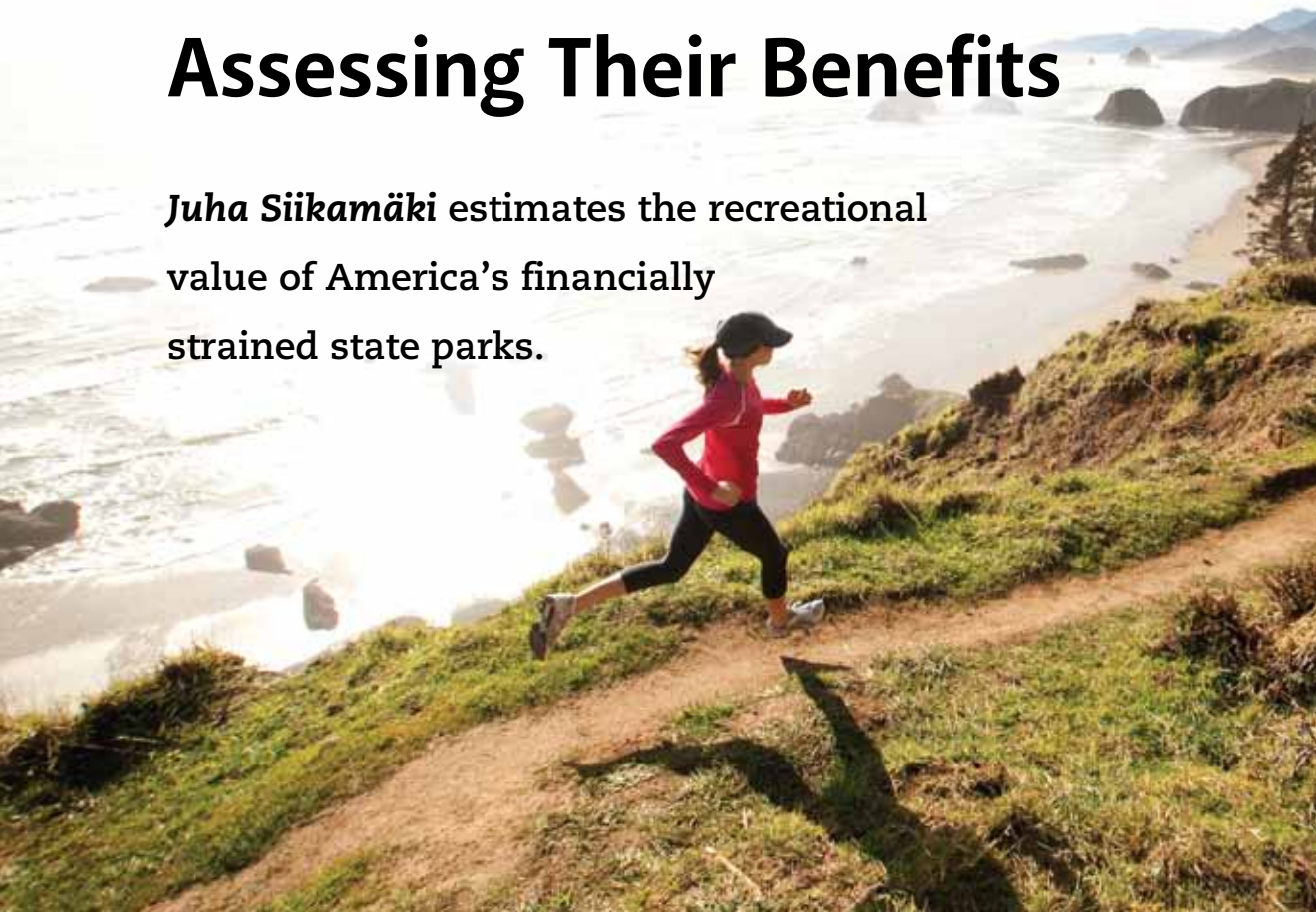
STATE PARKS

Assessing Their Benefits

Juha Siikamäki **estimates the recreational value of America's financially strained state parks.**



Each year, more than 700 million visits are made to America's 6,600 state parks. Despite the popularity of these areas, Arizona, California, Nevada, New York, and many other states are considering or already have decided to temporarily close some or even all of their parks to reduce expenses. The scale of proposed budget cuts is massive: In 2009, the State of Washington roughly halved the operating budget of its parks—from $100 million to $48 million—with further cuts scheduled for 2011–2013. Arizona legislature cut $72 million from the state parks budget over the past three years, and California has announced a plan to close 70 state parks to help meet a $22 million budget cut. The federal government, also an important supporter of outdoor recreation, similarly is under pressure to reduce spending.

While spending cuts and park closures may be inevitable, we don't know enough about their overall impact on nature recreation. Will the popularity of nature recre-

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ation drop as state parks are closed, or will people simply find alternative locations to explore nature? And does setting up nature parks encourage outdoor recreation? If it does, by how much?

Answering these questions is important from a policy and economic standpoint. Expenditures and investments in support of outdoor recreation are large, so it is worth knowing whether they achieve their intended societal goals and if their impacts translate into economic benefits or losses. Closing parks may not look like such a good idea if they generate larger benefits than the expenditures required to keep them open.

There is a large, rigorous literature assessing outdoor recreation behavior and benefits, but most of it is focused on specific recreation activities, such as angling, hiking, or hunting. Most of the studies further concentrate in a specific geographic region, such as a state or a sub-region within a state or a set of states. I recently completed a study that expanded the scope to include broad categories of recreational activities and examined their popularity relative to the entire U.S. park system.

My research indicates that state parks contribute roughly one-third of all nature recreation in the United States, measured in hours of nature recreation per capita. Using conventional economic approaches to estimate the value of recreation time combined with relatively conservative assumptions, the estimated annual contribution of the state park system is around $14 billion. That value is considerably larger than the annual operation and management costs of state parks.

Study Overview

Examining the amount of time Americans use for nature recreation was the focus of my study. Historical data on time use were available from five different surveys conducted between 1975 and 2007, and with the help of those data I could measure the impacts of changing access to nature on the popularity of nature recreation. Time-use surveys offer detailed descriptions of the daily activities elicited from individuals, and their data comprise a sample from the annual national time budget.

Each surveyed individual was requested to provide a minute-by-minute listing of activities during a 24-hour recall period. Nature recreation was defined broadly

to include many different kinds of physical recreation activities that take place in nature, including fishing, hunting, hiking, camping, skiing, boating, canoeing, recreational walking, and so forth. Using broad categories also made it possible to combine data from multiple surveys.

slightly increased. Note that these participation estimates refer to the percentage of the population for whom time use for nature recreation was not zero during the 24-hour survey recall period. Though such data well predict the relative popularity of nature recreation over time, participation rates

Between 1975 and 2007, about 3,000 new state parks were established. This expansion is estimated to contribute annually about 600 million additional hours of nature recreation.

As shown in Figure 1a, in 1975, Americans spent, on average, 0.79 hours per week per person on nature recreation. Nature recreation declined to about 0.59 and 0.57 hours per week per person by 1985 and 1992, respectively, and then dropped to 0.48 and 0.51 by 2003 and 2007. Although a consistent, moderate downward trend is apparent in Figure 1a, the estimates of average time use are not statistically significantly different between different years.

Figure 1b shows that the percentage of the population active in nature recreation steadily declined between 1975 and 1993 but has since stayed relatively constant or would be higher had the recall period been a month or a year.

Geographic variation in estimated time use per capita for nature recreation is illustrated for 2003–2007 in Figure 2. Nature recreation is especially popular in the Northwest and Northeast. Parts of the Southeast and south-central United States also stand out.

Uncovering the Contributions of U.S. State Parks

Data on time use for nature recreation are informative but do not reveal what drives nature recreation and what role access

Figure 1a. Time Use for Nature Recreation (hours/week/person)

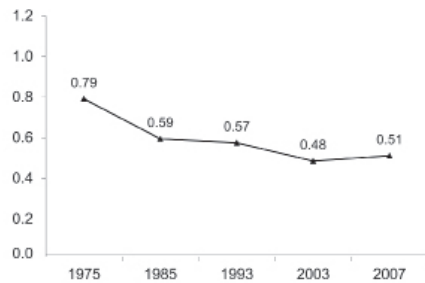
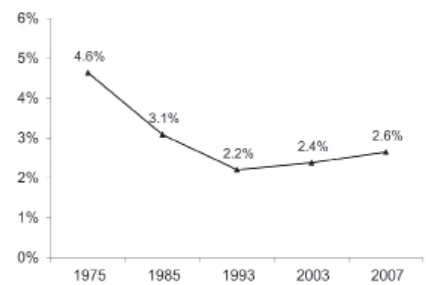


Figure 1b. Percentage of Population with Non-zero Time Use for Nature Recreation



to nature has in the popularity of nature recreation. To examine these questions, I constructed state-level estimates of nature recreation for the survey years between 1975 and 2007 and then matched those estimates with state-level data on the availability of state parks and other potentially important drivers of nature recreation. This approach allowed me to separate out state-specific innate differences in recreation and focus directly on how changes over time in the availability of state parks influenced the popularity of nature recreation in various states.

The statistical methods I used in this study are designed to extensively control for potentially important and possibly confounding factors within and among states, including baseline differences among the different states, time trends, and state-level variation in the socioeconomic characteristics of the population. The model also takes into account the availability of other potential recreation areas, such as access to federal lands and state parks in neighboring states.

Changes over time in the availability of state parks have a robust effect on nature recreation per capita. Between 1975 and 2007, about 3,000 new parks totaling about 2 million acres were established in the United States, increasing the total area of the state park system by nearly one-quarter. This expansion of the state parks is estimated to contribute about 9 percent of all current time use for nature recreation (Table 1). Overall in the United States, this equals annually about 600 million additional hours of nature recreation, or about 2.7 hours of nature recreation per capita.

Valuing recreation time monetarily requires determining the opportunity cost of time. To illustrate the potential magnitude of recreation's time value, I used a conventional and commonly adopted approach where recreation time is valued at

Figure 2. Time Use for Nature Recreation by State, 2003–2007 (hours/week/person, on average)

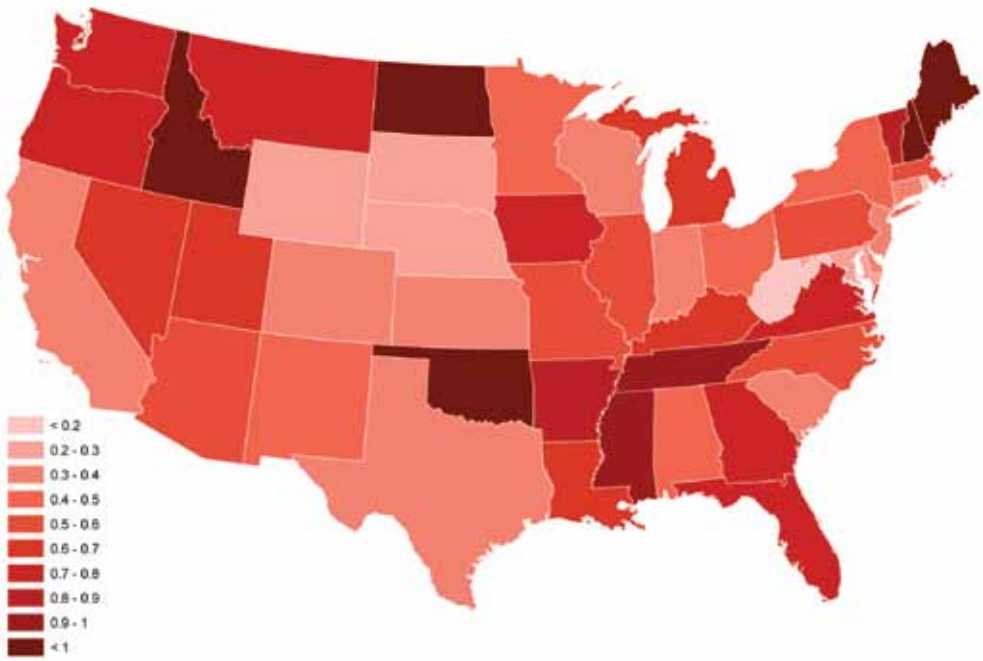


Table 1. Estimated Nature Recreation Services Provided by U.S. State Parks

Estimated effect	Expansion, 1975–2007 (about 1.9 million acres)	All parks (about 10.4 million acres)
Share of all current nature recreation contributed	9.2%	33.4%
Per person, annually		
Hours of nature recreation	2.7	9.7
Estimated time value	$17	$62
In the United States, annually		
Hours of nature recreation (millions), total	602	2,194
Estimated time value (millions), total	$3,851	$14,037

Source: Siikamäki 2011.

one-third the wage rate. The estimated time value of the nature recreation generated by the expansion of state parks between 1975 and 2007 is about $3.85 billion, or $17 per person, annually.

Extrapolating from the above results, I estimate about 33 percent of current time use for nature recreation can be attributed to the U.S. state park system (Table 1). This equals annually about 9.7 hours of nature recreation per capita, or about 2.2 billion hours of nature recreation in total in the United States. The estimated time value of nature recreation generated by the entire U.S. state park system is about $14 billion annually (about $62 per person annually, on average).

Park Benefits Exceed Recurring Costs

This research shows that providing the public with access to nature generates discernible and measurable impacts on the popularity of nature recreation. The estimated nature recreation services provided by the U.S. state park system are considerable. For example, the estimated recreation services from the two million acres of state parks established between 1975 and 2007—about one-fifth the total acreage of state parks—already exceed the currently reported operation and management costs of the entire U.S. state park system ($3.85 billion versus $2.3 billion, annually). In total, the entire U.S. state park system is estimated to generate about 2.2 billion hours of nature recreation, worth an estimated time value of about $14 billion, annually. Although the capital cost sunk in park real estate is not included in this calculation, it is unlikely that adding it to the assessment would make the overall costs of state parks greater than their benefits.

These estimates denote the annual flow of nature recreation attributed to the U.S.

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state park system. The net present value of these annual flows is required to project the total contributions of state parks. For example, using a 10 percent discount rate and an infinite horizon (because parks typically are permanent), the estimated total net present amount of nature recreation associated with the entire U.S. state park system equals about 22 billion hours and has an estimated total time value of about $140 billion.

It is also worth noting that the effects of a specific park on nature recreation may be smaller or greater than the average, even considerably. The existing literature on outdoor recreation also suggests this, providing many examples of how the characteristics of a recreation area influence its attractiveness to people.

Nature recreation represents only a partial assessment of the full range of ecosystem services produced by natural areas. Examples of other potentially relevant ecosystem services include carbon sequestration and storage through biological processes, contributions to surface and groundwater services, and benefits from preserving endangered and threatened species. A full assessment of ecosystem services from state parks should consider these nonrecreation contributions, yielding an even more comprehensive—and presumably larger—estimate of the value of America's state park system. ●

FURTHER READING

Siikamäki, Juha. 2011. Contributions of the U.S. State Park System to Nature Recreation. *Proceedings of the National Academy of Sciences* 108: 14031–36.