

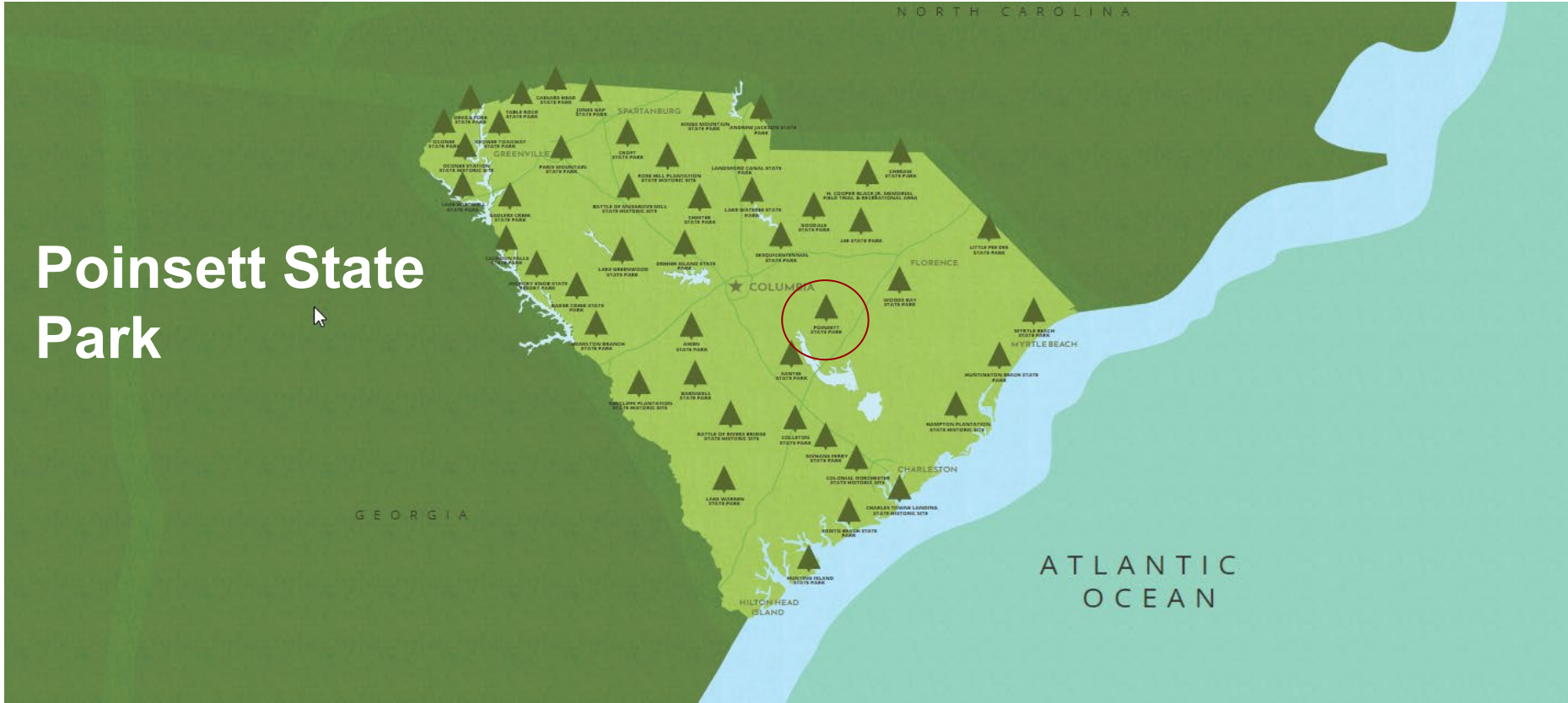
Navigating Challenges, Seizing Opportunities: U.S. State Parks in the 21st Century



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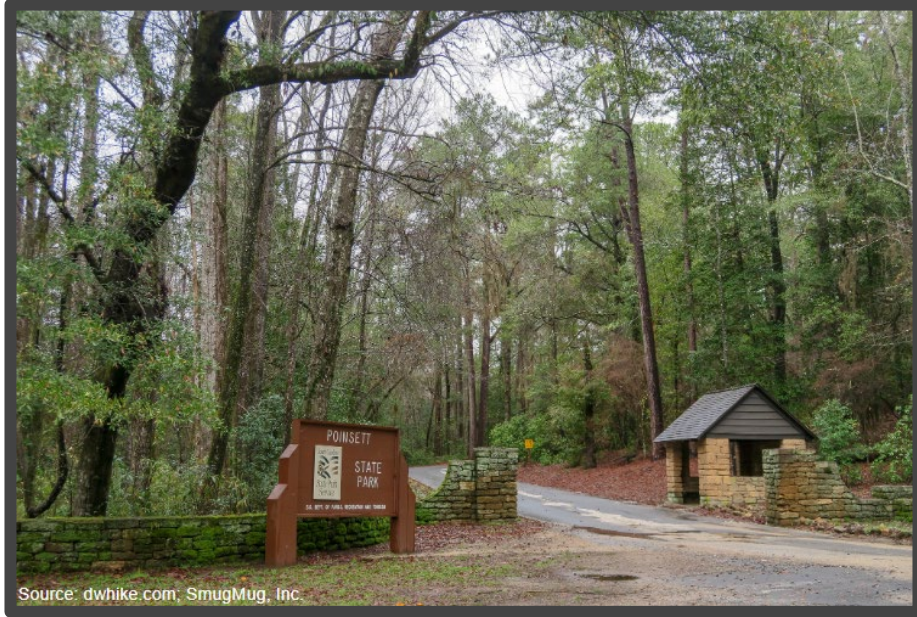
Where it all began...

Poinsett State Park



<https://southcarolinaparks.com/park-finder>

Where it all began...



Challenges = Opportunities

- Demand for outdoor recreation
- Climate change
- Demographic shifts
- The next pandemic



Source: Getty Images



Demand for Outdoor Recreation



2023 OUTDOOR PARTICIPATION TRENDS REPORT

EXECUTIVE SUMMARY AND KEY INSIGHTS

OUTDOOR
FOUNDATION

OUTDOOR
INDUSTRY
ASSOCIATION

PARTICIPANT BASE GROWTH

THERE HAS BEEN RECORD GROWTH IN THE TOTAL PARTICIPANT BASE.

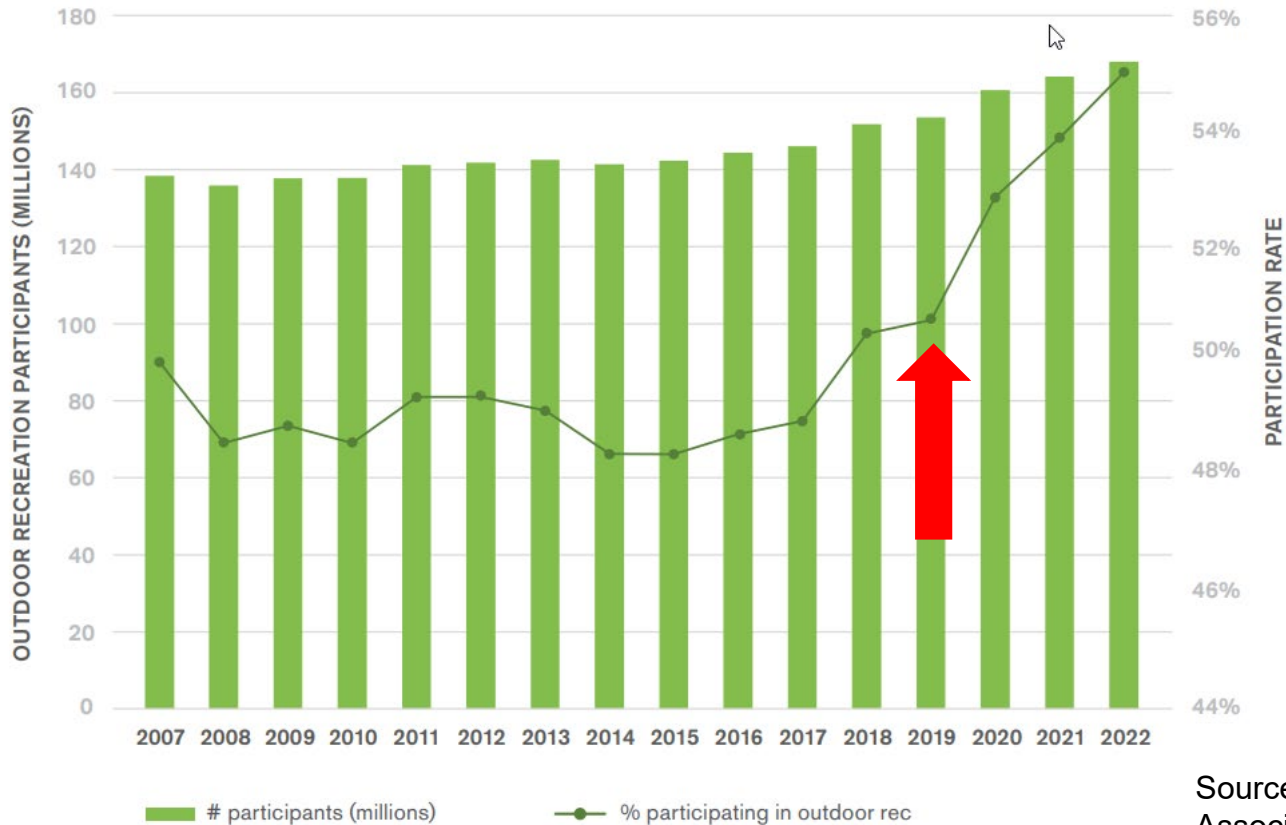
The number of outdoor recreation participants increased 2.3% to a total of **168.1 million Americans in 2022.**

This equates to

55%

of the U.S. population over the age of 6

Number of Outdoor Recreation Participants and Participation Rate: 2007 - 2022



The COVID Effect

travel Destinations Food & Drink News Stay Video

Unlocking the World

National park visitors surge as Covid-19 pandemic restrictions wane

By Andy Rose, CNN
Updated 9:43 AM EDT, Sun June 13, 2021



LOCAL

Gorges, Grandfather Mountain state parks see double-digit visitation increases during COVID

Karen Chávez
Asheville Citizen Times

Published 5:00 a.m. ET Jan. 30, 2021



Attendance trends threaten future operations of America's state park systems

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Edited by Arun Agrawal, University of Michigan, Ann Arbor, MI, and approved May 8, 2019 (received for review February 8, 2019)

This research examines how the operating expenditures of America's state park systems will be affected by a continued growth in attendance consistent with observed trends as well as potential climate futures. We construct a longitudinal panel dataset (1984–2017) describing the operations and characteristics of all 50 state park systems. These data are analyzed with a time-varying stochastic frontier model. Estimates from the model are used to forecast operating expenditures to midcentury under four different scenarios. The first scenario assumes annual attendance within each state park system will continue to grow (or decline) at the same average annual rate that it has over the period of observation. The subsequent scenarios assume statewide annual mean temperatures will increase following the RCP2.6, RCP4.5, and RCP8.5 greenhouse gas emissions trajectories. Operating expenditures under a scenario where annual growth in attendance stays consistent with observed trends are forecasted to increase 756% by midcentury; this is an order of magnitude larger than projected expenditures under any of the climate scenarios. The future climate change scenarios yielded increases in operating expenditures between 25% (RCP2.6) and 61% (RCP8.5) by 2050. Attendance is the single largest factor affecting the operations of America's state park systems, dwarfing the influence of climate change, which is significant and nontrivial. The future of America's state park systems will depend upon increased support from state legislatures, as well as management actions that generate funds for the maintenance of existing infrastructure and facilities, and the provisioning of services.

climate change | stochastic frontier | outdoor recreation | public lands

Parks and protected areas are vitally important to the health and well-being of the American public. These areas have also shaped the nation's identity as pioneers of preservation and conservation, leaving a legacy that many other nations around the world have aspired to over the past century. Managing parks and protected areas for human enjoyment and benefits comes at a cost, however. Management requires capital to ensure visitors' health and safety and to maintain infrastructure and services that facilitate desired outdoor recreation activities. Importantly, capital is also required to take management actions that minimize the environmental disturbance visitors can have on natural landscapes and cultural resources. As the demand for outdoor recreation continues to grow across the country, so too do the

to national parks frequently make national news, particularly in times of crisis such as federal government shutdowns. However, there is a dearth of information about visitation to state parklands across the country; despite the fact they see nearly 2.5 times as many annual visits as national parks. Currently, there are a total of 8,292 individual management units in operation within one of the nation's 50 state governments (5). These state parklands generate over 2 billion hours of nature recreation annually, about a third of all US nature recreation (6).

Increased visitation to parks and protected areas often stresses the capacities of park managers to ensure visitor health, safety, and enjoyment. Increased visitation also often results in greater, or more severe, environmental disturbances on-site as well as new disturbances in adjacent areas that visitors are using to avoid crowded trails and waterways (7). All of these consequences result in increased management costs. It is unclear whether elected officials across the country are willing to prioritize these costs, and support them through federal and state appropriations dedicated to managing outdoor recreation. For example, state funding allocated to managing outdoor recreation through state park systems has declined from a high of \$3.74 billion (inflation adjusted) in 2006 to \$2.59 billion in 2017 (4).

To compound concerns over attendance levels that are rapidly outpacing appropriated budgets, there are a wealth of data suggesting climate change, and more particularly increases in temperatures, will positively influence visitation rates (8, 9).

Significance

State park lands in the United States are important to the health and well-being of the American public. Managing these lands for human enjoyment comes at a cost, however. Management requires capital to ensure visitors' health and safety, to provide infrastructure and services that facilitate desired outdoor recreation activities, and to protect natural and cultural resources. By constructing and analyzing a dataset describing the operations of all 50 state park systems in the United States, we were able to determine the operating costs of state park systems will likely increase substantially in the coming decades. These increases are largely attributable to continued increases in attendance (visitor-hours) and, to a much lesser extent, climate change.



Projected Change in Operational Expenditures: 2017 - 2050

Two key findings:

- 1) 2017 level: **\$432/acre**
- 1) 2050 level: **\$5,380/acre**

(assuming historical annual attendance increase of 6.6%)



Climate change

Climate change: the challenge



Climate scientists say wildfires, flooding and heat waves will get worse and happen more often. Photos: Getty (3), AP, Reuters, Zuma Press

Extreme Heat, Floods, Fire: Was Summer 2023 the New Normal?

Climate scientists say a warming planet is contributing to, and worsening, weather events

By [Joseph Pisani](#) [Follow](#) and
[Jennifer Calfas](#) [Follow](#)

Aug. 23, 2023 at 1:30 am ET



SHARE



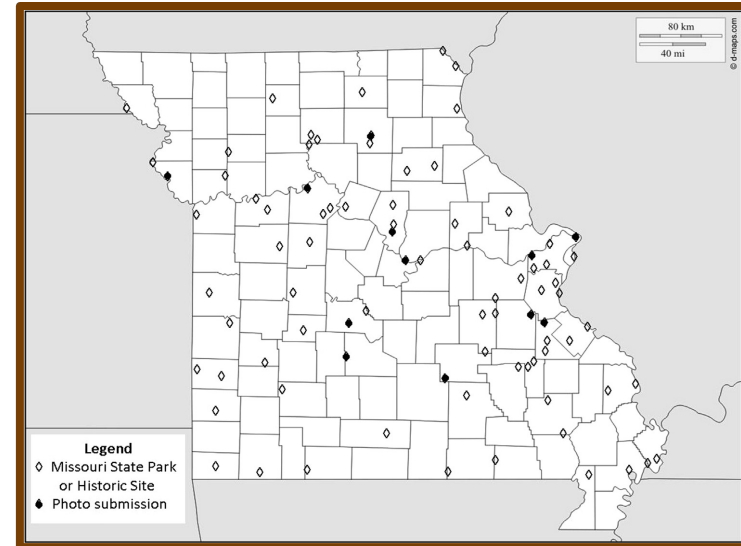
TEXT



Listen to article (1 minute)

To what degree might these impact your decision to visit Missouri State Parks and Historic Site?

| Top 5 Responses | Percent response - "Somewhat" or "A great deal" |
|--|---|
| Increase in tick- and mosquito-borne disease | 48.9% |
| Increased flooding | 45.2% |
| Increased exposure to toxins | 39.7% |
| Increased severity of heat waves | 38.7% |
| Risk of heat exhaustion and heat stroke | 38.7% |
| Sample N = 2,572 in 20 Missouri parks and historic sites | |



Source: Groshong, L., Wilhelm Stanis, S., & Morgan, M. (2021). Perceptions of climate change – Related health threats among state park visitors. *Recreation, Parks and Tourism in Public Health*. doi: 10.2979/rptph.5.1.03

Special Issue

Impacts of Climate Change on Outdoor Recreation Participation: Outlook to 2060

Ashley E. Askew

J. M. Bowker

Abstract

Natural resource managers and planners must consider outdoor recreation's long-run response to shifting population density, sociodemographic factors, land uses, and climate change. Projected rises in greenhouse gases imply changing minimum/maximum temperatures, potential evapotranspiration, and precipitation. The strong link between natural resource conditions and outdoor recreation suggests that long- and short-term recreation planning requires knowledge of which activities and settings will be impacted by climate change. Climate change response is principally an adaptation strategy, as climate cannot be directly managed like park access. Effective planning requires that adaptation or mitigation strategies should be considered for activities and implemented in advance.

We used a two-step approach. The estimation step yielded models of adult participation rates and days-per-participant by activity at regional and national levels. The simulation step combined models with external projections of explanatory variables at 10-year intervals to 2060. Estimates of per capita participation and days-of-participation were combined with population projections to estimate participants and participant-days by activity. Regional and national projections through 2060 were made under three 2010 Resources Planning Act (RPA) Assessment scenarios, varying in population growth rates, socioeconomic conditions, and land uses. Adding in a climate

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Projected changes in outdoor recreation participants – Nationwide : 2008 - 2060

| Selected activities | Range of percent change (total participants) | |
|---------------------|--|------------|
| Skiing | -109% | +3% |
| Fishing | -18% | -4% |
| Hiking | -9% | -3% |
| Birding | -16% | -3% |
| Whitewater | -37% | -7% |



Demographic Change

Source: Getty Images

Demographic Change

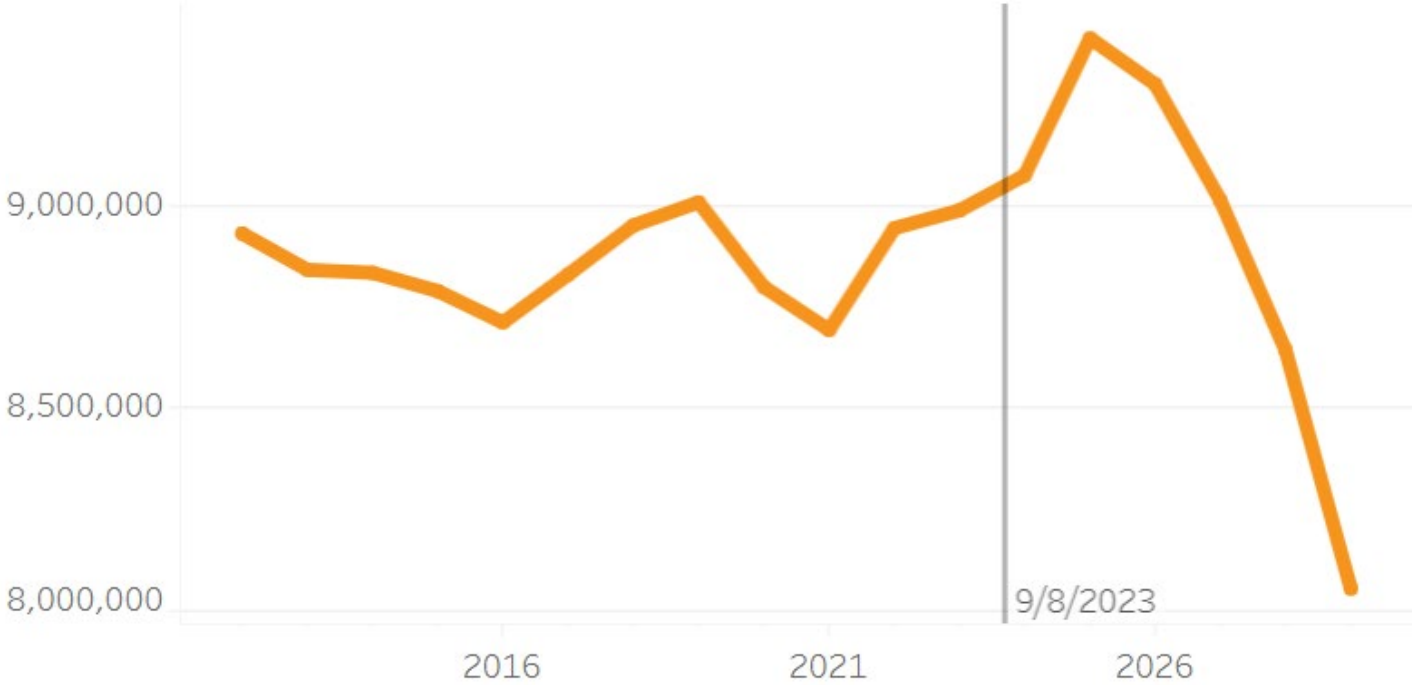
- In 2018, for the first time, the combined nonwhite population—**Blacks, Hispanics, Asians, persons identifying as multiracial, and other races—comprised 50%** of the under age 15 population.¹
- In 2020, **about 1 in 6 people in the US were 65+**; in 1920 this proportion was less than 1 in 20.²

Sources: ¹Brookings, W.H. Frey, June 24, 2019; ²US Census Bureau, Z. Caplan.

The Enrollment Cliff

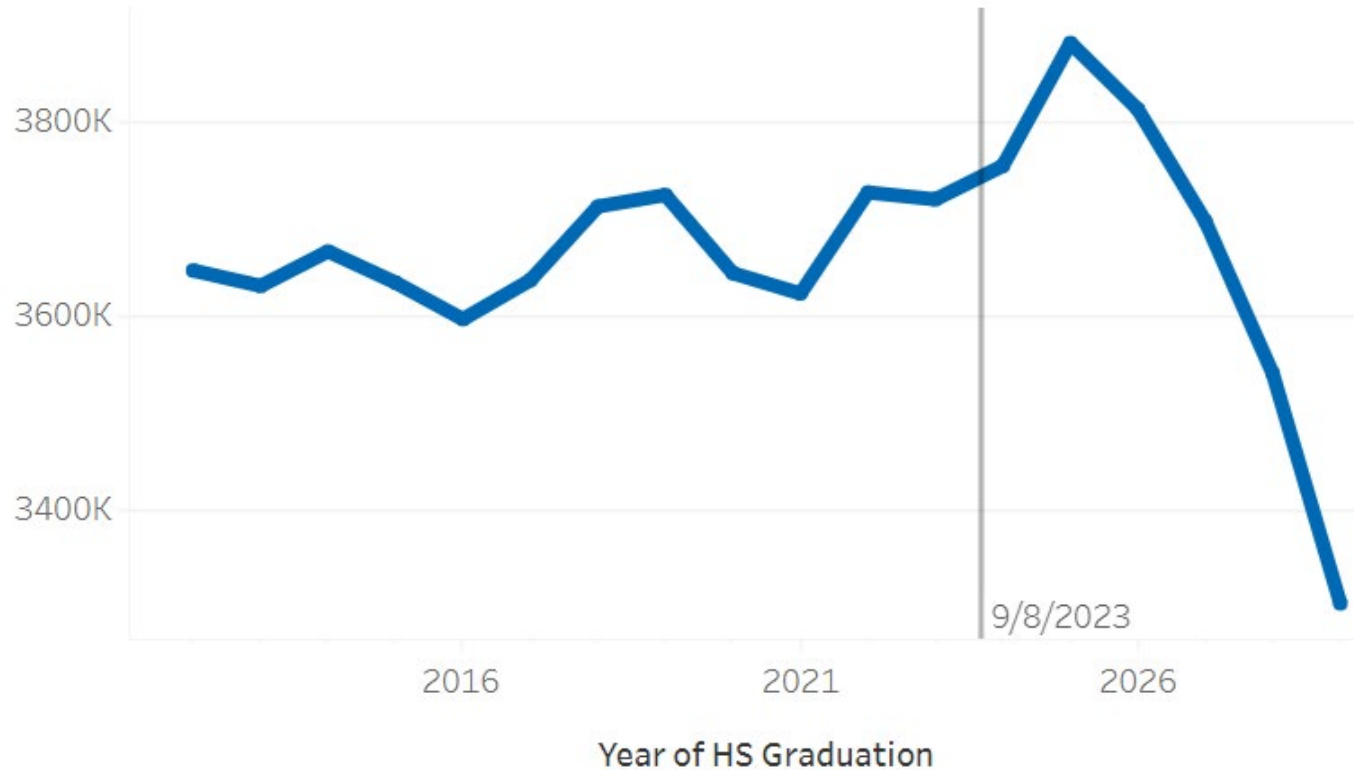


The “Enrollment Cliff”: Number of 18-Year-Olds in the US population



Source: College and University Professional Association for Human Resources

The “Enrollment Cliff”: Four-Year US College Enrollment



Source: College and University Professional Association for Human Resources



College of Natural Resources

The Next Pandemic

- **970 million** people suffer from a mental disorder
- **280 million** worldwide suffer from depression (as a mental disorder).



World mental health report

Transforming mental health for all



Source: WHO World Mental Health Report: Transforming mental health for all (2022)

“More than 1 in 5 US adults live
with a mental illness.”

(Center for Disease Control and Prevention)



What are the opportunities?

1. Promote the size of the economic impact of outdoor recreation.

- NASPD should play a prominent role within state and federal outdoor advocacy organizations
- Advocate for increased funding for conservation, economic impact studies, and research

Outdoor Recreation:
\$454 Billion
value-added contribution to GDP

What are the opportunities?

2. State parks play an important role as a “natural” climate solution.

- Explain the importance of trees and vegetation in capturing and storing carbon –in the “world’s best classrooms”
- Promote the potential of state parks to capture and store carbon – a study found that national park units sequester 17.5 metric tons of CO₂ per year¹



What are the opportunities?

3. Accelerate action to increase workforce and visitor diversity.

- Partner with your universities, community colleges, and K-12 to develop “pipelines” for the next generation workforce.
- Engage diverse stakeholders to develop programs, volunteer, and lead guided programs.



What are the opportunities?

4. Promote parks as a “natural” partner in community health and healthcare.

- Partner with primary care doctors to “prescribe” visits to state park.
- Work with local P&R to offer programs for targeted patient and health outcomes.

“Evidence supports an association between common types of nature experience and increased psychological well-being.”

SCIENCE ADVANCES | REVIEW

SOCIAL SCIENCES

Nature and mental health: An ecosystem service perspective

Gregory N. Bratman^{1,2,3,4*}, Christopher B. Anderson^{3,5}, Marc G. Berman^{6,7}, Bobby Cochran⁸, Sjerp de Vries⁹, Jon Flanders^{10,11}, Carl Folke^{12,13,14}, Howard Frumkin^{15,16}, James J. Gross¹⁷, Terry Hartig^{18,19}, Peter H. Kahn Jr.^{1,20}, Ming Kuo²¹, Joshua J. Lawler^{1,2}, Phillip S. Levin^{1,2,22}, Therese Lindahl¹⁴, Andreas Meyer-Lindenberg²³, Richard Mitchell⁴, Zhiyun Ouyang²⁵, Jenny Roe²⁶, Lynn Scarlett²⁷, Jeffrey R. Smith²⁸, Matilda van den Bosch^{28,29}, Benedict W. Wheeler³⁰, Mathew P. White³⁰, Hua Zheng²⁵, Gretchen C. Daily^{3,4,5,31*}

A growing body of empirical evidence is revealing the value of nature experience for mental health. With rapid urbanization and declines in human contact with nature globally, crucial decisions must be made about how to preserve and enhance opportunities for nature experience. Here, we first provide points of consensus across the natural, social, and health sciences on the impacts of nature experience on cognitive functioning, emotional well-being, and other dimensions of mental health. We then show how ecosystem service assessments can be expanded to include mental health, and provide a heuristic, conceptual model for doing so.

INTRODUCTION

Human well-being is linked to the natural environment in myriad ways, and actionable understanding of these links is deepening in diverse disciplines (1–3). Many of the contributions of living nature (diversity of organisms, ecosystems, and their processes) to people’s quality of life can be referred to as “ecosystem services.” They include water purification, provision of food, stabilization of climate, protection from flooding, and many others (2). Worldwide, major

These efforts rely increasingly upon models that relate scenarios of change in ecosystems to change in the provision of services (7), and they have been adopted on an international scale. For example, the Natural Capital Project’s InVEST models (for Integrated Valuation of Ecosystem Services and Tradeoffs) are being used in 185 countries around the world (6). The InVEST models are based on production functions that define how changes in an ecosystem’s composition, configuration, and function are likely to affect the flows and values

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Perspective on the future...

“A leader’s job is to look into the future and see the organization, not as it is, but as it should to be.”

-Jack Welch

“A leader takes people where they want to go. A great leader takes people where they don’t necessarily want to go, but ought to be.”

-Rosalynn Carter

Thank You!

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NC STATE
UNIVERSITY

College of
Natural Resources



Source: www.onlyinyourstate.com

The Bathhouse at Poinsett State Park (SC)