The Nature of Americans

Disconnection and Recommendations for Reconnection

National Report

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April 2017

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Executive Summary

The relationship of Americans and nature is changing. Adults and children alike spend evermore time indoors, participation in 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 nationwide 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 11,817 adults, children, and parents across the United States in 2015–16. This study is a cornerstone 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 15 focus groups with 119 adults conducted in major cities of the five most populous US states. The second method featured personal interviews with 771 children, 8–12 years old, along with an online survey of one parent of each of the participating children for additional insight. The third method was a nationwide online survey of 5,550 adults, measuring their sentiments toward nature, activities in nature, perceived benefits of nature, and barriers and facilitators to contact with nature. (Separate surveys of residents in Florida and Texas provided closer looks at two large, rapidly growing, bellwether states. Findings from these states can be found in their respective reports.) In each part of the study, oversamples of blacks, Hispanics, and Asians provide a closer look at these important groups.

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 Americans' 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. *Americans 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 Americans 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.

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, Americans 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. *Americans value nature in remarkably broad, diverse ways.* Americans 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. *Americans support 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 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. *Americans' relationship with nature is complex and nuanced.* Across many questions—including time spent outdoors, general interest in nature, and certain values of nature—Americans 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 ac-

tivities 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. *Americans perceive tremendous benefit from experiences in nature.* The vast majority of adult Americans 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, Americans 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 Americans 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 Americans' 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 Americans 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.

Acknowledgements

We are profoundly indebted to many for their help, resources, and encouragement in completing this study of Americans' relationships with nature, the outdoors, and wildlife, and the potential for enhanced quality of life these connections afford.

Financial support was provided by (in alphabetical order):

- Fish and Wildlife Foundation of Florida
- Florida Fish and Wildlife Conservation Commission
- Harold M. and Adeline S. Morrison Family Foundation
- Texas Parks and Wildlife Department
- The Walt Disney Company
- U.S. Fish and Wildlife Service
- Wildlife Management Institute

Many individuals from these sponsor organizations were involved from the beginning of The Nature of Americans. They were key to the successful completion of this project. We especially thank Steve Williams and Scot Williamson from the Wildlife Management Institute; Dan Ashe, Tracy McCleaf, Steve Chase, Hope Grey, Natalie Sexton, and Jay Slack from the U.S. Fish and Wildlife Service; Beth Stevens, Kim Sams, and Lisa Vazquez from The Walt Disney Company; Carter Smith, Nancy Herron, and David Buggs from Texas Parks and Wildlife Department; Lois Morrison from the Morrison Family Foundation; Nick Wiley and Jerrie Lindsey from the Florida Fish and Wildlife Conservation Commission; and Will Bradford from the Fish and Wildlife Foundation of Florida.

Additional methodological and technical consultation was provided by Focus Pointe Global, Inc., Heartland Institutional Review Board, Toluna USA, Inc., Office of Management and Budget, Nancy Wells, Waldo Carrasco, and Diana Carrasco. Current and former staff at DJ Case & Associates, including Rick Clawson, Chas Hartman, Jon Marshall, Ed Rudberg, Lois Sheley, Bonnie Stewart, Ginny Wallace, Gwen White, and Brian Williams, contributed to the project.

Our biggest debt of gratitude goes to the nearly 12,000 respondents who participated in this research. We extend our deep appreciation to these individuals for their willingness to share their experiences, thoughts, and opinions with us.

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

Nature, the outdoors, and wildlife in the United States have played fundamental roles in the complex cultural development of the nation. Yet it appears profound changes are occurring in the American public's connection to the natural world. Perhaps most obvious, various indicators suggest American society is shifting away from traditional nature-based recreation.[1] Reflecting these changes, the percentage of the US population 16 years old and older participating in fishing fell from 19 percent in 1991 to 14 percent in 2011.[2] The proportion of the US population participating in hunting activity has fluctuated around approximately 6 percent during the past two decades, and hunting participation has declined in most regions of the US. Wildlife observation in close proximity to where people live declined from 39 percent of the US population in 1991 to 29 percent in 2011, while more distant trips away from home for the purpose of seeing nature and wildlife decreased from 16 percent of the US population in 1991 to 9 percent in 2011.

Another indication of wider disconnection is in younger generations' activities and time use. In a study of American children's time, the largest activity declines from 1997 to 2003 occurred in sports and outdoor activities. For children aged 6 to 12 years of age, weekly participation in outdoor activities declined by 37 percent, from 16 percent of children to 10 percent of children.[3] A survey of children found African-American children spend less time outdoors than their Hispanic and non-Hispanic white counterparts.[4]

[1] Pergams, Oliver R. W., and Patricia A. Zaradic. "Evidence for a Fundamental and Pervasive Shift Away from Nature-Based Recreation." *Proceedings of the National Academy of Sciences* 105, no. 7 (February 19, 2008): 2295–2300.

[2] U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, and U.S. Census Bureau. "2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation." Washington, DC: U.S. Department of the Interior, 2011.

[3] Hofferth, Sandra L. "Changes in American Children's Time—1997 to 2003." *Electronic International Journal of Time Use Research* 6, no. 1 (January 1, 2009): 26–47.

[4] Larson, Lincoln R., Gary T. Green, and H. K. Cordell. "Children's Time Outdoors: Results and Implications of the National Kids Survey." *Journal of Park and Recreation Administration* 29, no. 2 (2011): 1–20.

Many factors *may* account for these changes. First, the US is an increasingly urban nation, with some four in five Americans residing in suburbs and cities. Historically, urban development has resulted in both environmental degradation and increasing separation of people from wildlife, plants, undeveloped landscapes, and other features of the natural world. Second, Americans are increasingly indoors-oriented, where on average we spend 90 percent of our time.[5] Third, like most modern nations, Americans are engaged in electronic media such as computers, cell phone, video games, and television. Some estimates report the average American now devotes more than 40–50 hours each week to electronic media.[6]

Additional society-wide changes include 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.[7] All these factors appear to be fostering profound transformation in how Americans think about and experience the natural world. Yet despite the seeming significance of these factors in pushing Americans from nature awareness and outdoor activity, these results have not been comprehensively documented for American adults and children as a whole. 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.

Another change occurring alongside these is demographic changes. Over one-third of the US population now consists of minorities, especially blacks, Hispanics, and Asians. By the year 2020, more than half of the nation's children are expected to be part of a minority race or ethnic group, growing to 64 percent by 2060. The US population as a whole is expected to follow the same pattern: around 2044, less than half the US population is projected to be single-race, non-Hispanic whites.[8] At present, we know relatively little on a national scale how different ethnoracial groups in the US think about nature, value nature, and participate in outdoor activities.[9] Rather than presume that there are differences across groups, we sought to empirically explore what—if any—differences emerge.

[5]Kellert, Stephen R. *Building for Life: Designing and Understanding the Human-Nature Connection.* Washington, DC: Island Press, 2005.

[6]See, for example, Nielsen Company. 2015. "The Total Audience Report: Q4 2014." Available online at http://www.nielsen.com/us/en/insights/reports/2015/the-total-audience-report-q4-2014.html. For information on adolescents, see Rideout, Victoria, Ulla G. Foehr, and Donald F. Roberts. "Generation M2: Media in the Lives of 8- to 18-Year-Olds." Kaiser Family Foundation. Available online at http://files.eric.ed.gov/fulltext/ED527859.pdf.

[7]Kellert, Stephen R. *Birthright: People and Nature in the Modern World.* New Haven, CT: Yale University Press, 2012. See also Hofferth (2009) and Kellert (2005).

[8]Colby, Sandra L., and Jennifer M. Ortman. "Projections of the Size and Composition of the US Population: 2014 to 2060." Washington, DC: U.S. Census Bureau, March 2015.

[9]Throughout this report, we often use the term "ethnoracial" to describe racial and ethnic identity simultaneously. This term gained traction in the 1990s as a way of capturing the fact that a Hispanic or Latino ethnic identity in American society tends to operate in an analogous manner as racial identities of black, white, and Asian. For example, see the work of Stanford sociologist Tomás R. Jiménez et al. 2015. "How Ethnoraciality Matters: Looking inside Ethnoracial 'Groups.'" *Social Current* vol. 2(2): 107–15. See also the work of UC–Berkeley historian David A. Hollinger. 2003. "Amalgamation and Hypodescent: The Question of Ethnoracial Mixture in the History of the United States." *The American Historical Review* vol. 108(5): 1363–90. Hollinger, David A. *Cosmopolitanism and Solidarity: Studies in Ethnoracial, Religious, and Professional Affiliation in the United States.* Madison, WI: University of Wisconsin Press, 2006.

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, a national initiative to understand and connect Americans and nature in 2012. 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 for the adult focus groups and adult online survey was generously provided by the U.S. Fish & Wildlife Service.

The first major component in the initiative's focused on understanding. This entailed detailed focus groups, interviews, and surveys with 11,817 American adults, children, and parents. 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 various sectors to do so. The second major component of the initiative 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 Americans' connections to nature. 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 in American society, 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.[10]

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.

[10] 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).

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 of some of this research literature is available in other publications.[11] 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.[12]

Brief descriptions of each of the eight biophilic values and frequently associated benefits are described below.[13]

- **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.

[11] See, for example, Kellert (2012).

[12] 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.

[13] Each is examined in detail in other publications: see Kellert (2012).

- **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.

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 Americans as a whole; minority Americans, particularly blacks, Hispanics, and Asians; and children during the middle childhood years of 8 to 12.[14] Altogether, five major topics guided our research.

1. **Relationship with nature.** What does "nature" mean to Americans? What are Americans' personal interests in nature? What are the basic values of the American public toward nature and wildlife? What is the extent of contact that Americans have with nature? How much do Americans know about the natural world? How do major demographic differences among Americans—race and ethnicity, age, residential location, gender, education, and income—correspond to differences in perceptions, values, interests, and experiences of nature?

2. **Benefits of exposure to nature.** What benefits do Americans view as deriving from the experience of nature? How do members of the public perceive contact with nature affects their health?

3. **Barriers to and facilitators of contact with nature.** What are the major barriers and facilitators to contact with nature, the outdoors, and wildlife in today's society? How do these vary by demographic categories? How important are family and friends in encouraging participation in nature-related activities? How important is the availability of open space and parks to involvement in the outdoors?

4. **Support for funding and programming.** How much do adults support funding nature-related programs? Which funding sources do they support using?

5. **Historical comparison.** The current study incorporates some questions from a 1978 investigation of values and knowledge of the natural world.[15] What, if any, differences distinguish

[14] 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/.

[15] 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'

the values and attitudes toward nature among Americans in 2016 with Americans surveyed in 1978? What, if any, differences distinguish the knowledge of the natural world among Americans in 2016 with those surveyed in 1978?

1.2 Methods for the Study

To understand Americans' 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 Americans 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 15 focus groups with 119 total participants throughout the country. Each took place in a major city in one the five most populous US states: California (Los Angeles); Florida (Jacksonville, Miami, Tampa); Illinois (Chicago); New York (New York City); and Texas (Dallas, Houston, San Antonio). These 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,[16] $N = 8$
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, $N = 7$

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. 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, and Behaviors toward Animals, Phase V." Washington, DC: U.S. Department of the Interior, 1979.

[16] Adults of various races and ethnicities

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

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. The purpose of the focus groups was to generate a more open-ended understanding of the relationship between adult Americans and nature, and to help guide the development of our more structured and closed-ended survey and interview questions.

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.

Table 1.1: Focus Group Participants

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

Note: Columns may not add to 100 due to rounding. Percentages reported are proportions out of 119, except for race and ethnicity, which is out of 114 due to missing data.

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 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

A nationwide online survey was conducted of English- and Spanish-speaking adults, 18 years of age and older, regarding their perceptions of and experience with nature and wildlife.[17] The nationwide sample consisted of 4,500 Americans from all 50 states, plus an oversample of 350 blacks, 350 Asians, and 350 Hispanics to provide greater opportunity to examine subsets of these groups. The total number of respondents was 5,550 (see Table 1.2). Figure 1.1 shows the geographic distribution of these respondents. The nationwide survey was fielded from May 12, 2016, to June 30, 2016.

[17] We also conducted the same survey among two separate samples—adults in Florida ($N = 2,227$) and adults in Texas ($N = 2,379$). The focus on these states reflected funding sources for the overall study and an opportunity to conduct a more in-depth examination of two large, rapidly changing states. Results specific to each of those states can be found in separate reports.

Table 1.2: Sample Size of Nationwide Survey

Categories	**Respondents**
Overall	4,500
Black oversample	350
Asian American oversample	350
Hispanic oversample	350
TOTAL	5,550

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 national sample. Toluna ensured that this national sample was representative of the US adult population by matching the sample's final composition to various high-quality baseline samples of demographics, attitudes, and behaviors.[18] These nationally representative, probability-based surveys include the American Community Survey, from the U.S. Census Bureau (USCB); the General Social Survey (GSS), from the National Opinion Research Center; and the Behavioral Risk Factor Surveillance System (BRFSS), from the Centers for Disease Control and Prevention (CDC).[19]

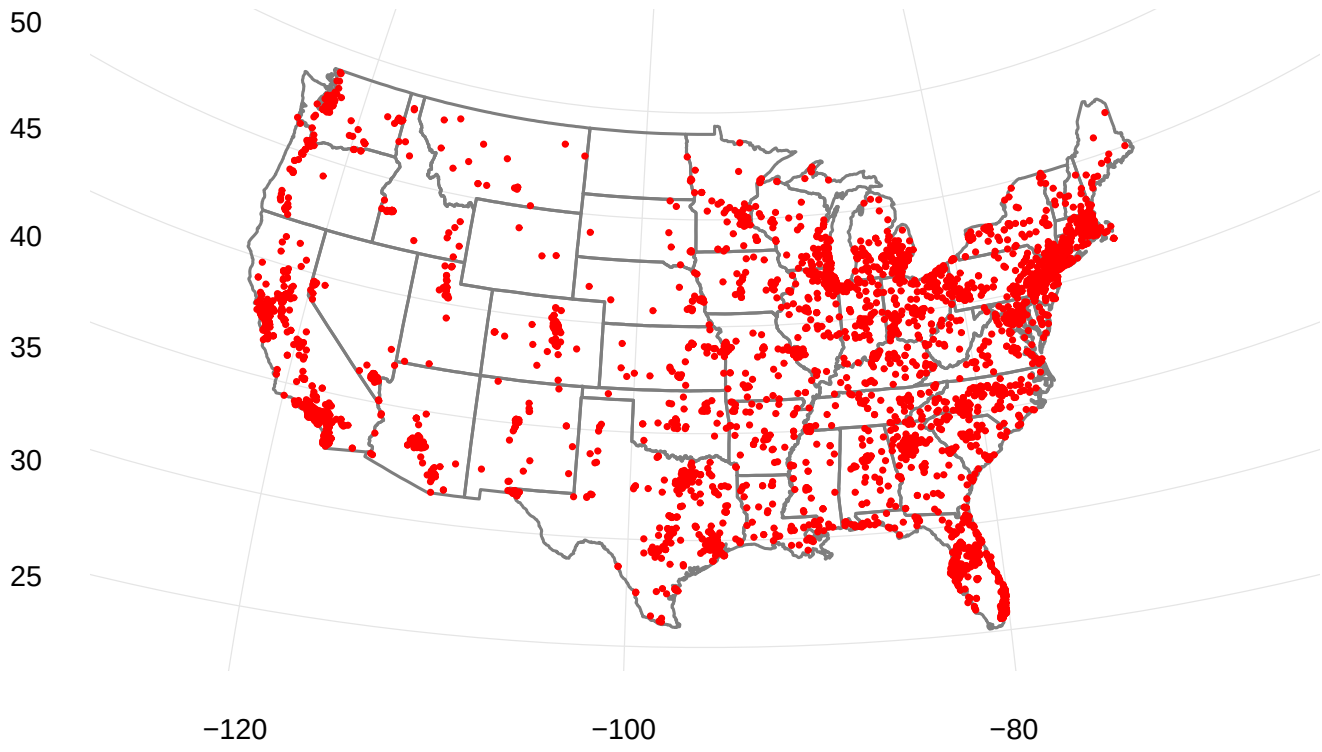
[18]This approach to collect data is becoming increasingly common and appears regularly in highly regarded peer-reviewed journals. Because the nationwide survey is a non-probability sample, we can make no statement about margins of sampling error on population estimates, nor would it be appropriate to use tests of statistical significance between or among sub-groups.

[19]More specifically, Toluna used a three-step process to draw the sample. First, Toluna drew questions from three nationally representative probability surveys conducted by the Census Bureau, Bureau of Labor Statistics, Centers for Disease Control and Prevention, and National Opinion Research Center. These questions asked about attitudes (e.g., political orientation), behaviors (e.g., smoking), and demographics (e.g., gender, age, Census division, and education). Second, Toluna applied a logarithmic algorithm to panelists' own responses, assigning a propensity score (valued at 0 to 1) to each respondent. (The composition of this algorithm was the only proprietary aspect of selecting the sample. All other elements in this process, including data sources, are publicly available and commonly used by other research firms.) Third, Toluna assigned potential participants to a quintile group, which were defined according to a blend of these behavioral, attitudinal, and demographic characteristics. (Subjects with similar propensity scores resemble one another on these characteristics.) The composition of the quintiles in the sample reflected the composition of the quintiles in the total population. When that was not the case, Toluna recruited more participants so each quintile in the final sample reflected the total population on attitudes, behaviors, and demographics. This approach eliminated the need to weight the national data prior to final analysis and reporting.

Even with such an extensive selection process, we wanted to ensure we balanced the national sample not only on general demographic traits, behaviors, and attitudes, but also on a question related to our fundamental topic of interest—namely, attitudes toward nature. To that end, we directed Toluna to add an additional stratification variable to the screening process. The question came from the General Social Survey, a nationally representative probability survey of non-institutionalized English- and Spanish-speaking Americans, and was asked most recently in 2014. A comparison of responses to that question can be found in Table 1.5.

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

Figure 1.1: Geographic Location of Adult Survey Respondents in the Contiguous US



Note: Y-axis is latitude. X-axis is longitude. Respondents' location is determined by their ZIP code. Respondents from Alaska ($N = 8$) and Hawaii ($N = 27$) not shown on map.

Tables 1.3, 1.4, and 1.5 compare the national online survey to highly regarded national surveys that use probability sampling. Under the "NOA 2016" column, figures without parentheses indicate the main sample of 4,500 respondents *without* the oversample included. (Figures in parentheses include the main sample plus the oversample, for a total of 5,550 respondents.) The national online survey closely matches these three highly regarded surveys particularly in race and ethnicity, gender, age category, household income, geographic distribution across the US, frequency of smoking cigarettes, and considering oneself to be a religious person.[20] The sample has higher educational attainment, on the whole, than the overall American adult population.

As noted above, the nationwide sample—and the two state samples—included an oversample of blacks, Hispanics, and Asians. When designing the study, we decided to include larger numbers of these groups for a simple rationale: because the proportional size of these groups is relatively smaller, their resulting representation in the survey could have limited the conclusions we would be able to draw. Increasing their number in the survey would increase our confidence in our analysis and interpretation. Upon receiving the nationwide survey data, we initially examined only the main national sample, excluding the oversample, to generate our main findings. We then conducted a series of comparisons between the main sample and the oversample. We observed that including the oversample in our analyses resulted in few if any discernible differences, and doing so did not change our major findings and recommendations. (We show comparisons of 10 major questions about respondents' nature-oriented interests, activities, and perceptions in Appendix B.) *In the adult portions of the report, therefore, we decided to present analyses conducted on both the main sample and oversample.* Although these minority groups became slightly overrepresented in the sample (see Table 1.3), again, analyses were unaffected in any substantive manner, and the larger sample size allows for greater opportunity to examine population subsets.

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 35 minutes, and the median length was 20 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.

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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 national sample closely aligns with highly regarded probability-based surveys not just in demographics but also in attitudes and behaviors, we have minimized bias to a reasonable level given the degree of accuracy needed for our purposes.

[20] The median age of the sample is 42.5. The median age of the US as a whole is 37.4, according to the 2010–2014 ACS. However, this figure includes people under 18-years-old, and thus this figure is not directly comparable to The Nature of Americans survey.

Table 1.3: Comparisons of Adult Participants to American Community Survey

Question	**Categories**	**ACS 2010–2014**	**NOA 2016**
Race			
	White	73.8	75.8 (66.4)
	Black	12.6	12.2 (16.2)
	Asian	5.0	5.1 (10.5)
	Indigenous	1.0	0.9 (0.9)
	Other race	7.6	6.0 (6.1)
Hispanic origin			
	No	83.1	83.0 (79.9)
	Yes	16.9	17.0 (20.1)
Gender			
	Men	49.2	49.0 (45.8)
	Women	50.8	51.0 (54.2)
Age category			
	18 to 24	13.0	13.0 (13.8)
	25 to 34	17.6	18.0 (19.6)
	35 to 44	16.9	18.0 (19.3)
	45 to 54	18.4	19.0 (17.9)
	55 to 64	16.1	15.0 (14.0)
	65 to 74	10.0	13.4 (12.2)
	75 to 84	5.6	3.3 (2.9)
	85 +	2.4	0.3 (0.3)
Education			
	< high school	13.7	2.1 (2.1)
	high school	28.0	16.2 (16.0)
	Associate, some college	29.1	38.4 (38.8)
	Bachelor's	18.3	27.8 (28.1)
	Post-graduate	11.1	15.7 (14.9)
Household income			
	< $15,000	12.5	10.3 (10.3)
	$15,000 to $24,999	10.7	9.7 (9.7)
	$25,000 to $49,999	23.7	22.7 (23.0)
	$50,000 to $74,999	17.8	19.3 (19.2)
	$75,000 to $99,999	12.2	15.3 (14.7)
	$100,000 to $124,999	8.1	9.0 (8.7)
	$125,000 to $149,999	4.9	5.1 (5.4)
	$150,000 to $199,999	5.0	4.4 (4.8)
	$200,000 +	5.0	4.0 (4.1)

Note: For The Nature of Americans (NOA) column, percentages reported are proportions out of 4,500. (Percentages in parentheses are proportions out of 5,550, which includes the oversample of black, Hispanic, and Asian respondents.) Columns may not add to 100 due to rounding. Nationally, the margin of error for the 2010–2014 American Community Survey (ACS) is ± 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 Americans 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."

Table 1.4: Comparisons of Adult Participants' Location to American Community Survey

Census Division	**ACS 2010–2014**	**NOA 2016**
New England	4.7	3.8 (3.7)
Middle Atlantic	13.2	15.3 (15.6)
East North Central	14.6	15.7 (14.9)
West North Central	6.5	5.8 (5.4)
South Atlantic	19.9	21.5 (20.7)
East South Central	5.9	4.2 (4.2)
West South Central	11.7	10.5 (9.7)
Mountain	7.2	6.9 (6.8)
Pacific	16.3	16.2 (18.9)

Note: For The Nature of Americans (NOA) column, percentages reported are proportions out of 4,500. (Percentages in parentheses are proportions out of 5,550, which includes the oversample of black, Hispanic, and Asian respondents.) Columns may not add to 100 due to rounding. Nationally, the margin of error for the 2010–2014 ACS is ± 0.1 percent.

Table 1.5: Additional Comparisons of Adult Participants to Benchmark Surveys

Question	**Categories**	**Benchmark**	**NOA 2016**
Residential location (USCB)			
	Urban and suburban	80.7	81.1 (83.4)
	Rural	19.3	18.9 (16.6)
Smoke cigarettes (CDC)			
	Every day	23.7	22.0 (21.5)
	Some days	9.8	10.6 (11.2)
	Not at all	66.4	67.4 (67.2)
Religious person (GSS)			
	Not at all	20.4	22.8 (22.2)
	Slightly	24.0	26.7 (26.2)
	Moderately	37.7	31.2 (31.2)
	Very	17.1	19.2 (20.3)
Spending on environment (GSS)			
	Too little	57.4	44.7 (44.1)
	About right	30.9	30.7 (30.6)
	Too much	9.3	15.2 (16.0)
	Don't know	2.4	9.2 (9.3)

Note: For The Nature of Americans (NOA) column, percentages reported are proportions out of 4,500. (Percentages in parentheses are proportions out of 5,550, which includes the oversample of black, Hispanic, and Asian respondents.) Columns may not add to 100 due to rounding. Residential location was self-defined by respondents; we compare it to the U.S. Census Bureau's (USCB) designations based on the 2010 US Census. Nationally, the margin of error for CDC's 2014 BRFSS is ± 0.1 percent; for NORC's 2014 GSS, ± 3.0 percent.

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.

Checks for Attitudinal Bias in the Adult Online Survey

Despite the comparability of the adult, children, and parent samples to other well-regarded surveys on demographics and behaviors, we wanted to check for possible attitudinal bias of the sample toward interest in nature. (Since participants could self-select into the survey, one concern is we may have queried people who are already enthusiastic about wildlife or the outdoors.) The research team therefore checked for attitudinal bias in two ways.

First, the online survey of adults included a question from the 2014 General Social Survey (GSS) on perceptions of spending to improve and protect the environment. (The exact question read, "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?") As Table 1.5 shows, the samples are comparable, given the margin of error for the estimates on the GSS.

Another check for attitudinal bias comes from a comparison with a survey conducted in late August 2011. The poll was the Opinion Research Corporation's (ORC) CARAVAN telephone survey of a sample of 1,000 adults, 18 years of age and older, living in private households in the contiguous United States. One of these questions was included as part of the final survey questionnaire: "How would you describe your interests in nature, wildlife, and the outdoors compared to your other interests? Would you say nature, wildlife, and the outdoors are ...your most enjoyable interests ...among your more enjoyable interests ...neither more nor less enjoyable than your other interests ...less enjoyable than your other interests?" Again, these results are comparable, given the margin of error on the ORC survey (Table 1.6).

Table 1.6: Comparisons of National-Level Data to 2011 ORC Survey

Categories	NOA 2016	ORC 2011
Your most enjoyable interests	26	19
Among your more enjoyable interests	47	37
Neither more nor less enjoyable	22	25
Among your less enjoyable interests	4	15
Other response	1	4

Note: "NOA" stands for The Nature of Americans. The margin of error for the ORC survey was ± 4 percent. The Nature of Americans survey does not have a margin of error because it was a non-probability sample.

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 771 children and a survey of one of their parents, for a total of 1,542 respondents. Due to the challenges of surveying younger children, these interviews were conducted 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 1.7 for more information about the parents surveyed.) Participants received compensation for their involvement. Answers had to pass quality control tests for authenticity and attentiveness, yielding 771 parent participants. 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 771 children participated, ranging in age from 8 to 12 years old. (See Table 1.8 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 55 (out of 771) households 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 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.)

As seen in Table 1.7, the parents' sample aligns well with the racial composition of the US as a whole. On the whole, the sample is more highly educated and has higher incomes than the

Table 1.7: Comparisons of Parent Participants to American Community Survey

Question	**Categories**	**ACS 2010–2014**	**NOA 2016**
Parent's race			
	White	73.8	73.4
	Black	12.6	15.2
	Asian	5.0	8.6
	Indigenous	1.0	3.7
	Other race	7.6	N/A
	Prefer no answer	N/A	0.91
Parent's Hispanic origin			
	No	83.1	83.5
	Yes	16.9	15.7
	Prefer no answer	N/A	0.8
Parent's ethnoracial category			
	White		59.4
	Hispanic		15.7
	Black		14.3
	Asian		8.3
	Other		2.3
Parent's gender			
	Men	49.2	11.0
	Women	50.8	88.6
	Prefer no answer	N/A	0.4
Parent's education			
	< high school	13.7	0.9
	High school	28.0	7.0
	Associate, some college	29.1	37.9
	Bachelor's	18.3	34.6
	Post-graduate	11.1	19.2
	Prefer no answer	N/A	0.4
Household income			
	< $15,000	12.5	2.7
	$15,000 to $24,999	10.7	4.0
	$25,000 to $49,999	23.7	19.5
	$50,000 to $74,999	17.8	18.2
	$75,000 to $99,999	12.2	20.5
	$100,000 to $124,999	8.1	12.7
	$125,000 to $149,999	4.9	6.6
	$150,000 to $199,999	5.0	4.4
	$200,000 +	5.0	4.0
	Prefer no answer	N/A	7.4
Parental status			
	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 portion of The Nature of Americans survey examined only parents. For The Nature of Americans survey, percentages reported are proportions out of 771. Columns may not add to 100 due to rounding.

US population. Few of the adult respondents were grandparents or other caregivers; nearly all participants (almost 90 percent) were mothers.

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?
- 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 the focus groups amounted to nearly 800 pages of conversation; each child answered 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.

Table 1.8: Demographic Information on Child Participants

Question	**Categories**	**Participants, %**
Child's race		
	White	69.0
	Black	16.0
	Asian	6.7
	Other	8.3
Child's Hispanic origin		
	No	80.3
	Yes	19.7
Child's ethnoracial category		
	White	53.8
	Hispanic	19.7
	Black	14.0
	Asian	6.6
	Other	5.8
Child's gender		
	Boy	49.7
	Girl	50.3
Child's residential location		
	Urban	23.0
	Suburban	67.0
	Rural	10.0
Child's age		
	8 years	20.6
	9 years	19.8
	10 years	20.2
	11 years	19.6
	12 years	19.7

Note: Percentages reported are proportions out of 771. 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.

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.
- Although we present full matrices throughout the report, we do not mean to suggest that each correlation reflects a true causal relationship.

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

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 about ways to continue The Nature of Americans' ultimate aim of connecting Americans and nature.

Chapter 2

Adults: Results

This chapter examines how American adults as a whole relate to nature. As noted in Chapter 1, this in-depth examination was prompted by a number of shifts in American society, 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 adult Americans think is "nature," recognizing that the word is complex and multifaceted. Next, we sought to establish what American 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.[1]

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 American 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.[2]

[1] 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.

[2] These issues were included for two reasons. First, any major attempt at significantly expanding nature-related opportunities and programs for 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

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 American adults' relationships with nature today, we used two methods—focus groups with 119 adults conducted in the five most populous states, and an online survey of 5,550 adults living in all 50 states. (See a fuller description in Chapter 1.) Our focus groups purposely included a high proportion of minority Americans, while our survey sample closely aligned with several national benchmark surveys (see Tables 1.3, 1.4, and 1.5). The focus group topic guide is included in Appendix C; the survey questionnaire, in Appendix D.

In this chapter, $N = 5,550$ for all quantitative analyses derived from the national 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.[3] In the focus groups when we asked this question, the most cited associations with "nature" included trees, animals, water, and birds. 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).[4] 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 is a place where human activity is limited or secondary, especially anything involving manufacturing and artificial fabrication. It is "not manmade or...forced" (white woman, late 40s, HS degree, middle income.) Another person told us that nature is "non-industrial"—"places to be able to just relax and...absorb everything around you" (white man, early 40s, Associate degree, middle income).

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.

[3]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.

[4]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.

Figure 2.1: What is Nature to You?

Note: Question asked in focus groups. Question wording: What comes to mind when you think of the word nature?

Nature had a quality of being uncultivated for most. 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). Others agreed: parks, forest reserves, and golf courses are "managed and manufactured," said one. For him, nature was wild and occurred in distant locations such as "Wyoming, Utah, Montana," due to "the rawness of it all" (white man, additional information missing). Others described places geographically closer but still somewhat distant from human control such as beaches and forests where "all the trees, flowers, plants—they come first—all that wildlife" (Hispanic woman, late 20s, some college, low income). Even though one man described his visits to his city's dog park as trips into nature, it was a trip with friends to more remote places—Costa Rica, Oregon, and California—that was his "first real exposure to nature" (white man, early 70s, some college, low income).

Most participants rejected the notion that nature could occur or be associated with what was indoors. Nature is "outdoors" (white woman, late 50s, HS degree, middle income). Another saw nature as "anything outside the house" (black man, early 30s, HS degree, low income), and another regarded nature as "out in the open" (white woman, early 70s, 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" (black man, early 50s, postgraduate degree, high income). "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."

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.

Another pattern was that *the very definition of what nature is could not be separated from human experiences in it.* 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. Ordinary daily life became special because something natural and unanticipated intervened—a sunset, a nest of birds, a beautiful flower, a night sky, the sunlight striking a tree. In this sense, particular aspects of nature could remove them figuratively from their immediate setting: "You go out [to a park], and you have no idea you're in the city" (white man, late 60s, Bachelor's, middle income).

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.) Finding these places required respondents to seek them out. If "pure" nature was located far away, then barriers to experiencing nature more became obstacles of cost, time, transportation, household responsibilities, opportunity, and other elements of access.

Respondents tended to think of two types, or levels, of nature. The first type involved more *mundane features* of the natural world, including trees, birds, butterflies, woods, flowers, and the ocean. They had "access" to this type of nature in their city, but they nevertheless distinguished city parks from other places "out in the open" (white woman, late 40s, Bachelor's, middle income).

The second type of nature involved seemingly *pure, unforgettable features that leave a lasting imprint* on adults' memories. The latter included "the national parks...camping, fishing, boating, [the] Grand Canyon" (black man, early 40s, postgraduate degree, high income). Finding these less cultivated places required residents to "seek it out a little bit." When describing quintessential nature, one offered, "The Grand Canyon. Nature at its best when I went.... It's beautiful. And Zion [National] Park. All that was so beautiful. I'd never seen it before, like *nature out there by itself*" (emphasis added; white woman, late 50s, HS degree, middle income). Another described "hiking...to Arizona to see the nice mountains and whatnot and...go[ing] to Costa Rica to go zip lining and [see] waterfalls" (Hispanic woman, late 40s, Bachelor's, middle income). The very conception of nature overlapped with special times when respondents felt acutely attached and attracted to nature; as examples of "nature," they mentioned sunsets in Hawaii, scuba diving in the Caribbean and Belize, boat rides in the Palisades, and camping and hiking in faraway places. Getting outside the city or suburb was especially important, especially traveling to places considered particularly unspoiled and beautiful:

> When I went skiing out West and especially in Europe...it was just awe-inspiring to see gigantic mountains. You could ski on them. And you get to the top of the mountain, you see forever, and then skiing down. I just love that experience, and that's a beautiful thing. (white man, early 70s, Bachelor's, middle income)

If "pure" nature was located far away, then barriers to experiencing nature more became obstacles of cost, time, opportunity, and other elements of access. For example, when reflecting on what might keep more Americans from spending more time in the outdoors, one respondent remarked:

> The price of gas may be prohibiting people from traveling. Maybe the price of airfare might be too high because of gas, so that might prohibit some people from going cross-country or like Costa Rica and the rain forest. That could be a reason. (white woman, early 60s, HS degree, middle income)

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 commonplace 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.

We return below to discussing this and other barriers to contact with nature in Sections 2.3 and 2.8.

Selecting Categories of Nature

In the national 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

Table 2.1: What Adults Surveyed Consider to be "Nature"

Categories	Yes, it is nature
Wild animals	85%
National parks	82%
Oceans	78%
State parks	77%
Ponds and lakes	75%
Outdoor gardens	72%
Insects	66%
Moon, sun, and stars	64%
Beach	63%
Plants in the yard	53%
Local parks	52%
Zoos	38%
Indoor plants	31%
Pets	30%
Ski resort	24%
Maintained lawns	21%
Photographs of animals	19%
Home aquarium or terrarium	16%
Paintings of landscapes	16%
My time sightseeing while commuting	15%
Family vacation destination (e.g., theme parks)	12%
My time walking to the car, bus, train	10%

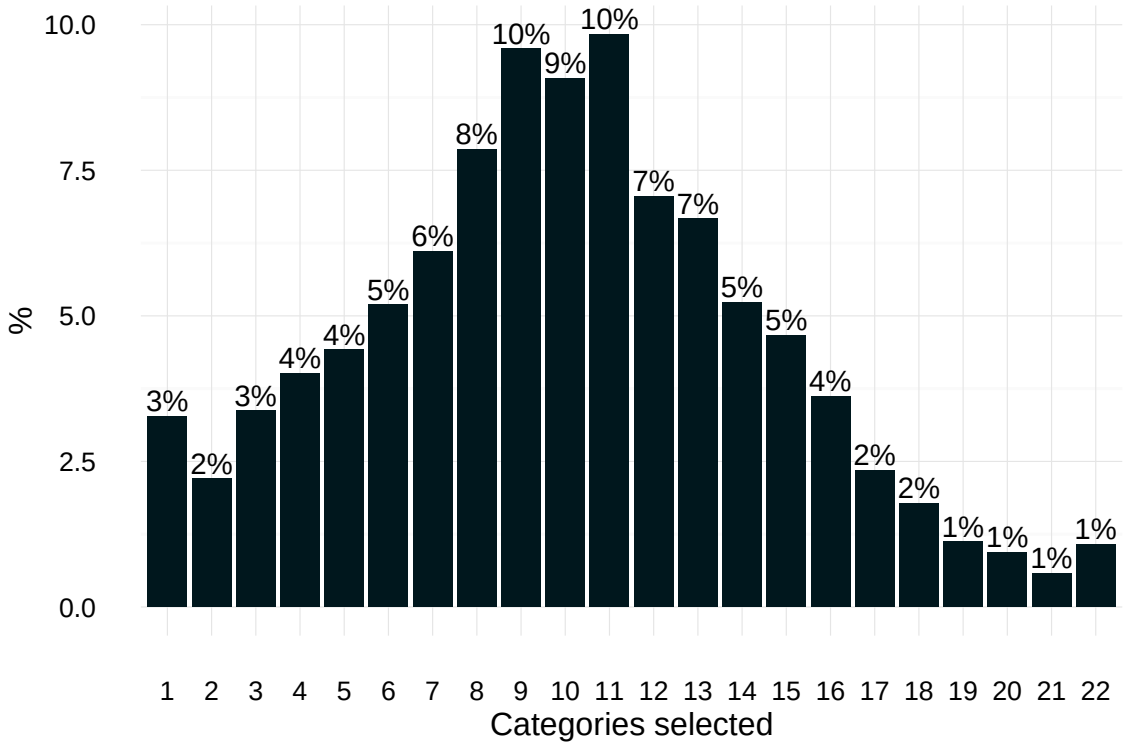
Question wording: For each of the following, please indicate if it's something that you would consider to be "nature" (check all that apply).

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, oceans, state parks, and ponds and lakes. 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 Americans 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.

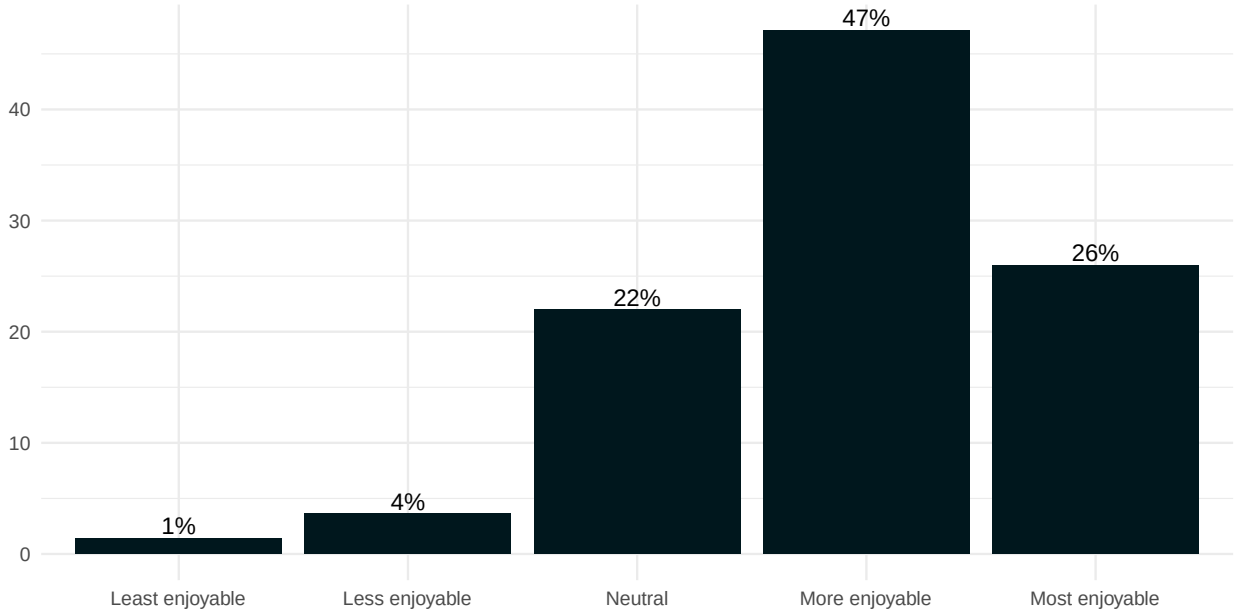
Out of 22 possibilities, the average (mean) number selected was 9.9 categories (with a standard deviation of 4.55). The median was 10 categories. All participants selected at least one category. Roughly half selected 7–13 categories (Figure 2.2).

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?

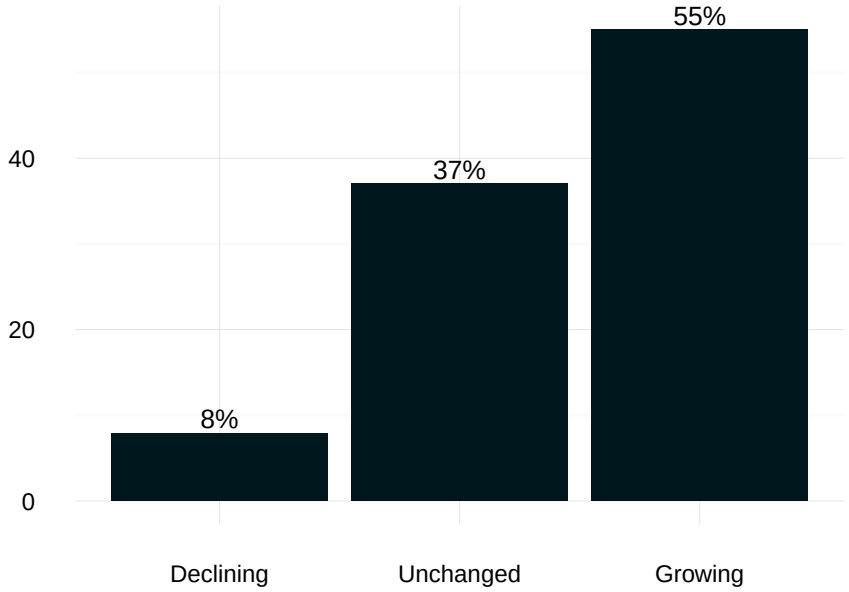
2.2.2 Interests in Nature

The majority of adults surveyed regarded their interests in nature as either their most enjoyable or among their more enjoyable interests (Figure 2.3). Most adults reported their interests in nature are growing or have remained unchanged over time (Figure 2.4). Nearly one-half (48 percent) of adults surveyed indicated their interests in nature were more than their parents' interests (Figure 2.5). About one-third (31 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.)

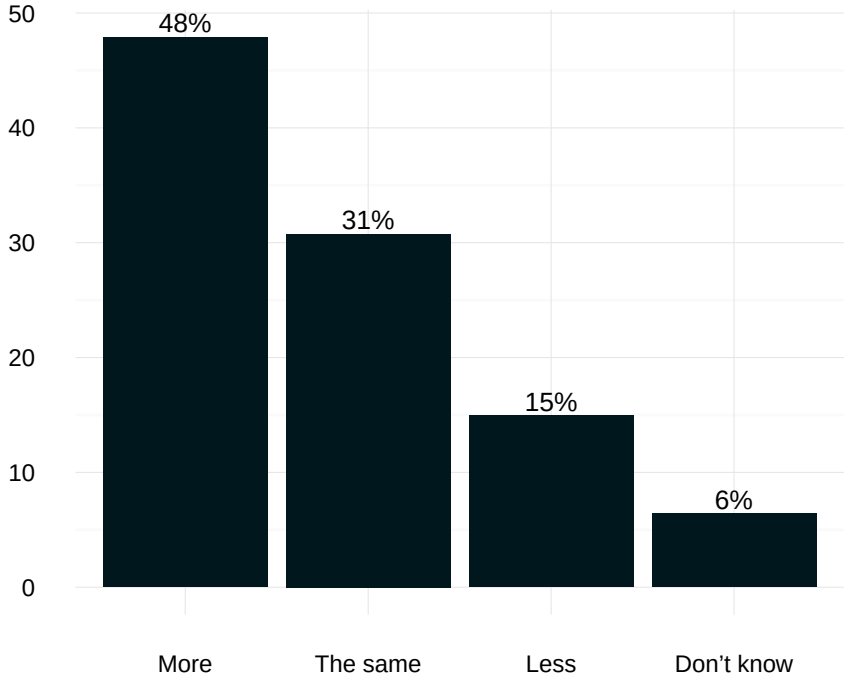
- Relative to white respondents, Hispanics were more likely to report their interests in nature are growing. Black and Asian respondents were less likely.

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?

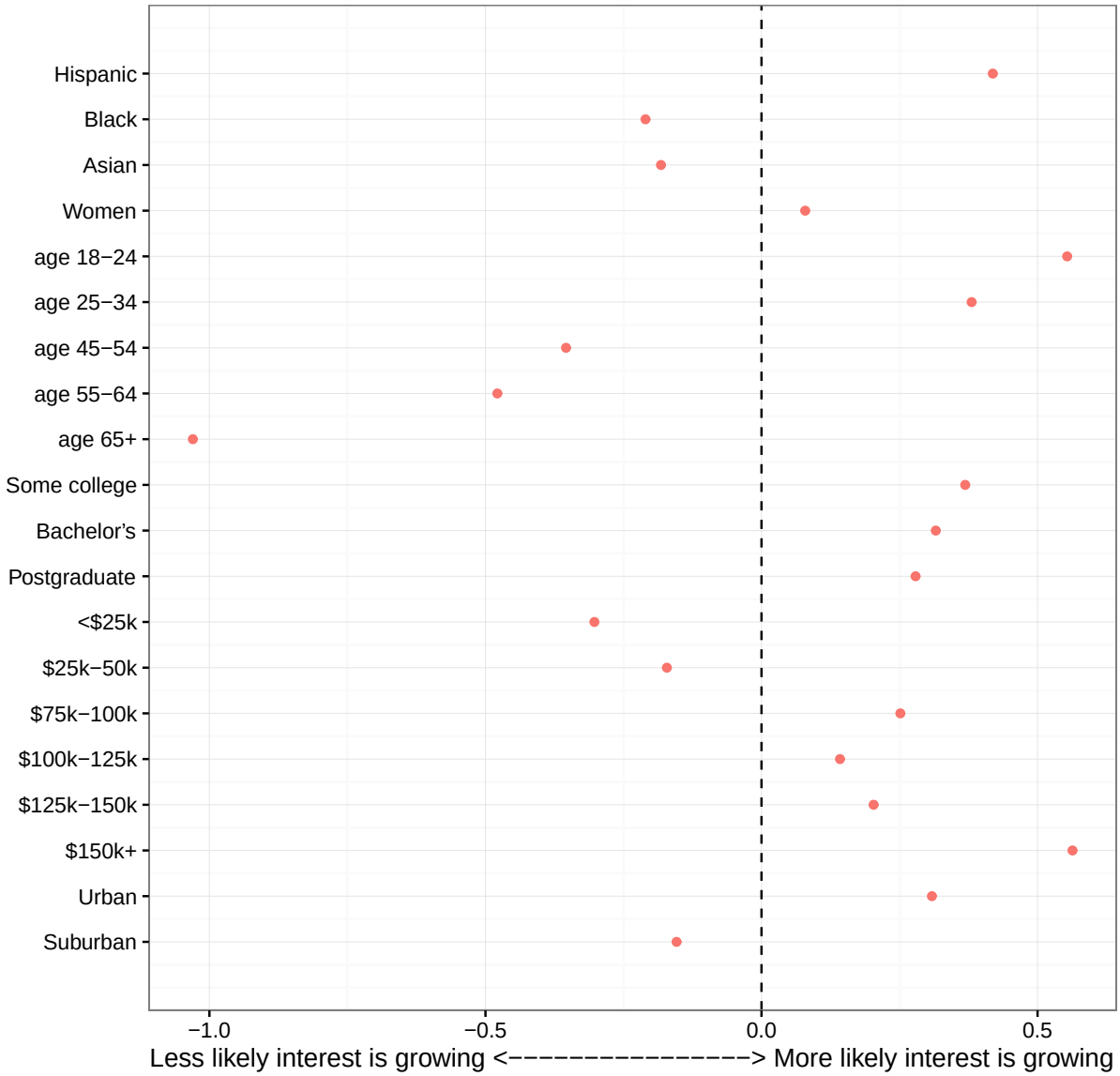
Figure 2.5: Interests in Nature Compared to Parents



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 middle-aged respondents (35–44-year-olds), younger adults were more likely to report their interests were growing.
- Relative to rural respondents, urban residents were more likely to see their interests in nature as growing; suburban residents were less likely.

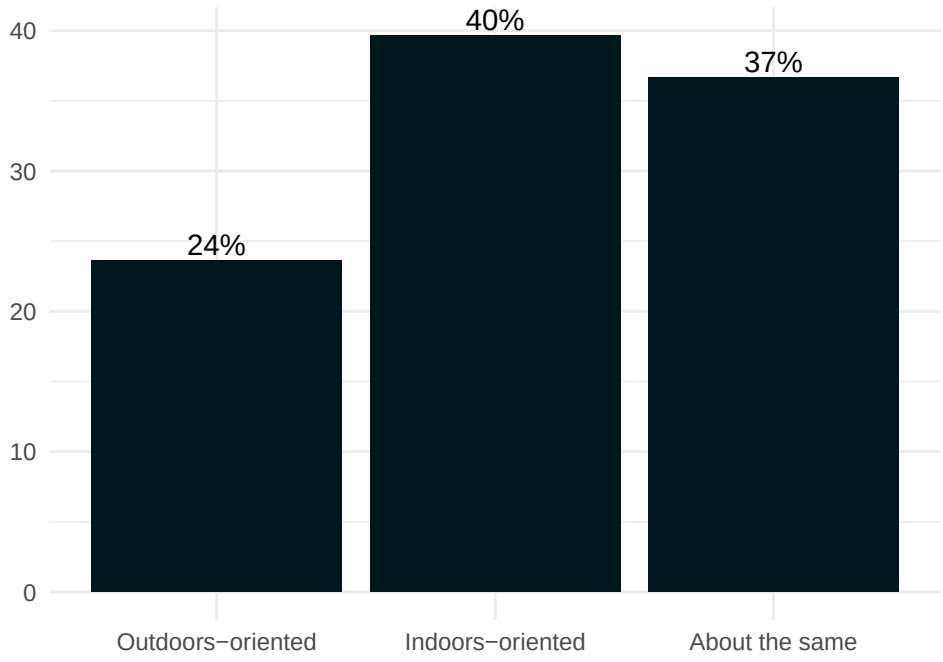
Figure 2.6: Likelihood that Interests in Nature are Growing



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 an American public that remains highly interested in nature in general. However, *interest* did not automatically translate into *lived experiences*. Two-fifths 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?

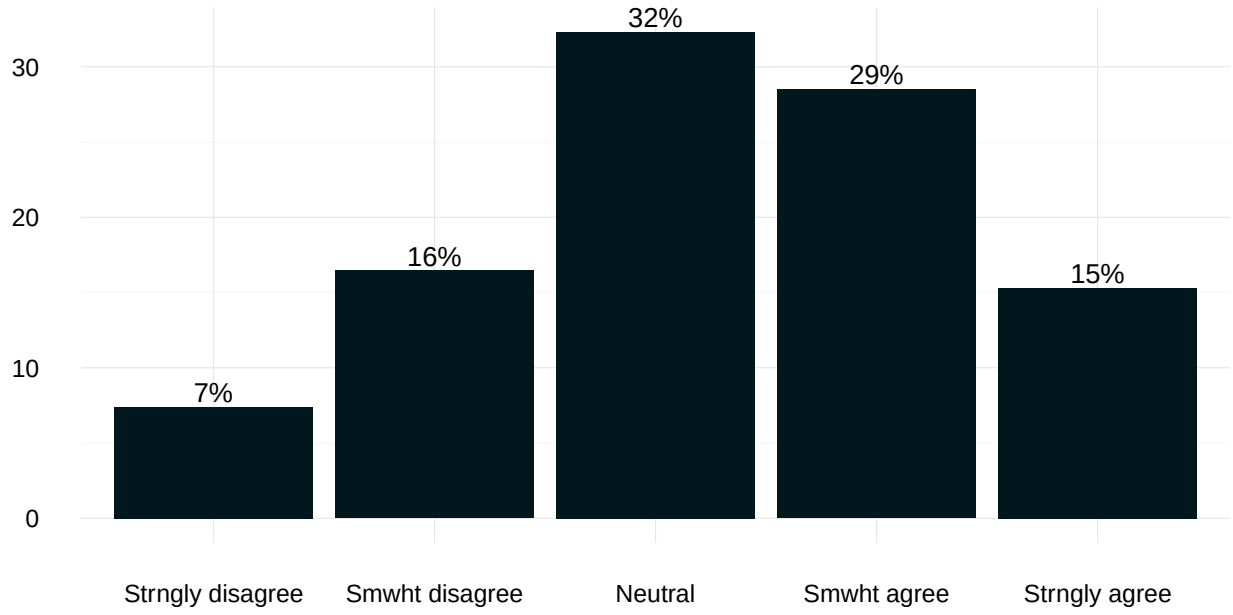
About one-quarter said they were outdoors-oriented, and over one-third said they were about equal.

Two-thirds of the national sample agreed that there are more important issues in their life than their interest and concerns for nature (Figure 2.8). These results suggest adult Americans 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 and 2.8.

2.2.3 Activities in Nature

In our survey, an open-ended question about American adults' favorite outdoor- or nature-oriented activity revealed that the most popular included walking and hiking, followed by camping, fishing, gardening, and activities like going somewhere and watching something (like a sunset, a bird, or a flower) (Figure 2.9). The most common locations for these activities tended to be parks and the beach. 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. As one focus group respondent remarked, "when I go out into nature, I like that kind of—the randomness that you have...the unpredictability of the sights and sounds that you have. There's a little bit of element of danger in there, too" (multiracial man, late 40s, Bachelor's, high income). Another added that the reason he loved going camping as a child was its unpredictability: "you just walk down and you just see animals randomly. You wouldn't even expect it" (Asian

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.

man, early 20s, some college, middle income). Another emphasized the variety and diversity of nature:

> 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)

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, gardening, outdoor exploration, and visiting zoos, aquariums, nature centers, natural history museums, and botanical gardens. While most of the activities elicited at least "some" or "a lot" of interest, a few generated relatively less interest among adult Americans. These included hunting, fishing, and membership in nature organizations. Some two-thirds of the national sample reported no interest in hunting, while 12 percent indicated "a lot" of interest in the activity. About half had no interest in belonging to nature-related organizations compared with 15 percent who expressed a great deal of interest. A little more than one-third reported no interest in fishing, in contrast to about 30 percent with "a lot" of interest.

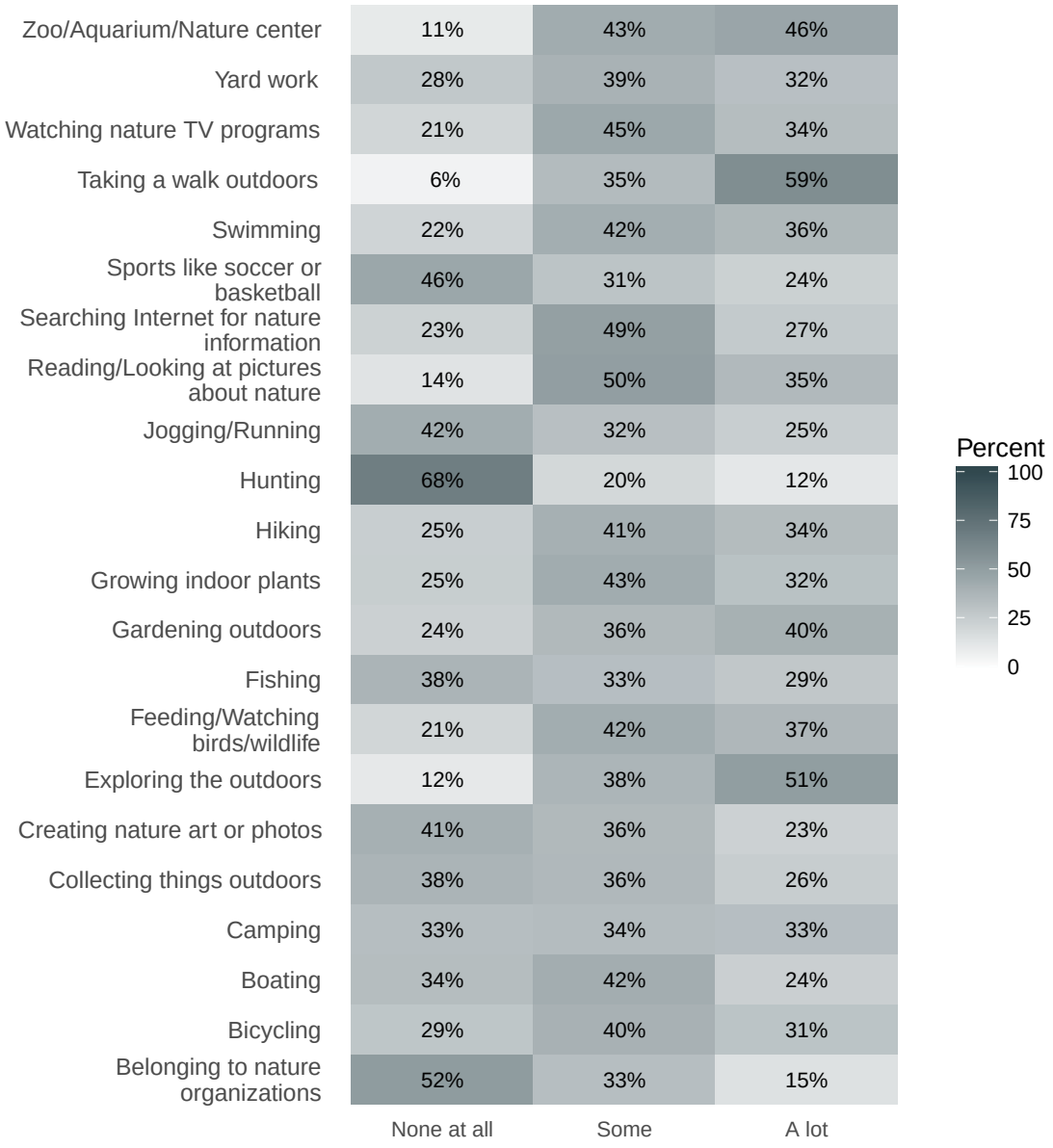
2.2.4 Time Spent on Nature Activities

During a typical week, about 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 (37 percent) or very (30 percent) satisfied with the amount of time they spend outdoors experiencing nature (Figure 2.12). One in

Figure 2.9: Favorite Nature- or Outdoor-oriented Activity

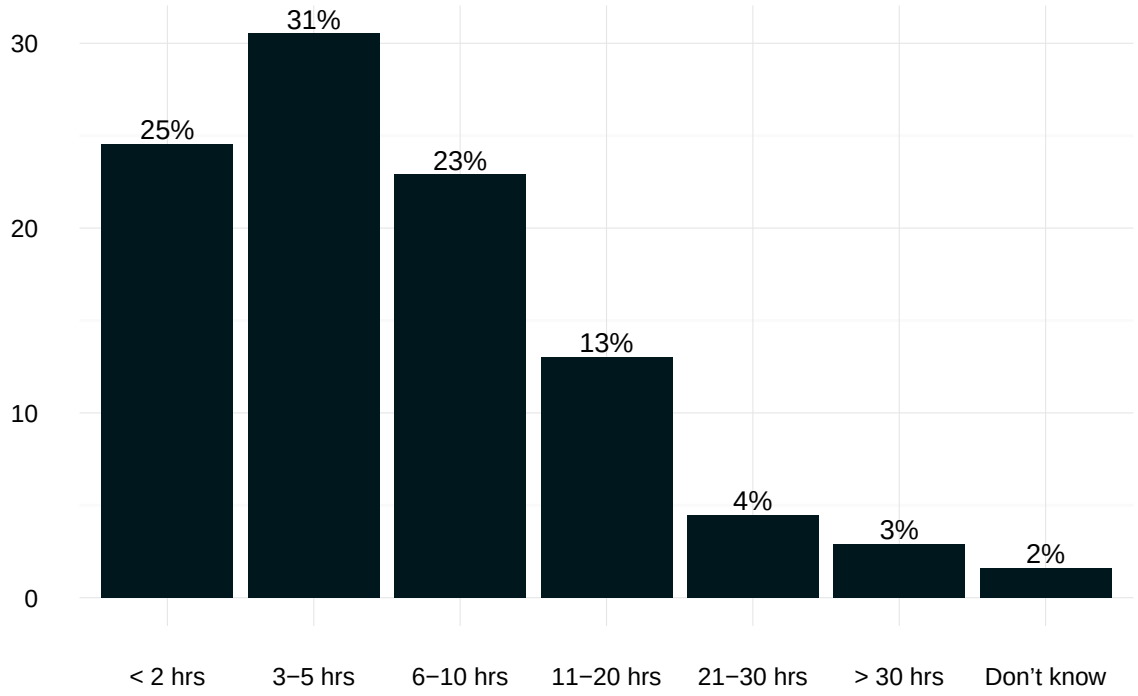
Question wording: What is your favorite outdoor- or nature-oriented activity?

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.)

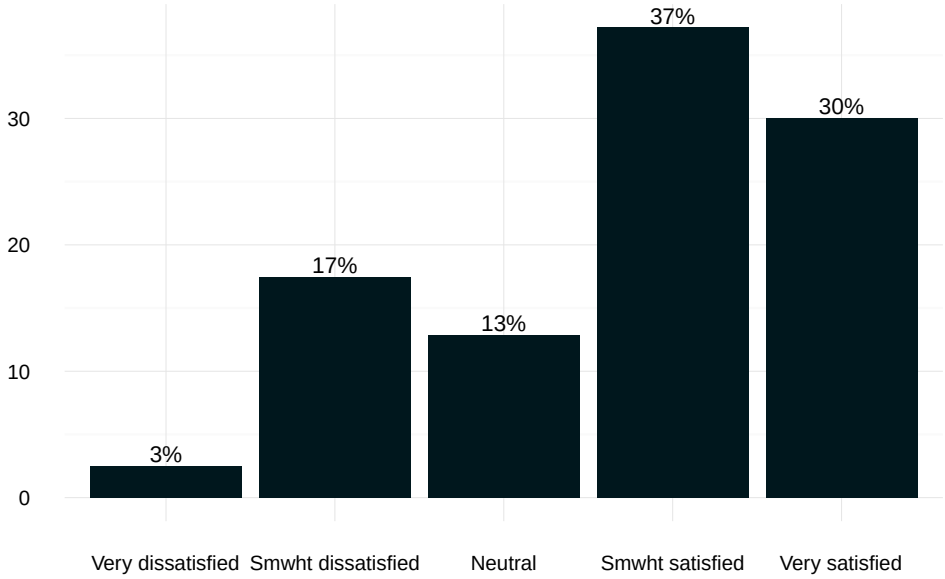
eight were neither satisfied nor dissatisfied. One in five were somewhat or very dissatisfied with their degree of weekly contact with the outdoors.

Satisfaction varied by the amount of time respondents reported spending outside. One-third of adults who reported spending the least amount of time outside in nature each week were dissatisfied with this amount (Table 2.2). Almost half (47 percent) were somewhat or very satisfied, and one-fifth were neutral. Overall, as adults reported spending more time outdoors, they also reported greater satisfaction with that amount of time. Ninety 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.[5]

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: 50 percent of respondents who reported spending 2 hours or less outside in nature each week rated their interests in nature as among their more or most enjoyable interests.

[5]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 4.37.

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?

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%	0%	1%	0%	6%
Smwht dissatisfied	28%	18%	14%	9%	5%	18%
Neutral	20%	12%	10%	8%	6%	41%
Smwht satisfied	28%	40%	43%	42%	34%	28%
Very satisfied	19%	28%	32%	41%	55%	8%

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?

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	4%	0%	0%	1%	0%	0%	4%
Less enjoyable	9%	4%	1%	0%	0%	1%	4%
Neutral	36%	22%	14%	12%	11%	7%	50%
More enjoyable	38%	50%	54%	52%	45%	26%	30%
Most enjoyable	12%	24%	30%	35%	44%	66%	11%

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.)

Table 2.4: Familiarity with News, Events, and Issues that Affect Nature and the Outdoors

	Not at all	Slightly	Moderately	Very	Extremely
Your local level	8%	16%	32%	24%	20%
Your state level	10%	20%	34%	24%	12%
The US national level	10%	22%	34%	22%	13%
The international level	19%	26%	28%	17%	10%

Note: Columns may not add to 100 percent due to rounding. Question wording: How familiar would you say you are about news, events, and issues that affect nature and the outdoors at ...your local level ...you state level ...the US national level ...the international level?

2.2.5 Familiarity with News, Events, and Issues

Adults surveyed differed widely in their familiarity with news, events, and issues that affect nature and the outdoors (Table 2.4). At the local level, just over two-fifths (44 percent) of respondents were very or extremely familiar with this news, events, and issues affecting nature. At the state level, 36 percent were very or extremely familiar; at the national level, 35 percent; at the international level, 27 percent. Respondents reported being less familiar about broader and more geographically distant news, events, and issues: 8 percent were not at all familiar with events at a local level; 19 percent were not at all familiar at the international level.

2.3 Adults' Perceptions of Increasing Disconnection from Nature

Despite the relatively high levels of interest in nature among adult Americans, participants in our study perceived growing separation from the natural world in modern society. This view emerged in our focus groups and online survey of the adult American public. (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 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 American 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.

Not all of the news was bad, of course. Some focus group participants interpreted increased rates of recycling, lower visible pollution, and increased usage of renewable energy as positive. Yet as the conversation continued, these positive examples of "interest in nature" quickly gave way to far deeper concerns over the failure to see the value of nature in and of itself, the growing interest in electronics and indoor activities, the presence of particularly polluted places, the contamination of food with unnecessary chemicals, the greed of corporations, and the lack of time people spent outdoors exploring, playing, and enjoying nature.

When focus group participants thought of interest in nature, they did not use rates of visitation to national parks or national wildlife refuges as their benchmark. Nor did they consider participation

rates in various recreational activities. Instead, evaluating "interest in nature" meant they appraised how society as a whole valued nature, especially revealed in how humans treated the natural world. To cite just one example out of many, consider the responses to a question about how Americans' interests in nature today compared with the interests of people who lived 50 or 100 years ago:

> Respondent 5: I feel people don't cherish nothing anymore, it looks like it's all about the money. I remember the time we [could] eat food...but now they've put out so many chemicals.... (black man, late 70s, some college, low income)
>
> Respondent 7: ....we farm too much, with fish we fish too much, soiling the Earth with all the chemicals...and there's no sense of respect, and I think we're seeing the results of that now. (black woman, late 50s, some college, middle income)
>
> Respondent 8: ....the air's so polluted. And without air we can't live, so that's one of the biggies that we've got to work on: cleaning up pollution and that makes a different. (black man, early 60s, HS incomplete, middle income)
>
> Respondent 1: I've noticed...over the last 20 years...we had hot days, but we never had a plume of haze like we get now.... I guess you could say it's because of the automobiles, but a lot of it is just the pollution that is being put into the air—the plants and things like that. (black woman, late 60s, HS degree, low income)
>
> Respondent 2: Fifty or 100 years ago, I think people were definitely more in touch or in tune with the natural environment around them. People lived off the land, they probably farmed their own land, probably raised their own livestock and things like that. Nowadays with everything being so commercialized, pollutants, things like that [are] just kind of polluting the environment, taking away from it. (black man, late 30s, postgraduate degree, high income)

Focus group respondents pointed out a shifting baseline in what was normal in terms of their exposure to nature and their perceptions of the state of the natural world. Residents of cities and suburbs were becoming "anesthetized," one respondent said. "They don't get shocked anymore by anything. It's like we have that Japanese nuclear thing just wash into the Pacific, and it's making its rounds" (Hispanic man, late 50s, Associate degree, middle income).[6] Another chimed in, stating that people "forgot about it already" (Hispanic man, late teens, some college, low income). A third added, "We're not surprised anymore. We have so many bad things that it's just—a lot of things are crazy in the world" (Hispanic woman, late 20s, HS degree, middle income).

2.3.1 Reasons for Disconnection from Nature

On first glance, the issues that respondents identified (above) may seem tangential to questions of interest in nature or a sense of disconnection from nature. But for respondents in our focus groups, *the treatment of the natural world was deeply rooted in exposure to nature.* "If you don't enjoy getting outside a lot, you're probably not one to care about the outdoors. If you enjoy getting outside and seeing all this fresh air and wildlife, then you kind of start to think about it" (Hispanic woman, late 30s, Associate degree, middle income).

[6] This was an apparent reference to the 2011 earthquake centered on Fukushima, Japan, and the subsequent release of radioactive molecules into the ocean.

Overcoming this disconnection from nature and disinterest in nature therefore 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. Focus group participants underscored their dissatisfaction with their physical landscape having become so artificial and human-made. One described the subdivision where he lived as being "completely an artificial experience on a day-to-day basis. I can't just go outside without seeing manicured sidewalks, and the trees carefully placed. And so, you don't get a sense of the organic" (multiracial man, late 40s, Bachelor's, high income). Cities are "all asphalt, concrete jungles" (white man, late 50s, Associate degree, middle income). One remarked on the loss of natural areas: "Not that many people have that much interest in nature nowadays, I feel, because in my opinion, with the commercial development, a lot of it's being taken away" (black man, late 60s, Bachelor's, low income). Another lamented what was happening in her city with "development":

> ...all the development that has been going on around us: 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. And that could be just simply because our city is growing. But also, I don't think they care whether they cut down another tree to make another apartment or another.... They just do it because they can. And if they were really thinking of nature, well, were they? (white woman, late 60s, HS degree, middle income)

Since nature is "fresh air," one woman's city was a barrier to her access to nature: "You don't get much of it [nature] down here. Too many cars and pollution" (Hispanic woman, late 20s, HS degree, middle income). Another discussion revealed disappointment with participants' urban and suburban environment:

> Respondent 1: It's different down here...compared to around the Carolinas, the Virginias, the Smoky Mountains and Blue Ridge and all that... Like I said, mountains and forests and the natural parks, that to me is—natural streams flowing, waterfalls, and lakes—that's more nature than down here. It's all asphalt, concrete jungles. (white man, late 50s, Associate degree, middle income)
>
> Respondent 8: And it's getting worse in the city. (white man, early 70s, some college, low income)
>
> Respondent 1: Too many people, traffic, pollution in cars and cities: it's terrible that it's happening.

Competing Priorities

A second major reason for the disconnection from the natural world was *other priorities* that "prevent people from really exploring those interests [in nature]" (Hispanic man, late 30s, Associate degree, middle income). These constrained time.[7] Indeed, respondents revealed their perception

[7] The lack of time posed a major barrier for all adults, and even more so for minorities and urban residents. See Figures 2.28, 4.70, and 4.71.

that acting on interests in nature required time, which meant that in respondents' minds, connecting to nature often *had* to occur at the expense of other activities and priorities, as one respondent observed:

> I think a lot of people have interest, but I don't think a lot of people have time to really explore nature, because most of the people I know—I know even with me—it's hard to find time to spend time with the family just at home. So I think people have interest, but time constraints prevent people from really exploring those interests, because you go to a job. A lot of people like to hang up pictures of...nature and stuff, but that's about as close as a lot of people get because [of] time constraints. So—but I think interest is there. (white man, late 30s, Associate degree, middle income)

A 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). 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).

Some focus group participants recognized that a lack of time was a function of implicit or explicit decisions about what to prioritize in life. One respondent remarked that people "are so busy and so consumed in their work...that basically everything...has to just make them money, that they don't care about everything else" (Hispanic man, late 20s, postgraduate degree, high income). 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).

Declining Direct Dependence

A third major reason was *declining direct dependence on the natural world*. According to focus group participants, Americans in the past "were more nature-oriented because they didn't have what we have today: they had to...survive or live with what they had around" (Hispanic woman, late 60s, Bachelor's, middle income). "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)

As focus group respondents listed these major reasons for widespread disconnection from the natural world, they tended to yearn for a time when people felt more intertwined with and knowledgeable of nature. One man described that his mother would go to the back yard and pick the right herbs. "She knew which one. She used to make tea for us. That's something that is also lost" (Hispanic man, early 70s, some college, middle income). Another told of visiting her grandfather, who had an avocado tree; he would always offer her a fruit. She described this and other similar experiences of connection to nature and family as among "the fondest memories I have." It was "one of the nicest things, having the tree in your backyard, and then they all went away" (Hispanic woman, late 30s, HS incomplete, middle income). Indeed, prior generations seemed to know and value something that the American public had forgotten today. One man, for example, spoke fondly of visiting his grandfather who had a farm with chickens and ducks. He articulated a profound feeling that nowadays something is wrong about his and others' relationship with nature, even if he had trouble expressing it. He remarked:

> When I look at that, I said we done got away from things. And I feel that I can—I just been—since I've got older I just don't—I can't explain myself, but I really feel like we just let everything go, all the stuff that our parents taught us and—I guess I can't get it out. (black man, early 80s, some college, low income)

Technology and electronic media

A fourth major reason for disconnection from nature was *technology, especially electronic devices and media*. The blunt assessment of one woman was, "Technology is ruining the kids" (Hispanic woman, late 40s, HS degree, middle income). Another respondent described, "we've lost that contact with nature to a large extent because we don't identify. We've got other things...gadgets and whatnot—that we don't need nature, and we just forget it to a certain extent, but it [nature] needs to be protected" (black man, late 50s, HS incomplete, middle income). Another added that when he was growing up, his parents would tell him to go outside, and he would run out the door. He and his family and friends were "always outside picking up, gardening, or doing something in the yard...and just enjoying to go outside." But in today's society, lifestyles have shifted, especially among children: "You can't get nobody to go outside and go do nothing; they'll stay inside all day" (black man, early 30s, HS incomplete, low income).

It is important to note that *technology's role in disconnecting people from nature was virtually synonymous with technology's role in disconnecting people from one another*. This is one indication

of the social component of experiences in nature. Note the complete overlap of interactions with people and interactions with nature in this remark:

> These kids won't even go outside, they want to stay in and there's video games and these telephones... I was telling a lady the other day... "You go in the doctor's office, you can't even get a conversation with nobody because everybody into that phone." So it's very little of today that nature plays a part, very little. (black woman, early 20s, HS degree, low 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.

Indeed, as focus group respondents looked ahead to the future, many expressed concern over their children's and grandchildren's growing reliance on technology and increasing inactivity in the outdoors. They often felt sorrow from this loss of contact with the outdoors in their lives, and lamented the lack of contact they saw in their children and grandchildren. "We live in a society where we shield our kids from going out" (multiracial man, late 40s, Bachelor's, high income). He said he missed seeing the stars in the night sky and hearing nature in the absence of cars. Among the obstacles one mother of a young child saw was that life had become so structured, "you kind of got to create those experiences for your kids" (Asian woman, late 30s, postgraduate degree, middle income). Another remarked similarly:

> That's one thing that I hate is kids can't do that [ride their bicycles down the street] no more. It's sad that you can't put your kid on a bicycle and say, "Go down the street and come back in 30 minutes." It's like, "You have a cell phone. Make sure you answer the phone. Don't talk to strangers." (multiracial woman, late 30s, Associate degree, middle income)

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 woman suggested: "That's what I'm trying to instill in my granddaughter, everything related to the sea. We have a big garden. We are planting things. It's just precious" (Hispanic woman, early 70s, postgraduate 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).

In short, these respondents were trying to raise their children differently. One asserted, "if you don't teach them right, they'll just be with their electronic devices their entire life. So you need to make those informed decisions for them, and make sure they're staying close to nature" (Asian woman, early 30s, postgraduate degree, high income). Another added the importance of "the way you raise your kids. If you teach them to play the video games, that's what they're going to do their entire life. Tell them to get outside" (multiracial woman, late 30s, Associate degree, 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 2.5 below.) Instead, most adults indicated they had been influenced by others 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 into nature...they have a real interest," said one who works on rivers and in forests. "We meet people up there—'Gosh, I've never been out in the forest, I've never been out in a place like this,' and they like it once they get out there" (Hispanic man, late 60s, Bachelor's, high income). One older sister talked about her younger brothers, who prefer being inside because of "safety...dogs and drowning and stuff like that," but also because video games give them "a sense of accomplishment." She paused, noting that her brothers *do* like nature. "They definitely enjoy it when they're outside. They're just scared, I guess" (Hispanic woman, late teens, some college, high income). Another added that people connect with nature as they are able to do so, but again the constraints of modern life make this increasingly difficult:

> I think people have interest, but time constraints prevent people from really exploring those interests, because you go to a job. A lot of people like to hang up pictures of stuff, of nature and stuff, but that's about as close as a lot of people get because [of] time constraints...but I think interest is there. (white man, late 30s, Associate degree, middle income)

2.4 Influences on Adults' Relationship with Nature

The survey of American adults revealed the people and experiences that have influenced how they view nature. More than one-third of our respondents cited parents as the greatest influence on how they think and feel about nature (Table 2.5). Indeed, nearly 60 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 Americans' connections to the natural world.

Table 2.5: Most Influential Person on How Adults Think or Feel about Nature

Person	%
Parent	37
Other	17
Friend	13
Grandparent	10
Teacher	5
Other relative	5
Brother/sister	5
Fish/wildlife/outdoor professional	4
Scout leader	2
Camp counselor/Youth group 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 man cited his interest and knowledge of fishing came from his father, including careful fishing practices and conserving marine life. He remarked, "Since I grew up in the outdoors, I always throw [fishing line] away so a turtle don't get snagged or anything like that. I learned to love it more and pass it on to my kids" (Hispanic man, late 50s, Associate degree, middle income). Another 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).

Via an open-ended question, survey respondents also described an experience that most influenced how they think or feel about nature (Figure 2.13). Most commonly, adults mentioned camping, fishing, and hiking. A large proportion of these experiences occurred when the adults were children and included family members such as parents, siblings, and grandparents.

Figure 2.13: Single Most Influential Experience in Nature

Question wording: What experience would you say most influenced how you think or feel about nature?

To examine these responses further, the research team drew 150 responses randomly, and then coded them for major themes. Out of 150 quotations three major themes emerged:

- 19 responses, or 13 percent, said they did not know or were unsure.
- 42 responses, or 28 percent, explicitly mentioned childhood.
- 25 responses, or 17 percent, explicitly mentioned another person or group of people. Of these 25 answers, 20 of them overlapped with mentions of childhood. That is, only five did *not* explicitly mention childhood.

- Upon eliminating overlapping codes, 89 responses, or 54 percent, could be categorized as explicitly fitting under one of these three themes.[8]

A representative selection of these responses reveals the breadth of nature experiences. The responses reinforce the importance of childhood, exploration—that is, something original or unanticipated occurring—and the presence of familiar people. A sample of these remarks follows:

- "The first time I saw a dolphin. I was at a dock in Florida, and suddenly I saw a dolphin swim up, and it was magical. Ever since, I feel like it's my purpose to protect them." (white woman, 19, urban, HS degree, middle income)
- "Playing in the woods as a kid, building tree forts and exploring nature." (white man, 38, urban, Bachelor's, high income)
- "The peacefulness of being outdoors." (black man, 34, urban, HS incomplete, low income)
- "Visiting national parks." (white woman, 66, suburban, Bachelor's, middle income)
- "I have a great respect for nature after my father took my brother and I hunting in the wilderness, and he taught us how to live off the land and to respect the beauty around us." (white man, 46, rural, Bachelor's, middle income)
- "I have traveled to northern Europe with my parents and admired nature. Mountains, oceans, waterfalls. It was an amazing experience growing up." (Asian woman, 30, urban, Bachelor's, middle income)
- "My husband having us go to Shenandoah [National Park] to go hiking." (white woman, 39, suburban, postgraduate degree, high income)
- "Traveling around my home state and around the world has influenced how attached I feel to nature. Learning about how humans have destroyed nature and its species is another reason why I feel passionate about appreciating and preserving what we do have left in this world." (Hispanic woman, 22, suburban, some college, low income)
- "Camping as a child." (white woman, 22, suburban, Bachelor's, low income)

Focus group respondents, particularly when asked about affectionate feelings towards nature, often discussed their experiences as children with the natural world. These experiences often occurred with parents or grandparents and involved learning to bike, visiting parks, fishing, camping, or visiting a grandparent's farm. "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).

[8] 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.[9]

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 both focus group participants and 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. In addition, data collected in a 1978 national study of American adults allow for some direct comparisons between how Americans valued nature and wildlife then and now. This material is reviewed following the presentation of the 2016 data.

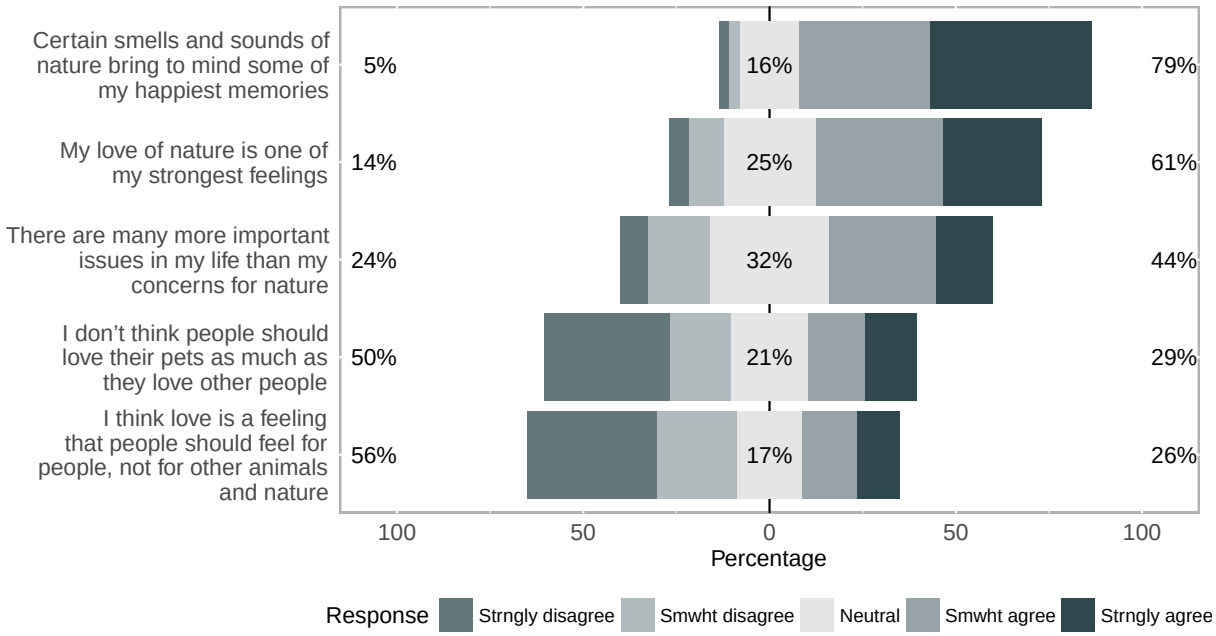
The findings presented here offer a distinct view of American adults. Most appear to have strong feelings of affection and attraction to nature, believe nature gives them peace and spiritual support, and are not averse to different aspects of the natural world. In addition, most adults believe in limits 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 American adults 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, 79 percent 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, 44 percent agreed they faced more important issues in life than their concerns for nature and wildlife.

[9] 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.

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."

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. When they 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.

Rather than being a solitary endeavor, affection for nature frequently connected people together. One person recalled times in childhood playing together outdoors: "you bonded in a different way back then. That's the affection and peace" (black man, late 40s, postgraduate degree, high income). Another participant described a morning routine of visiting the beach and conversing with,

> ...an elderly guy that's out there feeding the birds at the beach, so I will take bread to him and just hold conversation with him and listen to all his stories. We feed the birds, and it's—it gives me a sense of calmness, relaxation... Just to have a conversation, and to listen to old knowledge, wisdom. He educates me, and he knows some things I was not aware of. (black woman, late 30s, Bachelor's, middle income)

Others remembered fondly the lessons they learned about nature and wildlife from special people. Sometimes, these interpersonal connections spanned generations, linking the past with the present

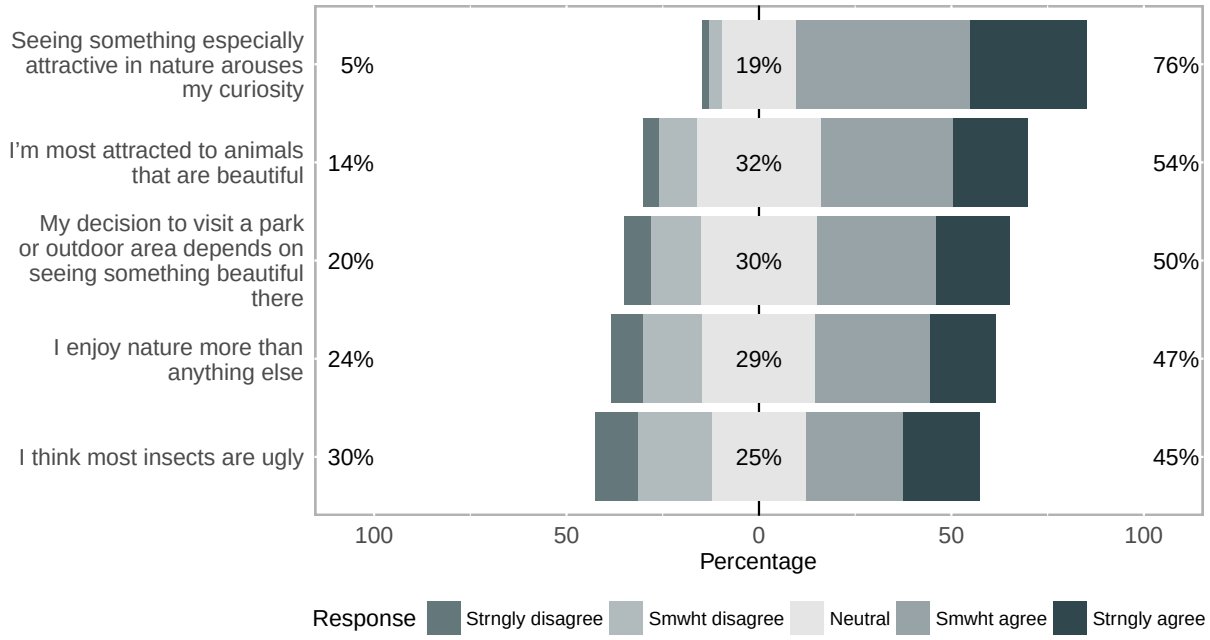
and even the future. Grandparents taught parents, who in turn taught their children, who intend to teach their children. Consider how one man's present-day experiences of outdoor activities connects him with memories of those with his father, who has now passed away:

> ...growing up, I spent a lot of time outdoors just camping, fishing, then I went with my mother and my father. I don't have my father anymore, so when I'm outdoors doing the camping, the fishing, it brings back memories of me spending time with my father. (Hispanic man, late 30s, Associate degree, high income)

More than connecting him to the past, these activities also link him to the *future* as he thinks about his own children. Now that he has children, "I want for them to have that attachment to nature to bring back memories when they grow up, you know, when they spend time outdoors, I want them to feel that attachment to nature and remind them of me."

2.5.2 Attraction to Nature

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."

The natural world also held great aesthetic appeal and attraction for many Americans in our study, including a sense and appreciation for its beauty. For example, most adults (76 percent) agreed that seeing something aesthetically attractive in nature arouses their curiosity (Figure 2.15). About half (54 percent) agreed they are most attracted to animals that are beautiful, and almost half (47 percent) said they enjoy nature more than anything else. The data indicate attraction to nature often involves beauty, but not in all cases: for example, 20 percent 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: nearly half of the respondents (45 percent) agreed most insects are ugly.

Among focus group participants, nature appeared to be most attractive to them under three particular circumstances: when it aroused one's curiosity, when it appeared aesthetically pleasing, and when it occurred in remote locations.

In terms of curiosity, changing seasons, rain storms, and the sun were often cited as aesthetically pleasing and changes that incited interest. Among the colors of nature participants cited as especially attractive was the color green. Experiences that aroused aesthetic curiosity was especially related to the unexpected and the surprising. For example, one man described a recent highly aesthetic experience occurring near his apartment complex when black-crowned night-herons unexpectedly nested there:

> ...there [were] six of them, in these trees, right at this intersection. And every day, I could go there and look at these birds... It was the most fabulous thing to me that I had ever seen... These herons decided to pick that location to set up their winter ground, because—they're gone now. (white man, late 50s, some college, middle income)

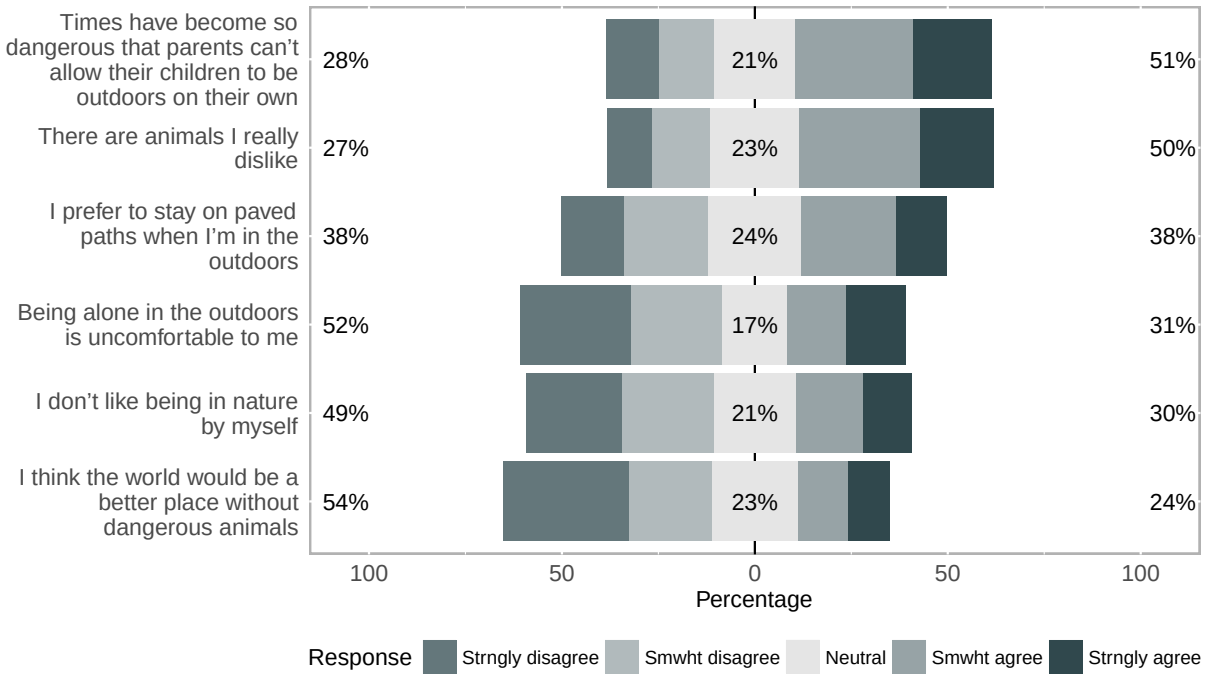
Many participants mentioned natural attractions close to home, but most emphasized their attraction to natural places and wildlife far from home. The remoteness of these locations seemed to reinforce the perception of their "purity." Some discussed faraway places they had visited, while others what they had seen on television or really wanted to one day encounter in person. One woman expressed a strong desire to see a giraffe gallop across the plains of Africa. Another woman tended to discount the aesthetic appeal of nature close to home. Nearby parks were (or could be) "pretty," but they were not the same as more exotic and remote locations:

> I think living here in the city, when we go away, we appreciate nature more because we have [a large park], but that's trees and stuff. That's not—I don't consider that "nature." It's pretty—flowers, trees—but going away to, like, Hawaii, Costa Rica, going to the Grand Canyon...it's like, "Wow." (white woman, late 50s, HS degree, middle income)

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 Americans also expressed avoidance and fear of aspects of nature and wildlife (Figure 2.16). For example, one-half (50 percent) agreed there are animals they really dislike. A similar proportion (51 percent) associated danger with the outdoors, particularly the fear of allowing children to be outside on their own. Despite these general fears of nature, relatively few adults were hostile to all aspects of nature. About half (52 percent) disagreed that being alone in the outdoors would be uncomfortable for them, or disagreed that they do not like being in nature by themselves (49 percent). Over half (54 percent) disagreed the world would be a better place without dangerous animals.

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."

The focus groups revealed some fear and avoidance of nature and wildlife, although these anxieties appeared to be focused on particular species—generally where these species were more geographically prevalent. For example:

- Snakes were discussed in all focus groups except for Miami and Los Angeles.
- Spiders were discussed extensively in Dallas, Houston, and Jacksonville.
- Coyotes were discussed extensively in Chicago.
- Mosquito- or tick-borne pathogens were discussed in Dallas, Houston, Jacksonville, and Miami.

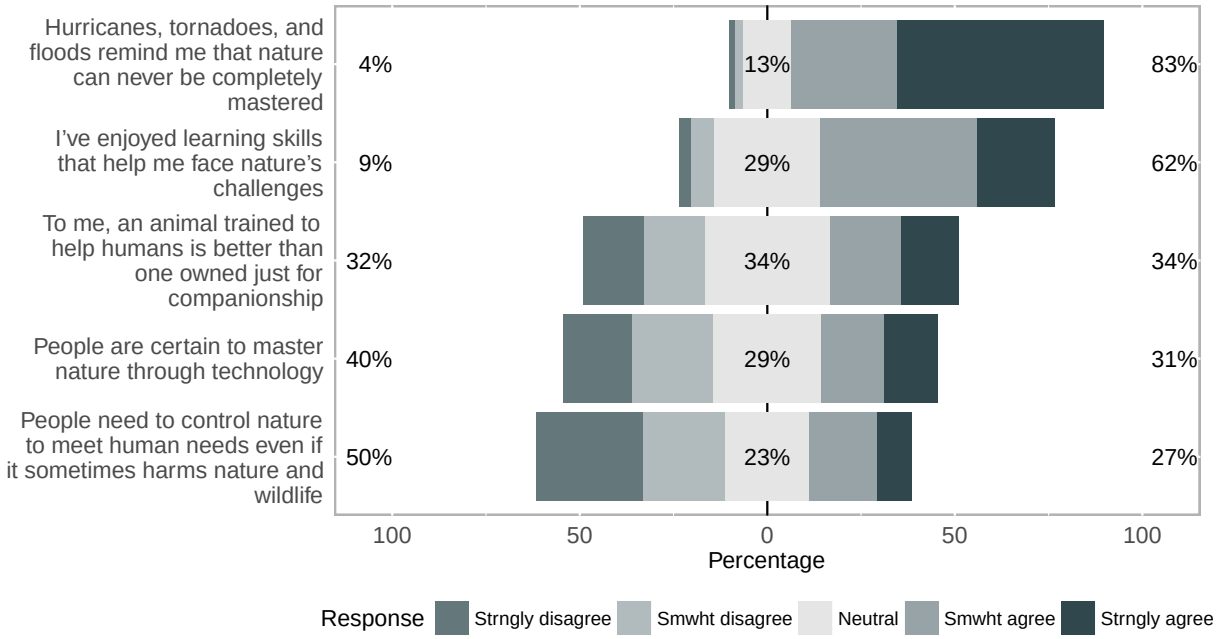
Focus group participants often suggested media and, in particular, reality TV had helped spread greater fear of nature than once existed.

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 American adults (83 percent) still regarded nature as largely uncontrollable and incapable of ever

being completely mastered (Figure 2.17). Even if nature were controllable, one-half of the respondents (50 percent) disagreed that people ought to control nature if the consequence were substantial harm to nature and wildlife.

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."

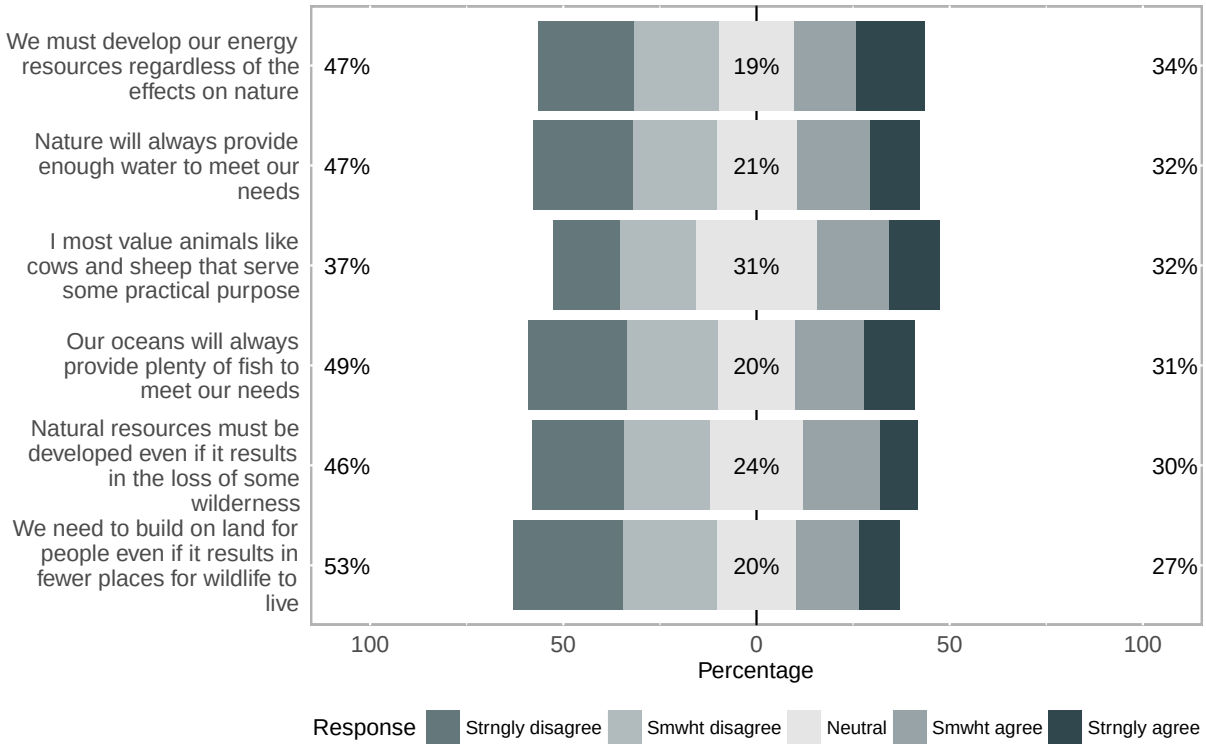
Focus group participants also commented on the human control of nature. They particularly cited examples of people attempting to control nature such as unwanted animals, insects, and plants. In the warmer locations of Florida and Houston, participants acknowledged air conditioning as a way of controlling nature, although they doubted the human ability to master weather. Focus group participants generally agreed that humans are unable to control nature. It was not uncommon for participants to say people should not even try to control nature, and some spoke of the negative outcomes when people try to do so. For example, one respondent remarked, "I think most people are fools to try to [control it] because it never ends well" (white man, early 20s, Bachelor's, middle income). Another suggested, "I think we're the fleas, and we're on Mother Nature's back actually, and she's trying to shake us off because look at all these disasters been going on. I think she's probably tired of us abusing the earth... You watch—something big's going to happen" (white man, late 40s, HS degree, low income).

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, about one-half of American adults disagreed with some aspect of exploitation when it seemed especially excessive and destructive (Figure 2.18). For example, over half of Americans disagreed with the utilization of nature if it reduced places for wildlife to live (53 percent). Across all questions, roughly one-third of respondents supported various forms of material exploitation, even when it resulted in adverse consequences on the natural world.

Figure 2.18: Values of Exploitation



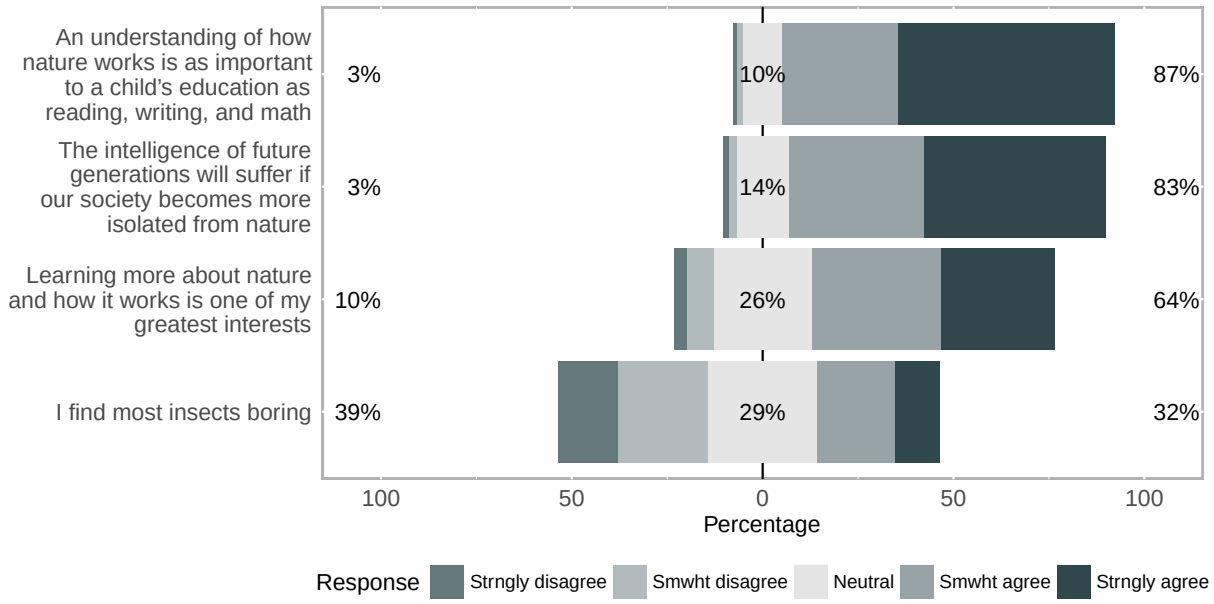
Note: The percentage listed on the left side combines "strongly disagree" with "somewhat disagree." The percentage listed in the middle reports the neutral category ("neither agree nor disagree"). The percentage listed on the right side combines "strongly agree" with "somewhat agree."

Many focus group participants expressed concerns regarding harmful impacts on nature in the course of exploiting natural resources. For example, one man described being a youth in Alaska and seeing a "huge" salmon run, which left a strong positive impression on him. Because of efforts to control the flow of water and to provide energy associated with this salmon run, he noted, "The salmon runs for a variety of reasons aren't what they used to be. You can go up there now, and you'd have to look real hard to see a few of them going by. It's really not the same as it used to be" (Asian man, late 50s, some college, middle income).

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 Americans surveyed (87 percent) 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 (83 percent) further agreed the intelligence of future generations will suffer if our society becomes isolated from nature. Finally, some two-thirds (64 percent) 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.

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."

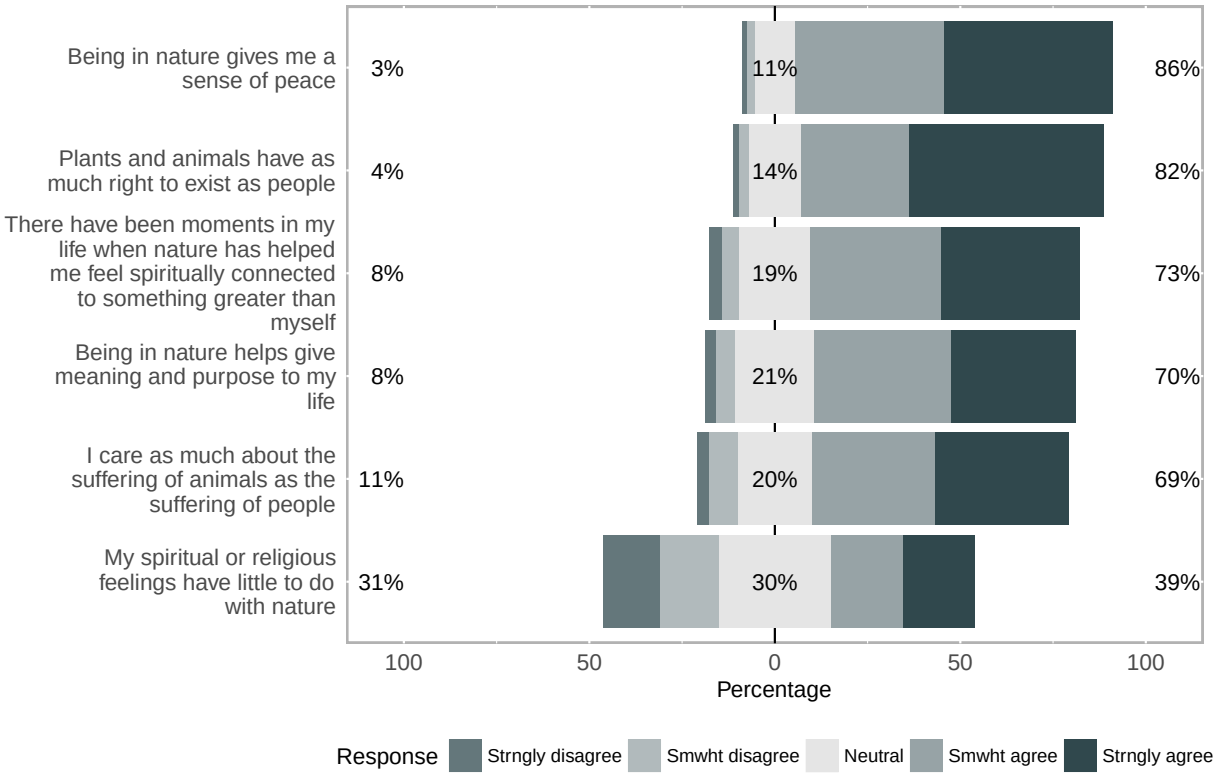
In focus group conversations, many thought learning about nature was important for human survival and contributed to people's safety, sustenance, and security. One respondent even suggested, "Without nature, we'll perish. There wouldn't be no human life without nature. I mean God gave us life, but we rely on nature for food, air, water, and if the ocean dries up, and all the trees die and all the animals die, there's no mankind. There's no you" (black man, late 30s, HS degree, middle income). Others discussed the importance of learning about animal husbandry and the health benefits that gained from a knowledge of nature. Participants also spoke highly of the knowledge they and others gained from contact with nature. For example, one man described the sugar cane factory near where he had been raised, and how his father knew by the position of the moon the best time to farm various types of sugar cane. He remarked:

> They knew if they didn't observe that thing, the cane would not produce enough sugar, juice for the sugar cane. It looks like they somehow...knew, and they passed that through generations through generations...the best time to do the farming. There is something that we could learn from nature. (Hispanic man, late 60s, some college, low income)

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 (86 percent) agreed being in nature gives them feelings of peacefulness (Figure 2.20). Some three-quarters of adult Americans agreed that there have been moments in life when nature helped them to feel spiritually connected to something greater than themselves (73 percent), and that being in nature contributed to feelings of meaning and purpose to their lives (70 percent). 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 (82 percent) and that they personally care about the suffering of animals as much as the suffering of people (69 percent).

Figure 2.20: Values of Spirituality



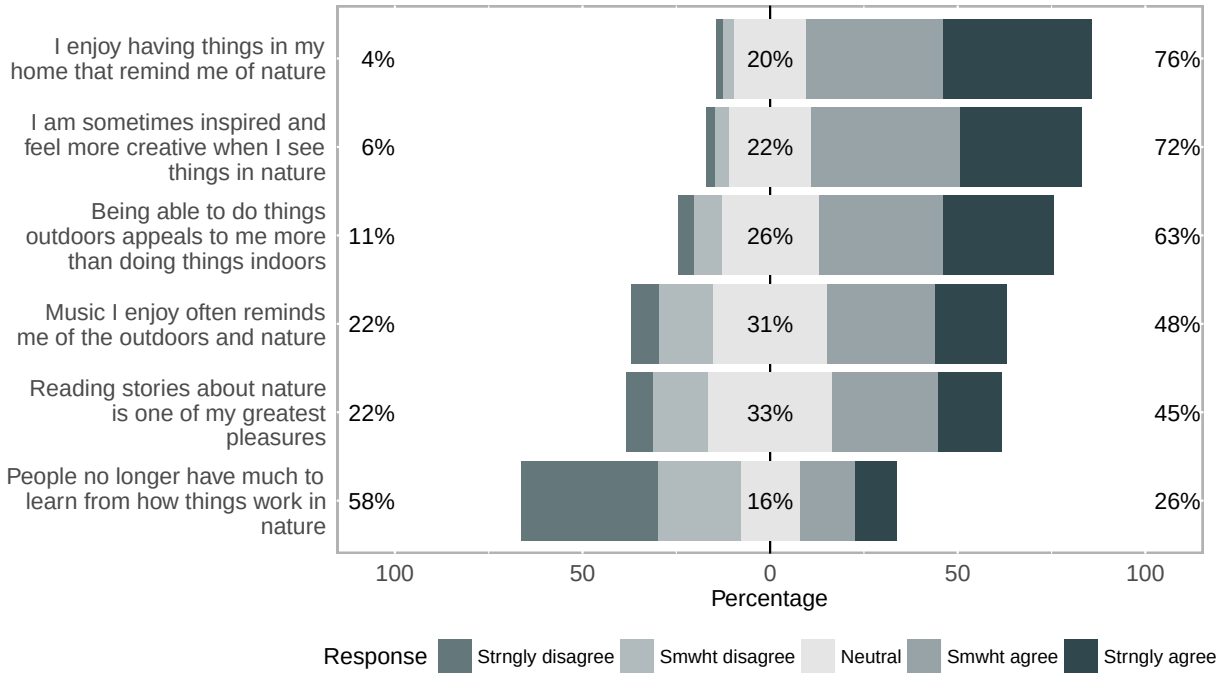
Note: The percentage listed on the left side combines "strongly disagree" with "somewhat disagree." The percentage listed in the middle reports the neutral category ("neither agree nor disagree"). The percentage listed on the right side combines "strongly agree" with "somewhat agree."

Valuing the spiritual dimension of nature was marked by a sense of awe and wonder for the natural world. For example, some focus group participants thought this degree of connection to nature helped make them feel closer to the divine and to creation. These complex views were often difficult to put into words. As one respondent remarked, "I don't know how to describe it. It just brings the serene to me, to be up there and know that over millions of years, all this stuff happened... I don't know whose God made it all, but I'm damn sure glad he made it" (black man, late 50s, some college, middle income). Another described nature as being "my church, my spirituality." He referred to taking his mountain bike out on a trail during the longest day of the year to watch the sun rise. Then, he traveled elsewhere to watch the sun set. "It was incredible, I felt perfect—this place couldn't be any more perfect" (Hispanic man, late 30s, HS degree, high income).

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 American adults enjoy surrounding themselves with representations and images of the natural world (Figure 2.21). For example, 76 percent of adult Americans 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 (72 percent). Nearly half agreed that reading stories about nature and music that reminds them of nature are appealing.

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."

Focus group participants mentioned particular symbols, including visual art, decorations from nature, songs or music inspired by nature, the materials used in building construction (such as wood or rocks), and television programs and movies about wild animals and places. These symbols of nature appeared to increase people's knowledge and peace of mind. One respondent remarked that representations of nature "[put] you in the mind of nature...[providing] a more natural way of interacting with the outside.... [I]t's not so much words and thoughts about a thing, it's more of an experience. That's what art does, too, with nature. It makes you experience it without necessarily thinking about it too logically" (black woman, late 30s, some college, middle income).

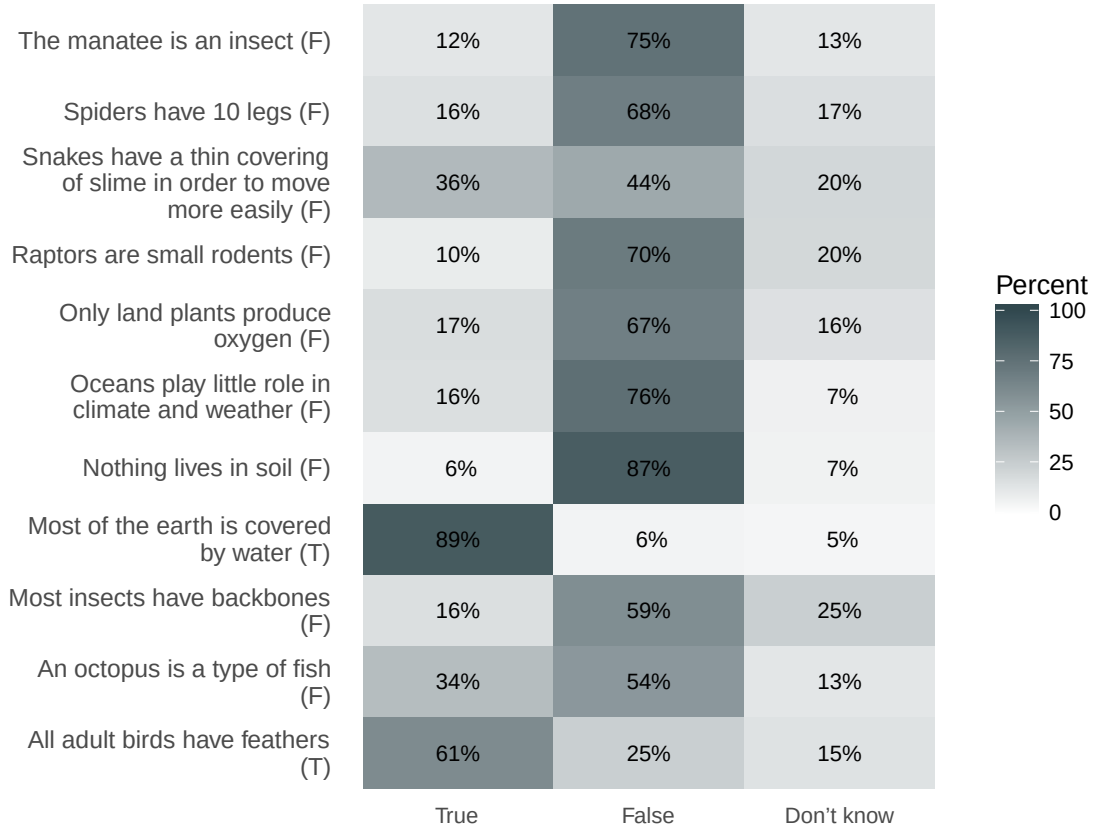
2.6 Knowledge of Nature and Wildlife

What do Americans 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) number of correct responses was 7.5 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.) The highest proportion correctly answered, "Most of the earth is covered by water" (89 percent correctly answered true), followed by "Nothing lives in the soil" (87 percent correctly answered false). Adults were most confused about whether or not snakes have a thin covering of slime in order to move more easily: 44 percent gave the correct answer (false), 36 percent gave the incorrect response (true), and 20 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 0.8 points lower on average; blacks, 1.3 points lower; Asians, 0.5 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 scored one-tenth of a point lower than men, on average—again, adjusting or controlling for other factors.
- Scores make a U-shape by age: average scores declined as respondents reach middle age, and then rose again.
- Adults with more formal education performed better on the knowledge questions. Adults with some college scored approximately 0.6 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, almost 1 point higher than adults with a high school degree or less.

- Adults with higher incomes scored lower on the quiz than respondents with low incomes. The very highest income-earners surveyed (those in households earning $150,000 or more per year) scored 1 point lower than adults in households earning $50,000–$75,000 per year.
- Suburban and rural respondents scored higher on the knowledge questions than did urban residents. Suburban adults, on average, scored 0.6 points higher than urban residents; rural adults, 1.0 points higher.
- Adults who reported spending more time outside had lower quiz scores, on average. Using adults who spend two hours or less outside each week as a comparison, adults who spend 11–20 hours outside scored 0.5 points lower. Adults who reported spending 30 or more hours outdoors scored 0.9 points lower than those who reported spending little time outdoors.
- Compared with adults who ranked their interests in nature as among their least enjoyable, other adults scored 1.5–2.5 points higher. For example, those who put their interest in nature as among their most enjoyable scored 1.5 points higher.

2.6.1 Comparison of Quiz Answers in 2016 with 1978

Six knowledge questions asked in 2016 overlapped with a national study conducted in 1978.[10] Clearly, economic, social, and political conditions in the US have changed since then. Much of the focus and content of the 1978 national survey of American adults differed from the 2016 survey of American adults; so, too, did much of the question wording and the methodologies used.[11] 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 make direct comparisons possible.[12]

The average respondent in 1978 correctly answered 43 percent of all 33 questions asked. By comparison, the average respondent in 2016 correctly answered 68 percent of all 11 questions asked (Table 2.6). Illustrating the changes, in 1978, 26 percent correctly answered a manatee is not an insect, in contrast to 75 percent of adults today. One-half (50 percent) of respondents in 1978 correctly answered a question about the number of spider's legs, in contrast to 68 percent today. For other questions, adults today had responses similar to those encountered in 1978. For example, roughly the same number of adults now as then correctly answered that all adult birds have feathers (63 percent in 1978 and 61 percent in 2016), and that most insects do not have backbones (57 percent in 1978 and 59 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.

[10] 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.

[11] 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.

[12] A recent comparison may be found in George, Kelly A., Kristina M. Slagle, Robyn S. Wilson, Steven J. Moeller, and Jeremy T. Bruskotter. "Changes in Attitudes toward Animals in the United States from 1978 to 2014." *Biological Conservation* 201 (September 2016): 237-42.

Table 2.6: Comparisons of 2016 Study to 1978 Study

	Correct (%)		*Wrong (%)*		*Don't know (%)*	
	1978	2016	1978	2016	1978	2016
The manatee is an insect	26	75	23	12	51	13
Raptors are small rodents	12	70	14	10	74	20
Spiders have 10 legs	50	67	18	16	32	17
All adult birds have feathers	63	61	22	24	15	15
Most insects have backbones	57	59	13	16	30	25
Snakes have a thin covering of slime	52	44	30	36	18	20

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 national study. 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 26 percent.
2. In 1978, 66 percent agreed they had owned pets as dear to them as another person. In 2016, 63 percent 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, 49 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, 65 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 65 percent of American adults 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, 70 percent 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, 36 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, 79 percent reported "a lot" (34 percent) or "some" (45 percent) interest in watching nature-related television programs.
9. In 1978, 11 percent reported membership in a conservation-related organization, while in 2016, 15 percent indicated "a lot" of interest in belonging to nature and wildlife-related organization.

Though the foregoing results are a relatively small proportion of the questions asked in the 1978 and 2016 national surveys, important similarities and differences emerge in Americans' values toward nature and wildlife. Respondents in both studies showed consistently high affection for and attraction to nature and wildlife. Americans appear as inclined as ever to have positive feelings of attachment and appreciation to the natural world. We also found certain creatures and environments remain sources of fear and aversion to most people, although 2016 results indicated at least a greater intellectual interest in learning more about insects. Few respondents in surveys supported the exploitation of nature and wildlife if it either resulted in significant harm to nature.

2.7 Benefits of Nature

Alongside examining the ways Americans 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." Of considerable importance to many adults surveyed was also how nature gives humanity peace 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. One respondent remarked that nature brings "a sense of escape from just city life for me" (Native Hawaiian man, early 20s, Bachelor's, middle income). Another described, "If I'm stressed out, I like to go for a jog outdoors or just lay out someplace and look up at the stars—that type of thing. It's relaxing" (white man, early 40s, postgraduate degree, high income). A third described the sound of rain and waterfalls as a "stress-buster" (Hispanic woman, late 20s, postgraduate degree, high income). A fourth said nature helps humans accept their limitations and to allow a feeling of mystery into their lives:

> I think one of the greatest benefits that we have is really that we get a sense that we exist in a context that's greater than our own points of view. You go on the mountain, and you get just...filled with the majesty of what you see around you. It makes you feel very, very small.... So, really, that...acceptance of [things within] us...that are going on around us, beyond our control, I think, is one of the greater things that we can learn. (Asian man, early 50s, Bachelor's, high income)

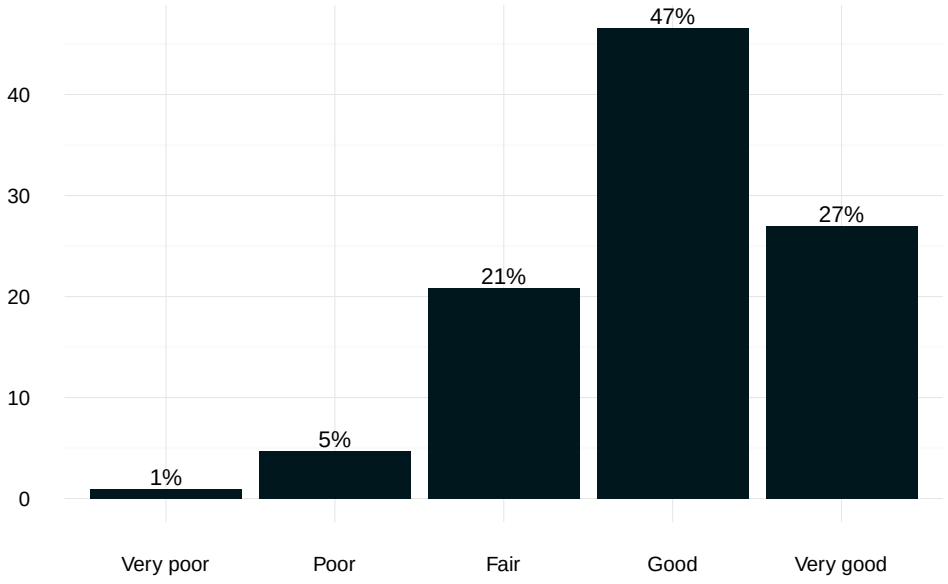
2.7.1 Health and Quality of Life

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). More than 70 percent viewed getting outdoors as very or extremely important for their physical health (Figure 2.26). Less than 10 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 of adult Americans 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 important. These responses indicate widespread awareness among most American adults of the importance of nature for fostering emotional as well as physical benefits.

Figure 2.23: The Single Most Important Thing Nature Gives Us

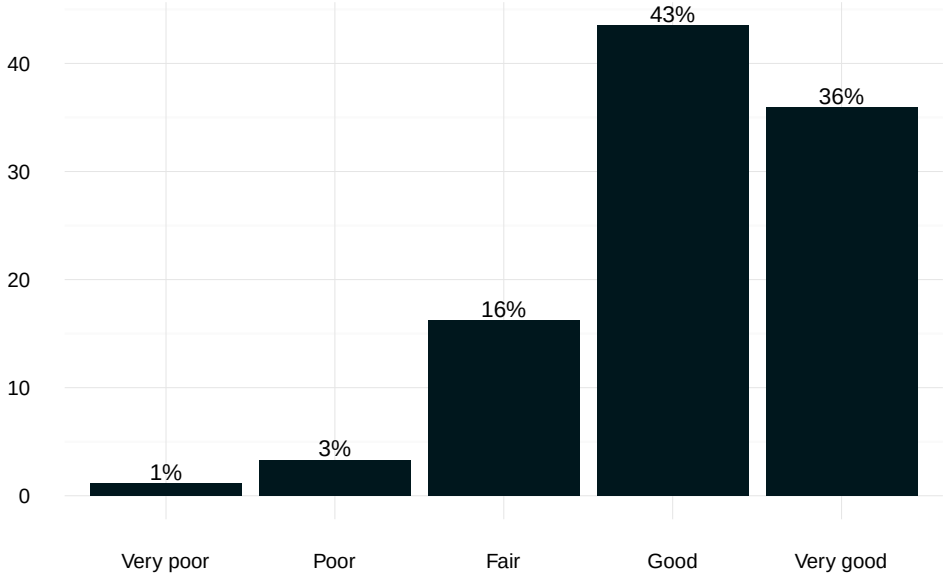
Question wording: What do you think is the single most important thing that nature gives us?

Figure 2.24: Self-reported Physical Health



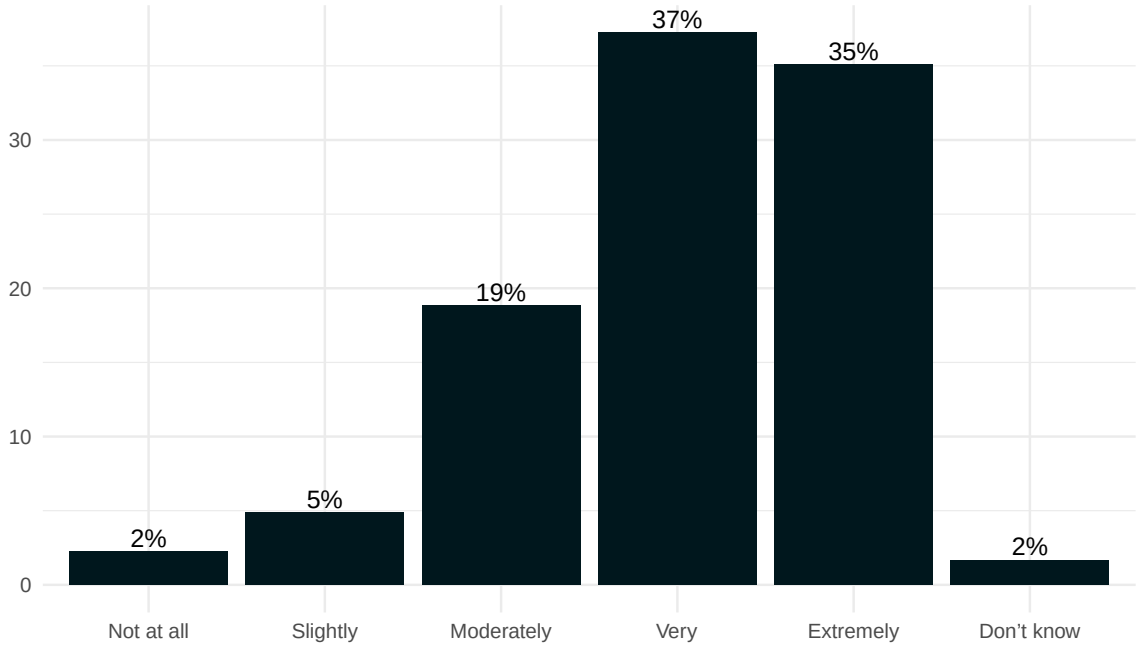
Question wording: In general, would you say your physical health is ...very good ...good ...fair ...poor ...very poor?

Figure 2.25: Self-reported Emotional Outlook on Life



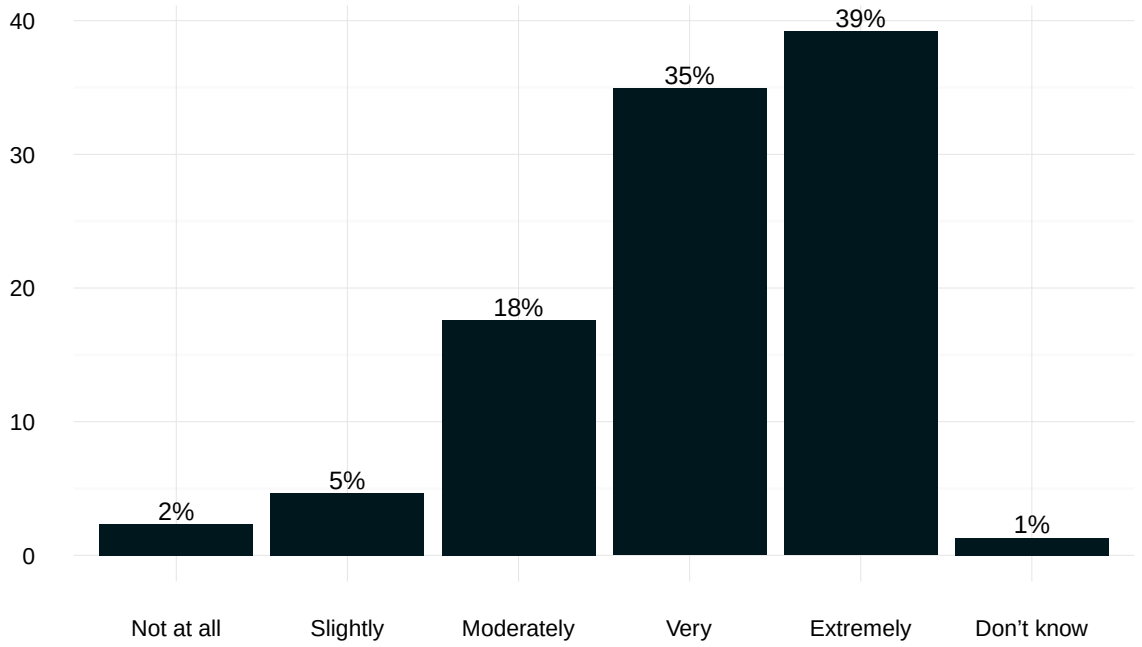
Question wording: In general, would you say your emotional outlook on life is ...very good ...good ...fair ...poor ...very poor?

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 2.7 shows the relationship between self-reported physical health and how important respondents viewed nature as an aid in sustaining their physical health. Most adults (61 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," 31 percent saw contact with nature as "extremely important."

Table 2.7: Perception of Physical Health and the Importance of Nature for Helping It

Importance	Very poor	Poor	Fair	Good	Very good
Not at all	6%	3%	3%	2%	1%
Slightly	16%	12%	8%	4%	2%
Moderately	25%	29%	29%	20%	7%
Very	12%	32%	35%	44%	29%
Extremely	31%	20%	22%	28%	61%
Don't know	10%	4%	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 2.8). Most respondents (59 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, 37 percent of those who had "very poor" emotional outlook rated contact with nature as "extremely important" to their emotional outlook.

Table 2.8: Perception of Emotional Outlook and the Importance of Nature for Helping It

Importance	Very poor	Poor	Fair	Good	Very good
Not at all	10%	7%	3%	2%	2%
Slightly	8%	11%	9%	5%	2%
Moderately	13%	23%	28%	21%	9%
Very	26%	24%	31%	43%	28%
Extremely	37%	34%	25%	29%	59%
Don't know	6%	2%	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 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 American 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, money, and relational support.

- 71 percent said a lack of *time* was a moderately, very, or extremely important hindrance to their interests in nature today. (An identical percentage indicated the presence of other more important things in their lives.)
- 63 percent said *financial reasons* were moderately, very, or extremely important.
- 61 percent said a *lack of friends* to be with outdoors was moderately, very, or extremely important.

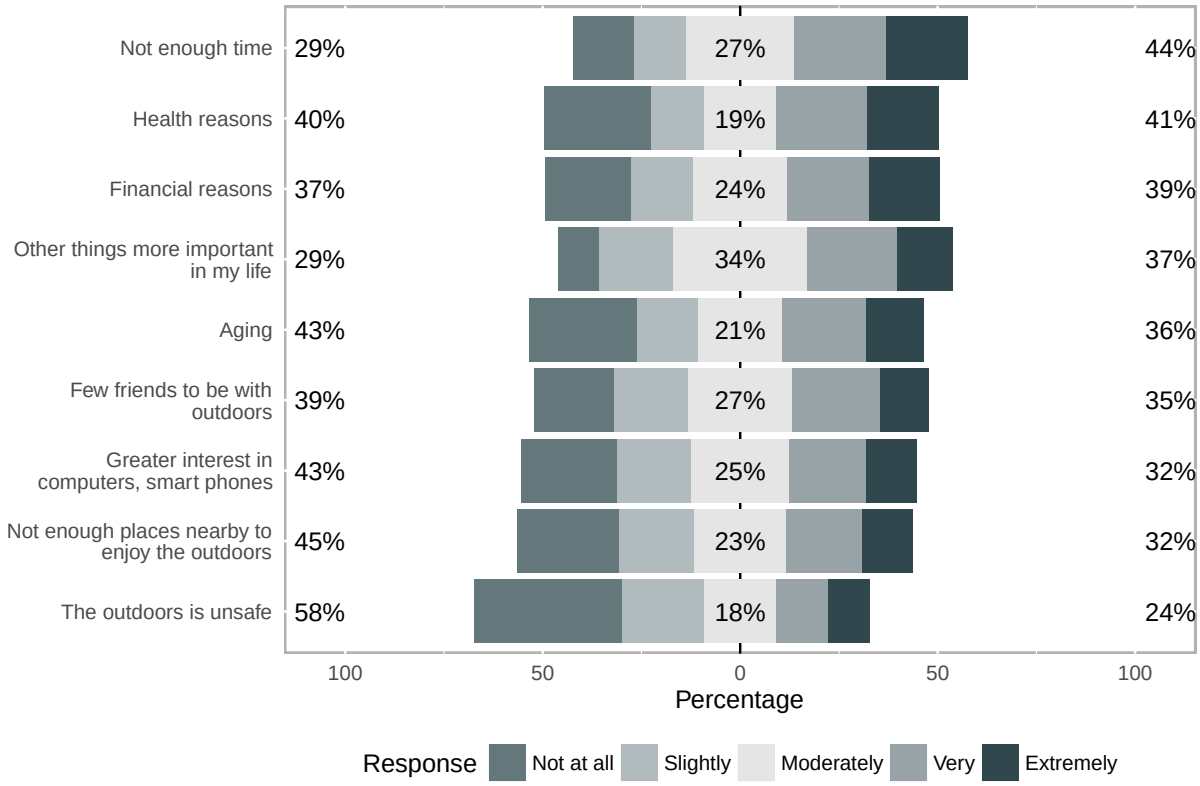
Slightly less frequently cited were health reasons (60 percent said these were at least moderately important) and aging (57 percent), followed by greater interest in computers, smart phones, and electronic media (57 percent) and a lack of places nearby to enjoy the outdoors (55 percent). For adults as a whole, the least important concern was the safety of the outdoors, although Section 4.5 reveals wide variation by race and ethnicity.

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 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.

How do these three barriers compare with the five major reasons for disconnection that respondents described in Section 2.3: 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

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.

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" 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 time 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. One asserted the importance of making a "commitment" to doing activities with children, especially visiting zoos and supplying his children with books about nature. "I think you gotta also build that interest.... I just say, 'Read this,' and try to pique their interest in seeing and doing something else besides playing video games." In his mind, parents needed to "keep prodding them and keep pushing them so that they'll appreciate it as they get older" (white man, late 30s, Associate degree, middle income).

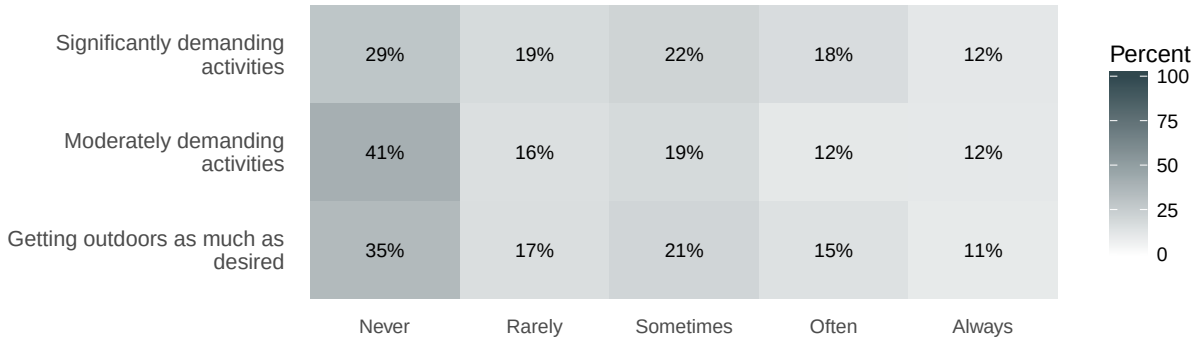
As the results above indicate, barriers to spending more time in nature tended to be more social than physical. When focus group participants did mention naturally occurring barriers, they frequently cited the weather and wildlife such as snakes or insects. For example, one respondent who lived in a 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). Forty-eight percent said their health limited them in this regard "never" or "rarely." In contrast, 30 percent of adults 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.
- 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.

Figure 2.29: Health Limits on Physical Activities

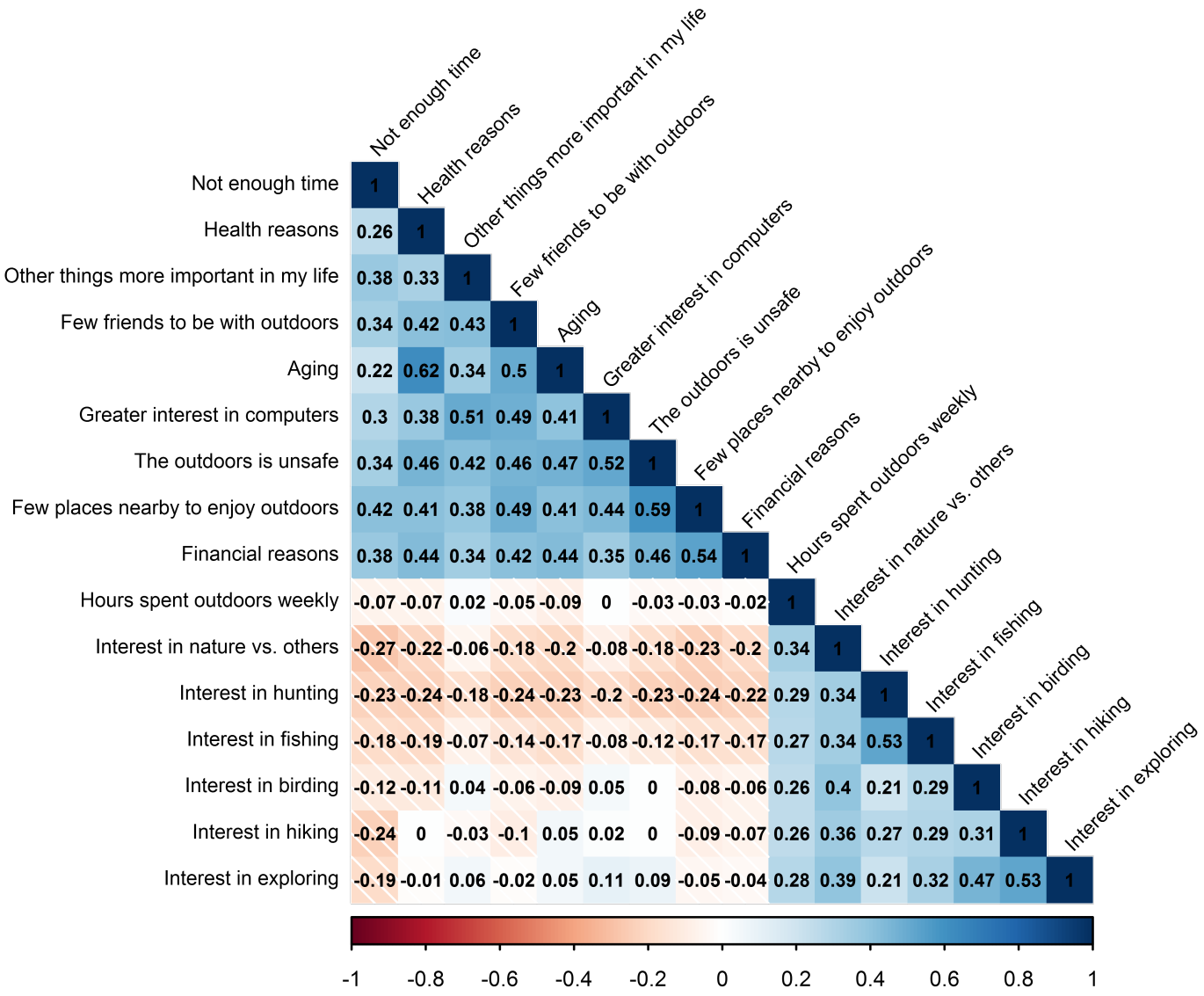


Note: Rows may not add to 100 percent due to rounding. Question wording: To what extent does your health limit your ability to be involved in each of the following? ...Moderately demanding activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf ...Significantly demanding 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.

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 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*.

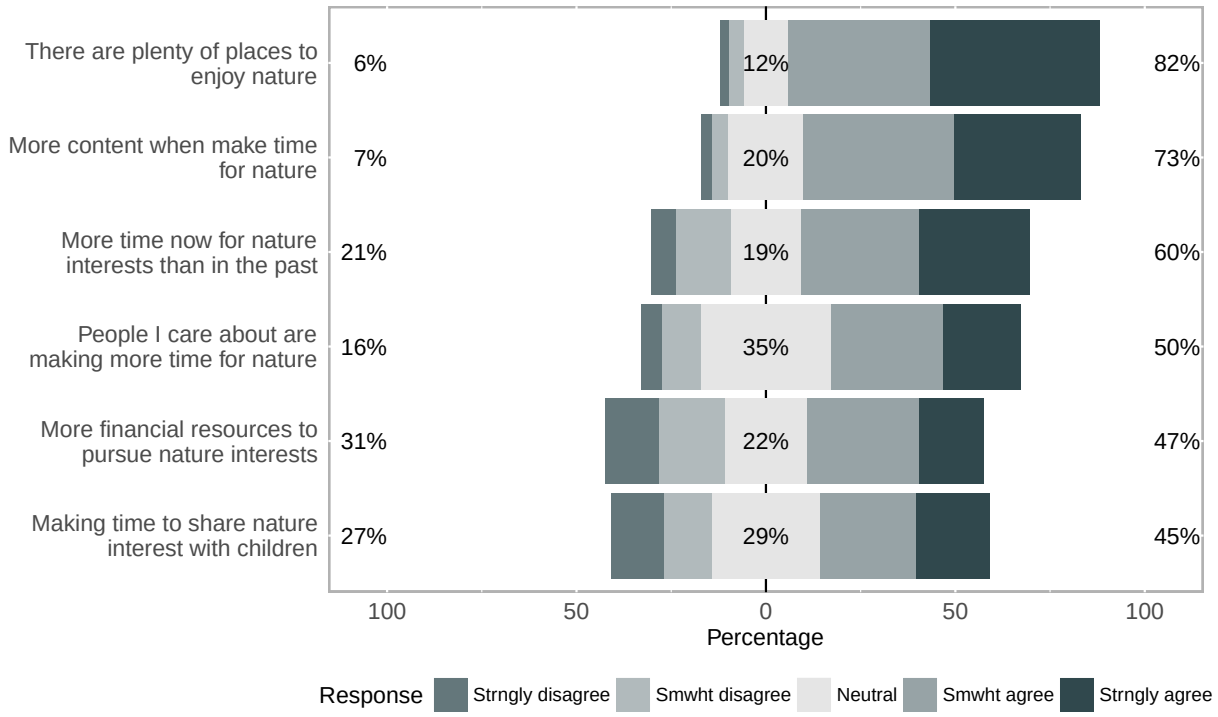
These barriers tended to be negatively related to particular outcomes. For example, a lack of time was negatively related to interest in activities like hunting, fishing, and hiking. A lack of time had a slight negative relationship with time spent outdoors. Overall, these various barriers had a stronger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

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.

2.8.1 Facilitators to Interest and Activities in Nature

We also examined facilitators to interest and activities in nature (Figure 2.31). The same three major factors also 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, 60 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 (47 percent) said they had more financial resources to pursue their interests in nature. One-half (50 percent) said people they care about are making more time for nature; almost as many (45 percent) said they were making time to share their interests in nature with children.

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.

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

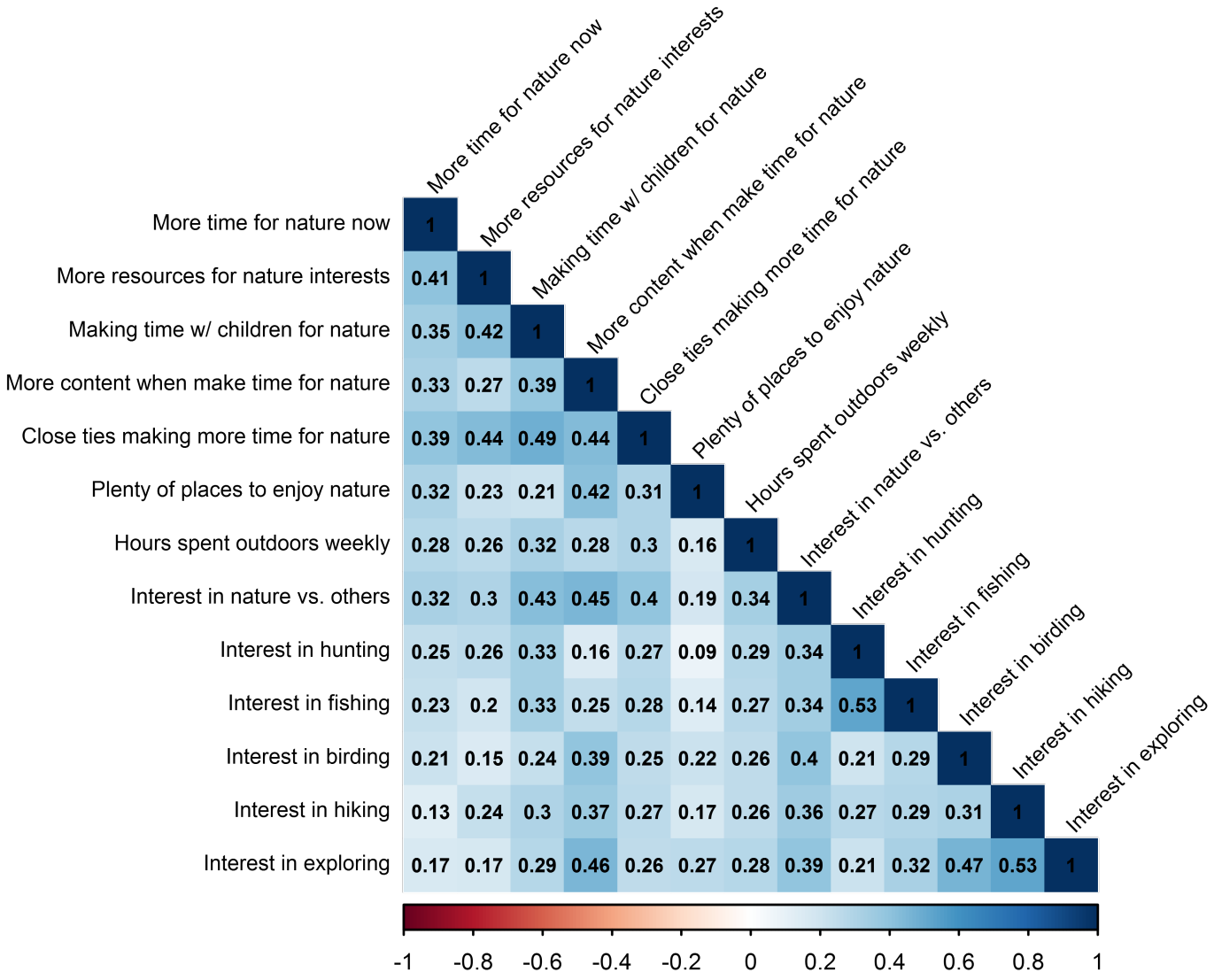
The results above indicate the importance of social support on nature-related interests and behaviors. Put a different way, the positive perception of and engagement in nature appears to be profoundly shaped by what other people—friends, family, children, peers, and mentors—regard as important, are currently 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. One described an annual trip to the beach with his spouse: it is "something we enjoy and obviously that is what...helps tie us to each other. We enjoy it together" (Hispanic man, late 30s, Bachelor's, high income). Another described how a trip with friends to faraway places was his "first real exposure to nature due to the friends I had around me who introduced me to it" (white man, late 60s, some college, low income). Yet another participant reported, "All my friends really enjoy going to...the springs and the beaches. We don't like going clubbing and being inside. We have the most fun when we're outside, so there's a lot of interest in it" (Hispanic woman, early 20s, some college, high income). Others referred to camping with parents, exploring creeks with friends, taking nieces and nephews to parks, hiking with children, surfing and golfing with friends.

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. A recent college graduate spent her undergraduate years "hiking and camping with [her] friends all the time" (Asian woman, early 20s, Bachelor's, middle income). Another was able to go camping "because [his] friends provided the transportation" (Asian man, late teens, some college, middle income). Still another goes hunting with his friends "a lot" (Hispanic man, early 30s, postgraduate degree, high income). "Having fun, activity-wise, you want to be with someone" (black woman, early 30s, HS degree, middle income).

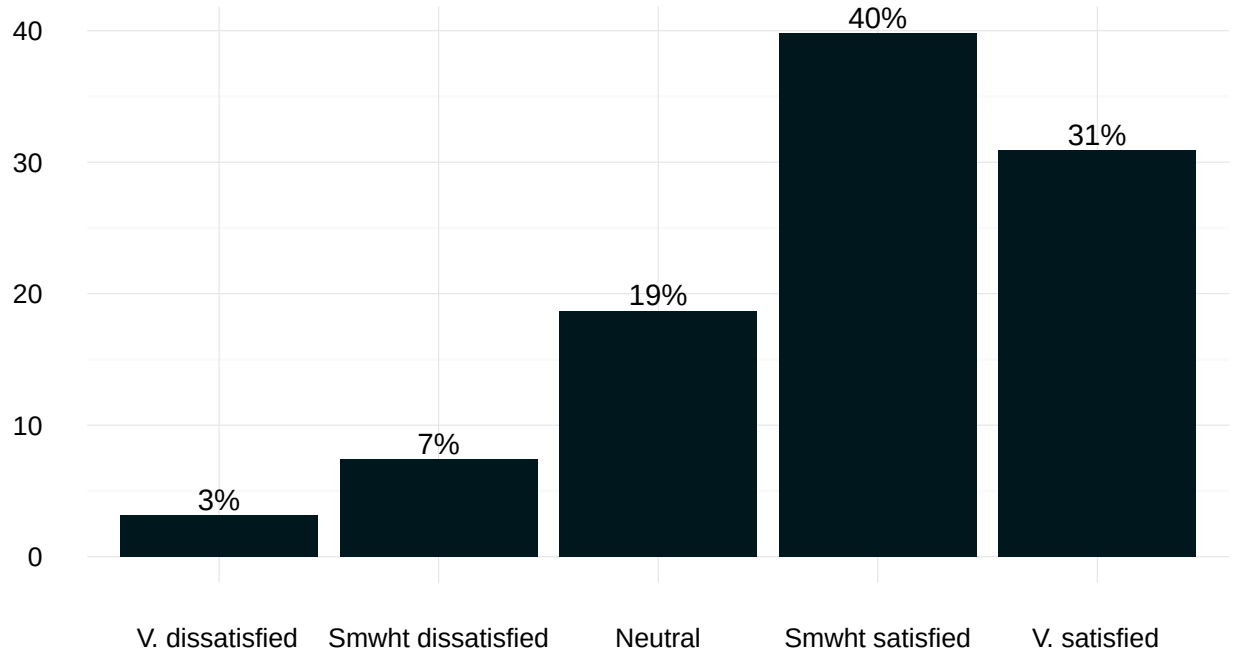
In addition to peer-to-peer encouragement to be outdoors and experience nature, adults mentioned the important role that socializing young children plays in their own lives. Their efforts to raise the next generation seemed to have a reciprocal effect on themselves. Indeed, the desire to encourage children's 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

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.

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.

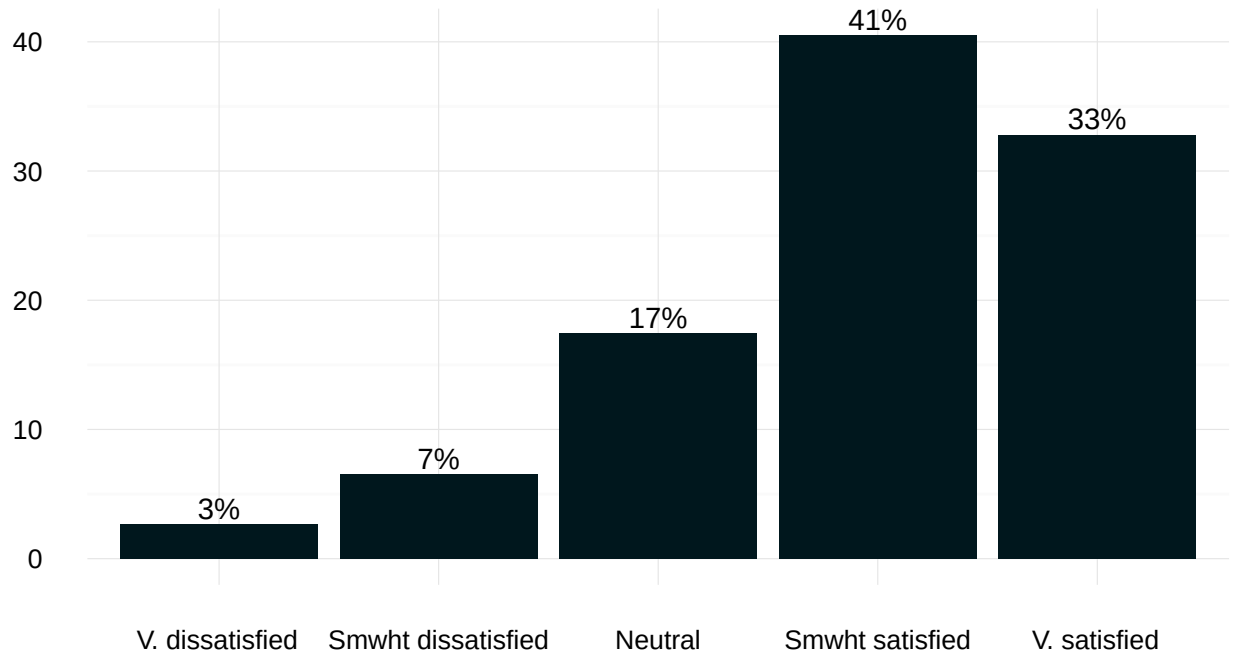
contact with nature and wildlife, and interest in activities such as exploring the outdoors, fishing, and hunting (Figure 2.31). One focus group participant said that he does not have any children of his own, but he goes to see his niece: "She's only four years old, so I can hang out with her. I guess 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 online survey, 70 percent were very or somewhat satisfied with places for outdoor and nature recreation near where they live (Figure 2.33). Ten percent were very or somewhat dissatisfied, and 19 percent were neither satisfied nor dissatisfied.

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.

A similar finding emerged regarding parks and open space. About three-quarters of surveyed adults (74 percent) were very or somewhat satisfied with parks and open space near where they live (Figure 2.34). Ten percent were dissatisfied, and 17 percent were neither satisfied nor dissatisfied.

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.

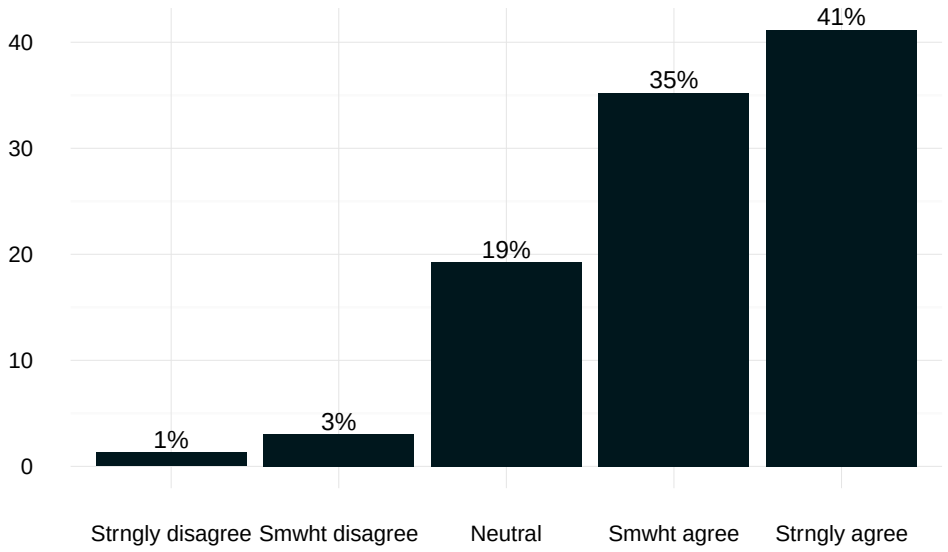
Experiencing nature in cities *was* possible for some respondents, but doing so required "more of a struggle":

> I guess the less populated the place, the more natural the place, but I also feel connected in cities and stuff.... obviously it's more beautiful to be on the beach...to be out there with the sun and the water and the trees, and it's easier to feel like that's perfect. [But] I also think that the city is perfect in its own way, and things that we don't consider nature—it's more of a struggle, I think, to find that, but it's there. (white man, late teens, some college, low income)

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 nationwide survey of adults. First, is there support for increasing the number of programs available for Americans to enjoy nature, the outdoors, and wildlife? Second, does the American public 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.

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?

2.9.1 Overall Perceptions of Programming, Funding, and Spending

Among adults surveyed, over three-quarters 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-fifth (19 percent) neither agreed nor disagreed. A mere 4 percent disagreed.

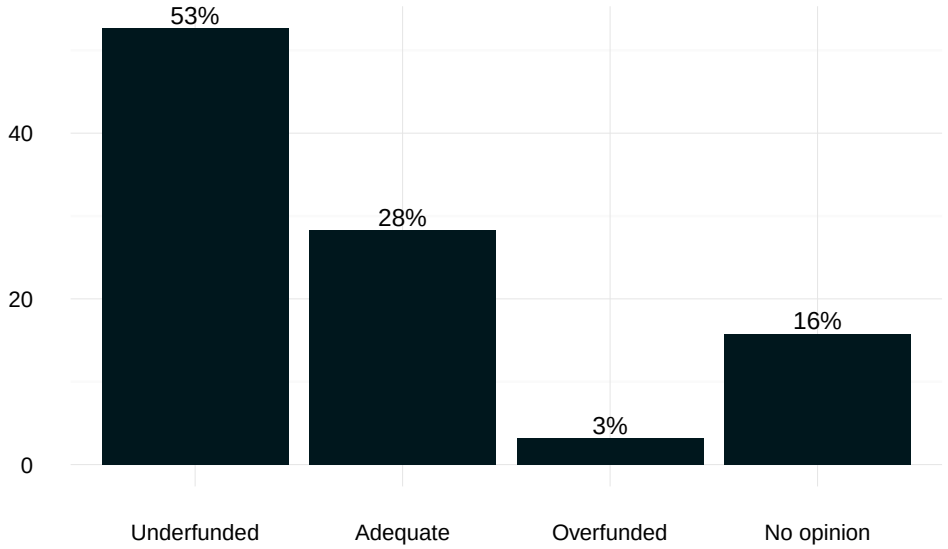
More than one-half of adults surveyed thought programs for Americans to enjoy nature and wildlife are underfunded (Figure 2.36). A little over one-quarter thought they are adequately funded. A very small proportion (3 percent) thought they are overfunded. A relatively larger minority—about one in six people—had no opinion on the matter.

Over 40 percent of adults surveyed thought the US spends too little on improving and protecting the environment (Figure 2.37). About 30 percent thought the US spends about the right amount. Half of that (16 percent) thought the US spends too much. Nine percent of respondents expressed no opinion.

2.9.2 Major Predictors of Support for Increasing Nature-related Programs

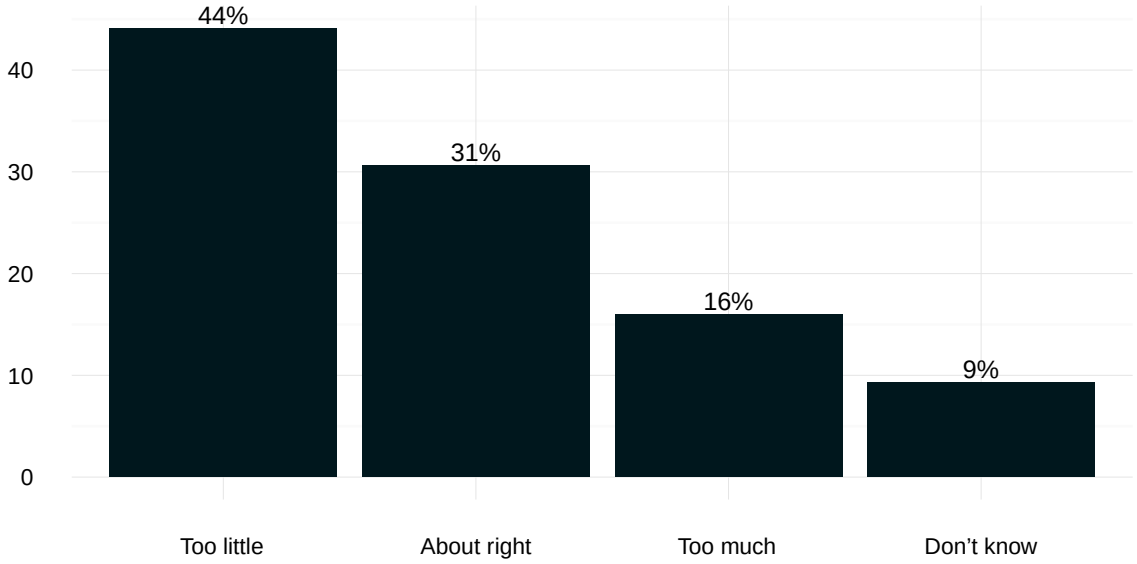
Which adults were most likely to strongly agree that the number of nature-related programs needs to increase? Figure 2.38 reports how different factors are associated with the likelihood of strongly supporting such an increase. Points greater than 0 signify that adults in that group were *more likely* 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

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?

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 and Asian adults were less likely to agree than whites.
- Women were slightly more likely than men to support increasing nature-related programs.
- Support for increasing programs was stronger among younger adults, and support decreased among older respondents.
- There were no differences by educational attainment.
- Compared with middle-income respondents, higher-income respondents were more likely to strongly support increasing the number of programs.
- Urban residents were likelier to support increasing programming: suburban and rural residents were relatively less likely.
- Adults who reported low satisfaction with their community were much more likely to support increasing programs.
- Performance on a formal knowledge of nature—measured via a quiz of 11 questions—had no relationship with support for increasing programming (see Figure 2.22).

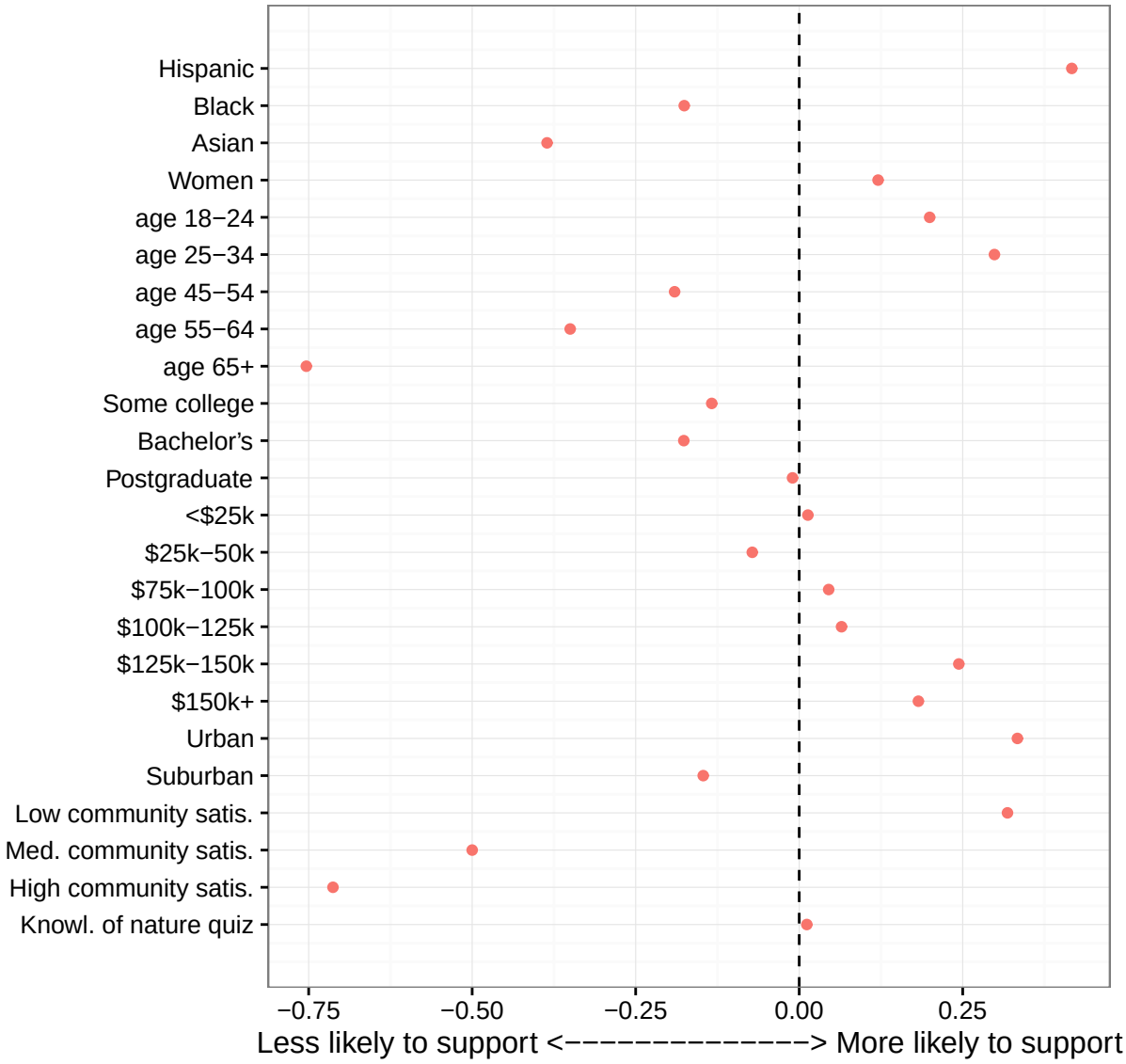
Similar trends emerged when examining the perception of funding of programs that help Americans enjoy nature and wildlife (Figure 2.39). Again, positive coefficients mean that a particular group was more likely, on average, to think programs are underfunded. Negative coefficients mean group members were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

- Hispanic adults were more likely than white adults to think current nature and wildlife programs are underfunded. Black adults and Asian adults were less likely.
- Adults of different ages were no different, once adjusting for other factors.
- Women were more likely than men to think current programs are underfunded.
- Differences across education level were slight.
- Middle-income respondents were less likely to think programs are underfunded, while the highest-income respondents surveyed were more likely.
- Adults who reported medium or high satisfaction with where they live were far less likely to think current nature and wildlife programs are underfunded, compared with adults who reported low satisfaction with their community.
- Performance on a formal knowledge of nature had a slight positive relationship with perceiving current programs are underfunded.

2.9.3 A Closer Look at Satisfaction with Community

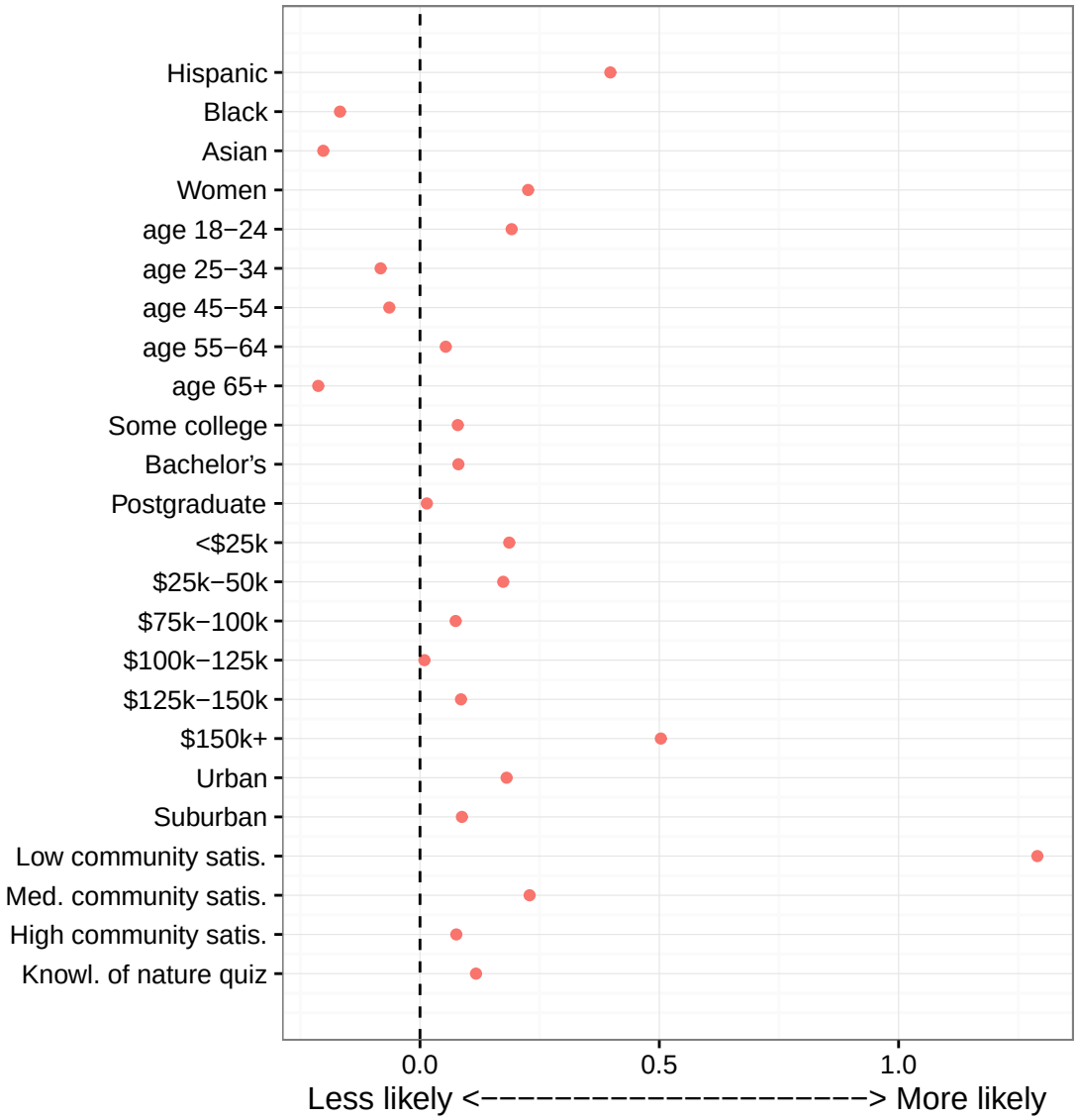
As seen above, satisfaction with one's community had a strong association with support for increasing nature-related programs and for perceiving them to be underfunded. These results point to the

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.

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

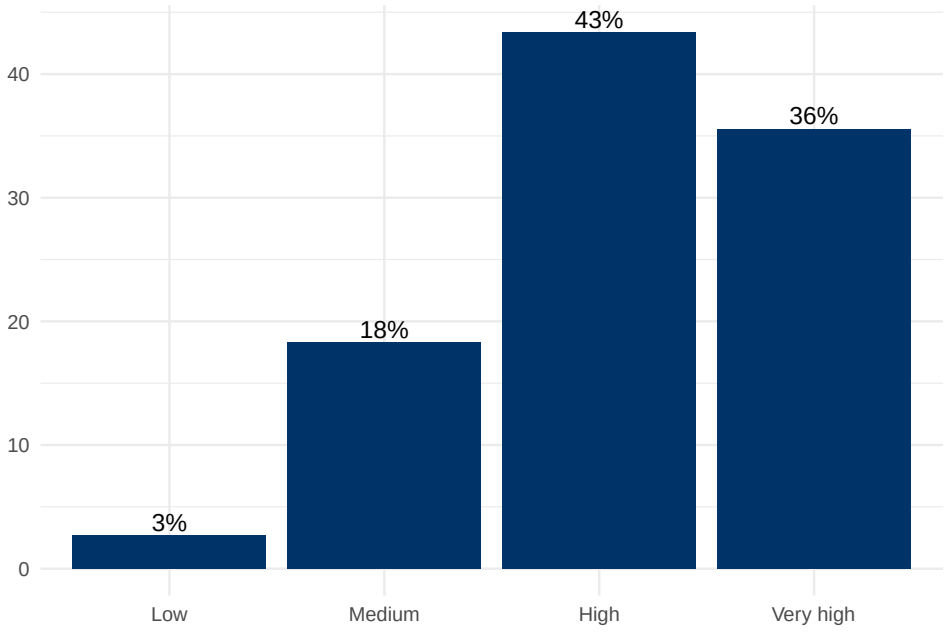


Note: The outcome is whether or not a respondent thinks current programs to help Americans enjoy nature and wildlife are "underfunded," compared with all other possible responses. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the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

importance of not only demographic categories in influencing attitudes and opinions, but also of the broader communities in which people live.

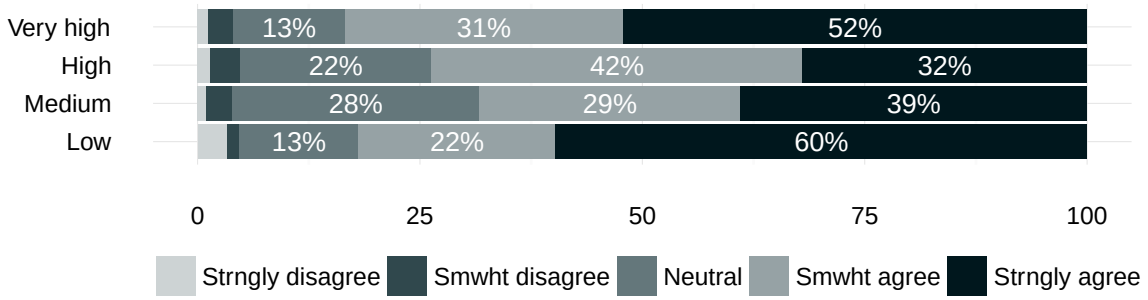
To generate respondents' satisfaction, we took 10 questions that asked about different elements of where they live—including health services, schools and the educational system, access to public transportation, air quality, and safety from crime, among others. We added the answers of each respondent,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



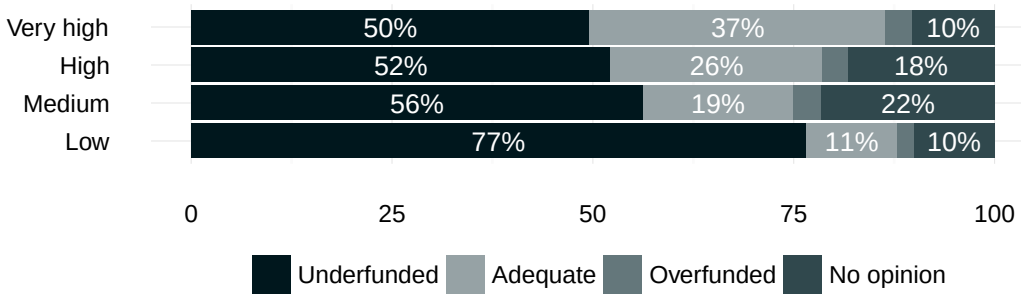
Adults who expressed low satisfaction with their overall community—including roads, schools, water quality, and more—were highly likely to want to increase the number of programs available for Americans to enjoy nature (Figure 2.41). They were also likely to think funding for nature and wildlife programs is below where it should be (Figure 2.42). Almost three-quarters of those with low community satisfaction perceived the programs are underfunded, compared with just under one-half of those who report high satisfaction. Adults who express low satisfaction with their overall community were also likely to believe spending on improving and protecting the environment is below where it should be (Figure 2.43).

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



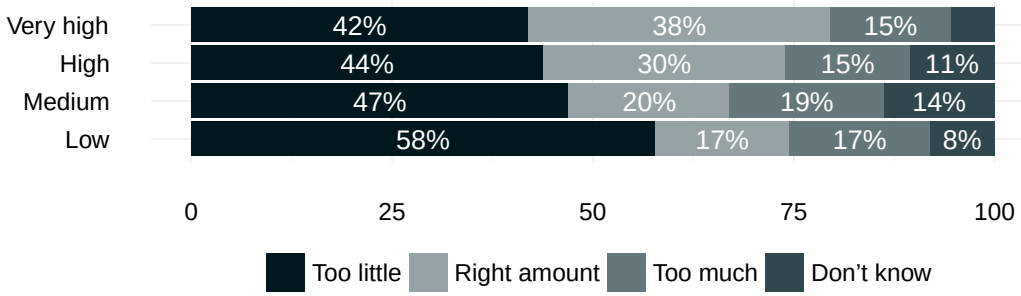
Note: Responses with percentages less than 7 are not reported due to lack of space.

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.

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

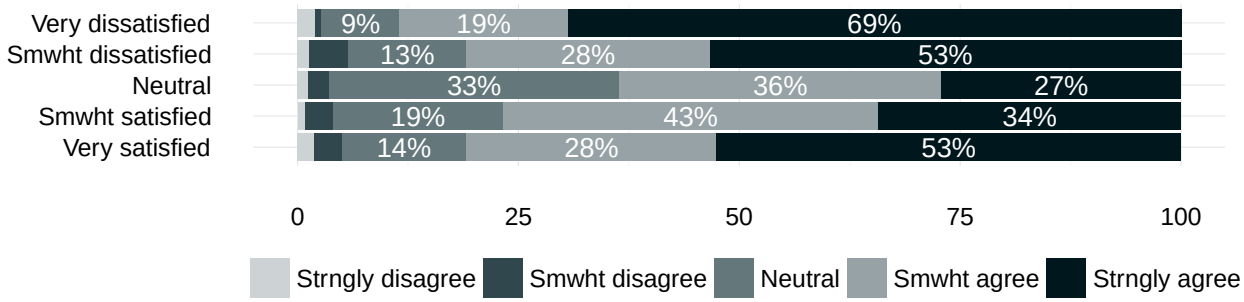


Note: Responses with percentages less than 7 are not reported due to lack of space.

2.9.4 Satisfaction with Parks and Open Spaces

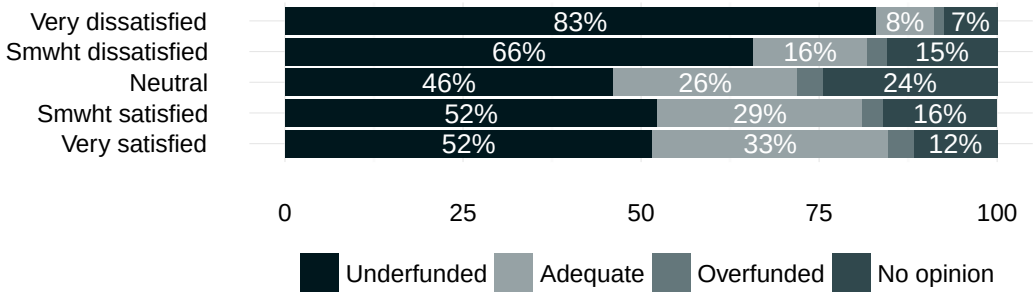
A similar pattern occurred when examining satisfaction of parks and open spaces where adults live. The majority of adults (61 percent) who had low satisfaction with nearby parks and open spaces strongly agreed of the need to increase the number of nature-related programs (Figure 2.41). They were also 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



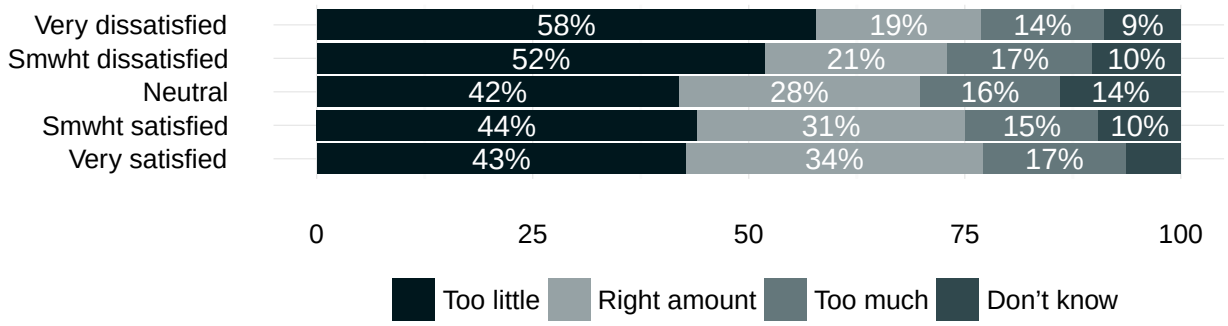
Note: Responses with percentages less than 7 are not reported due to lack of space. Question wording: How satisfied are you with each of the following where you live: Parks and open space?

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

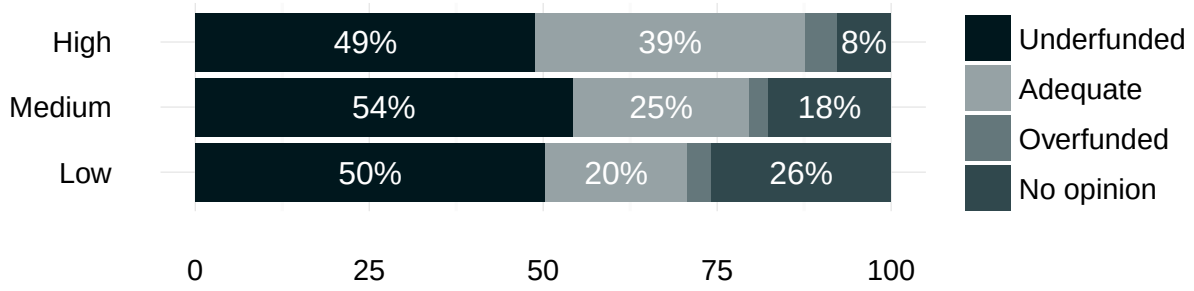
As described in Chapter 1, the biophilia hypothesis postulates that humans have an inherent inclination to affiliate with nature as an adaptive response to natural forces and stimuli. This inclination is a weak tendency that must be nurtured, developed, and learned to become functional and beneficial. 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.[13]

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).

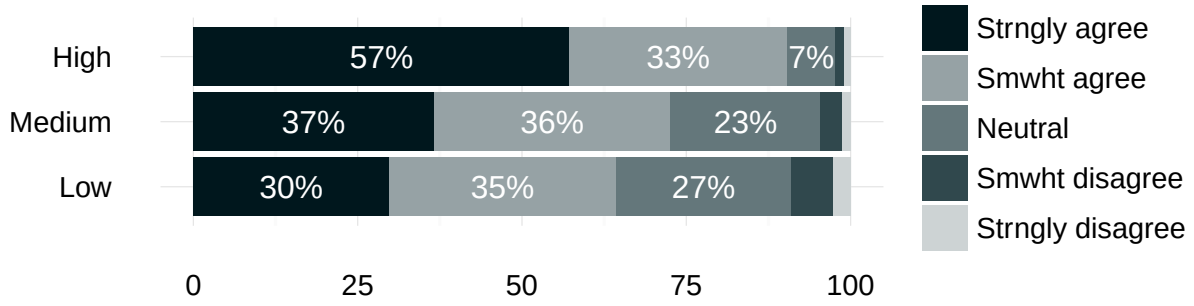
[13]To create a scale for each dimension, we first assigned a numerical value to each possible response for each biophilia question (ranging from 1 to 5, "strongly disagree" to "strongly agree"). Within each grouping of questions, we summed the total for each respondent, and then divided by the number 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

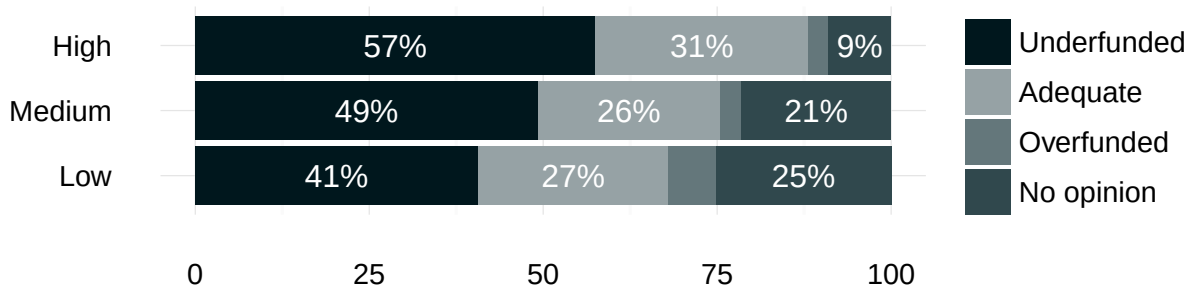


Note: Responses with percentages less than 7 are not reported due to lack of space.

Attraction

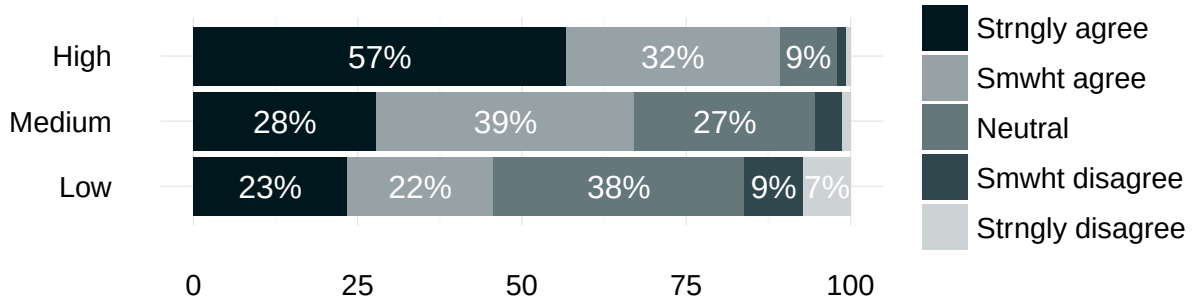
The natural world holds an appeal and aesthetic attraction for people especially related to its perceived beauty. For example, one question asked respondents how much seeing something especially attractive in nature arouses their curiosity. Among adults surveyed, those who had the highest attraction 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

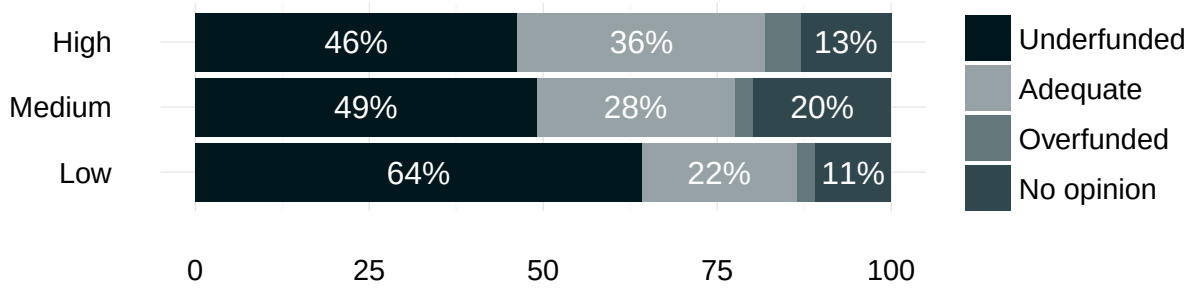


Note: Responses with percentages less than 7 are not reported due to lack of space.

Aversion

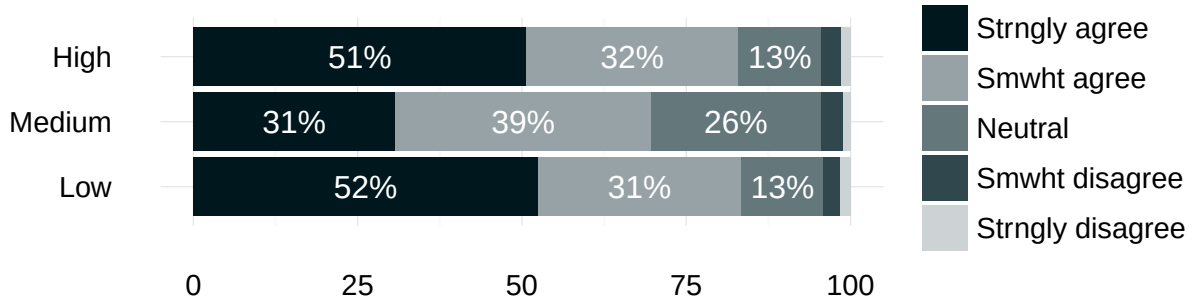
People often avoid aspect of nature that provoke fear, anxiety, and avoidance. For example, some adults find being alone in the outdoors to be especially frightening, or they particularly dislike certain plants and animals. Adults who were least averse to aspects of nature (being alone in the outdoors,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

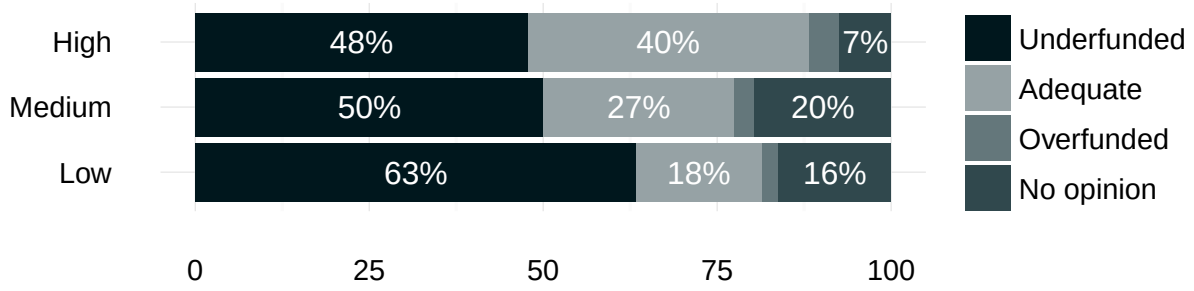


Note: Responses with percentages less than 7 are not reported due to lack of space.

Control

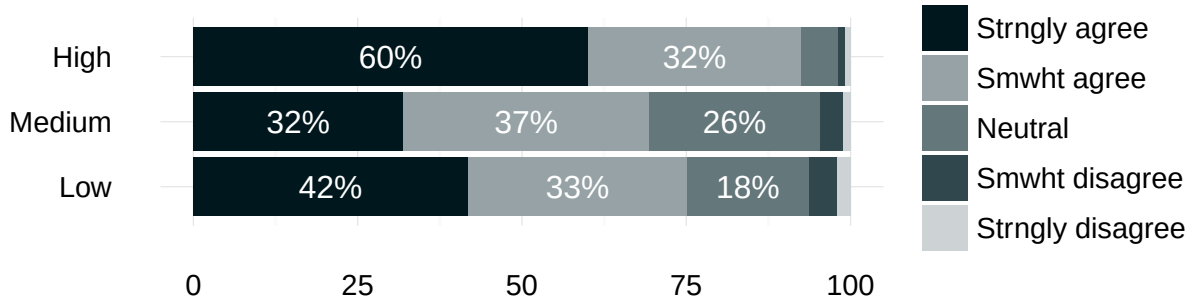
Control refers to the potential in human activity to master and dominate the natural world. For example, some adults surveyed strongly agreed that people need to control nature to meet human needs even if it sometimes harms nature and wildlife. Adults surveyed who scored low on the control scale were 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

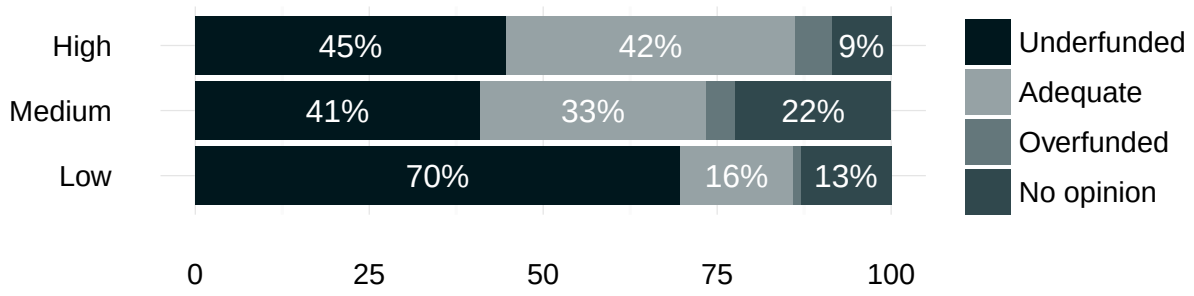


Note: Responses with percentages less than 7 are not reported due to lack of space.

Exploitation

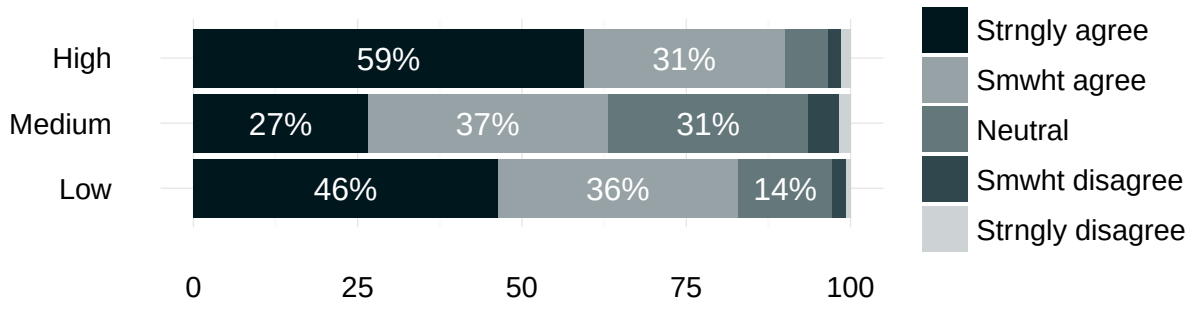
Exploitation refers to support for the material utilization of nature. Adults who did not see nature in an exploitative way—for example, people who strongly disagreed that humans ought to develop energy resources without considering the consequences for nature—were far more likely to regard funding as 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

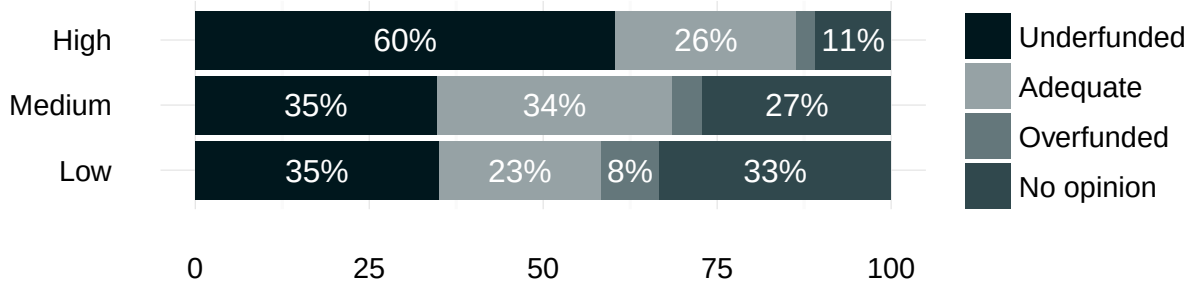


Note: Responses with percentages less than 7 are not reported due to lack of space.

Intellect

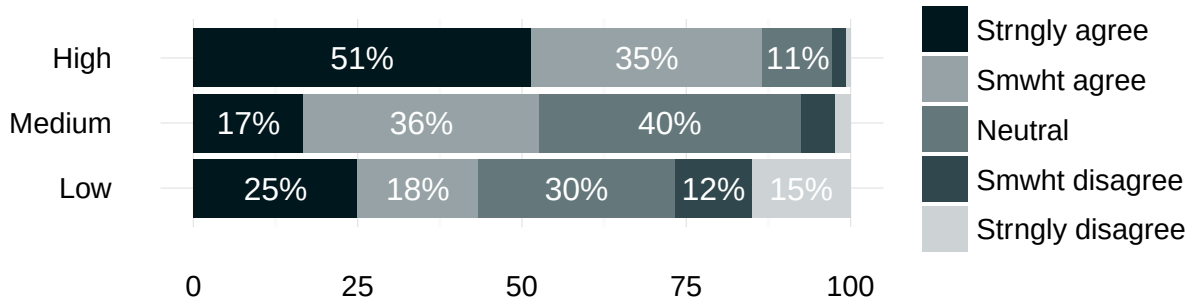
Intellect describes valuing knowledge of nature for its role in intellectual development. Sixty percent of those who strongly valued nature for its role in learning perceived nature and wildlife programs to be underfunded (Figure 2.57). Similarly, one-half of this same group supported increasing programs 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

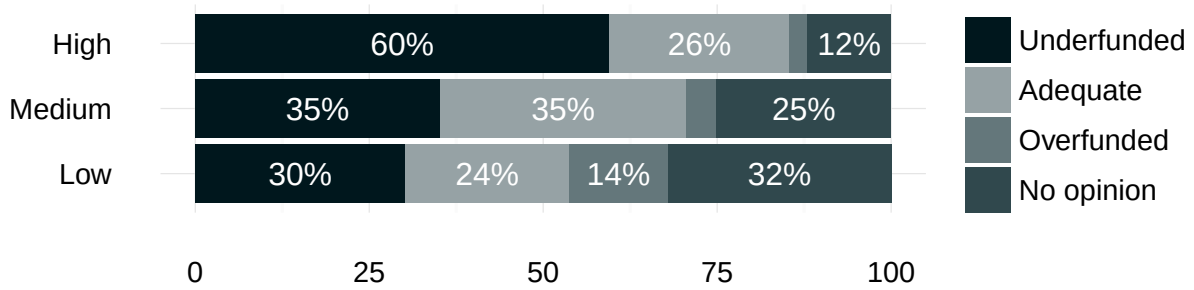
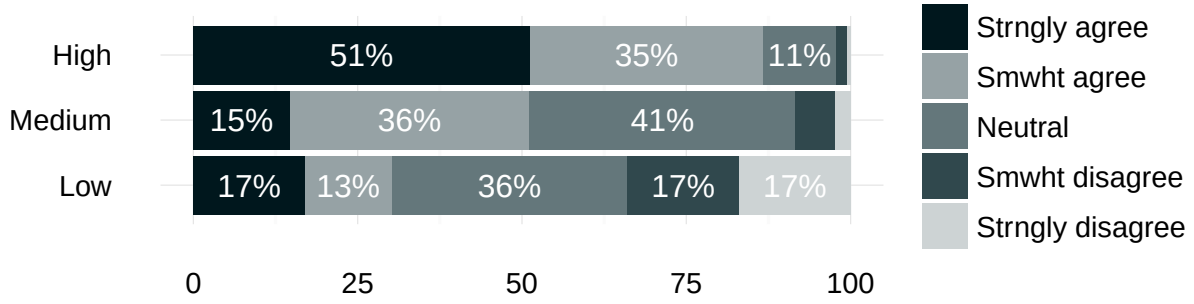


Figure 2.60: Support for Increasing Programs to Enjoy Nature and Wildlife, by Spirituality Scale



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

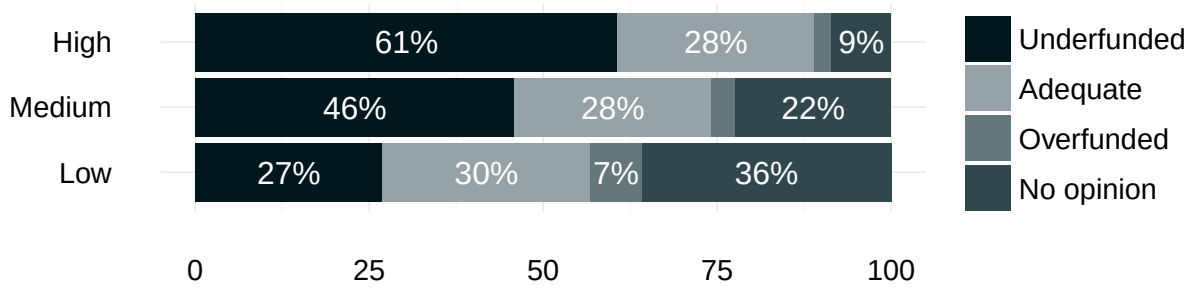


Figure 2.62: Support for Increasing Programs to Enjoy Nature and Wildlife, by Symbolism Scale

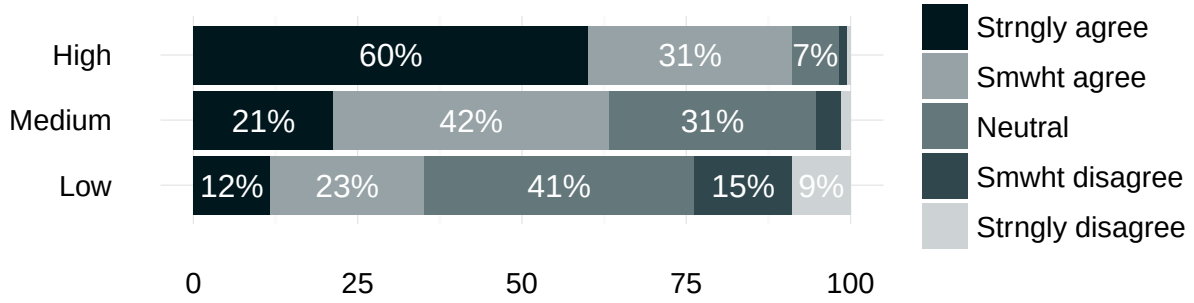
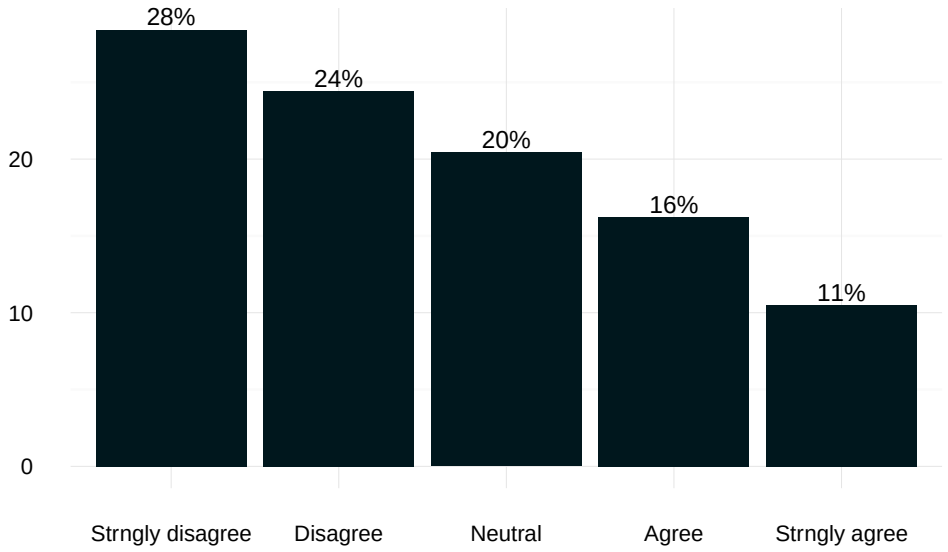


Figure 2.63: Agreement with Building on Land even if it Reduces Habitat



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

2.10 Trade-offs between Using and Conserving Natural Resources

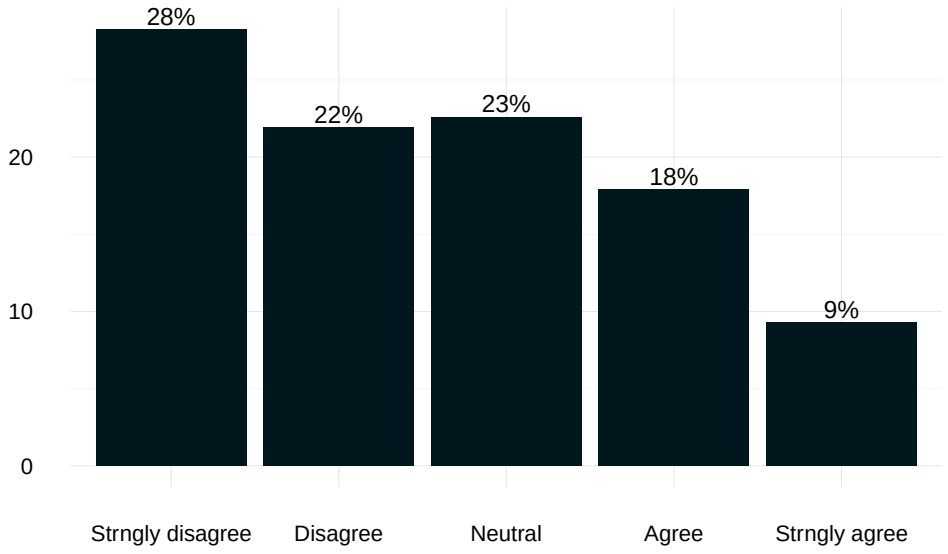
We asked respondents three questions in which they had to make a trade-off between doing some activity or harming some aspect of nature. Just over one-half (52 percent) of respondents disagreed with the need to build on land for people even if it results in fewer places for wildlife to live (Figure 2.63). Twenty-seven 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 disagreed; 27 percent agreed; 23 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). Nearly one-half (47 percent) disagreed, while 34 percent agreed. Nineteen percent neither agreed nor disagreed.

2.11 Funding Sources to Pay for Nature and Wildlife Activities

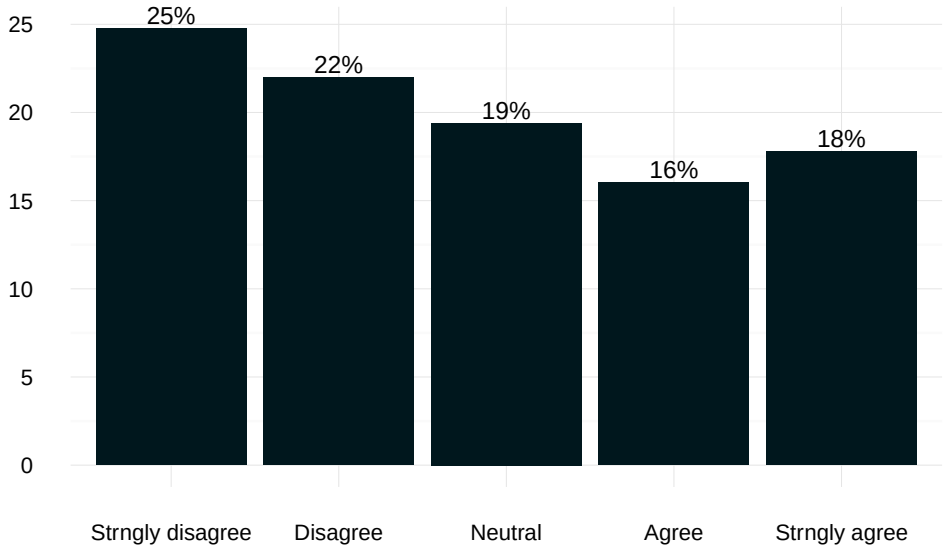
Adults surveyed expressed support for employing a variety of funding options to help pay for the costs of additional programs to increase contact with nature and wildlife (Figure 2.66). The funding source that garnered the greatest support was fines collected for environmental pollution, with over 8 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 over 70 percent agreement. 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: 10 percent or fewer adults surveyed disagreed with using these funding sources to help pay for nature- and wildlife-related activities.

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.

A charge on oil and gas development also received support from the majority of adults. 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 check-off on national income tax returns, a small charge on bird-watching and bird-feeding supplies, and a fee on international travel to and from the United States.

The source that received the least support was an additional charge on state sales tax. Fewer than 40 percent supported this option, 30 percent were neutral, and 32 percent did not support it.[14]

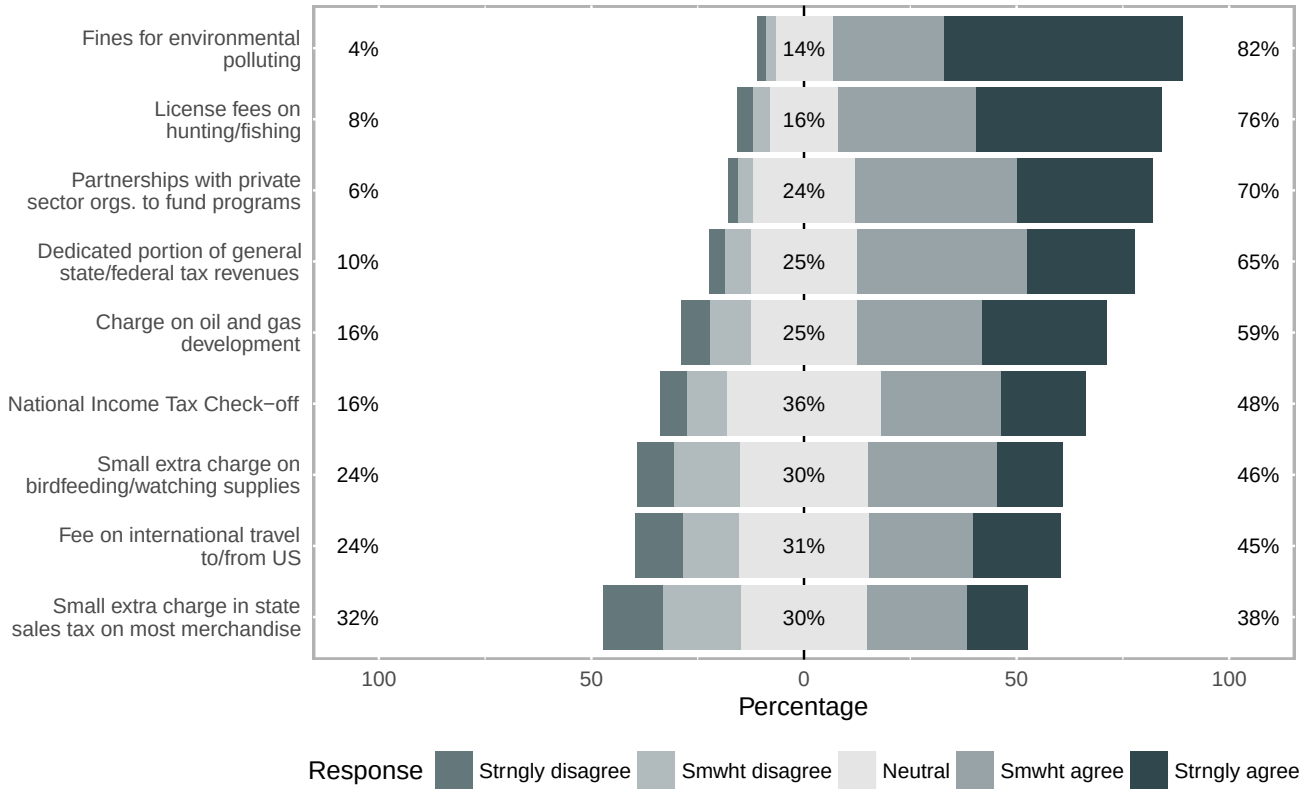
We explored in somewhat greater detail support for three diverse sources of funding: 1) license fees on hunting and fishing (i.e., a charge only on particular users), 2) dedicated portion of general state and federal tax revenues (i.e., a charge on all residents), and 3) a charge on oil and gas development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

Among all adults, 44 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 support.

- Hispanic adults and white adults were equally likely to support using license fees, with black adults and Asian adults relatively less likely than whites.
- There were no differences across age groups, after adjusting for other factors.
- Women were more likely than men to support using license fees as a funding source.
- Those with the highest levels of education supported using license fees compared with those who had a high-school degree or less.
- Respondents from the highest-income households were more likely to support using license fees from hunting and fishing compared with low-income respondents.
- Urban residents were most supportive, with suburban and rural residents relatively less likely to support using license fees from hunting and fishing.
- 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.

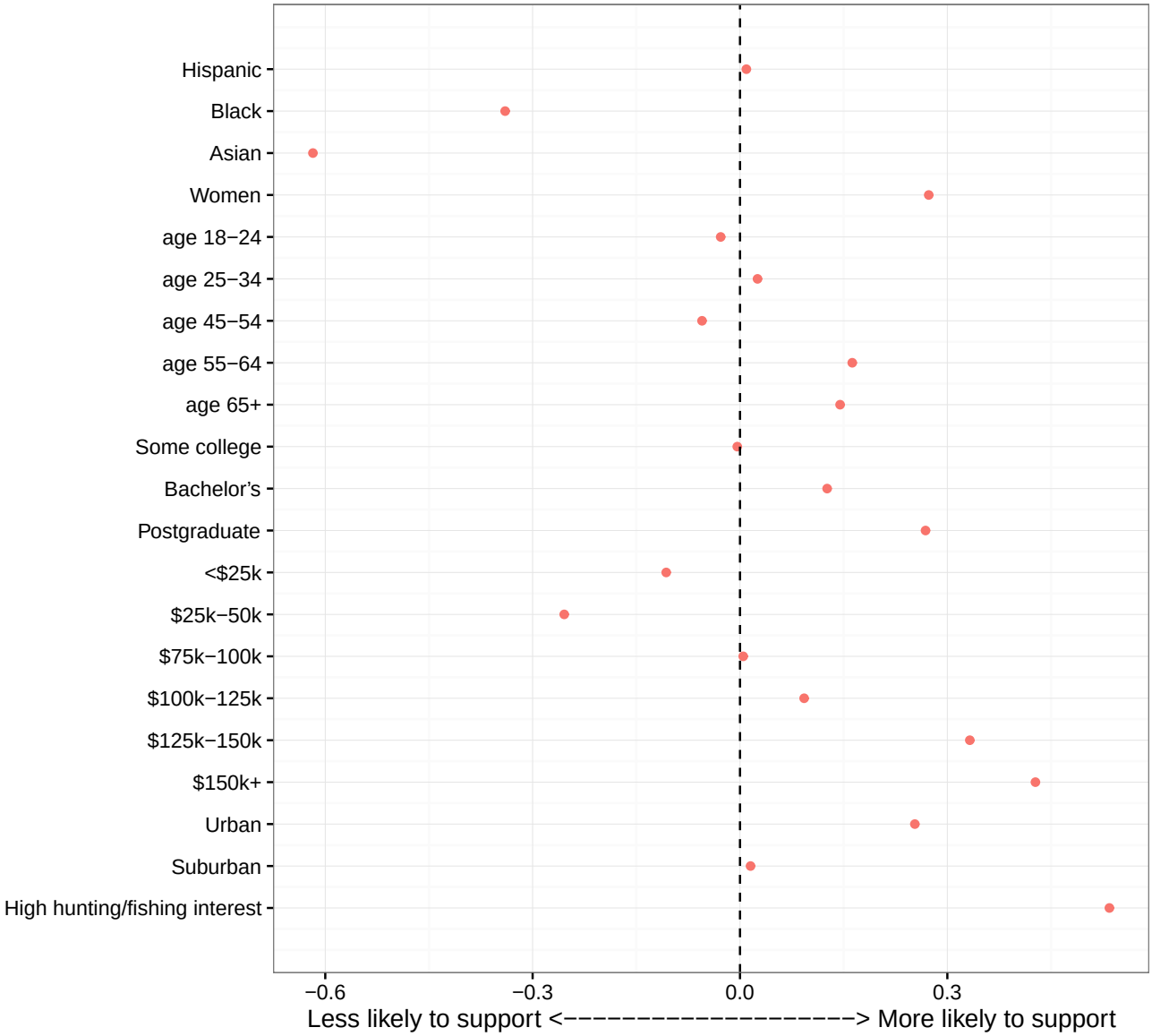
[14] Via referendum, voters in three US states have an additional charge on sales tax for nature-related programs and conservation: Arkansas (0.125 percent), Missouri (two earmarked sales taxes—0.125 percent for conservation of fish, forests, and wildlife and 0.10 percent for parks and soil conservation), 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 support for conservation funding," *Transactions of the North American Wildlife and Natural Resources Conference*, no. 77.

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.

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



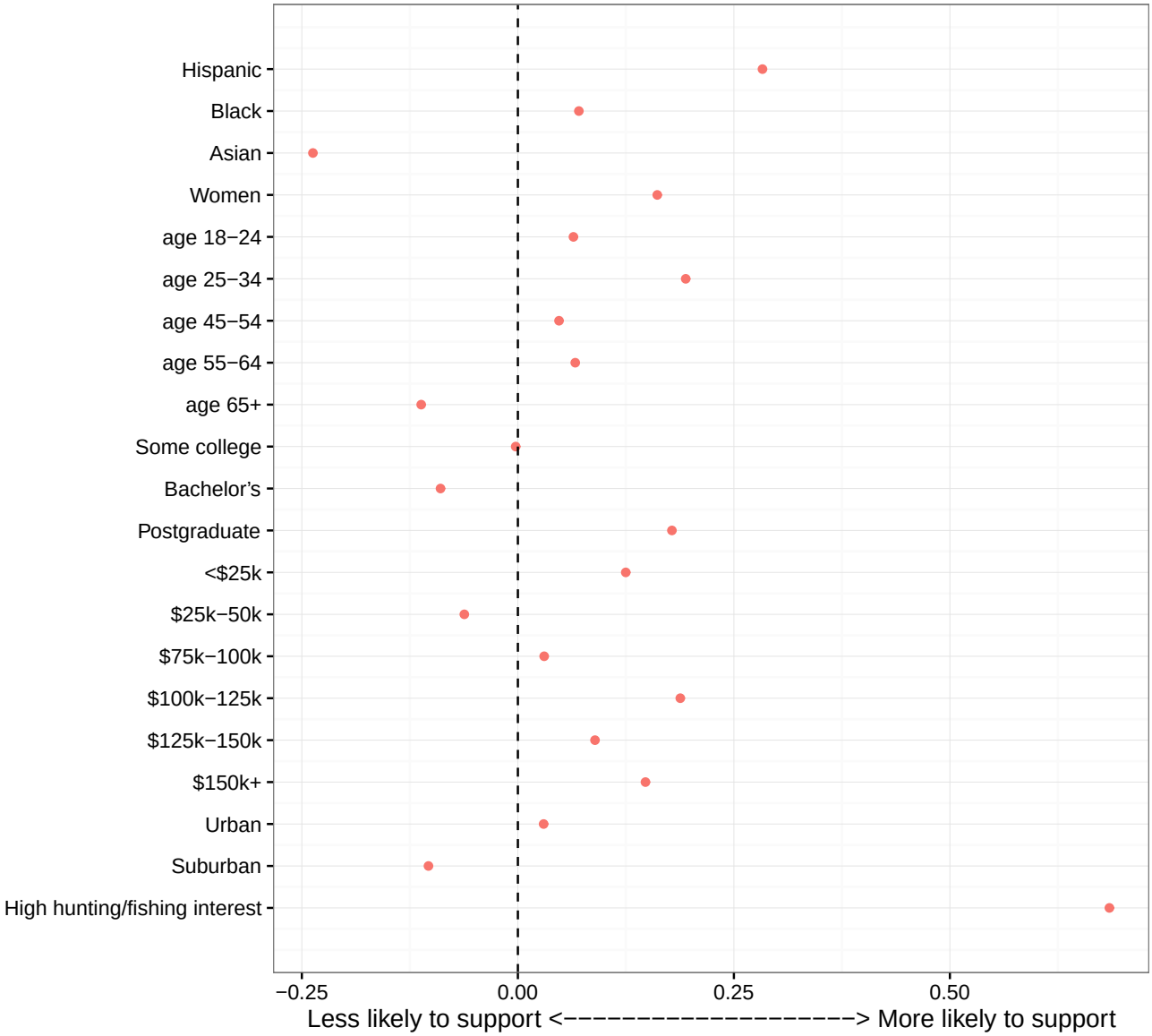
Note: The outcome is whether or not a respondent "strongly agrees" that license fees on hunting and fishing should help pay the cost of activities related to nature and wildlife. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the 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. One-quarter of adult respondents strongly agreed with using this source. Figure 2.68 reveals factors associated with strong support for using tax revenues.

- Hispanic adults were the likeliest to support the use of this funding source; black and white adults, equally as likely; and Asian adults, somewhat less likely to support this option.
- Younger adults were slightly more likely to support using general tax revenues from state and federal sources than older adults.

- There were no differences by household income.
- There was no difference among urban, suburban, and rural respondents.
- 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

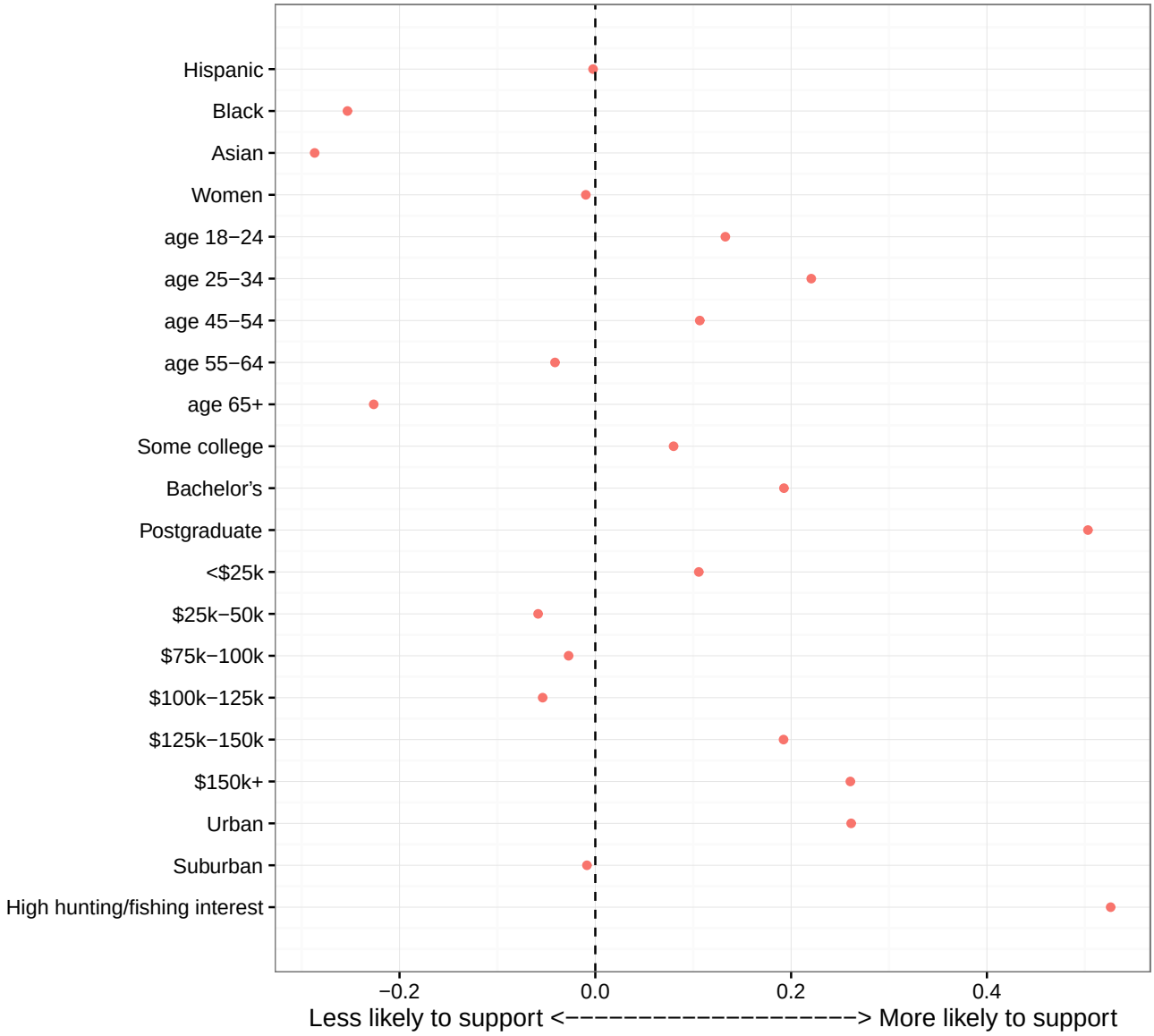


Note: The outcome is whether or not a respondent "strongly agrees" that a dedicated portion of general tax revenues from state and federal sources should help pay the cost of activities related to nature and wildlife. The dot represents the point estimate of the log odds of that particular factor, net 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. Just under 30 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 white adults were equally likely to express strong support for a charge on oil and gas development to support nature and wildlife programs. Black adults and Asian adults were less likely to support this option.
- Younger adults were more likely to strongly support a charge on oil and gas development. Support for this option decreased among older respondents.
- Women and men were similar in their perceptions, adjusting for other factors.
- High-income respondents were likelier to support this funding source, relative to low-income respondents.
- Urban residents were more supportive, on average, than suburban and 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 nature as wild, uncultivated, and set apart from human influences. Viewing and experiencing what respondents considered to be "authentic" nature required, in their minds, significant commitments of time and resources.

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.

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. American adults cited a range of favorite activities in nature, including walking, hiking, camping, fishing, visiting zoos and aquariums, exploring the outdoors, wildlife feeding and observation, and gardening.

Time spent in nature. The majority of adults surveyed reported spending 5 or fewer 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 number 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 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.

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

- 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.
- Almost half of adults surveyed thought "too little" money is being spent on improving and protecting the environment. About one-third said current spending is adequate.
- The highest levels of support for increasing nature-related programs and funding came from Hispanics, younger adults, higher-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, and a small charge on bird-feeding and bird-watching supplies.

Chapter 3

Children and Parents: Results

This chapter of the report examines 771 interviews with children and a survey of one of their parents from five of the most populous US states. 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 771 parents with a web-camera–interview of one of their children, for a total of 1,542 respondents. The sample was derived from residents of five regionally distributed states: California, Florida, Illinois, New York, and Texas. 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 overall sample had a slightly higher median income and educational level than in the US as a whole (see Table 1.8 in Chapter 1). The child interview schedule is included in Appendix E; the parent questionnaire, in Appendix F.

In this chapter, $N = 771$ for all analyses, except for analyses broken out by race and ethnicity. For those analyses only, $N = 726$ since children who are 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 across all five states in our sample.

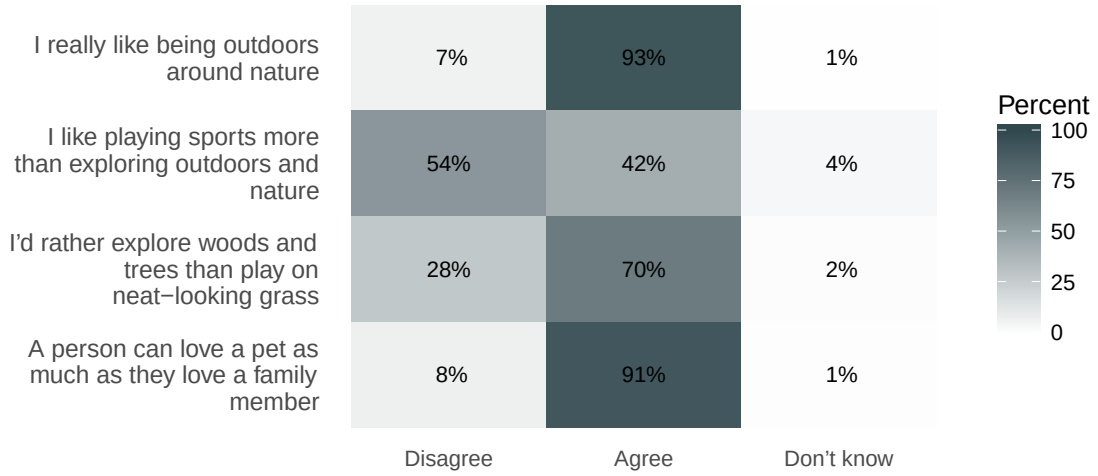
3.2 Children's Relationships with Nature

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 (93 percent) agreed they "really like" being in the outdoors around nature. In addition, nearly all (91 percent) agreed that a person can love a pet as much as they love a family member. Seventy 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 42 percent agreeing they like playing sports more than exploring outdoors and nature.

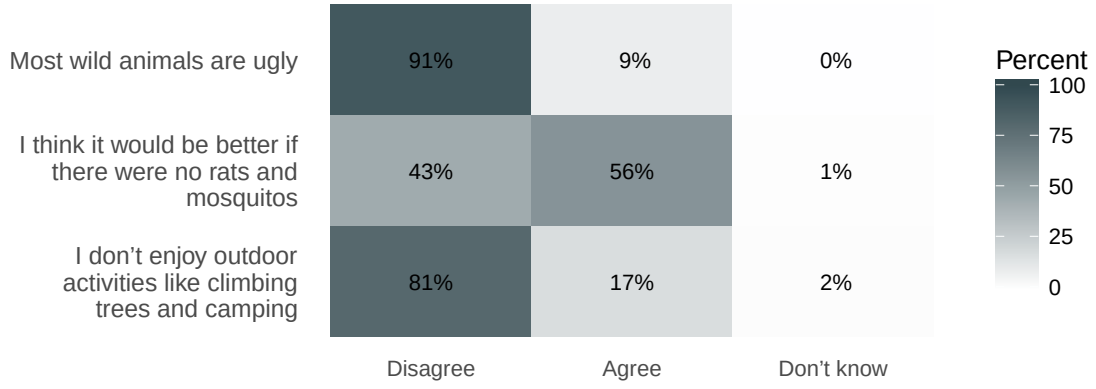
Figure 3.1: Children: Affection and Attraction to Nature



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 (91 percent) disagreed that most animals are ugly. About four-fifths (81 percent) disagreed that they do not enjoy outdoor activities like climbing trees and camping. Children were about evenly divided on whether or not it would be better to have no rats or mosquitoes, with 56 percent agreeing.

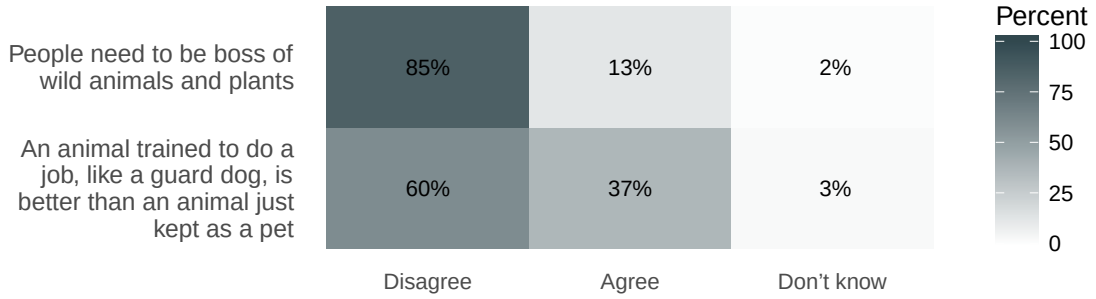
Figure 3.2: Children: Aversion to Nature



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.

In terms of controlling nature, the great majority of children 8–12-years-old rejected the idea that people need to be the "boss" of wild animals and plants (Figure 3.3). Most (60 percent) rejected the idea that an animal trained to do a job is better than an animal just kept as a pet.

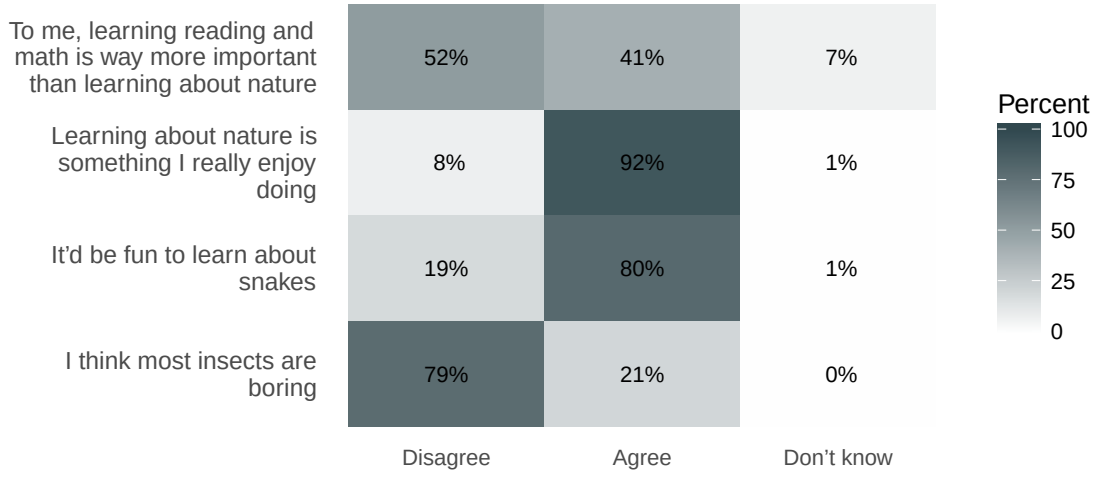
Figure 3.3: Children: Control of Nature



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 (92 percent) said they "really" enjoy learning about nature. Eighty percent agreed that it would be "fun" to learn about snakes. Seventy-nine percent disagreed to finding most insects boring. Children were about evenly divided over learning reading and math versus learning about nature: 52 percent disagreed that learning reading and math is more important than learning about nature.

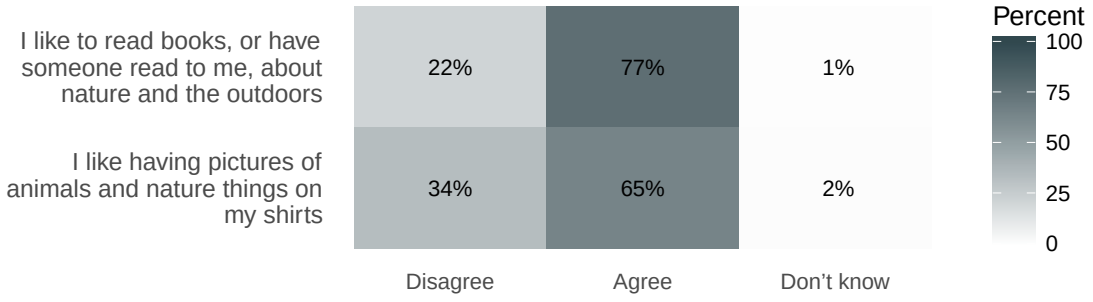
Figure 3.4: Children: Intellectual Interest in Nature



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). Almost four-fifths (77 percent) said they like to read books about nature, or have someone read to them books about nature. Two-thirds (65 percent) agreed they like having pictures of animals and other elements of nature on their shirts.

Figure 3.5: Children: Symbolic Representation of Nature



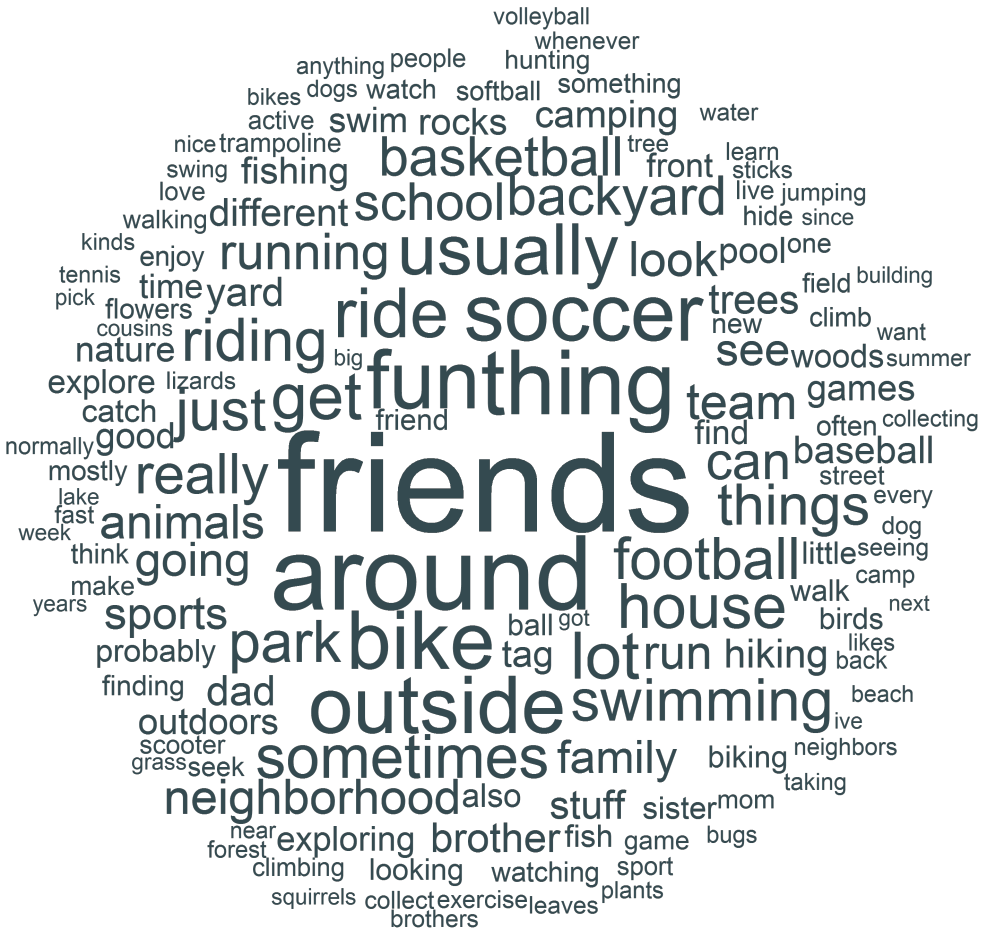
Note: Rows may not add to 100 percent due to rounding. Question wording: Please tell me if you agree or disagree with each of the following ideas.

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 most frequently mentioned biking, swimming, running, and other play activities. Although children rarely used the word explicitly, the act of *exploring* the out-

doors emerged, and children shared their excitement and curiosity about the dynamic, sometimes surprising, and unexpected features of the natural world.

Figure 3.6: Children: Favorite Thing to Do in the Outdoors



Question wording: What's your very favorite thing to do when you think about playing in the outdoors and nature?

A sample of remarks conveys the richness of children's experiences in the natural world:

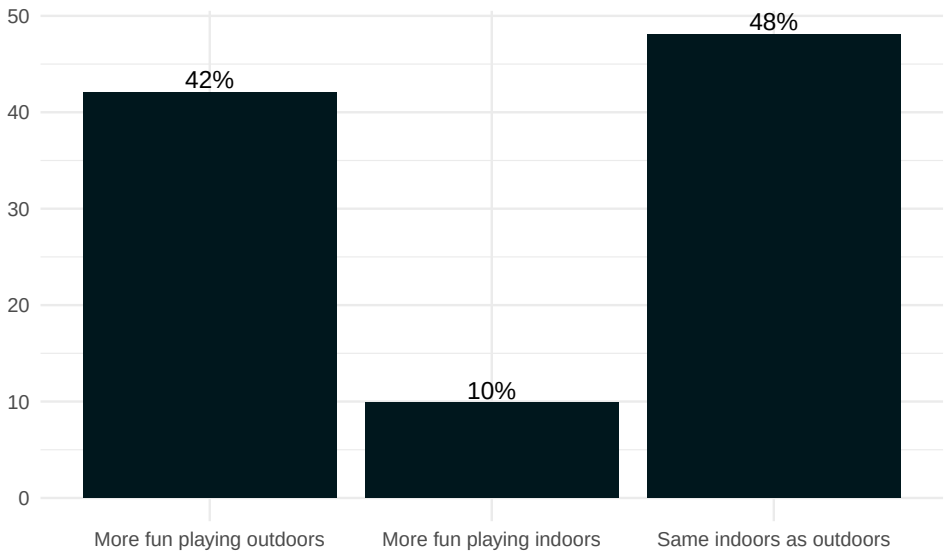
> "My favorite thing to do is probably exploring. I like to explore the beach. I like to look for big seashells and big fish." (Boy, Hispanic, age 9, urban)

> "My favorite thing to do is to climb trees at my apartment. I like to climb all the way to the tops. I like to climb them with my friend from school." (Girl, white, age 8, suburban)
>
> "I like going out and seeing lizards or different kinds of outdoor things or insects." (Boy, black, age 12, urban)
>
> "My favorite thing to do is play tag a lot. I play with my classmates." (Girl, Asian, age 8, urban)
>
> "I like to go hiking, because it's fun, you get to look around, and listen to the quietness of it. I usually hike at one of the camps I go to. They have a lot of outdoor activities." (Girl, Hispanic, age 12, suburban)
>
> "Camping. I go with my family. We go to a campground. We go once or twice every couple of years or so. We go hiking, canoeing, and bicycling. Camping is my favorite because it is mostly everything you do outdoors." (Boy, Hispanic, age 10, suburban)
>
> "Exploring. When we walked the Appalachian Trail over the summer, my friend went with us. We explored in all of the streams and caught salamanders. We found out what kind they were, and that was a lot of fun. He bought me a field guide at the lodge to tell us what the salamanders were. We got to camp and that was a lot of fun." (Girl, white, age 12, suburban)
>
> "I like finding rocks with my friends because we get to go find some interesting rocks that look awesome. We look for them in the back of a house that's in a circle. It's a special place where we find the best rocks." (Boy, black, age 9, suburban)
>
> "I love to go swimming. I swim at my grandma's house, but then she had to move. I don't swim anymore, because no one else has a pool. I liked going under water. Sometimes I go deep under water. I liked playing games in the pool like Marco Polo. I swim with friends and family in the pool when there are parties, like birthday parties." (Boy, white, age 8, suburban)
>
> "A lot of things honestly, like, sometimes looking at animals or playing with friends. It has gotten cold the last few times. Playing with friends or exploring—more or less exploring. We have a little creek down here. I find streets that I have never been through, little fishes, squirrels—cute squirrels actually—and lots and lots of ants. I took my friend, and we had 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)
>
> "I like playing soccer and cheer, because I get to be active and have a lot of room to do stuff and run." (Girl, black, age 10, suburban)
>
> "Basketball. I play three days after school. I play with my friends and some girls in basketball. We usually play like normal—we don't have teams or anything. We play in the basketball court. It is my favorite because I experience more exercise and can lose some weight, too. I can also help my friends with basketball." (Boy, Hispanic, age 10, 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 over 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 (10 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 and black children were most likely to say they have more fun playing outdoors, with almost one-half selecting that answer (Table 3.1). Asian children were the least likely, with 31 percent saying they have more fun playing outdoors. Asian children were also the most likely to report having more fun playing indoors: one in six said so.

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

Category	White	Hispanic	Black	Asian
More fun playing outdoors	40%	48%	48%	31%
More fun playing indoors	7%	13%	13%	16%
Same indoors as outdoors	53%	39%	39%	53%

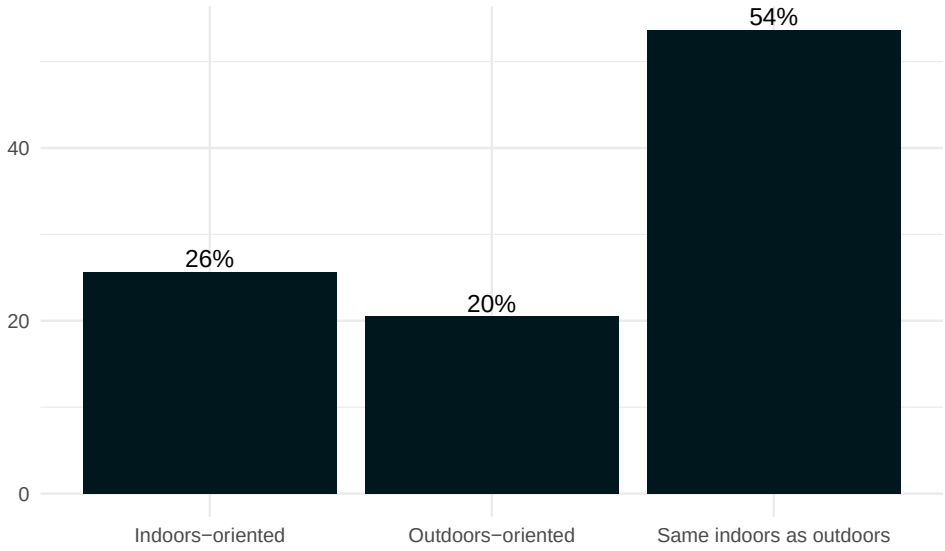
Note: Columns may not add to 100 percent due to rounding. Question wording: When you think about the things that you like to do for fun when you play indoors and outdoors, do you have more fun ...playing outdoors ...playing indoors ...or do you have as much fun playing indoors as playing outdoors?

Children who reported having more fun playing indoors did not have any clear distinguishing characteristics. They were only slightly more likely to live in low-income households (annual income less than $25,000 per year) and to have a parent who earned an Associate degree. They were slightly more likely to reside in urban communities and to be boys.

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. Just over one-half said they were about the same.

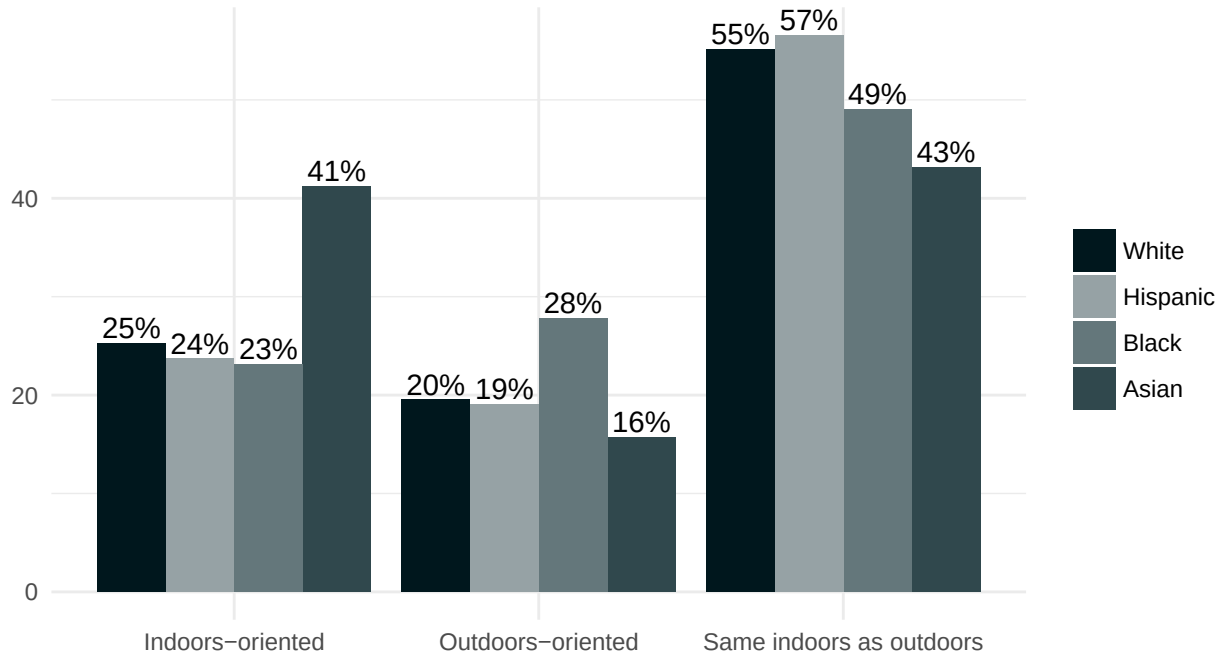
Figure 3.8: Parents: Child More Indoors- or Outdoors-Oriented



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?

Asian children were relatively more likely to be indoors-oriented in their hobbies and pastimes (Figure 3.9). Black children were slightly likelier to be 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

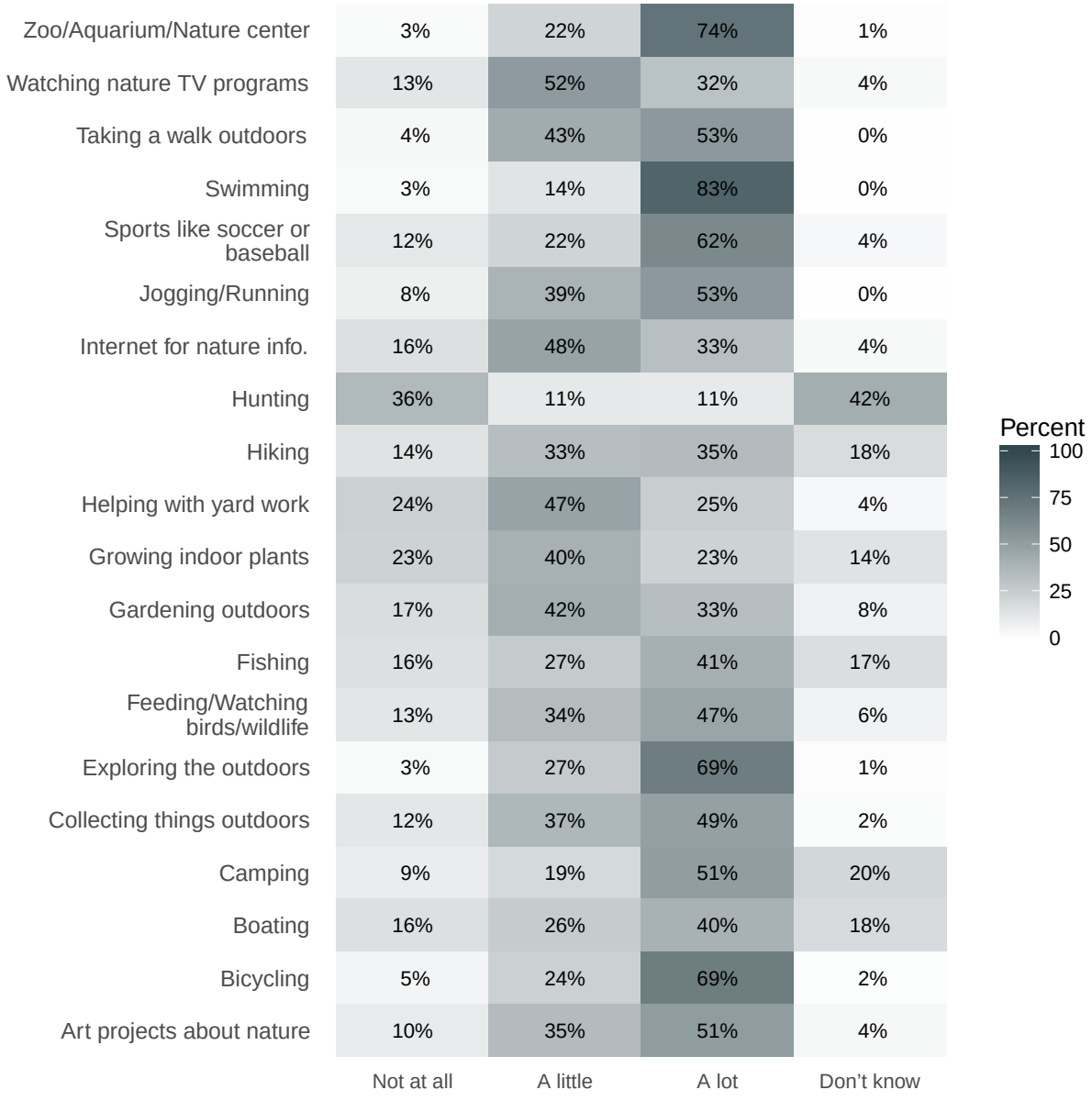
In today's world, children typically have many choices of activities they can do. We listed a large number and asked the children to indicate how much they like each (Figure 3.10). Their answers reflected both how much they "like" each activity (what we call *popularity*) and whether they know about the activity (what we call *familiarity*).

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, growing indoor plants, helping with yard work, watching nature TV programs, and looking on the Internet for information about nature. Hunting was also the least familiar activity among the children, with 42 percent saying they did not know how much they like it. Other activities with which children were unfamiliar included camping, hiking, boating, 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.

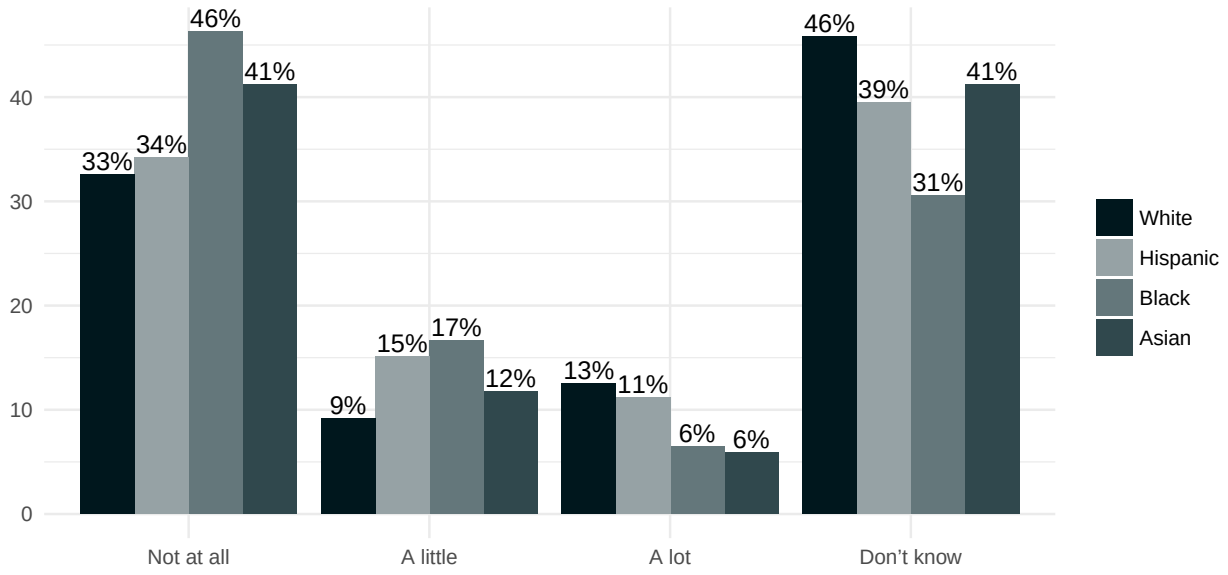
Across ethnoracial groups, the popularity and familiarity of hunting differed (Figure 3.11). Black children reported liking hunting the least (46 percent said they did not like it at all), followed by Asian children (41 percent). Slightly higher proportions of white and Hispanic children reported liking hunting "a lot."

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?

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 expressed dislike of fishing, compared with about one in six white, Hispanic, and Asian children. Fishing was most popular among white and Hispanic children (over 40 percent), followed by black and Asian children (around 30 percent). Asian children were likeliest to say they did not know how much they liked fishing (29 percent).

Feeding or watching birds or other wildlife was a popular activity for nearly half the children interviewed (Figure 3.13). Asian children were the least likely to report disliking feeding or watching birds or other wildlife: 20 percent selected this response; another 10 percent said they were unfamiliar with it.

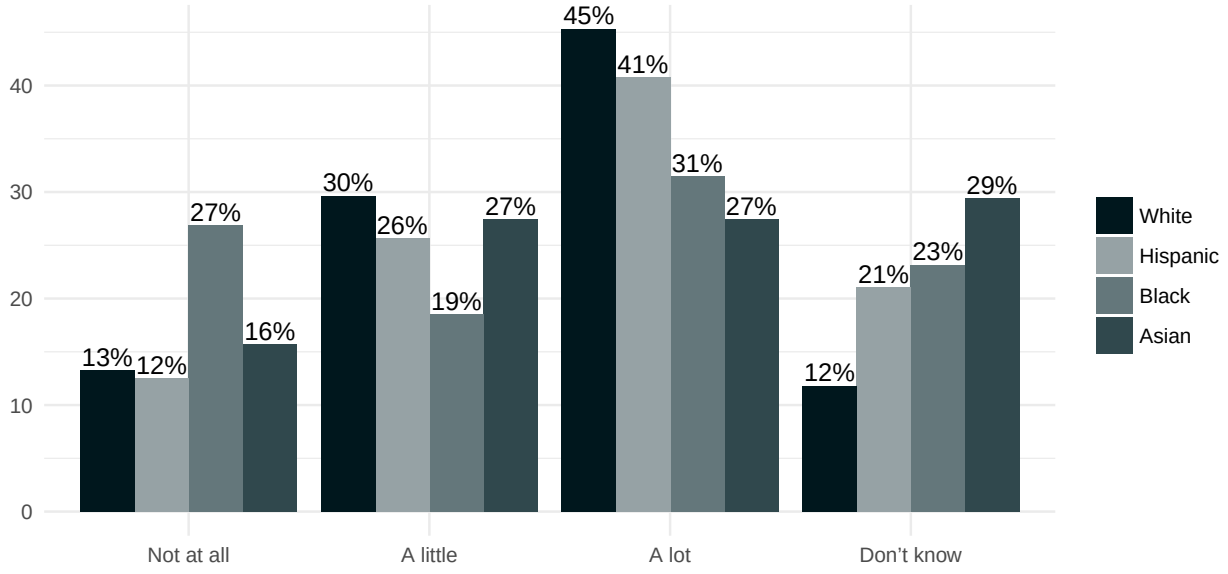
The popularity of camping varied (Figure 3.14). About 20 percent of black children disliked it (compared with around 10 percent of other children). One-third of black children said they liked it "a lot," which was about the same as the proportion of Asian children, but less than Hispanic (48 percent) or white (56 percent) children.

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." It was relatively less popular among Asian children: 50 percent said they like exploring "a lot," and 10 percent said "not at all."

Frequency of Participating in Common Activities with Family Members

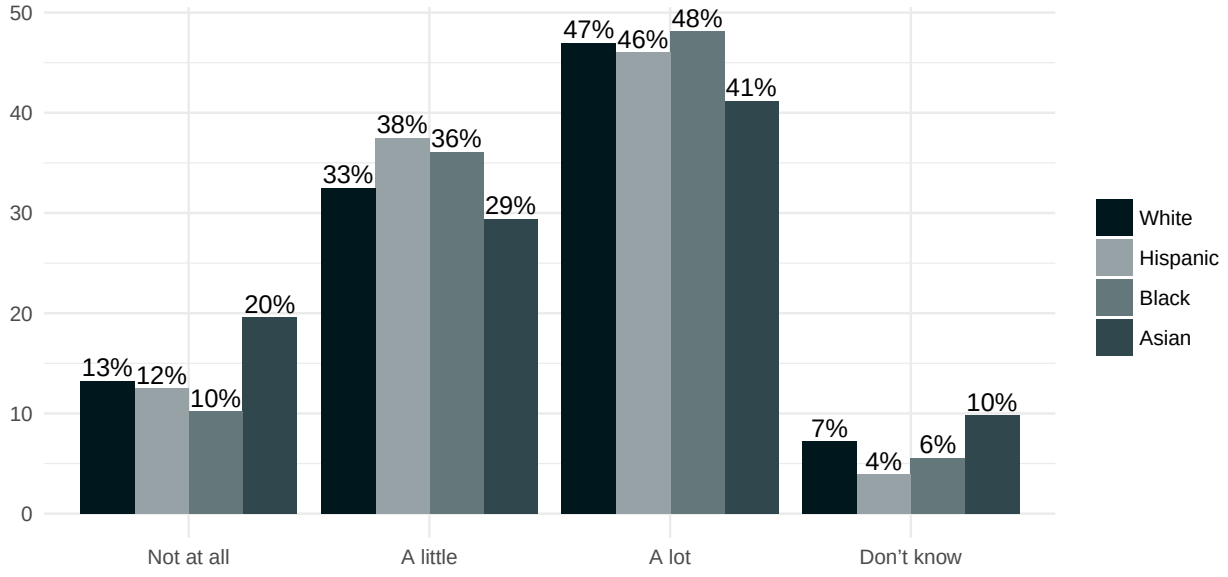
As seen above, different activities have different levels of popularity and familiarity among children. We asked children's parents to estimate how often their child participates with a parent or other family members in 13 different activities (Figure 3.16).

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



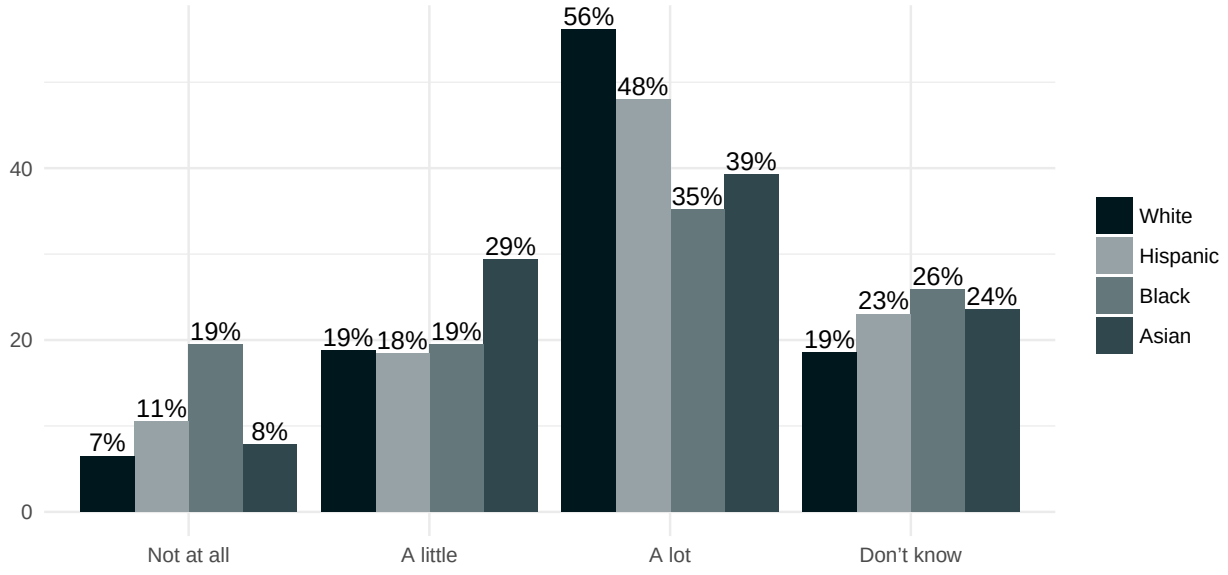
Question wording: How much do you like each of the following activities? ...Fishing.

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



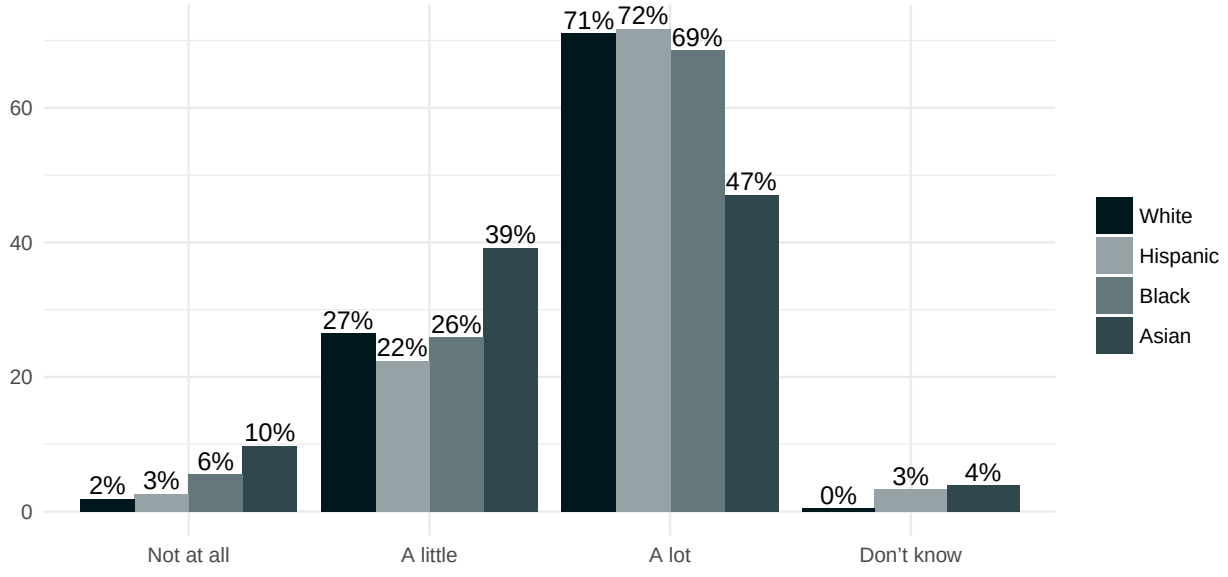
Question wording: How much do you like each of the following activities? ...Feeding or watching birds or other wildlife.

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.

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.

Among all children, 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, yard work, and watching birds and other wildlife. The least frequent activities were sleeping-out in the backyard or neighborhood, followed by camping away from home; fishing or hunting; outdoors-only sports like boating, canoeing, or skiing; and hiking 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.

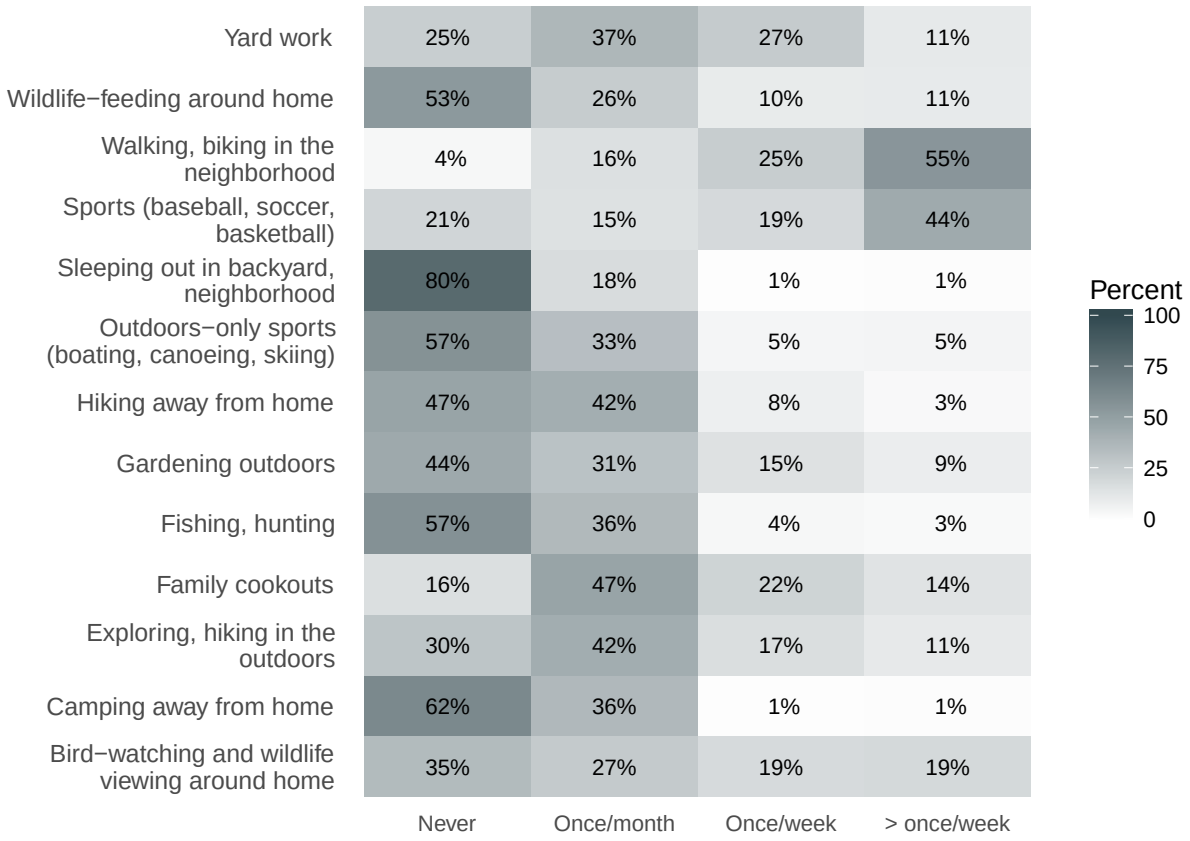
3.2.2 How Children Spend Their Time

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 where 8–12-year-old children in our sample spend their time.

According to parents' reports, the average child in our sample spent nearly 8 hours per week watching TV and just over 8 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 15.9 hours watching TV or using computers each week. Time spent with electronic media increased with age, rising from approximately 13.6 hours per week among 8-year-olds to 19.2 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 (12-year-olds).

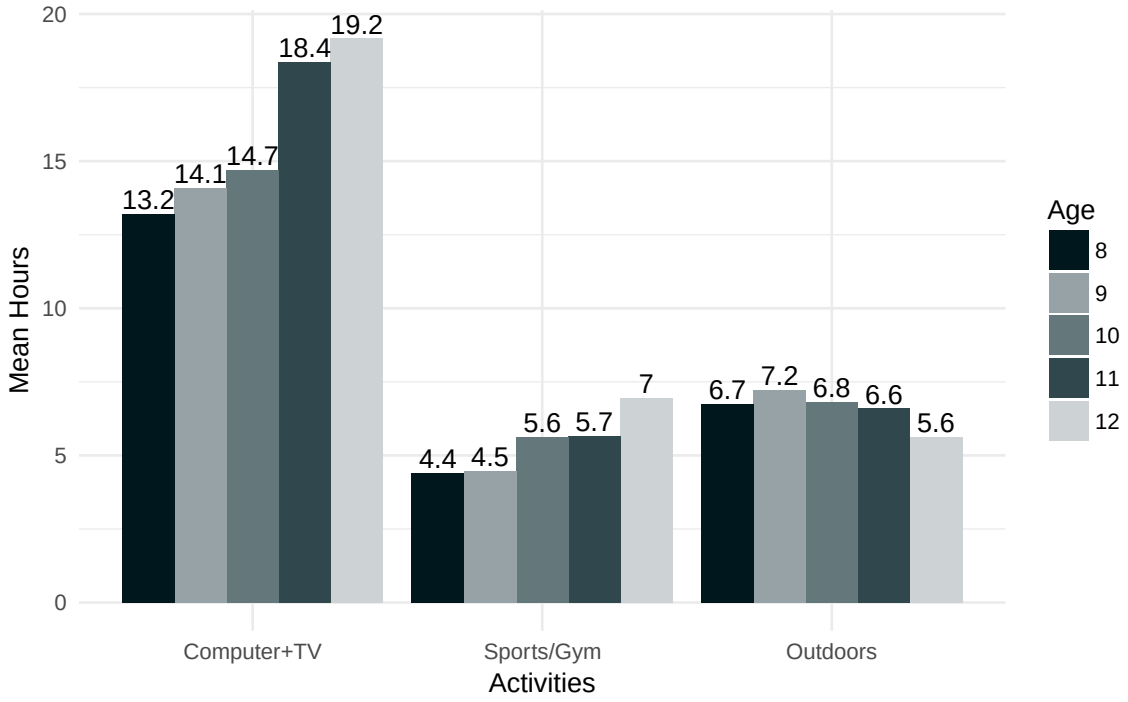
Time spent in outdoor activities averaged 6.6 hours in a typical week, and declined slightly with age from 6.7 hours among 8–year-olds to 5.6 hours among 12–year-olds. In effect, parents reported their children on average devoted nearly 21 hours each week to a combination of electronic media, television, and sports-related activities compared with the 6.6 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 3.16: 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.

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 on average spent slightly more time in outdoor activities in a typical week than Asian and black children.

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

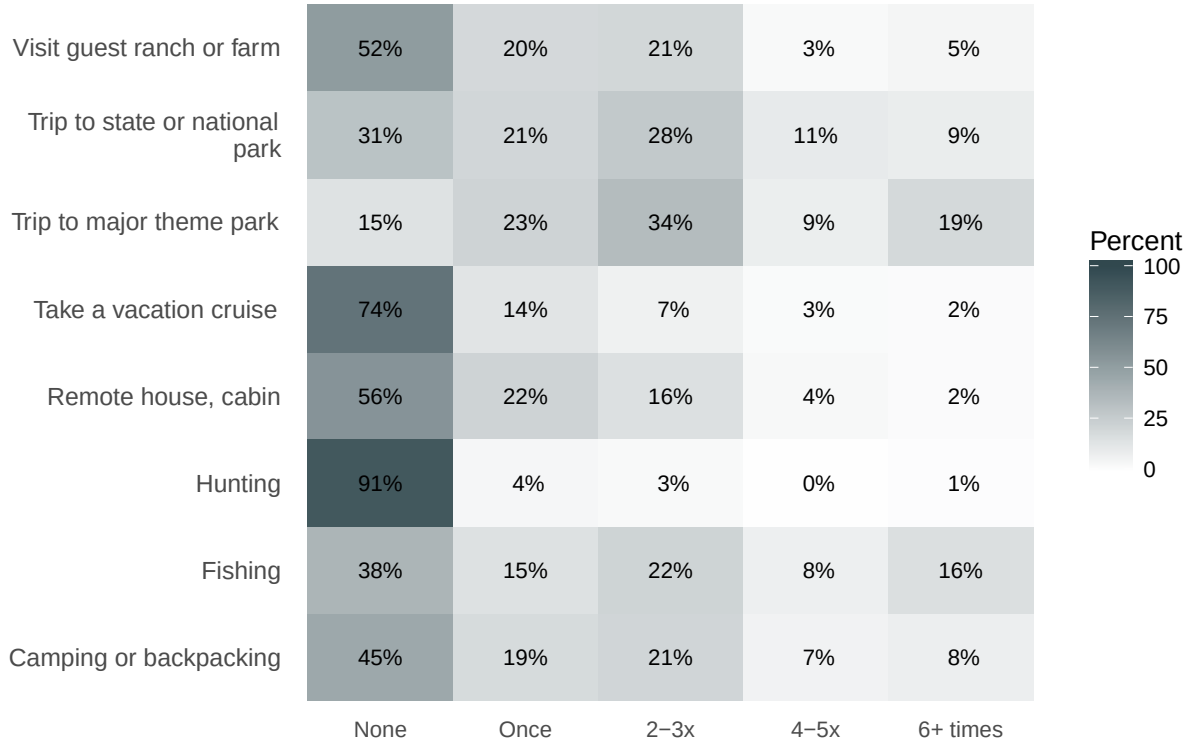
Outdoor Categories	White	Hispanic	Black	Asian
< 2 hrs	16%	24%	22%	36%
3-5 hrs	39%	42%	47%	38%
6-10 hrs	25%	19%	20%	20%
11-20 hrs	13%	11%	9%	4%
21-30 hrs	5%	3%	1%	0%
> 30 hrs	1%	2%	0%	2%

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

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.

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 to a major theme park, fishing, and 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.

Seventy-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 35 percent of white children took fewer than five nature-oriented trips. Indeed, 32 percent of white children took 10 or more trips, compared with 8 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	Asian
No trips	8%	13%	19%	6%
1-4 trips	27%	34%	52%	45%
5-9 trips	33%	33%	21%	33%
10-14 trips	20%	14%	5%	16%
15+ trips	12%	7%	3%	0%

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	19%	14%	14%	4%	9%	8%
1-4 trips	44%	37%	33%	35%	22%	37%
5-9 trips	25%	31%	36%	34%	30%	31%
10-14 trips	10%	11%	11%	19%	26%	14%
15+ trips	2%	7%	6%	8%	13%	10%

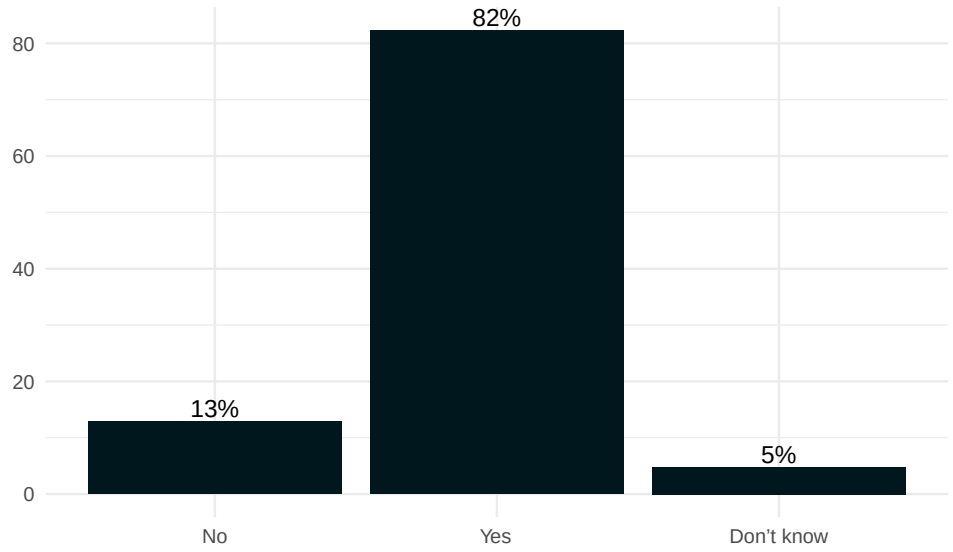
Note: Columns may not add to 100 percent due to rounding. Question wording: How often has your child taken each of the following trips with family or friends during the past two years? ...Camping or backpacking ...Visiting a guest ranch or farm ...Fishing ...Hunting ...Trip to state or national park.

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

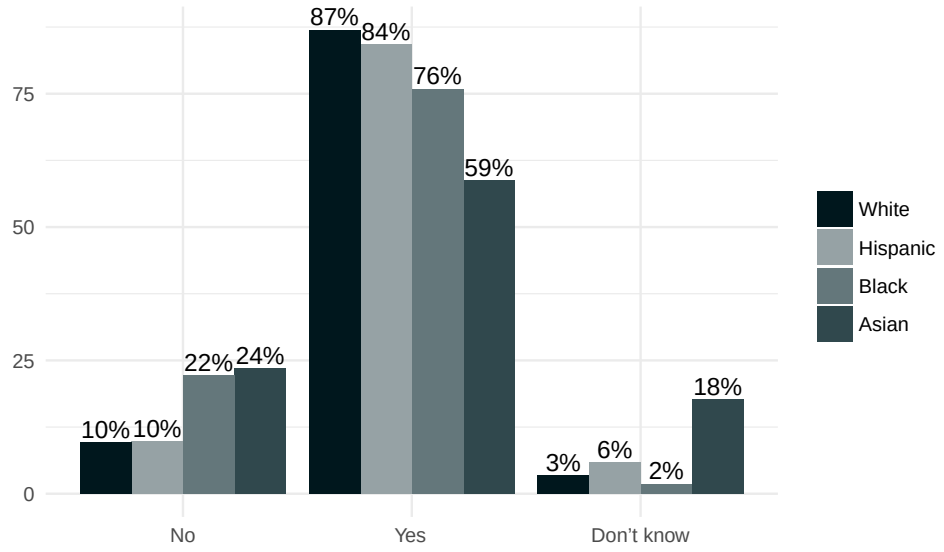
The great majority of children in our study (82 percent) reported that they care for a special plant or animal (Figure 3.19). Nearly 90 percent of white and Hispanic children reported taking care of a plant or animal, as well as 76 percent of black children and 59 percent of Asian children (Figure 3.20). Urban children were less likely to report taking care of a plant or animal (Figure 3.21).

Figure 3.19: Children: Care for Special Animals and Plants



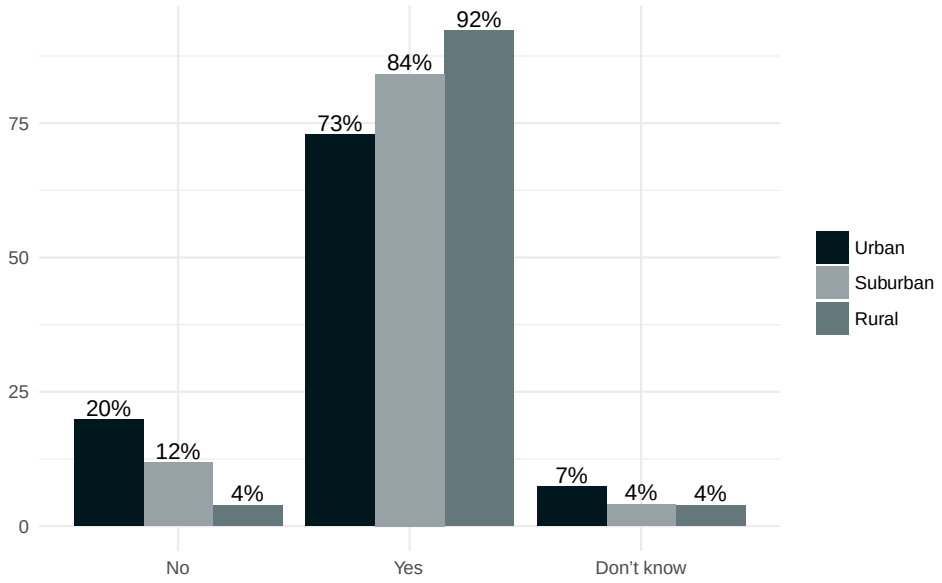
Question wording: Are there special animals or plants you like to take care of? ...If yes, please tell me which plants or animals, and why you like to take care of them.

Figure 3.20: 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.

Figure 3.21: Children: Care for Special Animals and Plants, by Location



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 take care of dogs and pets like turtles because I feel like they are human also." (Boy, black, age 9, urban)

> "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 am growing strawberries right now. It's fun to take care of the strawberries and sometimes my aunt and I like to grow tomatoes and different flowers." (Girl, Hispanic, age 12, suburban)

"I have two cats, and I really like my cats. I like taking care of my Venus flower because it looks pretty." (Boy, white, age 9, suburban)

"Reptiles—mine is a bearded dragon. A bird. My dad has two pet geese... We have a cat and a dog. We also have a lionhead rabbit. My mom helps me take care of them. I like taking care of them because animals are fun and they keep you company whenever you are feeling alone and you don't have someone to play with. You might want to play with your cat or your dog. It is really cool to watch them go." (Girl, Hispanic, age 8, urban)

"I like to take care of exotic animals. Sugar gliders—I have one. His name is Gizmo. Every day he can only eat at nighttime because they are nocturnal. They only eat chicken, hot dogs, and vegetables. When you want to bathe them, you have to bathe them with a wet cloth because they drown easily. We got them from a sugar glider breeder." (Boy, black, age 11, suburban)

"I like to take care of frogs and help them get onto the sidewalks. I put slugs into the grass so no one hurts them. I like taking care of lizards, put them in the grass so no one will step on them on the sidewalk." (Boy, white, age 11, suburban)

"The animals are the birds and squirrels, and the plants are the Chinese blue flowers. I like to take care of the flowers when they come up they are really pretty in the summer. I like to take care of the birds and squirrels because they're the animals you see outdoors, and it's easy to take care of them every day." (Girl, white, 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 3.22). 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 3.40.)

About two-thirds of children interviewed reported feeling scared by things like bees, spiders, and poison ivy. Fifty-nine percent picked up on wider societal concerns, noting their parents are afraid that they will meet strange people outdoors. However, 87 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 over one-quarter (27 percent) said they were more interested in television and computer games than being outdoors in nature.

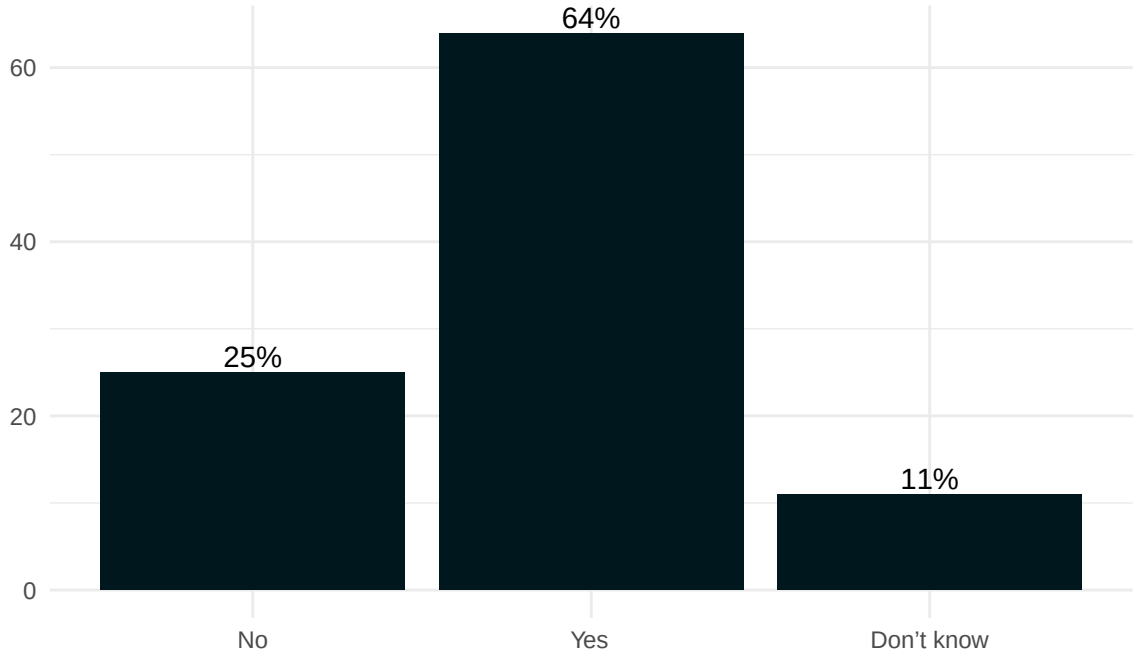
Just over one-quarter (27 percent) agreed they had few friends who are interested in the outdoors; a smaller proportion (11 percent) said they had no one to teach them about outdoor activities.

Depending on the topic, children's attitudes toward the outdoors were similar or diverged across ethnoracial groups. Figure 3.23 generally shows agreement among children in terms of their interest in the outdoors, the amount of places to play, and the amount of time they have to play. In contrast, Figure 3.24 shows relatively more variation. Black children, followed by 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.

3.2.6 Special Places in Nature

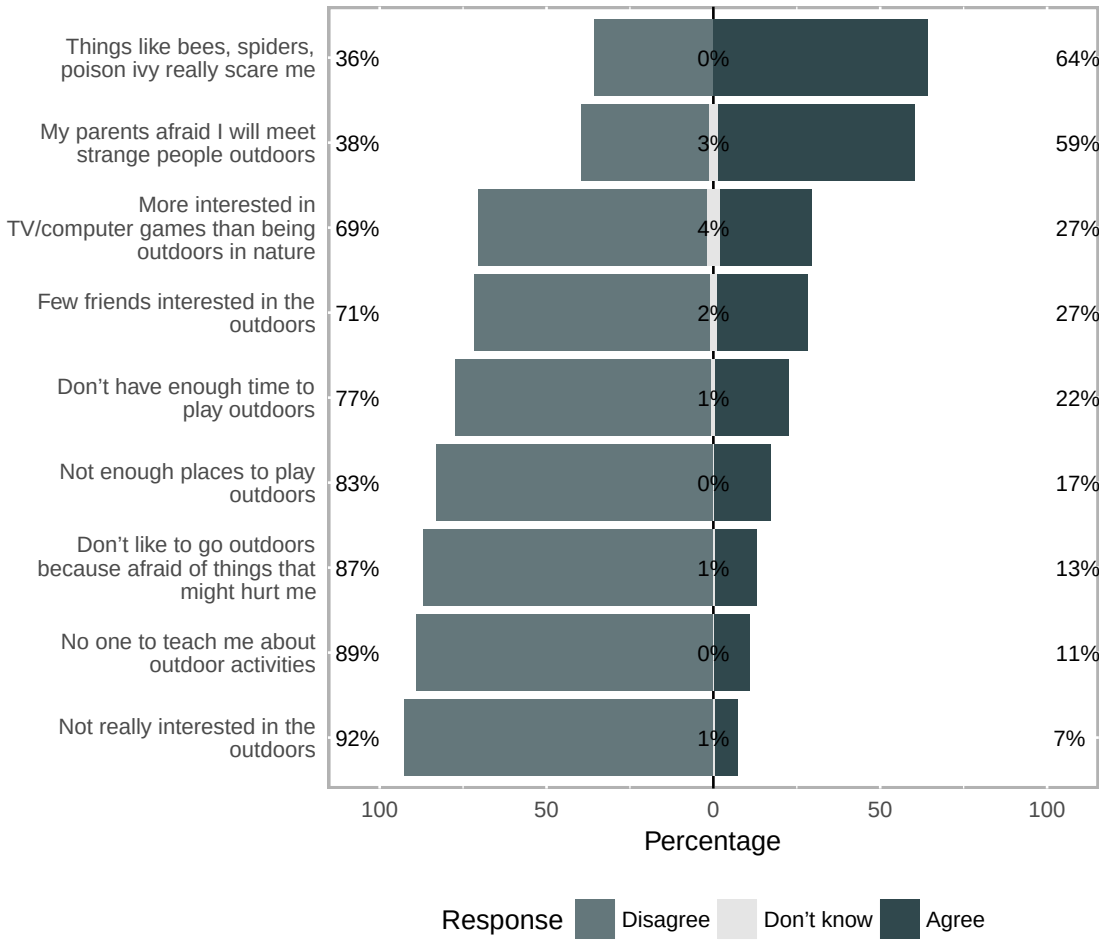
One of the ways children experience connection to nature is by connecting to a particular place. Among children studied, two-thirds reported having a place outdoors that is special to them (Figure 3.25). About two-thirds of Hispanic, white, and black children said they have a special place outdoors (Table 3.5). Relatively fewer Asian children said they do—just under half.

Figure 3.25: Children: Special Place in the Outdoors



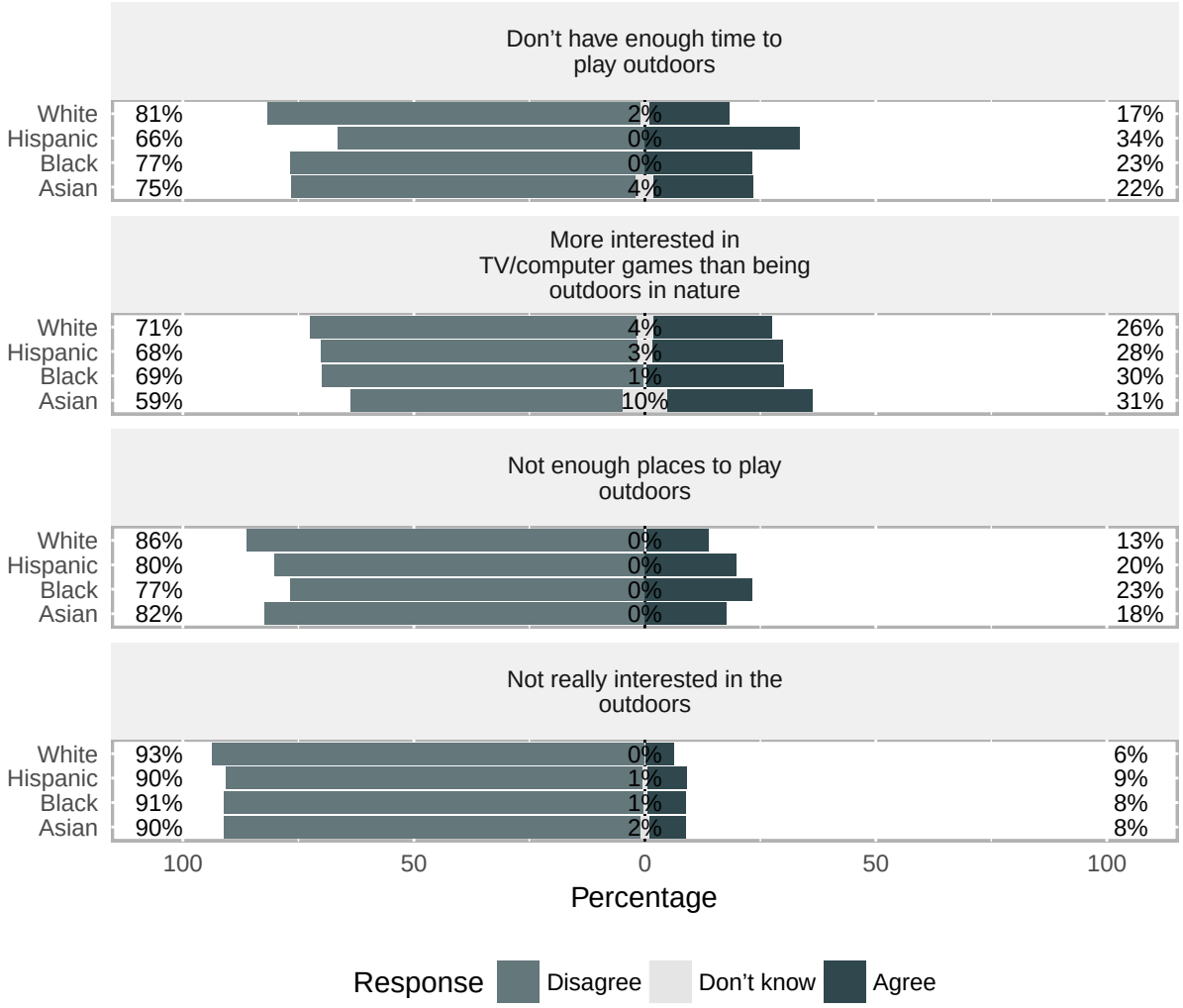
Question wording: Is there any place outdoors that is special to you?

Figure 3.22: Children: Attitudes toward the Outdoors



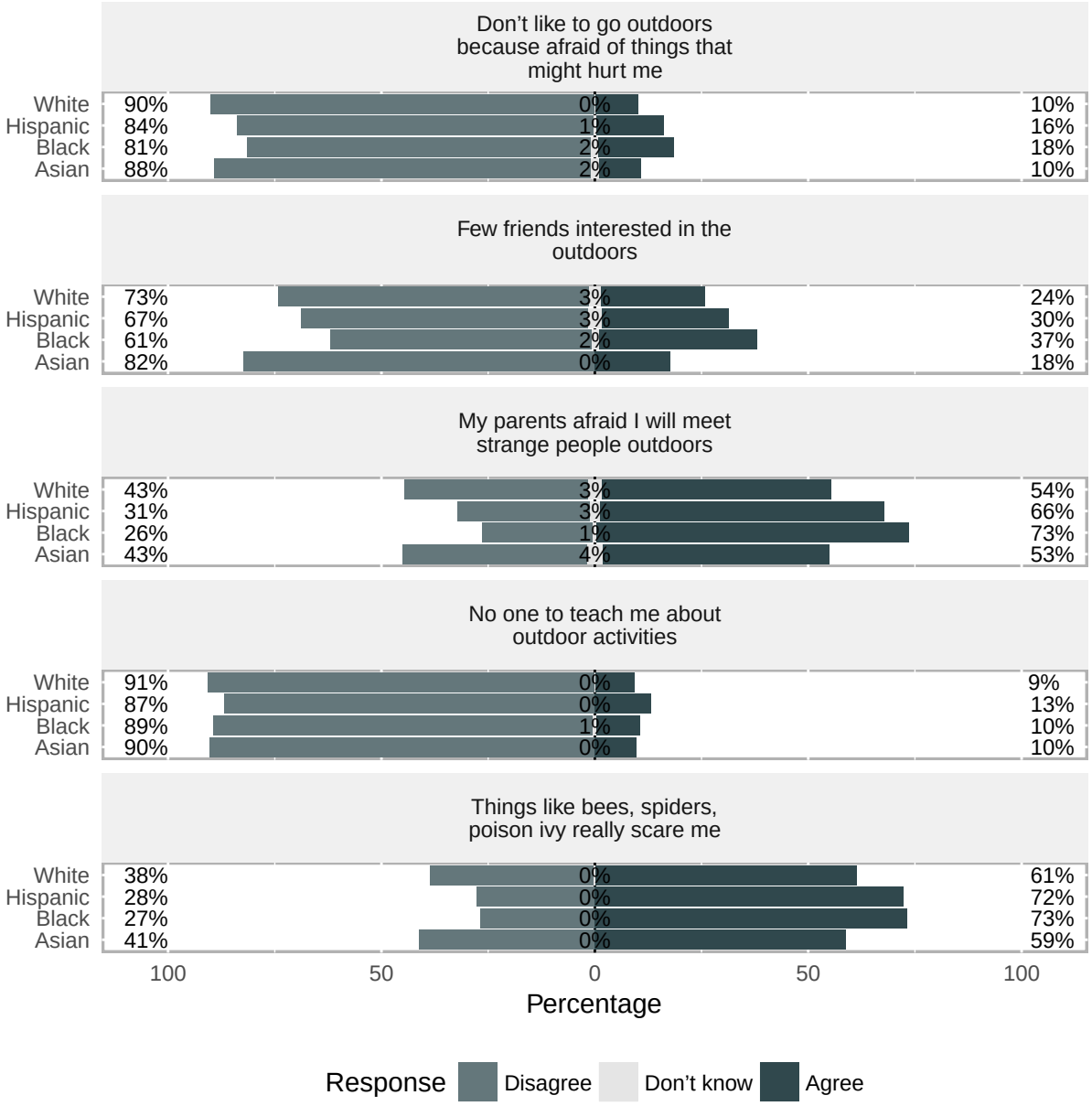
Note: The percentage on the left side represents "disagree"; the percentage in the middle, "don't know"; the percentage on the right side, "agree." Question wording: Do you agree or disagree with each of these ideas? ...I'm not really interested in the outdoors ...I don't have enough time to play outdoors ...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.

Figure 3.23: Children: Attitudes toward 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 3.24: Children: Attitudes toward 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.

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

Categories	White	Hispanic	Black	Asian
No	26%	16%	27%	39%
Yes	64%	68%	66%	45%
Don't know	10%	15%	7%	16%

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 3.26). 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.

> "There is a little opening in the woods that I can go inside of and play. It's in my backyard. I like it because it smells good, it has smooth soil, the trees so tall and thin, and it's so secretive." (Boy, black, age 8, suburban)
>
> "This place is basically anywhere outdoors where I can play with my friends because I don't get to go outside a lot." (Girl, black, age 11, suburban)
>
> "The park in my neighborhood is special to me because I eat there with my friends sometimes and play on the swings." (Girl, white, age 10, suburban)
>
> "At my school there is this field that we go to for recess sometimes. Occasionally we are allowed to go into the woods and there is a creek there. We get to play a lot of games and it is really fun." (Boy, white, age 10, suburban)
>
> "I like Central Park because I like to walk to West, and I have a lot to discover. There are a lot of trees." (Boy, multiracial, age 10, urban)
>
> "I have two. I like going to the lake and being outside on the trampoline. I like going to the lake because I like to just look at the water and see different flowers and plants that I don't usually get to see at home. I like the trampoline because I get to be outside and do gymnastics at the same time." (Girl, white, age 10, urban)
>
> "I like playing in the front yard and the backyard, and on the side of the house. In the front yard I like to walk on the sidewalk or ride my bike in the street. In the backyard I like to go on the trampoline or in the playground. I play with my siblings." (Girl, Hispanic, age 11, suburban)
>
> "My backyard because it had a lot of open space, and I can do stuff. I play soccer with my sister, and I check around the house that my dad's building." (Boy, Asian, age 10, urban)
>
> "Our woods because I feel like I'm lucky to have them because it's a place I can just go and stay without there being much noise. It's a quiet place." (Boy, white, age 12, rural)

Figure 3.26: Children: Special Place in the Outdoors

Question wording: Is there any place outdoors that is special to you? ...If yes, please tell me about this place and why it's special to you.

> "The pond in the park because it is relaxing. I usually go fishing there or sit there and read or draw. I usually go on the weekends, like Saturdays or Sunday mornings. Sometimes I go with my mom, and sometimes I go with some friends. It is special because it is really close to my house, and I have been going a long time. It is nice because there are turtles and animals and such." (Girl, Hispanic, age 12, urban)

> "The tree house in my backyard. I go there when I'm sad or grumpy. But mostly when I'm happy I go up there and play with my brother or sister and do homework up there, too." (Girl, multiracial, age 9, urban)

> "My backyard, because it's huge, fun, and amazing. I like playing ball with my dad and brother back there all day it's fun!" (Girl, Hispanic, age 9, urban)

> "I like going to the forest preserves. I like to bike there and see the plants and animals there. Some of the plants are really pretty and the animals you wouldn't see anywhere else. I go probably five times during the summer. I usually go with my mom or my grandpa." (Boy, white, age 10, suburban)

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:

> "My grandparents' cottage on Lake Ontario is special because I have done a lot of bird watching, jet skiing, and fishing there. A lot of the things I like to do I get to do there. Also my backyard is special because we have set up bird feeders and we get to watch the birds back there." (Boy, white, age 12, urban)

> "My grandma's house because there are lots of lizards there." (Girl, Hispanic, age 11, suburban)

> "I like a nature preserve in Florida, and it's where I do my wilderness camps. It's special because there are cool animals, bugs, and insects that I can play with." (Boy, white, age 8, rural)

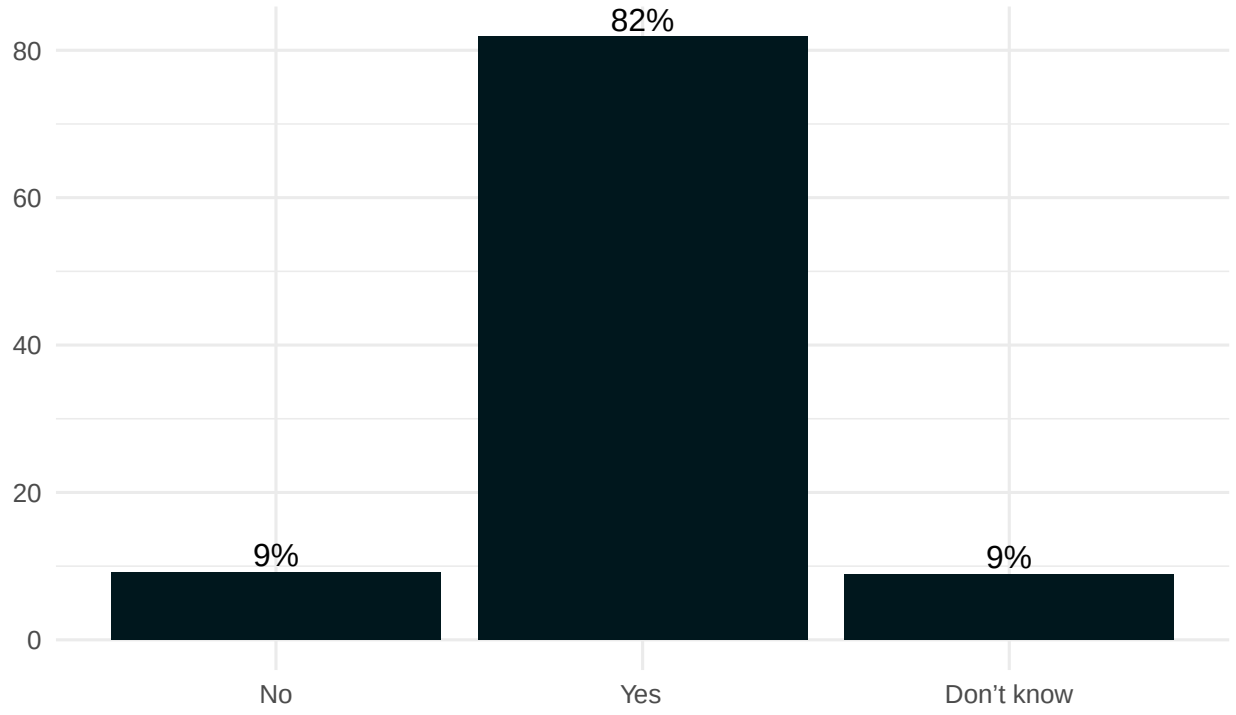
> "The zoo. It's special to me because I can go see all the animals. I go with my family and friends. My favorite animal at the zoo is the zebra. I like to feed the different animals. Mostly like to see the little babies." (Girl, Hispanic, age 12, suburban)

> "I like amusement parks that I get to be at with my family and friends and where the rides, attractions, and music are nice." (Boy, Hispanic, age 10, urban)

> "The ocean. It is special because my favorite animal is a dolphin, and the ocean is its habitat. I like going to the beach a lot with family and friends. It is a good place to go to in the summer." (Girl, Hispanic, age 11, suburban)

> "The place called Wildwood where I go for a week every summer is special to me because I get to go there and ride horses and take care of them." (Girl, white, age 11, suburban)

Figure 3.27: Children: Unforgettable Time in the Outdoors



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

> "The zoo. It's special to me because I can go see all the animals. I go with my family and friends. My favorite animal at the zoo is the zebra. I like to feed the different animals. Mostly like to see the little babies." (Girl, Hispanic, age 12, suburban)
>
> "The beach. Whenever we go there, we all bond as a family." (Girl, multiracial, age 12, suburban)

Unforgettable Time in the Outdoors

Over 80 percent of children interviewed reported having a time in the outdoors they will never forget (Figure 3.27). Hispanic children were the most likely to have had an unforgettable time outdoors, with nearly 90 percent reporting one (Table 3.6). Black and Asian children were slightly less likely to cite a special experience: 78 percent and 76 percent did, respectively. One-fifth of Asian children did not know if they had had a special time outdoors—more than double the rate of other children.

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

Categories	White	Hispanic	Black	Asian
No	10%	5%	13%	4%
Yes	81%	88%	78%	76%
Don't know	8%	8%	9%	20%

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?

The great majority of these unforgettable times occurred close to home and often involved relatively simple experiences, although a portion described events that were unusual or occurred in more distant places, such as camps or vacation spots (Figure 3.28). Like special places in the outdoors, these unforgettable times typically involved familiar persons such as friends, family, and teachers. This finding once more underscores how often the experience of nature for the children studied is a deeply social event that reinforces relationships to others and connections to place and community. A sample of children's impressions of these unforgettable times follows.

Figure 3.28: Children: Unforgettable Time in the Outdoors

Question wording: Have you ever had a time in the outdoors that you will never forget? ...If yes, please tell me about that special memory and how it made you feel.

> "When I was camping on a school trip, I was with my classmates. We carved sticks into knives and made our own shelter." (Girl, multiracial, age 9, suburban)

> "One time, I was digging for bugs. I found this really colorful one, and I dug some more and found a whole colony of them. I kept one, and it died eventually." (Boy, black, age 10, urban)

> "When I shot my first deer, because it was really fun at my grandpa's farm." (Boy, white, age 11, suburban)
>
> "One time, my sister she came down for spring break and stayed for two months, and it was during the Fourth of July, and we played a lot of games, and watched the fireworks and played basketball. We were with our whole family." (Girl, black, age 9, suburban)
>
> "We were camping, and it was my first one with my girl scout troop. My leader told us to get our flashlights and put them to our heads, then shine them on the ground. 'You will see jewels on the ground,' and we all did it. There were spiders, and it scared me!" (Girl, Hispanic, age 11, suburban)
>
> "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)
>
> "One time, my family and I went to North Carolina for Thanksgiving. It was my first time there, and it was beautiful. We went hunting at night in the snow, and I shot a bird from the sky with my bow and arrow. It was my first time seeing snow, so I really enjoyed that moment." (Girl, Hispanic, age 12, suburban)
>
> "When I went camping with my family and other friends. We ran around and tried to spot any interesting animals. My friend said she saw a deer." (Boy, Asian, age 10, urban)
>
> "When I was in 4th grade, I went to the Everglades with my class on a field trip. I saw a bunch of animals and plants, and it was very beautiful. My favorite part was when my teacher told everyone to be quiet, and we could only hear the birds and animals. I will never forget because it made me realize that nature is so beautiful." (Girl, Hispanic, age 10, urban)

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%	8%	6%
Yes unforgettable time	76%	87%	62%
Don't know	10%	4%	32%

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.

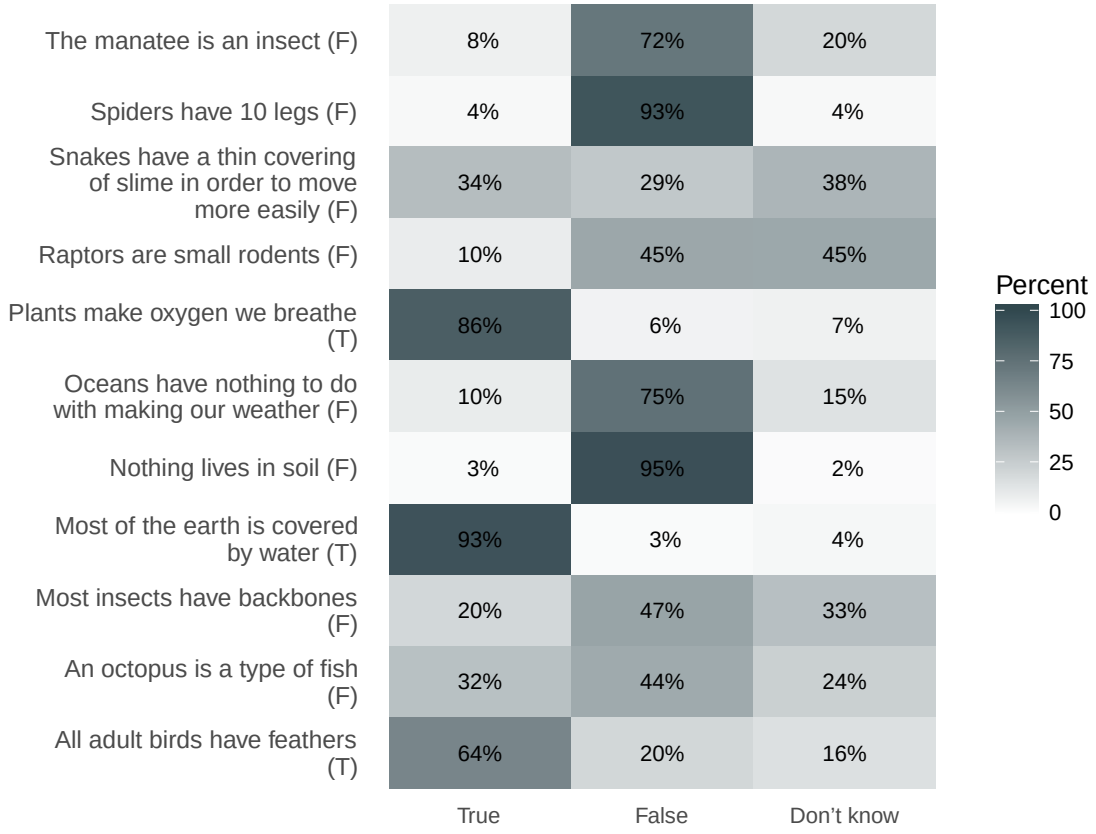
We asked children to answer 11 true/false questions about the natural world, including the following:

- 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)

The average (mean) score on this 11-question knowledge quiz was 7.4. (The median score was 7.) Three-fourths of children scored 6 or higher. As Figure 3.29 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 3.29). Children were most confused about whether raptors are small rodents (45 percent "don't know"), whether snakes have a thin covering of slime (38 percent "don't know"), whether most insects have backbones (33 percent "don't know"), and whether an octopus is a type of fish (24 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

Figure 3.29: Children: Quiz of Formal Knowledge about Nature



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

asked to a small sample ($N = 267$) of children 6–18-years-old enrolled in public school in Connecticut, asked in 1978.[1]

- In 1978, 78 percent of the children surveyed correctly answered the question about the number of spider's legs in contrast to 93 percent today.
- In 1978, 66 percent of the children recognized that snakes are not covered with a thin layer of slime, compared with 29 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 47 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:

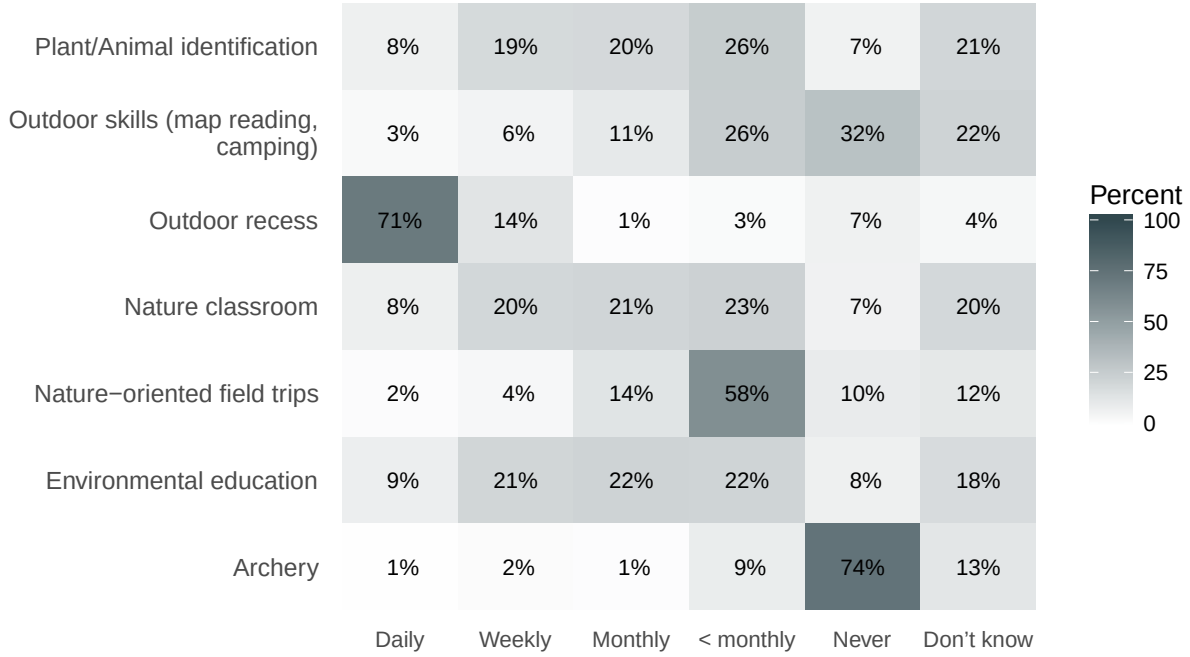
- Girls, on average, scored half a point lower than boys.

[1] 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.

- 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 0.7 points lower on the knowledge quiz than white children.
- Children whose parents have a graduate degree scored about one-third a point higher, on average, than children whose parents have less education.

One of the places children learn factual knowledge about the natural world is school (Figure 3.30). Just over one-half (52 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 3.30: 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 past two years. Almost one-half of white and Asian children have gone on a hiking or camping trip, followed by nearly 40 percent of Hispanic children and nearly 20 percent of black children. A similar pattern can be seen with Scouts and 4-H, with participation rates about doubled for white and Asian children compared with Hispanic and black children. About one in six children interviewed have attended a nature camp in the past two years. Relatively more black and Hispanic children have

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

Participated?	White	Hispanic	Black	Asian
Hiking, camping trips	46%	38%	19%	45%
Scouts, 4-H	27%	15%	11%	22%
Nature camps	17%	16%	19%	18%
Outdoor adventure programs	16%	22%	29%	12%

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.

participated in outdoor adventure programs—29 percent and 22 percent, respectively–than white and Asian children.

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:

> "At my school, we do a lot of gardening. We have this garden by the school so my teacher teaches us about animals and wildlife and stuff like that. She talks about ecosystems and how if one thing is missing the rest of the system can't live without it." (Girl, multiracial, age 10, suburban)

> "A lot of people. My mom, sometimes my dad, sometimes when other people are here and they are playing outside with me. My Mom usually tells me what bugs and animals sometimes eat. My dad teaches me how to build campfires with random stuff and hot coals and riding my bike." (Boy, white, age 9, suburban)

> "My dad teaches me about birds, stars, animals, how old trees are, how you can tell the difference between safe and dangerous plants, and just the difference between plants in general. My mom teaches me about what's safe and what's dangerous, how to make things (like how to whittle)." (Boy, white, age 10, urban)

> "Girl Scouts teaches me about plants and animals, and not to bother animals. We go to the creek, and we look at the moths and the beaver dams. My mom teaches me not to mess with the bees so I don't get stung. My parents' friends have a garden, and they were teaching me how the rabbits go underground to get the food in their garden." (Girl, Hispanic, suburban, age 10)

> "A TV show called Wild Krats. I learn about creatures' features and the environment. I have a teacher at school who teaches me about life science and some biology." (Boy, Hispanic, age 8, suburban)

> "I do a lot of research myself on the computer. I also learn from my social studies teacher and also my science teacher. I learn how to protect wildlife and what wildlife is, like wildlife history." (Boy, Asian, age 11, suburban)

> "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)
>
> "My gardening teacher teaches me about plants, spiders, lady bugs and how insects help the ground." (Girl, black, age 9, suburban)

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.

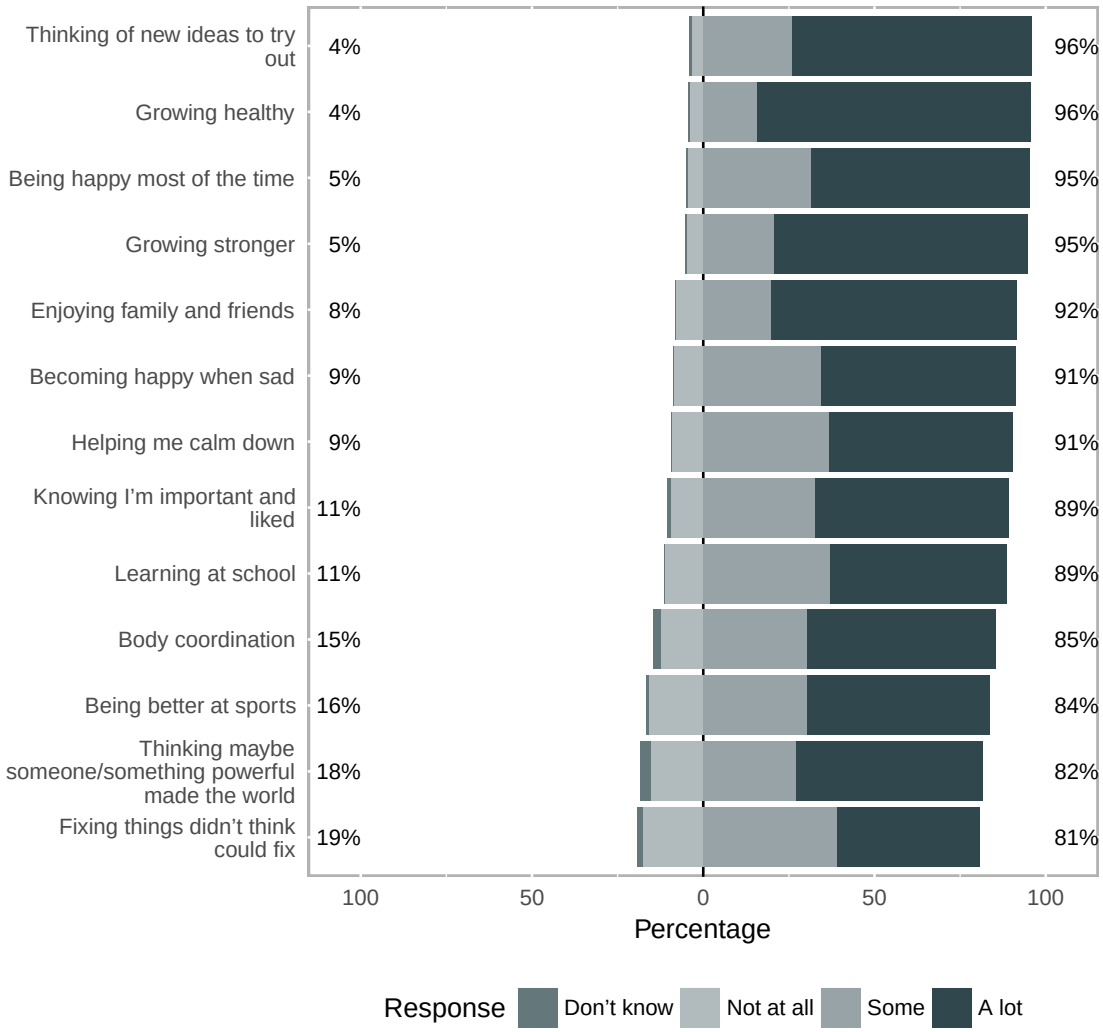
3.3.1 Physical, Psychological, and Social Effects

Nearly all the children in our sample viewed playing in the outdoors and nature as helping them to develop and mature *physically* (Figure 3.31). 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 3.32). The parents surveyed especially cited contact with nature as having fostered their child's physical health and strength and coordination.

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. Virtually all the children reported their experience of nature enhanced their ability to think of and try out new ideas.

Similarly, most parents reported an array of *psychological* 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

Figure 3.31: 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.

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 (92 percent) and reinforcing their sense of being liked and important to others (89 percent). Most children (89 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.

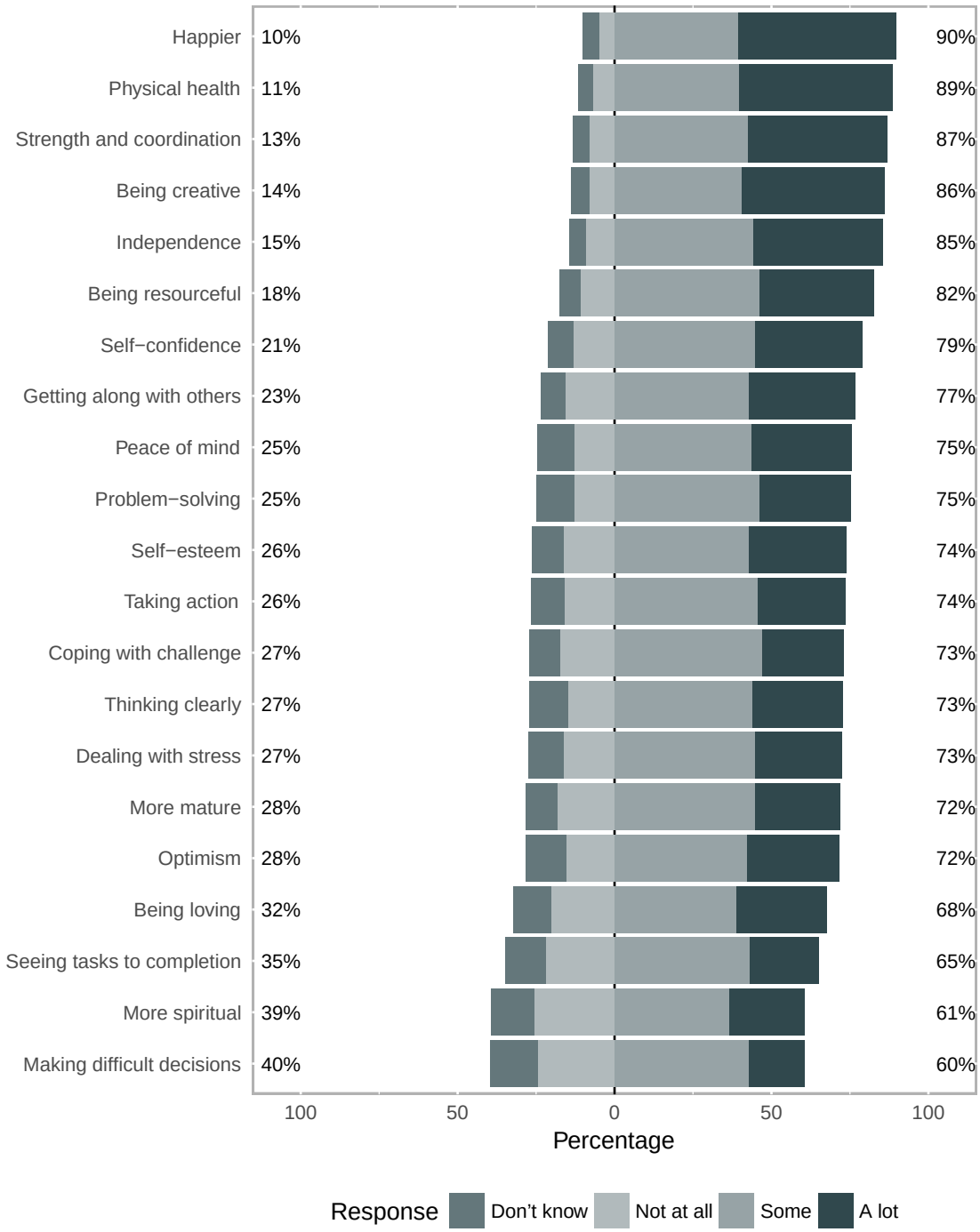
These physical, psychological, and social benefits associated with children's experiences of nature were often related to one another, and to a variety of other measures of children's interest in the outdoors. This association is reflected in a correlation matrix that reveals the interconnection of many of these variables (Figure 3.33). 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

Figure 3.32: 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.

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.

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. One-quarter of parents answered affirmatively, and a sample of what those parents wrote follows:

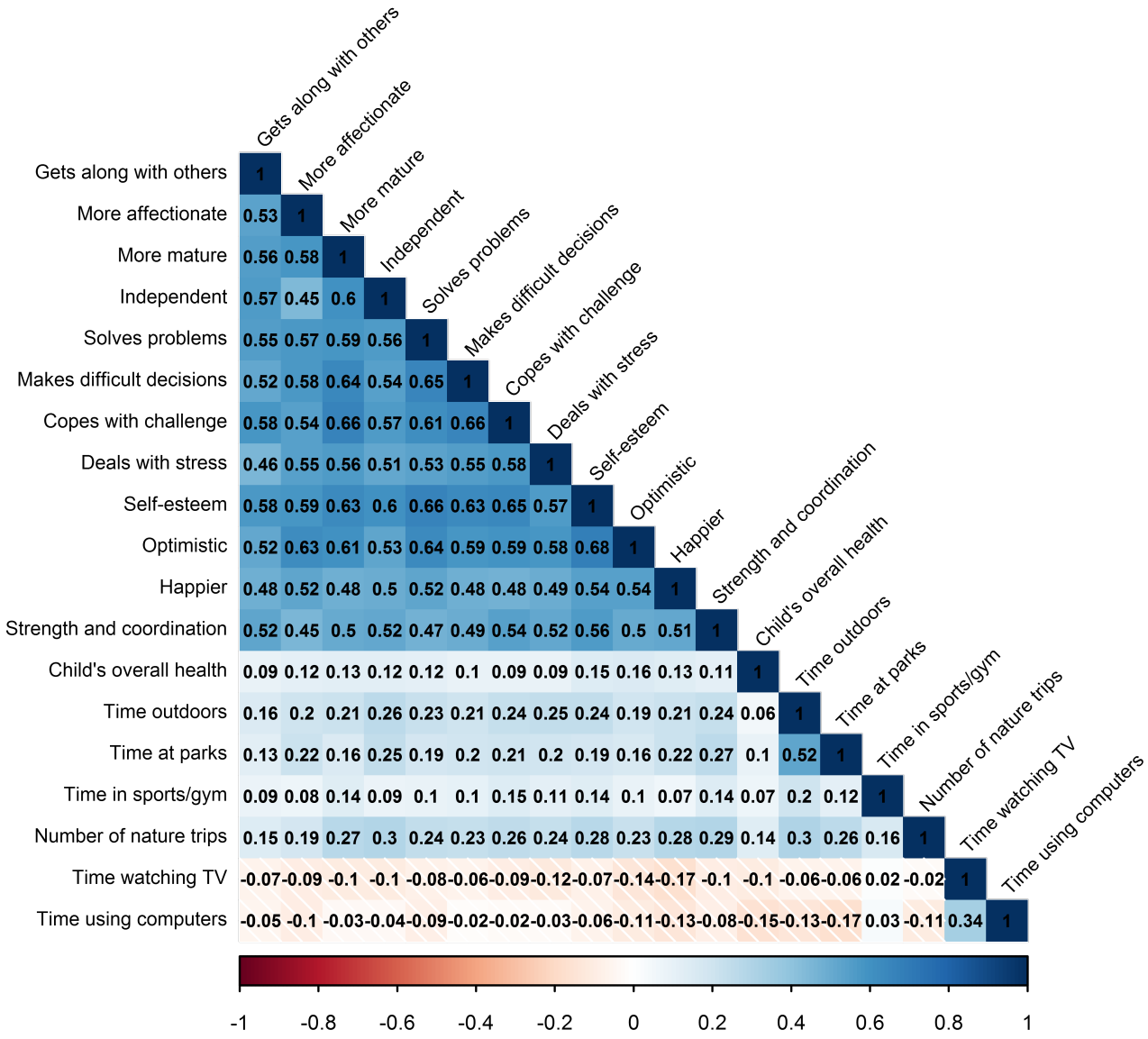
> "Being overweight, activities like playing, swimming, fishing, and camping has helped him lose a few pounds." (Parent of a boy, Hispanic, age 10, rural)
>
> "His anxiety has mostly diminished and he has a lot more self-confidence. Also you can tell he loves being outside and playing - which says a lot, in that he has a 135 IQ so he loves to read indoors." (Parent of a boy, white, age 8, suburban)
>
> "She has been very stressed because of a separation between her father and I. Going for nature walks, being outside, and taking pictures of nature helps her to relax." (Parent of a girl, white, age 10, rural)
>
> "Sometimes he has trouble focusing on tasks such as schoolwork or chores at home, but when he spends more time outdoors his focus tends to improve. His overall mood also tends to be better when he spends more time outdoors." (Parent of a boy, white, age 11, suburban)
>
> "She had a brief episode of high blood pressure. We changed her diet and made her exercise more outdoors." (Parent of a girl, black, age 12, suburban)
>
> "His attitude improves. He is in better spirits and is more helpful and responsible. He sleeps better." (Parent of a boy, Hispanic, age 11, urban)
>
> "It has built confidence and she is more aware of how things are made and what it takes to grow things and see a final product." (Parent of a girl, Hispanic, age 10, urban)

The word cloud reports the particular health improvement parents reported (size indicates relative frequency) (Figure 3.34). 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.

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) relationships with others (especially family and friends), and 4) the accessibility of places to play outdoors.

Figure 3.33: 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?

Figure 3.34: 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.

For parents, one of the most important barriers to their child playing more outdoors was accessibility in terms of concerns for safety (Figure 3.35). 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: about 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 3.36 and 3.37 report ethnoracial differences in what parents perceived are barriers to their child playing more outdoors. As seen in Figure 3.36, a sizable minority of parents of Asian and black children—roughly two-fifths—saw their child's lack of interest as an important barrier. In comparison, about as half as many parents of white and Hispanic children said a lack of interest was an important barrier for their child.

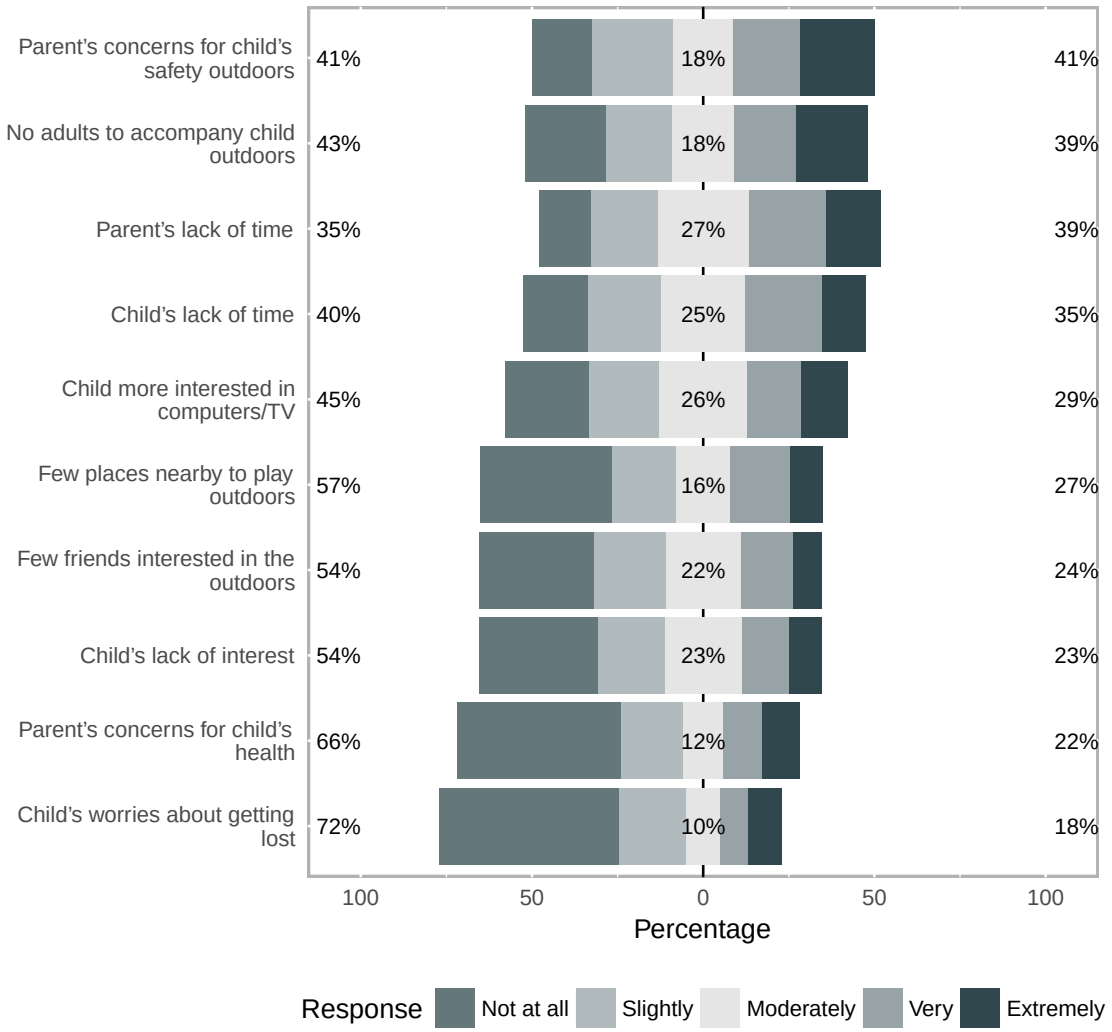
In regards to social relationships, parents of minority children were much likelier to mention these as important impediments to their child playing more outdoors. For parents of white children, one in five said their child's lack of friends interested in the outdoors was an important barrier. In comparison, this was an important barrier for one in four parents of Hispanic children, and one in three parents of black and Asian children. An even larger barrier was the lack of adults to accompany children outdoors. One in four parents of white children put this as an important barrier, followed by one in two parents of Hispanic children, and two out of three parents of black and Asian children.

Ethnoracial differences also emerged in terms of time and access (Figure 3.37). Parents of minority children—especially of Asian and black children—saw a lack of time as a relatively larger barrier than parents of white children did. For example, well over one-half of Asian children's parents reported that their child's lack of time—as well as their own lack of time—were important barriers to the outdoors. Parents of black and Hispanic children were also relatively more concerned about a lack time than parents of white children.

Access to outdoor spaces also emerged as an important barrier for parents of minority children. Whereas two-thirds of white children's parents did *not* see a lack of places as an important barrier, at least one-third of minority children's parents did. Another dimension of access—health concerns—were mentioned as highly important, especially among parents of Asian and black children. A third dimension of access–concerns for safety—ranked as highly important for most parents of black and Asian children: two-thirds of black children's parents viewed safety as a very or extremely important barrier to their child spending more time outdoors. Parents of Asian children were equally concerned: 63 percent said their concerns for their child's safety was an important barrier. One of the elements of safety is children's concerns about getting lost. Asian, black, and Hispanic children's parents were much likelier to mention this, compared with white children's parents.

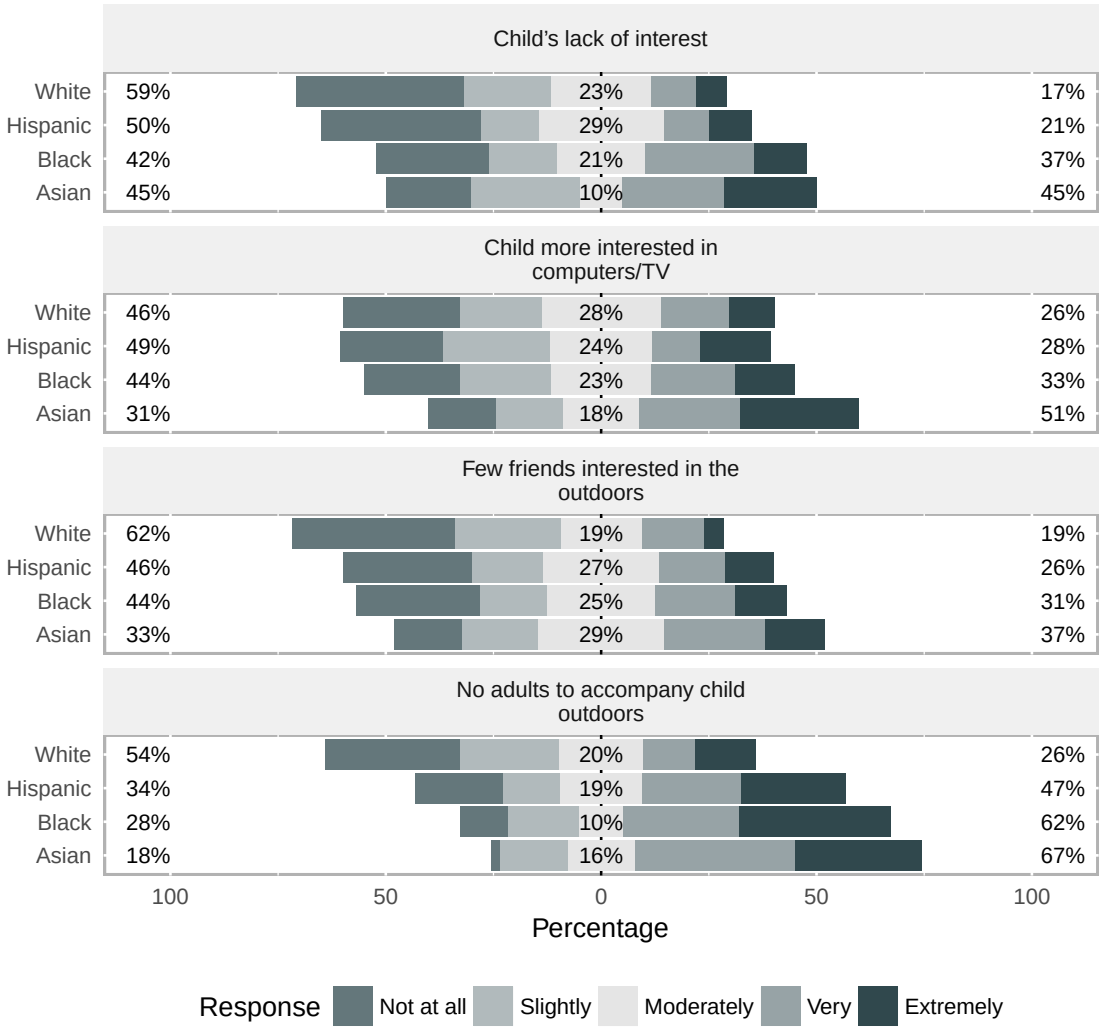
Just as parents of minority children tended to attribute more importance to barriers, so too did urban parents (Figures 3.38 and 3.39). Of particular concern to urban parents were safety issues. In addition, urban parents were more likely to indicate the lack of adults to accompany their child when playing outdoors (47 percent) and their own lack of time (41 percent). Urban parents were also far more likely to cite their child's and child's friends' lack of interest in the outdoors (30 percent each). Suburban parents tended to attribute less importance to these barriers, although

Figure 3.35: Parents: Importance of Barriers to Child's Playing More Outdoors



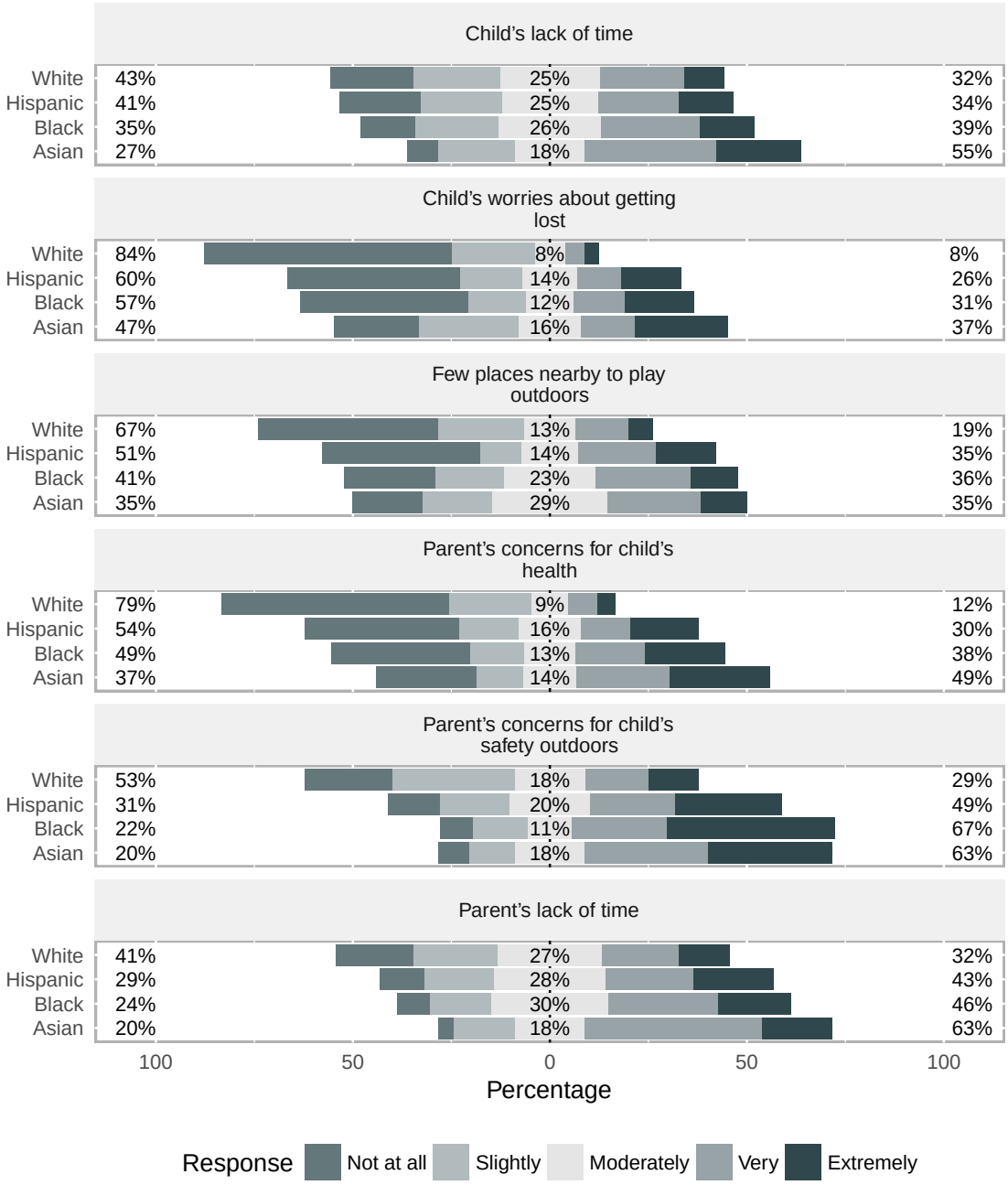
Note: The percentage listed on the left side is the total of "not at all important" and "slightly important." The percentage listed in the middle is "moderately important." The percentage listed on the right side is the total of "extremely important" and "very important." Question wording: How important 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 3.36: 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 3.37: 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.

concerns about their child's safety outdoors, lack of adult supervision, and time problems were cited as substantial obstacles to suburban parents. Rural parents expressed relatively less concern about safety and social support, followed by lack of interest and time.

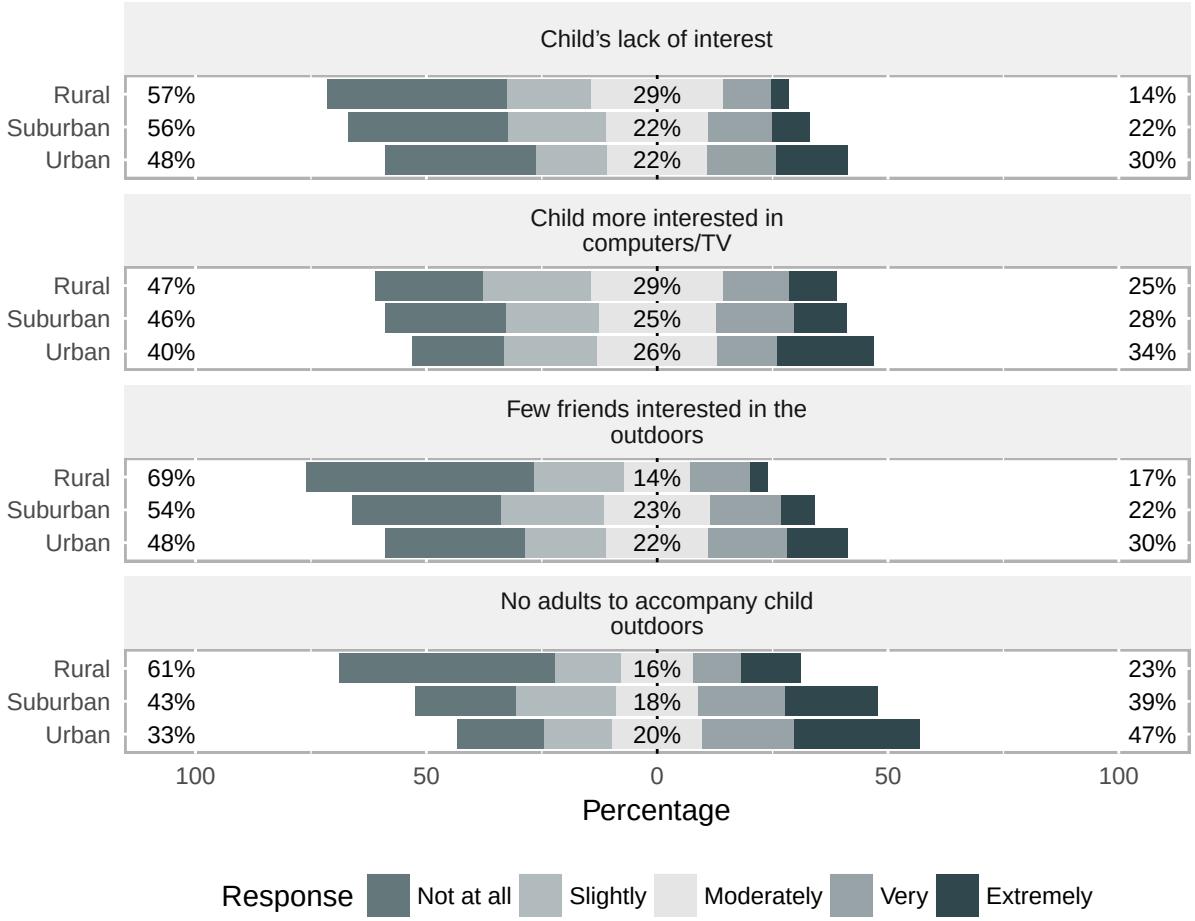
Many of the obstacles and impediments to children's outdoor play are interrelated with one another. A correlation matrix reveals how the most salient barriers—interest, social relationships, time, and access—form overlapping and reinforcing barriers for children (Figure 3.40).[2] For example, a child's 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. A lack of interest 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, 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. Parents' concern for safety showed a relatively weak—even nonexistent—relationship with time spent outdoors, time spent at parks, and nature trips.[3] 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.

[2] 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.

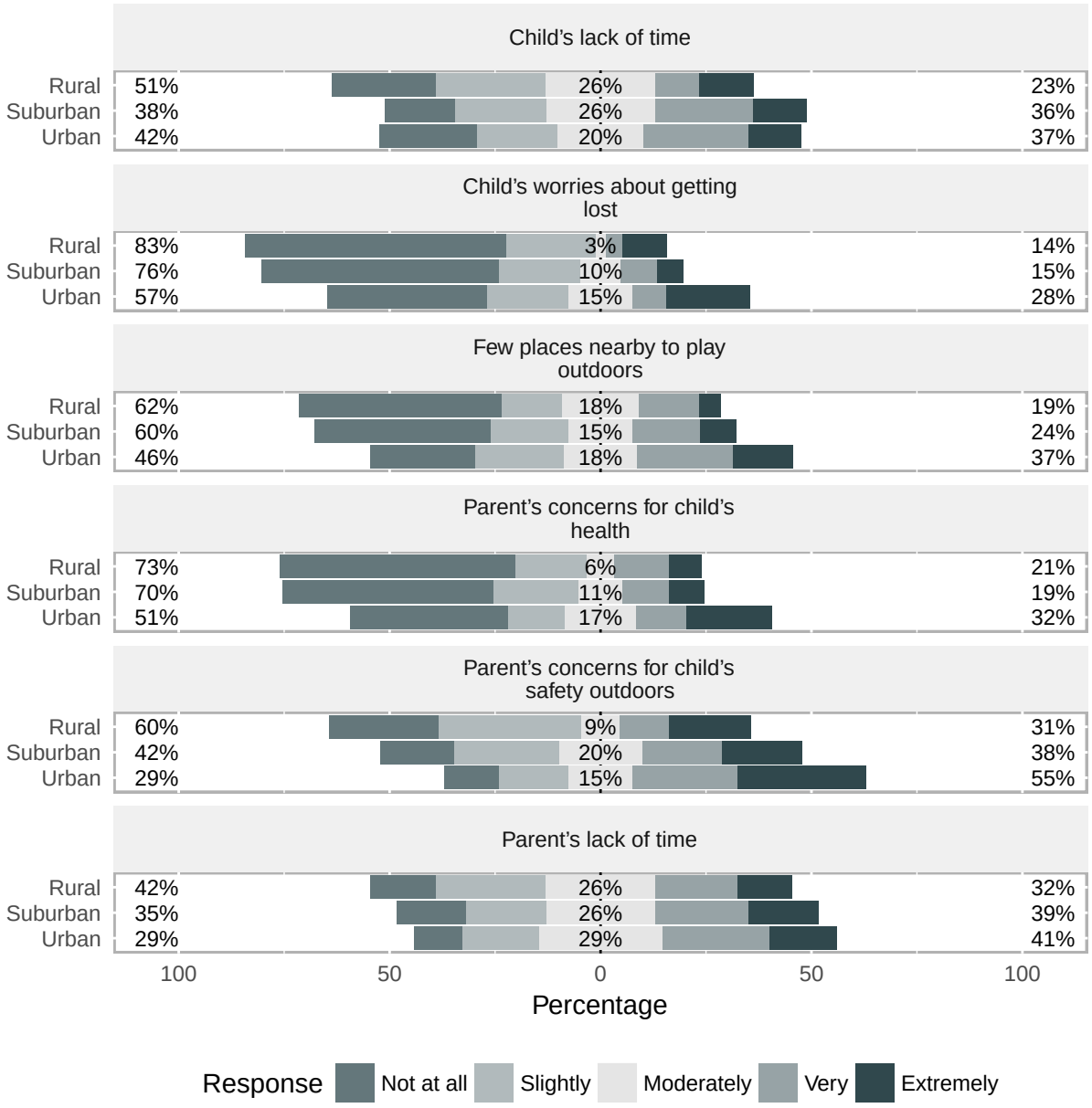
[3] This non-relationship was true for black and Hispanic children, but not for Asian children. For black children, parents' concern for safety had a remarkably small relationship with children's time spent outdoors or at parks (essentially 0). It had a slight positive relationship with the number of nature trips ($r = 0.11$). For Hispanic children, parents' concern had a nil relationship with time outdoors and time at parks. For number of nature trips, $r = -0.06$. For Asian children, parents' concern had a positive relationship with time spent outdoors ($r = 0.11$) and at parks ($r = 0.05$). It had a negative relationship with the number of nature trips ($r = -0.24$).

Figure 3.38: Parents: Interest and Relational Barriers to Child Playing More Outdoors, by Location



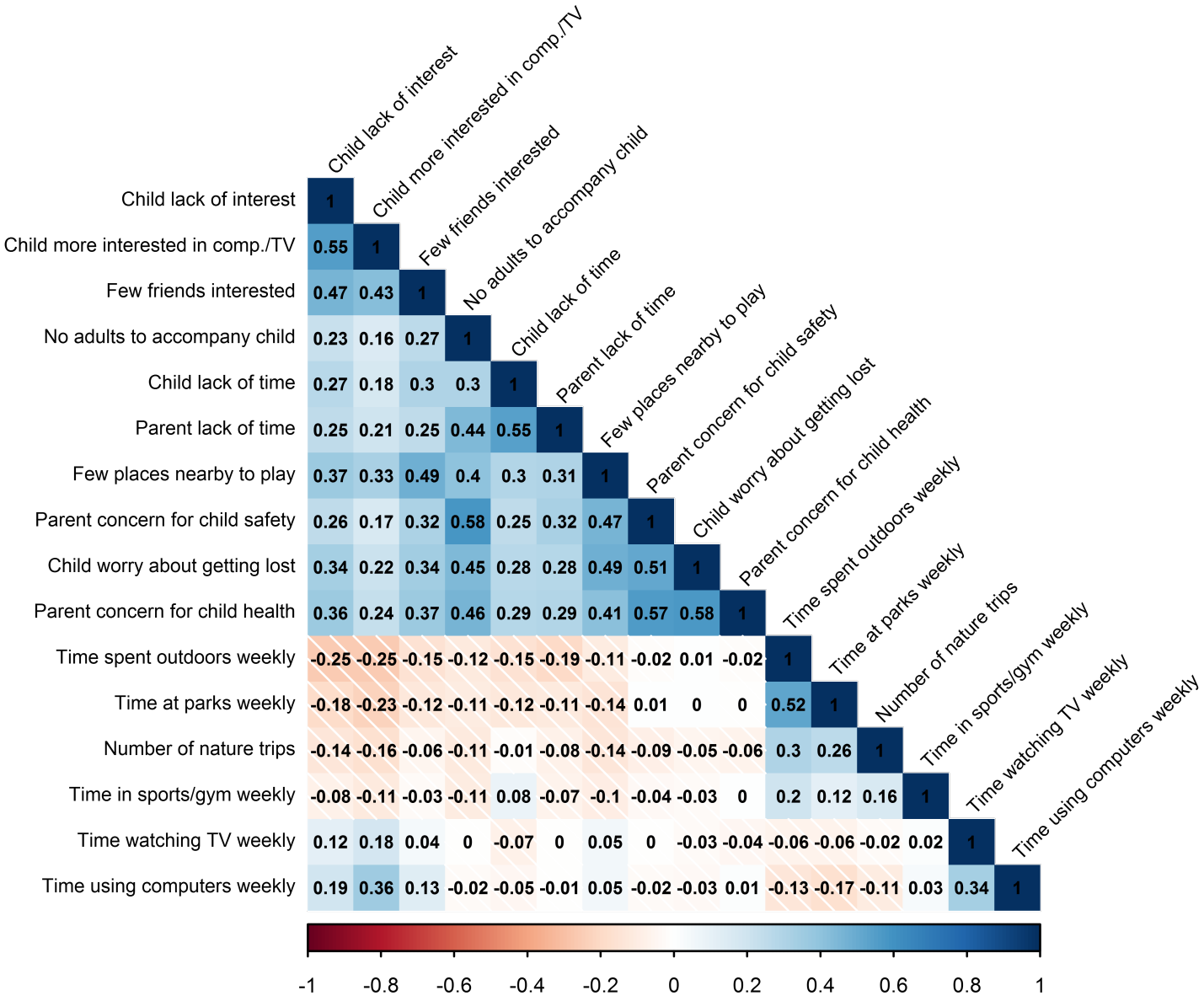
Note: The percentage listed on the left side is the total of "not at all important" and "slightly important." The percentage listed in the middle is "moderately important." The percentage listed on the right side is the total of "extremely important" and "very important." Question wording: How important 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 3.39: 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.

Figure 3.40: 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 Parents: 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, over one-third (37 percent) of parents who called themselves indoors-oriented have children who play outdoors two hours or less per week. In comparison, less than one-sixth 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 4.1 hours outdoors each week.
- Children of parents who are outdoors-oriented spent on average 9.2 hours outdoors each week.
- Children of parents whose are both indoors- and outdoors-oriented spent on average 6.9 hours outdoors each week.

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

Categories	Outdoors-oriented	Indoors-oriented	Same indoors/outdoors
< 2 hrs	14%	37%	15%
3-5 hrs	30%	45%	43%
6-10 hrs	26%	14%	26%
11-20 hrs	19%	2%	12%
21-30 hrs	9%	1%	4%
> 30 hrs	2%	1%	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 less outdoors each week—12 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 5.7 hours outdoors each week.
- Children of parents who said their own lack of time is an unimportant barrier spent on average 8.4 hours outdoors each week.
- Children of parents who said their own lack of time is a moderately important barrier spent on average 5.8 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	17%	18%	25%
3-5 hrs	31%	47%	45%
6-10 hrs	26%	23%	20%
11-20 hrs	16%	11%	6%
21-30 hrs	7%	0%	3%
> 30 hrs	2%	0%	1%

Note: Columns may not add to 100 percent due to rounding. "Unimportant" combines "not at all important" and "slightly important." "Highly 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, 45 percent said they were more interested in electronic media than being outdoors in nature. In comparison, only 17 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 More Interested in Electronic Media than Outdoors, by Parent's Orientation to Indoors or Outdoors

Categories	Outdoors-oriented	Indoors-oriented	Same indoors/outdoors
Not more interest in TV/comp.	83%	55%	75%
More interest in TV/comp.	17%	45%	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 and wildlife.

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. Slight variations emerged, with black (77 percent), Hispanic (80 percent), and Asian (82 percent) children slightly 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	Asian
0	86%	80%	77%	82%
1	14%	20%	23%	18%

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—77 percent, compared with 90 percent of rural children (Table 3.13).

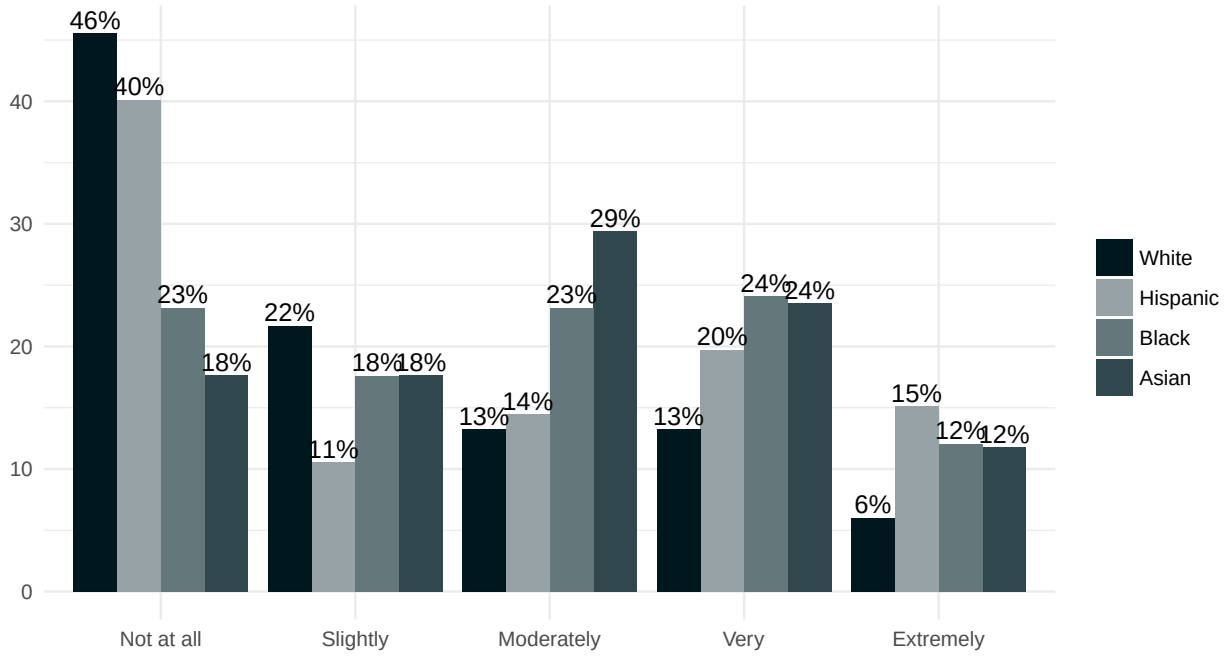
Table 3.13: Children: Enough Places to Play Outdoors, by Location

Category	Urban	Suburban	Rural
False	23%	16%	10%
True	77%	84%	90%

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 3.41). Sixty-eight percent of parents of white children viewed a lack of places as an *un*important barrier, compared with 23 percent of black children's parents and 18 percent of Asian children's parents. In contrast, 36 percent of parents of black or Asian children viewed a lack of places as "very" or "extremely" important—about double the percentage of white children's parents.

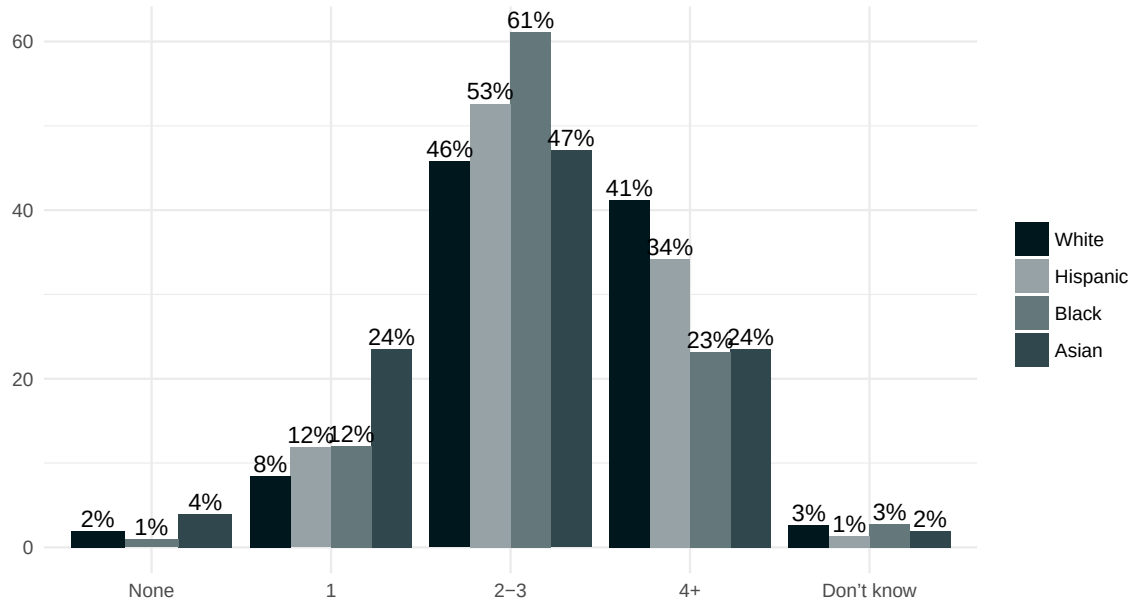
Figure 3.41: Parents: Importance of Few Neighborhood Places to Play as Barrier, by Race and Ethnicity



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

Large differences emerged in the number of parks and open spaces reported within two miles of where participants live (Figure 3.42). One-quarter (24 percent) of Asian children's parents, for example, reported having one park nearby. One-eighth (12 percent) of Hispanic and black children's parents reported the same. In comparison, 41 percent of white children's parents and 34 percent of Hispanic children's parents mentioned four or more parks nearby—compared with one-quarter of black and Asian children's 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 3.42: Parents: Parks and Open Spaces within Two Miles, by Race and Ethnicity

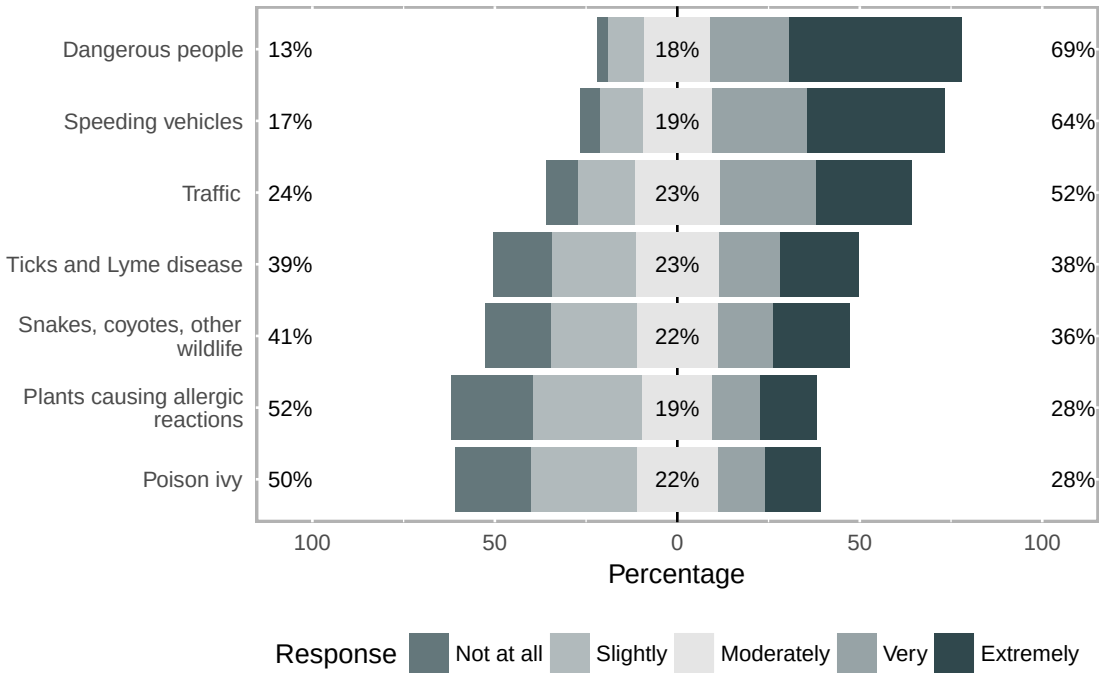


Question wording: How many parks and significant open spaces are within 2 miles of your home?

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 3.35, 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 3.43). Parents' top concern was dangerous people (68 percent), followed by speeding vehicles (64 percent) and traffic (52 percent). Relatively fewer parents reported concern over environmental elements like ticks and Lyme disease (38 percent); snakes, coyotes, and other wildlife (36 percent); plants causing allergic reactions (28 percent); and poison ivy (28 percent).

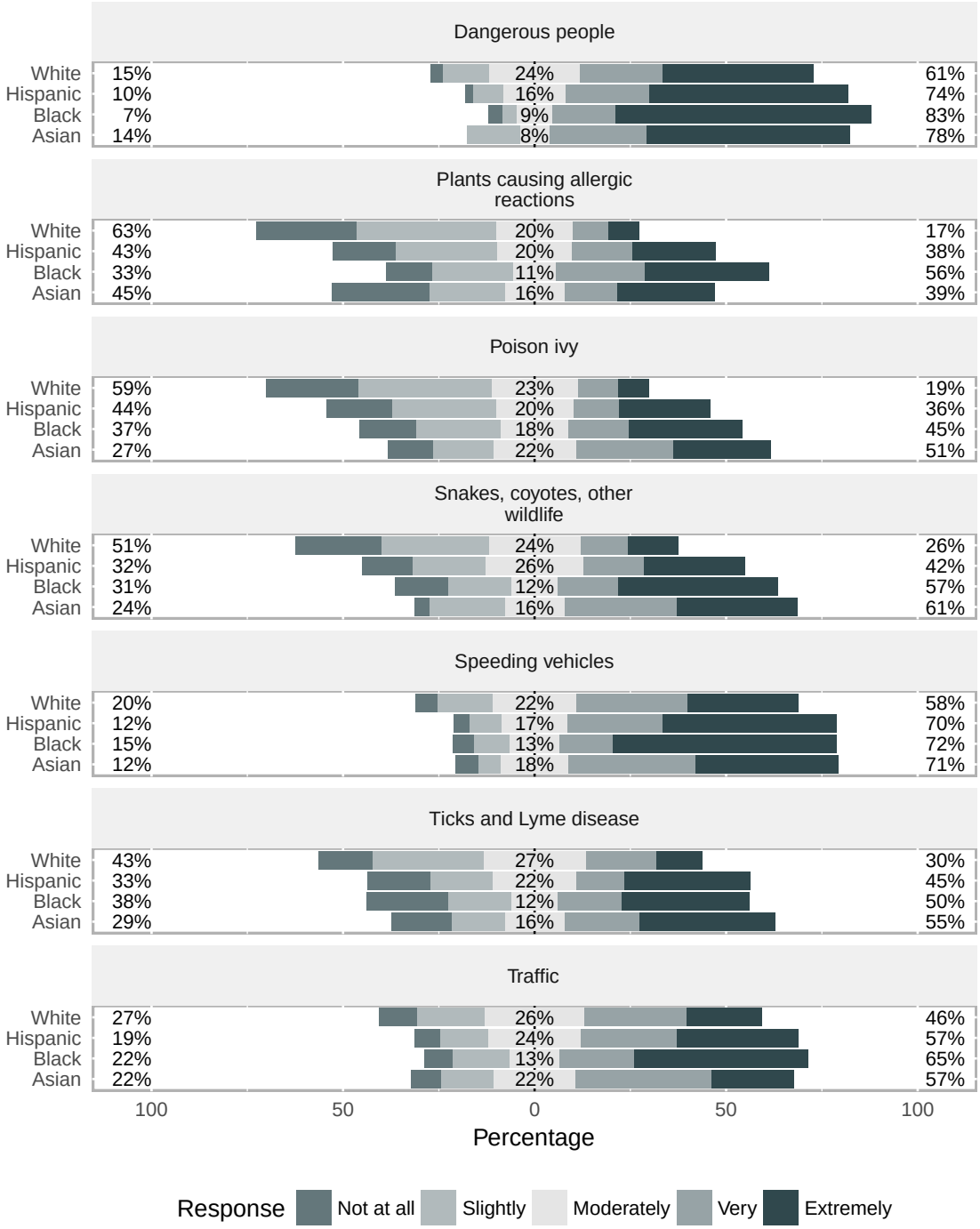
Figure 3.43: Parents: Importance of Safety Concerns for Their Children



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 3.44). 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 great majority of parents of black children (83 percent), for example, were very or extremely concerned about dangerous people (compared with 61 percent of white children's parents). Parents of Asian children were most concerned about poison ivy (51 percent), followed by parents of black children (45 percent), Hispanic children (36 percent), and white children (19 percent).

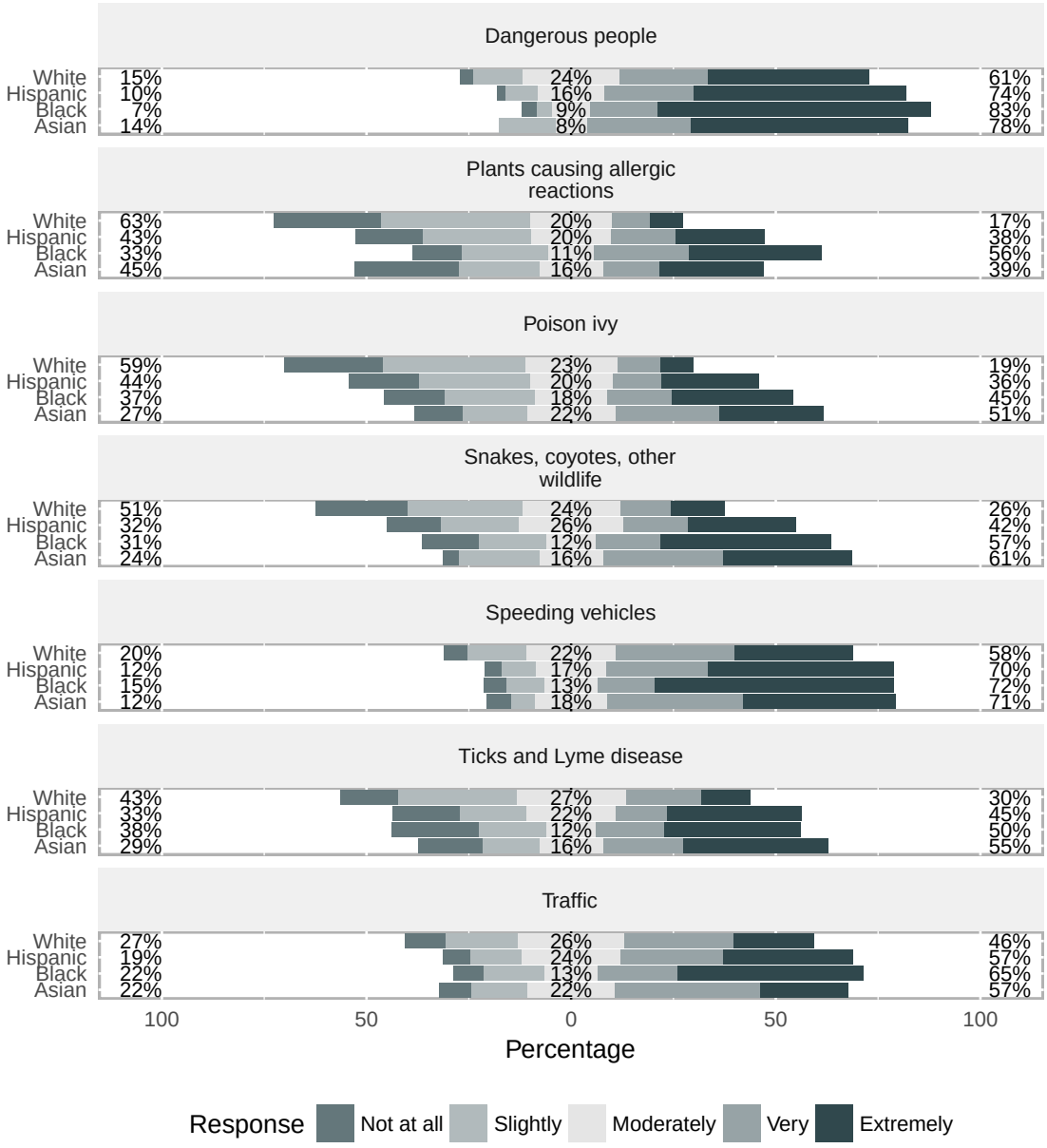
Figure 3.44: Parents: Importance of Safety Concerns for Their Child, by Race and Ethnicity



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?

The extent of safety concerns also varied depending on location (Figure 3.45). In general, urban parents were most concerned about their child's safety, followed by suburban parents, and then rural parents. Yet with all groups, social concerns like dangerous persons and cars were more widely shared than environmental dangers.

Figure 3.45: 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, 66 percent of parents reported that their concerns for their child's health were "not at all" or only "slightly" important (Figure 3.35). 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: just over 10 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	69%	18%	7%	3%	3%	0%
Anxiety	88%	7%	3%	1%	1%	0%
Asthma	86%	6%	4%	2%	2%	0%
Autism	96%	1%	1%	1%	1%	0%
ADD/ADHD	90%	4%	2%	2%	1%	0%
Bone/Joint/Muscle problems	94%	3%	1%	1%	1%	0%
Brain concussion	96%	1%	1%	1%	1%	0%
Depression	95%	3%	1%	1%	1%	0%
Diabetes	97%	1%	1%	1%	1%	0%
Epilepsy	98%	1%	1%	1%	0%	0%
Hearing problems	97%	1%	1%	1%	1%	0%
Mental issues	95%	2%	1%	1%	1%	0%
Leg/Back problems	94%	2%	1%	1%	1%	0%
Obesity	91%	3%	3%	2%	2%	0%
Speech/Language problems	95%	2%	1%	1%	1%	0%
Vision problems	93%	2%	2%	1%	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:

- Most 8–12-year-olds in our study 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. 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. 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. 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.
- 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 family and 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.
- 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.
- 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.
- Children consumed electronic media and played organized sports more than they participated in nature and outdoors activities. Time spent outdoors declined with age.

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. Contact with nature frequently helped children to create and maintain their social relationships with family and friends and with classmates at school.

Barriers to Contact with Nature:

- 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. (This was the case regardless of the child's race or ethnicity, except in the case of Asian children, where parents' concerns about safety had a strong negative relationship with the number of nature trips taken in the past two years.) 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 great 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 fewer nature-oriented trips (such as camping, fishing, hunting, or visiting a state or national park). Black and Hispanic children and parents were more concerned about the social dangers of the outdoors such as strange people, traffic, and speeding vehicles.

Urban–rural differences:

- Compared with urban and suburban children, rural children took more trips camping, fishing, visiting a national or state park, farm or ranch. They were also more likely to recall times in the outdoors they will never forget.
- Although children living in suburbs had more parks near their homes, they reported less time spent each week playing in these parks or engaged in outdoor activities than either urban or rural children. Suburban children were also less likely to report a time in the outdoors they will never forget.
- Although the majority of children indicated caring for particular animals or plants, this occurred to a lesser extent among urban children than suburban and rural children.

Gender differences:

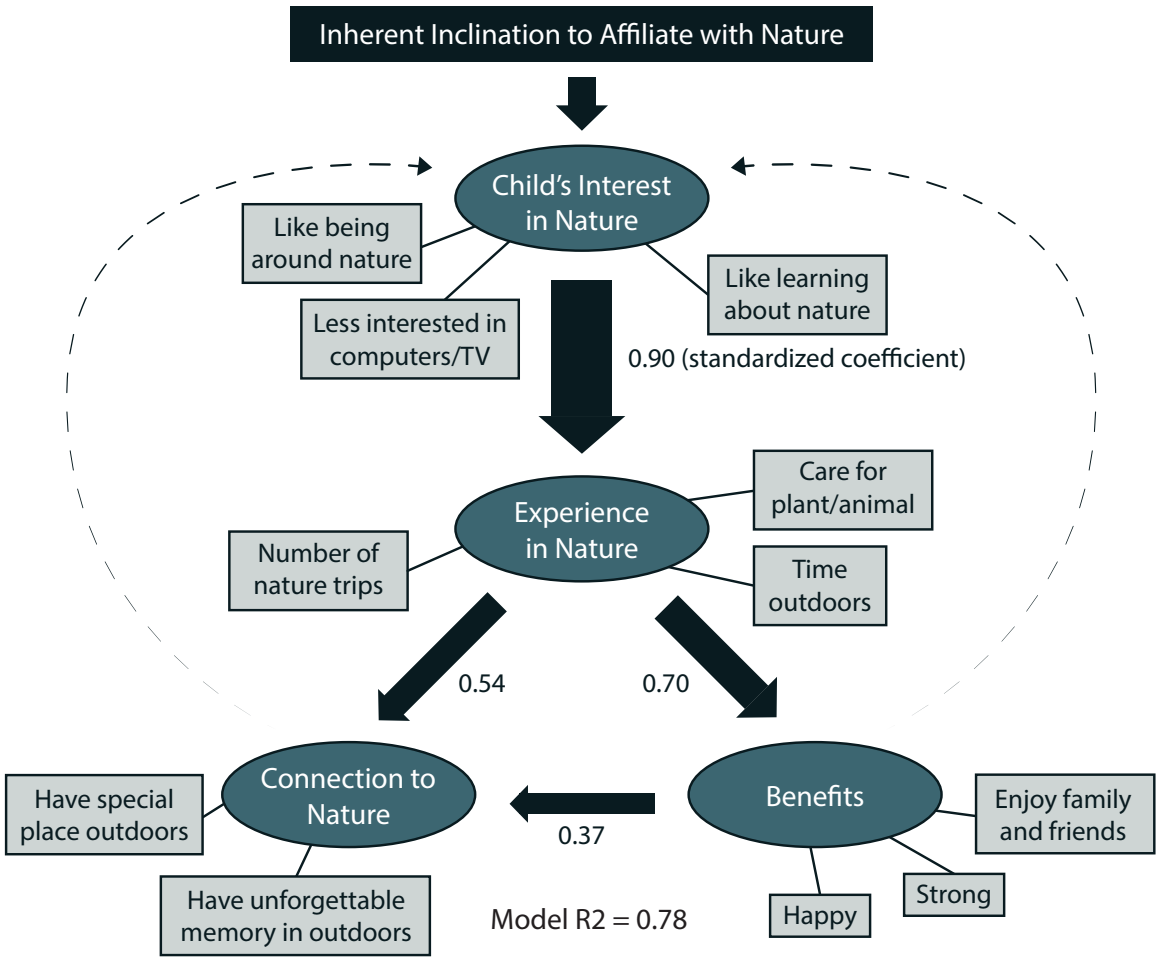
- Few substantive differences emerged between girls and boys surveyed.
- Boys on average scored slightly higher on a short quiz of their knowledge of the natural world.

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 3.46: 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 3.46. 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 3.46 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.[4]

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

[4]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.

[5]In technical terms, the model's covariance fully matches the collected data's covariance.

Chapter 4

Race, Ethnicity, and Other Demographic Differences: Results

This chapter examines relationships to nature and wildlife among various socio-demographic adult groups in the US, with a particular emphasis on differences among racial and ethnic groups. Demographic differences among Americans 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 the American population consists of minority groups—in particular, blacks, Hispanics, and Asians. Indeed, Hispanics are already the largest minority group in nearly half of American states, and their share of the population is projected to continue to grow, according to the U.S. Census Bureau.[1] Second, these minority populations have historically been relatively under-served 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, Americans have moved in significant numbers from rural areas to urban and suburban locations. Nearly 8 in 10 Americans currently live in urban and suburban areas—roughly 53 percent in suburbs and 26 percent in cities—and only 21 percent in rural locations. Urban areas typically include relatively higher proportions of non-whites, while suburban and rural areas often have relatively larger proportions of whites. While some Americans have chosen to return to rural areas from urban and suburban ones, urbanization is projected to increase: nearly 9 in 10 Americans will live in urban areas by 2050—just over 400 million people, compared with about 50 million in rural areas.[2]

[1] For more information, see Jennifer M. Ortman and Christine E. Guarneri. 2009. "United States Population Projections: 2000 to 2050." Available online at http://www.census.gov/population/projections/files/analytical-document09.pdf. See also Sandra L. Colby and Jennifer M. Ortman. 2015. "Projections of the Size and Composition of the US Population: 2014 to 2060." Available online at http://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf.

[2] See projections from the United Nations' Population Division's "World Urbanization Prospects: 2014" at http://esa.un.org/unpd/wup/Country-Profiles.

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.[3] 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 Americans and children and their parents, we begin with findings related to respondents' relationships to nature, followed by how their 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 15 focus groups conducted in five regionally distributed states, as well as a survey of 5,550 adults across the US. 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 somewhat.

- $N = 5,550$ for all analyses derived from the national survey reporting income, gender, and education.
- $N = 5,190$ for all analyses derived from the national survey reporting age, since the number of participants in each discrete age over 70-years-old is too small for confident analysis.
- $N = 5,459$ for all analyses derived from the national 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.

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 Americans 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

[3] 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.

animals (from 74–91 percent of respondents), zoos (37–40 percent), and photographs of wild animals (17–19 percent). Relative to others, black adults were slightly more willing to regard "nature" as family vacation destinations, maintained lawns, and the time walking to a car, bus, or train.

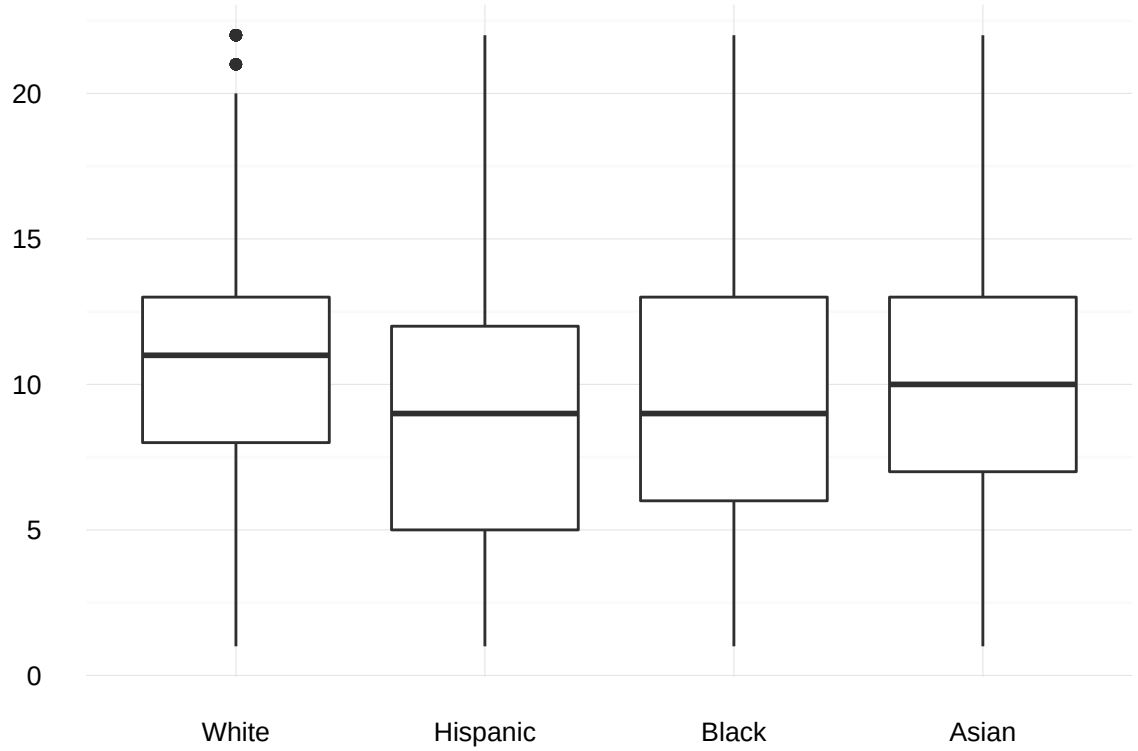
Table 4.1: What is "Nature"? by Race and Ethnicity

Category	White	Hispanic	Black	Asian
Wild animals	91%	77%	74%	85%
National parks	87%	72%	72%	83%
Oceans	84%	69%	67%	80%
State parks	83%	66%	68%	78%
Ponds and lakes	81%	65%	66%	73%
Outdoor gardens	75%	67%	69%	70%
Insects	72%	55%	59%	59%
Moon, sun, and stars	69%	54%	54%	64%
Beach	68%	56%	52%	65%
Plants in the yard	58%	43%	51%	47%
Local parks	57%	44%	48%	50%
Zoos	38%	38%	40%	37%
Pets	31%	31%	29%	22%
Indoor plants	30%	34%	30%	27%
Ski resort	26%	21%	19%	25%
Maintained lawns	21%	19%	24%	19%
Photographs of animals	19%	17%	19%	19%
Home aquarium or terrarium	17%	16%	15%	14%
Paintings of landscapes	16%	14%	17%	16%
My time sightseeing while commuting	14%	17%	17%	17%
Family vacation destination (e.g., theme parks)	11%	13%	18%	13%
My time walking to the car, bus, train	8%	13%	13%	10%

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 black adults, 9; for Asian adults, 10. The bottom of the box represents the lower quartile: For Hispanic adults, 25 percent selected between 1 and 5 categories; in comparison, for white adults, 25 percent selected between 1 and 8 categories. Put a different way, Hispanic and black adults were likelier to select fewer categories than white and Asian adults.

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

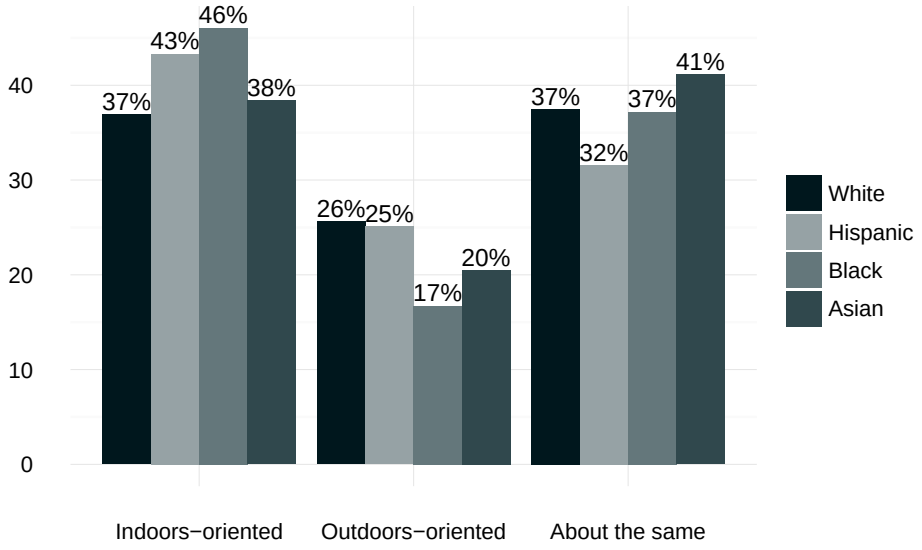


Note: The bottom of the box represents the first quartile (25 percent of responses fall beneath this line). The top of the box represents the third quartile (75 percent of responses fall beneath this line). The horizontal line inside the box represents the second quartile (i.e., the median). The upper 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 Americans (24 percent) indicated their primary pastimes, hobbies, and recreational interests tended to be outdoors-oriented, in contrast to 40 percent who selected indoors-oriented and 37 percent who selected both indoors- and outdoors-oriented. Black adults were slightly more likely to report being more indoors-oriented: 46 percent did so (Figure 4.2). A similar proportion of Hispanic adults (43 percent) viewed themselves as indoors-oriented, while 25 percent said their pastimes were outdoors-oriented.

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). More urban (44 percent) than suburban (38 percent) or rural (32 percent) residents considered themselves indoors-oriented in their pastimes, hobbies, and interests.

Table 4.2: Orientation in Pastimes, Hobbies, and Interests, by Location

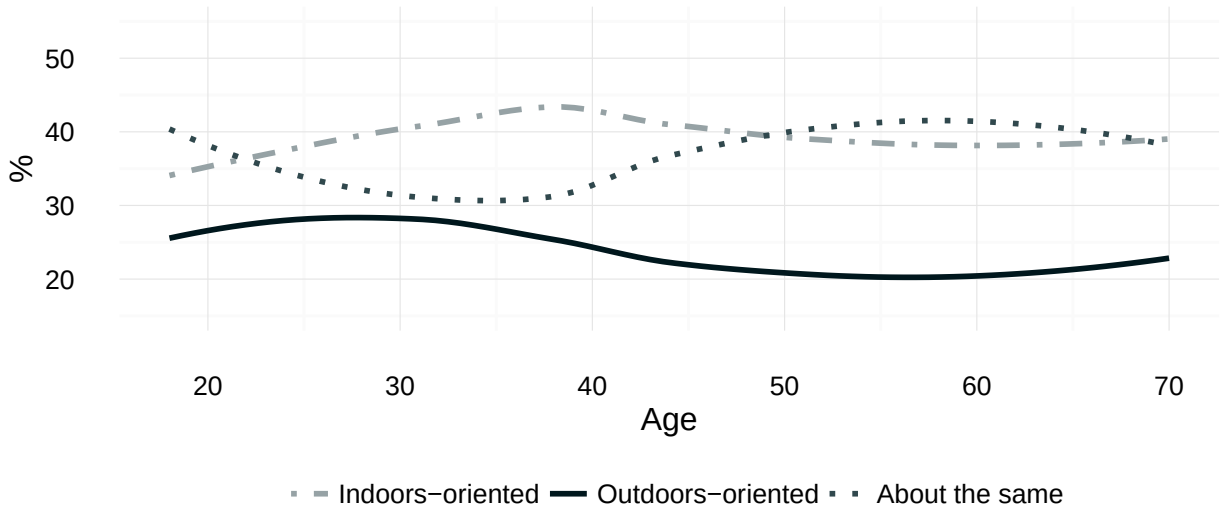
Categories	Urban	Suburban	Rural
Indoors-oriented	44%	38%	32%
Outdoors-oriented	24%	22%	27%
About the same	32%	39%	41%

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 to its lowest levels among respondents in their mid-50s, where it plateaued (Figure 4.3).[4]

[4]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 American adults described their interests in nature as among the most enjoyable if not most enjoyable interests in their lives: 26 percent said their interests in nature were their most enjoyable. By race and ethnicity, Hispanic adults were especially inclined to perceive contact with nature as among their most enjoyable interests relative to other groups (Table 4.3). Over one-third (36 percent) held this view, compared with 24 percent of white respondents, 22 percent of Asian respondents, and 20 percent of black respondents.

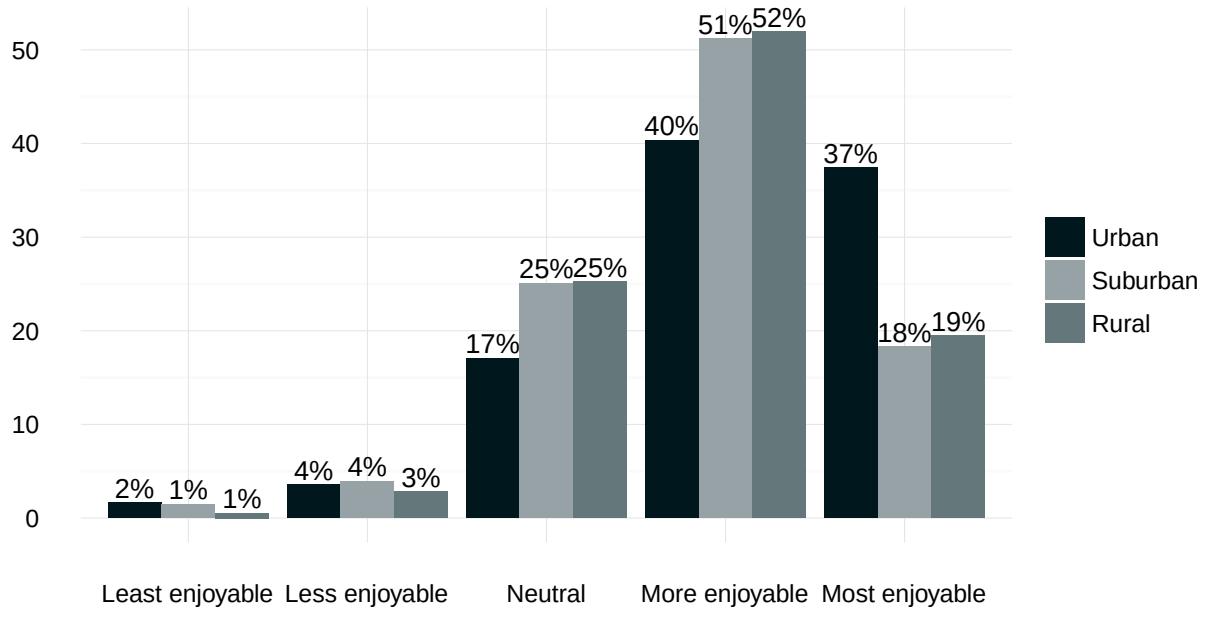
Table 4.3: How Nature Interests Compare with Other Interests, by Race and Ethnicity

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 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: 37 percent did so, compared with 18 percent of suburban respondents and 19 percent of rural ones.

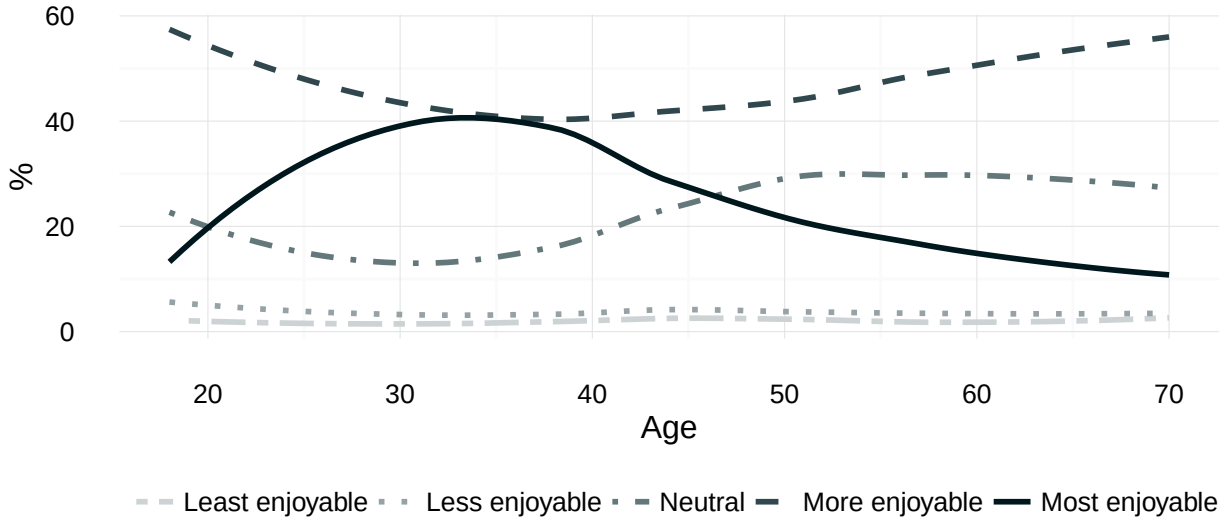
Figure 4.4: How Nature Interests Compare with Other Interests, by Location



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 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 grew steadily among 18–30-year-olds: for many of these younger adults, interest in nature switched from being merely among their more enjoyable interests to being their most enjoyable one. Interest in nature was highest for respondents in their 30s, then it declined steadily among older adults in our sample. Following the solid black line, adults in their mid-30s were about 15 percentage points above the overall average of 26 percent. Adults in their late-60s were about 10 percentage points below the overall average.

Figure 4.5: How Nature Interests Compare with Other Interests, by Age

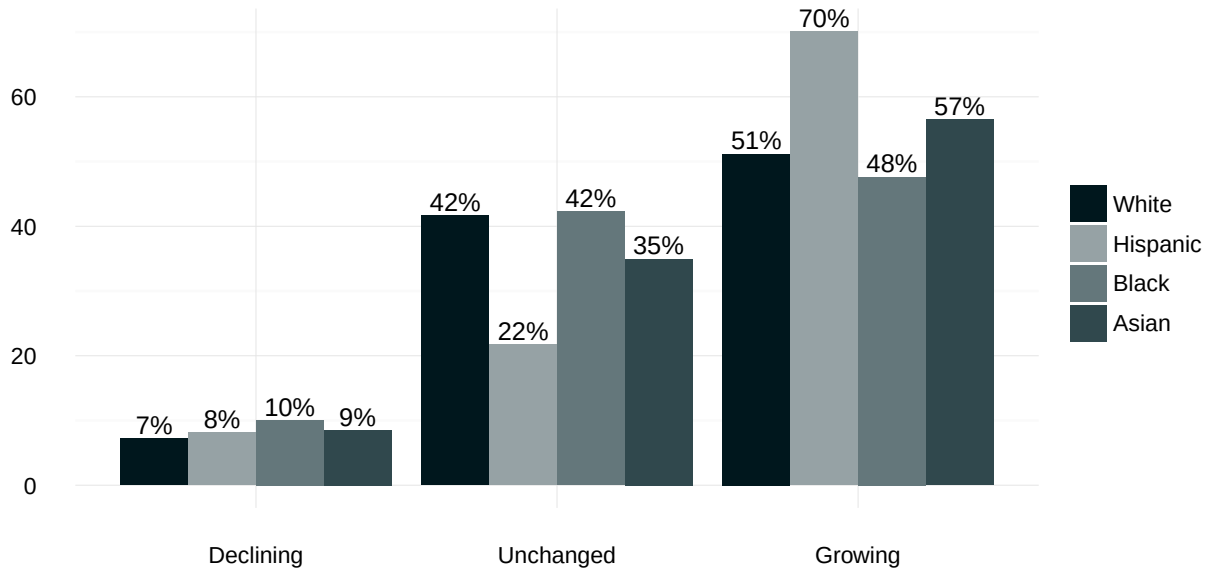


Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you describe your interests in nature compared to your other interests? Would you say things of nature are ...your 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

Adults surveyed perceived their interests in nature as growing, with only a relatively small proportion reporting a declining interest (Figure 4.6). Hispanic adults were likeliest to report an increasing interest in nature: 70 percent indicated this to be the case.

Figure 4.6: Change in Interests in Nature as Time Goes On, by Race and Ethnicity

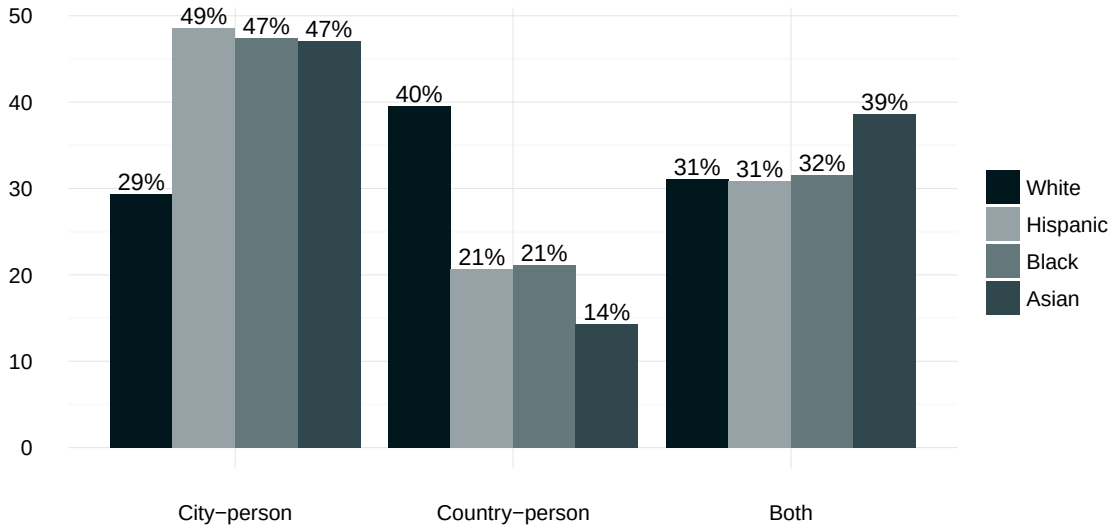


Question wording: As time goes on, do you find your interests in nature growing, declining, or remaining unchanged?

4.2.5 Variation of "City" or "Country" Identity

Nearly one-half of Hispanic, black, and Asian adults considered themselves to be a "city-person," compared with about one-third of white adults (Figure 4.7). Conversely, four in 10 white adults considered themselves to be a "country-person," a figure approximately twice the rate found among Hispanic and black adults.

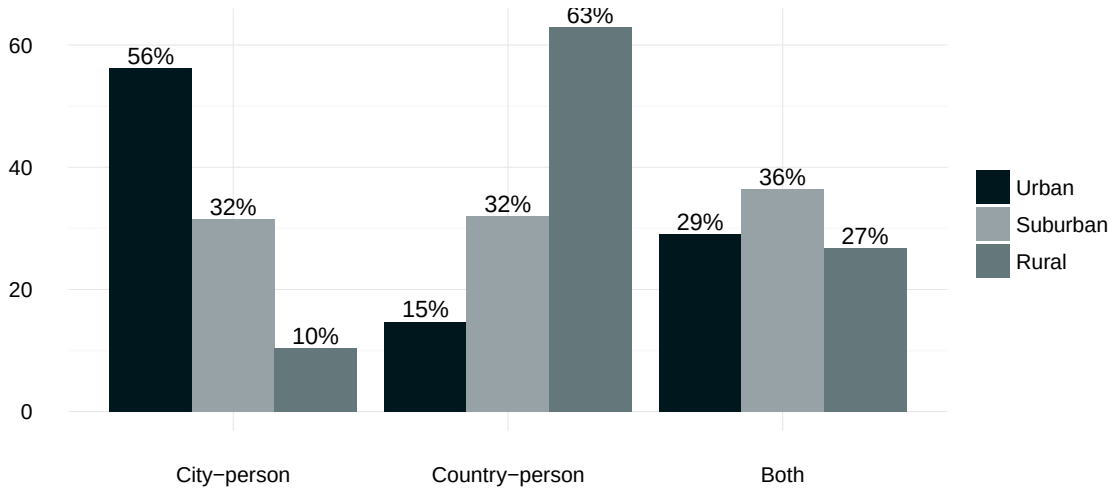
Figure 4.7: Identity as a "City" or "Country" Person, by Race and Ethnicity



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 (Figure 4.8). Almost two-thirds of rural respondents identified as a "country-person," compared with one-third of suburban respondents and one-sixth of urban respondents. Most urban residents thought of themselves as a "city-person" or both a "city- and a country-person" at heart.

Figure 4.8: 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?

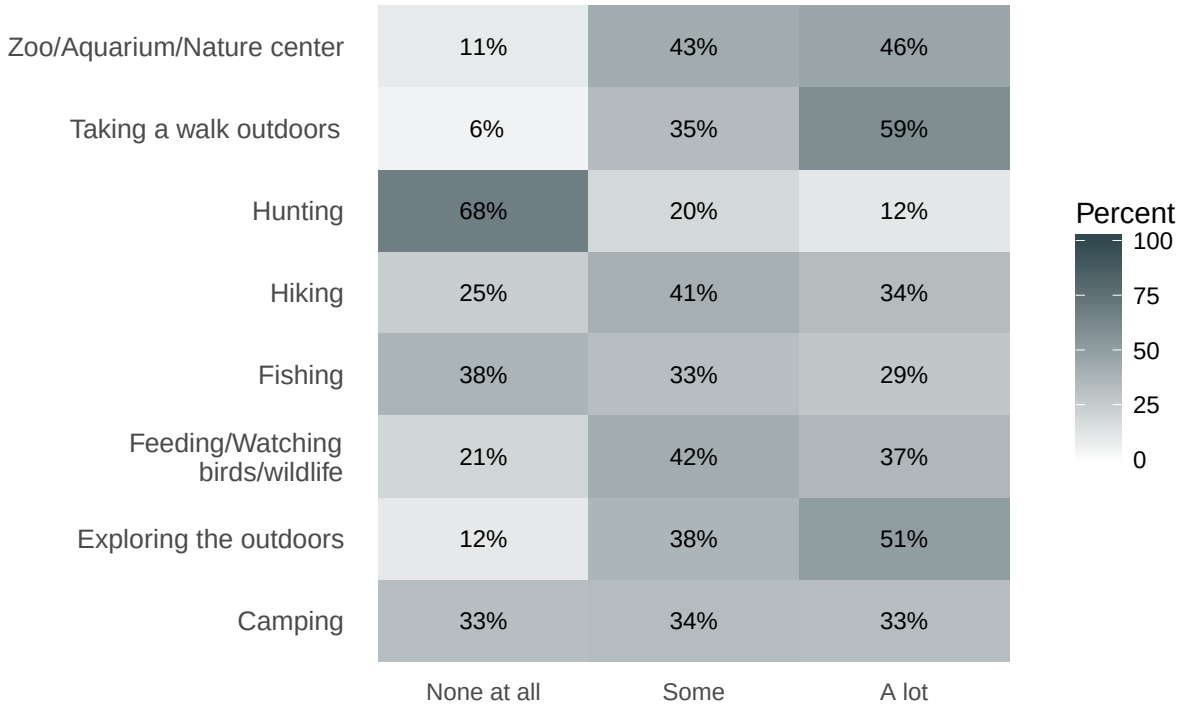
4.2.6 Interest in Nature-Related Activities

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 4.9 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.

Interest in Hunting

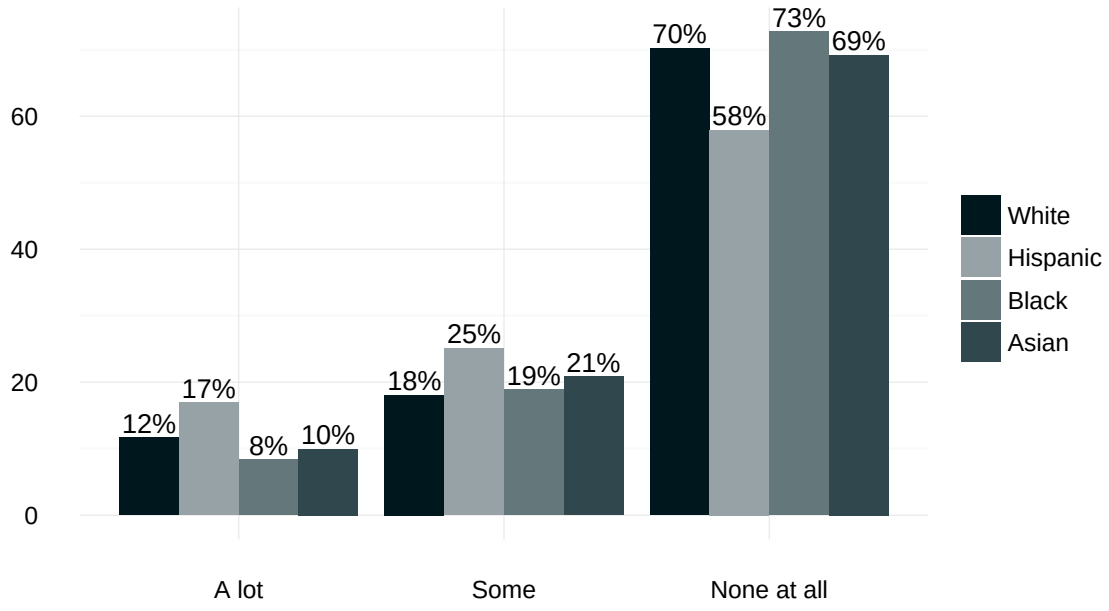
As Figure 4.10 shows, interest in hunting was highest among Hispanic adults (17 percent), followed by white (12 percent), Asian (10 percent), and black adults (8 percent). Over two-fifths (42 percent) of Hispanic adults expressed at least "some" degree of interest in hunting. In contrast, approximately 30 percent of Asian and white adults reported at least "some" interest, followed by one-quarter (26 percent) of black adults.

Figure 4.9: 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.

Figure 4.10: Interest in Hunting, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...hunting.

Urban adults were likeliest to report interest in hunting (16 percent), compared with suburban residents (8 percent) and rural residents (13 percent) (Table 4.4). It is important to note that this finding is *not* simply because current-day urban dwellers have grown up in rural areas, as Table 4.5 shows.

Table 4.4: Interest in Hunting, by Current Residential 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.

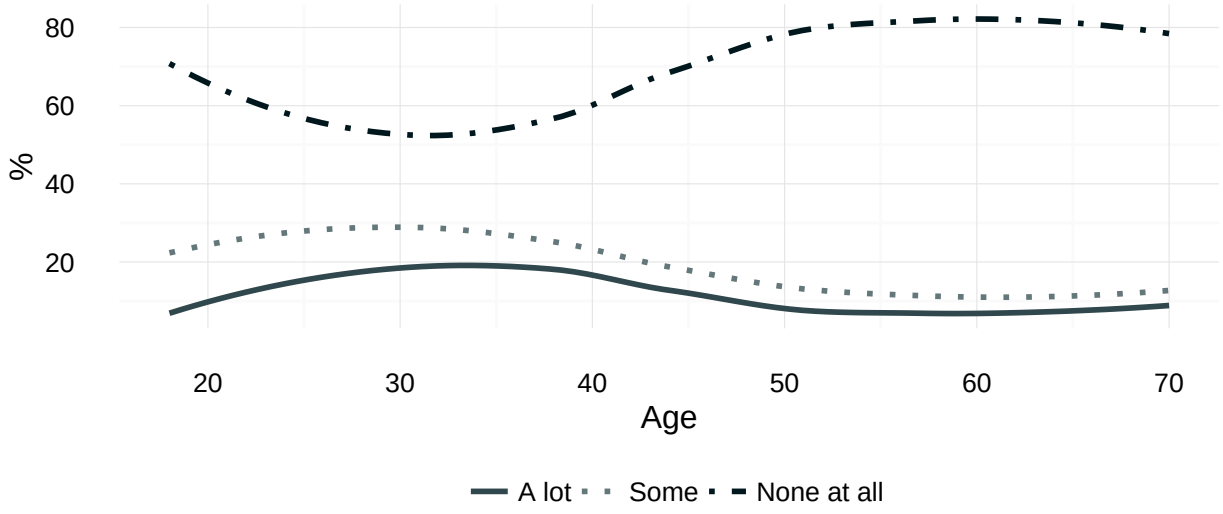
Table 4.5: Interest in Hunting, by Location Where Grew Up

Categories	Urban	Suburban	Rural
A lot	16%	8%	13%
Some	24%	17%	17%
None at all	60%	75%	69%

Question wording: How would you rate your interest in each of the following activities? ...hunting.

Interest in hunting was highest among adults in their 30s, with about one-fifth expressing "a lot" of interest (Figure 4.11). Interest in hunting was lowest among Americans over 50 years of age, with 80 percent in this age group reporting no interest at all.

Figure 4.11: 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 4.6), with 17 percent reporting "a lot" of interest. Conversely, more than three-quarters of women (77 percent) indicated no interest in hunting.

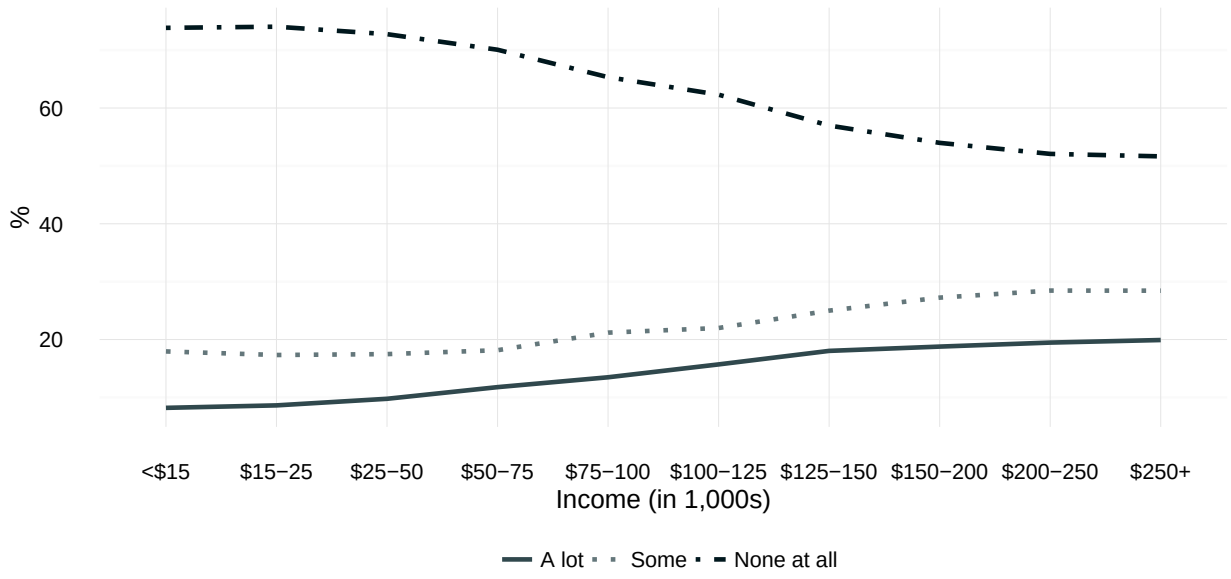
Table 4.6: Interest in Hunting, by Gender

Categories	Men	Women
A lot	17%	8%
Some	25%	15%
None at all	57%	77%

Question wording: How would you rate your interest in each of the following activities? ...hunting.

Interest in hunting increased with household income (Figure 4.12). About 10 percent of adults from the lowest-income households had "a lot" of interest in hunting. In comparison, about 20 percent of adults from the highest-income households had "a lot" of interest in hunting.

Figure 4.12: Interest in Hunting, by Income

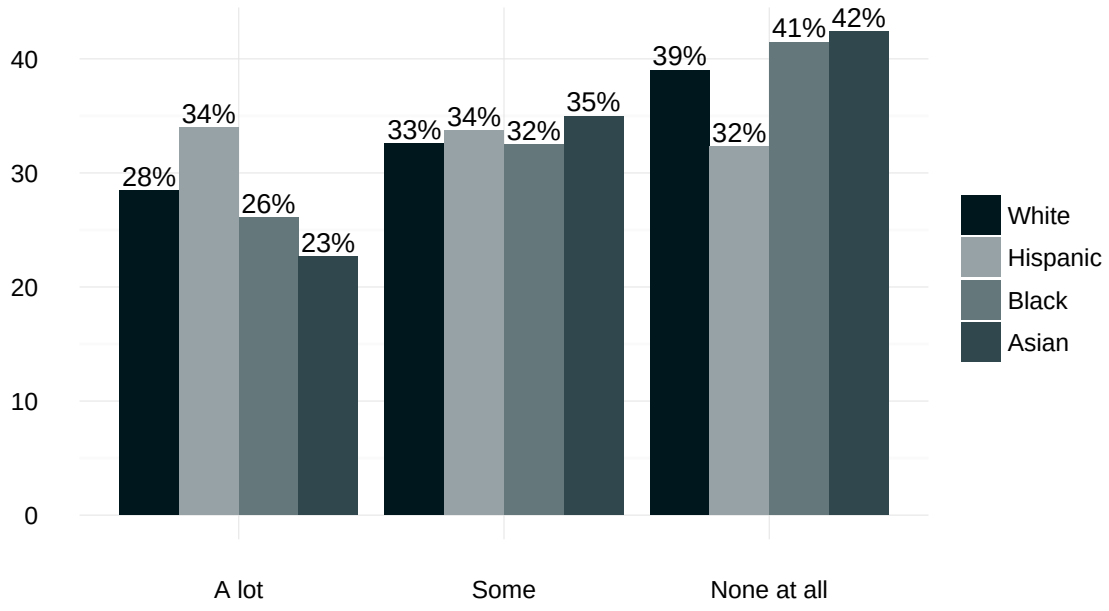


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...hunting. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

Interest in Fishing

Trends related to interest in fishing were similar to those of hunting (Figure 4.13). Hispanic adults comprised the largest proportion of adults with "a lot" of interest in fishing (34 percent). Moreover, combining the categories "some" interest and "a lot" revealed interest among nearly 70 percent of Hispanic adults, compared with some 60 percent of white adults, and slightly less than 60 percent of black and Asian adults.

Figure 4.13: Interest in Fishing, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...fishing.

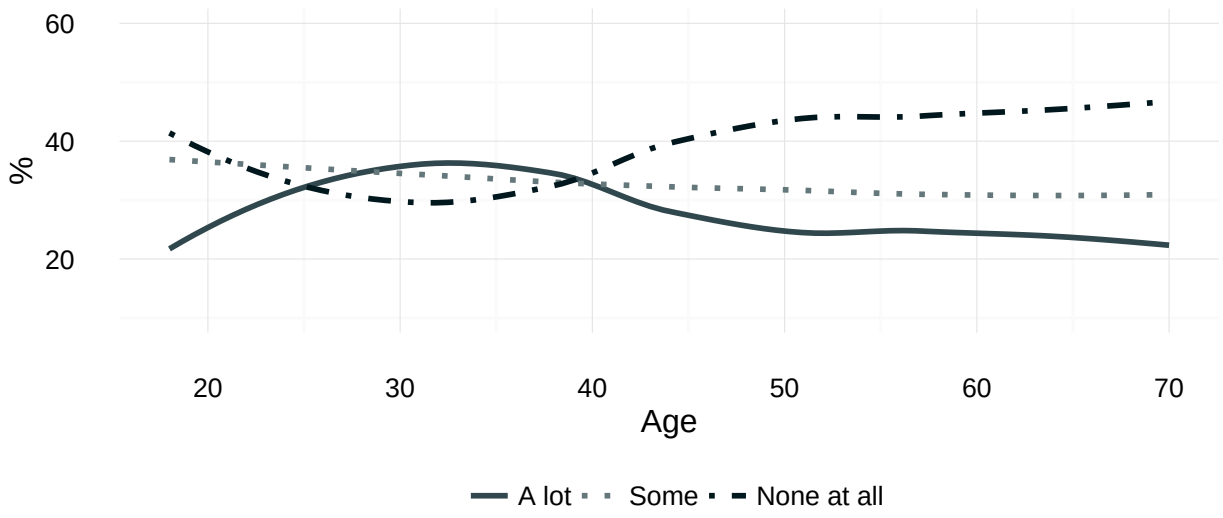
About one-third of urban and rural adults reported "a lot" of interest in fishing, in contrast to approximately one-quarter of suburban respondents (Table 4.7). Adults in their 30s reported the greatest level of interest in fishing (Figure 4.14). Adults over about age 50 expressed the least interest in fishing, with 45–50 percent reporting no interest at all. Nearly 70 percent of men had at least "some" interest in fishing, compared with 55 percent of women (Table 4.8).

Table 4.7: 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 4.14: 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.

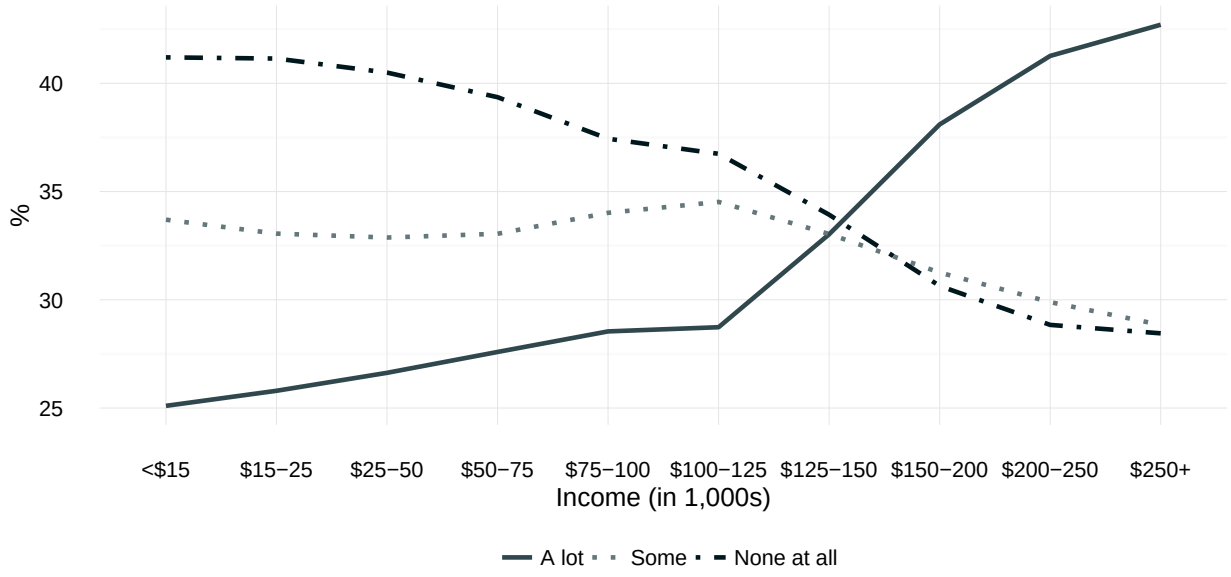
Table 4.8: Interest in Fishing, by Gender

Categories	Men	Women
A lot	35%	23%
Some	34%	32%
None at all	31%	44%

Question wording: How would you rate your interest in each of the following activities? ...fishing.

Interest in fishing was lowest among adults from low-income households and highest among adults from high-income households (Figure 4.15). Around 25 percent of adults from the lowest-income households had high interest in fishing, compared with well over 40 percent of adults from high-income households.

Figure 4.15: Interest in Fishing, by Income

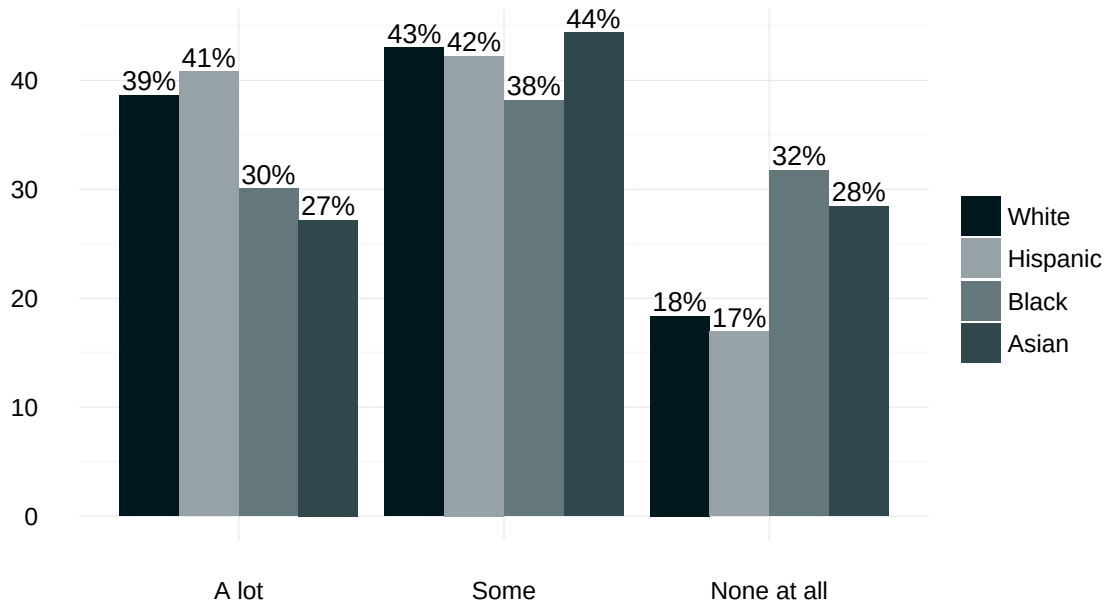


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...fishing. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

Interest in Feeding or Watching Birds or Other Wildlife

The largest proportions of adults with "a lot" of interest in feeding or watching birds or other wildlife were Hispanic or white (Figure 4.16). Black and Asian respondents reported relatively lower levels of interest—30 percent and 27 percent, respectively. Black and Asian adults surveyed were likeliest to say they have no interest at all in feeding or watching wildlife (32 percent and 28 percent, respectively). Slightly less than one-fifth of white and Hispanic adults reported having no interest in these activities.

Figure 4.16: 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.

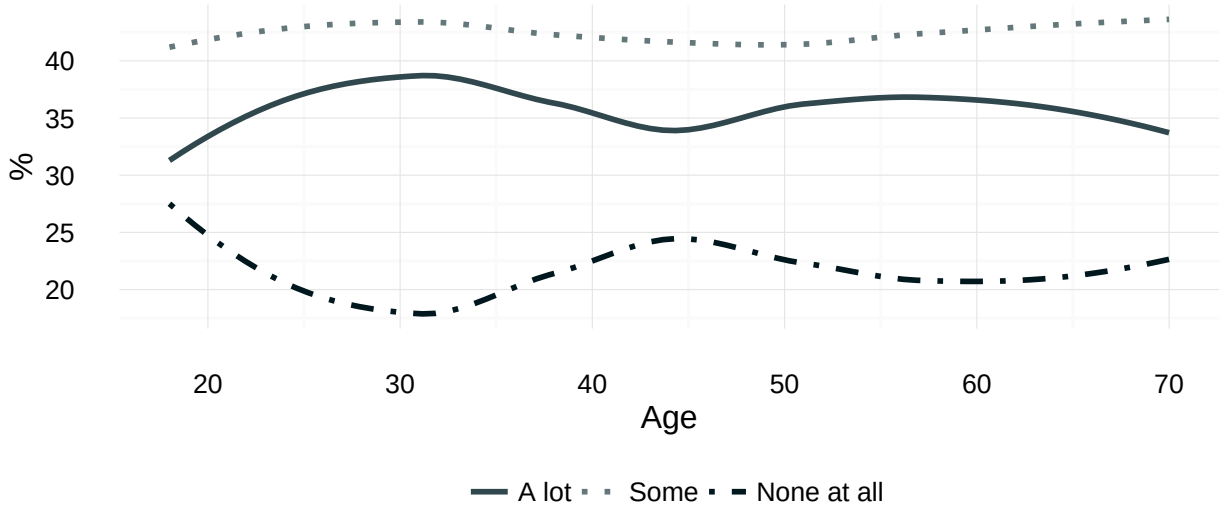
Urban and rural residents were relatively alike in their interest in watching or feeding birds or other wildlife, with about 40 percent expressing strong interest (Table 4.9). Suburban adults were slightly less interested (34 percent expressed "a lot" of interest). Across ages, interest in watching or feeding birds or other wildlife was relatively stable (Figure 4.17). Between 30 and 40 percent of adults expressed high interest in these activities.

Table 4.9: Interest in Bird/Wildlife Watching/Feeding, by Location

Categories	Urban	Suburban	Rural
A lot	38%	34%	40%
Some	41%	43%	43%
None at all	21%	23%	17%

Question wording: How would you rate your interest in each of the following activities? ...feeding or watching birds or other wildlife.

Figure 4.17: 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.

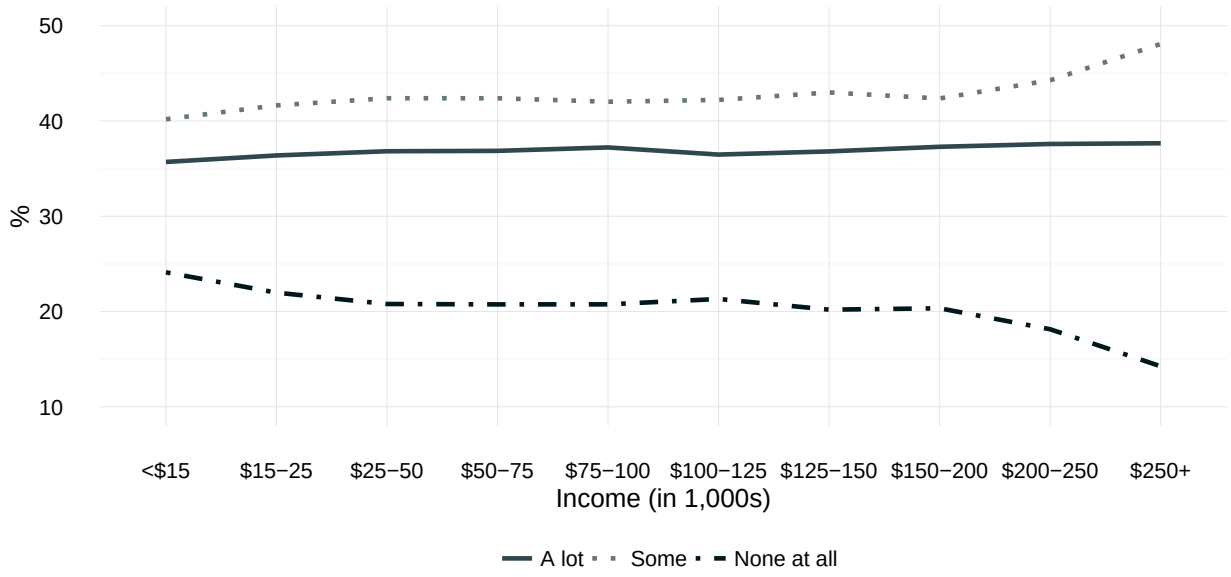
Interest in wildlife feeding or watching was relatively similar among women and men (Table 4.10). Women were slightly more likely to report strong interest in watching or feeding birds or other wildlife (39 percent to 34 percent). Interest in watching or feeding birds or other wildlife remained stable across household income levels (Figure 4.18).

Table 4.10: Interest in Bird/Wildlife Watching/Feeding, by Gender

Categories	Men	Women
A lot	34%	39%
Some	44%	40%
None at all	21%	21%

Question wording: How would you rate your interest in each of the following activities? ...feeding or watching birds or other wildlife.

Figure 4.18: Interest in Bird/Wildlife Watching/Feeding, by Income

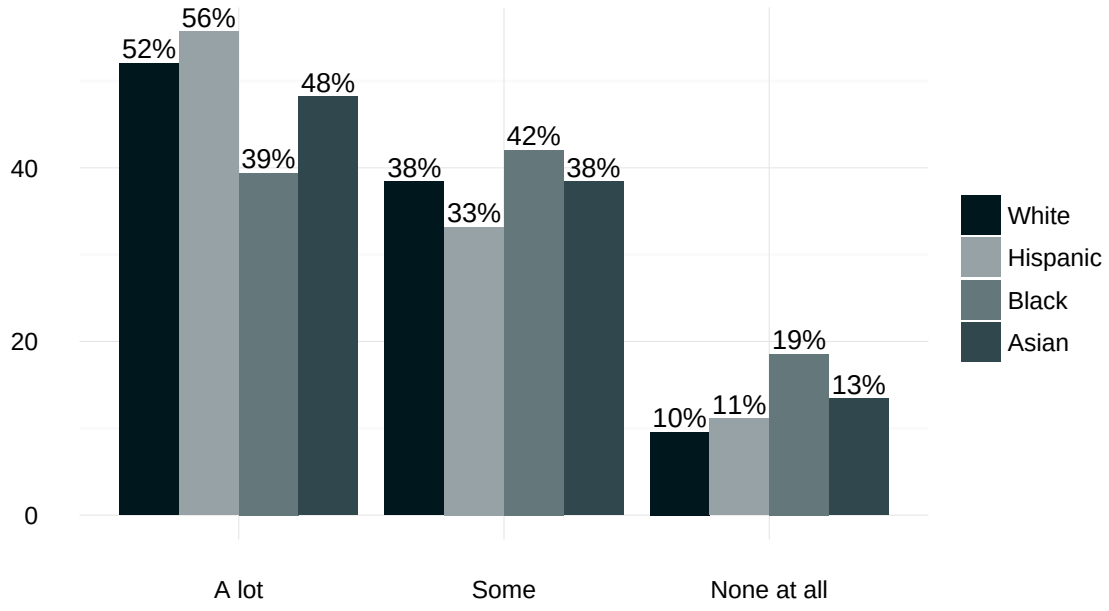


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...feeding or watching birds or other wildlife. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

Interest in Exploring the Outdoors

As seen in Figure 4.9, interest in exploring the outdoors was relatively high across all adults surveyed: 89 percent expressed "some" or "a lot" of interest in this nature-related activity. Figure 4.19 shows the strongest interest in exploring the outdoors occurred among Hispanics (56 percent reported "a lot" of interest), followed by white (52 percent), Asian (48 percent), and black adults (39 percent). About one-fifth of black adults (19 percent) reported no interest at all in exploring the outdoors—about twice the percentage found among Hispanics (11 percent) and whites (10 percent).

Figure 4.19: 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.

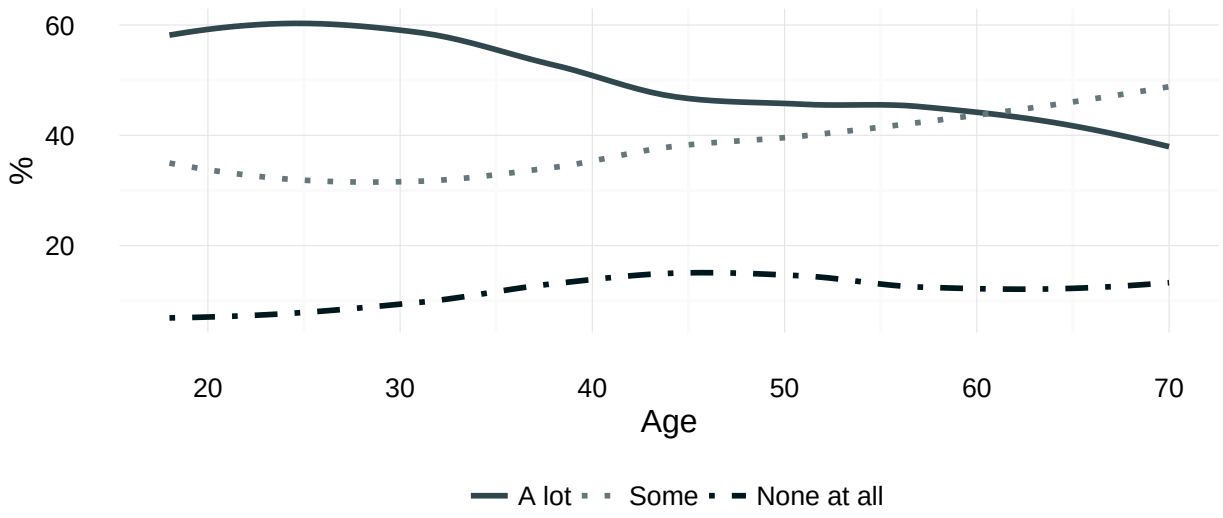
Roughly similar interest in exploring the outdoors occurred among urban (54 percent), rural (51 percent), and suburban (47 percent) residents (Table 4.11). By age, interest in exploring the outdoors was highest among adults in their 20s (nearly 60 percent reported "a lot" of interest) and lowest among Americans over 50-years-old (about 40 percent reported high interest) (Figure 4.20). Interest in exploring the outdoors was virtually identical among women and men: one-half reported high interest (Table 4.12). Interest in exploring the outdoors crossed household income levels, with strong interest remaining stable at around 50 percent (Figure 4.21).

Table 4.11: Interest in Exploring the Outdoors, by Location

Categories	Urban	Suburban	Rural
A lot	54%	47%	51%
Some	34%	41%	40%
None at all	12%	12%	9%

Question wording: How would you rate your interest in each of the following activities? ...exploring the outdoors.

Figure 4.20: Interest in Exploring the Outdoors, by Age



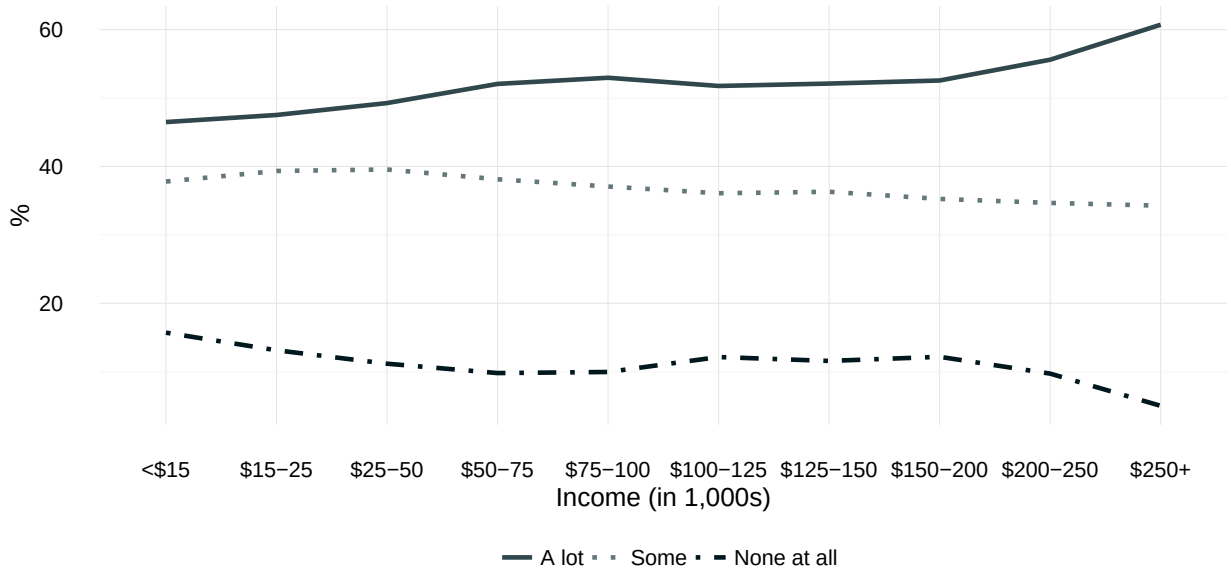
Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ...exploring the outdoors.

Table 4.12: Interest in Exploring the Outdoors, by Gender

Categories	Men	Women
A lot	50%	51%
Some	39%	37%
None at all	12%	12%

Question wording: How would you rate your interest in each of the following activities? ...exploring the outdoors.

Figure 4.21: Interest in Exploring the Outdoors, by Income

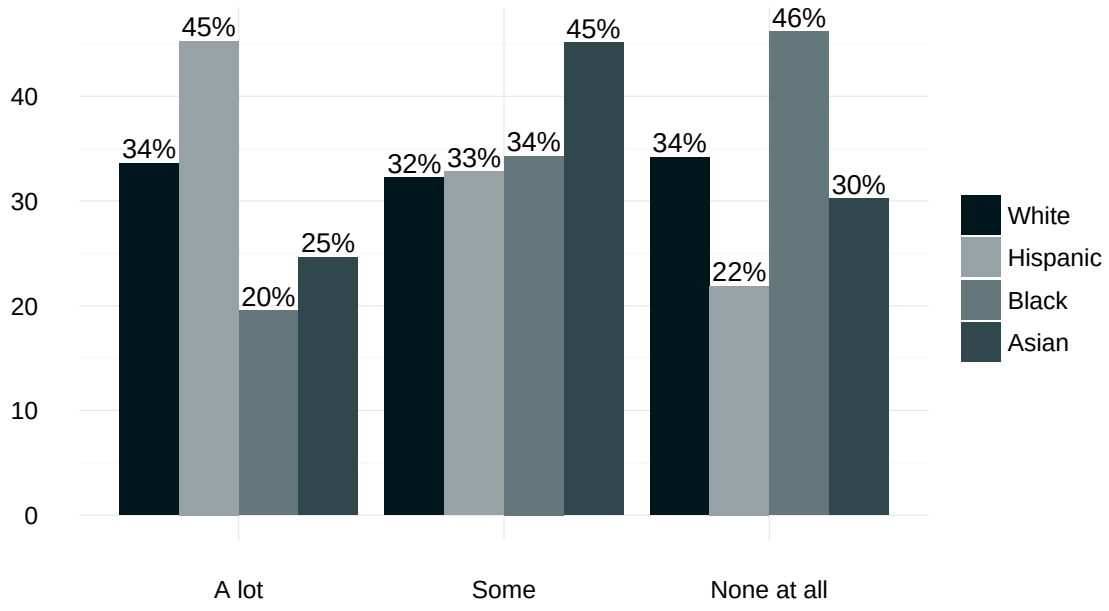


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...exploring the outdoors. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

Interest in Camping

Notable differences emerged among ethnoracial groups in interest in camping (Figure 4.22). Almost one-half of Hispanic adults expressed high interest, compared with one-third of white adults, one-quarter of Asian adults, and one-fifth of white adults. Nearly one-half of black respondents expressed no interest in camping at all.

Figure 4.22: Interest in Camping, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...camping.

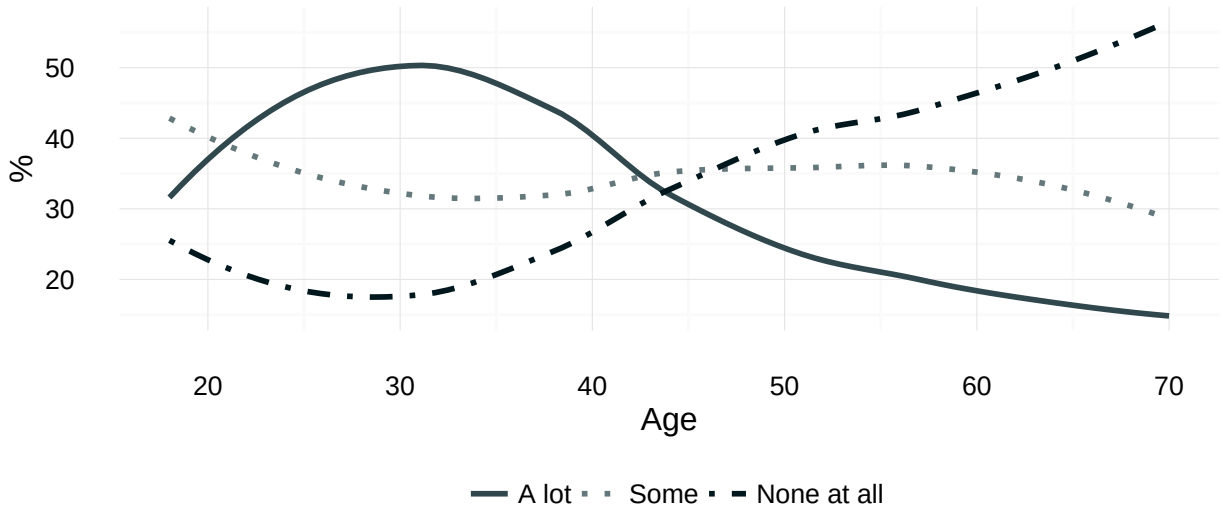
Interest in camping was highest among urban residents (43 percent indicated they have "a lot" of interest), suburban residents (25 percent), and rural residents (31 percent) (Table 4.13). Interest in camping was highest among adults in their mid-20s to mid-30s, and then declined among older adults (Figure 4.23).

Table 4.13: Interest in Camping, by Location

Categories	Urban	Suburban	Rural
A lot	43%	25%	31%
Some	29%	38%	37%
None at all	28%	38%	33%

Question wording: How would you rate your interest in each of the following activities? ....camping.

Figure 4.23: 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.

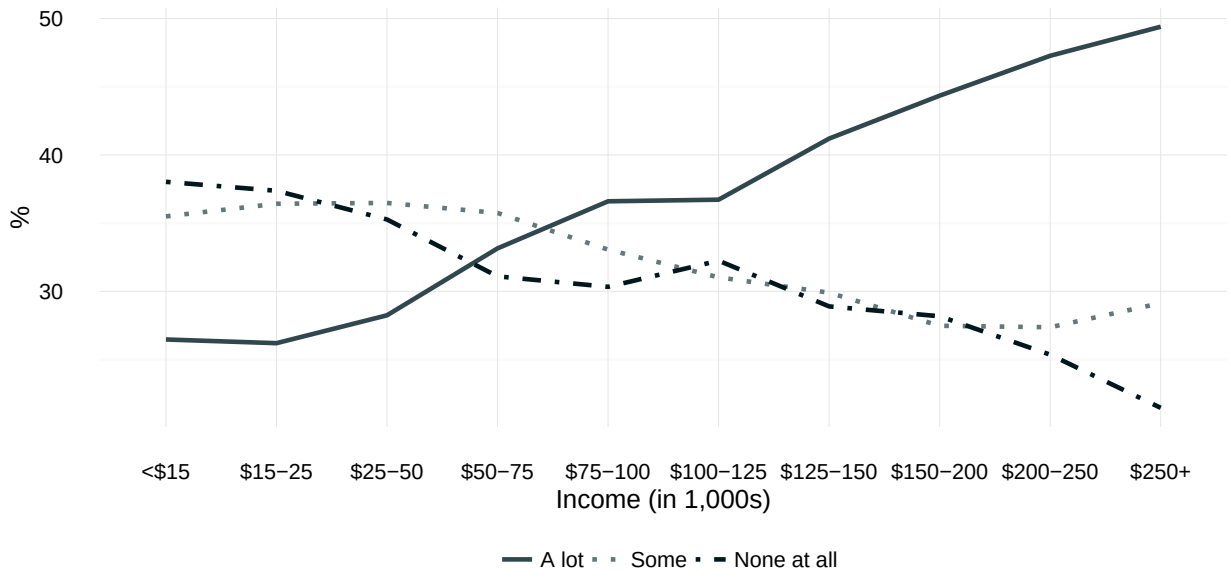
Men were relatively more interested in camping: 38 percent expressed high interest, compared with 29 percent of women (Table 4.16). Interest in camping grew substantially across household income (Figure 4.27). About one-quarter of low-income respondents were highly interested, compared with about one-half of high-income respondents.

Table 4.14: Interest in Camping, by Gender

Categories	Men	Women
A lot	38%	29%
Some	33%	35%
None at all	29%	36%

Question wording: How would you rate your interest in each of the following activities? ....camping.

Figure 4.24: Interest in Camping, by Income

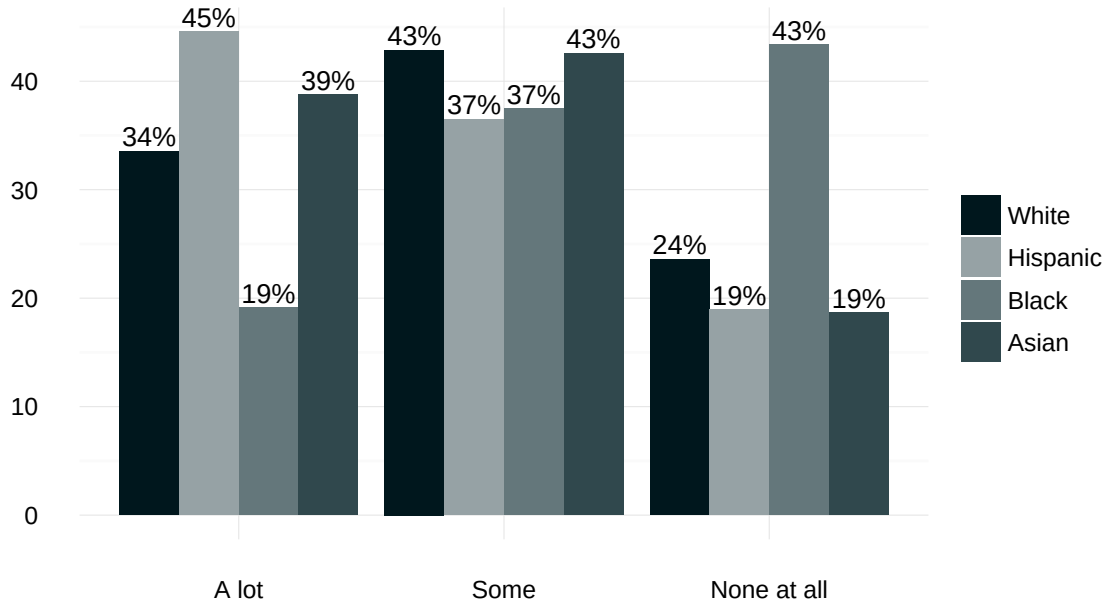


Note: Income figures in 1,000s. Question wording: Which of the following income categories best describes your total annual household income averaged over the past 5 years? | How would you rate your interest in each of the following activities? ....camping.

Interest in Hiking

Substantial ethnoracial differences emerged not only in camping, but also in hiking (Figure 4.25). Almost half (45 percent) of Hispanic adults indicated strong interest in hiking, followed by Asian (39 percent) and white adults (34 percent). By contrast, 19 percent of black adults reported "a lot" of interest in hiking. Also, 43 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 4.25: Interest in Hiking, by Race and Ethnicity



Question wording: How would you rate your interest in each of the following activities? ...hiking.

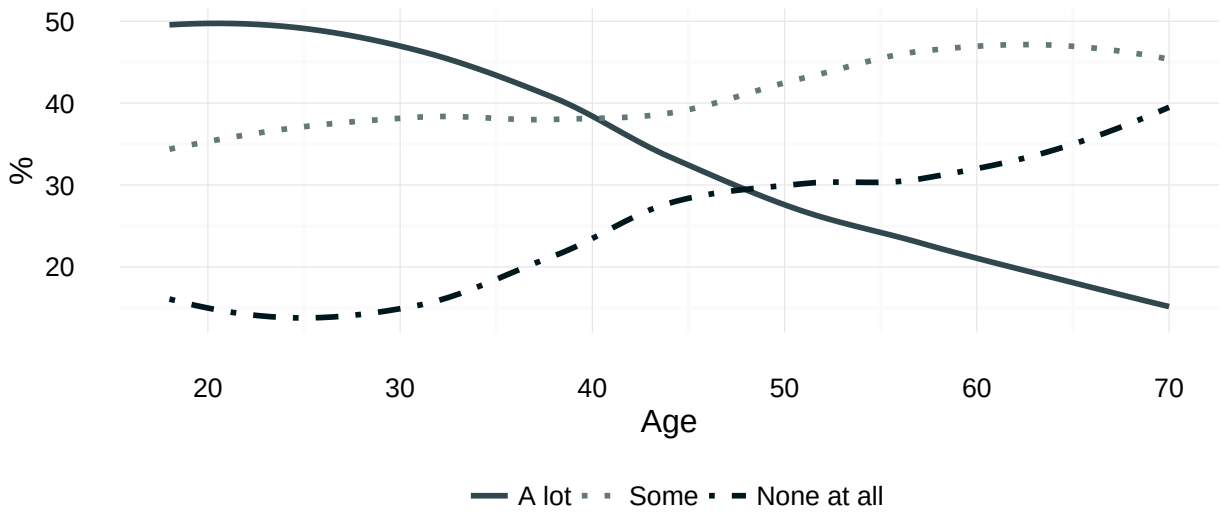
Interest in hiking was highest among urban residents: 38 percent indicated they have "a lot" of interest, followed by suburban (32 percent) and rural residents (31 percent) (Table 4.15). Across all residential locations, one-quarter of the respondents reported no interest at all in hiking. Among adults surveyed, interest in hiking was highest among adults in their late teens and 20s, with one-half reporting strong interest (Figure 4.26). This interest swiftly declined, with 20 percent of adults in their late 50s and early 60s reporting "a lot" of interest in hiking.

Table 4.15: Interest in Hiking, by Location

Categories	Urban	Suburban	Rural
A lot	38%	32%	31%
Some	37%	43%	44%
None at all	24%	26%	25%

Question wording: How would you rate your interest in each of the following activities? ...hiking.

Figure 4.26: 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 4.16), with approximately one-third (34 percent) expressing a great deal of interest and approximately one-quarter no interest at all in hiking.

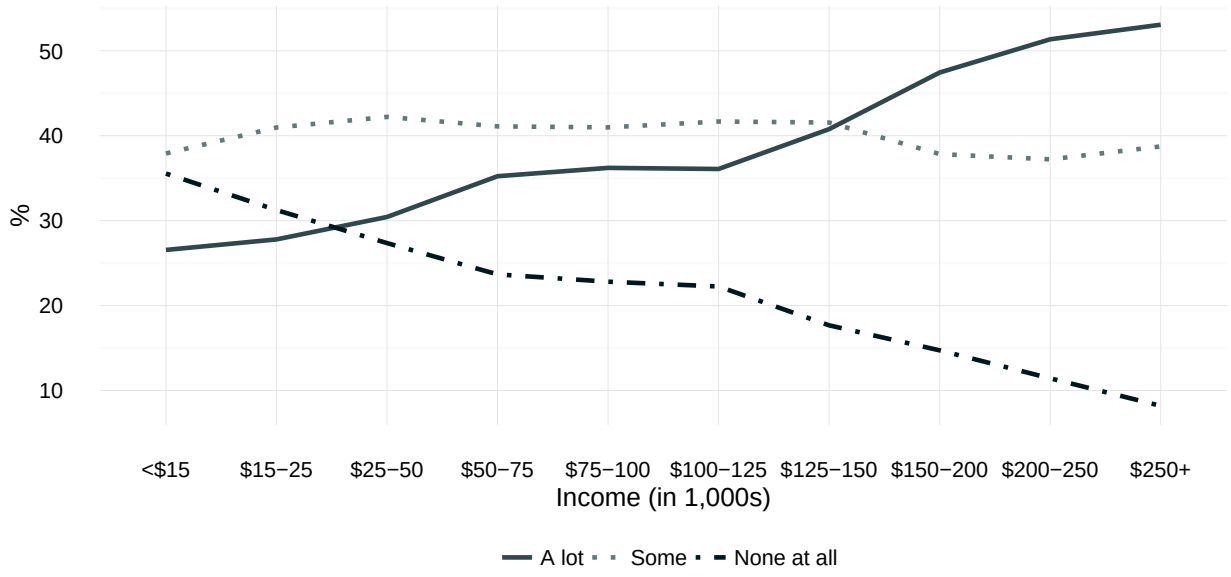
Table 4.16: Interest in Hiking, by Gender

Categories	Men	Women
A lot	34%	34%
Some	42%	40%
None at all	24%	26%

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 4.27). Around 25 percent of adults from low-income households reported high interest in hiking, compared with well over 50 percent of adults from high-income households.

Figure 4.27: Interest in Hiking, by Income

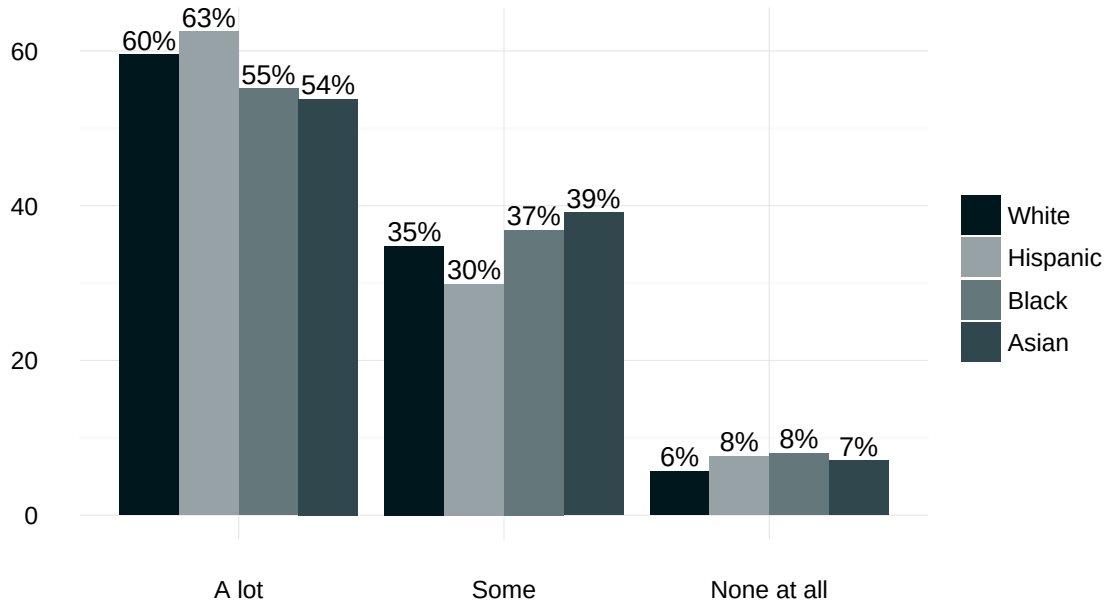


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...hiking. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

Interest in Walking Outdoors

In contrast to substantial differences among groups in hiking interest, very few differences emerged among ethnoracial groups in interest in walking outdoors (Figure 4.28). About 3 out of 5 whites, Hispanics, blacks, and Asians expressed high interest in this activity. Across groups, fewer than 1 in 10 expressed no interest.

Figure 4.28: 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.

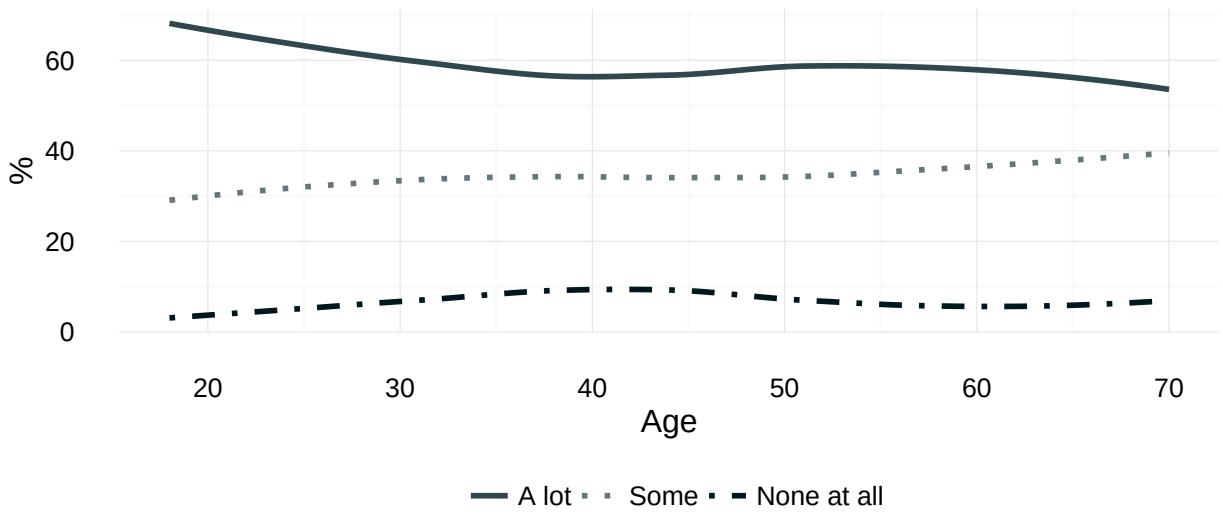
Interest in walking outdoors was roughly similar among urban residents (58 percent indicated they have "a lot" of interest), suburban residents (60 percent), and rural residents (59 percent) (Table 4.17). Interest in walking outdoors was highest among the youngest adults surveyed, but held relatively steady among older adults (Figure 4.29).

Table 4.17: Interest in Walking Outdoors, by Location

Categories	Urban	Suburban	Rural
A lot	58%	60%	59%
Some	35%	34%	36%
None at all	7%	7%	5%

Question wording: How would you rate your interest in each of the following activities? ....taking a walk outdoors.

Figure 4.29: 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.

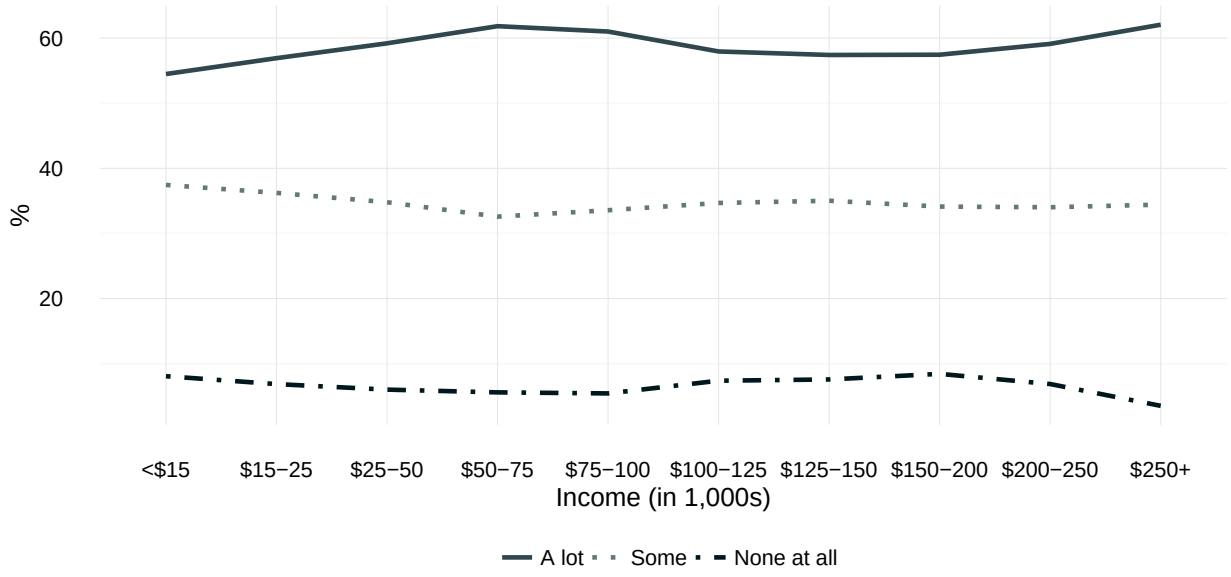
Women were more interested in walking outdoors: 64 percent expressed high interest, compared with 53 percent of men (Table 4.18). Interest in walking outdoors scarcely changed across household income (Figure 4.30). Roughly 60 percent of adults were highly interested.

Table 4.18: Interest in Walking Outdoors, by Gender

Categories	Men	Women
A lot	53%	64%
Some	39%	31%
None at all	8%	5%

Question wording: How would you rate your interest in each of the following activities? ....taking a walk outdoors.

Figure 4.30: Interest in Walking Outdoors, by Income

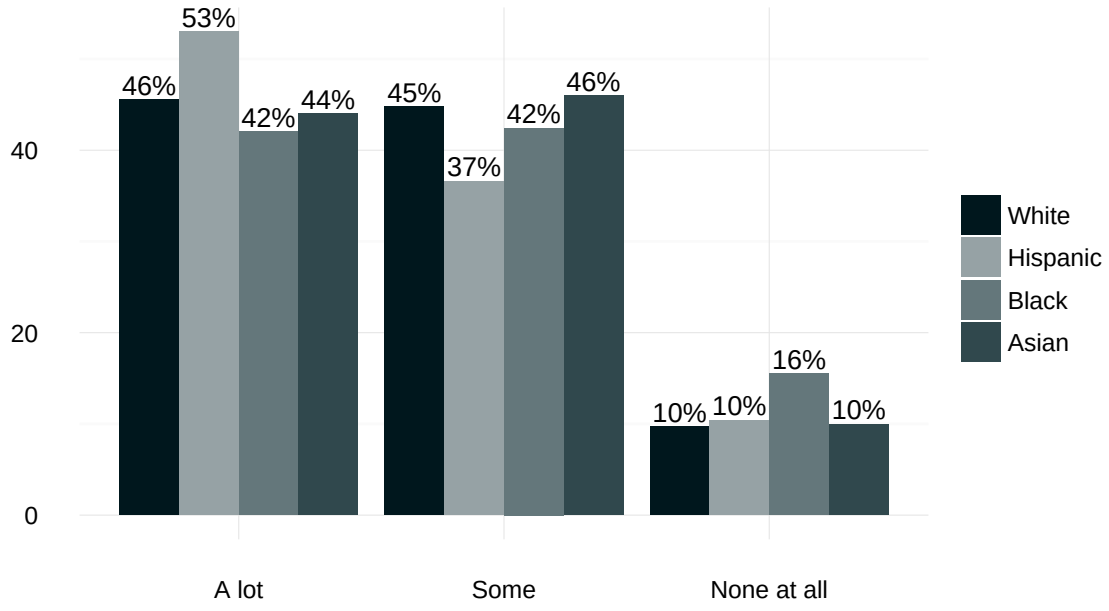


Note: Income figures in 1,000s. Question wording: Which of the following income categories best describes your total annual household income averaged over the past 5 years? | How would you rate your interest in each of the following activities? ....taking a walk outdoors.

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 (53 percent), 46 percent of white, 44 percent of Asian, and 42 percent of black adults expressed interest in visiting these places (Figure 4.31).

Figure 4.31: 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.

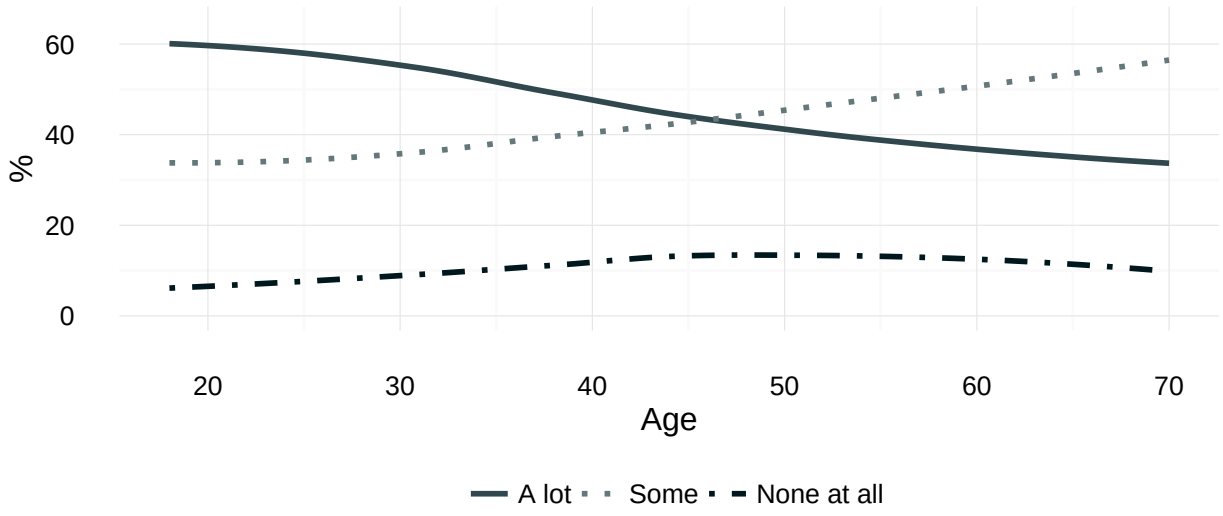
Just under 90 percent of urban, suburban, and rural respondents expressed at least "some" interest in visiting nature-education centers (Table 4.19). Young adults reported the greatest interest in visiting nature-education centers (around 60 percent), with this figure declining by about 20 percentage points among older adults (Figure 4.32). With respect to gender, women were far more likely to report a good deal of interest in visiting nature-education centers: 53 percent indicated "a lot" of interest, compared with 38 percent of men (Table 4.20). Across incomes, interest in visiting zoos, aquariums, nature centers, natural history museums, and botanical gardens was stable (Figure 4.33).

Table 4.19: Interest in Visiting Nature-Education Settings, by Location

Categories	Urban	Suburban	Rural
A lot	50%	45%	42%
Some	39%	44%	47%
None at all	11%	11%	11%

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 4.32: Interest in Visiting Nature-Education Settings, by Age



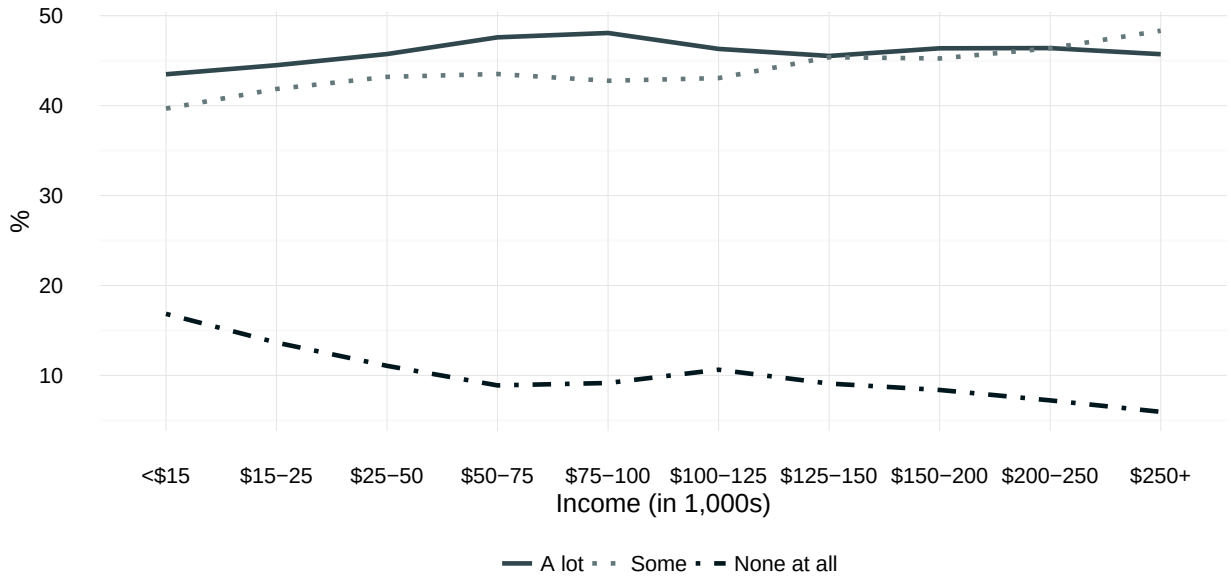
Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How would you rate your interest in each of the following activities? ...visiting a zoo, aquarium, nature center, natural history museum, or botanical garden.

Table 4.20: Interest in Visiting Nature-Education Settings, by Gender

Categories	Men	Women
A lot	38%	53%
Some	48%	38%
None at all	13%	9%

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 4.33: Interest in Visiting Nature-Education Settings, by Income

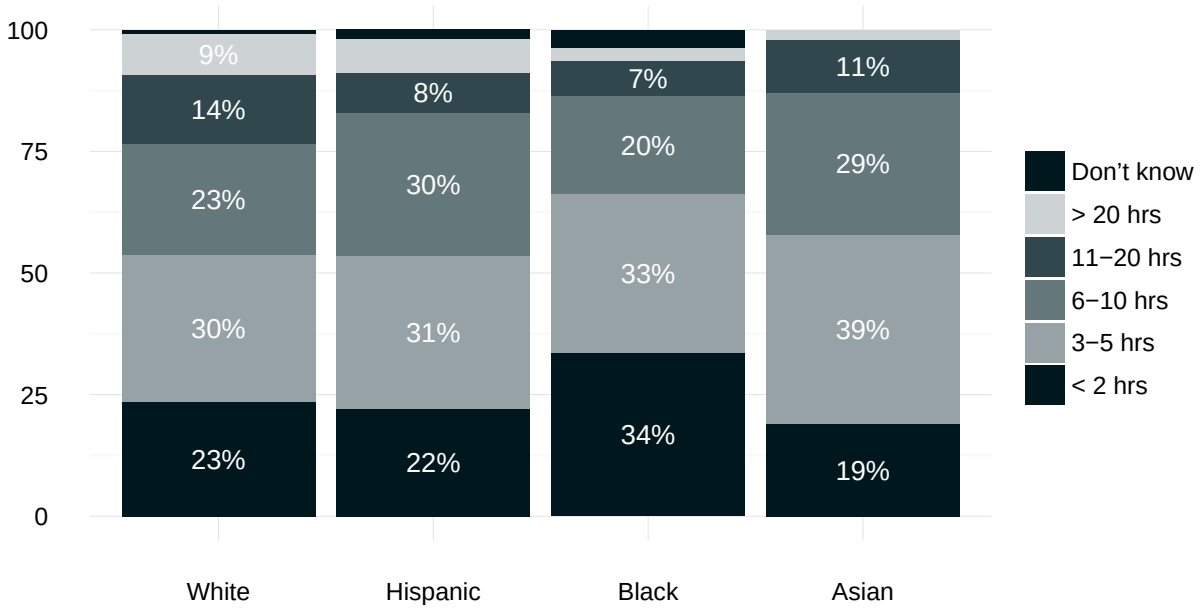


Note: Income figures in 1,000s. Question wording: How would you rate your interest in each of the following activities? ...visiting a zoo, aquarium, nature center, natural history museum, or botanical garden. | Which of the following income categories best describes your total annual household income averaged over the past 5 years?

4.2.7 Time Spent Outside in Nature

Across all ethnoracial groups, three-quarters of adults reported spending fewer than 10 hours outside in nature in a typical week (Figure 4.34). One-third (34 percent) of black adults reported spending fewer than two hours outside in a typical week, compared with about one-fifth of Asian, white, and Hispanic adults. Across ethnoracial groups, most adults reported being satisfied with the amount of time they spent in outside in nature (Table 4.21): Roughly 70 percent said they were somewhat or very satisfied; in contrast, about 20 percent reported being somewhat or very dissatisfied.

Figure 4.34: 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.)

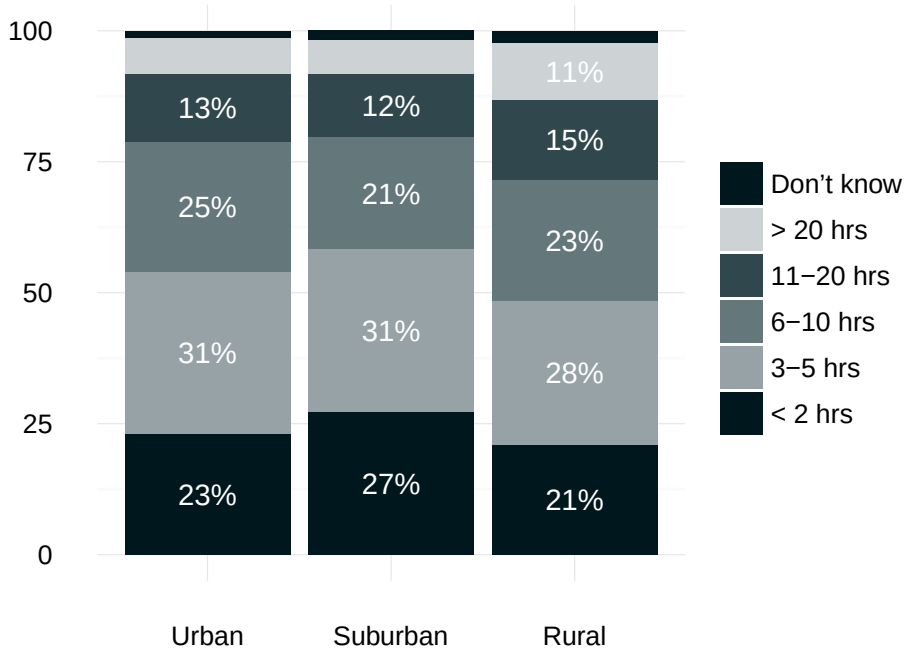
Table 4.21: Satisfaction with Amount of Time Able to Experience Nature, by Race and Ethnicity

Categories	White	Hispanic	Black	Asian
Very dissatisfied	2%	3%	3%	2%
Smwht dissatisfied	19%	15%	14%	17%
Neutral	12%	10%	15%	16%
Smwht satisfied	39%	33%	35%	41%
Very satisfied	27%	39%	33%	24%

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 4.35). About one-quarter reported spending fewer than 2 hours outside in nature. Those who spent 11 or more hours outdoors each week were likeliest to live in rural areas. Across residential location, about two-thirds of adults surveyed were somewhat or very satisfied with the amount of time they spend outdoors experiencing nature each week (Table 4.22). Urban residents were especially likely to be very satisfied: 40 percent were, compared with 26 percent of rural adults and 22 percent of suburban adults. Suburban respondents were likeliest to express dissatisfaction with the amount of time they are able to get outdoors to experience nature—23 percent did so, compared with 19 percent of rural respondents and 17 percent of urban respondents.

Figure 4.35: 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.)

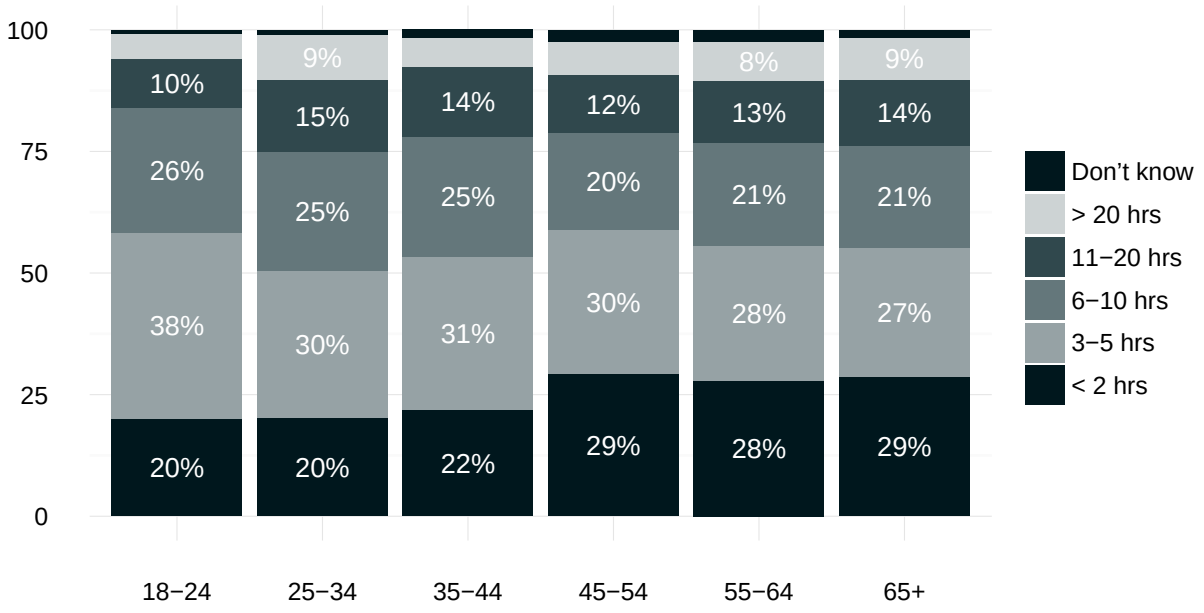
Table 4.22: Satisfaction with Amount of Time Able to Experience Nature, by Location

Categories	Urban	Suburban	Rural
Very dissatisfied	3%	2%	2%
Smwht dissatisfied	14%	21%	17%
Neutral	11%	14%	13%
Smwht satisfied	32%	40%	42%
Very satisfied	40%	22%	26%

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, about three-quarters of adults reported spending fewer than 10 hours outside in nature in a typical week (Figure 4.36). Dissatisfaction with time spent outdoors was highest among young adults (18–24-year-olds) and older adults (55–64-year-olds) (Table 4.23). Adults 25–34 years old were likeliest to report being satisfied with the time they spend outdoors experiencing nature each week.

Figure 4.36: 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 4.23: 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	3%	2%	3%	2%	4%	2%
Smwht dissatisfied	25%	12%	13%	20%	22%	16%
Neutral	9%	9%	12%	15%	15%	17%
Smwht satisfied	39%	36%	32%	39%	37%	42%
Very satisfied	24%	40%	41%	24%	22%	23%

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?

Figure 4.37 shows how different factors are associated with the likelihood that an average respondent is dissatisfied with the amount of time they spend outdoors weekly. Points greater than 0 signify that adults in that group were *more likely* to be dissatisfied with the time they spend outdoors in nature. 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.)

- Those who were likelier to be dissatisfied include white adults, women, very young adults, 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 black and Asian adults, men, middle-aged and older adults, those with lower educational attainment, those from higher-income households, 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 all ethnoracial groups, the most influential person tended to be a parent (Table 4.24). 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 30 percent of black and Asian adults cited a parent. For Asian adults, friends and fish, wildlife, and outdoor professionals played a relatively larger role than these people did among white, Hispanic, and black respondents. Parents and grandparents also played a relatively smaller role for Asian respondents.

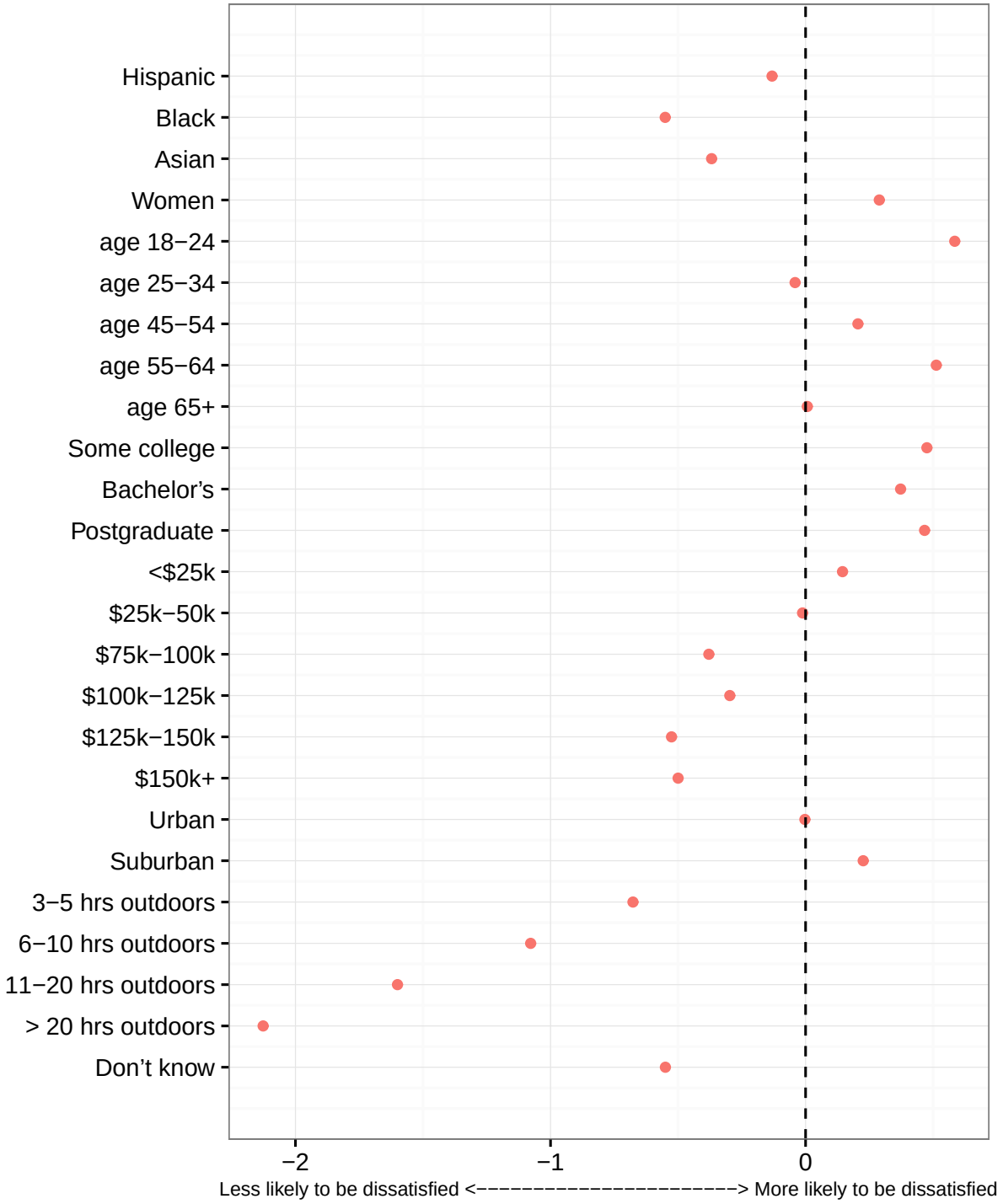
Table 4.24: Most Influential Person on How Adults Think or Feel about Nature, by Race and Ethnicity

Person	White	Hispanic	Black	Asian
Parent	41%	37%	31%	30%
Other	17%	13%	20%	19%
Friend	12%	14%	11%	21%
Grandparent	9%	13%	11%	3%
Other relative	5%	5%	4%	5%
Teacher	4%	5%	8%	8%
Brother/sister	4%	8%	5%	3%
Scout leader	3%	1%	2%	1%
Fish/wildlife/outdoor professional	3%	2%	6%	8%
Camp counselor/Youth group leader	2%	1%	2%	2%

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 and wildlife (Table 4.25).

Figure 4.37: 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 4.25: Most Influential Person on How Adults Think or Feel about Nature, by Location Where Grew Up

Person	Urban	Suburban	Rural
Parent	38%	35%	41%
Other	15%	19%	18%
Friend	13%	15%	11%
Grandparent	10%	8%	13%
Brother/sister	6%	4%	3%
Teacher	5%	6%	4%
Other relative	5%	5%	5%
Fish/wildlife/outdoor professional	4%	4%	3%
Scout leader	2%	3%	2%
Camp counselor/Youth group leader	2%	2%	1%

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, over one-third selected a parent as their most influential person (Table 4.26). Nearly one-quarter of the youngest adults selected a friend. Young adults were also likeliest to select a teacher and were the least likely to select a grandparent.

Table 4.26: 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	35%	44%	39%	36%	36%	33%
Friend	22%	13%	13%	11%	12%	10%
Other	14%	14%	14%	23%	17%	20%
Teacher	9%	5%	4%	4%	5%	6%
Grandparent	7%	9%	12%	10%	10%	10%
Brother/sister	5%	5%	8%	3%	3%	2%
Other relative	4%	3%	4%	6%	7%	7%
Camp counselor/Youth group leader	2%	1%	2%	2%	3%	2%
Fish/wildlife/outdoor professional	2%	4%	3%	3%	5%	4%
Scout leader	1%	1%	1%	3%	3%	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 value nature and wildlife 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 ethnoracial 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 4.38). Some 80 percent agreed that certain smells and sounds of nature bring to mind some of their happiest memories, and approximately 60 percent reported that love of nature is one of their strongest feelings. These feelings of strong affection for nature and wildlife were greatest among Hispanic respondents. For example, 71 percent of adult Hispanics reported their love of nature as one of their strongest feelings compared with 61 percent among whites, 53 percent among Asians, and 52 percent among blacks. Noting the competing pressures and priorities of modern society, nearly one-half of Hispanic, black, and Asian respondents—in comparison to 39 percent of whites—agreed "there are many more important issues in my life than my concern 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 4.39). Urban residents were more likely to believe people should not love their pets or nature as much as they love other people. Some 40 percent of urban adults expressed this view—twice the proportion found among rural adults. One-half of urban respondents and two-fifths of suburban dwellers also indicated they faced more important issues in their lives than those involving nature, compared with one-third of rural adults.

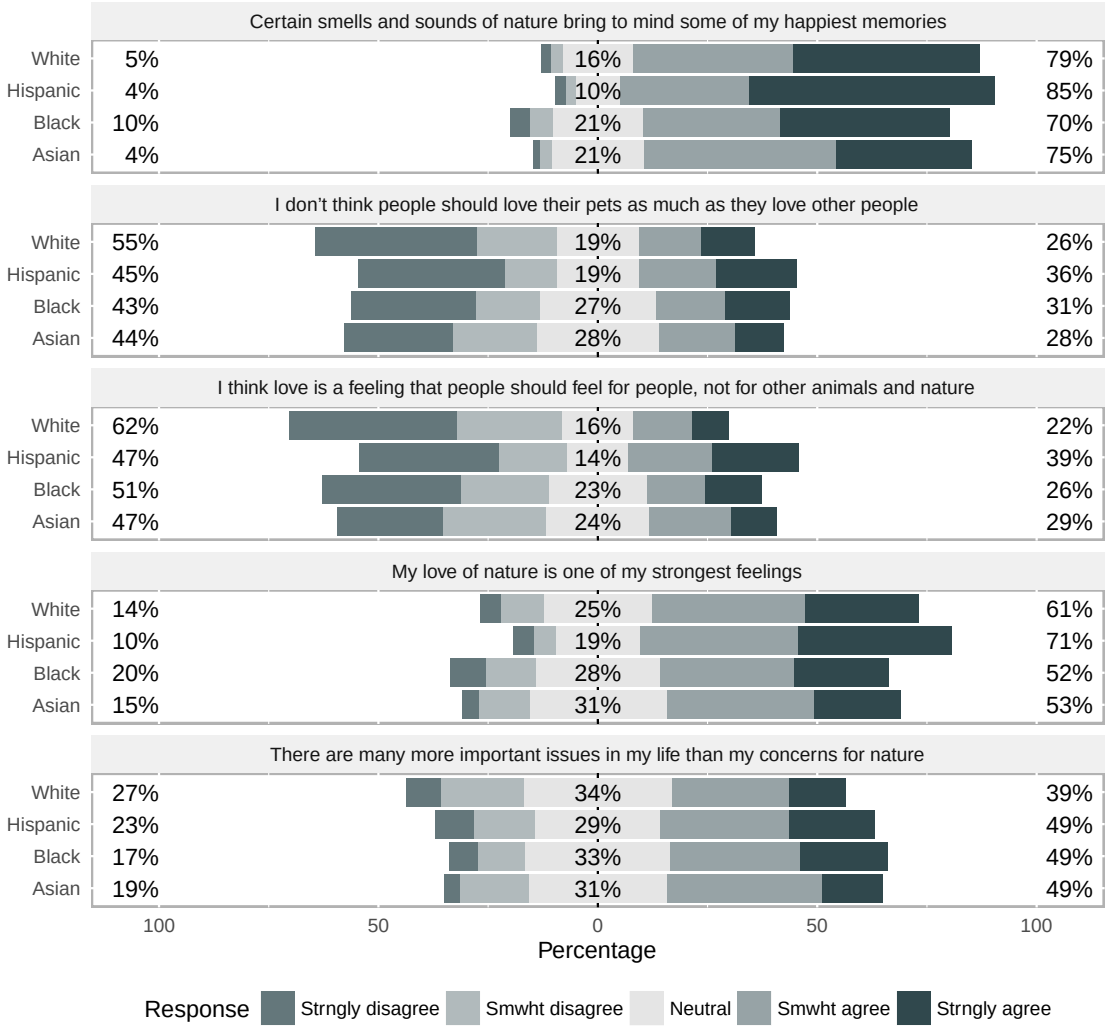
Across ages, most adult respondents largely agreed that "certain smells and sounds of nature bring to mind some of my happiest memories," and most agreed that the love of nature is one of their strongest feelings (Figure 4.40). However, substantial declines occurred among older adults. For example, 7 in 10 young adults agreed their love of nature is one of their strongest feelings compared with 5 in 10 older adults.

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 percent of Hispanics in comparison to 46 percent of whites, 43 percent of Asians, and 36 percent of blacks indicated they "enjoyed nature more than anything else" (Figure 4.41). Hispanic adults also reported slightly more attraction to beautiful animals than members of other ethnoracial groups. A great majority of adults—between about 70 and 80 percent—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.

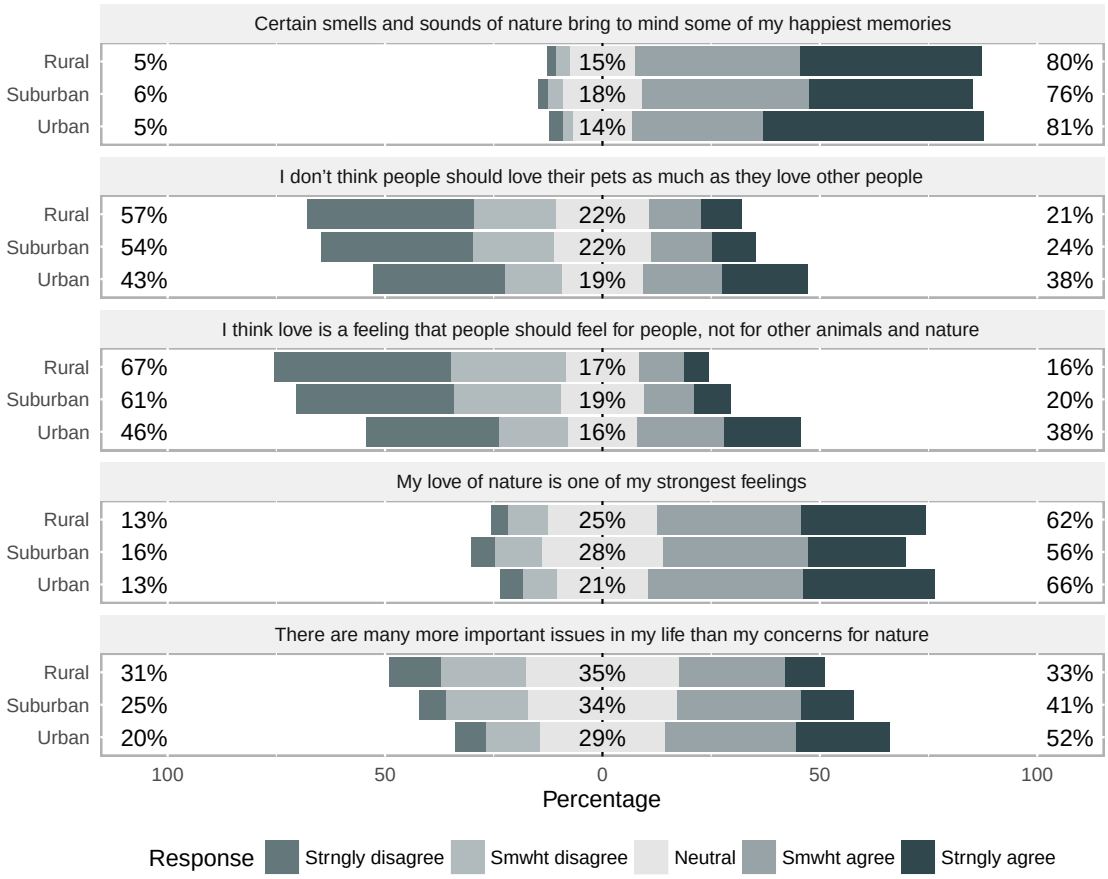
A similar pattern of attraction to nature was encountered across residential location (Figure 4.42). Nearly 8 in 10 adults agreed that seeing something especially attractive in nature arouses their curiosity. Still, intriguing differences emerged. For example, 6 in 10 urban residents, compared with 4 in 10 rural and suburban residents, indicated they enjoyed nature more than anything else. Also, the choice to experience the beauty of nature appeared to be relatively more common among urban than rural residents. Sixty percent of urban adults indicated they were most attracted to beautiful animals, compared with 47 percent or rural residents. Sixty percent of urban adults also

Figure 4.38: Values of Affection, by Race and Ethnicity



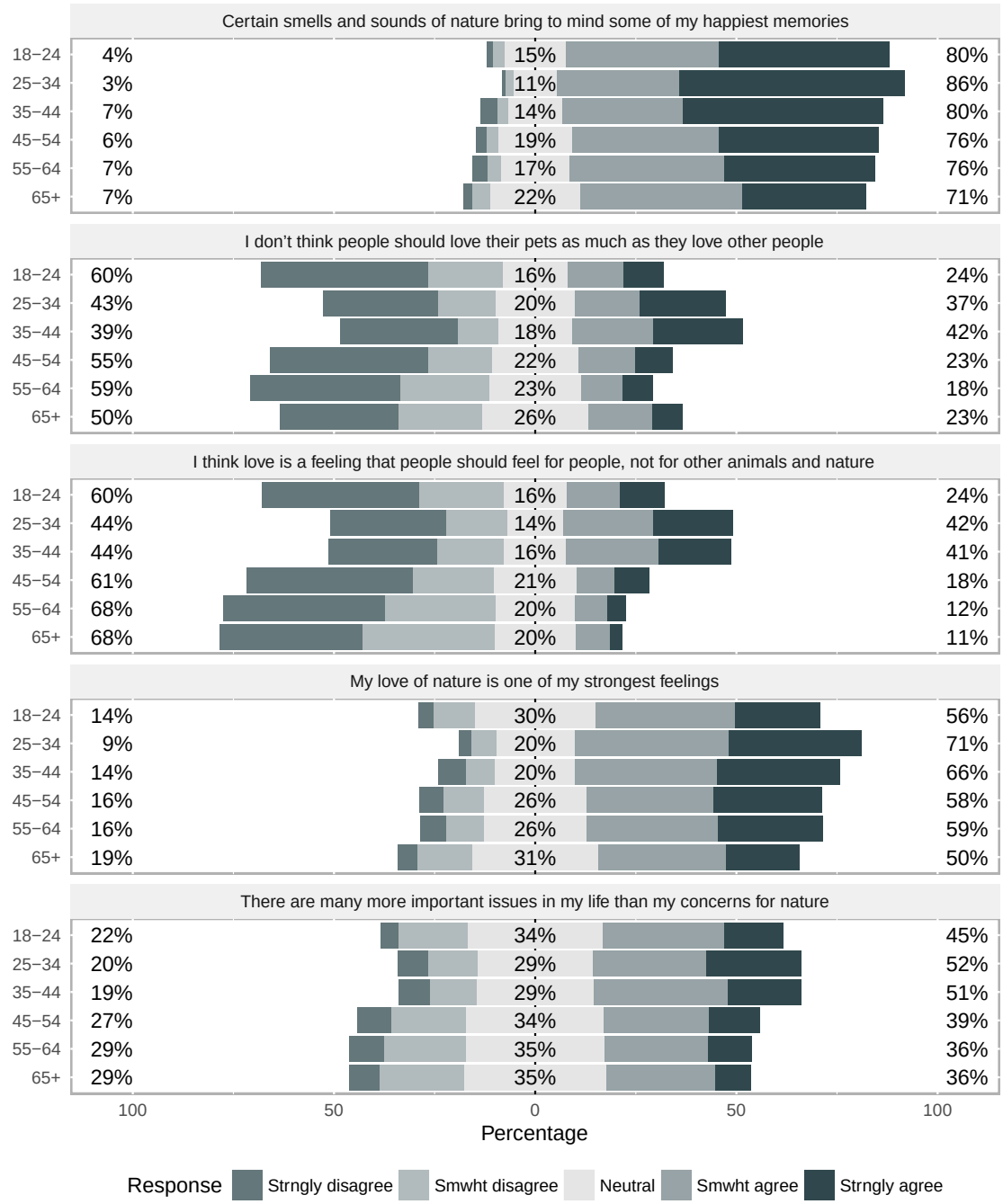
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.39: Values of Affection, by Location



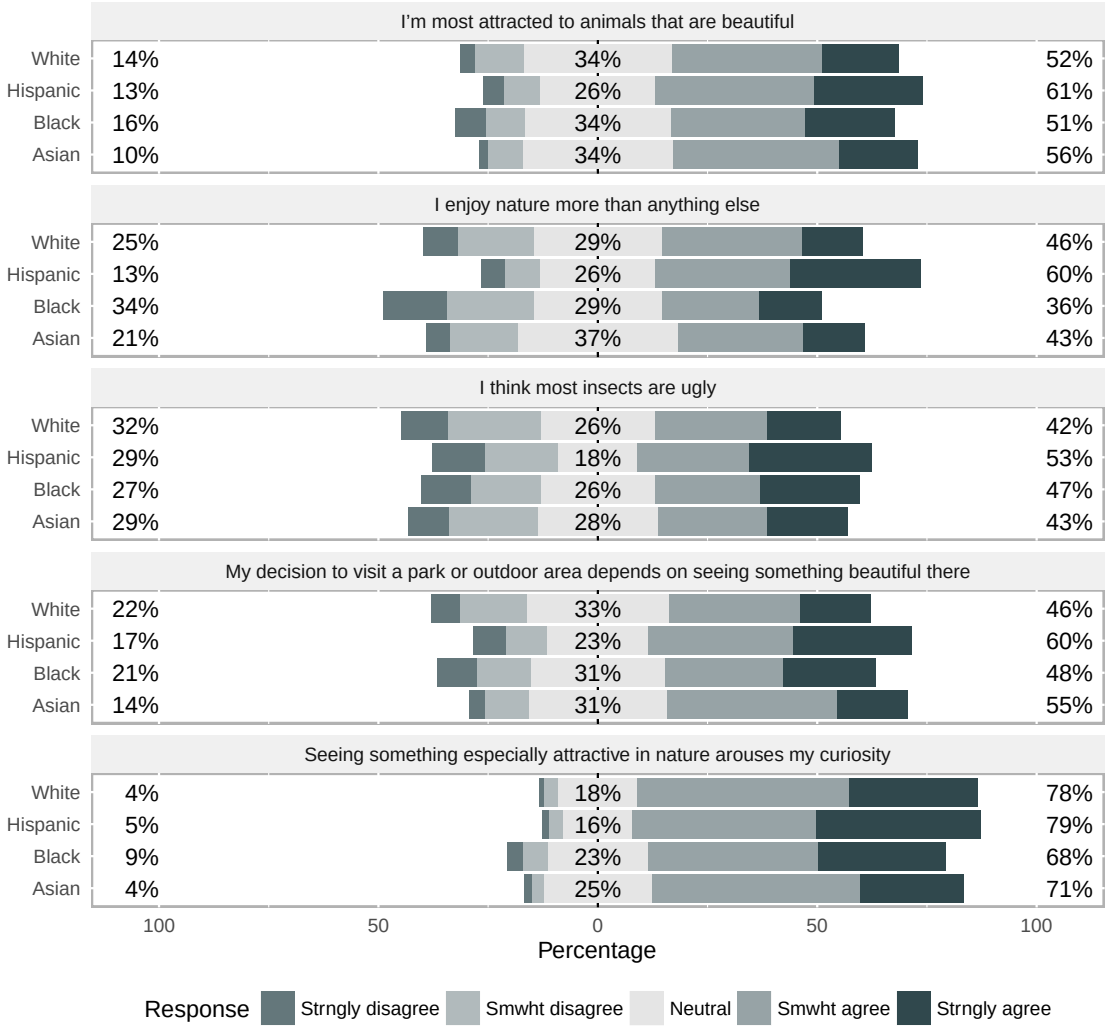
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.40: Values of Affection, by Age Category



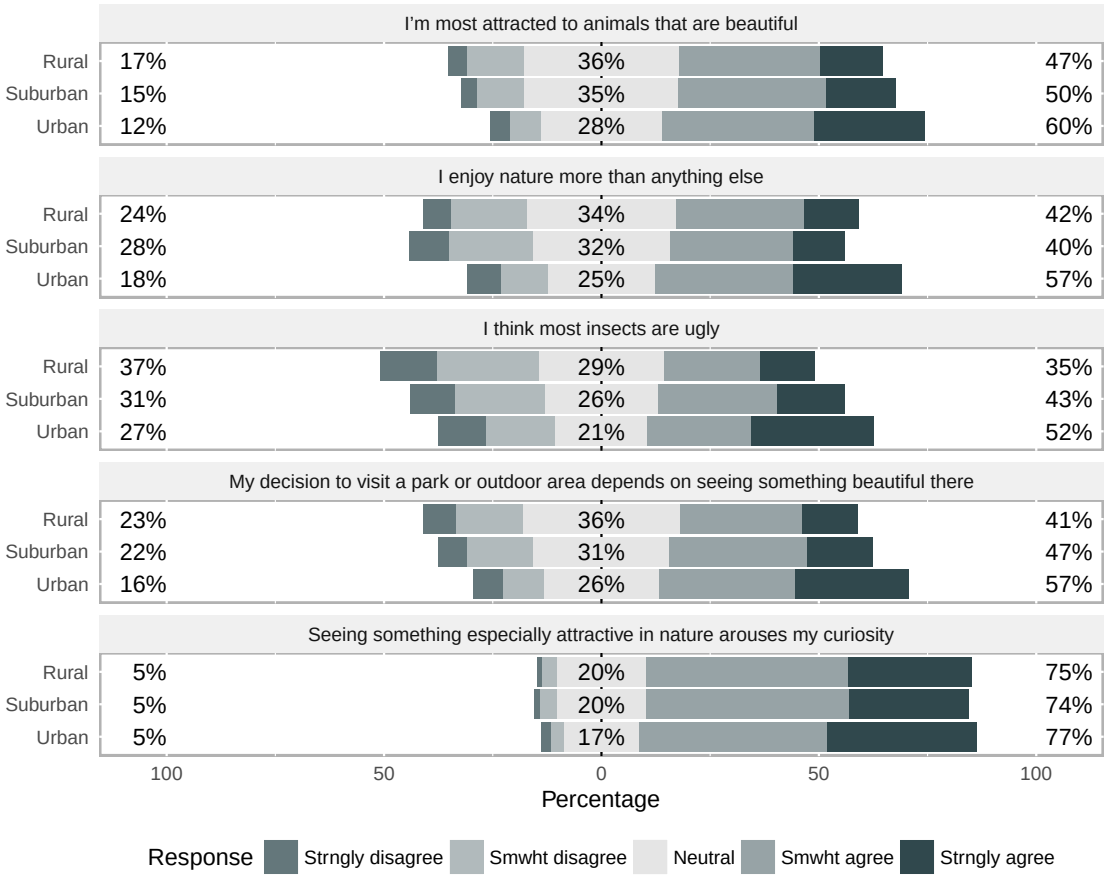
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.41: 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 4.42: Values of Attraction, by Location

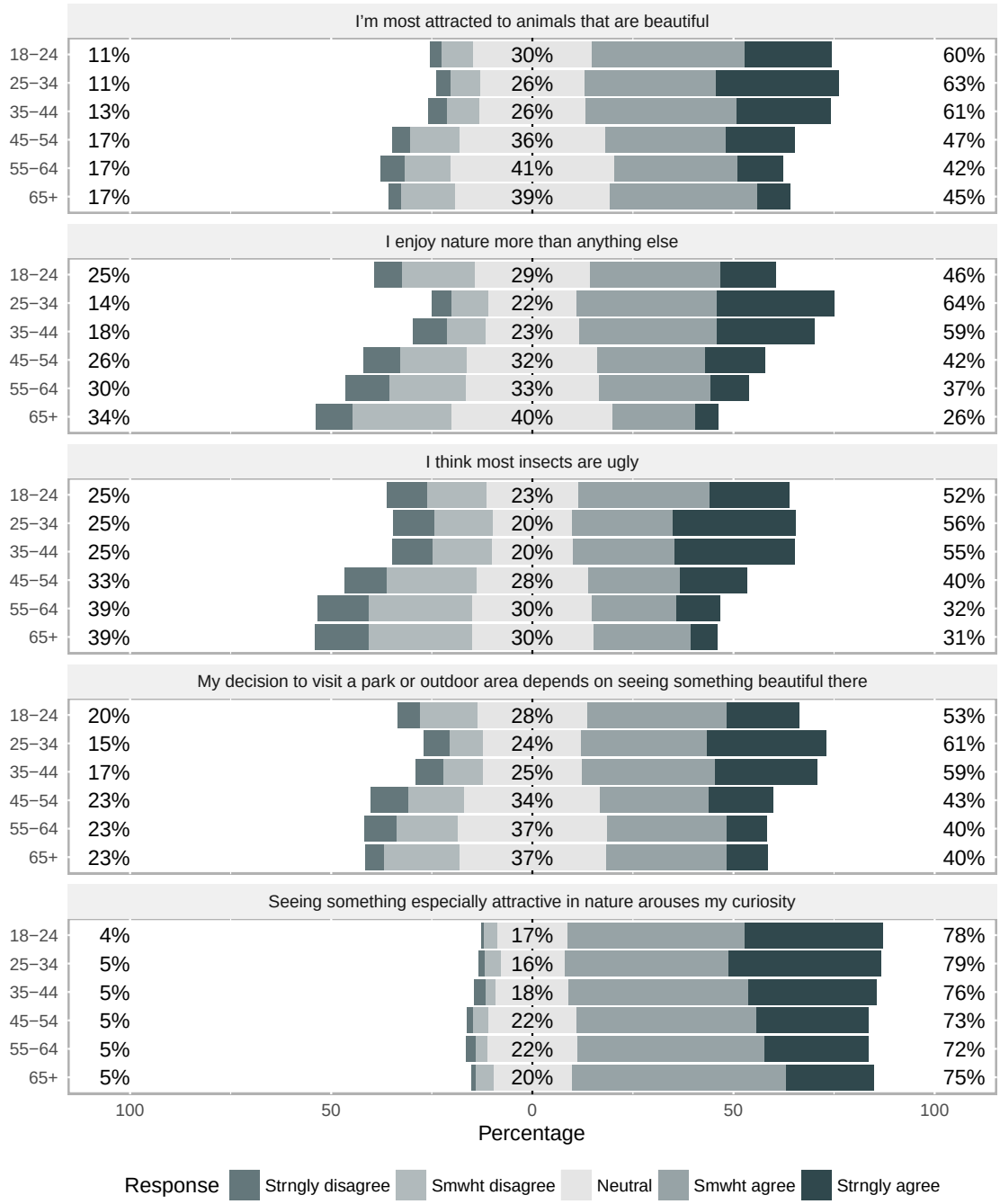


Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

indicated they were more likely visit a park if they could see something beautiful there, compared with approximately 40 percent of rural residents. Despite this relatively strong attraction to the beauty of the natural world, urban residents were more likely to view most insects as ugly: one-half of urban residents agreed with this view of insects, compared with one-third of rural adults.

Adults of all ages revealed attraction to the aesthetic appeal of nature (Figure 4.43). The role of beauty in motivating action, however, differed. For example, most young adults (around 60 percent) were most attracted to beautiful animals, and they were more inclined to visit a park or outdoor area if they could see something beautiful there. By contrast, relatively fewer older adults were as motivated by the beauty of nature: only 40 percent of adults 55 years of age and older indicated they would choose to visit a park because something beautiful could be found there. Enjoyment of nature appeared to peak among younger adult populations: about two-thirds of 25–34-year-olds indicated contact with nature was among their greatest source of enjoyment, declining to about one-quarter of adults over 65.

Figure 4.43: 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 4.44). 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, 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. Finally, slightly higher proportions of black, Hispanic, and Asian adults (versus white adults) agreed that times have become so dangerous that parents cannot allow their children to be outdoors on their own.

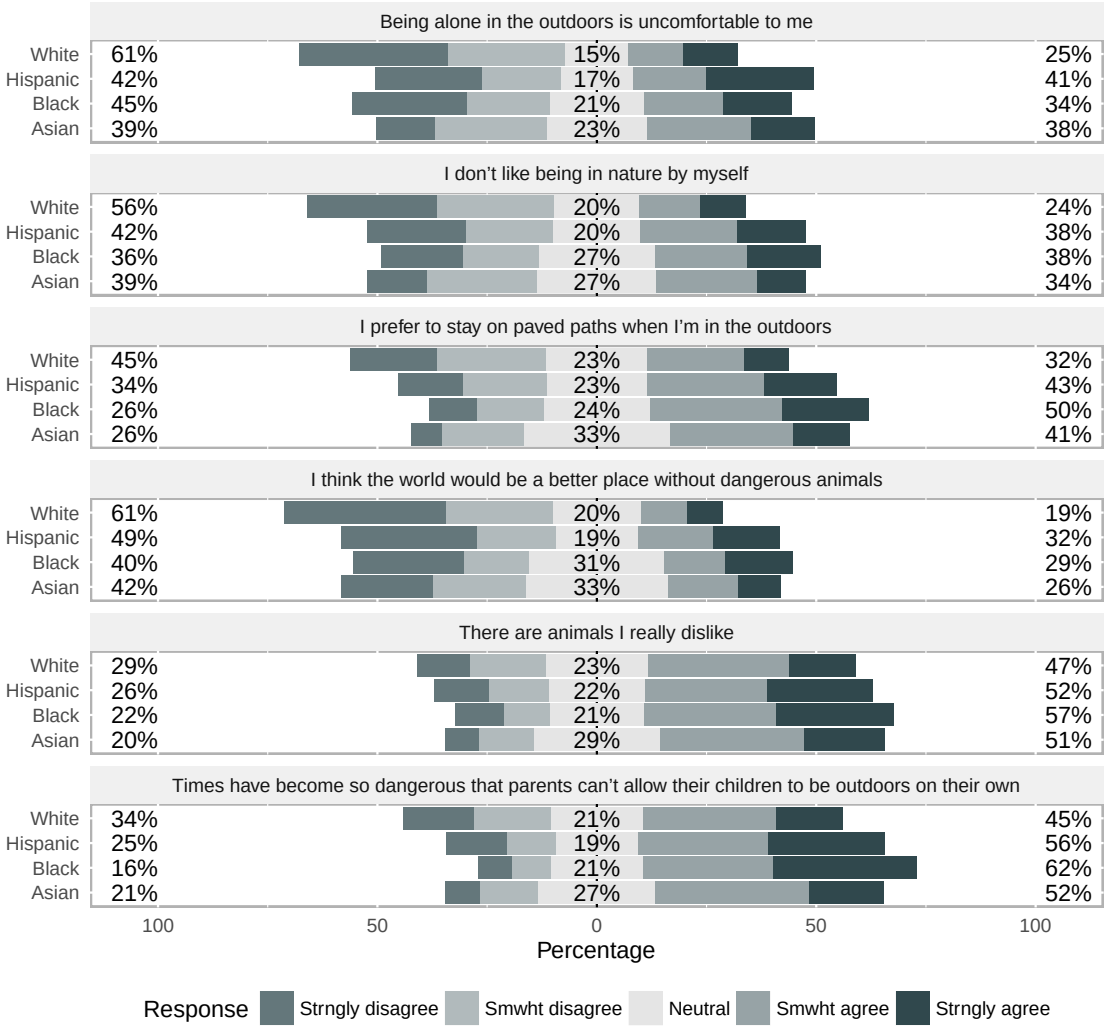
Across residential location, aversion to particular aspects of nature was most apparent among urban adults and lowest among rural respondents (Figure 4.45). For example, two-fifths of urban residents indicated being uncomfortable alone in the outdoors compared to one-fifth of rural respondents. In addition, 45 percent of urban residents preferred staying on paved paths when outdoors, compared with 36 percent of suburban adults, and 26 percent of rural respondents. The majority of urban adults (56 percent) also believed it was not safe for children to be alone outdoors, compared with 44 percent of rural adults.

Age differences were also important (Figure 4.46). Aversion to nature was relatively high among 25–44-year-olds, although it never reached the majority of people surveyed. Approximately 40 percent of these adults indicated discomfort being alone in the outdoors, nearly twice that encountered among older adults. Middle-aged adults were also more likely to express a preference for paved paths in the outdoors, and to support a view that the world would be better without dangerous animals. Across age groups approximately one-half regarded the world as having become so dangerous it was no longer safe for parents to let their children be in the outdoors on their own.

4.3.4 Control

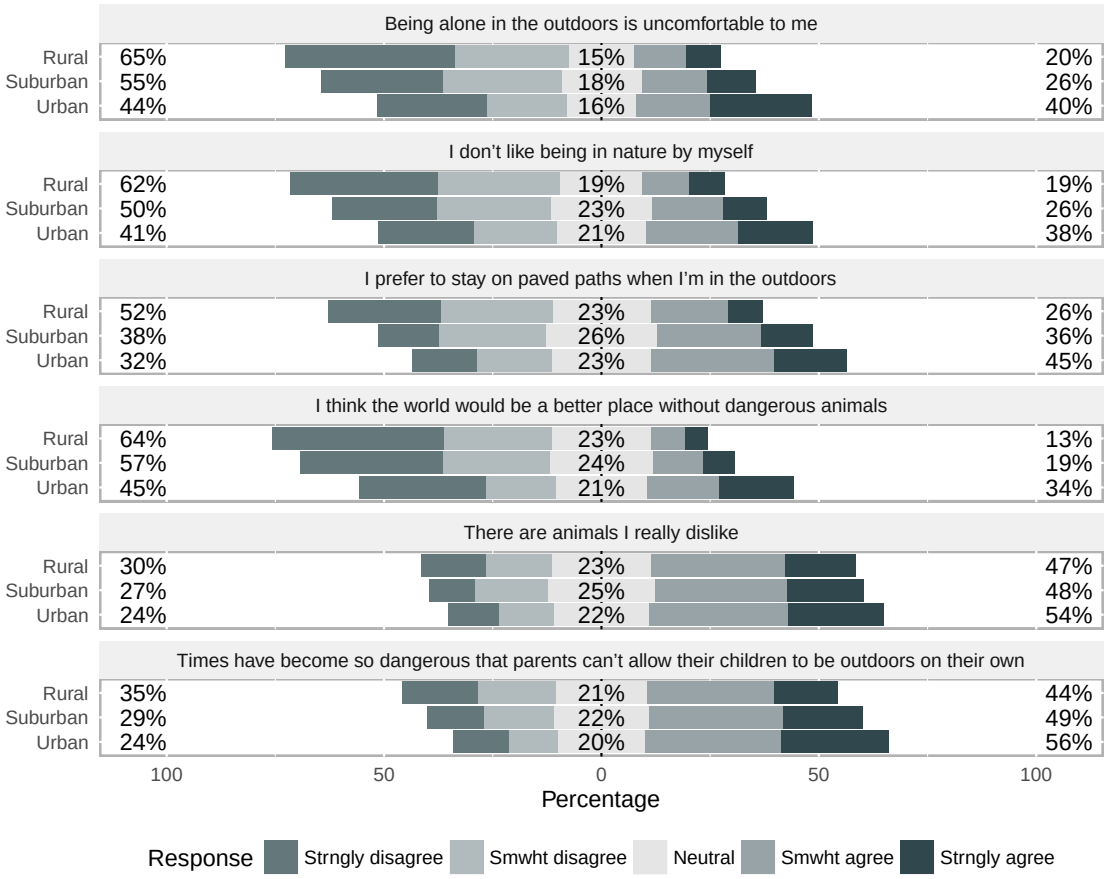
Control describes the tendency to master, dominate, and at times subjugate nature. Across ethnoracial groups, diverse thoughts emerged regarding the human ability to control and master nature (Figure 4.47). White adults were perhaps the most skeptical of the benefits of human mastery and dominion over nature, while Hispanic adults were the most inclined to support this value. Some 80 percent of all respondents believed nature could never be mastered, especially when it involved the use of human technology or an effort to satisfy human material needs while harming nature and wildlife. White adults were substantially less inclined to support these views: for example, one-quarter supported the mastery of nature through technology or the control of nature if it resulted in harmful environmental consequences. By contrast, 45 percent of Hispanic adults endorsed this use of technology, and 37 percent believed people must control nature even if it harmed nature and

Figure 4.44: Values of Aversion, by Race and Ethnicity



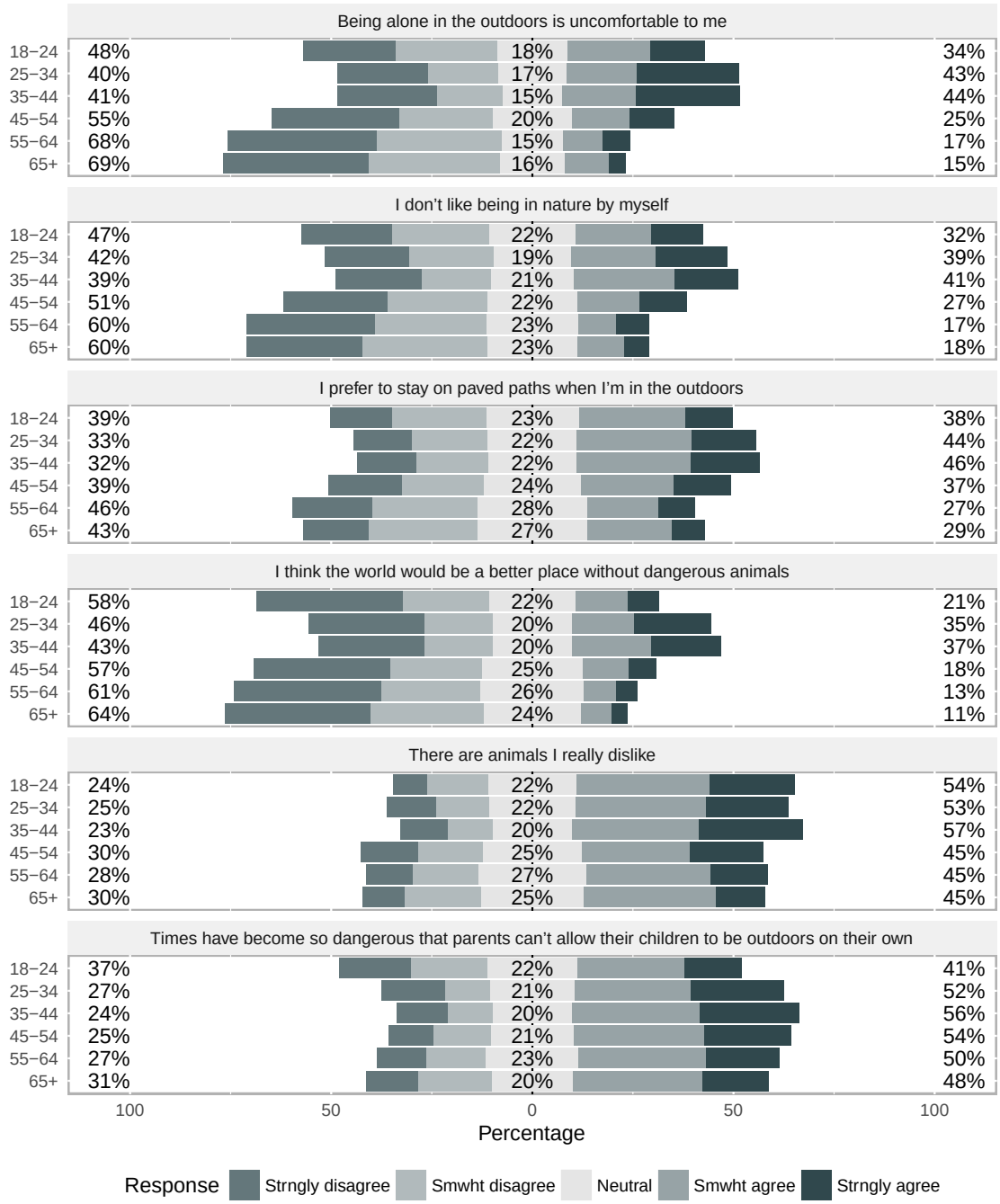
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.45: 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 4.46: 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."

wildlife. In addition, 44 percent of Hispanics indicated "an animal trained to help humans is better than one owned just for companionship."

Regardless of where respondents lived, the great majority of adult Americans agreed certain naturally occurring events such as hurricanes and floods could never be completely mastered (Figure 4.48). 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 agreed that certain natural disasters are a reminder that nature can never be mastered (Figure 4.49). Middle-aged adults were most confident that people are certain to master nature through technology; they also were likeliest to agree that people need to control nature to meet human needs even if it sometimes harms nature and wildlife. This same group tended to evaluate more highly animals trained to help humans compared with those owned just for companionship.

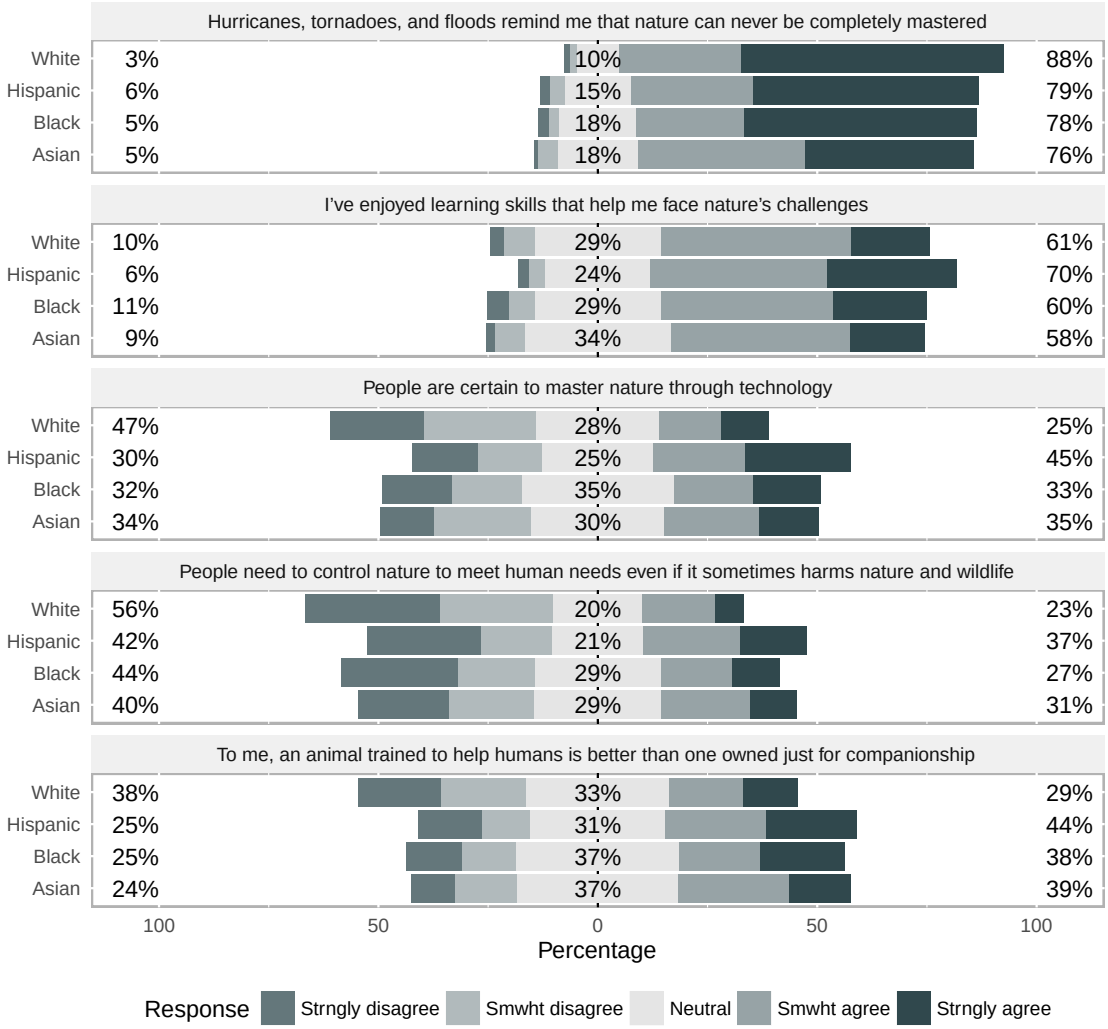
4.3.5 Exploitation

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 4.50). Similar to the value of control, 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, about 30–40 percent of minority 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 4.51). 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.

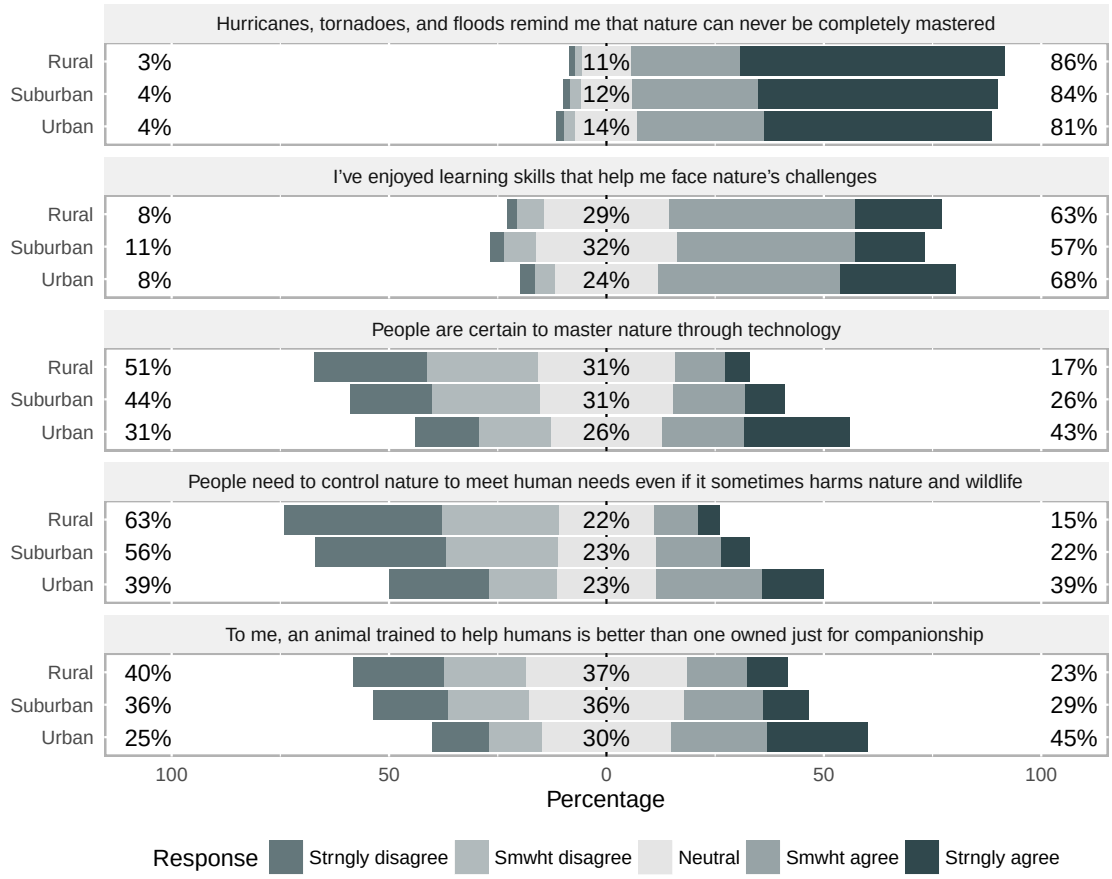
With respect to age differences, adults in their mid-20s to mid-40s were the most likely to support exploiting nature to serve human purposes (Figure 4.52). For example, between two-fifths and one-half of adults of this age group supported developing natural, energy, and land resources even if it resulted 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, less than 20 percent of older adults endorsed the need to build on and exploit land resources that result in the loss of wildlife habitat.

Figure 4.47: Values of Control, by Race and Ethnicity



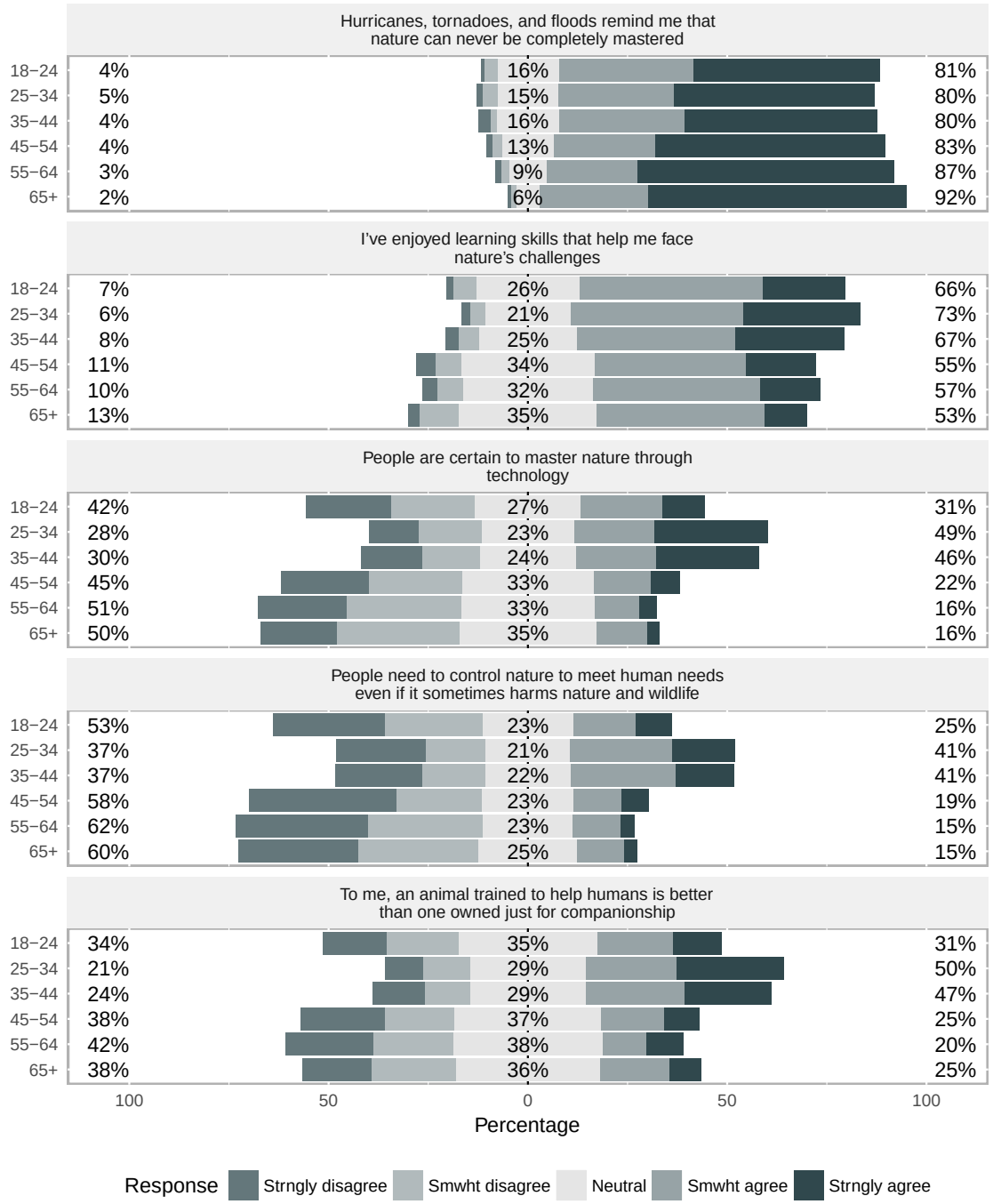
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.48: Values of Control, by Location



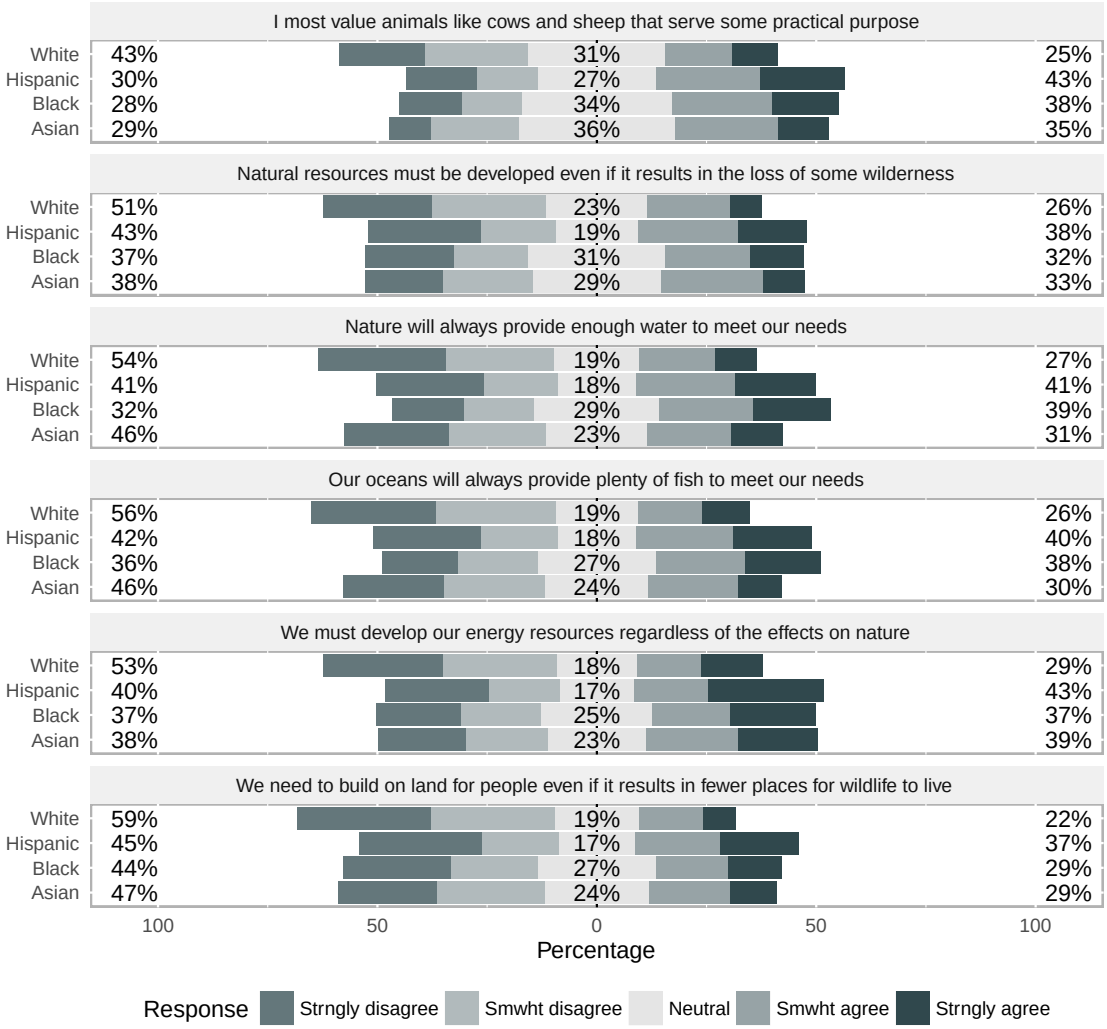
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.49: Values of Control, by Age Category



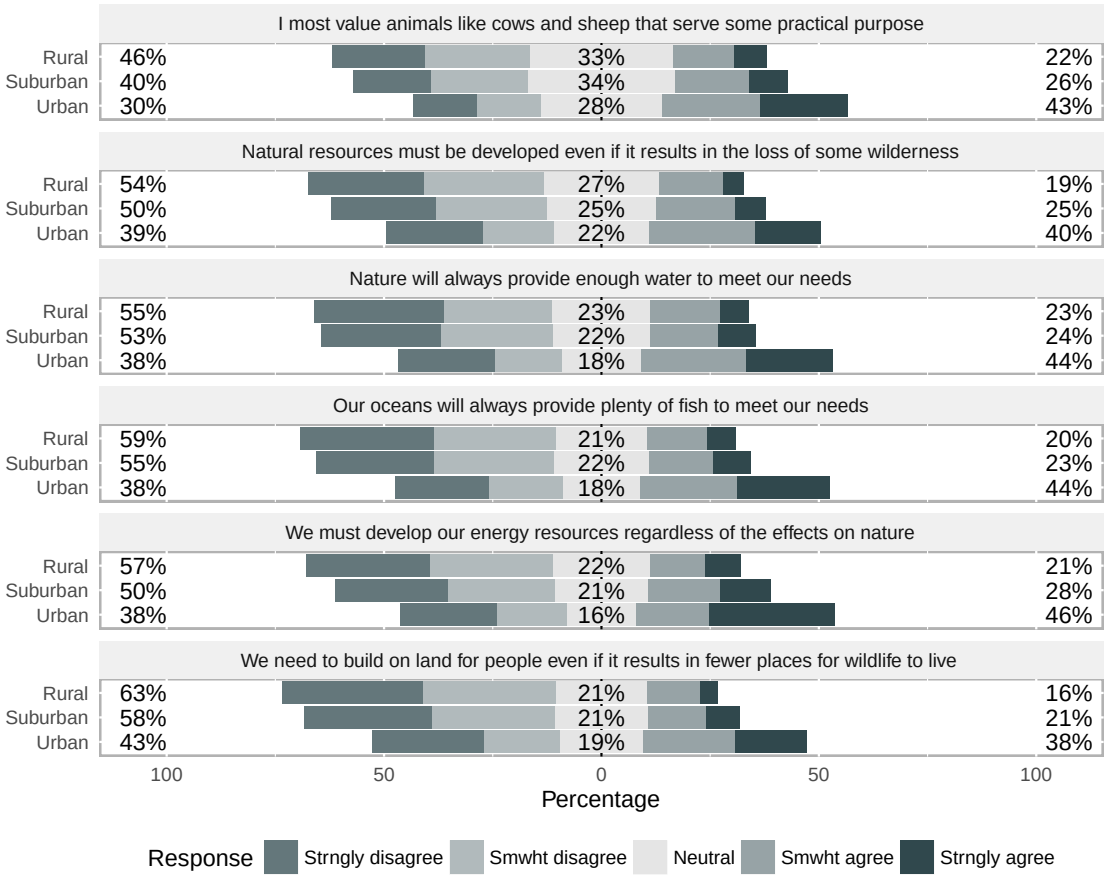
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.50: Values of Exploitation, by Race and Ethnicity



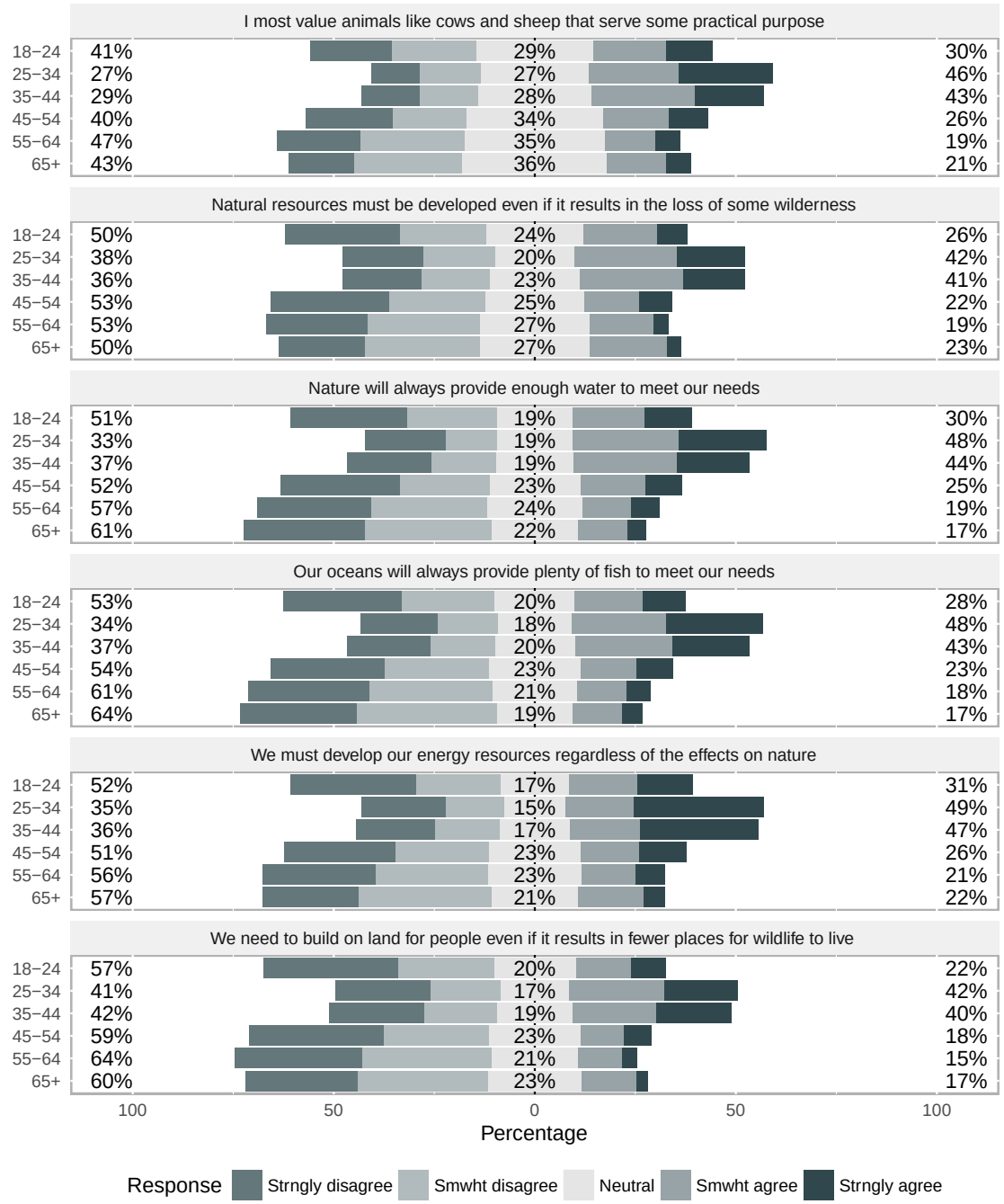
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.51: Values of Exploitation, by Location



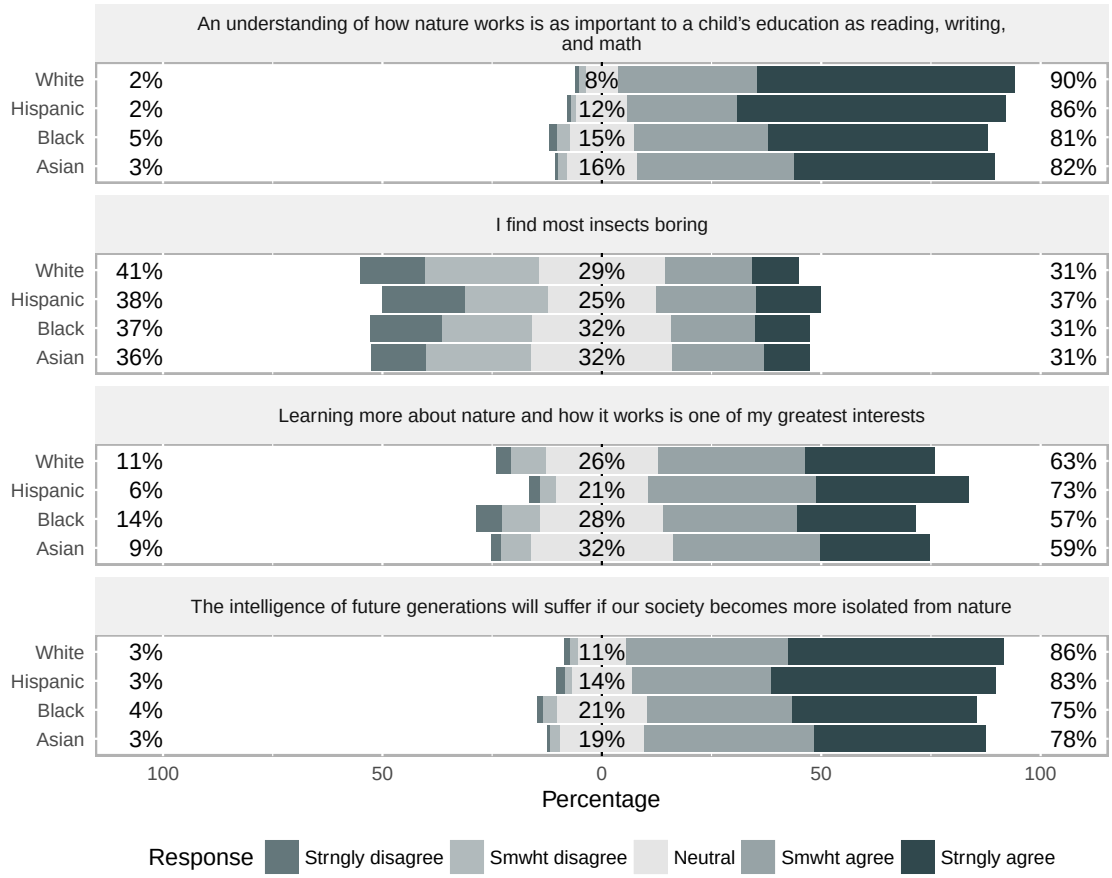
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.52: 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."

Figure 4.53: Values of Intellect, by Race and Ethnicity

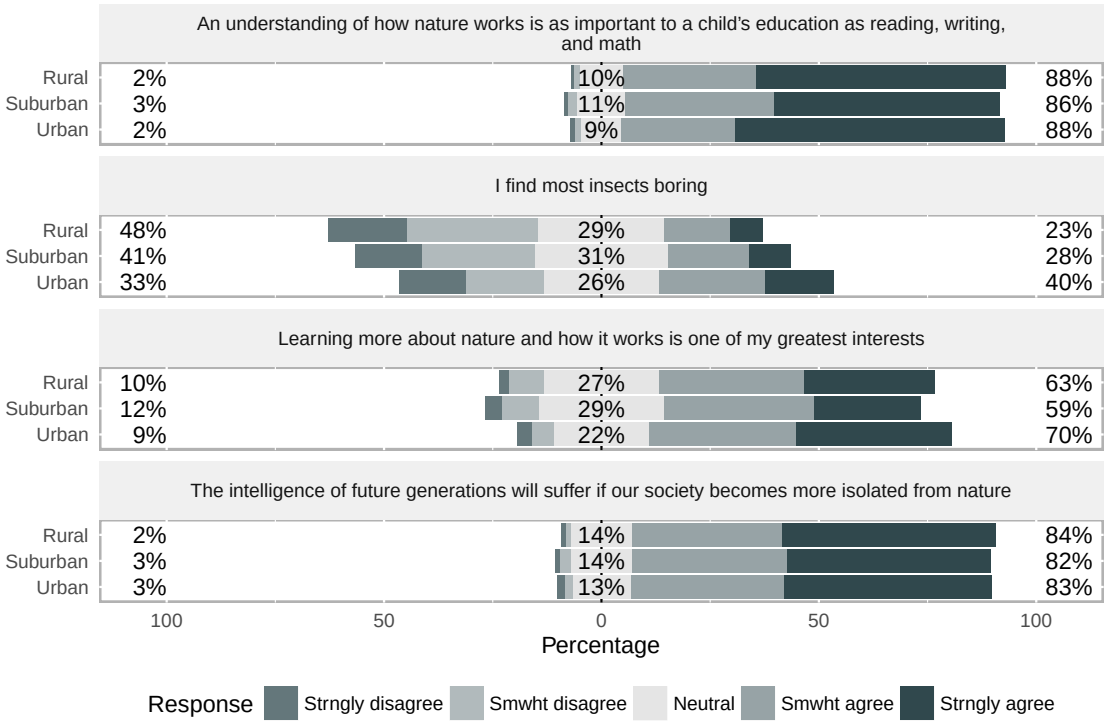


Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

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 4.53). Nearly 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." These views were somewhat more prevalent among white and Hispanic adult Americans. 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.

Figure 4.54: 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."

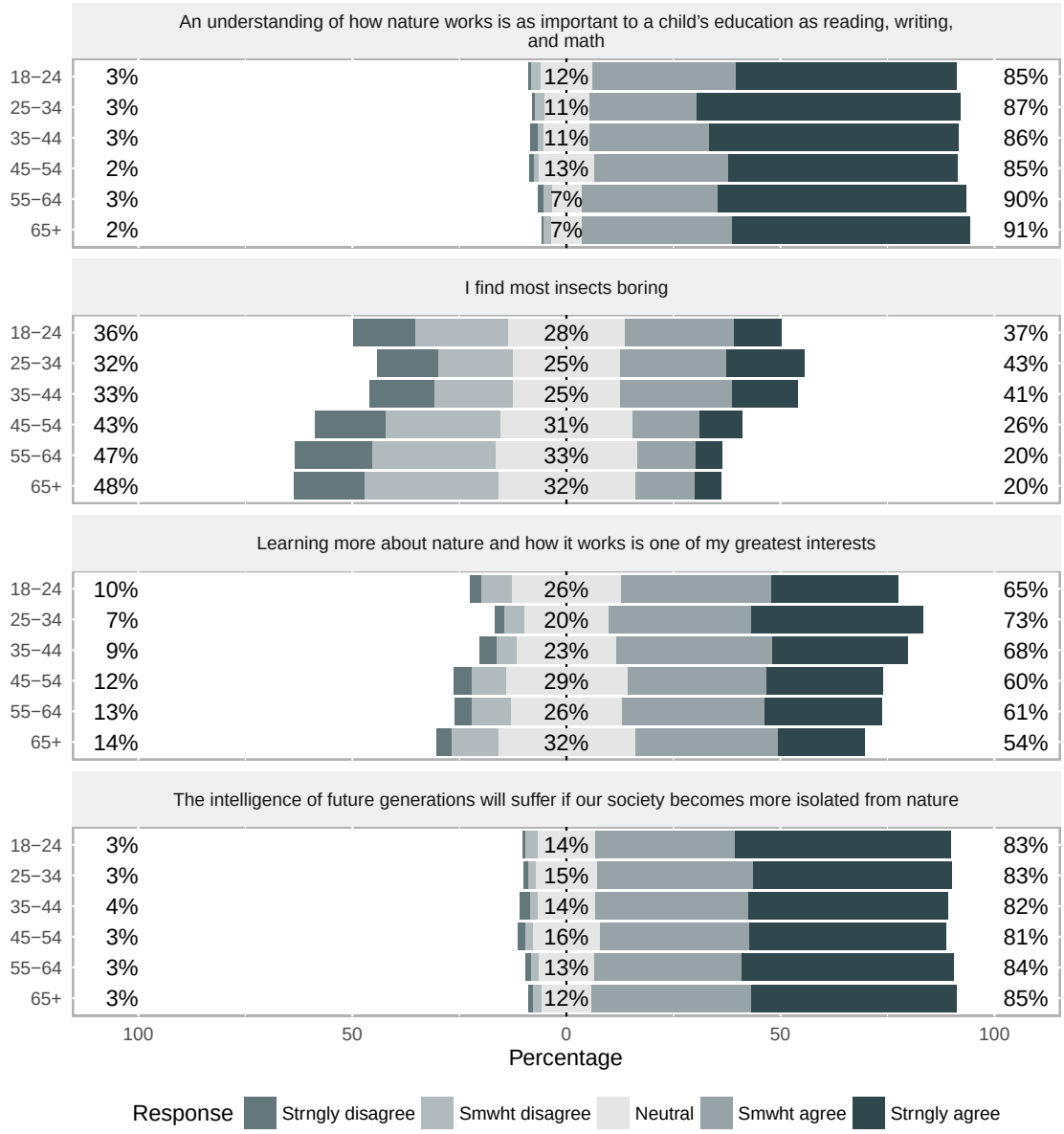
Regardless of location, the overwhelming majority of respondents recognized a clear connection between the development of human intellect and the experience of nature (Figure 4.54). Nearly 90 percent of rural, suburban, and urban respondents agreed that understanding nature is as important as traditional 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, 40 percent of urban residents indicated they found insects boring, compared with just over 20 percent of rural 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 4.55). The desire to learn about how nature works appeared to be strongest among 25–44-year-olds, although this same group was slightly more inclined to find insects boring.

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 all ethnoracial groups (Figure 4.56). For example, approximately 80 percent of all adults endorsed the view that "being in nature gives me a sense of peace," approximately 70 percent

Figure 4.55: 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."

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."

Residential location seemed to have little influence on holding a spiritual value of nature (Figure 4.57). 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, nearly 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 great majority of adults regardless of age reported finding meaning, purpose, and peace through contact with nature (Figure 4.58). 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 25–44-year-olds perceived no connection between religious affiliation and their spiritual feelings for nature, while a similar proportion of older adults *did* see this connection.

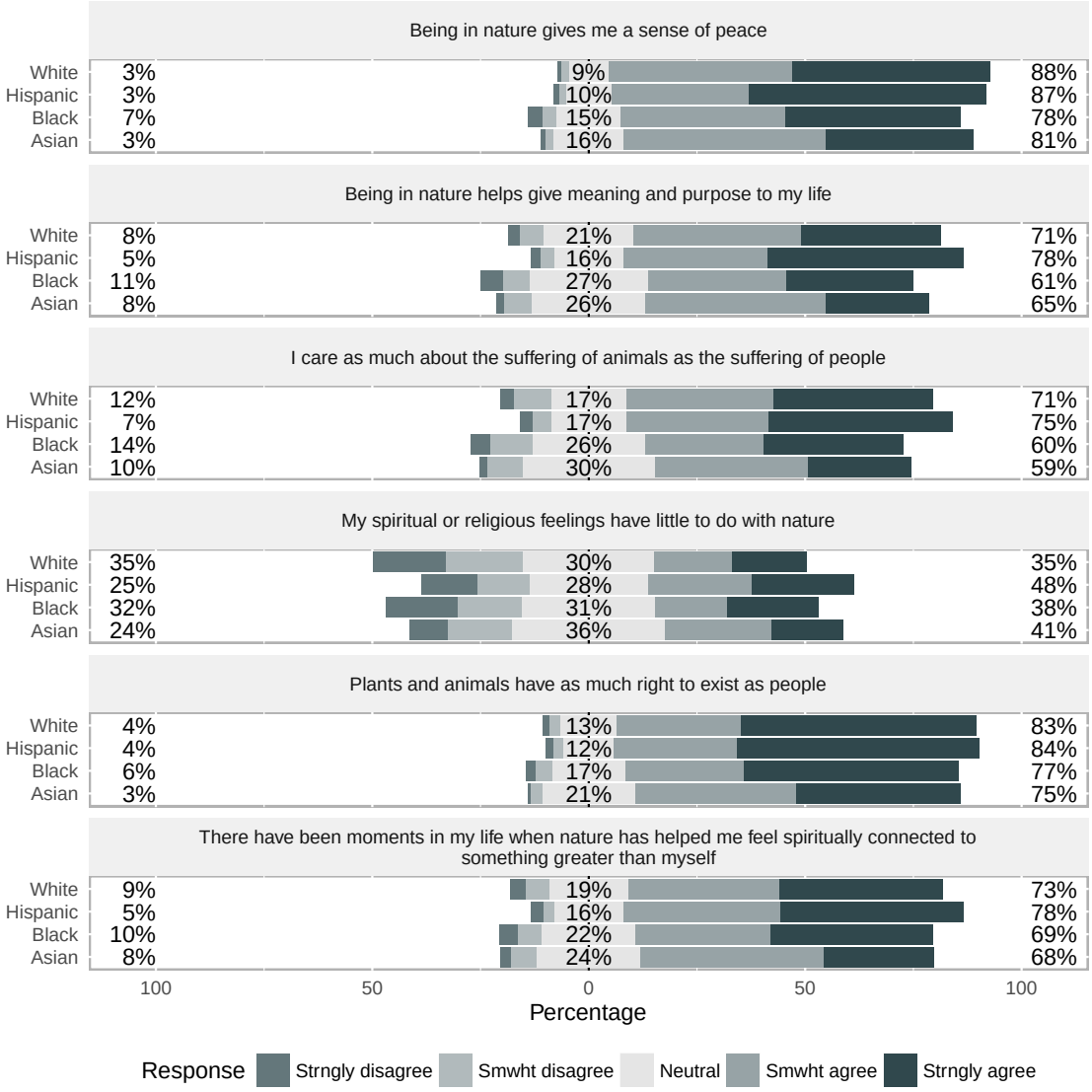
4.3.8 Symbolism

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 4.59).

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 4.60). For urban residents, this symbolic association with nature tended to be most strongly associated with the experience of music (57 percent) and reading books (55 percent). Rural respondents were likeliest to disagree that people no longer had much to learn about the natural world: 72 percent disagreed, compared with 45 percent of urban adults.

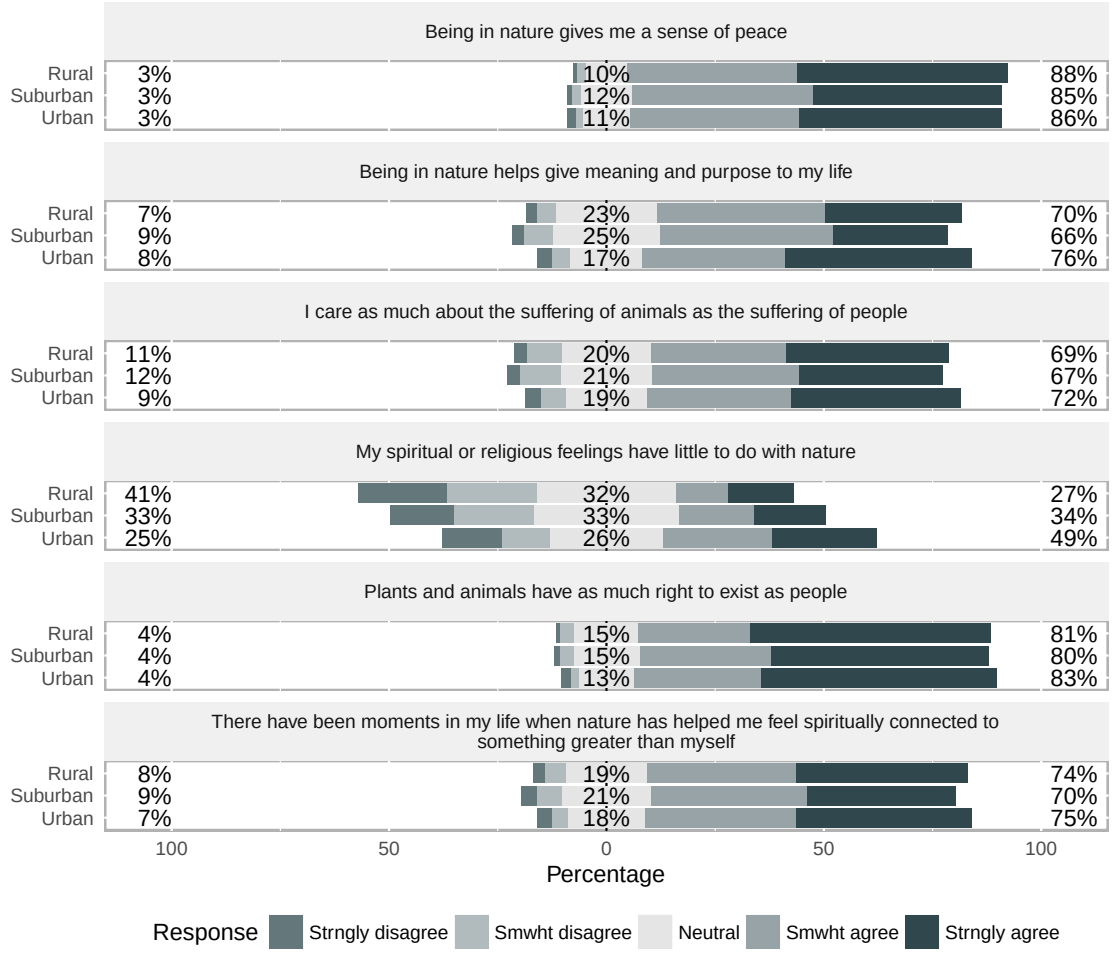
Among age groups, the great majority of especially young adults reported being inspired and most creative when exposed to nature, and enjoyed having things associated with the natural world in their homes (Figure 4.61). Adults 25–44-years-old were far more likely to report the music they most enjoyed reminded them of nature and the outdoors. Interest in the symbolic appeal of nature appeared to peak among 25–34-year-olds and then declined. Nevertheless, older adults were the most likely to support the idea that people have much to learn about how things work from studying nature.

Figure 4.56: Values of Spirituality, by Race and Ethnicity



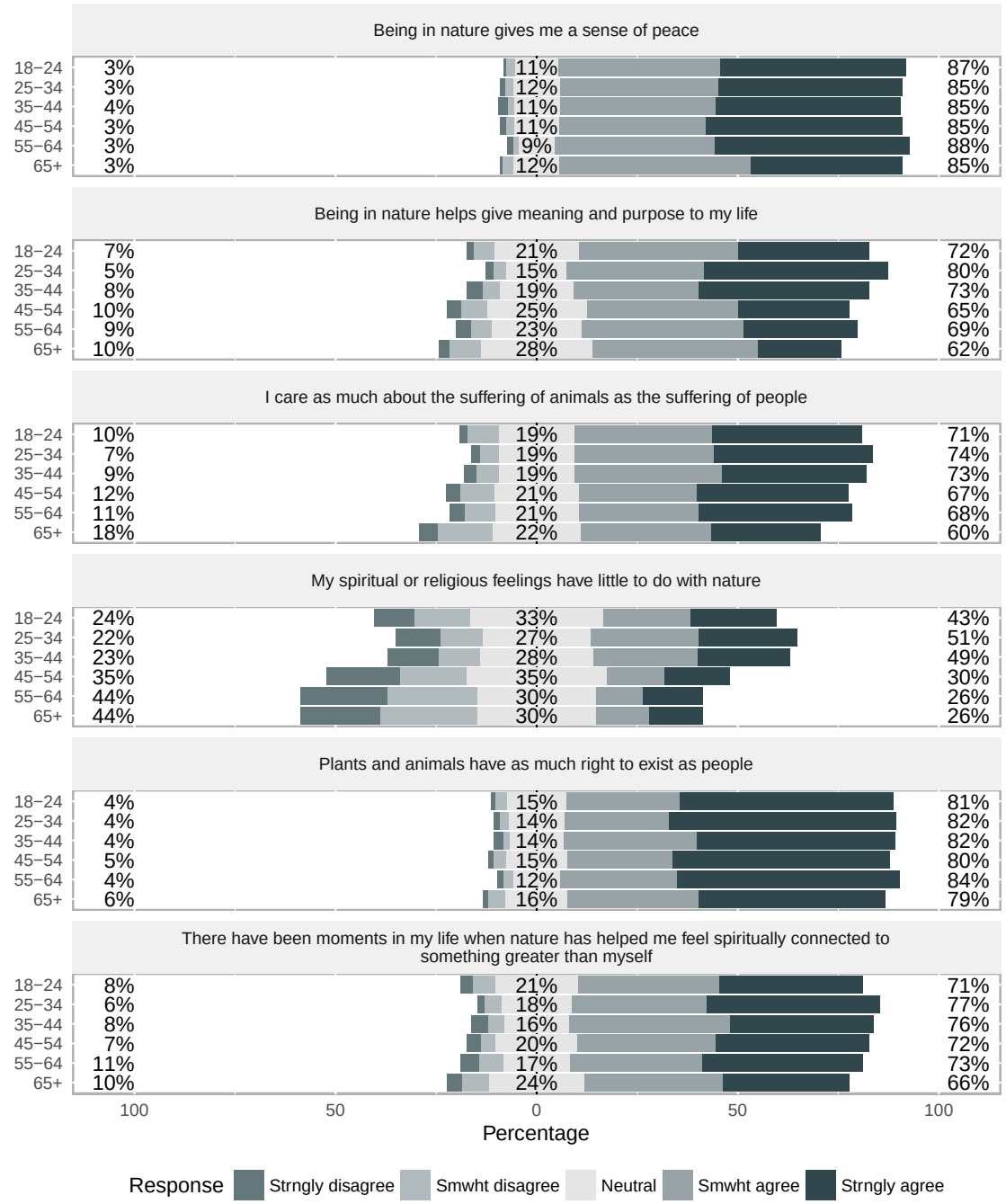
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.57: Values of Spirituality, by Location



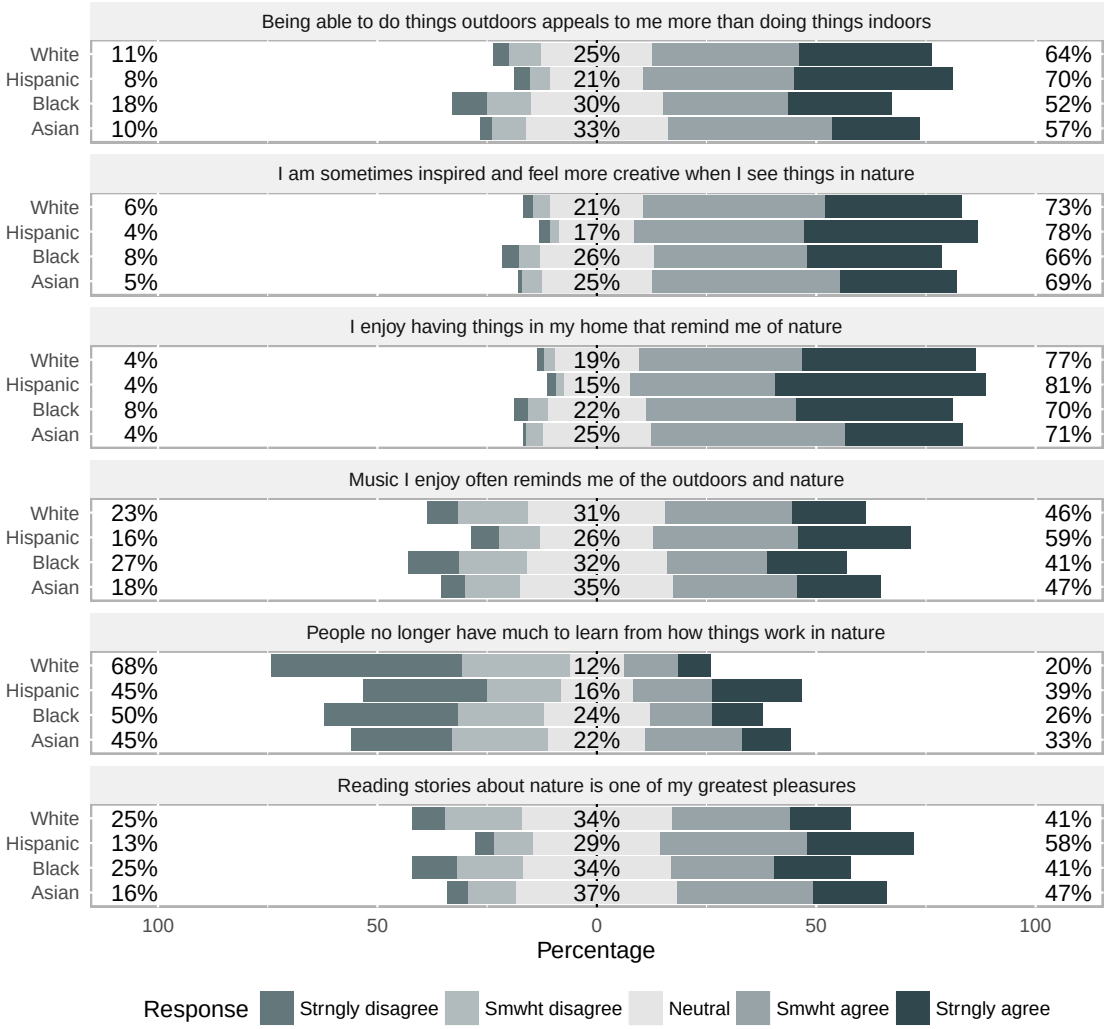
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.58: Values of Spirituality, by Age Category



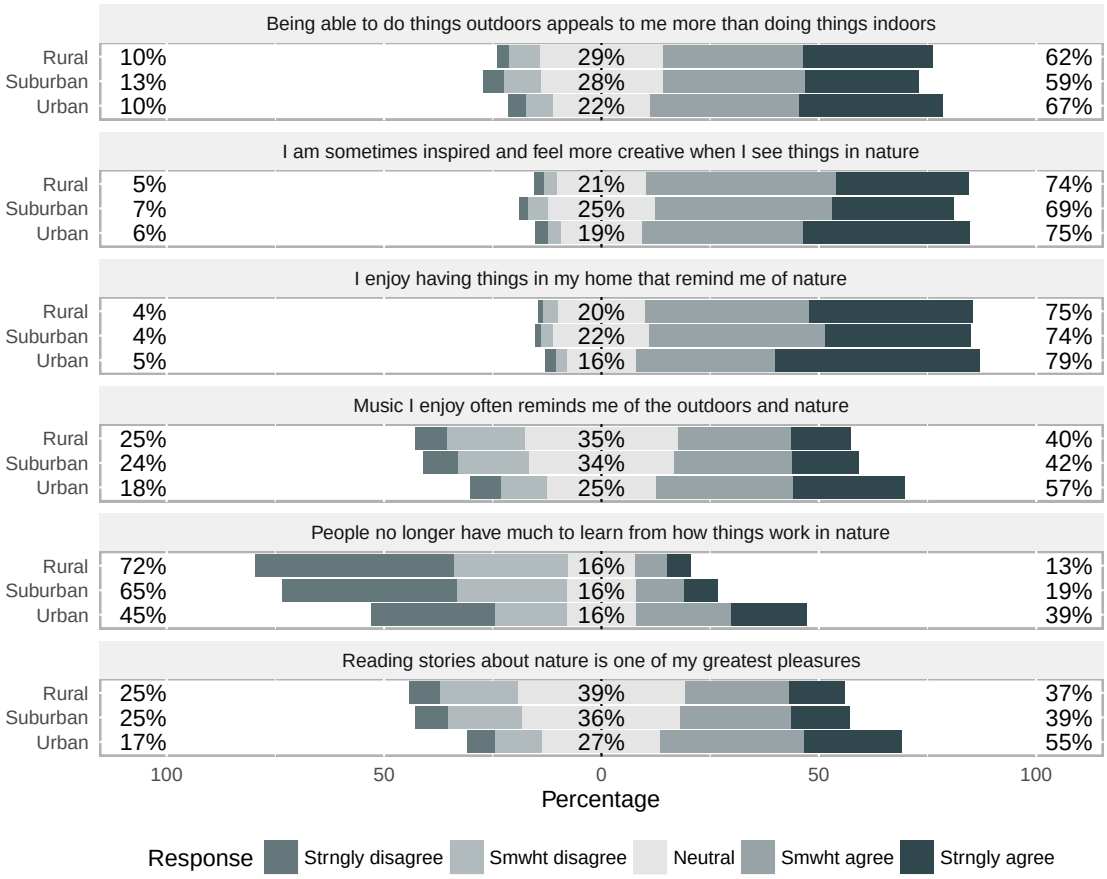
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.59: Values of Symbolism, by Race and Ethnicity



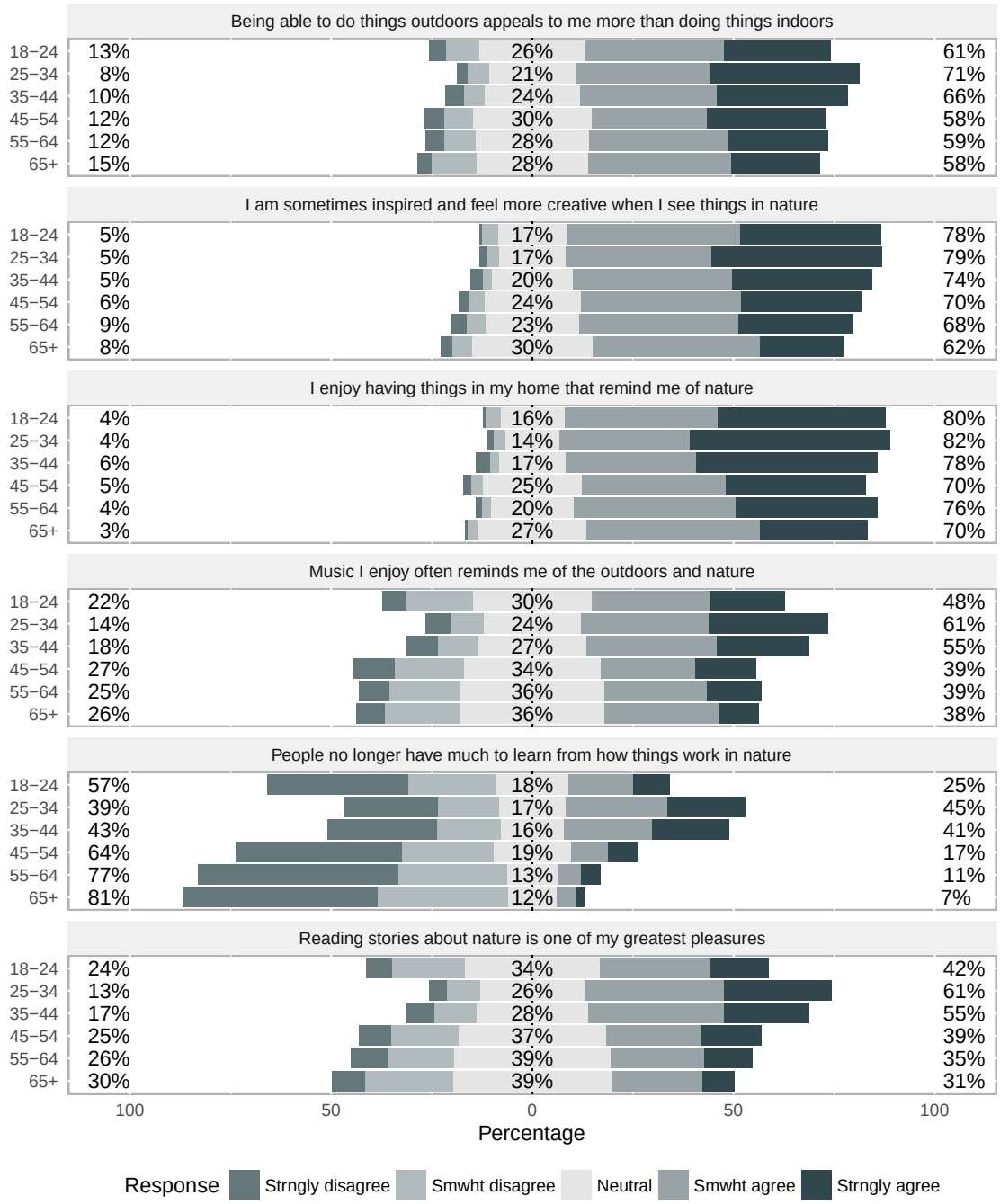
Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "strongly agree" and "somewhat agree."

Figure 4.60: 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 4.61: 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."

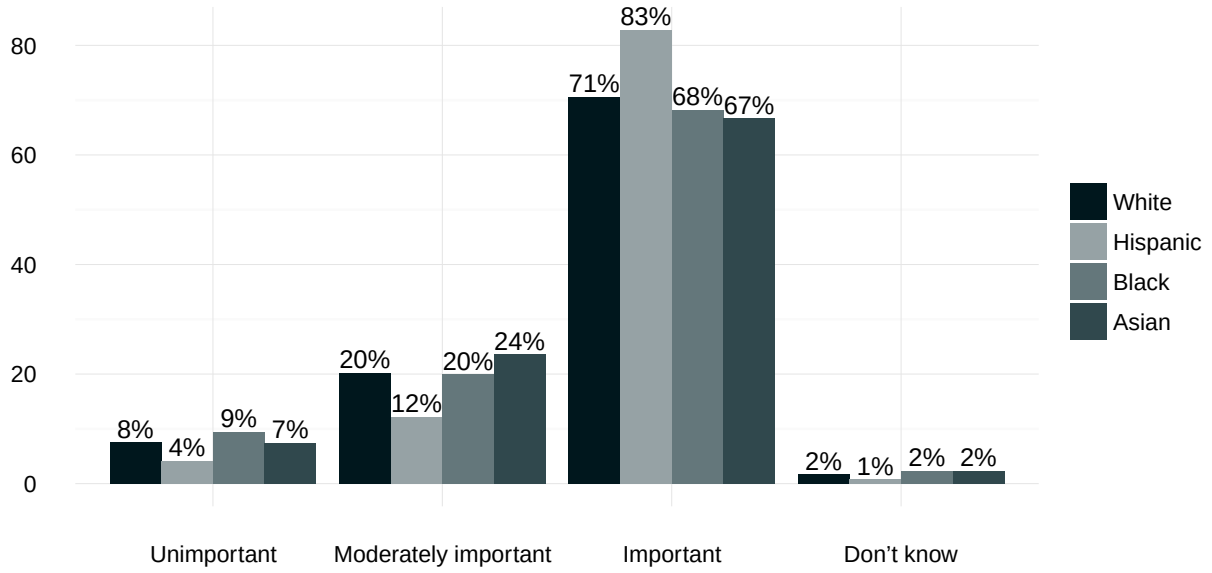
4.4 Benefits of Contact with Nature and the Outdoors

As reported in Chapter 2, 72 percent of American adults agreed that getting outdoors and into nature is very or extremely important for their physical health (Figure 2.26). Moreover, 74 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 4.62). Approximately 70 percent of white, black, and Asian adults noted an important connection between exposure to nature and physical health. An even higher 80 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.

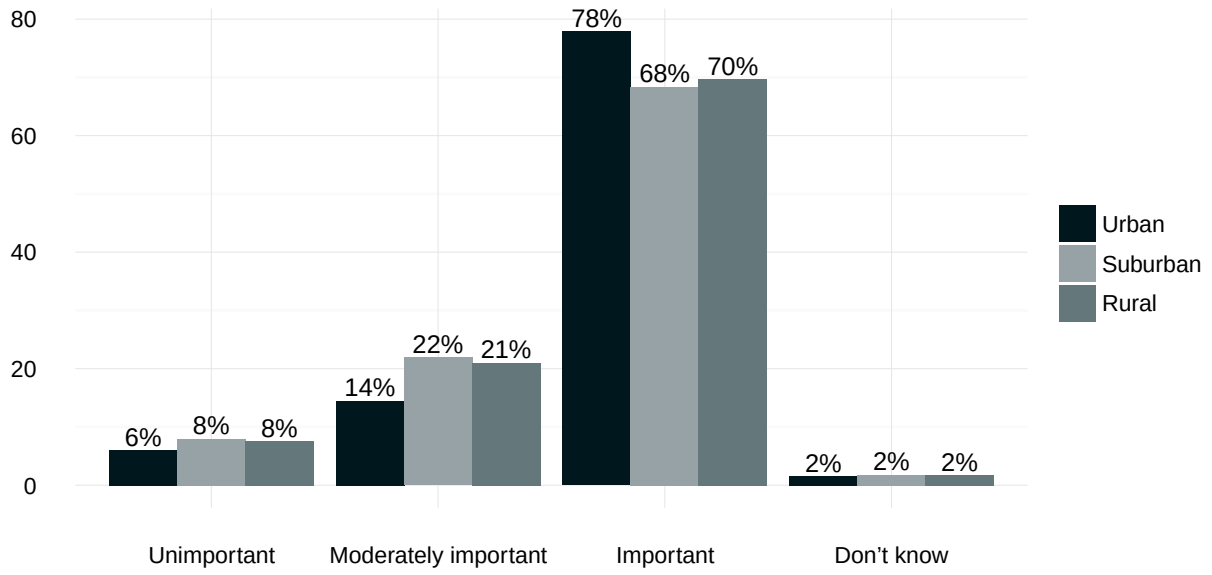
Figure 4.62: Importance of Nature for Helping Physical Health, by Race and Ethnicity



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." "Highly important" combines "very important" and "extremely important."

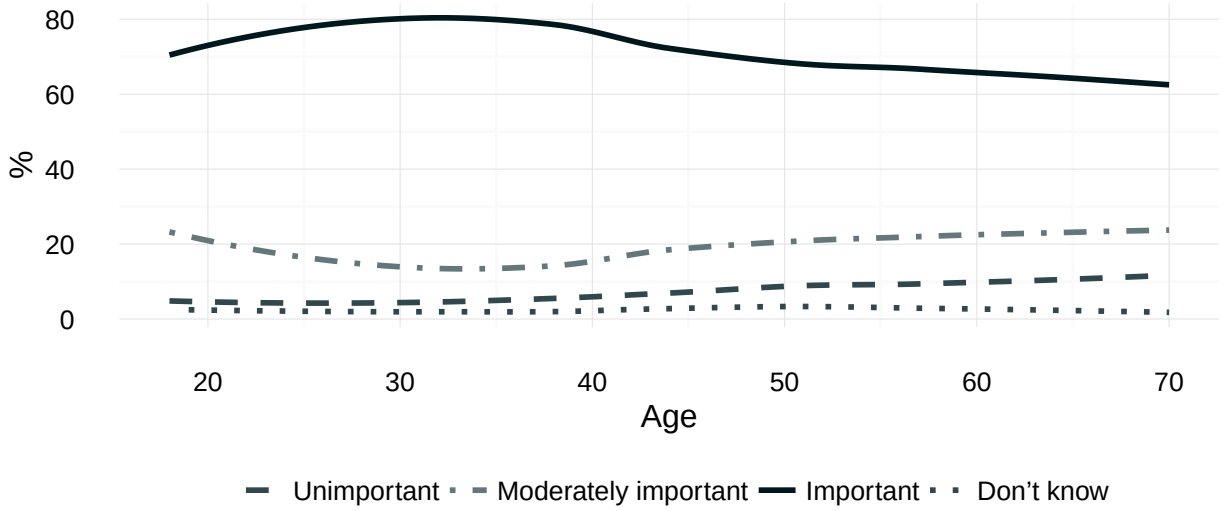
Urban residents were likeliest to perceive an important connection between exposure to nature and their physical health (Figure 4.63). In terms of age, roughly 80 percent of 30-year-olds mentioned an important connection between getting into nature and their physical health (Figure 4.64). The majority of older adults saw exposure to nature as important for their physical health, but at a relatively lower rate.

Figure 4.63: 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." "Highly important" combines "very important" and "extremely important."

Figure 4.64: 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." "Highly important" combines "very important" and "extremely important."

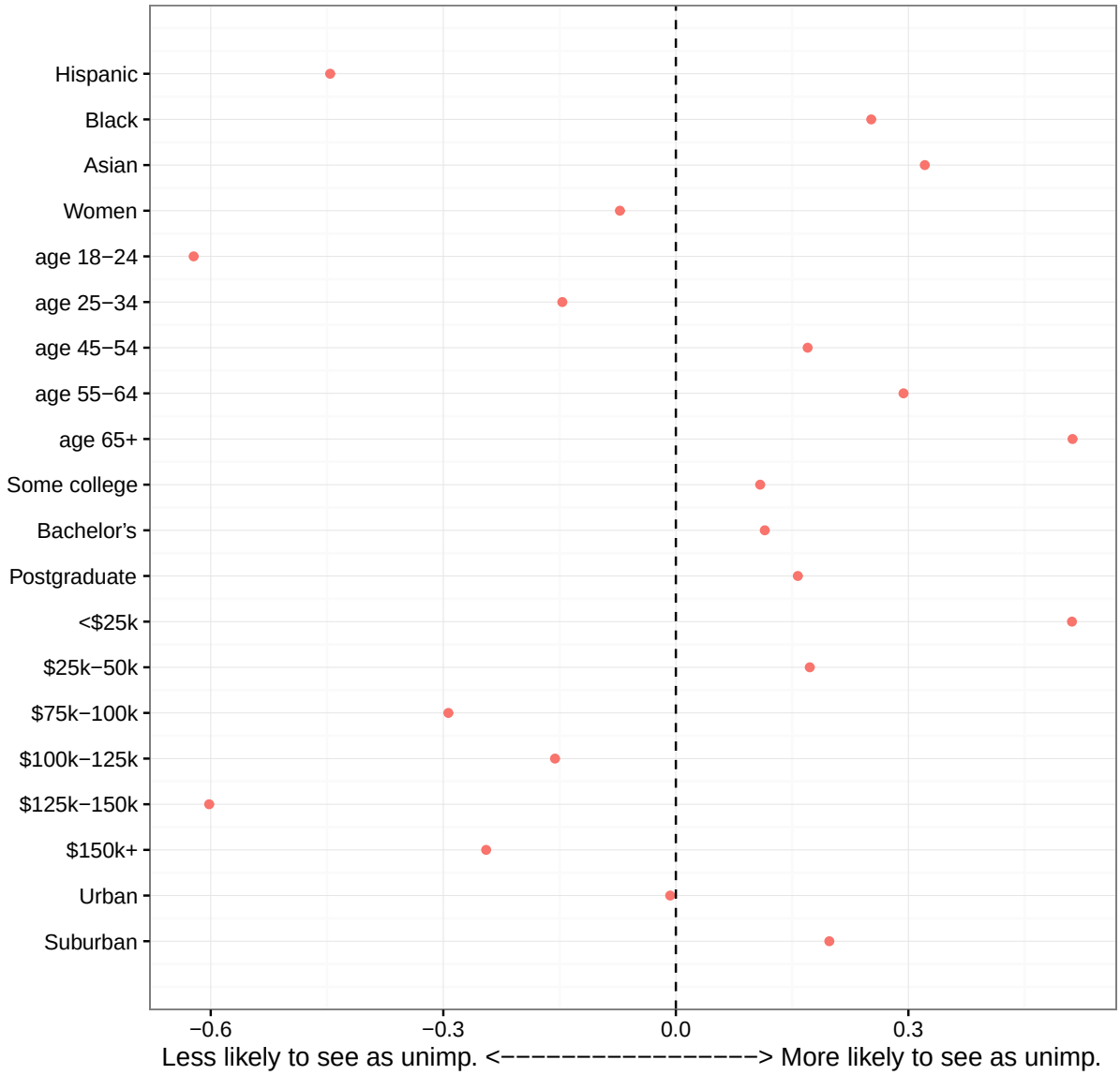
Figure 4.65 shows which respondents were likelier to see nature as unimportant for their physical health (including those who responded "don't know"). Points greater than 0 signify that adults in that group were *more likely* to see nature as unimportant for their physical health. Points less than 0 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, suburban residents, and respondents from lower-income households were slightly likelier to see contact with nature as unimportant for their physical health.
- By far the largest predictor among the factors included was age: older adults were more likely to see nature as unimportant to their physical health, compared to young adults.

4.4.2 Emotional Outlook

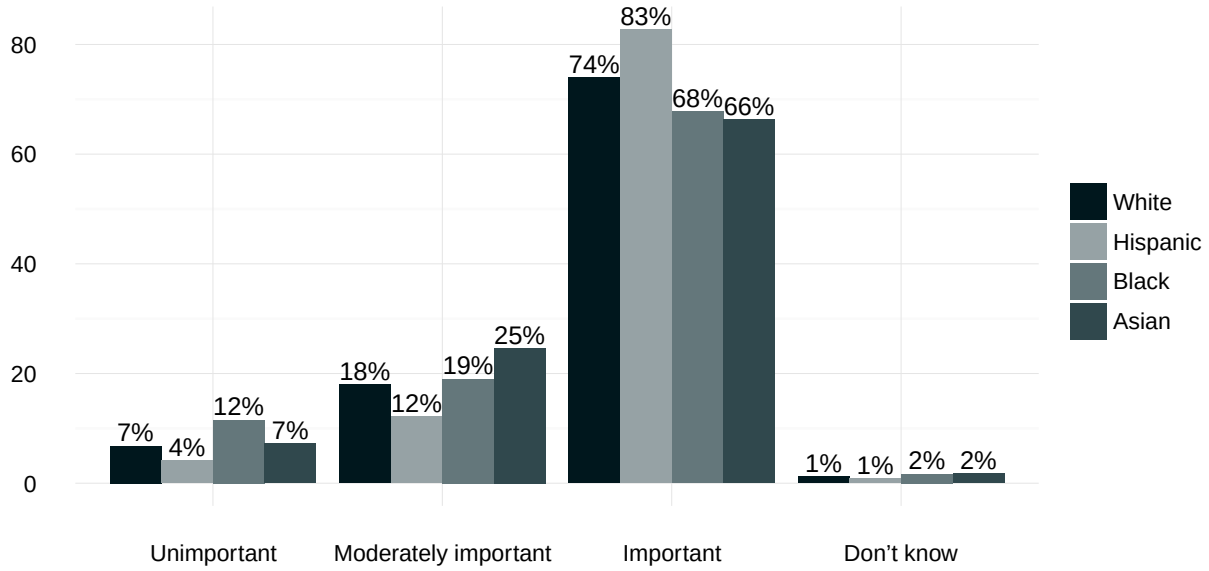
The great majority of adults also perceived an important connection between getting outdoors into nature and their emotional outlook on life (Figure 4.66). Modest differences occurred among ethnoracial groups. The largest proportion who perceived a positive connection between emotional outlook and exposure to nature were Hispanic adults (83 percent), followed by 75 percent of white adults, 68 percent of black adults, and 66 percent of Asian adults. Relatively few adults regarded the connection between nature and their emotional outlook to be unimportant.

Figure 4.65: 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.

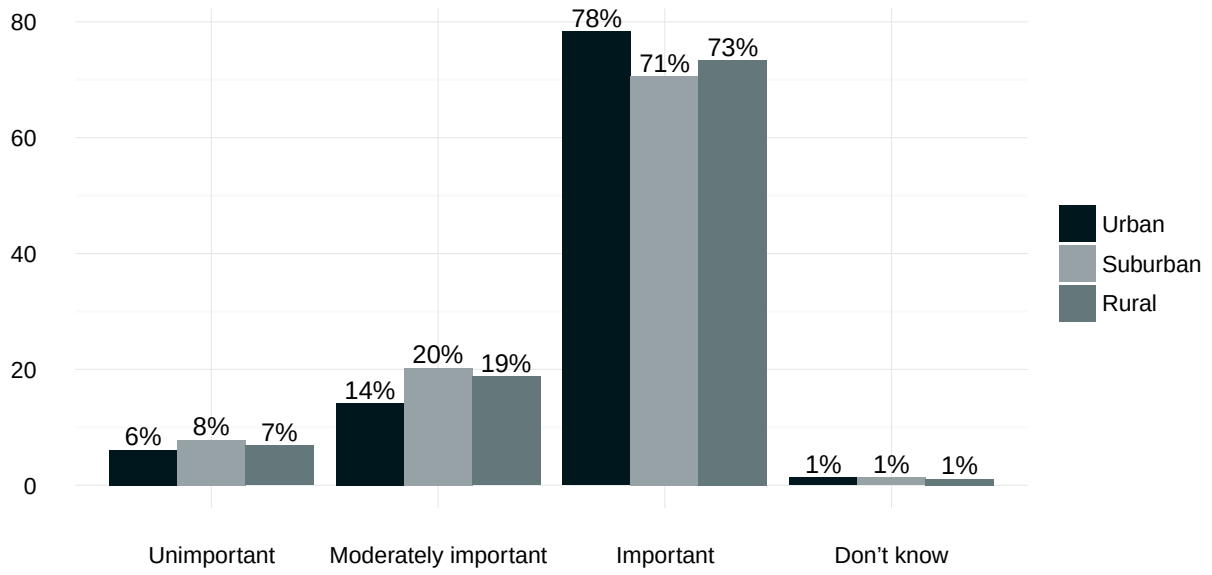
Figure 4.66: Importance of Nature for Helping Emotional Outlook, by Race and Ethnicity



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." "Highly important" combines "very important" and "extremely important."

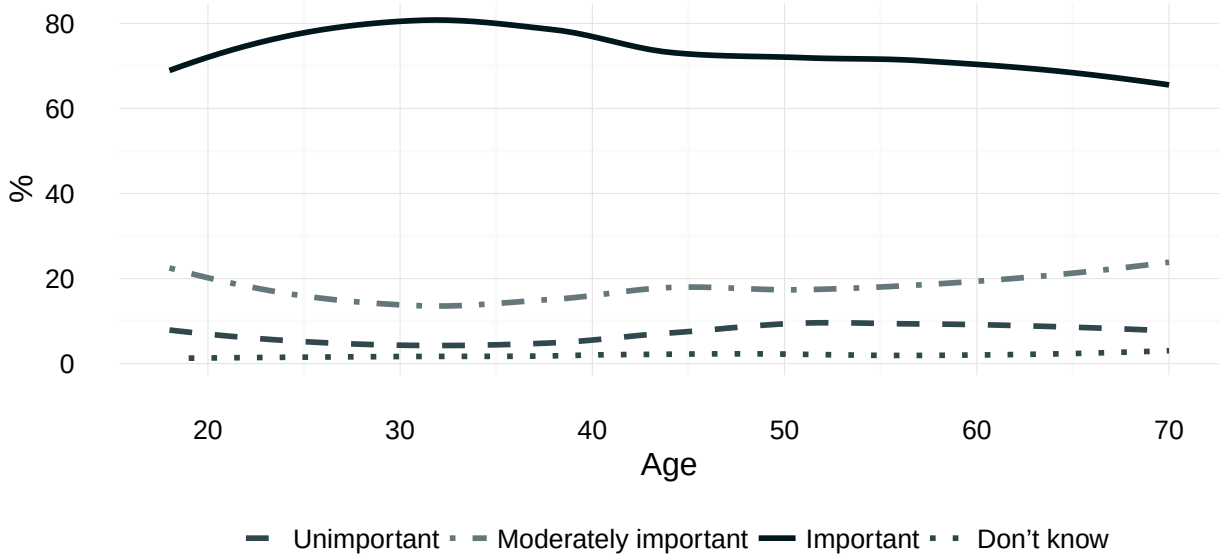
Differences across location were relatively small (Figure 4.67). Urban residents were the most likely to report a perceived important connection between exposure to nature and their emotional outlook on life, as were younger adults (Figure 4.68).

Figure 4.67: 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." "Highly important" combines "very important" and "extremely important."

Figure 4.68: 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." "Highly important" combines "very important" and "extremely important."

Figure 4.69 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 and Asian adults, suburban residents, and lower-income respondents were likelier to see contact with nature as unimportant for their emotional outlook.
- Older adults were also likelier to see contact with nature as unimportant for their emotional outlook on life.

4.5 Barriers and Facilitators to Interests in and Contact with Nature

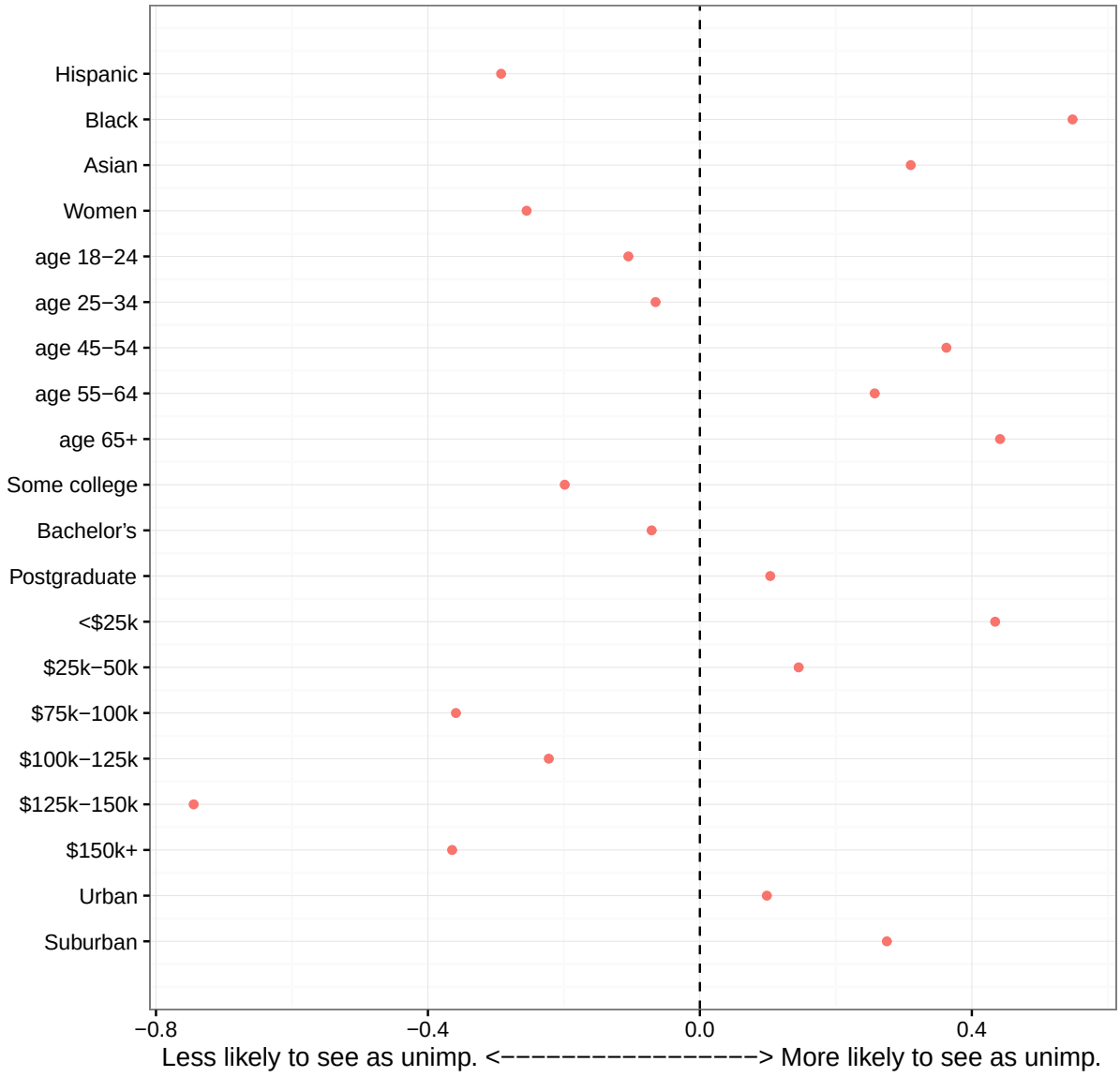
This chapter first examined the relationships of various groups of adults toward nature and wildlife, and then highlighted the physical and emotional benefits associated with contact with the natural world. In this section, we conclude with a consideration of the barriers and facilitators to greater 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 4.70 lists a number of potential obstacles to adults' interests in nature, broken out by ethnoracial groups. Hispanic adults were the most likely to cite growing older and having few friends to be with outdoors as important barriers to their nature interests. Hispanic respondents—followed by black and Asian respondents—were also likeliest to cite a lack of places to enjoy the outdoors and financial factors to be important barriers. White adults tended to regard the lack of outdoor places and financial reasons as relatively less important impediments.

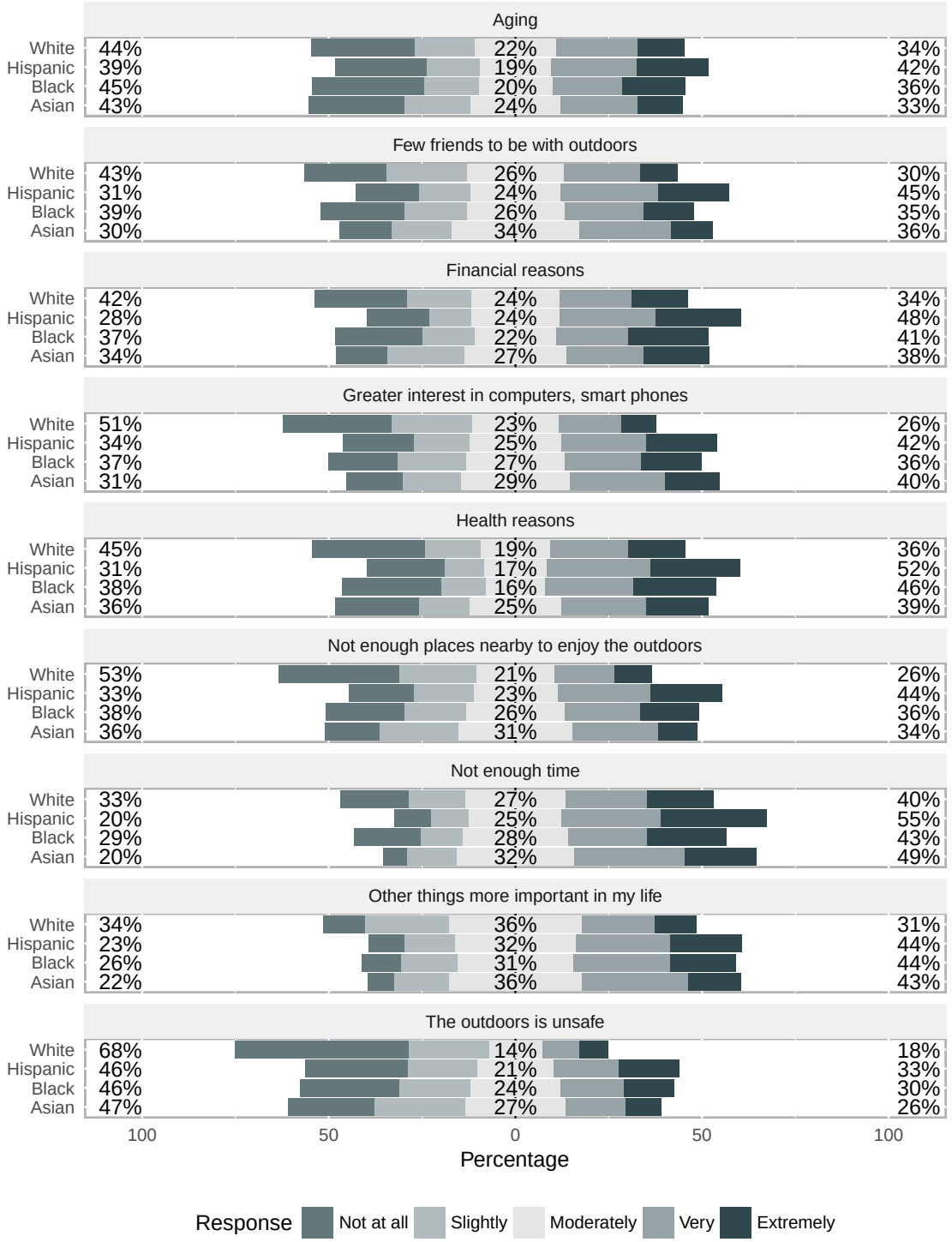
Hispanic and Asian respondents were also the most likely to cite the competing interest in computers, smart phones, and other electronics as obstacles to their interests in nature. White adults were relatively less likely to see these as important obstacles. A lack of time was identified by more

Figure 4.69: 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.

Figure 4.70: Importance of Potential Barriers to Interest in Nature, by Race and Ethnicity



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 ...Few friends to be with outdoors ...Aging ...Greater interest in computers, smart phones, and electronic media ...Not enough places nearby to enjoy the outdoors.

than half of Hispanics and just under half of Asian adults as an important barrier. Approximately 40 percent of black and white adults cited this as a significant obstacle.

Health reasons were reported by a majority of Hispanic adults (52 percent) and nearly a majority of black adults (46 percent) as a significant obstacle to their interests in nature. In contrast, 38 percent of black adults and 36 percent of Asian respondents cited health issues as an unimportant impediment.

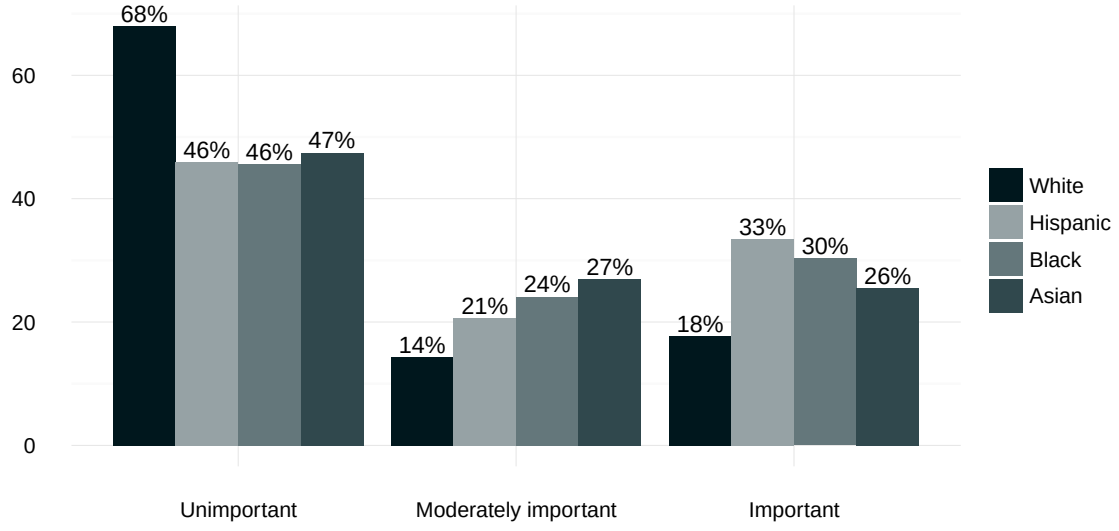
Residential location also aligned with the perceived importance of barriers to respondents' interests in nature (Figure 4.71). Urban residents were likelier to report having few friends to be with outdoors, few places nearby to enjoy outdoors, and greater interest in computers. Urban residents were also likelier to cite health reasons and aging as important barriers, along with not having enough time.

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

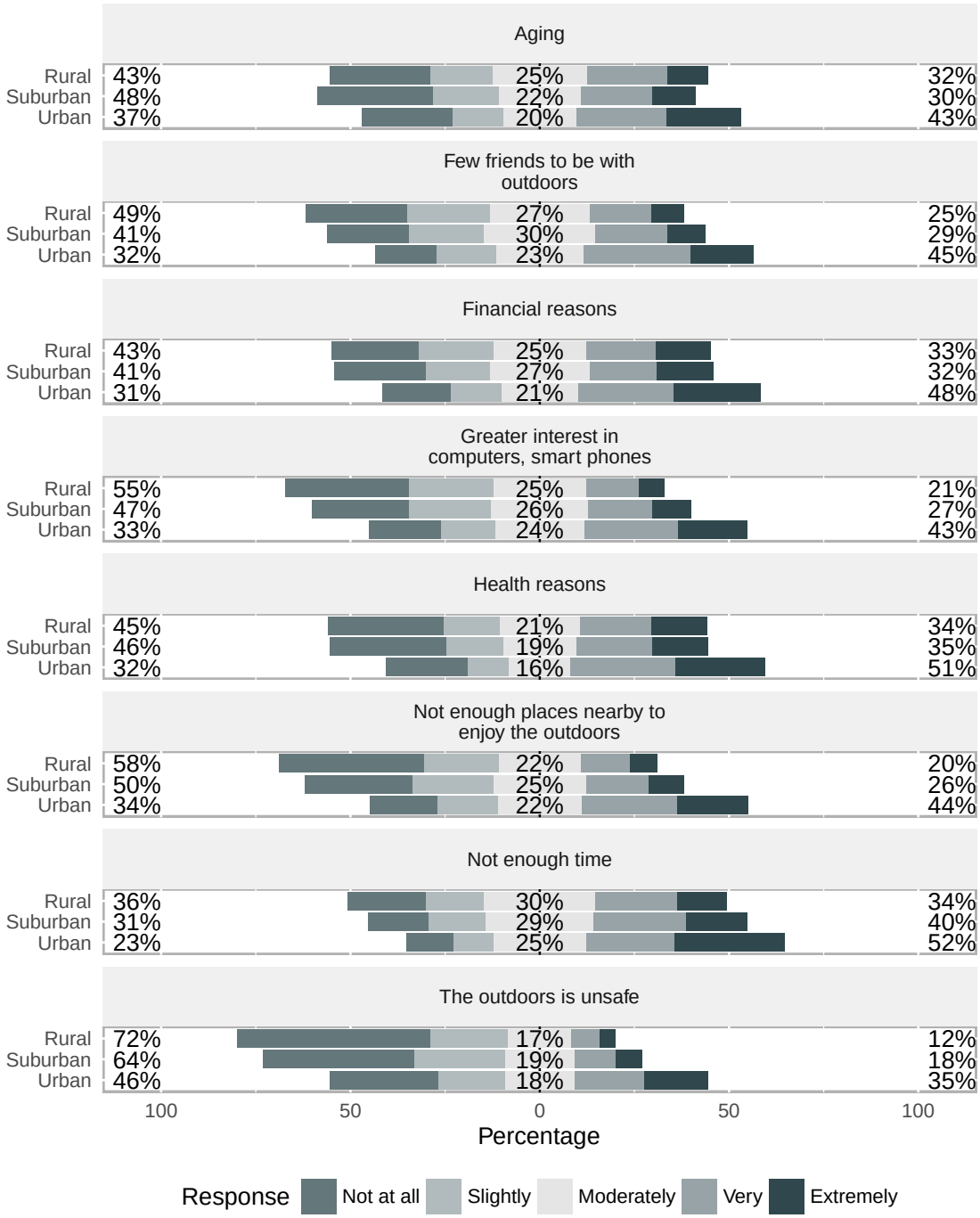
The perceived safety of the outdoors emerged as a major obstacle to spending more time in the outdoors among minority groups *and* among urban residents (Figures 4.70 and 4.71). The majority of white respondents—over two-thirds—perceived this factor as a barrier of relatively minor importance, in contrast to a majority of black, Asian, and Hispanic respondents, who regarded this concern as moderately, very, or extremely important (Figure 4.72). Moreover, as Figure 4.44 showed above, most minority respondents, especially 62 percent of black adults, agreed that times have become so dangerous that parents cannot allow their children to be outdoors on their own.

Figure 4.72: Safety of the Outdoors as a Barrier to Nature Interest, by Race and Ethnicity



Note: "Unimportant" combines "not at all important" and "slightly important." "Highly 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.

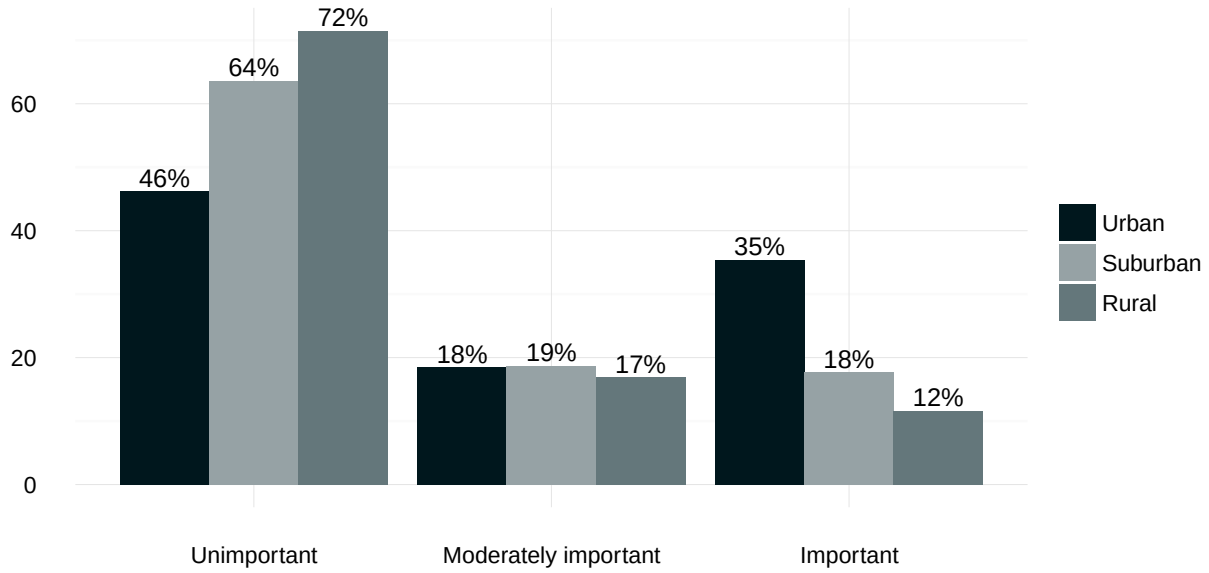
Figure 4.71: Importance of Potential Barriers to Interest in Nature, by Location



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 ...Few friends to be with outdoors ...Aging ...Greater interest in computers, smart phones, and electronic media ...Not enough places nearby to enjoy the outdoors.

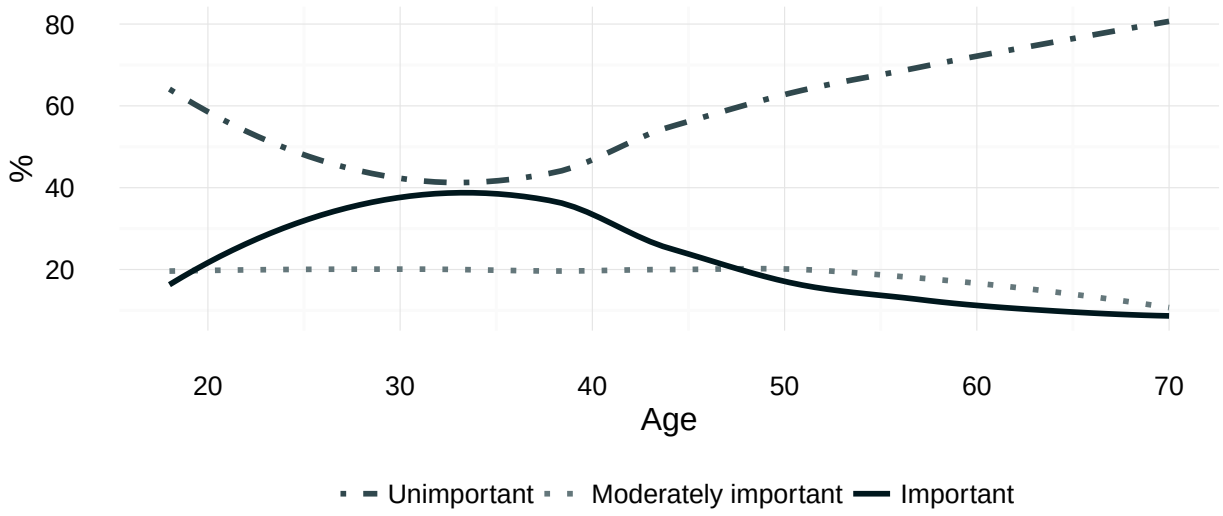
Regarding the influence of where respondents lived, the safety of the outdoors was perceived to be a minor barrier for the majority of rural and suburban residents (Figure 4.73). By contrast, more than one-third of urban residents cited the safety of the outdoors as a very or extremely important obstacle to their greater interests in nature. The perceived safety of the outdoors in hindering interest in nature also varied by age (Figure 4.74). Concern regarding this obstacle peaked among adults in their 30s, reaching about 40 percent of adults surveyed, and then declined to approximately 15 percent among older adults. The influence in child-rearing may have been an important factor here.

Figure 4.73: 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." "Highly important" combines "very important" and "extremely important."

Figure 4.74: 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." "Highly important" combines "very important" and "extremely important."

Figures 4.72, 4.73, and 4.74 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 4.75).

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 an 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 4.76 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.)

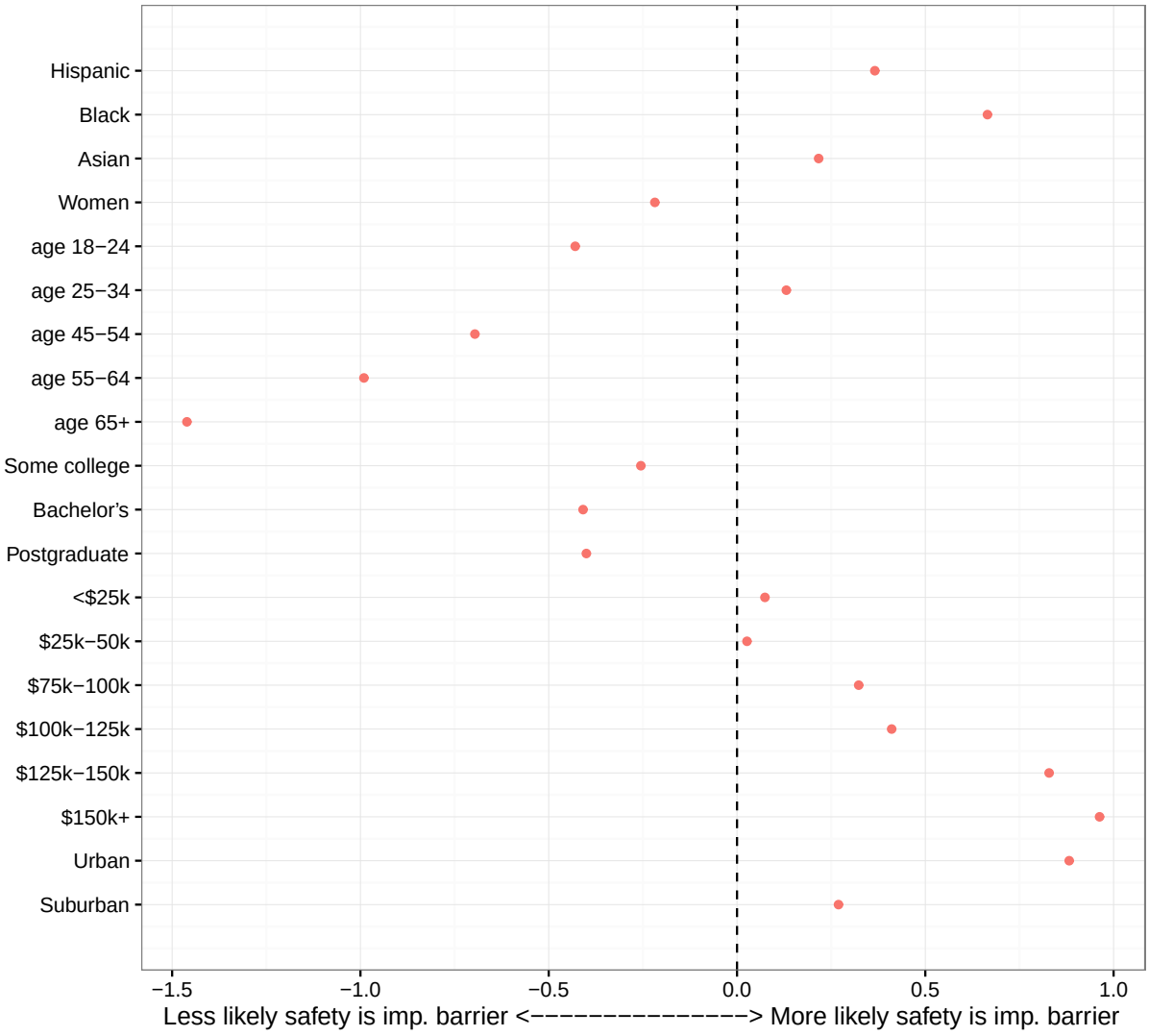
- Blacks were more likely to dislike being in nature by themselves compared to whites.
- Women were not different from men in their aversion to being alone in nature.
- Older respondents were less likely to dislike being alone in nature.
- Compared with middle-income respondents, low-income and high-income respondents were more likely to dislike being in nature alone, especially very wealthy respondents.
- Urban and suburban residents were likelier to be averse to being in nature by themselves.

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.

Time for Nature

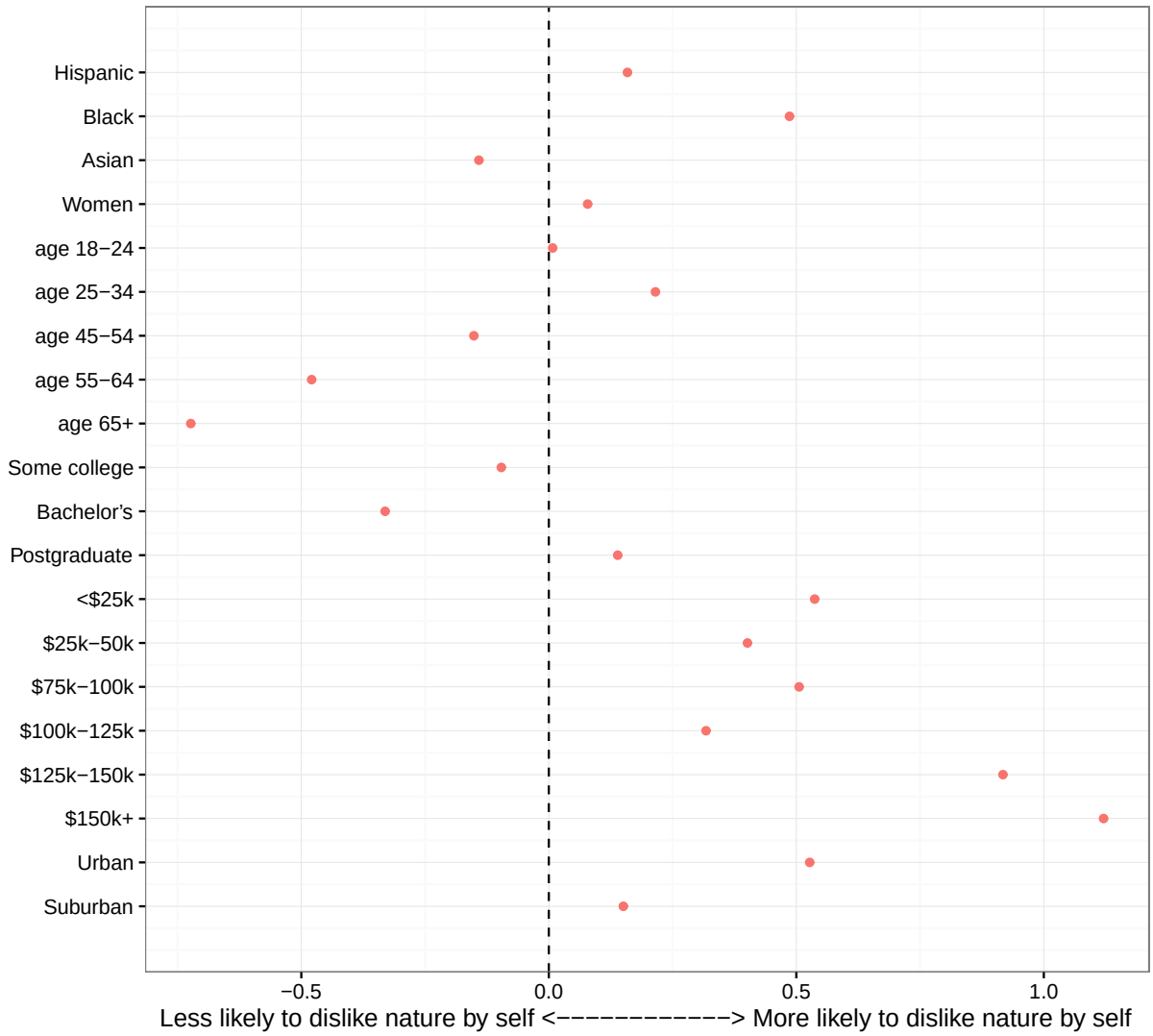
Despite the relatively strong and widespread interest in nature expressed by adults of all racial and ethnic backgrounds, the lack of time was especially important for Hispanic, Asian, and black adults (Figure 4.77). For urban adults, too, a lack of time was especially salient (Figure 4.78).

Figure 4.75: Likelihood that the Safety of the Outdoors is Very or Extremely Important Barrier to Interests in Nature



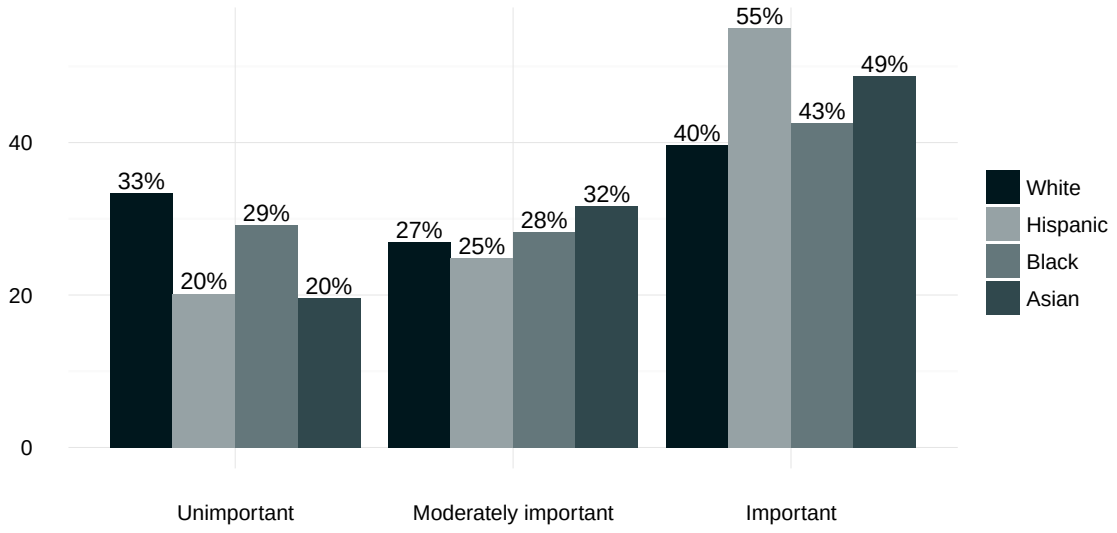
Note: The outcome is the likelihood that a respondent perceives that the outdoors is unsafe is a very or extremely important hindrance to their interests in nature today. The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

Figure 4.76: Likelihood of Disliking Being in Nature Alone



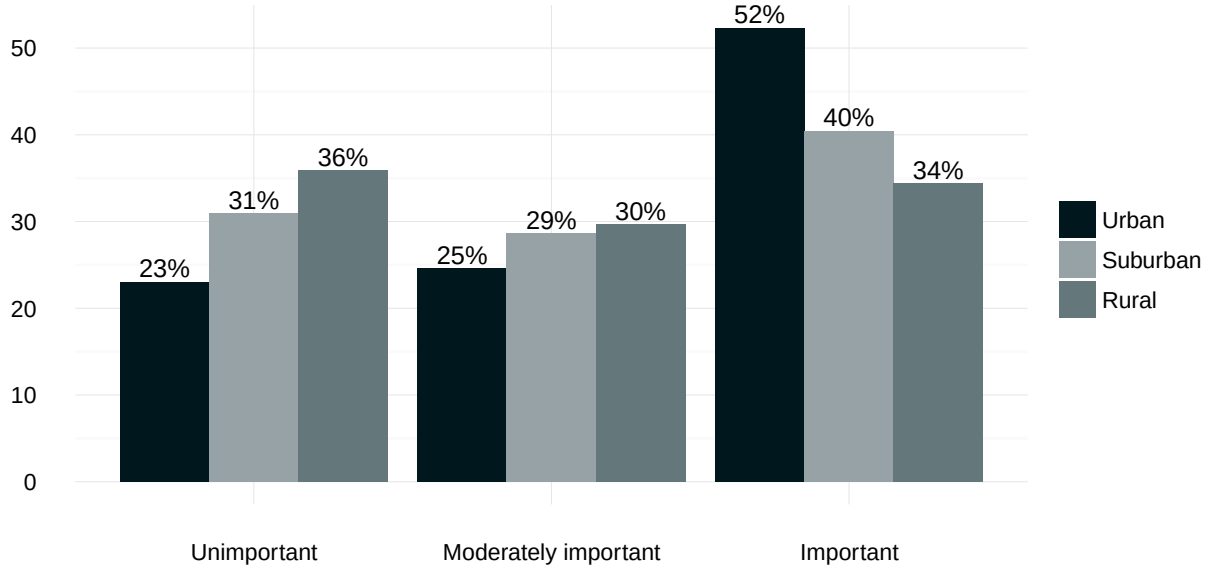
Note: The outcome is the likelihood that a respondent strongly agrees that "I don't like being in nature by myself." The dot represents the point estimate of the log odds of that particular factor, net of the other factors included in the model, in relation to the outcome.

Figure 4.77: 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." "Highly important" combines "very important" and "extremely important."

Figure 4.78: Lack of Time as a Barrier to Nature Interests, by Location

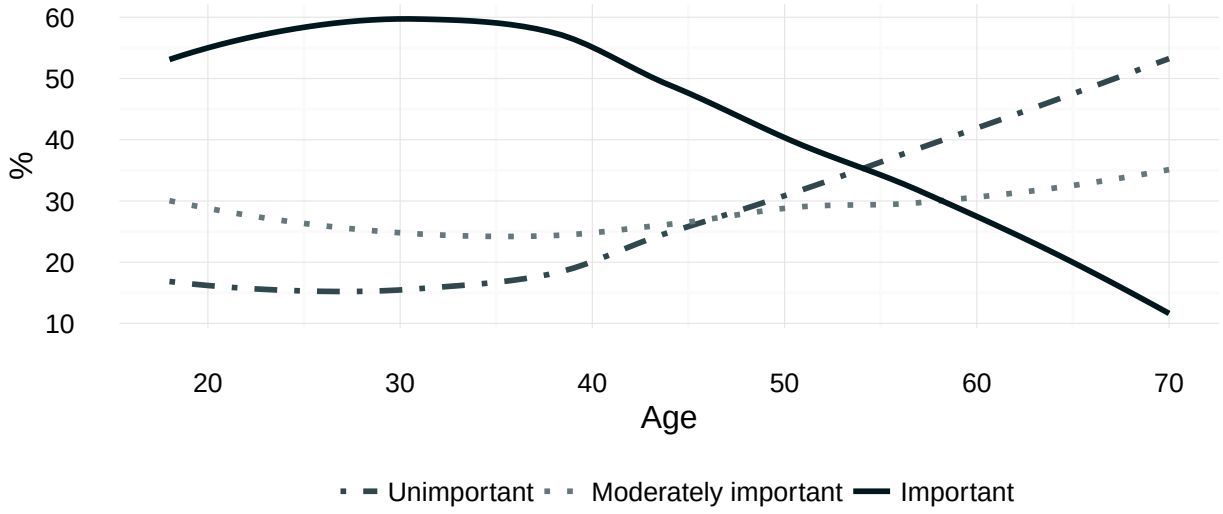


Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time. "Unimportant" combines "not at all important" and "slightly important." "Highly important" combines "very important" and "extremely important."

Analysis by age suggests a lack of time is highly dependent on an adults' stage in life (Figure 4.79). 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 10 percent of adults in their late-60s regarding this as an important barrier.

Figure 4.79: Lack of Time as a Barrier to Nature Interests, by Age



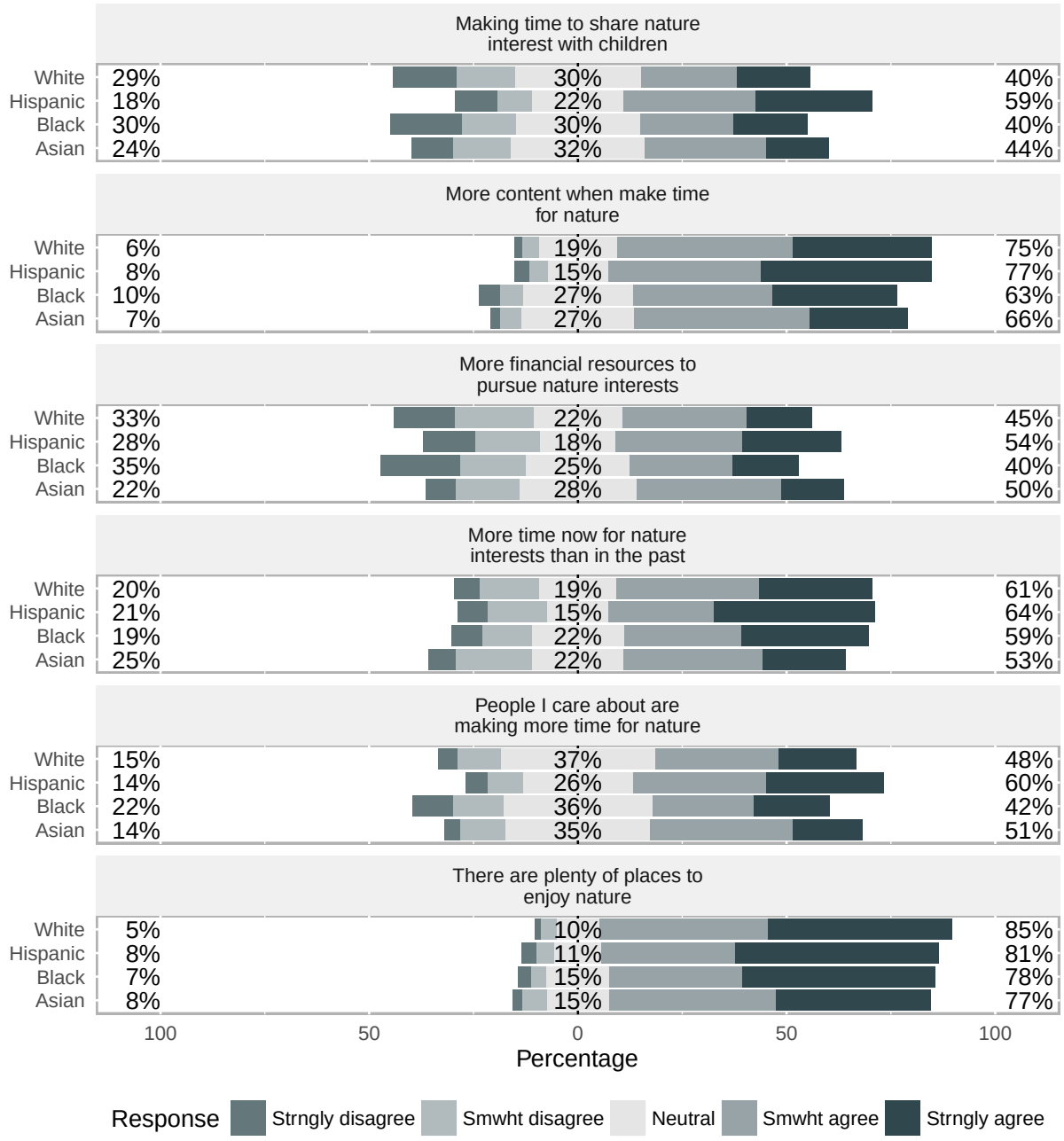
Note: Respondents older than 70 are excluded due to small sample size. Data points are smoothed using the LOESS smoothing method (locally weighted smoothing). Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time. "Unimportant" combines "not at all important" and "slightly important." "Highly important" combines "very important" and "extremely important."

4.5.2 Facilitators

Facilitators that could enhance interest in and contact with nature include social relationships associated with family and friends, financial resources, available time, and feelings of contentment and satisfaction in the outdoors. Figure 4.80 shows how these varied among different ethnoracial groups. Among Hispanic respondents, 60 percent indicated that people close to them are making more time to experience nature, followed by 51 percent of Asian respondents, and 48 percent of white adults. In contrast, less than a majority (42 percent) of black adults indicated this was the case in their lives. Regarding the influence of family and children, nearly 60 percent of Hispanic adults reported making time to share their interests in nature with children. By contrast, 40 percent of black and Asian adult respondents indicated this was occurring in their lives.

About one-half of Asian and Hispanic respondents reported having more financial resources to pursue interests in nature and the outdoors, compared with 45 percent of white and 40 percent of black respondents. A majority of adults across all ethnoracial groups indicated they have more time for nature now than in the past. This included 60 percent of black, Hispanic, and white respondents, followed by 53 percent of Asian adults. The great majority of (nearly 80 percent) all racial and ethnic groups indicated there were "plenty" of places for them to enjoy nature. Finally, the majority of all adults reported being more content when they find time to be in nature and the outdoors.

Figure 4.80: Potential Facilitators to Contact with Nature, by Race and Ethnicity

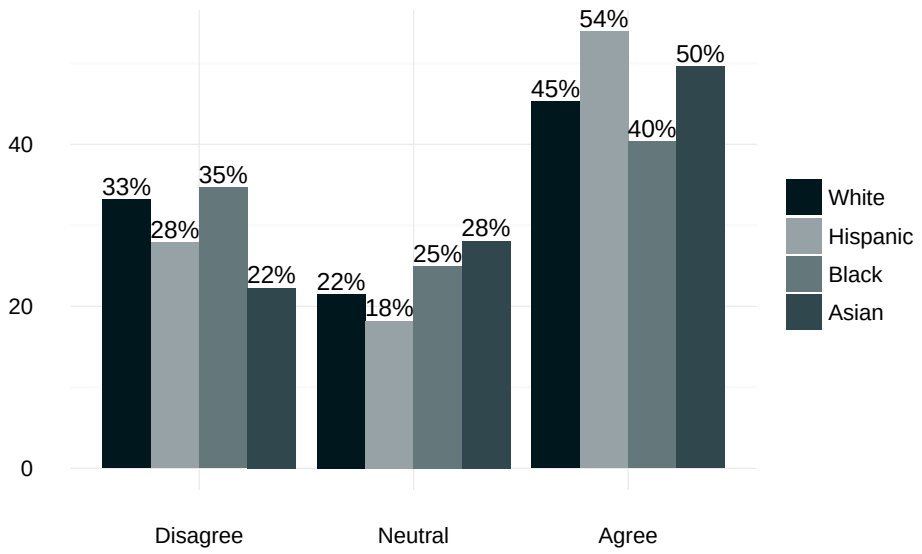


Note: The percentages on the left side of the chart combine responses "strongly disagree" and "somewhat disagree." The percentage in the middle reports "neither agree nor disagree." The percentages on the right side combine responses "somewhat agree" and "strongly agree." Question wording: How much do 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.

Financial Resources and Access to Nature

Outdoor activities typically require some degree of financial expenditure for equipment, transportation costs, license fees, and sometimes time from work. About one-half of Hispanic and Asian respondents somewhat or strongly agreed they have more financial resources to pursue their interests in nature than in the past (Figure 4.81), compared with 45 percent of white adults and 40 percent of black adults.

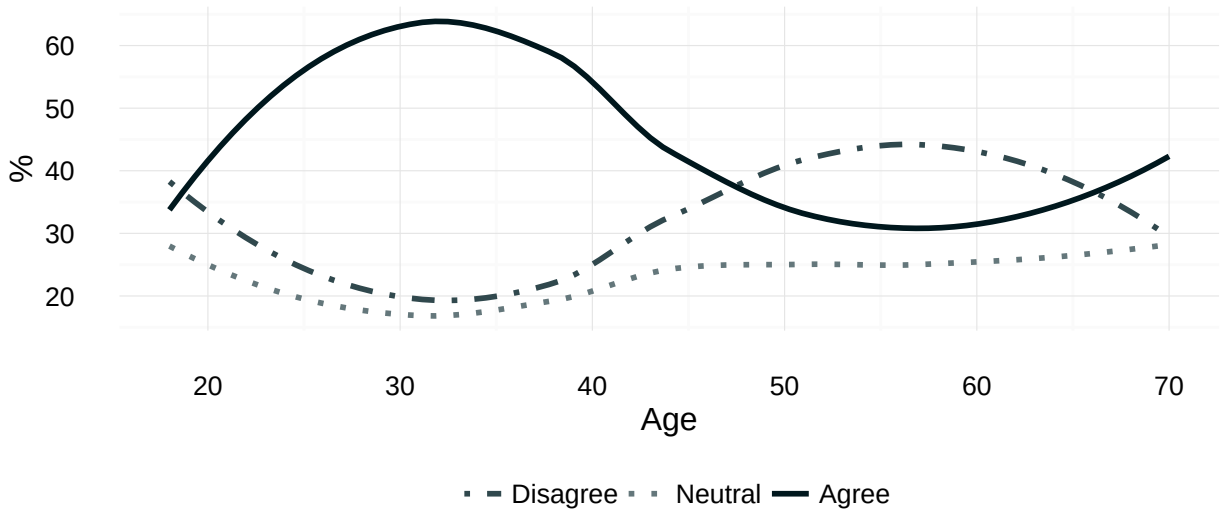
Figure 4.81: More Financial Resources to Pursue Interests in Nature, by Race and Ethnicity



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."

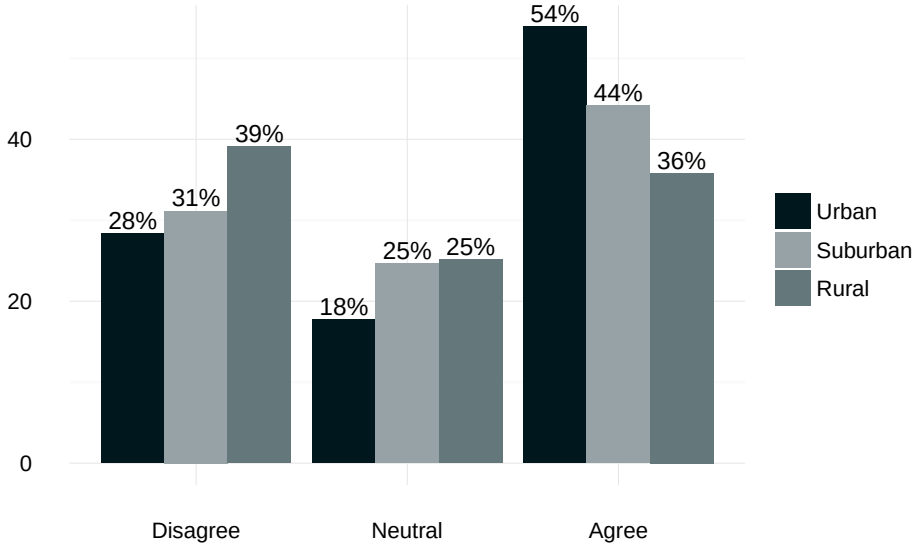
The availability of financial resources varied by age (Figure 4.82). The very youngest adults surveyed, alongside adults in their 50s were least likely to agree they had more financial resources to pursue their interests in nature: about one-third agreed. In contrast, the majority (60 percent) of adults in their 30s said they had sufficient financial resources to pursue their nature interests. With respect to residential location, the majority of urban residents (54 percent) agreed they have more financial resources to pursue their nature interests, followed by suburban (44 percent) and rural residents (36 percent) (Figure 4.83).

Figure 4.82: 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 4.83: 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."

Satisfaction with Places to Access Nature

"Access" to nature can include both the quantity of places and their quality. We explored adults' perceptions 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 4.27). Over 80 percent of white and Hispanic adults agreed to this statement, followed by nearly 80 percent of black and Asian respondents. One-half of Hispanic respondents (49 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 4.27: Agreement that There Are "Plenty" of Places to Enjoy Nature, by Race and Ethnicity

Categories	White	Hispanic	Black	Asian
Strngly agree	44%	49%	46%	37%
Smwht agree	40%	32%	32%	40%
Neutral	10%	11%	15%	15%
Smwht disagree	4%	4%	4%	6%
Strngly disagree	1%	3%	3%	2%

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 4.28). Still, a sizable minority were ambivalent or expressed dissatisfaction. Black, Hispanic, and Asian respondents were likelier to be neutral or dissatisfied than white respondents.

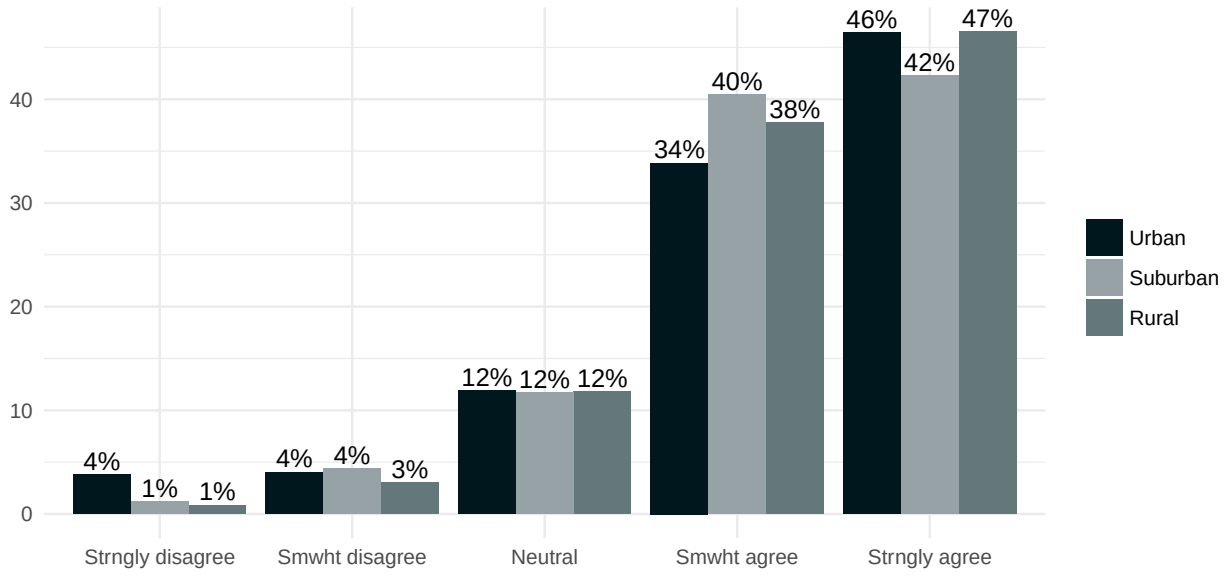
Table 4.28: Satisfaction with Places for Outdoor and Nature Recreation, by Race and Ethnicity

Categories	White	Hispanic	Black	Asian
Very dissatisfied	3%	5%	4%	1%
Smwht dissatisfied	6%	9%	8%	10%
Neutral	17%	18%	24%	23%
Smwht satisfied	41%	38%	35%	43%
Very satisfied	33%	30%	29%	23%

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.

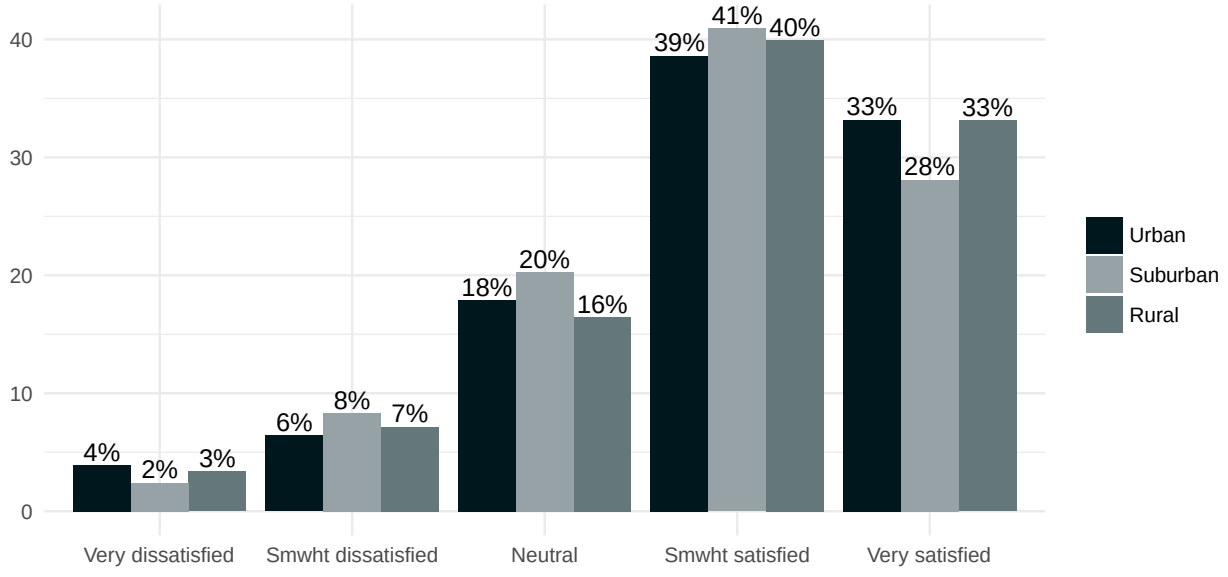
Few differences emerged among urban, suburban, and rural adults in terms of the quantity of places nearby (Figure 4.84). The highest percentages of those supporting this view were rural and urban respondents (47 percent and 46 percent, respectively). Satisfaction with nearby places for outdoor and nature recreation was relatively lower (Figure 4.85). One-third of urban and rural respondents were very satisfied, followed by 28 percent of suburban residents. Ten percent of adults across each location were somewhat or very dissatisfied with nearby places for outdoor and nature recreation.

Figure 4.84: 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 4.85: Satisfaction with Places for Outdoor and Nature Recreation, by Location



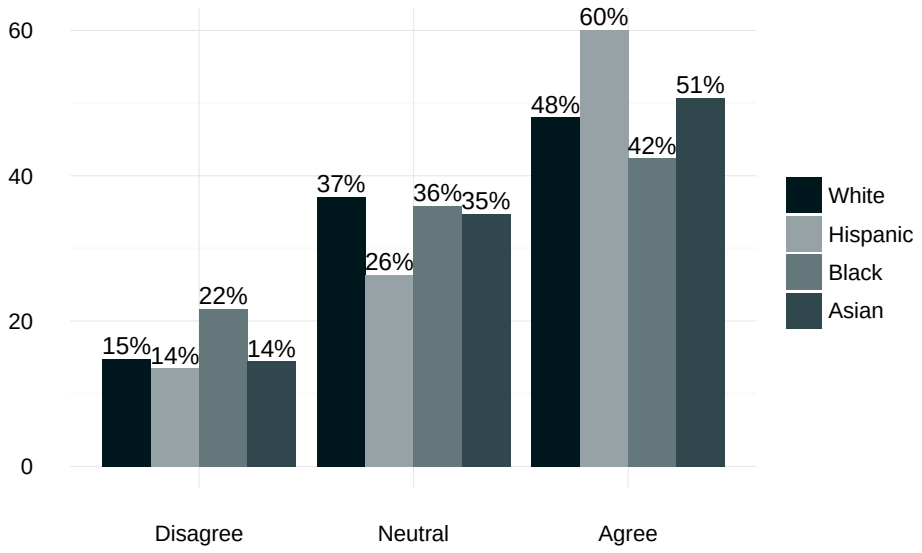
Question wording: How satisfied are you with each of the following where you live? ...Places for outdoor and nature recreation.

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.

Sixty percent of Hispanic adults agreed that people they care about are making more time for nature (Figure 4.86). Among Asian and white respondents, the corresponding figure was roughly 50 percent. Just over 40 percent of black respondents agreed to this statement.

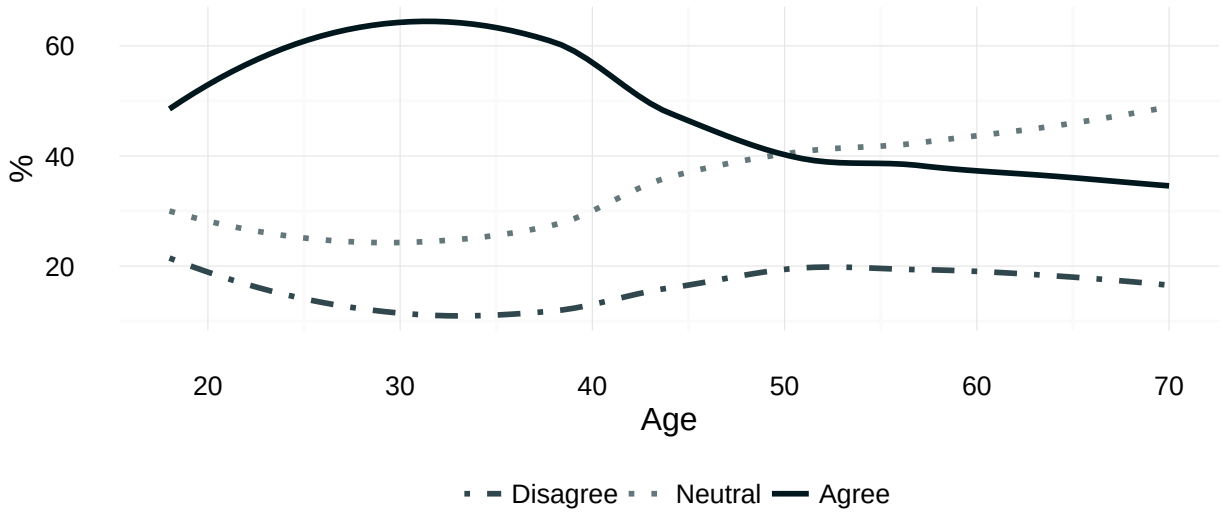
Figure 4.86: Friends and Family Making More Time for Nature, by Race and Ethnicity



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."

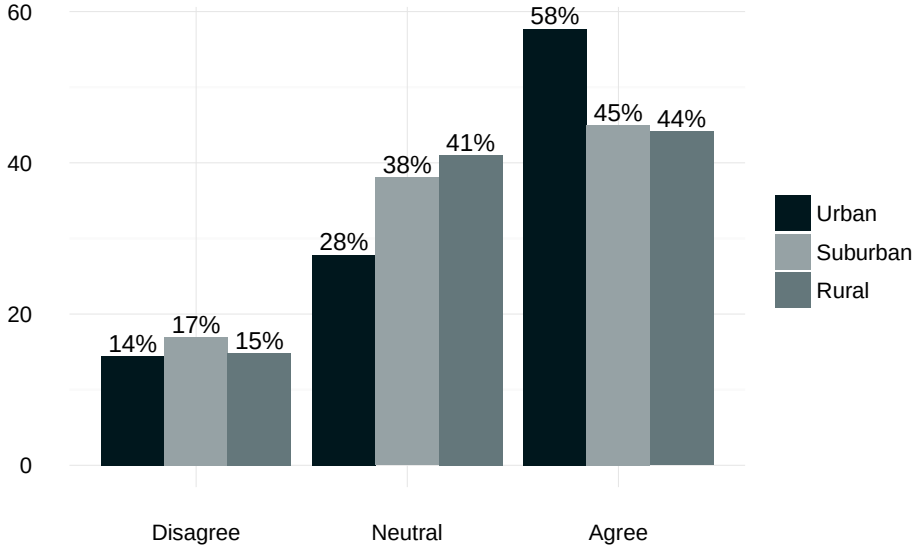
Adults in their 30s were the most likely (60 percent) to indicate people they care about are making more time for experiencing nature (Figure 4.87). Relatively fewer older adults agreed (less than 40 percent). Urban respondents were the most likely (60 percent) to indicate people close to them are making more time for nature (Figure 4.88), compared with approximately 45 percent of suburban and rural respondents.

Figure 4.87: 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 4.88: Friends and Family Making More Time for Nature, by Location



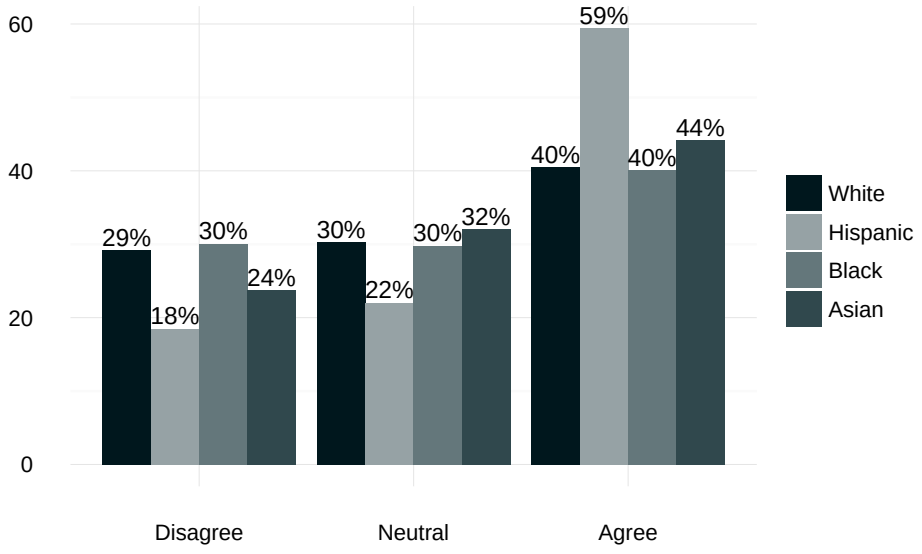
Question wording: How much do you agree or disagree with the following statements? ...People I care about are making more time for nature. "Disagree" combines "strongly disagree" and "somewhat disagree." "Agree" combines "strongly agree" and "somewhat agree."

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, 60 percent of Hispanic respondents agreed that they are making time to share their interest in nature and the outdoors with children. By contrast, 44 percent of Asian adults and 40 percent of white and black adults agreed. Thirty percent of white and black respondents indicated they are *not* making more time to share their interest in nature with children.

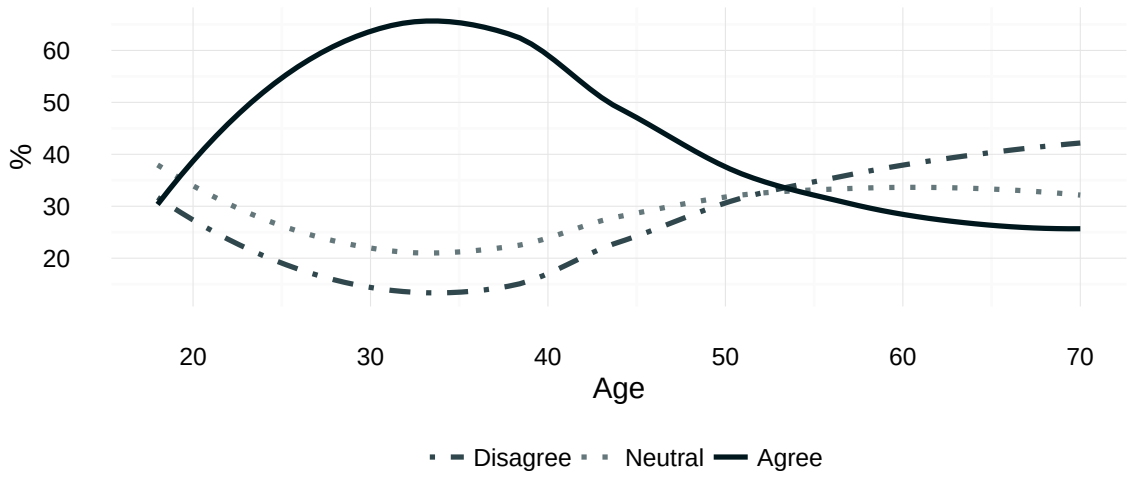
Figure 4.89: Sharing Interest in Nature with Children, by Race and Ethnicity



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."

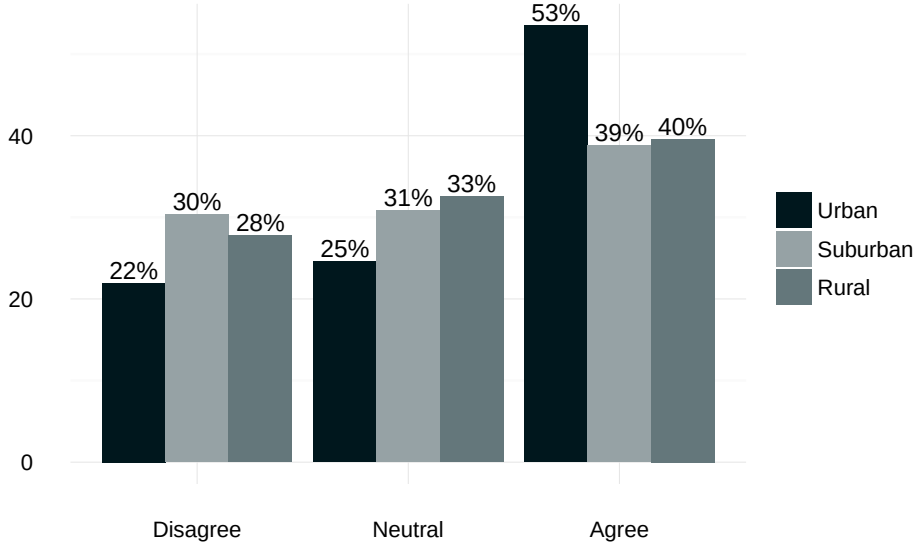
The influence of age and life stage can be seen in responses to this question (Figure 4.90). Sharing interest in nature with children rose sharply for adults in their 20s and 30s, peaking at around 65 percent. Then the percentage declined: 40 percent of 50-year-olds said they are making time to share their interest in nature with children, compared with 25 percent of 70-year-olds. Across location, the highest percentage (53 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 4.91).

Figure 4.90: 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 4.91: 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. 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. 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. Interest in nature was widespread. So was recognition of its benefits. Adults of all races and ethnicities associateÂăcertain smells and sounds of nature with happy memories, feel curious about something especially attractive in nature, believe learning how nature works is as important as other school subjects, believe societal intelligence depends on staying connected to nature, find peace in nature, and feel 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.

Important variation by race and ethnicity. Important differences across ethnoracial groups, however, did emerge in three 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 trade-offs. 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 trade-offs 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 fishing, 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

related but distinct. Each had an independent relationship with various outcomes of interest; they were not simply proxies or stand-ins for one another. This suggests the need to take each into careful consideration when creating programs and setting policy, as the next chapter describes.

Chapter 5

Major Findings and Recommendations: Connecting Americans and Nature

The prior three chapters of this report have described detailed results from a study of 11,817 American 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 Americans' 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 Americans' 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. **Americans 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 Americans 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 Americans 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-

portunities 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 Americans 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 Americans 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 Americans 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 Americans 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. **Americans value nature in remarkably broad, diverse ways.**

   One of the most striking and consistent findings of our study of Americans 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 Americans' 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 Americans 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. **Americans 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 Americans 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 Americans.

7. **Americans' relationship with nature is complex and nuanced.**

Across many questions, such as time spent outdoors and general interest in nature, Americans 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. Understanding comes when program providers place themselves in the lives and neighborhoods of the constituencies they seek to serve and by including those we wish to serve in the development of programming. 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 Americans 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 Americans 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. **Americans perceive tremendous benefit from experiences in nature.**

   Across demographic categories, the vast majority of adult Americans 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 Americans connect with nature, they bond with their families and friends, develop intellectually, and find respite and rejuvenation. Linking Americans 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 Americans 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 Americans 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 Americans and 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 Americans 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.

A.1 Affection

Figure A.1: Values of Affection, by Gender

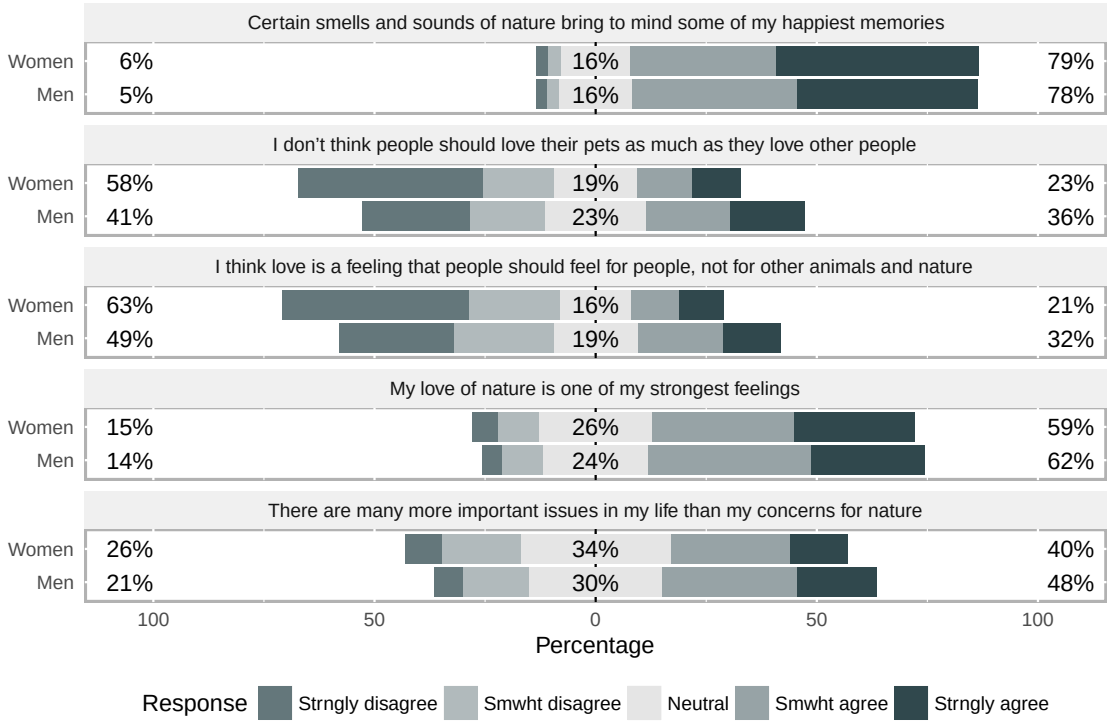


Figure A.2: Values of Affection, by Income

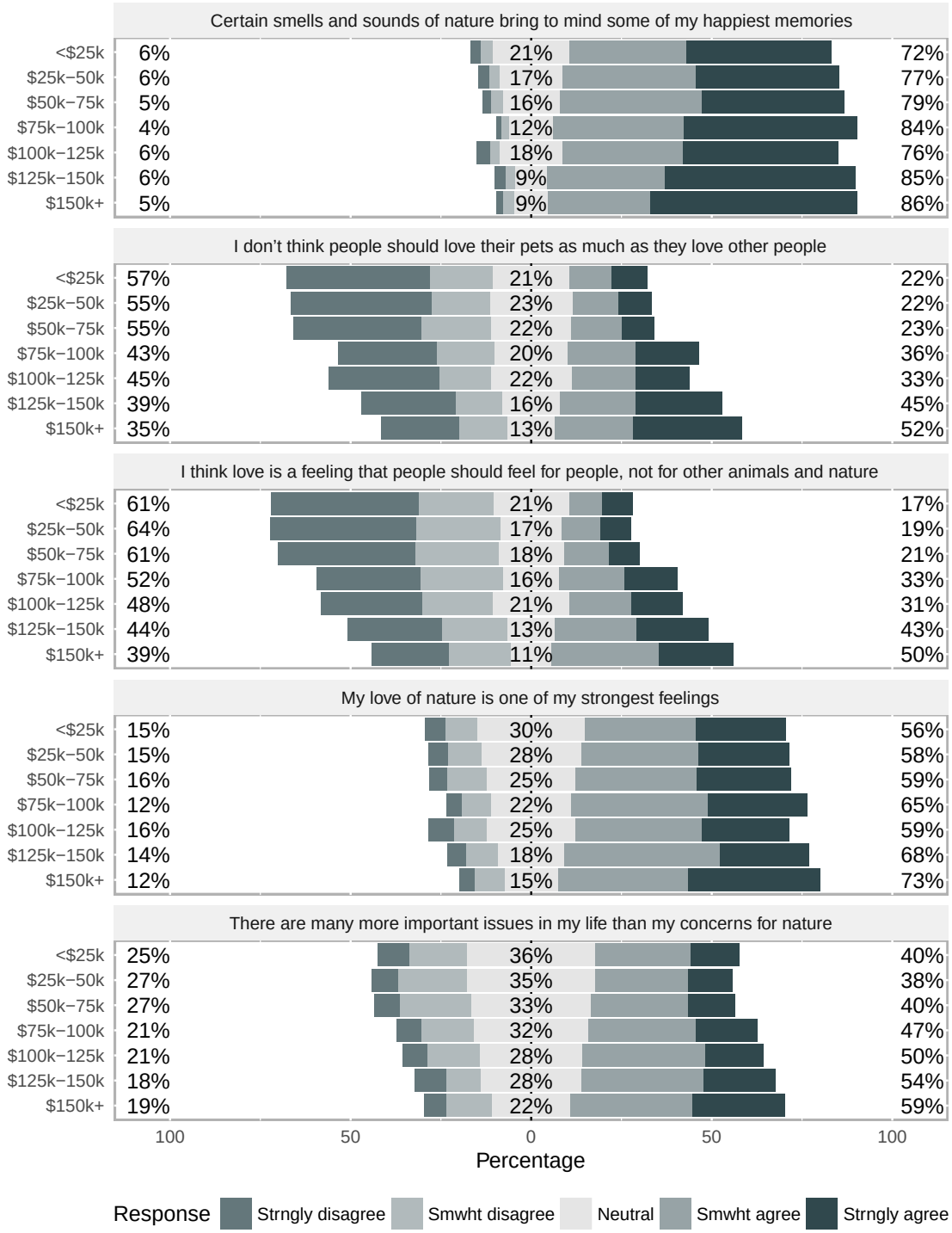
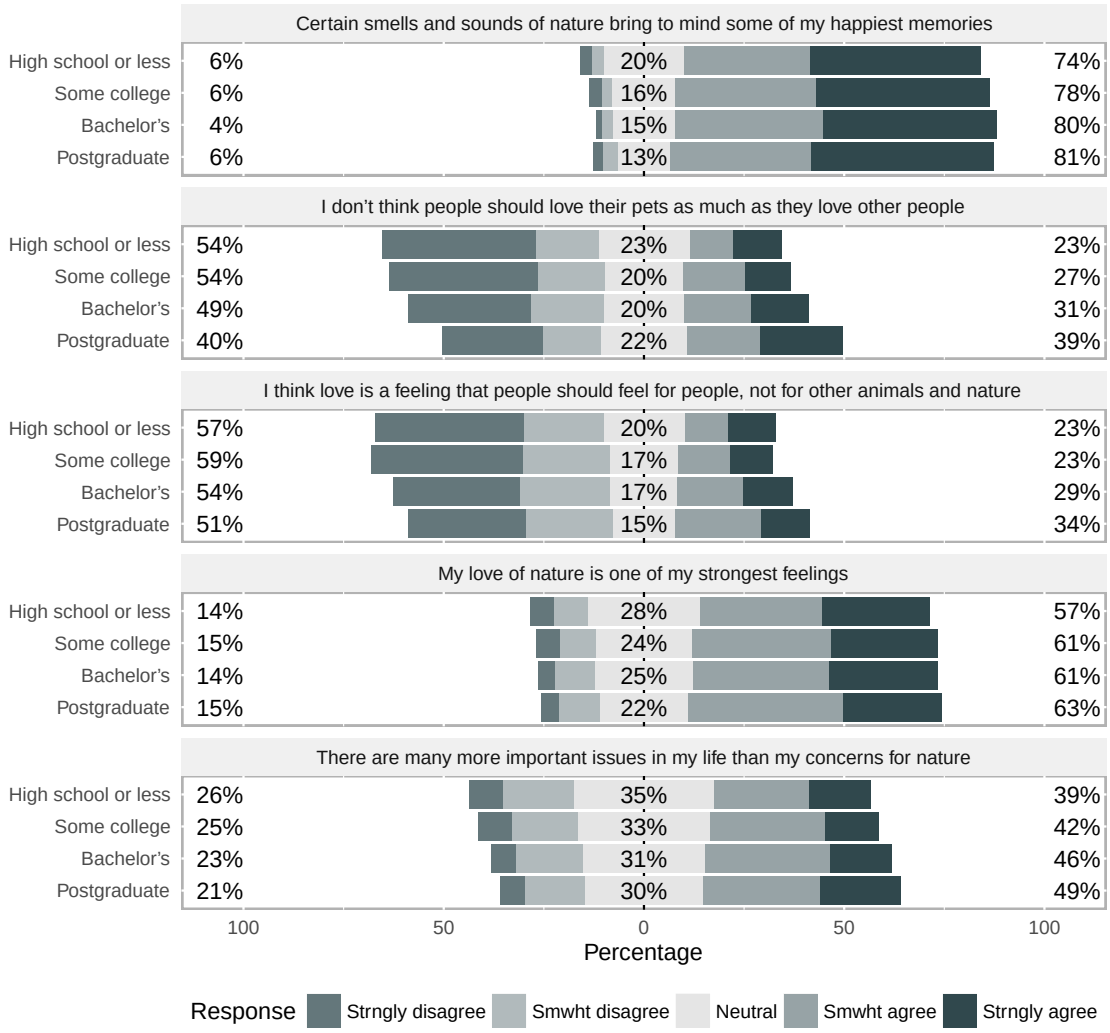


Figure A.3: Values of Affection, by Educational Attainment



A.2 Attraction

Figure A.4: Values of Attraction, by Gender

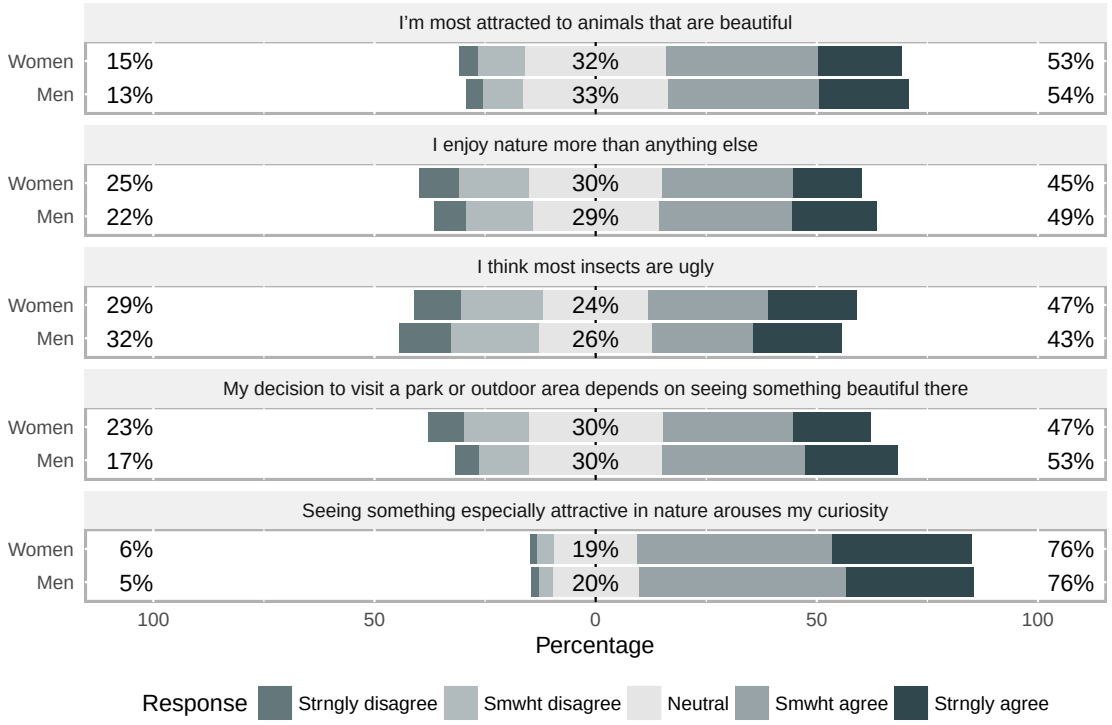


Figure A.5: Values of Attraction, by Income

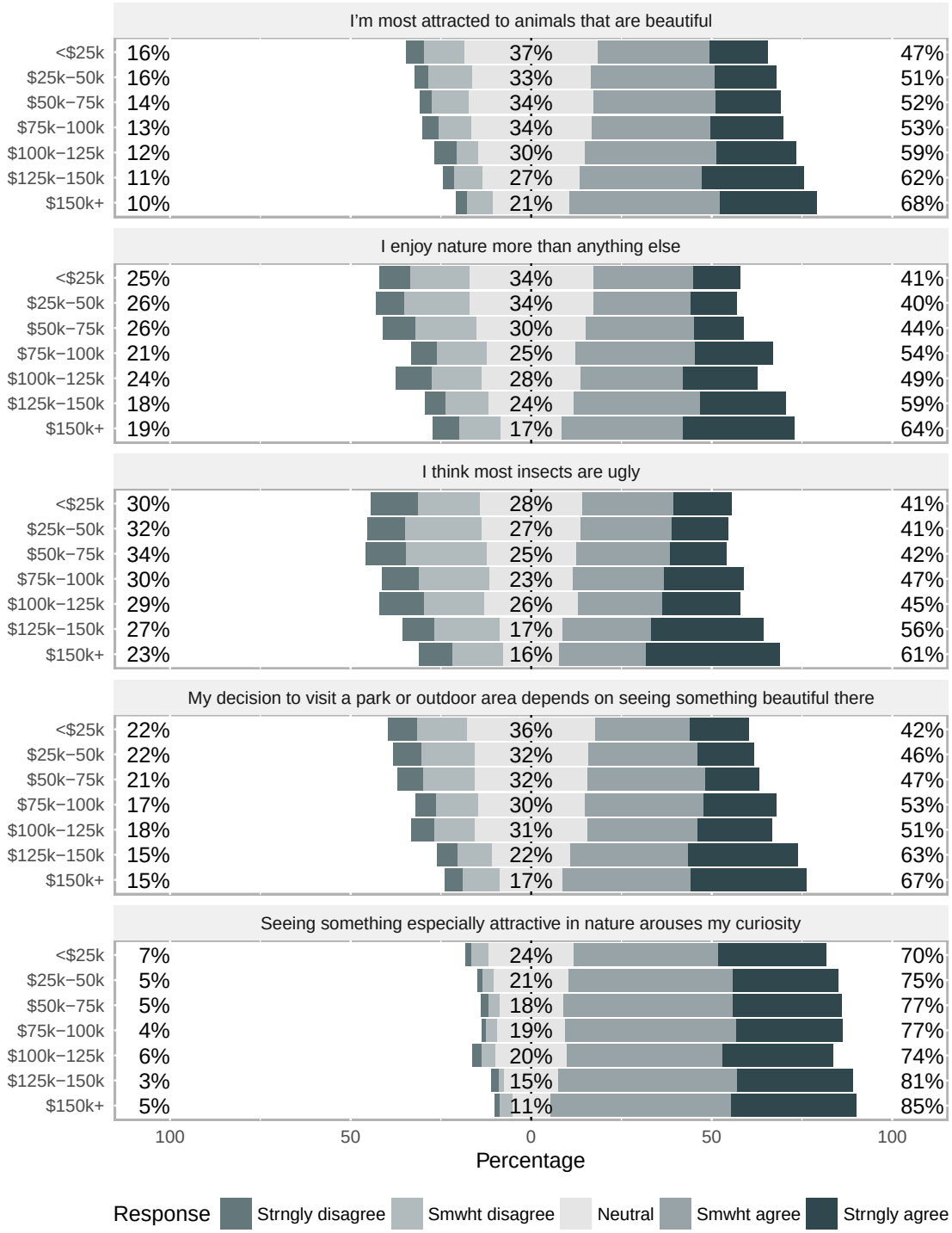
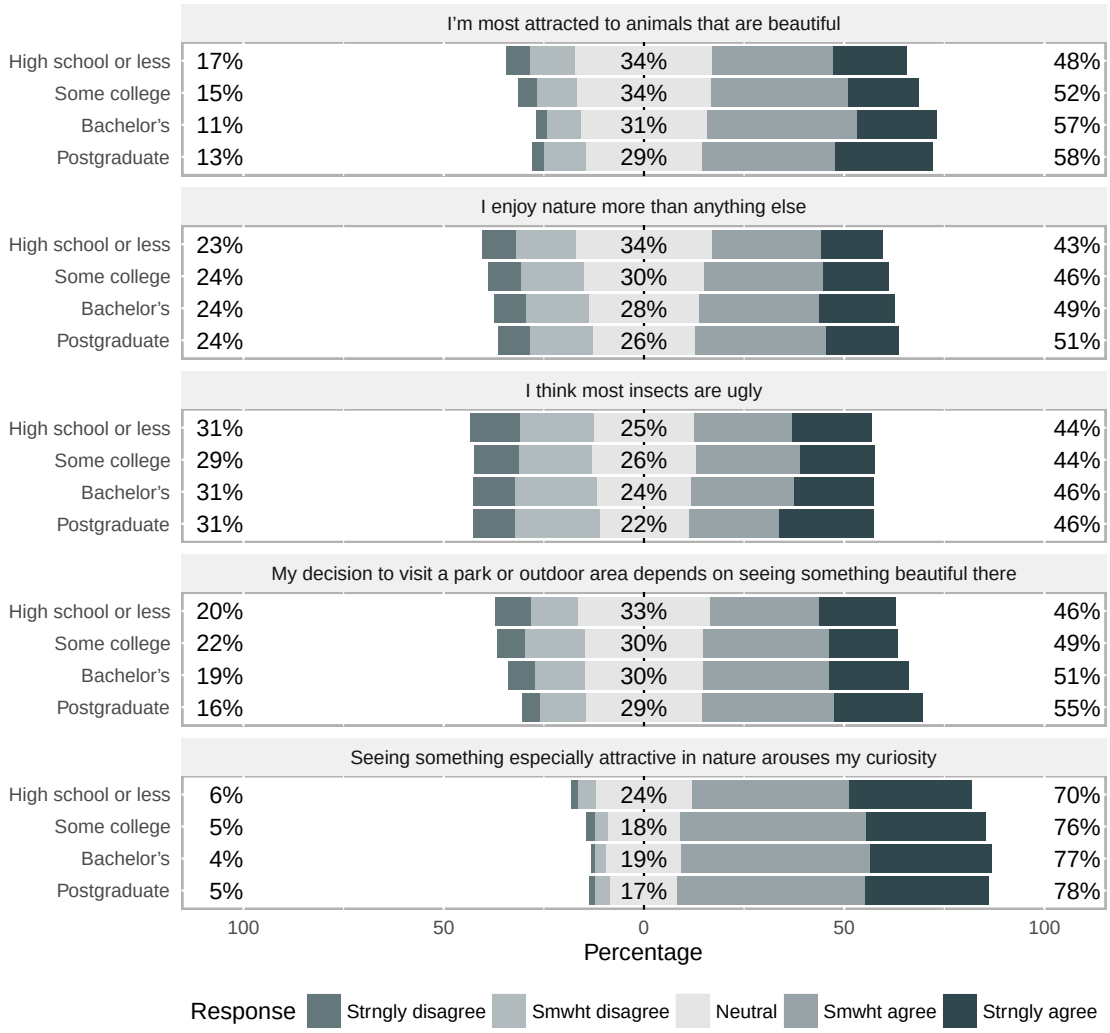


Figure A.6: Values of Attraction, by Educational Attainment



A.3 Aversion

Figure A.7: Values of Aversion, by Gender

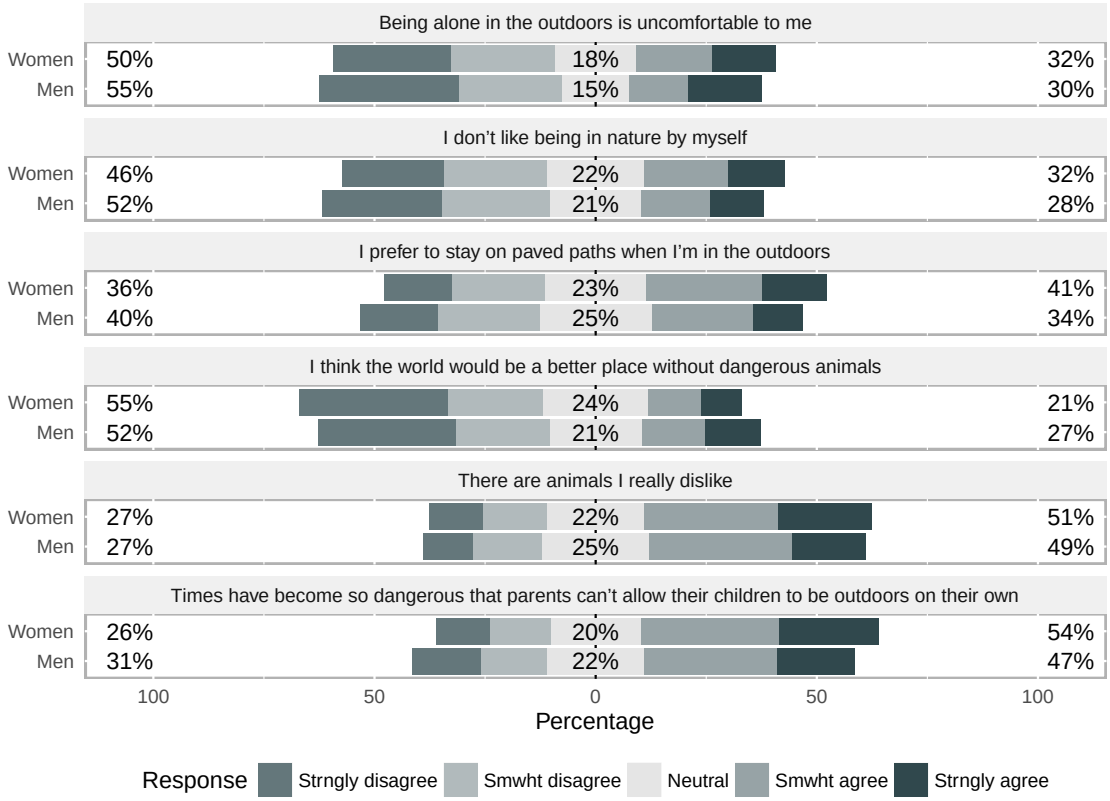


Figure A.8: Values of Aversion, by Income

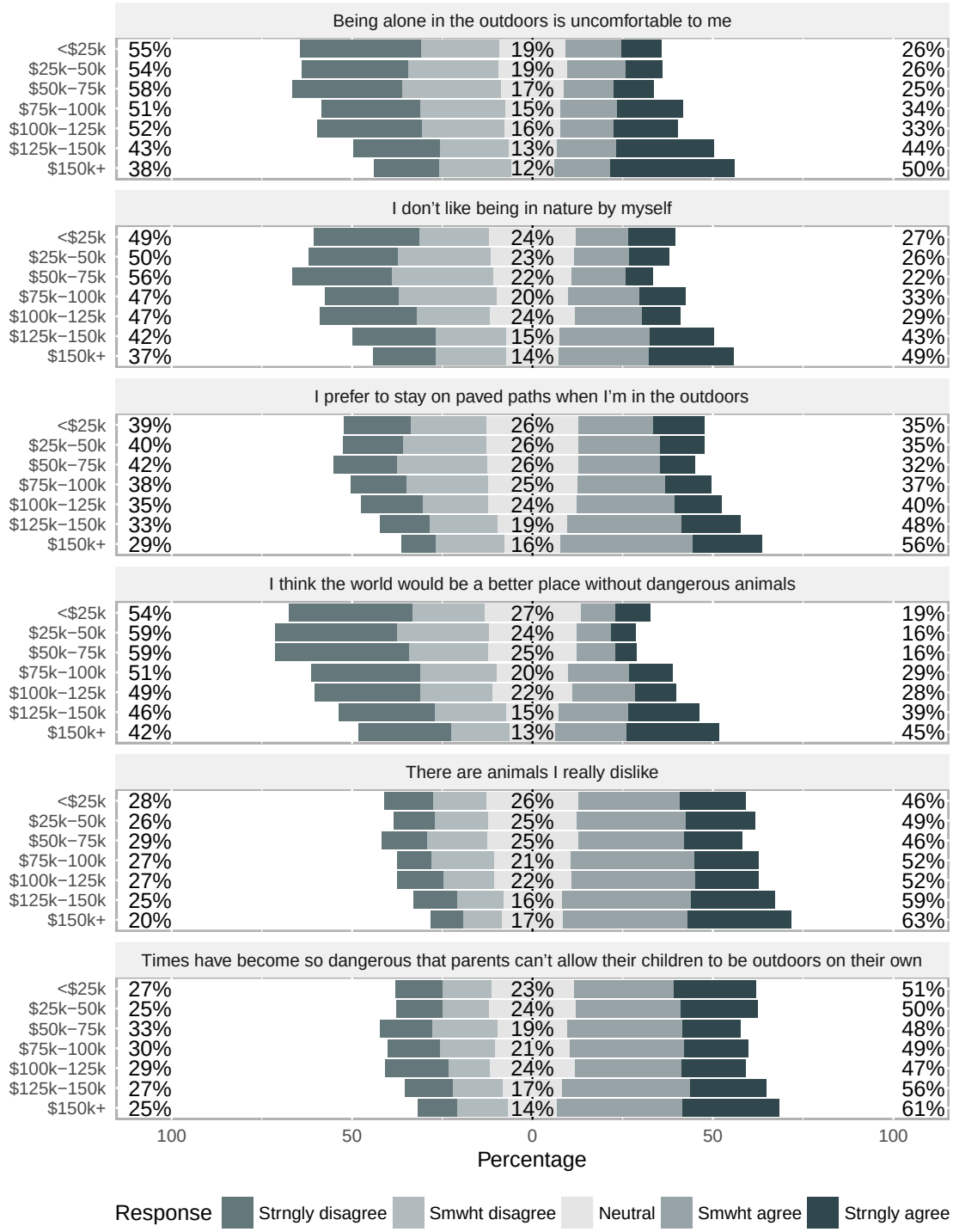
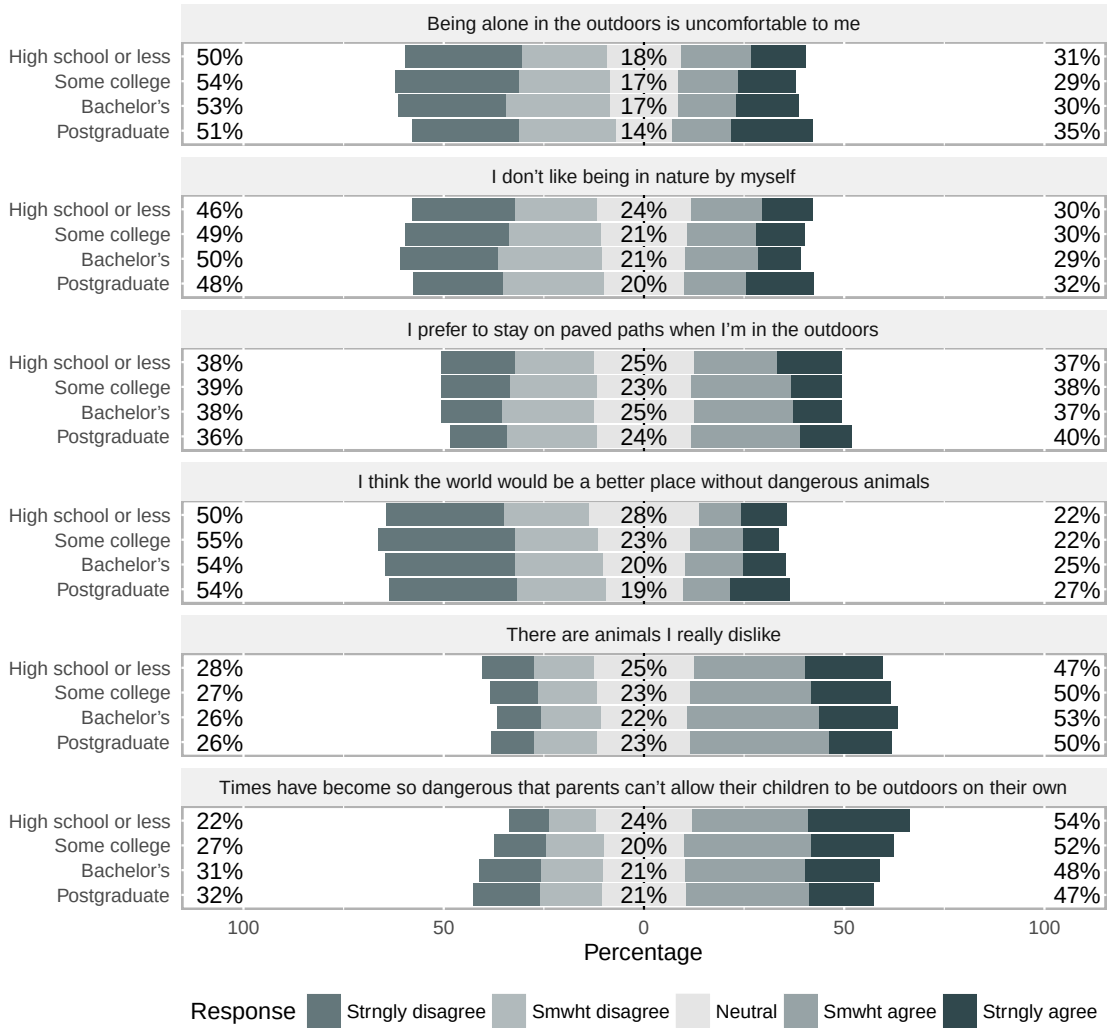


Figure A.9: Values of Aversion, by Educational Attainment



A.4 Control

Figure A.10: Values of Control, by Gender

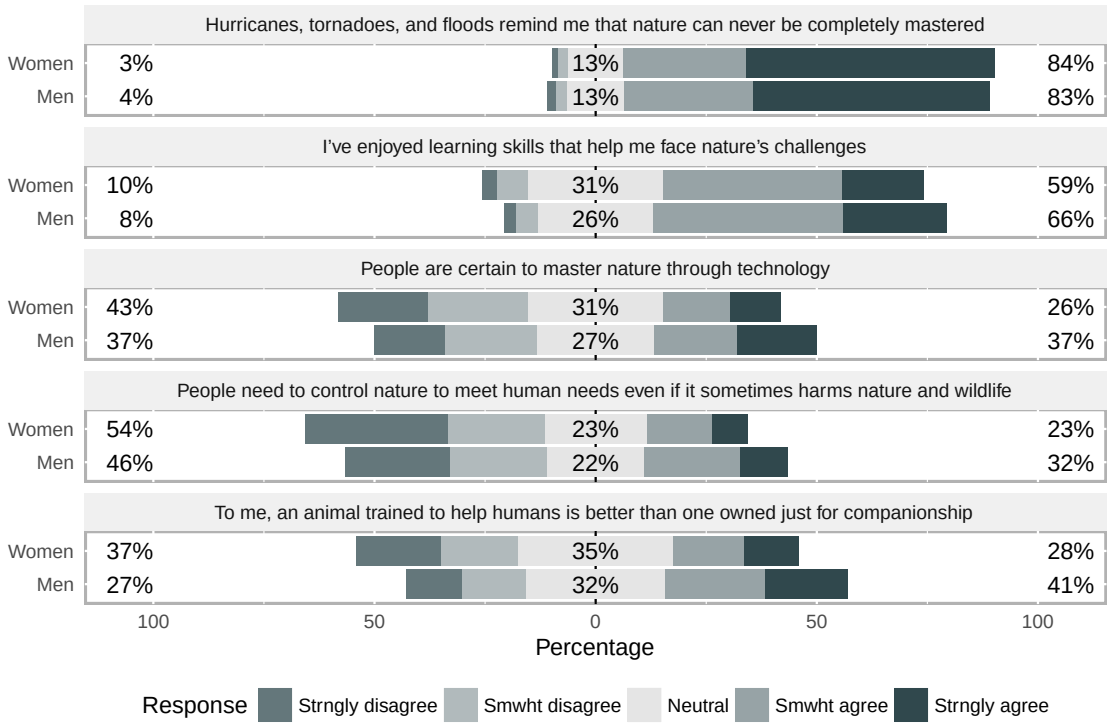


Figure A.11: Values of Control, by Income

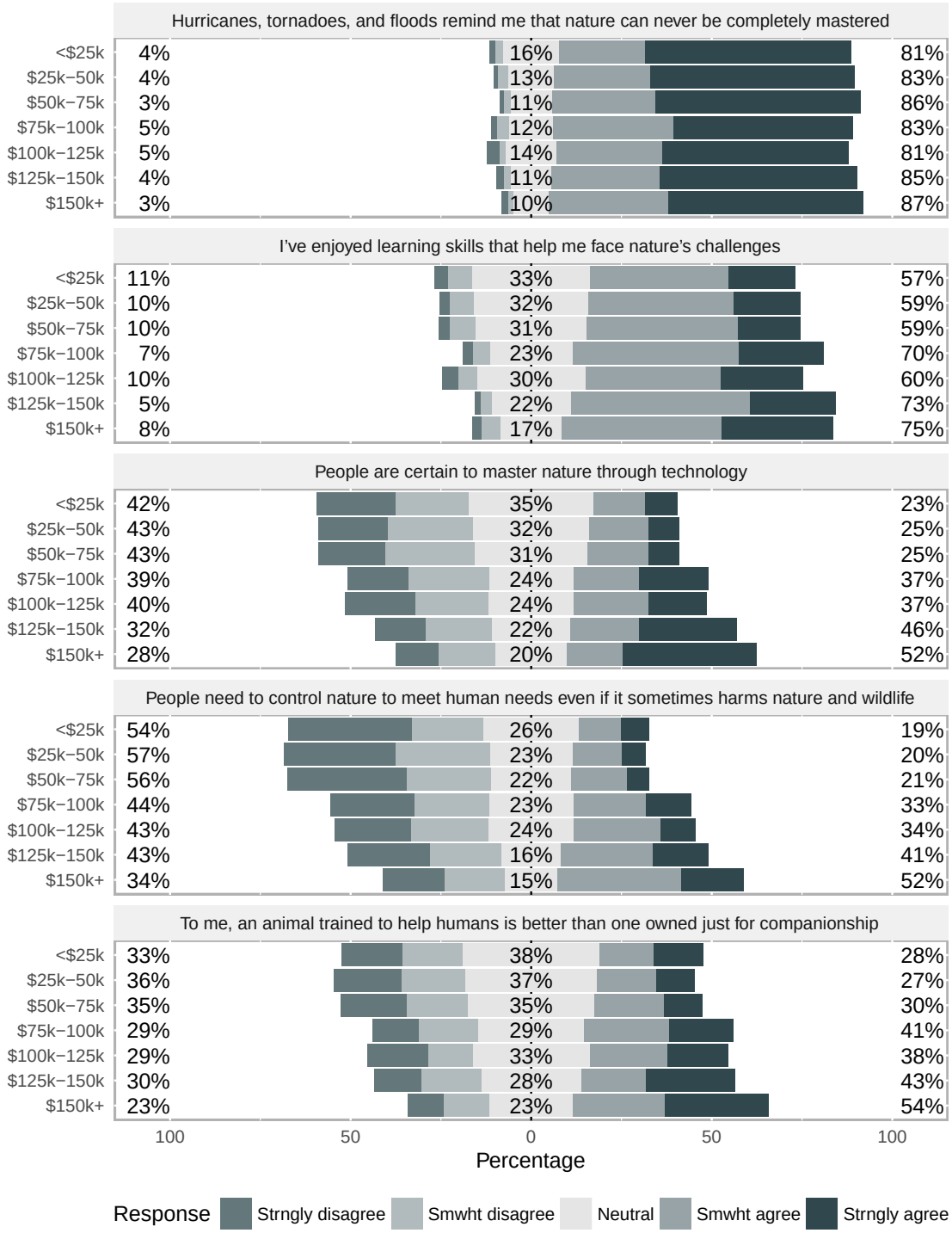
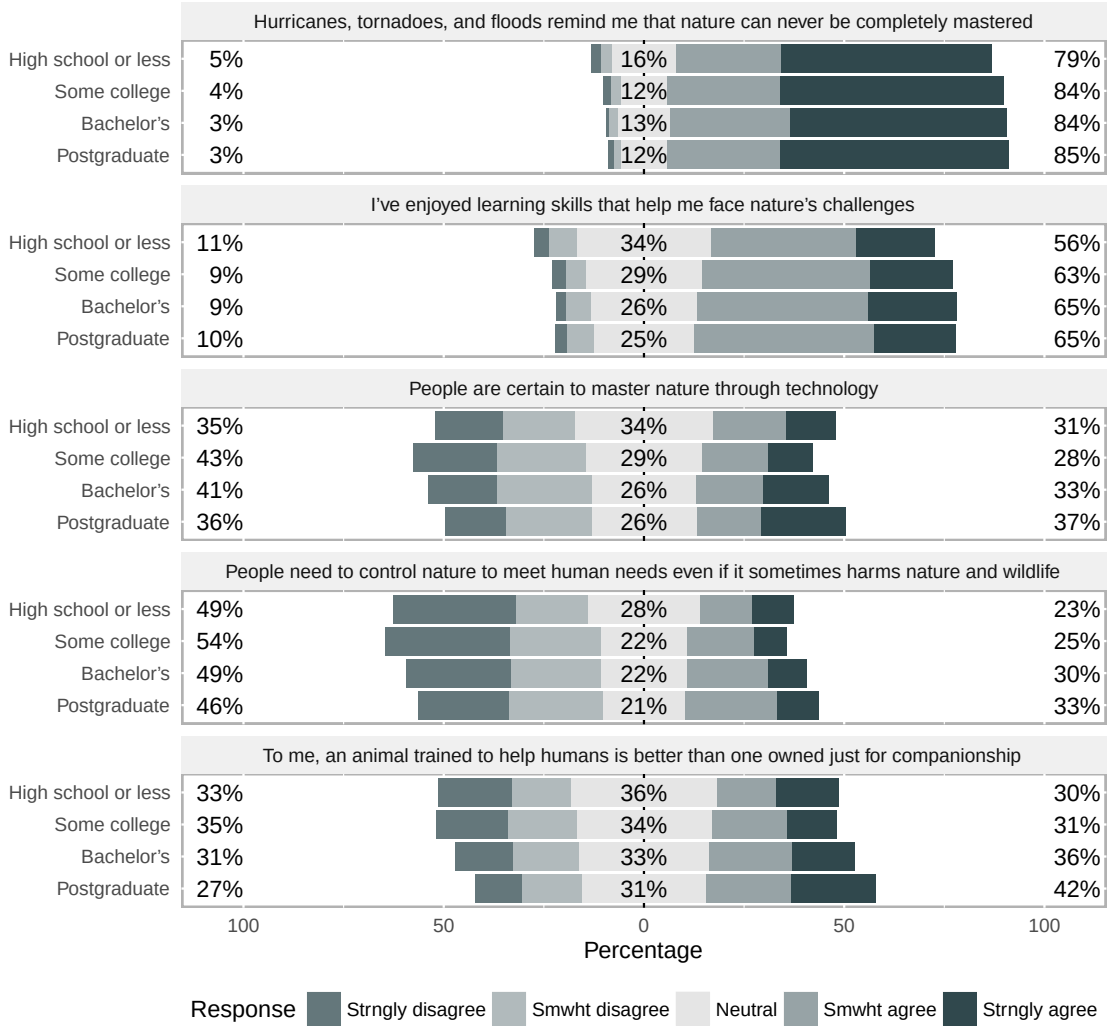


Figure A.12: Values of Control, by Educational Attainment



A.5 Exploitation

Figure A.13: Values of Exploitation, by Gender

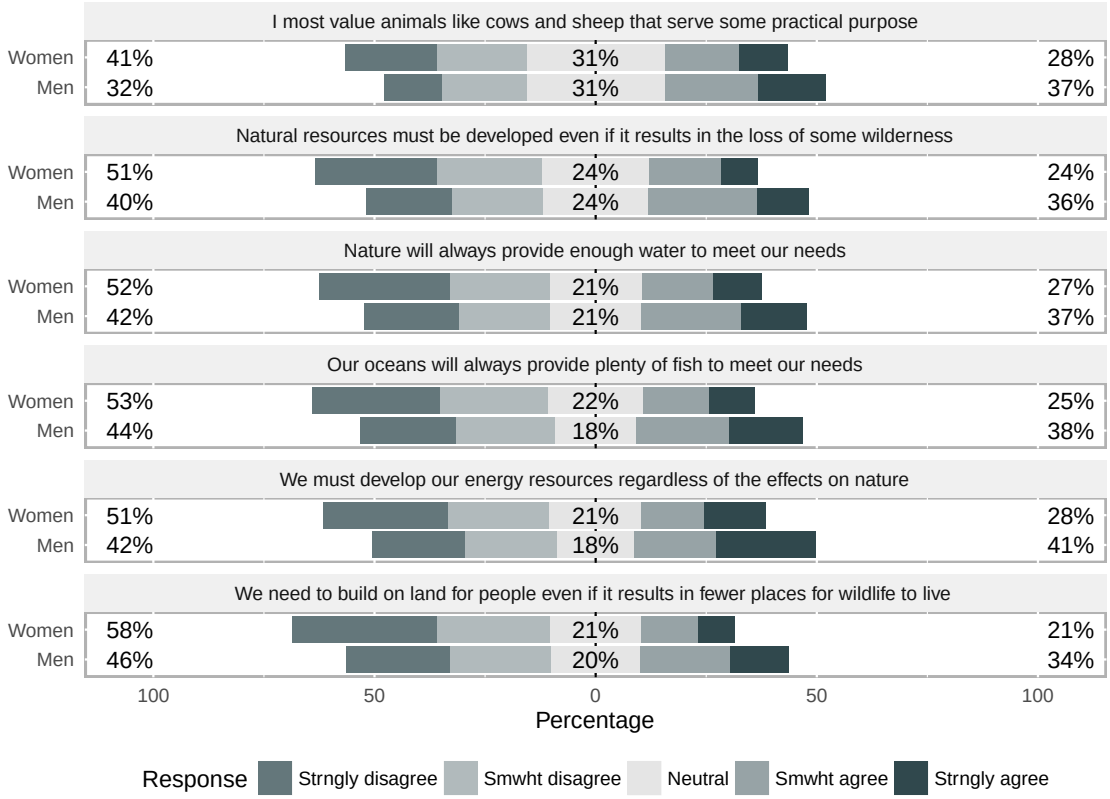


Figure A.14: Values of Exploitation, by Income

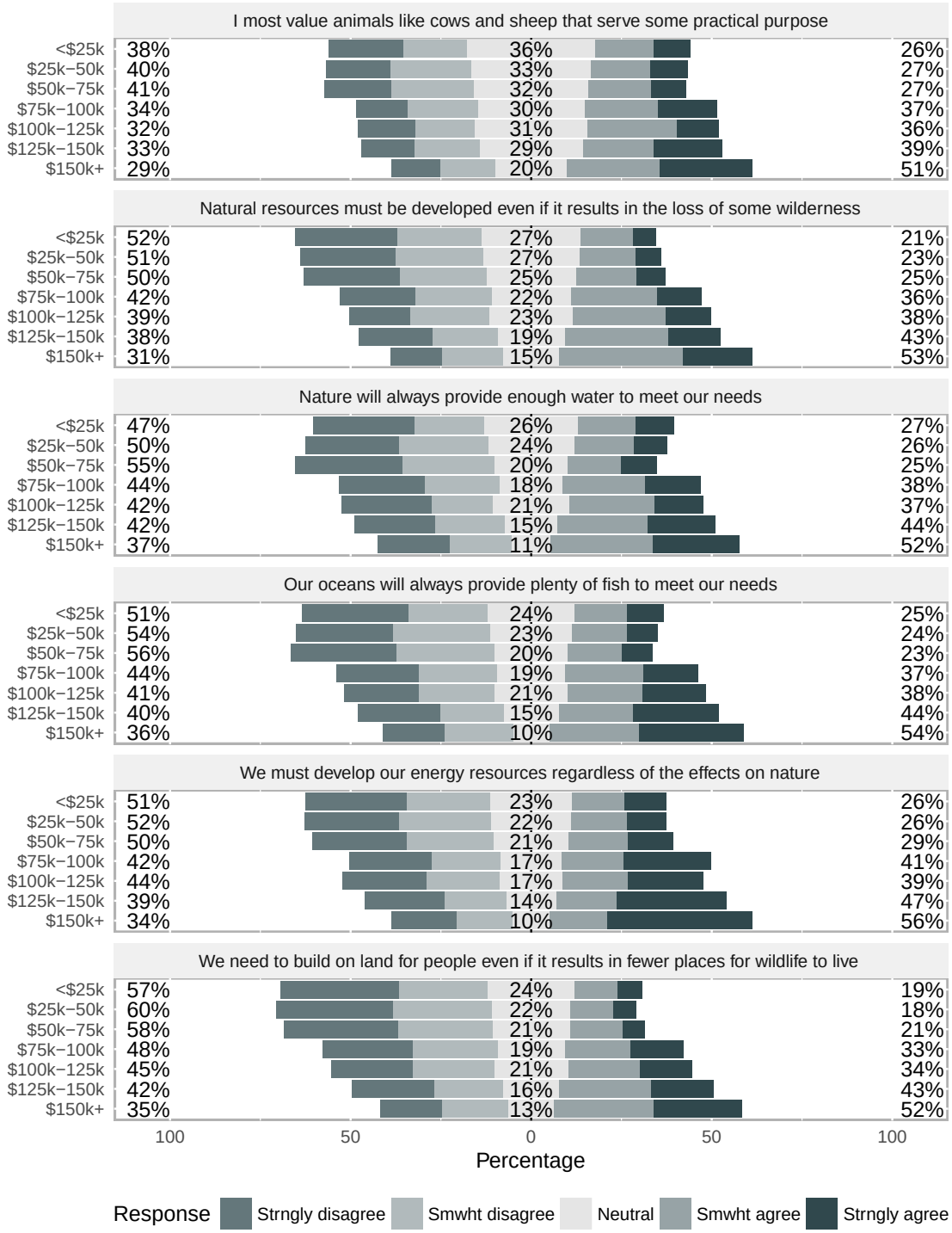
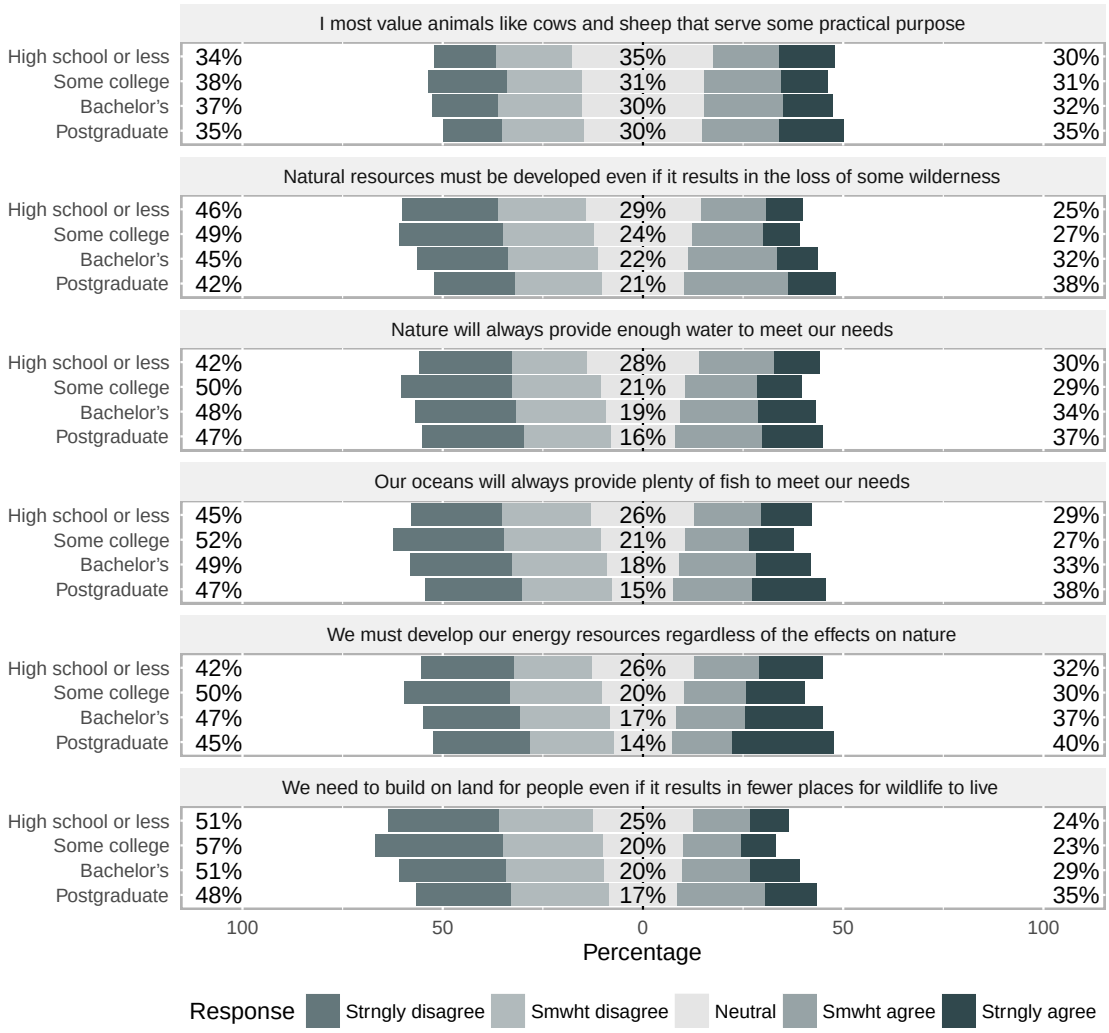


Figure A.15: Values of Exploitation, by Educational Attainment



A.6 Intellect

Figure A.16: Values of Intellect, by Gender

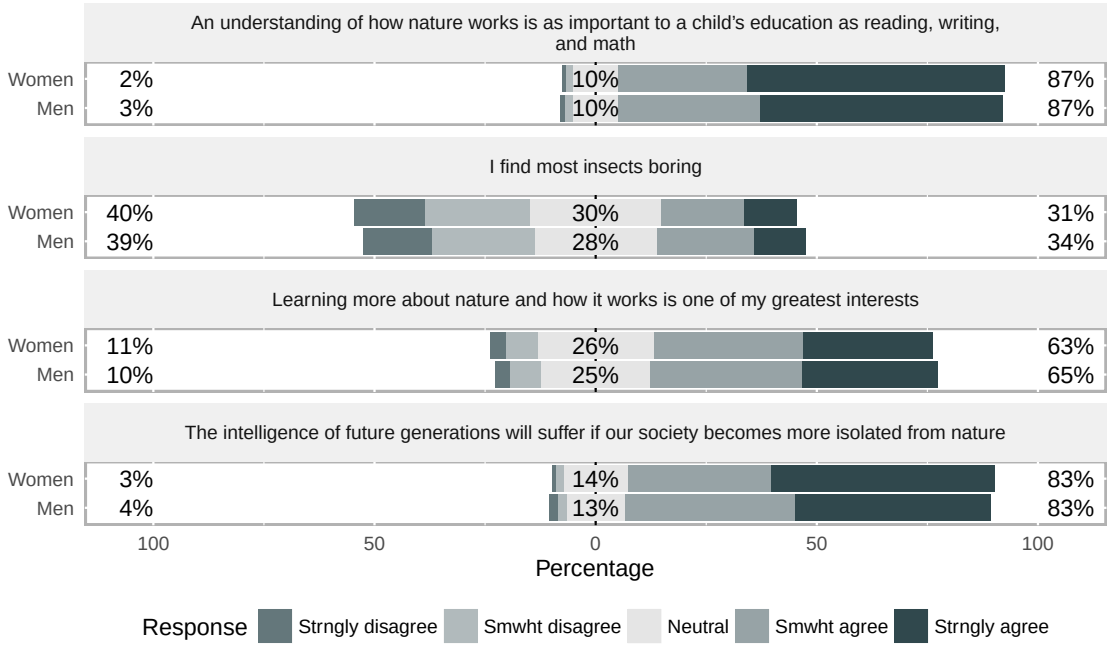


Figure A.17: Values of Intellect, by Income

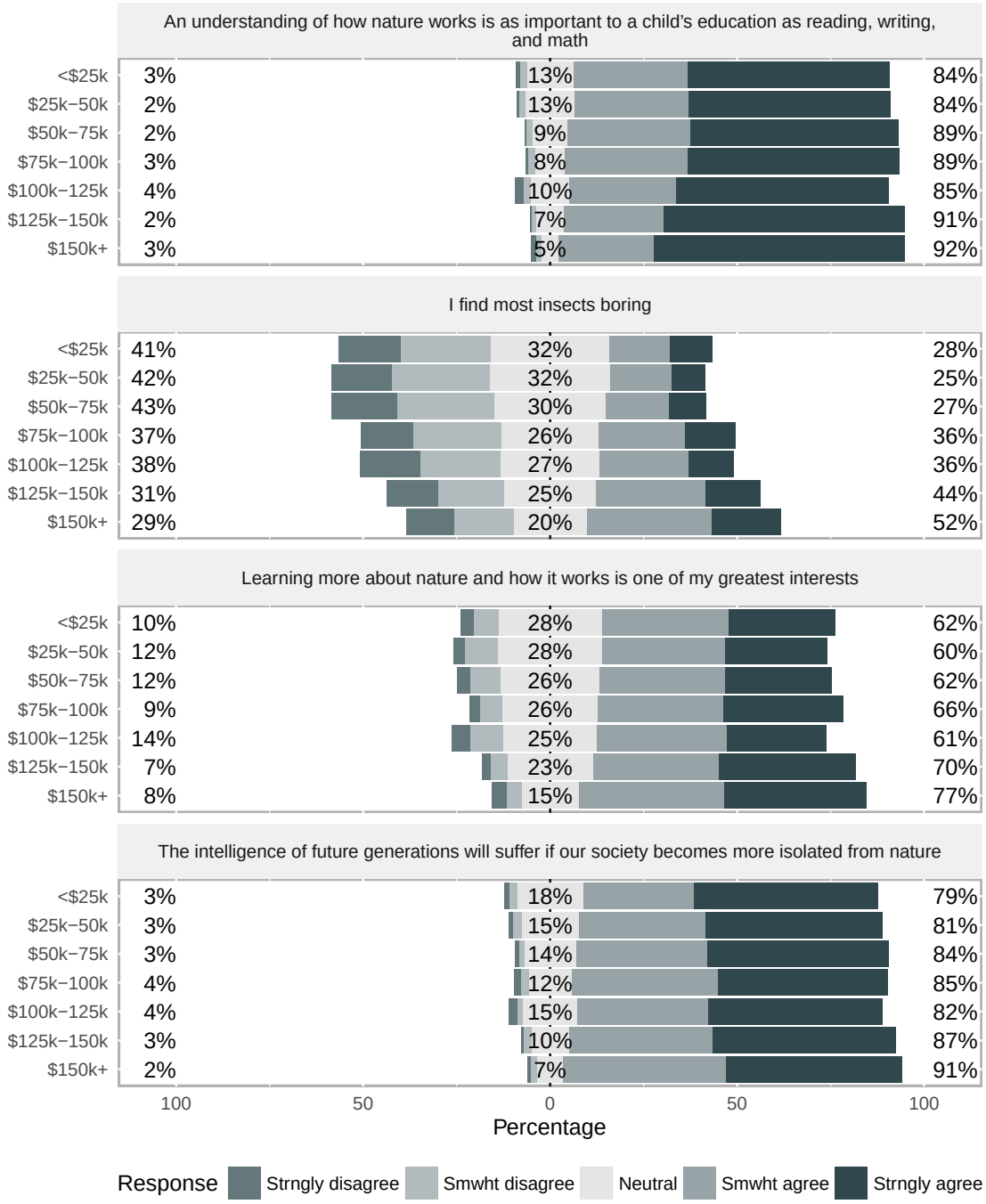
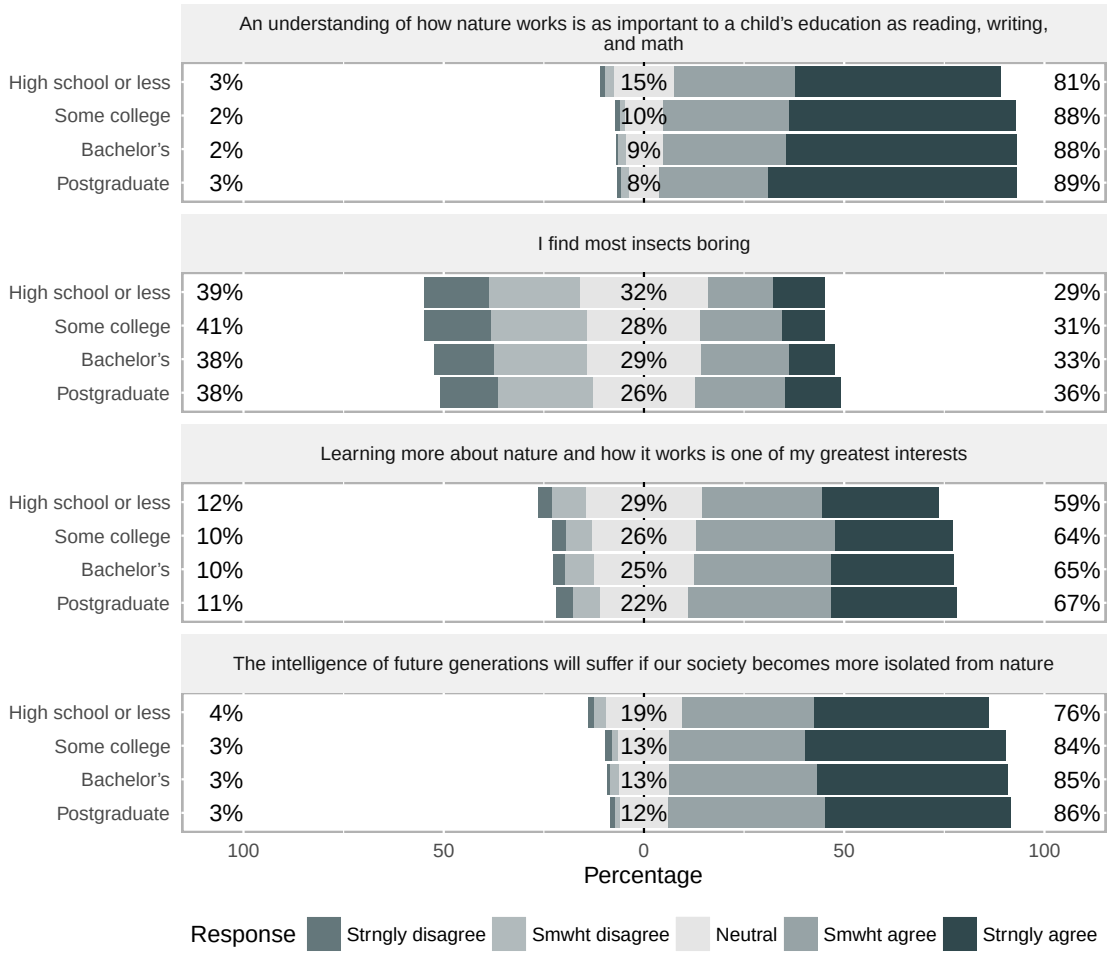


Figure A.18: Values of Intellect, by Educational Attainment



A.7 Spirituality

Figure A.19: Values of Spirituality, by Gender

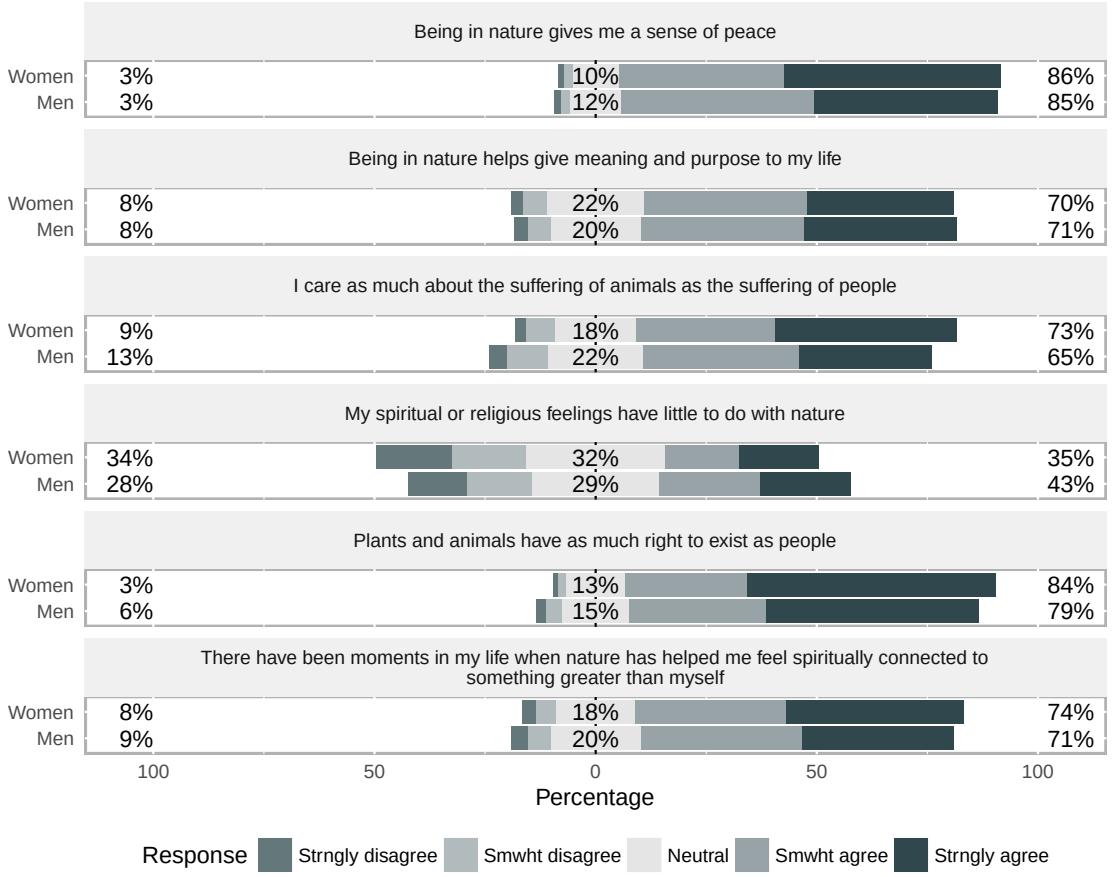


Figure A.20: Values of Spirituality, by Income

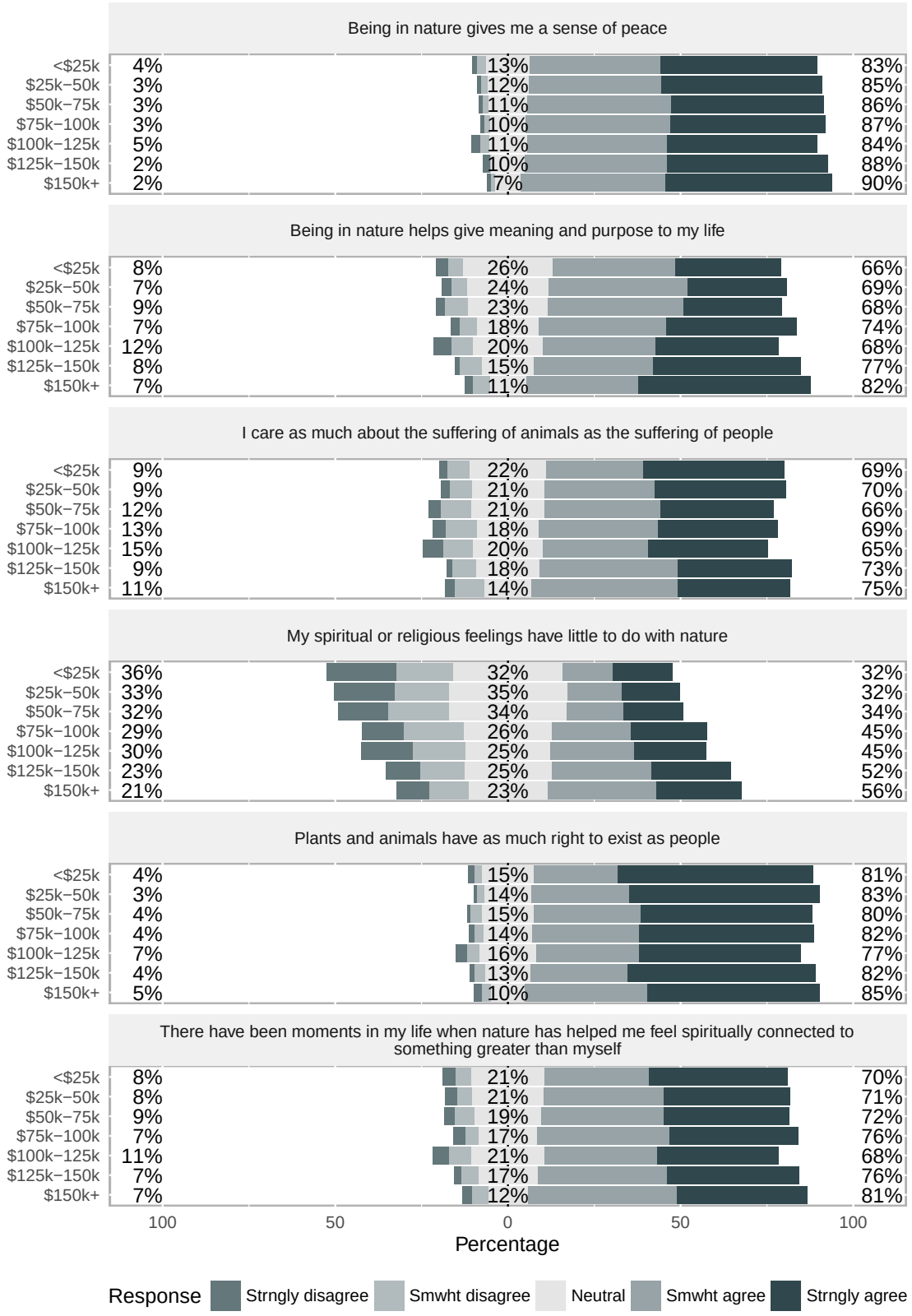
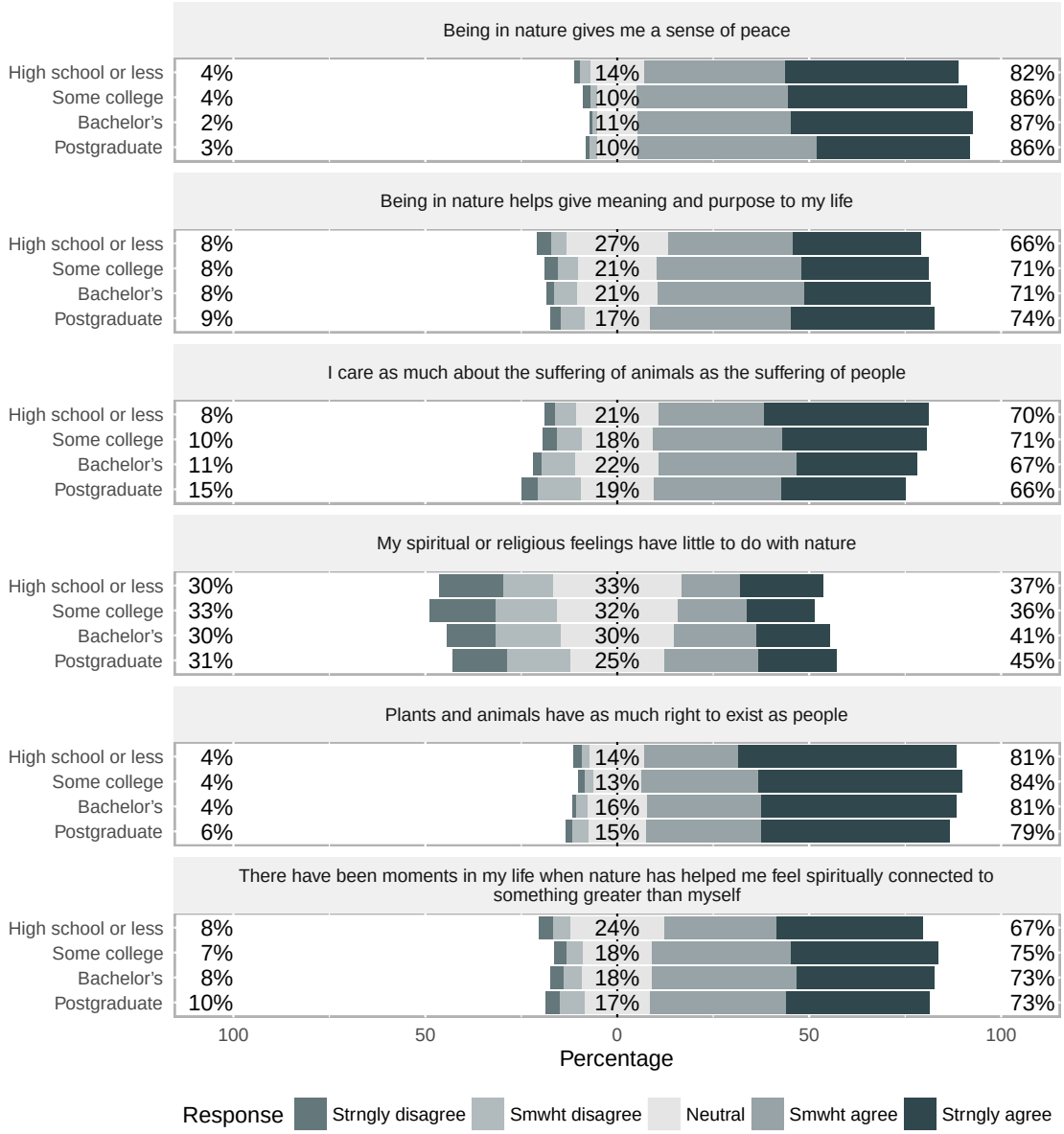


Figure A.21: Values of Spirituality, by Educational Attainment



A.8 Symbolism

Figure A.22: Values of Symbolism, by Gender

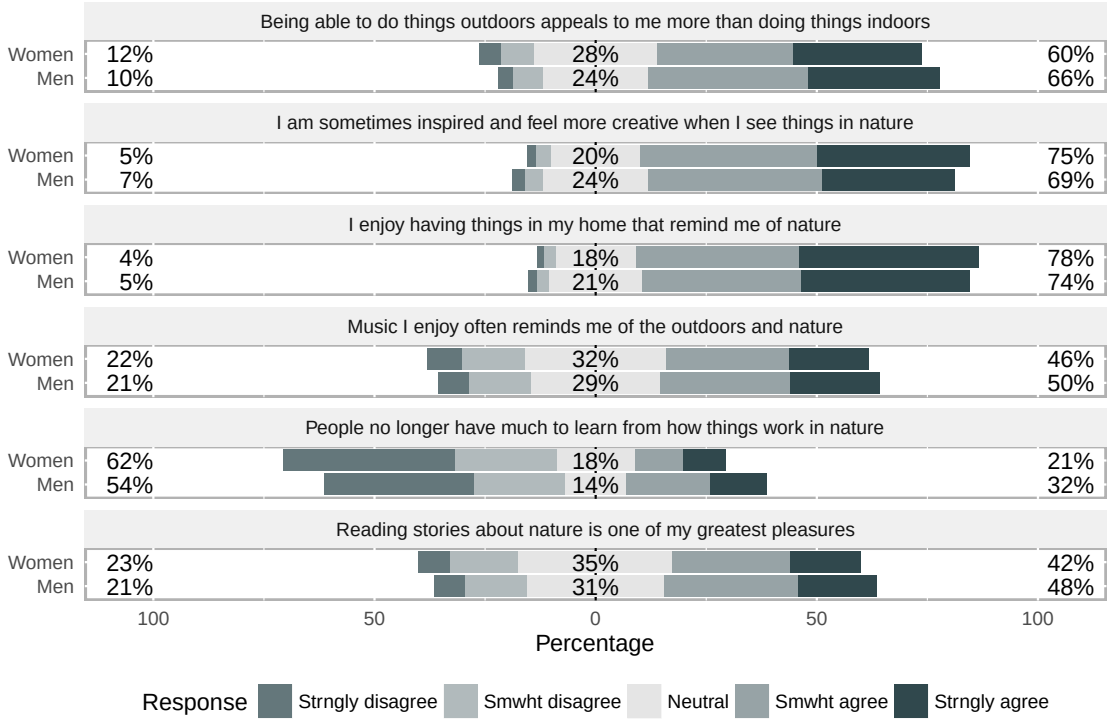


Figure A.23: Values of Symbolism, by Income

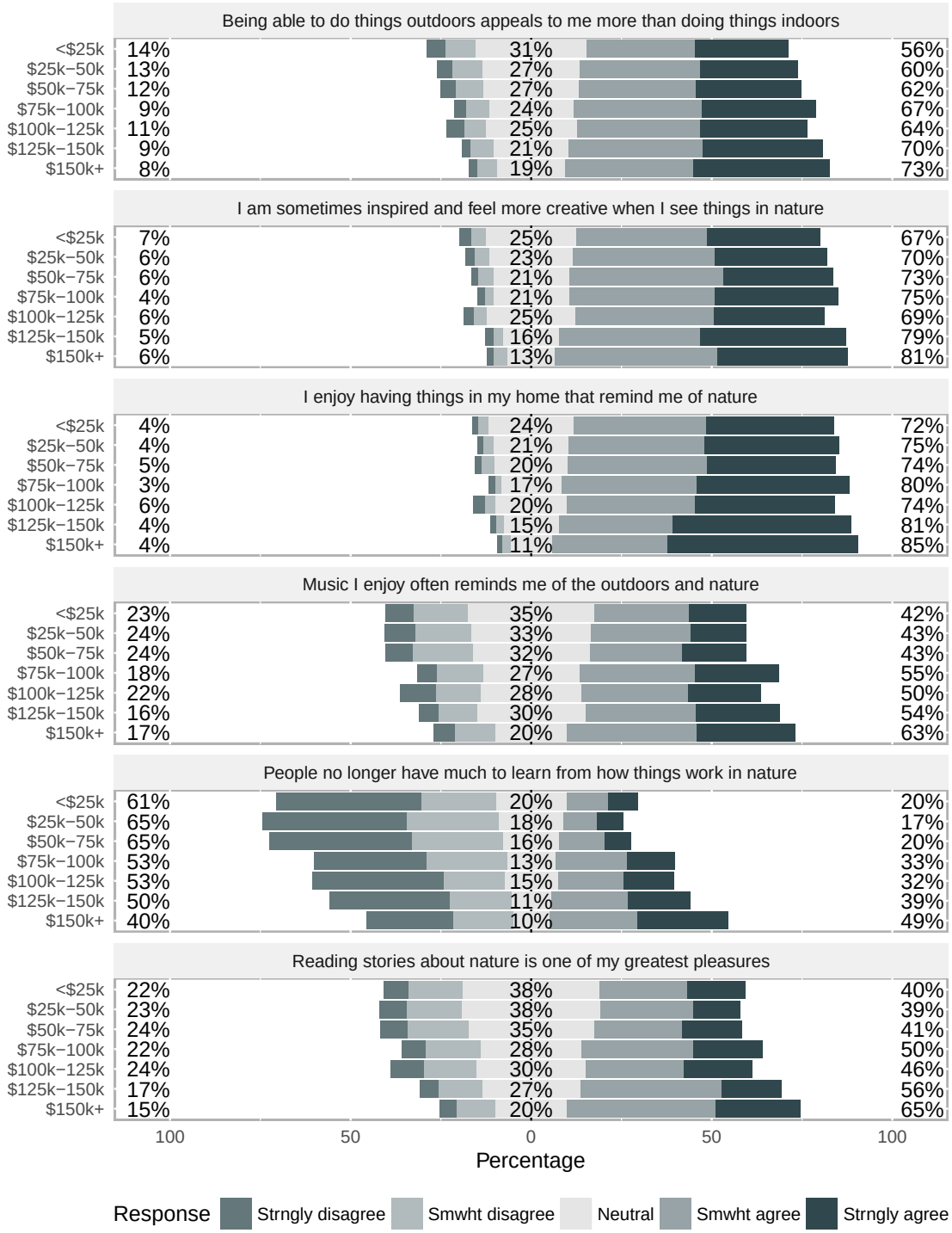
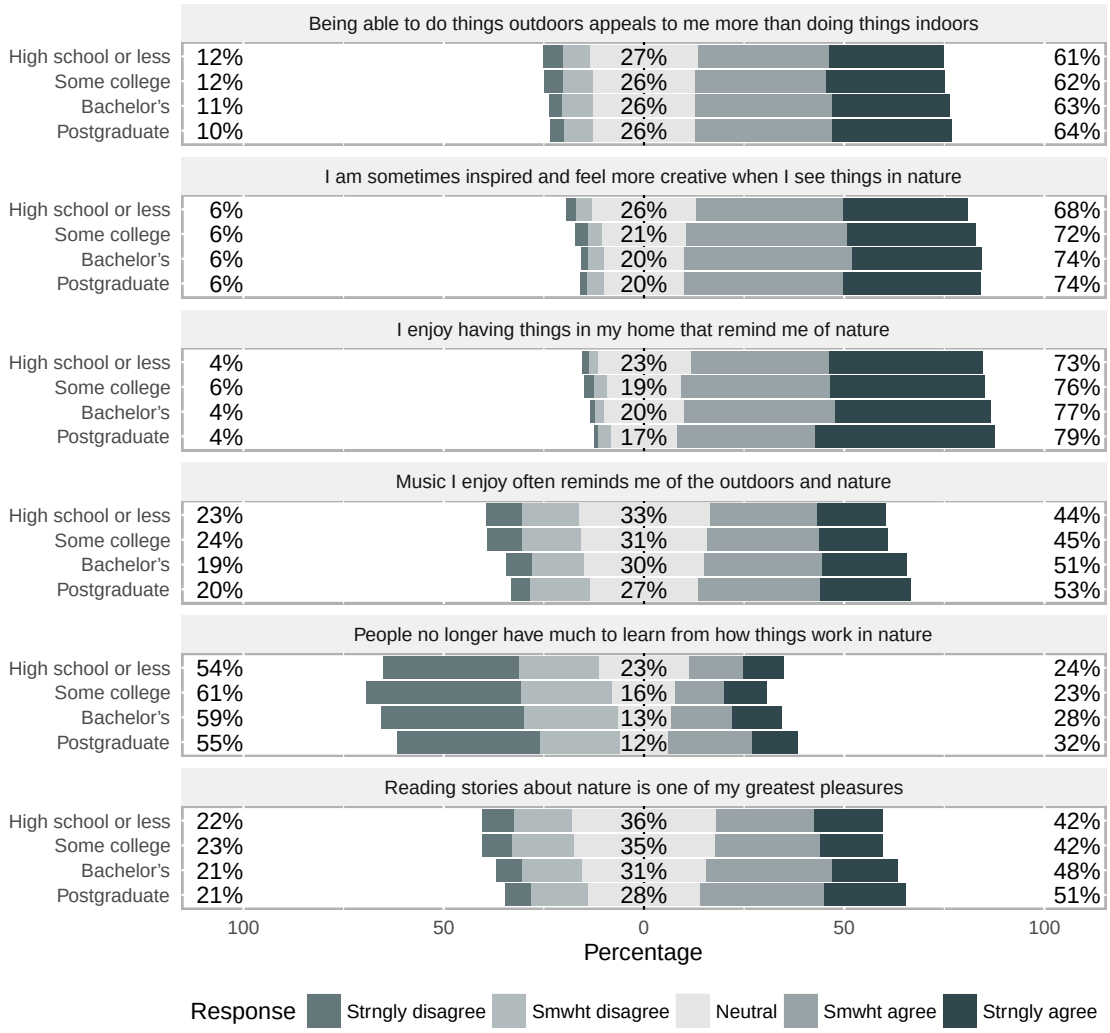


Figure A.24: Values of Symbolism, by Educational Attainment



Appendix B

Comparisons of Main Sample with Main Sample and Oversample

In this appendix we present comparisons of results from the main sample and results from the main sample with the oversample included. As noted in Section 1.2, we collected an oversample of minority Americans to increase their participation, which in turn provided greater confidence in making claims about particular subgroups. By comparing a diverse array of questions, we show here that including the oversample along with the main sample in our analyses has little, if any, effect on the results or on their interpretation.

B.1 Interests in Nature

Table B.1: Main Sample: Interests in Nature Compared with Other Interests

Categories	White	Hispanic	Black	Asian
Least enjoyable	1%	1%	4%	2%
Less enjoyable	3%	3%	6%	4%
Neutral	22%	16%	31%	28%
More enjoyable	50%	47%	39%	46%
Most enjoyable	24%	33%	20%	20%

Table B.2: Main+Over Sample: Interests in Nature Compared with Other Interests

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 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 Interest in Exploring

Table B.3: Main Sample: Interest in Exploring the Outdoors

Categories	White	Hispanic	Black	Asian
A lot	52%	56%	37%	45%
Some	38%	34%	43%	39%
None at all	10%	10%	20%	16%

Table B.4: Main+Over Sample: Interest in Exploring the Outdoors

Categories	White	Hispanic	Black	Asian
A lot	52%	56%	39%	48%
Some	38%	33%	42%	38%
None at all	10%	11%	19%	13%

Question wording: How would you rate your interest in each of the following activities? ...Exploring the outdoors.

B.3 Value of Nature on Intellect

Table B.5: Main Sample: Understanding How Nature Works Important Part of Child's Education

Categories	White	Hispanic	Black	Asian
Strongly disagree	1%	1%	2%	0%
Somewhat disagree	1%	1%	2%	1%
Neither agree nor disagree	8%	12%	15%	18%
Somewhat agree	32%	27%	29%	38%
Strongly agree	59%	59%	52%	43%

Table B.6: Main+Over Sample: Understanding How Nature Works Important Part of Child's Education

Categories	White	Hispanic	Black	Asian
Strongly disagree	1%	1%	2%	1%
Somewhat disagree	1%	1%	3%	2%
Neither agree nor disagree	8%	12%	15%	16%
Somewhat agree	32%	25%	31%	36%
Strongly agree	59%	61%	50%	46%

Question wording: To what extent do you agree or disagree with the following statements? ...An understanding of how nature works is as important to a child's education as reading, writing, and math.

B.4 Importance of Nature for Health

Table B.7: Main Sample: Importance of Getting into Nature for Helping Physical Health

Categories	White	Hispanic	Black	Asian
Extremely important	33%	42%	32%	29%
Very important	37%	40%	37%	37%
Moderately important	20%	13%	20%	26%
Slightly important	5%	3%	6%	2%
Not at all important	2%	2%	4%	2%
Don't know	2%	1%	2%	4%

Table B.8: Main+Over Sample: Importance of Getting into Nature for Helping Physical Health

Categories	White	Hispanic	Black	Asian
Extremely important	33%	43%	32%	30%
Very important	37%	39%	36%	36%
Moderately important	20%	12%	20%	24%
Slightly important	5%	3%	6%	5%
Not at all important	2%	1%	4%	2%
Don't know	2%	1%	2%	2%

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

B.5 Social Influence on Nature Interests

Table B.9: Main Sample: People I Care About Making More Time for Nature

Categories	White	Hispanic	Black	Asian
Strongly disagree	5%	5%	11%	3%
Somewhat disagree	10%	9%	12%	10%
Neither agree nor disagree	37%	29%	36%	37%
Somewhat agree	29%	32%	23%	31%
Strongly agree	19%	25%	18%	19%

Table B.10: Main+Over Sample: People I Care About Making More Time for Nature

Categories	White	Hispanic	Black	Asian
Strongly disagree	5%	5%	10%	4%
Somewhat disagree	10%	8%	12%	11%
Neither agree nor disagree	37%	26%	36%	35%
Somewhat agree	29%	32%	24%	34%
Strongly agree	19%	28%	18%	17%

Question wording: How much do you agree or disagree with the following statements? ...People I care about are making more time for nature.

B.6 Availability of Places to Enjoy Nature

Table B.11: Main Sample: There are Plenty of Places to Enjoy Nature

Categories	White	Hispanic	Black	Asian
Strongly disagree	1%	3%	4%	1%
Somewhat disagree	4%	5%	4%	6%
Neither agree nor disagree	10%	13%	16%	18%
Somewhat agree	40%	32%	31%	41%
Strongly agree	44%	48%	45%	35%

Table B.12: Main+Over Sample: There are Plenty of Places to Enjoy Nature

Categories	White	Hispanic	Black	Asian
Strongly disagree	1%	3%	3%	2%
Somewhat disagree	4%	4%	4%	6%
Neither agree nor disagree	10%	11%	15%	15%
Somewhat agree	40%	32%	32%	40%
Strongly agree	44%	49%	46%	37%

Question wording: How much do you agree or disagree with the following statements? ...There are plenty of places to enjoy nature.

B.7 Lack of Time

Table B.13: Main Sample: Lack of Time Hinders Interests in Nature

Categories	White	Hispanic	Black	Asian
Not at all important	18%	9%	18%	7%
Slightly important	15%	11%	10%	12%
Moderately important	27%	26%	28%	34%
Very important	22%	27%	20%	24%
Extremely important	18%	27%	23%	22%

Table B.14: Main+Over Sample: Lack of Time Hinders Interests in Nature

Categories	White	Hispanic	Black	Asian
Not at all important	18%	10%	18%	6%
Slightly important	15%	10%	11%	13%
Moderately important	27%	25%	28%	32%
Very important	22%	27%	21%	30%
Extremely important	18%	28%	21%	19%

Question wording: How important is each of the following in hindering your interests in nature today? ...Not enough time.

B.8 Competing Priorities

Table B.15: Main Sample: Other Important Issues in My Life than My Concerns for Nature

Categories	White	Hispanic	Black	Asian
Strongly disagree	8%	7%	7%	3%
Somewhat disagree	19%	14%	10%	15%
Neither agree nor disagree	34%	31%	33%	32%
Somewhat agree	27%	29%	29%	33%
Strongly agree	13%	18%	21%	17%

Table B.16: Main+Over Sample: Other Important Issues in My Life than My Concerns for Nature

Categories	White	Hispanic	Black	Asian
Strongly disagree	8%	9%	7%	4%
Somewhat disagree	19%	14%	11%	16%
Neither agree nor disagree	34%	29%	33%	31%
Somewhat agree	27%	29%	29%	36%
Strongly agree	13%	19%	20%	14%

Question wording: To what extent do you agree or disagree with the following statements? ...There are many more important issues in my life than my concerns for nature.

B.9 Perceptions of Danger Outdoors

Table B.17: Main Sample: Times Too Dangerous for Children to be Outdoors Alone

Categories	White	Hispanic	Black	Asian
Strongly disagree	16%	13%	7%	9%
Somewhat disagree	18%	11%	9%	13%
Neither agree nor disagree	21%	21%	21%	29%
Somewhat agree	30%	29%	31%	35%
Strongly agree	15%	25%	32%	13%

Table B.18: Main+Over Sample: Times Too Dangerous for Children to be Outdoors Alone

Categories	White	Hispanic	Black	Asian
Strongly disagree	16%	14%	8%	8%
Somewhat disagree	18%	11%	9%	13%
Neither agree nor disagree	21%	19%	21%	27%
Somewhat agree	30%	30%	30%	35%
Strongly agree	15%	27%	33%	17%

Question wording: To what extent do you agree or disagree with the following statements? ...Times have become so dangerous that parents can't allow their children to be outdoors on their own.

B.10 Perception of Funding Levels

Table B.19: Main Sample: Funding Levels of Programs for Americans to Enjoy Nature and Wildlife

Categories	White	Hispanic	Black	Asian
Under-funded	52%	60%	50%	49%
Adequately funded	30%	26%	23%	34%
Over-funded	4%	2%	3%	1%
No opinion	14%	11%	24%	16%

Table B.20: Main+Over Sample: Funding Levels of Programs for Americans to Enjoy Nature and Wildlife

Categories	White	Hispanic	Black	Asian
Under-funded	52%	61%	46%	48%
Adequately funded	30%	26%	23%	33%
Over-funded	4%	2%	3%	3%
No opinion	14%	11%	27%	16%

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 name tag. 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.

(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 mosquitoes.

    (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

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. _____

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

(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) $1000,000 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.