of the word “nature”? Again, a reasonably short answer of several sentences on this question—and others to follow this evening—will help ensure that everyone has a chance to speak and we can fit all our questions in this evening. And we'll go round the group in round-robin fashion, starting with a different person each time. Remember, there is no right or wrong answer. So, what comes to mind when you hear the word “nature”?

**Discussion Item 3a: Interest in nature.** Now, here's another question for you to consider: how much interest do you think Americans of today have in nature? And please explain why you think that.

**Discussion Item 3b: Interest in nature.** How do you think this current interest in nature compares to 50 years ago? And please explain why.

**Discussion Item 4: Affection for nature.** Some people say they feel a certain affection for nature—or in other words, they have an emotional attachment to nature, for example, something as simple as certain smells and sounds bringing to mind happy memories. Thinking about this idea, could you briefly describe how nature holds any degree of affection for you personally?

**Discussion Item 5: Exploitation of nature.** Now some people say that nature is especially important as a source of natural resources or products that we might use in our work or hobbies. Thinking about this idea, could you describe for us your thoughts and experience with nature as a source of material or products that you might use in your work or hobbies?

**Discussion Item 6: Attraction to nature.** Now, some people say they feel attraction to nature, say, for nature's sights, sounds, beauty, shapes, and colors. Thinking about this idea, could you briefly describe the attractions that nature holds for you personally?

**Discussion Item 7: Aversion toward nature.** Now, some people say that nature is uninteresting and can provoke fear and cause them to avoid it, such as fear of certain animals, or the fear of being alone in the outdoors, or recalling memories of such things. Thinking about this idea, could you briefly describe things in nature that might hold particular fear for you, or things you try to avoid in nature?

**Discussion Item 8: Control over nature.** Now, some people think that nature needs to be controlled to meet human needs. Thinking about this idea, could you briefly describe some of your own experiences in trying to control and master nature?

**Discussion Item 9: Intellect from nature.** Now, some people say that that there's much we can learn from nature through our knowledge and understanding of how nature works. Thinking

of this idea, could you briefly describe what for you are the benefits of learning about nature, and your own experiences learning about nature?

**Discussion Item 10: Symbolism of nature.** Now, some people see nature all around us—say in the shapes of buildings, in art, in things we read—even in the things we use to decorate and design our homes. Thinking of this idea, could you briefly describe ways the images and forms of nature in art, architecture, decoration, reading, or music are important to you?

**Discussion Item 11: Spirituality from nature.** Now, some people say that nature provides a type of spiritual comfort to them; in some cases, a sense of meaning and purpose in life, or a sense of peacefulness. Thinking of this idea, could you briefly describe how important to you is the spiritual comfort you obtain from nature.

**Discussion Item 12: Comparison with others.** We’ve been talking a lot about your thoughts and feelings about nature. Now I’d like you to think once more about the “average American citizen.” Would you say that you care more about nature than the average American, or less, or maybe about the same?

Okay, we’re down to our last formal question. Thanks for hanging in there.

**Discussion Item 13: Barriers/obstacles to spending time in nature.** Are there any barriers or obstacles that might keep you from spending more time in nature? For example, some people say they don’t have a way to travel to natural areas or the outdoors; or some say they don’t feel especially welcome in parks or outdoor areas, or “I don’t have enough time.” Could you briefly describe the barriers or obstacles that keep you from spending more time doing nature-related activities?

**Conclusion.** That ends our discussions for this evening. Before you go, please take a moment to answer a few additional questions on this sheet; notice that we only want you to include the number that was on your nametag. We will keep all of your information confidential, but for research purposes would like to connect your responses here with the information in the handout. And finally, remember to see \_\_\_\_\_ at the door as you leave for your incentive—our way of saying thank you for the time you’ve taken to be with us this evening and share your thoughts and ideas. It’s been a pleasure to meet you tonight, and I trust you found this evening’s discussion interesting and perhaps fun as well. Thank you.

# Appendix D

## Questionnaire for Adults

Paperwork Reduction Act Statement: The U.S. Fish and Wildlife Service is sponsoring this survey under the authority of the Fish and Wildlife Act of 1956. The survey will provide information necessary to understand the connection between Americans and nature in an increasingly diverse, technologically oriented, and rapidly changing society. Results will help improve the design and delivery of new or existing programs aimed at engaging the public in nature-related activities. Your response is voluntary. An agency may not conduct or sponsor and you are not required to respond to an information collection unless it displays a currently valid Office of Management and Budget control number. We estimate that it will take you 20 minutes to complete the survey. These times include the time necessary to gather information, read instructions, and complete the survey. You may send comments on any aspect of this information collection to the Information Collection Clearance Officer, U.S. Fish and Wildlife Service, 5275 Leesburg Pike, (Mail Stop BPHC), Falls Church, VA 22041.

Thank you for agreeing to participate in this important study of Americans' interests in nature and the outdoors.

1. In general, would you say your pastimes, hobbies, and recreational interests are...?
  - (a) More indoors-oriented
  - (b) More outdoors-oriented
  - (c) About the same indoors- and outdoors-oriented
2. In general, do you tend to think of yourself as...?
  - (a) A "city-person" at heart
  - (b) A "country-person" at heart
  - (c) Both a "city- and country-person" at heart
3. For each of the following, please indicate if it's something that you would consider to be "nature." (Check all that apply.)
  - (a) Wild animals
  - (b) Indoor plants

- (c) Outdoor gardens
- (d) Zoos
- (e) Pets and domestic animals
- (f) National Park
- (g) State Park
- (h) My time walking to the car, bus, or train
- (i) Ski resort
- (j) Oceans
- (k) Paintings of landscapes
- (l) Photographs of animals
- (m) Insects
- (n) Neighborhood or local park
- (o) Home aquarium or home terrarium
- (p) Maintained lawns
- (q) My time sightseeing while commuting/driving
- (r) Ponds and lakes
- (s) Family vacation destination like a major theme park
- (t) Yard plants
- (u) Moon, sun, and stars
- (v) Beach

*From this point on, please consider “nature” to include wild animals, plants, landscapes, and other features and products of the natural environment.*

4. How would you describe your interests in nature compared to your other interests? Would you say things of nature are...?
  - (a) Your MOST enjoyable interests
  - (b) Among your MORE ENJOYABLE interests
  - (c) Neither more nor less enjoyable than your other interests
  - (d) Among your LESS ENJOYABLE interests
  - (e) Your LEAST enjoyable interests
5. On average, how satisfied are you with the amount of time you’re able to get outdoors to experience nature?
  - (a) Very satisfied
  - (b) Somewhat satisfied

- 
- (c) Neither satisfied nor dissatisfied
  - (d) Somewhat dissatisfied
  - (e) Very dissatisfied
6. In a typical week, when weather allows, about how many hours do you spend outside in nature? (Do not include organized sports.)
- (a) Less than 2 hours
  - (b) 3–5 hours
  - (c) 6–10 hours
  - (d) 11–20 hours
  - (e) 21–30 hours
  - (f) More than 30 hours
  - (g) Don't know
7. How often would you say you read something about nature?
- (a) Daily
  - (b) Weekly
  - (c) Monthly
  - (d) Less than monthly
  - (e) Never
8. Would you say your interests in nature are more than, less than, or the same as your parents (or those who raised you)?
- (a) More
  - (b) Less
  - (c) The same
  - (d) Don't know
9. How much do you agree or disagree with the following statements? (Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree)
- (a) I have more time now for nature interests than in the past.
  - (b) I have more financial resources now to pursue my nature interests than in the past.
  - (c) I'm making time to share my interest in nature and the outdoors with children.
  - (d) I find myself more content when I make time for nature.
  - (e) People I care about are making more time for nature.
  - (f) There are plenty of places to enjoy nature.

- 
10. How important is each of the following in hindering your interests in nature today? (Extremely important, Very important, Moderately important, Slightly important, Not at all important)
- (a) Not enough time
  - (b) Health reasons
  - (c) Other things are more important in my life
  - (d) Few friends to be with outdoors
  - (e) Aging
  - (f) Greater interest in computers, smart phones, and electronic media
  - (g) The outdoors is unsafe
  - (h) Not enough places nearby to enjoy the outdoors
  - (i) Financial reasons
11. As time goes on, do you find your interests in nature growing, declining, or remaining unchanged?
- (a) Growing
  - (b) Declining
  - (c) Remaining unchanged
12. For each of the following brief statements about nature, please indicate if you think each statement is true, false, or you don't know. (Please answer based on your current knowledge.) (True, False, Don't know)
- (a) Spiders have 10 legs.
  - (b) Raptors are small rodents.
  - (c) All adult birds have feathers.
  - (d) The manatee is an insect.
  - (e) An octopus is a kind of fish.
  - (f) Snakes have a thin covering of slime in order to move more easily.
  - (g) Most insects have backbones.
  - (h) Only land plants produce oxygen.
  - (i) Most of the earth is covered by water.
  - (j) Oceans play little role in climate and weather.
  - (k) Nothing lives in soil.
13. How familiar would you say you are about news, events, and issues that affect nature and the outdoors at...? (Extremely familiar, Very familiar, Moderately familiar, Slightly familiar, Not at all familiar)
- (a) Your local level

- 
- (b) Your state level
  - (c) The US national level
  - (d) The international level
14. How would you rate your interest in each of the following activities? (A lot, Some, None at all)
- (a) Camping
  - (b) Swimming
  - (c) Hiking
  - (d) Jogging or running
  - (e) Bicycling
  - (f) Boating
  - (g) Fishing
  - (h) Hunting
  - (i) Exploring the outdoors
  - (j) Feeding or watching birds or other wildlife
  - (k) Watching nature-TV programs
15. How would you rate your interest in each of the following activities? (A lot, Some, None at all)
- (a) Reading or looking at pictures about nature
  - (b) Surfing the web for nature information or pictures
  - (c) Gardening outdoors
  - (d) Growing indoor plants
  - (e) Yard work
  - (f) Visiting a zoo, aquarium, nature center, natural history museum, or botanical garden
  - (g) Creating nature art or photos
  - (h) Belonging to nature organizations
  - (i) Organized sports like basketball, soccer, or baseball
  - (j) Taking a walk outdoors
  - (k) Collecting or gathering nature objects like rocks, leaves, or mushrooms
16. What is your favorite outdoor- or nature-oriented activity? \_\_\_\_\_
17. What is your second-favorite outdoor- or nature-oriented activity? \_\_\_\_\_
18. To what extent do you agree or disagree with the following statements? (Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree)

- 
- (a) Certain smells and sounds of nature bring to mind some of my happiest memories.
- (b) My love of nature is one of my strongest feelings.
- (c) There are many more important issues in my life than my concerns for nature.
- (d) I think love is a feeling that people should feel for people, not for other animals and nature.
- (e) I don't think people should love their pets as much as they love other people.
19. To what extent do you agree or disagree with the following statements? (Strongly agree, Somewhat agree, Neither agree or disagree, Somewhat disagree, Strongly disagree)
- (a) I think most insects are ugly.
- (b) I enjoy nature more than anything else.
- (c) I'm most attracted to animals that are beautiful.
- (d) Seeing something especially attractive in nature arouses my curiosity.
- (e) My decision to visit a park or outdoor area depends on seeing something beautiful there.
20. To what extent do you agree or disagree with the following statements? (Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree)
- (a) Being alone in the outdoors is uncomfortable to me.
- (b) There are animals I really dislike.
- (c) I don't like being in nature by myself.
- (d) I prefer to stay on paved paths when I'm in the outdoors.
- (e) I think the world would be a better place without dangerous animals.
- (f) Times have become so dangerous that parents can't allow their children to be outdoors on their own.
21. To what extent do you agree or disagree with the following statements? (Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree)
- (a) People are certain to master nature through technology.
- (b) I've enjoyed learning skills that help me face nature's challenges.
- (c) Hurricanes, tornadoes, and floods remind me that nature can never be completely mastered.
- (d) People need to control nature to meet human needs even if it sometimes harms nature and wildlife.
- (e) To me, an animal trained to help humans is better than one owned just for companionship.
22. To what extent do you agree or disagree with the following statements? (Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree)
- (a) We must develop our energy resources regardless of the effects on nature.

- 
- (b) We need to build on land for people even if it results in fewer places for wildlife to live.
- (c) I most value animals like cows and sheep that serve some practical purpose.
- (d) Natural resources must be developed even if it results in the loss of some wilderness.
- (e) Our oceans will always provide plenty of fish to meet our needs.
- (f) Nature will always provide enough water to meet our needs.
23. To what extent do you agree or disagree with the following statements? (Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree)
- (a) An understanding of how nature works is as important to a child's education as reading, writing, and math.
- (b) The intelligence of future generations will suffer if our society becomes more isolated from nature.
- (c) Learning more about nature and how it works is one of my greatest interests.
- (d) I find most insects boring.
24. To what extent do you agree or disagree with the following statements? (Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree)
- (a) Being in nature helps give meaning and purpose to my life.
- (b) Being in nature gives me a sense of peace.
- (c) There have been moments in my life when nature has helped me feel spiritually connected to something greater than myself.
- (d) I care as much about the suffering of animals as the suffering of people.
- (e) Plants and animals have as much right to exist as people.
- (f) My spiritual or religious feelings have little to do with nature.
25. To what extent do you agree or disagree with the following statements? (Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree)
- (a) I enjoy having things in my home that remind me of nature.
- (b) People no longer have much to learn from how things work in nature.
- (c) I am sometimes inspired and feel more creative when I see things in nature.
- (d) Reading stories about nature is one of my greatest pleasures.
- (e) Being able to do things outdoors appeals to me more than doing things indoors.
- (f) Music I enjoy often reminds me of the outdoors and nature.
26. Which one of the following persons most influenced how you think or feel about nature?
- (a) Parent
- (b) Brother/sister
- (c) Grandparent

- (d) Other relative
  - (e) Friend
  - (f) Teacher
  - (g) Camp counselor/Youth group leader
  - (h) Scout leader
  - (i) Fish/wildlife/outdoor professional
  - (j) Other
27. What do you think is the single most important thing that nature gives us? \_\_\_\_\_
28. What experience would you say most influenced how you think or feel about nature? \_\_\_\_\_
29. In general, would you say your physical health is...?
- (a) Very good
  - (b) Good
  - (c) Fair
  - (d) Poor
  - (e) Very poor
30. In general, would you say your emotional outlook on life is...?
- (a) Very good
  - (b) Good
  - (c) Fair
  - (d) Poor
  - (e) Very poor
31. To what extent does your health limit your ability to be involved in each of the following?  
(Never, Rarely, Sometimes, Often, Always)
- (a) Moderately demanding activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf
  - (b) Significantly demanding activities such as working outside, climbing a hill, climbing several flights of stairs, or going on a trip
  - (c) Getting outdoors as much as you'd like
  - (d) Accomplishing as much as you would like on a daily basis
32. In your opinion, how important is getting outdoors and into nature for helping your physical health?
- (a) Extremely important
  - (b) Very important

- 
- (c) Moderately important
  - (d) Slightly important
  - (e) Not at all important
  - (f) Don't know
33. In your opinion, how important is getting outdoors and into nature for helping your emotional outlook on life?
- (a) Extremely important
  - (b) Very important
  - (c) Moderately important
  - (d) Slightly important
  - (e) Not at all important
  - (f) Don't know
34. Overall, how would you rate your quality of life?
- (a) Very good
  - (b) Good
  - (c) Fair
  - (d) Poor
  - (e) Very poor
35. How satisfied are you with the each of the following where you live? (Very satisfied, Somewhat satisfied, Neither satisfied nor dissatisfied, Somewhat dissatisfied, Very dissatisfied)
- (a) Health services
  - (b) Schools and educational system
  - (c) Access to public transportation
  - (d) Roads
  - (e) Entertainment and arts
  - (f) Places for outdoor and nature recreation
  - (g) Air quality
  - (h) Water quality
  - (i) Parks and open space
  - (j) Safety from crime
36. In your opinion, do we need to increase the number of programs available for Americans to enjoy nature, the outdoors, and wildlife?
- (a) Strongly agree

- 
- (b) Somewhat agree
  - (c) Neither agree nor disagree
  - (d) Somewhat disagree
  - (e) Strongly disagree
37. In your opinion, are programs for Americans to enjoy nature and wildlife underfunded, adequately funded, or over-funded?
- (a) Under-funded
  - (b) Adequately funded
  - (c) Over-funded
  - (d) No opinion
38. Which funding sources do you think should help pay the cost of activities related to nature and wildlife? (Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree)
- (a) Hunting and fishing license fees
  - (b) Small extra charge on bird-feeding/-watching supplies
  - (c) A charge on oil and gas development
  - (d) Dedicated portion of general tax revenues from state and federal sources
  - (e) Fines collected for environmental polluting
  - (f) Small extra charge in state sales tax on most merchandise
  - (g) Partnering with private sector organizations to fund programs
  - (h) National Income Tax Check-off
  - (i) Fee on international travel to and from the US
39. Other source of funding? (Please specify.)
40. What is your gender?
- (a) Male
  - (b) Female
41. Which best describes the area where you grew up?
- (a) Urban
  - (b) Suburban
  - (c) Rural
42. Which best describes where you live now?
- (a) Urban
  - (b) Suburban

- 
- (c) Rural
43. Are you of Hispanic or Latino origin?
- (a) No
  - (b) Yes
44. What is your race? (Check all that apply.)
- (a) White
  - (b) Black or African American
  - (c) American Indian or Alaska Native
  - (d) Asian
  - (e) Native Hawaiian or Other Pacific Islander
45. What is your age?
- (a) 18 to 24
  - (b) 25 to 34
  - (c) 35 to 44
  - (d) 45 to 54
  - (e) 55 to 64
  - (f) 65 to 74
  - (g) 75 to 84
  - (h) 85 or older
46. What is the last grade in school you completed, or degree you received?
- (a) 8th grade or less
  - (b) High school incomplete (grades 9, 10, 11)
  - (c) High school complete (grade 12 or equivalent)
  - (d) Some college, no degree
  - (e) Associate degree
  - (f) College graduate/Bachelor's degree
  - (g) Post-graduate degree such as Master's, PhD, MD, JD
47. Which of the following income categories best describes your total ANNUAL household income averaged over the past 5 years?
- (a) Less than \$15,000
  - (b) \$15,000 to \$24,999
  - (c) \$25,000 to \$49,999

- (d) \$50,000 to \$74,999
- (e) \$75,000 to \$99,999
- (f) \$100,000 to \$124,999
- (g) \$125,000 to \$149,999
- (h) \$150,000 to \$199,999
- (i) \$200,000 to \$249,999
- (j) \$250,000 or more

Please enter your 5-digit zip code: \_\_\_\_\_

**Thank you for your time and participation.**

## Appendix E

# Questionnaire for Children

Thanks so much for talking to us today. We're going to ask you some questions about things you enjoy doing, especially things in the outdoors and nature. There are no right or wrong answers, and we just want you to have fun as you think about the questions and your answers? If you don't understand a question, be sure to ask us. Do you have any questions before we get started? Ok, let's get started....

1. When you think about the things that you like to do for fun when you play indoors and outdoors...
  - (a) Do you have more fun playing outdoors,
  - (b) Do you have more fun playing indoors,
  - (c) Or do you have as much fun playing indoors as playing outdoors?
2. How much do you like each of the following activities? (A lot, Some, Not at all)
  - (a) Camping
  - (b) Swimming
  - (c) Hiking
  - (d) Jogging or running
  - (e) Bicycling
  - (f) Boating
  - (g) Fishing
  - (h) Hunting
  - (i) Exploring the outdoors
  - (j) Feeding or watching birds or other wildlife
  - (k) Watching TV programs about nature
  - (l) Looking on the computer, tablet, or phone for nature information or pictures
  - (m) Gardening outdoors

- 
- (n) Growing indoor plants
  - (o) Helping with yard work
  - (p) Visiting a zoo, aquarium, nature center, or place where you can learn about nature, wild animals, and the outdoors
  - (q) Drawing or creating art about animals, clouds, plants, and other nature things
  - (r) Sports you take part in like soccer or baseball
  - (s) Taking a walk outdoors
  - (t) Collecting or gathering nature things like rocks and leaves
3. What is your very favorite thing to do when you think about playing in the outdoors and nature? \_\_\_\_\_
4. After \_\_\_\_\_, what is your next most favorite thing to do when you think about playing in the outdoors and nature? \_\_\_\_\_
5. Do you agree or disagree with each of these ideas? (Agree, Disagree, Don't know)
- (a) I'm not really interested in the outdoors.
  - (b) I don't have enough time to play outdoors.
  - (c) Few of my friends are interested in the outdoors.
  - (d) There are few people to teach me about nature and the outdoors.
  - (e) Things like bees, spiders, and poison ivy really scare me.
  - (f) My parents are afraid of my meeting strange people outdoors.
  - (g) I'm more interested in TV and computer games than being outdoors in nature.
  - (h) I have few adults that will play outdoors with me.
  - (i) I don't like to go outdoors because I am afraid of things that might hurt me.
6. Who teaches you about nature and the outdoors? \_\_\_\_\_
7. Do your parents ever make you go outside?
- (a) Yes (GO TO Q9)
  - (b) No (SKIP TO Q10)
8. If "yes," how often do your parents make you go outside?
- (a) Every day
  - (b) A few times a week
  - (c) Every once in a while
9. Do you think each of the following ideas about nature and wildlife is true, false, or you don't know? (True, False, Don't know)
- (a) Spiders have 10 legs.

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- (b) Raptors are small rodents.
  - (c) All adult birds have feathers.
  - (d) The manatee is an insect.
  - (e) An octopus is a kind of fish.
  - (f) Snakes have a thin covering of slime in order to move more easily.
  - (g) Most insects have backbones.
  - (h) Plants make oxygen we breathe.
  - (i) Most of the earth is covered by water.
  - (j) Oceans have nothing to do with making our weather.
  - (k) Nothing lives in soil or dirt.
10. Please tell me if you agree or disagree with each of the following ideas. (Agree, Disagree, Don't know)
- (a) I think most insects are boring.
  - (b) People all over the world have plenty of water to drink.
  - (c) Learning about nature is something I really enjoy doing.
  - (d) A person can love a pet as much as they love a family member.
  - (e) It'd be fun to learn about snakes.
  - (f) Most wild animals are ugly.
  - (g) I really like being in the outdoors around nature.
  - (h) I like playing sports more than exploring outdoors and nature.
  - (i) I don't enjoy outdoor activities like climbing trees and camping.
  - (j) I think an animal trained to do a job, like a guard dog, is better than an animal just kept as a pet.
  - (k) I like to read books, or have someone read to me, about nature and the outdoors.
  - (l) I think it would be better if there were no rats and mosquitos.
  - (m) To me, learning reading and math is way more important than learning about nature.
  - (n) I like having pictures of animals and nature things on my shirts.
  - (o) I'd rather play on neat-looking grass than explore woods and trees.
  - (p) People need to be the boss of wild animals and plants.
11. How much do you think playing in the outdoors and nature has helped you with each of these parts of growing up? (A lot, A little, Not at all, Don't know)
- (a) Growing healthy
  - (b) Growing stronger

- (c) Helping me learn at school
  - (d) Helping me make my arms, legs, and body do what I want them to do
  - (e) Helping me be better at sports
  - (f) Helping me be happy most of the time
  - (g) Helping me become happy when I'm sad
  - (h) Helping me fix things that I didn't think I could fix
  - (i) Helping me think of new ideas I'd like to try out
  - (j) Helping me calm down
  - (k) Helping me enjoy my family and friends
  - (l) Helping me know I'm important and liked
  - (m) Helping me think that maybe someone or something really big or powerful made the world
12. Have you ever had a time in the outdoors that you will never forget?
- (a) Yes (GO TO Q13)
  - (b) No (SKIP TO Q14)
  - (c) Don't know (SKIP TO Q14)
13. If "yes," please tell me about that special memory and how it made you feel? \_\_\_\_\_
14. Are there special animals or plants you like to take care of?
- (a) Yes (GO TO Q15)
  - (b) No (SKIP TO Q16)
  - (c) Don't know (SKIP TO Q16)
15. If "yes," please tell me which plants or animals, and why you like to take care of them.  
\_\_\_\_\_
16. Is there any place outdoors that is special to you?
- (a) Yes (GO TO Q17)
  - (b) No (SKIP TO END)
  - (c) Don't know (SKIP TO END)
17. If "yes," please tell me about this place and why it's special to you. \_\_\_\_\_

**Thank you very much.**

## Appendix F

# Questionnaire for Parents

Thank you for agreeing to participate in our study of children and nature. About 750 parents or caregivers across the United States are being asked to complete this survey about the outdoors, nature, and the role of nature in family life. The survey takes about 30 minutes. Your participation is important but completely voluntary. If you feel uncomfortable answering any question, skip it and move on. Your survey responses are strictly confidential and results from this research will be reported only in totals. If you have questions about the survey, please contact [Name of Survey Researcher] at [Phone Number] or by email at the email address specified below [to be provided]. Please start with the survey now by clicking on the Continue button below.

Throughout this survey, we use the words “your child,” referring to the young person who was interviewed. What is your relationship to this young person? \_\_\_\_\_

1. In general, would you say your pastimes, hobbies, and recreational interests are...?
  - (a) More indoors-oriented
  - (b) More outdoors-oriented
  - (c) About the same indoors- and outdoors-oriented
2. How would you describe your interests in nature and the outdoors compared to your other interests? Would you say things of nature are...
  - (a) Your MOST enjoyable interests
  - (b) Among your MORE ENJOYABLE interests
  - (c) Neither more nor less enjoyable than your other interests
  - (d) Among your LESS ENJOYABLE interests
  - (e) Your LEAST enjoyable interests
3. What is the gender of your child participating in this study?
  - (a) Male
  - (b) Female
4. Your child participating in this study...?

- 
- (a) Age (at most recent birthday)
  - (b) Grade (current or just completed)
5. What is the race of your child participating in this study? (mark one or more)
- (a) American Indian or Alaska Native
  - (b) Asian Indian
  - (c) Chinese
  - (d) Filipino
  - (e) Japanese
  - (f) Korean
  - (g) Vietnamese
  - (h) Other Asian
  - (i) Black or African American
  - (j) Native Hawaiian
  - (k) Guamanian or Chamorro
  - (l) Samoan
  - (m) Other Pacific Islander
  - (n) White
6. Is your child of Spanish or Hispanic origin? (mark one or more)
- (a) No, not of Hispanic, Latino/a, or Spanish Origin
  - (b) Yes, Mexican, Mexican American, Chicano/a
  - (c) Yes, Puerto Rican
  - (d) Yes, Cuban
  - (e) Yes, Another Hispanic, Latino/a or Spanish Origin
  - (f) Prefer not to respond
7. What type of community do you currently live in? (Please select the one most like your current community.)
- (a) Urban
  - (b) Suburban
  - (c) Rural
8. What type of home do you live in?
- (a) Apartment or condominium
  - (b) Single family residence

- 
- (c) Multi-family home
  - (d) Farm or ranch
  - (e) Other (please specify) \_\_\_\_\_
9. Does your home have a yard?
- (a) Yes (GO TO Q10)
  - (b) No (SKIP TO Q11)
10. Which of the following does your yard include? (Please select all that apply.)
- (a) Asphalt
  - (b) Dirt
  - (c) Some grass
  - (d) Extensive grass
  - (e) Shrubs
  - (f) Trees
  - (g) Flower gardens
  - (h) Vegetable gardens
  - (i) Natural areas including woods and meadows
  - (j) Human-made structures such as decks and patios
  - (k) Creeks, ponds, lakes, rivers, beach, oceanfront
  - (l) Swimming pool
  - (m) Other features (please specify) \_\_\_\_\_
11. How far is your home from a large open space such as a yard, park, or school that you can use?
- (a) In my yard
  - (b) Within a few blocks
  - (c) Less than one mile
  - (d) Greater than one mile
  - (e) I am not familiar with any park or open space near my home
12. How many parks and significant open spaces are within 2 miles of your home?
- (a) None
  - (b) 1
  - (c) 2-3
  - (d) 4+

- 
- (e) Don't know
13. How much time does your child play in a nearby park or open space in an average week when weather allows (NOT including organized sports)?
- (a) My child doesn't play in parks and open areas
  - (b) Less than 1 hour
  - (c) 1-2 hours
  - (d) 3-5 hours
  - (e) More than 5 hours
14. How does your child generally get to a nearby park or open space? (Select all that apply.)
- (a) Bike
  - (b) Walk
  - (c) Driven by car
  - (d) Other (please specify) \_\_\_\_\_
15. What does your child generally do at a park or open space area? (Select all that apply.)
- (a) Plays sports and games
  - (b) Goes to the playground
  - (c) Explores natural areas like creeks and woods
  - (d) Don't know
  - (e) Other (please specify) \_\_\_\_\_
16. Did your child participate in any of the following outdoor programs during the past 2 years? (Select all that apply.)
- (a) Outdoor programs like Scouts or 4-H
  - (b) Hiking and camping trips
  - (c) Nature camps
  - (d) Outdoor adventure programs
  - (e) Other (please specify) \_\_\_\_\_
17. Has your child attended an outdoor camp during the past 2 years? (If so, for how long?)
- (a) NO, not attended an outdoor camp
  - (b) YES, Less than one week
  - (c) YES, One week
  - (d) YES, Two weeks
  - (e) YES, One month
  - (f) YES, More than one month

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18. In general, would you say your child's pastimes, hobbies, and recreational interests are...?
- (a) More indoors-oriented
  - (b) More outdoors-oriented
  - (c) About the same indoors- and outdoors-oriented
19. How would you rate your child's interest in each of the following activities? (A lot, Some, None at all, Don't know)
- (a) Camping
  - (b) Swimming
  - (c) Hiking
  - (d) Jogging or running
  - (e) Bicycling
  - (f) Boating
  - (g) Fishing
  - (h) Hunting
  - (i) Exploring the outdoors
  - (j) Feeding or watching birds or other wildlife
  - (k) Watching nature-TV programs
  - (l) Reading or looking at pictures about nature
  - (m) Surfing the web for nature information or pictures
  - (n) Gardening outdoors
  - (o) Growing indoor plants
  - (p) Helping with yard work
  - (q) Visiting a zoo, aquarium, nature center, natural history museum, or botanical garden
  - (r) Creating nature art or photos
  - (s) Belonging to nature organizations
  - (t) Organized sports such as basketball, soccer, baseball
  - (u) Taking a walk outdoors
  - (v) Collecting or gathering nature objects like rocks, leaves, or mushrooms
20. What is your child's favorite outdoor- or nature-oriented activity? \_\_\_\_\_
21. What is your child's second-favorite outdoor- or nature-oriented activity? \_\_\_\_\_
22. On average in a typical week, about how many hours does your child participate in outdoor activities when weather allows (NOT including organized sports)?
- (a) Less than 2 hours

- 
- (b) 3-5 hours
  - (c) 6-10 hours
  - (d) 11-20 hours
  - (e) 21-30 hours
  - (f) More than 30 hours
  - (g) Don't know
23. What type of school does your child attend?
- (a) Does not attend school
  - (b) Charter
  - (c) Home-schooled
  - (d) Magnet
  - (e) Private
  - (f) Public
24. Does the school have a special focus?
- (a) Yes
  - (b) No
  - (c) If yes, please fill in (for example, Montessori, Waldorf, traditional, academy, math/science, art/music, outdoor-nature school) \_\_\_\_\_
25. How does your child generally get to school?
- (a) Bike
  - (b) Walk
  - (c) Driven by car
  - (d) Bus
  - (e) Home-schooled
  - (f) Other
26. How often does your child's school offer programs about nature and the outdoors? (Daily, Weekly, Monthly, Less than monthly, Never, Don't know)
- (a) Nature classroom/study
  - (b) Environmental education
  - (c) Outdoor skills such as map reading or camping
  - (d) Archery
  - (e) Identification of plants and animals
  - (f) Nature- or outdoor-oriented field trips

- (g) Outdoor recess
27. Any other nature or outdoor education programs at your child's school? (If so, please briefly describe.) \_\_\_\_\_
28. During an average month, season and weather permitting, how often does your child participate with you or other family members in each of the following outdoor activities? (Daily, 2–6 times a week, Once a week, Once a month, Never)
- (a) Gardening outdoors
  - (b) Helping with yard work
  - (c) Sports such as basketball, baseball, soccer, tennis
  - (d) Outdoors-only sports such as boating, canoeing, skiing
  - (e) Walking or biking in the neighborhood
  - (f) Fishing or hunting
  - (g) "Sleeping-out" in the backyard or neighborhood
  - (h) Family "cook-outs" around home or the neighborhood
  - (i) Camping-out in places away from home
  - (j) Exploring or hiking in the outdoors
  - (k) Going hiking in places away from home
  - (l) Bird-watching and other wildlife viewing around home
  - (m) Wildlife feeding around home
29. Any other significant outdoor activities your child participates in with you or other family members (season and weather permitting)? \_\_\_\_\_
30. How often has your child taken each of the following trips with family or friends during the past 2 years? (Not at all, Once, 2–3 times, 4–5 times, More than 5 times)
- (a) Camping or backpacking
  - (b) Renting a house or cabin on a lake or in a remote area
  - (c) Visiting a guest ranch or farm
  - (d) Taking a vacation cruise
  - (e) Fishing
  - (f) Hunting
  - (g) Trip to major theme park
  - (h) Trip to State or National Park
31. How great a concern to you are the following safety issues for your child? (Extremely concerned, Very concerned, Moderately concerned, Slightly concerned, Not at all concerned)
- (a) Traffic

- 
- (b) Speeding vehicles
  - (c) Ticks and Lyme disease
  - (d) Poison ivy
  - (e) Plants that cause allergic reactions
  - (f) Snakes, coyotes, other wildlife
  - (g) Dangerous people
32. Other safety concerns? \_\_\_\_\_
33. How important is each of the following in keeping your child from playing more outdoors? (Extremely important, Very important, Moderately important, Slightly important, Not at all important)
- (a) Lack of interest on her/his part
  - (b) Lack of time in his/her schedule
  - (c) Lack of time in my schedule
  - (d) Few of their friends are interested in the outdoors
  - (e) Few places in neighborhood to play outdoors
  - (f) My concerns for my child's safety in the outdoors
  - (g) My child's worries about getting lost
  - (h) My child is more interested in computers and television
  - (i) Health concerns for my child
  - (j) No adults to accompany my child in the outdoors
34. How much has contact with nature influenced your child's development in each of the following ways? (A lot, Some, Not at all, Don't know)
- (a) Being resourceful
  - (b) Understanding/solving problems
  - (c) Taking action
  - (d) Seeing tasks to completion
  - (e) Making difficult decisions
  - (f) Dealing with stress
  - (g) Coping with challenge/adversity
  - (h) Getting along with other people
  - (i) Thinking clearly
  - (j) Being creative
  - (k) Increased self-esteem

- 
- (l) Increased self-confidence
  - (m) Increased peace of mind
  - (n) Improved physical health
  - (o) Improved strength and coordination
  - (p) Increased independence
  - (q) Increased optimism
  - (r) Happier
  - (s) Being spiritual
  - (t) More mature
  - (u) Being affectionate/loving
35. In an average week, how many hours does your child participate in formally organized sports, including sports practice and gym classes at school?
- (a) My child does not participate in organized sports
  - (b) Less than 2 hours
  - (c) 3–5 hours
  - (d) 6–10 hours
  - (e) 11–20 hours
  - (f) 21–30 hours
  - (g) More than 30 hours
  - (h) Don't know
36. In an average week, how much does your child watch TV (network, cable, satellite)?
- (a) My child does not watch TV
  - (b) Less than 2 hours
  - (c) 3-5 hours
  - (d) 6-10 hours
  - (e) 11-20 hours
  - (f) 21-30 hours
  - (g) More than 30 hours
  - (h) Don't know
37. In an average week, how much does your child use a computer, computer note pad, or smart phone, including time spent playing video games?
- (a) My child does not use any of these electronic devices
  - (b) Less than 2 hours

- (c) 3–5 hours
  - (d) 6–10 hours
  - (e) 11–20 hours
  - (f) 21–30 hours
  - (g) More than 30 hours
  - (h) Don't know
38. How much does each of the following influence your child from playing more outdoors? (Not at all influential, Slightly influential, Moderately influential, Very influential, Extremely influential)
- (a) Allergies
  - (b) Anxiety
  - (c) Asthma/respiratory problems
  - (d) Autism or Asperger's Syndrome
  - (e) Attention Deficit or ADHD
  - (f) Bone, joint, or muscle problems
  - (g) Brain condition/concussion
  - (h) Depression
  - (i) Diabetes
  - (j) Epilepsy or seizures
  - (k) Hearing problems
  - (l) Cognitive/mental issues
  - (m) Leg or back problems
  - (n) Obesity
  - (o) Speech or language problems
  - (p) Vision problems
  - (q) Other (please rate here and explain below)
39. Other health issues affecting your child's outdoor play? \_\_\_\_\_
40. Do you think your child's contact with nature or outdoor-activities has contributed to the onset of any ailments your child experienced?
- (a) Yes (GO TO Q41)
  - (b) No (SKIP TO Q42)
  - (c) Don't know (SKIP TO Q42)
41. Please briefly list/describe the ailment/s and onset connected with outdoor activity. \_\_\_\_\_

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42. Do you think your child's contact with nature or outdoor-activities has contributed to the improvement of any ailments your child experienced?
- (a) Yes (GO TO Q43)
  - (b) No (SKIP TO Q44)
  - (c) Don't know (SKIP TO Q44)
43. Please briefly list/describe the ailment/s and improvement connected with outdoor activity.
44. Overall, how would you rate your child's health?
- (a) Very good
  - (b) Good
  - (c) Fair
  - (d) Poor
  - (e) Very poor
45. Overall, how would you describe your child's physical fitness?
- (a) Very good
  - (b) Good
  - (c) Fair
  - (d) Poor
  - (e) Very poor
46. How much physical exercise does your child get in a typical week?
- (a) Less than 2 hours
  - (b) 3-5 hours
  - (c) 6-10 hours
  - (d) 11-20 hours
  - (e) 21-30 hours
  - (f) More than 30 hours
47. What is the last grade in school you completed, or degree you received?
- (a) 8th grade or less
  - (b) High school incomplete (grades 9, 10, 11)
  - (c) High school complete (grade 12)
  - (d) Some college but no degree
  - (e) Associate degree
  - (f) College graduate

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- (g) Post-graduate degree such as master's, PhD, MD, JD
48. What is your race? (Mark one or more.)
- (a) American Indian or Alaska Native
  - (b) Asian Indian
  - (c) Chinese
  - (d) Filipino
  - (e) Japanese
  - (f) Korean
  - (g) Vietnamese
  - (h) Other Asian
  - (i) Black or African American
  - (j) Native Hawaiian
  - (k) Guamanian or Chamorro
  - (l) Samoan
  - (m) Other Pacific Islander
  - (n) White
49. Are you of Spanish or Hispanic origin? (Mark one or more.)
- (a) Yes, of Hispanic, Latino/a, or Spanish Origin
  - (b) Yes, Mexican, Mexican American, Chicano/a
  - (c) Yes, Puerto Rican
  - (d) Yes, Cuban
  - (e) Yes, Another Hispanic, Latino/a or Spanish origin
50. During the past year, which of the following income categories best describes your total household income?
- (a) Less than \$15,000
  - (b) \$15,000 to \$24,999
  - (c) \$25,000 to \$49,999
  - (d) \$50,000 to \$74,999
  - (e) \$75,000 to \$99,999
  - (f) \$100,000 to \$124,999
  - (g) \$125,000 to \$149,999
  - (h) \$150,000 to \$199,999

(i) \$200,000 to \$249,999

(j) \$250,000 or more

51. Your gender?

(a) Male

(b) Female

52. Your ZIP code? \_\_\_\_\_

**Thank you very much.**