# The NYS Park System: An Economic Asset to the Empire State

Prepared for:
Parks & Trails New York

Prepared by:
Political Economy Research Institute, University of Massachusetts-Amherst
James Heintz, Robert Pollin, and Heidi Garrett-Peltier

March 2009

## Introduction

The New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) maintains and operates 178 state parks and 35 state historic sites, covering a total of 325,000 acres. These parks and historic sites attracted over 55 million visitors during the 2007/8 season. The park system represents a valuable collection of natural and recreational assets, including 1,350 miles of hiking trails, over 8,000 campsites, nature centers, swimming pools, beaches, boat launches, and golf courses. The park system clearly makes a valuable contribution to the quality of life in New York State. This report documents another contribution of the State Park System – its impact on the regional and state economies.

The New York State Parks System is divided into 11 administrative regions: Allegany, Saratoga/Capital, Central New York, Finger Lakes, Genesee, Long Island, New York City, Niagara Frontier, Palisades, Taconic, and Thousand Islands. In addition, New York State has two large forest preserves – the Adirondack Park and the Catskills – which are administered separately from the State Park System. Because of their separate status, we do not include the Adirondack Park or the Catskills in the analysis of this report. For fiscal year 2008/9, state government expenditures on the park system total about $341 million. Approximately $88 million is dedicated to capital improvements (e.g. investments in buildings, interpretive centers, roads, bridges, and recreational facilities). The remaining $253 million represents the operating expenditures which support on-going activities and services.

This report challenges the presumption that there are stark trade-offs between generating jobs and protecting the environment. We specifically estimate the size of the economic contributions of the park system to the economies of each of the 11 regions and to the New York State economy as a whole. We show that the state spending of $341 million to operate, maintain, and improve the Park System generates economic benefits to the regional and state economies that dramatically exceed this investment. The direct state spending increases employment, supports local businesses, and generates numerous ripple effects throughout the regional economies. State Parks also attract visitors from outside the local community. These visitors spend money on food, shopping, transportation, recreation, and lodging, all of which gives New York's local economies an added boost.

Table 1 summarizes our estimates of the impact of state spending and visitor expenditures on the 11 regions and New York State as a whole.[1] We estimate that the combination of state and visitor spending supports up to $1.9 billion in economic output and

---

[1] Table 1 shows the upper-end estimates of the impact of government and visitor spending. The report presents a range of estimates in subsequent sections.

business sales and up to 20,000 jobs throughout the state. Clearly, the impact of the state park system on New York's economy is sizeable and the benefits exceed the direct costs of operating the state parks many times over.

Table 1. Total visitors and the estimated impact of state operating expenditures, capital investments, and visitor expenditures, New York State parks.

| REGION | Visitors (2007/8) | Employment | Sales/Output |
|---|---|---|---|
| | | Upper bound | |
| | | # jobs | ($ millions) |
| Allegany | 1.9 million | 860 | $62 |
| Capital/Saratoga | 3.3 million | 2,929 | $249 |
| Central | 2.3 million | 1,620 | $134 |
| Finger Lakes | 3.0 million | 1,776 | $141 |
| Genesee | 1.2 million | 675 | $58 |
| Long Island | 19.9 million | 3,992 | $410 |
| New York City | 4.5 million | 716 | $61 |
| Niagara Frontier | 10.3 million | 4,701 | $569 |
| Palisades | 4.4 million | 1,052 | $94 |
| Taconic | 3.1 million | 957 | $102 |
| Thousand Islands | 1.7 million | 882 | $63 |
| **STATE** | **55.7 million** | **20,159** | **$1,942** |

*Sources: See appendix.*

Table 1 also presents economic impact assessments for each of the 11 park regions. Two factors have a large influence on the relative size of the economic impacts in each region: (1) the size of the regional park system and (2) the number of non-local visitors the region attracts. The regions with the largest aggregate impacts are Long Island, the Capital/Saratoga region, and the Niagara Frontier. The regions with the smallest total impacts are the Allegany region, the Genesee region, and New York City. Although the state parks in the New York City region receive a large number of visitors each year, most of the visitors are local and therefore the direct effects of visitor spending are smaller. It is also important to remember that these figures exclude the economic impact of various local and national parks and historic sites throughout the state.

The economic impact estimates featured in this report emphasize the effects of spending associated with the state parks. However, the State Park System contributes to the economic well-being of the state in ways that go beyond the immediate impacts of government and visitor expenditures. These additional benefits include maintaining valuable ecosystems and biodiversity, providing opportunities for recreation, mitigating the negative impacts of pollution, improving health outcomes, preserving areas of historic importance, and protecting the state's heritage for future generations. The state parks improve the quality of life in New York and thereby influence business location decisions and the ability of the state to attract a high-quality workforce. Many of these long-term economic benefits are not easy to value. Nevertheless, research studies that have attempted to quantify these benefits suggest that the total contribution of the park system to the state economy would exceed the estimates of the impact of government and visitor spending presented in Table 1. We do not attempt to assess the size of these additional economic contributions in this report, but they should not be ignored when

interpreting our findings. Because of these numerous additional benefits, our assessments of the economic impact of the state park system, even our upper-bound estimates, underestimate the parks' true economic contribution.

The primary focus of this report is the state park system. However, the activities of the New York State Office of Parks, Recreation, and Historic Preservation – as a state agency – are not restricted to the state parks and historic sites. These additional activities are varied and substantial. They include organizing the Empire State Games; administering the state recreational boating program; oversight of over 10,000 miles of snowmobile trails; administering local grants-in-aid programs which support park and recreational trail development by community groups and municipalities; and oversight of the state's historic preservation programs.[2] All of these activities generate economic benefits for local and state economies – from promoting tourism to raising property values. Therefore, the assessment of economic impacts contained in this report, which focuses exclusively on the parks and historic facilities, will not represent the full contribution of the Office of Parks, Recreation, and Historic Preservation to the New York State economy.

The remainder of the report is organized as follows. In the next section, we discuss the approach we use to estimate the economic impacts of the New York State park system. We focus specifically on how parks expenditures, by visitors and the state, affect jobs, economic output, and employment income. Following this general discussion, we estimate the economic impact of direct government spending on the park system, in terms of operating expenditures and capital improvements. We then assess the economic impact of visitor spending on the regional and state economies, given the annual number of visitors to each of the regions. Finally, we conclude by reflecting on the analysis and summarizing our findings.

**Economic Impacts of the New York Park System: Measuring the Effects**

We examine three channels through which the state parks and historic sites impact the state economy: operating expenditures by Office of Parks, Recreation, and Historic Preservation; expenditures on capital improvements to the parks' infrastructure; and spending by the tens of millions of visitors who come to enjoy the parks. By 'operating expenditures' we refer to the recurring categories of expenditures that are necessary to keep the park system going. Operating expenditures include personnel costs, administrative services, and office and maintenance supplies. Capital improvements represent durable investments in the physical infrastructure of the parks and historic sites: roads, bridges, buildings, sea walls, and the restoration of recreational facilities. When visitors come to the parks, they also spend money in the region, on groceries, eating out, car expenses, lodging, and other kinds of shopping. All of these categories of expenditures will affect the local and state economies, by increasing business sales, creating jobs, and generating new sources of income.

Before moving directly into considering the impact of these categories of spending on employment, economic activity, and incomes, it is useful to review the approach we use to generate the estimates.

---

[2]   These historic preservation programs include community preservation and development activities, the redevelopment of historic structures, maintaining the National Register of Historic Places for New York State, and the administration of state and federal tax benefit programs.

Expansion of spending affects economic activity through three distinct effects. These are:

1. *Direct effects*—the impact generated directly by the expenditure itself (e.g. state spending used to hire park staff or to repair a road);

2. *Indirect effects*—the new jobs and economic output associated with increased demand for materials, goods, and services linked to direct spending (e.g. when park visitors eat in a local restaurant, they create indirect demand for the food that is used to prepare the meal);

3. *Induced effects*—the expansion of economic activity that results when people who get the jobs generated by the direct and indirect effects spend their incomes on goods and services.

We begin by focusing first on direct and indirect effects. Direct and indirect effects are fairly straightforward to measure within the framework of our model, based on state-level input-output accounts. Estimating induced effects involves a broader set of considerations, including the current state of the economy. Therefore, we briefly consider the question of induced effects separately below.

*Input-Output Model for Estimating Direct and Indirect Job Creation*

Our primary tool for generating estimates of the economic impacts of parks spending is a model based on state-level and county-level input-output tables. In the technical appendix, we discuss the operation of the input-output model in more detail. Here we present a brief non-technical summary of this discussion.

The input-output model captures in great detail the relationships that exist between different industries in the production of goods and services. We also observe the interconnections between consumers of goods and services, including households and governments, and the various producing industries. The input-output model enables us to estimate the effects on the regional and state economies of an increase in final demand for the products or services of a given industry. For example, we can estimate the number of jobs directly created in local supermarkets and food stores when park visitors spend money on groceries. We can also estimate the jobs that are indirectly created in other industries through the additional visitor spending. Overall, the input-output model allows us to estimate the economy-wide outcomes that result from a given level of spending in a particular area, including the effect on jobs, the value of output and sales, and incomes.

The estimates from the input-output model also take into account leakages. The most important leakages occur when visitors or state agencies purchase goods or services produced outside of the local and state economies. Spending on these goods does not raise the demand for local output. The estimates we present in this report take into account these leakages, given the level of domestic spending in each of the park regions.

*Estimating Induced Job Creation*

It is more difficult to assess the size of the induced employment effects – or what, within standard economic models, is commonly termed the consumption multiplier – than to estimate direct and indirect effects. The induced effects represent a different category of multiplier in that they capture the increase in employment that occurs when the income generated by the direct and indirect job creation is spent.

There are aspects of the induced effects which we can estimate with a high degree of confidence. In particular, we have a good sense of what is termed the 'consumption function' – what percentage of the additional money people receive from being newly employed will be spent. But we cannot know with an equivalent degree of confidence what the overall employment effects will always be of that extra spending. To begin with, the magnitude of the induced effect will depend on existing conditions in the economy. If unemployment is high, this will mean that there are a good number of people able and willing to take jobs if new employment opportunities open up. But if unemployment is low, there will be less room for economic activity to expand, even if newly employed people have more money to spend.

Similarly, if there is slack in the economy's physical resources, the capacity to expand employment will be greater—and the induced effects larger. If the economy is operating at a high level of activity there is not likely to be a large employment gain beyond what resulted from the initial direct and indirect effects. According to the New York State Department of Labor and the U.S. Bureau of Labor Statistics, the average unemployment rate for the state was 7.0 percent as of January 2009. This is the highest level of unemployment in over 15 years. Therefore, there appears to be a good deal of slack in the state economy.

Because there is evidence of excess capacity in the state economy, we assume that the induced effects will be more or less unconstrained. We calculate the size of the induced effects by estimating how much of the additional employment income earned as a result of the increased spending linked to state parks is spent on household consumption. Using our basic input-out model, we then estimate the number of jobs, the value of output, and the employment income that this additional consumption spending would generate, assuming that there is ample excess capacity in the economy due to the prevailing high levels of unemployment. The details of this analysis are summarized in the appendix.

Given the current economic climate, we report the total estimated economic impact which includes the direct, indirect, and induced effects in the main body of the report, since we feel these estimates represent the most accurate assessment of the economic impacts of the park system today. In order to provide a more complete picture of the range of estimates, we also present the economic impacts limited to the direct and indirect effects in the appendix of the report for comparison purposes. We stress that the estimates that exclude the induced effects would be more appropriate when the New York State economy is booming and there is little or no excess capacity.

*Economic Benefits Not Linked to State or Visitor Expenditures*

Our assessment of the economic impacts of the park system is restricted to a consideration of government and visitor expenditures. However, as discussed earlier, the state park system generates economic benefits that go beyond the immediate impacts of direct expenditures. These contributions include sustaining valuable ecosystem services, mitigating pollution, improving health outcomes, and protecting the state's natural and historic heritage.

A 2004 study of the economic value of New Jersey state parks and forests included an estimate of the economic contribution of various ecosystem services (Mates and Reyes, 2004). Ecosystem services refer to processes within the natural environment which are essential for

sustaining the economy over time. These include protecting the water supply, removing pollutants, supporting soil formation, preventing erosion, securing the habitats of species important to humans, and maintaining environmental stability. The study estimated the annual value of these ecosystem services for New Jersey to be between $395 million and $605 million. Given the greater size of the New York park system, the benefits of ecosystem services provided by the state parks in New York would be proportionately larger.

Similarly, a report of the Texas Comptroller of Public Accounts estimated the costs the state would have to incur to remove pollutants and to manage storm water *if* the state parks did not provide these services (Texas Comptroller, 2008). The total estimated costs would have been $159 million. The analysis was restricted to metropolitan state parks only, so the total impact of the entire park system in Texas would have been larger.

To give a final example, the U.S. Fish and Wildlife Service conducted a study of the economic impact of wildlife viewing, as a recreational activity, for the country as a whole and each of the states (Leonard, 2008). The report estimates that wildlife viewing in New York State supports nearly $1.6 billion in sales for the state economy. The state parks in New York are essential for realizing these benefits. Much wildlife viewing takes place in the state parks. Even when wildlife viewing occurs outside of the park system, the parks still provide crucial habitats and maintain biodiversity throughout the state. Although the economic benefits of wildlife viewing and bird watching cannot be entirely attributed to particular state parks, parks provide critical habitat and ecosystems which support wildlife viewing and bird watching.

This report does not attempt to place a dollar value on all these potential benefits. The analytical focus is narrower – we only consider the impacts of government and visitor expenditures. Nevertheless, as this review of research studies suggests, the other economic benefits are sizeable and should not be forgotten when interpreting the economic impacts detailed in the remaining sections of this report.

**Direct Government Spending to Maintain New York State Parks and Historic Sites: Operating Expenditures and Capital Improvements**

For fiscal year 2008/9, expenditures for the State Park System by OPRHP total $341 million. Table 2 shows how these expenditures were distributed among the 11 regions. The table also presents a breakdown between operating expenditures and capital expenditures. Operating expenditures refer to recurring spending needed to finance the day-to-day activities involved in running the New York State system of parks and historic sites. Expenditures on personnel, including salaries and benefits, account for a significant share of total operating expenditures. In fiscal year 2008/9, approximately 68 percent of total operating expenditures went towards salaries and benefits. Other recurring expenses (e.g. supplies, printing, transportation, utilities, etc.) account for the remaining portion of these expenditures.

Table 2. State expenditures on the New York State park system, Office of Parks, Recreation, and Historic Preservation, Fiscal Year 2008/9.

|  | Operating | Capital | Total |
|---|---|---|---|
| Allegany | $9.6 million | $4.5 million | $14.2 million |
| Capital | $47.6 million | $11.0 million | $58.6 million |
| Central | $13.6 million | $5.4 million | $19.0 million |
| Finger Lakes | $13.9 million | $4.0 million | $17.9 million |
| Genesee | $8.1 million | $4.4 million | $12.5 million |
| Long Island | $66.3 million | $19.4 million | $85.7 million |
| New York City | $17.8 million | $5.0 million | $22.7 million |
| Niagara | $25.1 million | $5.3 million | $30.4 million |
| Palisades | $24.9 million | $7.5 million | $32.3 million |
| Taconic | $15.4 million | $15.1 million | $30.4 million |
| Thousand Islands | $10.9 million | $6.1 million | $17.0 million |
| **STATE** | **$253.1 million** | **$87.6 million** | **$340.7 million** |

*Source: New York State Office of Parks, Recreation, and Historic Preservation.*

Capital expenditures refer to investments in physical infrastructure. The New York State park system maintains a variety of public assets: buildings, nature centers, cabins, camping facilities, dams, roads, bridges, swimming pools, boat launches and marinas, septic systems, and golf courses. Capital expenditures constitute any spending use to repair, upgrade, or invest in entirely new public assets. Since the activities associated with operating expenditures are distinct from those associated with capital expenditures, we analyze the impact of these two types of government spending separately.

The New York parks region with the highest level of total expenditure is the Long Island region, followed by the Capital/Saratoga region. One reason why the total expenditure figures for the Capital/Saratoga region are higher than other regions is that the Office of Parks, Recreation, and Historic Preservation is located in Albany (and hence the Capital region). Therefore, central administrative activities are included in the total for this region. Two of the western regions, Allegany and Genesee, have the lowest expenditures, but these two regions also have the lowest number of state parks of all the agency's regions – four and six respectively – and no state historic sites administered by OPRHP.

Table 3 presents estimates of economic impact of the operating expenditures by region and for the state as a whole. The table shows estimates which include direct, indirect, and induced effects. We present three indicators that demonstrate the economic impact:

- *Employment*: the number of jobs that are supported by New York State spending for fiscal year 2008/9.
- *Output and sales*: the total value of economic output (e.g. business sales) that the expenditures support.
- *Employee compensation*: the amount of income from employment that the expenditures support.

We present these three different indicators to provide a more complete picture of the impact of direct operating expenditures on local and state economies.

Table 3. Economic impact of state operating expenditures for fiscal year 2008/9 on regional and state economies, direct, indirect, and induced effects.

| | Operating Expenditures | Employment | Output | Total compensation— wages and benefits |
|---|---|---|---|---|
| | | # jobs | ($ millions) | |
| Allegany | $9.6 million | 225 | $15.2 million | $5.2 million |
| Capital/Saratoga | $47.6 million | 1,058 | $83.6 million | $25.9 million |
| Central | $13.6 million | 334 | $25.1 million | $8.9 million |
| Finger Lakes | $13.9 million | 309 | $23.6 million | $8.7 million |
| Genesee | $8.1 million | 210 | $15.7 million | $5.5 million |
| Long Island | $66.2 million | 1,376 | $125.3 million | $44.4 million |
| New York City | $17.7 million | 421 | $34.3 million | $13.2 million |
| Niagara Frontier | $25.1 million | 390 | $47.1 million | $20.6 million |
| Palisades | $24.9 million | 520 | $43.9 million | $13.1 million |
| Taconic | $15.4 million | 306 | $27.9 million | $9.3 million |
| Thousand Islands | $10.9 million | 244 | $16.0 million | $4.4 million |
| **STATE** | **$253.1 million** | **5,393** | **$458 million** | **$159 million** |

*Sources: See appendix.*

We can interpret the estimated economic impacts directly from Table 3. For example, state park operating expenditures for the Niagara Frontier region are estimated to total $25 million in 2008/9. We estimate that these operational expenditures support 390 jobs. Turning to output and sales, the total impact is estimated to be $47.1 million – $25 million in direct spending and $22.1 million due to indirect linkages to other sectors and induced output generated by the increased spending of those who get additional income from the jobs created.

On a statewide basis, we estimate that the operational expenditures of $253 million in fiscal year 2008/9 support 5,393 jobs. The total employment income associated with these jobs is $159 million. Finally, the total statewide impact on economic output is $458 million.

We perform a similar exercise with capital expenditures. Table 4 summarizes the estimates including direct, indirect, and induced effects. The interpretation of the tables is the same as for Table 3, only now we focus on capital improvements. For the entire state, annual capital expenditures for 2008/9 support 1,241 jobs, $150 million in sales and economic output, and $52 million in employee compensation.

Table 4. Economic impact of state capital expenditures for fiscal year 2008/9 on regional and state economies, direct, indirect, and induced effects.

| | Capital Expenditures | Employment | Output | Emp. Income |
|---|---|---|---|---|
| | | # jobs | ($ millions) | |
| Allegany | $4.5 million | 70 | $6.8 million | $1.9 |
| Capital/Saratoga | $11.0 million | 164 | $19.0 million | $6.3 |
| Central | $5.4 million | 85 | $9.5 million | $3.2 |
| Finger Lakes | $4.0 million | 60 | $6.6 million | $2.1 |
| Genesee | $4.2 million | 68 | $7.7 million | $2.5 |
| Long Island | $19.4 million | 260 | $34.4 million | $12.7 |
| New York City | $5.0 million | 77 | $9.0 million | $3.2 |
| Niagara Frontier | $5.3 million | 63 | $9.1 million | $3.6 |
| Palisades | $7.5 million | 111 | $12.9 million | $4.2 |
| Taconic | $15.1 million | 196 | $25.6 million | $9.0 |
| Thousand Islands | $6.1 million | 87 | $9.2 million | $2.9 |
| **STATE** | **$87.4 million** | **1,241** | **$150 million** | **$52 million** |

*Sources:  See appendix.*

Public investments in improving and maintaining park facilities can generate economic benefits beyond those featured in Table 4. For example, improved facilities (e.g. a new nature center) will likely increase future visitation. More visitors will produce a larger total impact, as those visitors spend money in the local economy. In addition, better attractions may encourage visitors to spend more money locally or to stay for longer periods of time. We do not attempt to estimate these long-run effects in this report, but it is important to keep in mind that these benefits will exist.

We summarize the impact of direct spending on the state park system by the Office of Parks, Recreation, and Historic Preservation by combining these two sets of estimates. Table 5 presents the total economic impact of all state expenditures for fiscal year 2008/9. Total state expenditures on state parks support an estimated 6,635 jobs, $211 million in employment income, and $608 million in economic activity as measured by the value of output and sales.

Table 5. Economic impact of total state expenditures for fiscal year 2008/9 on regional and state economies, direct, indirect, and induced effects.

| | Employment | Output | Employment Income |
|---|---|---|---|
| | # jobs | ($ millions) | |
| Allegany | 294 | $22.0 | $7.1 |
| Capital/Saratoga | 1,221 | $102.6 | $32.2 |
| Central | 419 | $34.7 | $12.1 |
| Finger Lakes | 370 | $30.1 | $10.7 |
| Genesee | 278 | $23.4 | $8.0 |
| Long Island | 1,636 | $159.7 | $57.1 |
| New York City | 498 | $43.3 | $16.4 |
| Niagara Frontier | 454 | $56.2 | $24.2 |
| Palisades | 631 | $56.8 | $17.4 |
| Taconic | 502 | $53.5 | $18.2 |
| Thousand Islands | 331 | $25.3 | $7.3 |
| **STATE** | **6,635** | **$608** | **$211** |

*Sources: See appendix.*

## The Impact of Visitor Spending: New York State Parks and Historic Sites

*Visitor spending in the State Park System: overview*

Direct spending by the Office of Parks, Recreation, and Historic Preservation in each of the park regions represents only one category of spending that will impact the regional and state economies. The spending of visitors to New York State parks will also have an immediate impact on employment, business sales, and income. In this section, we estimate the economic impacts of visitor spending for the park system.

In many respects, the impact of visitor spending is identical to the effects of other categories of expenditures. Visitor spending has a direct impact on demand for local goods and services. However, the direct impact of visitor spending generates second-round effects throughout the local economy – the indirect effects. When visitors spend money locally, businesses will need to purchase more supplies, increase employment, and expand their use of various services. Finally, the additional employment that visitor spending generates increases local incomes and purchasing power. When this money gets spent, the economy receives another boost – through the induced effects.

In order to trace these effects throughout the regions, we need estimates of how much visitors to the parks actually spend. Ideally, in-depth studies of the economic impact of state parks will collect this information through surveys administered to visitors. These surveys collect information on total spending, the different categories of spending (e.g. lodging, food, transportation, etc.), the type of visitor (e.g. local/non-local), and the length of the stay (e.g. day trip, overnight, or multiple nights). The information collected is compiled and estimates of total spending for the entire park system are calculated. The input-output model, described earlier, then produces estimates of the regional and statewide impact of visitor spending.

For this report visitor expenditures are based on studies of other park systems in the United States, combined with information on visitor numbers in New York. To develop these estimates, we reviewed a number of economic impact studies of state park systems, individual parks, and national parks, monuments, and historic sites in order to develop reasonable estimates of spending per visitor that could be applied to the New York parks. The appendix describes these studies and discusses the estimates in greater depth.

Here we will simply summarize our findings and assumptions. Since we have information on the number of visitors to New York State parks, we estimate total visitor expenditures by multiplying an estimate of average spending per visitor, drawn from other studies, by the actual number of visitors to the parks and historic sites in New York. We restrict our attention to estimates from research studies of other state park systems. We limit our focus for three reasons. (1) The current study is focused on the state park system in New York, so there is a natural parallel between the current study and the other state park studies. (2) Individual parks vary widely in terms of facilities, attractions, and, therefore, spending per visitor. Using spending estimates from single parks or historic sites will generate a range of estimates that is too wide to be useful. Averaging across a park system tends to smooth out these individual variations. (3) National parks have been studied extensively and we review a number of the relevant estimates in the appendix. In general, visitors to national parks tend to spend more on average than visitors to state parks. One reason for this is that a large fraction of visitors travel long distances with the sole purpose of visiting a particular national park. Using average spending calculations from national parks to estimate spending in state parks will therefore tend to inflate the economic impacts. We prefer to err on the side of caution and therefore use the national parks spending estimates for comparison purposes only.

After reviewing studies of state parks in Missouri, Texas, California, Minnesota, Arizona, and North Carolina, we feel that a reasonable range for per visitor spending, expressed in 2007/8 dollars, would be from $17 to $35. Note that these are average figures for all types of visitors – locals and non-locals alike. Many local visitors to the New York State parks are likely to spend less than $17 per person. Out-of-state visitors with larger transportation, lodging, and food costs will likely spend more than $35 per person. This pattern is certainly true for the studies we reviewed. Therefore, to best extent possible, we made adjustments to the average spending figures so that the estimates were comparable, given the composition of local and non-local visitors to the New York State parks. See the appendix for more details.

*Total number of visitors and estimates of their expenditures*

Table 6 presents figures for total number of visitors by region to the New York State parks for the 2007/8 season and our estimates of a credible range for total visitor expenditures. We present a low-end estimate and a high-end estimate. The low-end estimate is calculated by assuming that park visitors spend – on average – $17 per person. The high-end estimate is calculated by assuming that spending levels amounted to $35 per visitor. As Table 6 indicates, there were 55.7 million visitors to New York State parks during the 2007/8 season.[3] Using our proposed range for per visitor spending, we estimate that total visitor spending would have been between $946 million and $1.9 billion.

---

[3]  Note 'visitors' refer to the number of visits by individuals over the course of the season. Therefore, a single individual can be counted as more than one visitor.

Table 6. Visitors to New York State Parks in the 2007/8 season
and estimated total visitor expenditure.

|  | Attendance | Total Visitor Spending | |
|---|---|---|---|
|  |  | Low | High |
|  | (thousands) | (millions) | |
| Allegany | 1,981 | $33.7 | $69.3 |
| Capital/Saratoga | 3,300 | $56.1 | $115.5 |
| Central | 2,349 | $39.9 | $82.2 |
| Finger Lakes | 2,958 | $50.3 | $103.5 |
| Genesee | 1,234 | $21.0 | $43.2 |
| Long Island | 19,798 | $336.6 | $692.9 |
| New York City | 4,503 | $76.6 | $157.6 |
| Niagara Frontier | 10,292 | $175.0 | $360.2 |
| Palisades | 4,411 | $75.0 | $154.4 |
| Taconic | 3,113 | $52.9 | $109.0 |
| Thousand Islands | 1,718 | $29.2 | $60.1 |
| **STATE** | **55,657** | **$946.2** | **$1,948.0** |

*Source: For visitor number –* 2007 NYS Statistical Yearbook. *For visitor spending estimates, see text.*

To avoid overestimating the economic impact of visitor spending, we exclude spending by local users of the parks. The simplifying assumption we adopt is that spending by locals in the local economy would have generally happened anyway. Of course, if the park did not exist, locals would have spent their money on different goods and services, but much of the spending would have occurred regardless. For example, instead of buying food for a picnic, families would have bought food for lunch at home. The types of food would be different, but local spending would have still occurred. Most studies of the economic impact of visitor spending in parks assume that the net effect of the expenditures of local visitors is zero or close to zero.[4] We adopt this same convention in this study. The same argument does not apply to non-local visitors – particularly those whose primary purpose is to visit the park. If the park did not exist, spending in the local economy by these individuals would be zero. Moreover, non-local visitors are likely to incur expenses, e.g. in terms of transportation and lodging, which they would not have incurred if they spent their leisure time in their home communities. Therefore, spending by non-local visitor represents a net increase in demand from the perspective of the regional economy.

Three of the studies of state park systems include a breakdown of total spending by local visitors and total spending by non-local visitors – Minnesota, Missouri, and Texas. From these studies, we calculate that the ratio of non-local visitor spending to average visitor spending is about 2.0 (see appendix). That is, non-local visitors spend twice as much compared to the average across all visitors.

---

[4] We can think of examples where the existence of a park may cause locals to increase their total spending – e.g. purchasing sporting equipment using income that they would have saved. However, estimating the size of these effects would be complicated and subject to errors. By assuming that these effects are negligible, we adopt a more conservative approach to our estimates and guard against exaggerating the economic impact of park visitors.

We have survey information, collected by the New York State Office of Parks, Recreation, and Historic Preservation, on the distance visitors travelled to visit parks in each of the regions. For the purposes of this study, we define non-local visitors in New York State to be those visitors who travelled more than 80 miles to visit one of the parks. Table 7 summarizes non-local visitors expressed as a percentage of total visitors for each of the New York park regions. Table 7 also presents estimates of total non-local visitor spending, assuming that non-local visitors spend twice as much as the average visitor. The figures for total non-local visitor spending by region are used to estimate the economic impacts of visitor spending. Note that the Niagara Frontier region has the highest levels of non-local visitor expenditures. This is because the parks in this region attract many more visitors who travel a significant distance.

Table 7. Share of non-local visitors and estimated total non-local visitor expenditures by region.

| | Non-local visitors | Non-local visitor expenditures ($ millions) | |
|---|---|---|---|
| | (percent) | Low | High |
| Allegany | 18.2% | $12.2 | $25.2 |
| Capital/Saratoga | 36.2% | $40.6 | $83.6 |
| Central | 32.4% | $25.9 | $53.3 |
| Finger Lakes | 31.7% | $31.8 | $65.6 |
| Genesee | 20.8% | $8.7 | $18.0 |
| Long Island | 9.5% | $64.2 | $132.2 |
| New York City | 2.9% | $4.5 | $9.2 |
| Niagara Frontier | 37.8% | $132.4 | $272.7 |
| Palisades | 6.8% | $10.2 | $20.9 |
| Taconic | 12.2% | $12.9 | $26.5 |
| Thousand Islands | 21.4% | $12.5 | $25.7 |
| **STATE** | **18.5%** | **$356** | **$733** |

*Source: For non-local visitors, Office of Parks, Recreation, and Historic Preservation.*
*For expenditures, see text.*

We also need to determine how park visitors are likely to spend their money. Again we turn to the detailed studies that already exist for guidance. More details of our review of these studies are provided in the appendix. Here we report our conclusions. In general, the expenditures of park visitors are concentrated in six broad categories: groceries, restaurants and bars, general shopping/retail, recreational goods, lodging, and transportation/automobile. Spending by category varies between local and non-local visitors, but here we are focusing on spending by non-locals only. Table 8 presents the composition of non-local visitor spending used to generate the economic impact assessments.

Table 8. Shares of non-local visitor expenditures by category, used to estimate economic impacts.

| | |
|---|---|
| Groceries and retail food shops | 12% |
| Transportation and automobile | 20% |
| Eating out (restaurants and bars) | 22% |
| General shopping (non-food) | 12% |
| Recreational equipment | 9% |
| Lodging (all types) | 25% |

*Source: See appendix.*

*Economic impacts of visitor expenditures*

We now estimate the economic impact of visitor spending. Table 9 presents our projections of the impact of visitor expenditures in terms of employment, output and sales, and employment income for each of the park regions and for the state as a whole. The table shows estimates that include the induced effects in addition to the direct and indirect impacts. In both tables, we present a low-end estimate and a high-end estimate, corresponding to the low and high estimates of non-local visitor spending.

Table 9. Economic impact of estimated non-local visitor expenditures on regional and state economies, direct, indirect and induced effects (2007/8 season).

| | Employment | | Output | | Employment Income | |
|---|---|---|---|---|---|---|
| | Low | High | Low | High | Low | High |
| | # jobs | | ($ millions) | | | |
| Allegany | 275 | 566 | $19 | $40 | $5 | $11 |
| Capital/Saratoga | 830 | 1,708 | $71 | $147 | $22 | $45 |
| Central | 583 | 1,201 | $48 | $99 | $13 | $28 |
| Finger Lakes | 683 | 1,406 | $54 | $111 | $15 | $32 |
| Genesee | 192 | 396 | $17 | $35 | $5 | $10 |
| Long Island | 1,145 | 2,356 | $121 | $250 | $34 | $70 |
| New York City | 106 | 218 | $9 | $18 | $2 | $5 |
| Niagara Frontier | 2,063 | 4,247 | $249 | $512 | $75 | $154 |
| Palisades | 204 | 421 | $18 | $37 | $5 | $11 |
| Taconic | 221 | 455 | $23 | $48 | $7 | $14 |
| Thousand Islands | 267 | 550 | $18 | $38 | $6 | $11 |
| **STATE** | **6,569** | **13,524** | **$648** | **$1,334** | **$190** | **$391** |

*Sources: See appendix.*

We estimate that the total employment supported by visitor spending would range between 6,569 and 13,524, the impact on output and sales would be between $648 million and $1.3 billion, and the additional employment income earned would range between $190 and $391 million.

We recommend that future studies of this kind include field-based visitor surveys to generate expenditure figures. In the current study, we base our analysis of the impact of visitor

spending on careful, comparable studies of other state park systems. To explore whether our findings are reasonable, we compare our assessment of the economic impacts of state parks in New York with the economic impacts of state parks contained in these other studies.

Our estimates of the total expenditures of the 55.7 million visitors to New York State parks total between $946 million and $1.9 billion (see Table 6). We estimate that non-local visitors account for between $356 and $733 million of these total expenditures. This spending would support approximately 6,500 to 13,500 jobs, depending on the level of visitor expenditures. A recent study of visitor spending in 79 Texas state parks found that non-local visitors spent an estimated $283 million (Crompton and Culpepper, 2006). In 2006, the total number of visitors (local and non-local) was 9.8 million, less than a fifth of the New York total. The estimated total employment impact of this spending was 8,079 jobs. Given that our estimates of non-local expenditures in New York State parks are 125% to 260% higher than those of the Texas parks examined in the study, our assessment of the employment impacts of visitor spending in New York appear reasonable, if not conservative, in light of the findings of the Texas study.

A study of the economic impact of state park visitors in Missouri in 2002 found that there were 13.8 million visitors to the state's parks (Cole, Vessell, and Zhu, 2003) – roughly one-quarter of the number of visitors to New York parks. In the Missouri study, out-of-state visitors were estimated to have spent a total of $100 million and this spending would have supported 2,013 jobs. These numbers are of roughly the same magnitude as our estimates, if we account for the fact that there are about four times as many visitors to New York parks and that non-local spending was 4 to 7 times the out-of-state spending in the Missouri study. A study of 14 parks in the North Carolina state park system estimated that non-local visitors to these parks totaled 3.4 million and spent $80 million during the 2005/6 season (Greenwood and Vick, 2008). The total employment impact of this spending was estimated to be 2,120 jobs. Our estimate of non-local spending linked to the New York State parks is between 4.5 and 9 times higher than that found in North Carolina. Scaling up the employment impact by these factors would make the North Carolina projections approximately consistent with, or much larger than, our range of estimates, depending on whether we scale up by a factor of 4.5 or 9.

The point of these comparisons is not to argue that the New York State estimates are equivalent to the economic impact estimates from these other states. Our objective in making these comparisons is simpler – to show that the *range* of estimates we have generated for New York State is credible when compared to other studies that are based on actual survey data. From this comparison, we find that the estimates from studies of other state park systems are more in line with our upper-bound assessment of the economic impact of parks in New York State. We also do not put a precise dollar value on the numerous economic benefits which are not directly tied to government and visitor expenditures and which we discussed at length earlier in the report. Therefore, we feel that our upper-bound estimates are a reasonable, if not conservative, estimate of the economic benefits of the New York state park system.

**Conclusions**

The New York State parks generate sizeable economic benefits for the economies of the parks regions and for the state as a whole. On a statewide basis, spending by the Office of Parks, Recreation, and Historic Preservation and visitors to the state parks supports up to 20,000 jobs, $1.9 billion in output and sales, and $440 million in employment income.[5] These benefits are distributed among the 11 regions which constitute the New York State park system. The state parks are currently supported by $341 million in total expenditures, including $88 million in capital investments. This investment in the state parks clearly pays off in terms of real economic dividends.

Although the total economic benefits of the parks and historic sites are large, it would be a mistake to reduce their value to a matter of jobs and business sales. The park system makes numerous economic contributions that are real and valuable, but difficult to assess and price. These benefits include maintaining the natural environment, providing an escape for millions of New Yorkers and others from around the world, and protecting the state's heritage for future generations. Investments in the park system generate many different kinds of returns and all of these benefits should be considered in assessing the real contribution of the park system.

---

[5]   These numbers have been rounded off somewhat, but are based on the estimates in Tables 5 and 9.

**Appendix**

*A. The Input-Output Model and Employment Multipliers*

1. The Regional Input-Output Models

National input-output tables (i.e. I-O tables) are compiled by the Bureau of Economic Analysis (BEA).  Every five years the Census Department gathers data (in its "Economic Census") and the BEA uses this data along with information from other Census programs—including annual surveys that cover selected industries, such as manufacturing and services.  The I-O tables also incorporate data collected and tabulated by other Federal agencies—including the U.S. Departments of Agriculture, Education, and Energy—and data from a number of private organizations (Horowitz and Planting, 2006).  However, the input-output matrices made available through the BEA are suited for national-level analysis only.

To calculate the detailed employment impact assessments contained in this report, we used the social accounting and impact assessment software package, IMPLAN Pro (Version 2.0). IMPLAN is calibrated to the BEA I-O tables and includes a highly detailed level of industrial disaggregation – over 500 different sectors. Our input-output model is calibrated using 2007 data. State-level and county-level data files are available for use with the IMPLAN software. We use the 2007 county-level files for New York State to generate our estimates. Regional models – corresponding to the 11 parks regions in New York State – were created by pooling county-level data.

2. Using the Input-Output Model to Examine Economic Multipliers

To study the effects on employment, output/sales, and employee compensation with the regional I-O models, we use the IMPLAN software to generate the relevant multipliers. Employment multipliers are computed based on an employment-output ratio. The assumption is that employment/output ratios remain fixed in the short-run. Therefore, output multipliers – derived from the Leontief inverse matrix – can be converted into employment multipliers by using the employment-output ratios. Similarly, output multipliers can also be converted into multipliers for employee compensation using fixed coefficients. The IMPLAN software performs these calculations automatically.

The I-O model can also be used to calculate induced effects. The assumption is that a fixed proportion of the compensation employees receive is spent on household purchases. When total compensation goes up, household consumption (a category of final demand) increases proportionately. However, the I-O model of induced effects, computed by endogenizing the household sector, tends to generate implausibly large multiplier effects. Therefore, we do not use the direct I-O estimates of induced effects in our calculations but instead use a different methodology, described later in the appendix.

3. Categories of spending and I-O multipliers

To perform the kind of economic impact analysis featured in this report we needed to match the expenditure categories with the disaggregated sectors in order to calculate the various

multipliers. These multipliers are then used to estimate the economic impacts of increasing the relevant category of expenditure. In cases where more than one industrial sector is relevant, we constructed a weighted average of the different sectors in which we arbitrarily select the weights based on our review of the studies of other state park systems.[6] For this study, the categories of expenditure and the corresponding sectors used are as follows.

- *Direct operating expenditures on parks and historic sites*:  Parks, historic sites, museums, and zoos
- *Capital expenditures on park infrastructure*: Non-residential construction
- *Visitor expenditures on groceries*: Food retail establishments
- *Visitor expenditures on restaurants*: Food service and drinking establishments
- *Visitor expenditures on automobiles*: 90% gas station establishments, 5% automobile repair services, 5% automobile rental services.
- *Visitor expenditures on recreational equipment*: sporting goods retail establishments
- *Visitor expenditures on lodging*: 50% hotels and motels, 50% other lodging services
- *Visitor expenditures on other retail*: general merchandising

## B. Calculating induced effects

Induced effects refer to the additional employment, output, and income that are produced when the additional employee compensation generated by an initial demand stimulus – as captured by the direct and indirect effects – is spent. The magnitude of the induced effects depends on how the additional employment income translates into household expenditures and the size of the multiplier effects associated with the increase in household spending.

Induced effects are often estimated by endogenizing the household sector in the input-output model. The assumption is that increases in employee compensation (or value added) finance greater household spending, as reflected in the vector of household consumption in overall final demand. The endogenous household model often yields very large induced effects, in part because the propensity to consume out of employee compensation (or value-added) implicit in the endogenous household input-output model is large.

Instead of relying on the consumption function which is implicit in the input-output accounts, we estimate the relationship between real gross employee compensation and real personal consumption expenditures econometrically using a dynamic empirical model for the entire U.S. This gives us a more accurate sense of how household consumption responds to changes in employee compensation. We then integrate this estimated relationship into our basic input-output model to calculate induced effects.

The first step of the process is to estimate the relationship between personal consumption expenditures and employee compensation. To do this, we begin with the following dynamic empirical model:

$$C_t = \alpha + \beta_1 C_{t-1} + \beta_2 C_{t-2} + \beta_3 C_{t-3} + \gamma E_t + \mu_t$$

---

[6]  In these cases, altering the weights does not change the magnitude of the overall multipliers in any meaningful way.

In the above equation, $C_t$ represents real personal consumption expenditures in time period 't,' $E_t$ represents real employee compensation, and $\mu_t$ is a stochastic error term. We are interested in how changes in employee compensation affect changes in personal consumption expenditures. Therefore, we estimate the model in first differences. First differencing also insures that the variables are stationary (based on augmented Dickey-Fuller unit root tests). The GDP-deflator for personal consumption expenditures is used to transform nominal values into real variables. The time series is quarterly, and extends from 1950 to 2007. All data comes from the Bureau of Economic Analysis, U.S. Department of Commerce.

The estimated model is (rounding off the coefficients):

$$C_t = 7.83 + 0.10\ C_{t-1} + 0.20\ C_{t-2} + 0.21\ C_{t-3} + 0.30\ E_t$$
$$(3.2)\quad (1.7)\qquad (3.5)\qquad (3.6)\qquad (5.9)$$

T-values are reported in parentheses. From this model, we can calculate the impact of a change in employee compensation on personal consumption expenditures, taking into account the dynamic feedback effects captured by the lag endogenous variables:

$$\frac{\gamma}{1-(\beta_1+\beta_2+\beta_3)} = \frac{0.2952}{1-0.5186} = 0.6132$$

This implies that a $1 million increase in gross employee compensation will be associated with a $613,200 increase in household consumption.

Next, we need to estimate the feedback effects – that is, the impact of the increase in household consumption on employee compensation. Additional household consumption expenditures will increase the vector of final demand in the input-output model and, through direct and indirect employment effects, raise employee compensation.

For example, using our input-out model for the Palisades region and restricting the estimates to direct and indirect effects only, we find that a $1 increase in household final demand is associated with an increase in employee compensation of $0.222.[7] We obtain similar estimates for each of the other parks regions.

We can now estimate the multipliers – in terms of employment, output, and employment income – for each additional $1 million in employee compensation generated by the direct and indirect effects of any particular final demand stimulus. We do this for each of the park regions. First, we calculate the total impact on household consumption of a $1 increase in employee compensation. This would be given by the following expression:

Total impact on HH consumption $= x + x^2y + x^3y^2 + x^4y^3 + \dots\dots$

In which 'x' is the estimated propensity to consume out of additional employee compensation (0.6132 according to our estimates described above) and 'y' is the additional employee

---

[7]   We use the IMPLAN calibrated model and restrict our focus to households with annual incomes between $25,000 and $100,000, under the assumption that the vast majority of the jobs created would affect households with incomes in this range.

compensation generated by a $1 increase in final household demand (0.222 from the basic input-output model for the Palisades region). We can factor out a single 'x,' giving us:

$$\text{Total impact on HH consumption} = x[1 + xy + (xy)^2 + (xy)^3 + \ldots\ldots]$$

The expression in the brackets is an infinite series. Since xy<1, we know that the series converges to:

$$\text{Total impact on HH consumption} = x/(1-xy).$$

Using our estimates, the total impact on household consumption expenditures of a $1 increase in employee compensation is $0.71.

Finally, we use these estimates to calculate a general induced multiplier. Take the example of calculating an induced employment multiplier for the Palisades region. From the basic input-output model, we estimate that a $1 million change in final household consumption would create 6.5 additional jobs. However, we are interested in the number of jobs that would be generated by an additional $1 million in employee compensation. We know that $1 in employee compensation will generate $0.71 in induced household consumption. Therefore, $1 million in additional employee compensation generates $710,000 in new household expenditures and approximately 4.6 additional jobs (6.5 * 0.71) – when all dynamic multiplier effects are taken into account for the Palisades region. We can perform similar calculations for induced output and employment income multipliers and for each of the individual park regions.

*C. Estimating average visitor spending from studies of other state park systems*

We do not have recent survey-based information on visitor spending in the New York State park system. Therefore, we rely on studies of other state parks to generate a credible range of estimates for New York. We are primarily interested in the spending of non-local visitors, for reasons discussed in the main text of the report. We reviewed a number of research reports on the economic impact of visitor spending linked to other state parks. We have estimates of *average* visitor spending (local and non-local) for six states: Arizona, California, Minnesota, Missouri, North Carolina, and Texas.[8] Three of these studies – Minnesota, Missouri, and Texas – contain information on average spending by locals and non-locals.[9] The Arizona and North Carolina Studies restricted their attention to spending by non-locals only. Citations for all these studies are contained in the list of references.

We first focused on estimating the ratio of spending of non-locals to average spending for the three state studies for which we had estimates of non-local and average spending – Minnesota, Missouri, and Texas. One challenge is that average spending will be influenced by the composition of the visitors – the more non-local visitors, the greater the average spending. However, we have information on the composition of visitors for each of these states. In addition, we have estimates of the composition of non-local visitors for the New York State park

---

[8]    We also reviewed estimates from Ohio and Michigan. However, these studies did not report estimates of the number of visitors and focused only on total spending. Therefore, we did not include them in our analysis since it would be difficult to make comparisons with the New York State parks.
[9]    In addition, the Texas study also separates out spending by 'casual' visitors – those individuals who visited the park, but whose primary purpose for visiting the area was something different.

system. If define 'non-local visitors' in New York to include all those who drove more than 80 miles to visit a park, then 18.5 percent of all visitors to New York State parks are non-local. We can adjust the average spending numbers for Minnesota, Missouri, and Texas to reflect the visitor composition in New York – that is, we calculate what average spending per visitor would be *if* the share of non-local visitors were identical to the share in New York.

Table A1. Summary of Calculations of the Ratio of Non-Local Visitor Spending to Average Visitor Spending Based on Studies of Minnesota, Missouri, and Texas.

| State | Spending by locals | Spending by non-locals | Average spending | % non-local | Ave. spending adj. | Ratio: non-local to average |
|---|---|---|---|---|---|---|
| Minnesota | $14.37 | $39.75 | $25.45 | 41.6% | $19.07 | 2.1 |
| Missouri | $28.30 | $34.91 | $29.67 | 20.9% | $29.52 | 1.2 |
| Texas | $9.81 | $45.20 | $42.54 | 91.7% | $16.37 | 2.8 |

*Sources: See appendix.*

Table A1 summarizes this information. From the adjusted averages, we then calculate the average ratio of non-local visitor spending to average spending. The average ratio of non-local spending to average visitor spending across these three states is 2.0.

Next we review the estimates of average visitor spending for all six states. We make adjustments to the reported average spending to make the dollar amounts more applicable to New York State. For Minnesota, Missouri, and Texas, we use the adjusted average visitor spending numbers from Table A1. For North Carolina and Arizona, we know average spending by non-locals, but not the spending by locals or the composition of visitors. Therefore, we compute average visitor spending assuming that the ratio of non-local spending to average spending is 2.0 (as calculated above). For California, we have no additional information to make any adjustments. These figures are summarized in Table A2.

Table A2. Estimates of average spending per visitor, adjusted to make the estimates more applicable to the New York State analysis.

| State | Year | Ave. spending (reported) | Ave. spending adjusted | In 2007/8 dollars |
|---|---|---|---|---|
| California | 2002 | $30.51 | $30.51 | $35.84 |
| Missouri | 2002 | $29.67 | $29.52 | $34.67 |
| Texas | 2006 | $42.54 | $16.37 | $17.16 |
| North Carolina | 2006 | $23.56 | $11.78 | $12.35 |
| Arizona | 2001 | $50.28 | $25.14 | $29.99 |
| Minnesota | 2001 | $25.45 | $19.07 | $22.76 |

*Note: Average reported spending in Arizona and North Carolina reflects spending by non-local visitors only.*

The studies reviewed here were conducted in different years. Therefore, the average spending amounts need to be corrected for inflation. We therefore express each of the adjusted average spending amounts in 2007/2008 dollars, since we are using New York State visitor data from the 2007/8 season. The adjusted, inflation-corrected estimates of average spending range

from \$12.35 (North Carolina) to \$35.84 (California). To avoid excessive influence from the maximum and minimum estimates, we drop the highest and lowest values. The adjusted average visitor expenditure from the remaining four states ranges from \$17 to \$35 (rounding off the dollar figures). We use this range in the economic impact assessment detailed in the report. Note that this implies that average spending per non-local visitor would be between \$34 and \$70.

Finally, we need to estimate the share of expenditures in each of six expenditure categories: groceries, eating out (restaurants/bars), recreational equipment, other shopping/retail, automobile/transport, and lodging. We focus only on the spending patterns of non-local visitors. We have estimates of the distribution of non-local visitor spending (divided into these six categories) for four out of the six states: Texas, North Carolina, Arizona, and Minnesota. Table A3 summarizes this information. We calculate the median share across the four states and use this distribution of visitor spending in our estimates for New York.

Table A3. Distribution of non-local visitor expenditures across six spending categories.

| | Texas | North Carolina | Arizona | Minnesota | **MEDIAN** |
|---|---|---|---|---|---|
| Groceries | 23% | 12% | --- | 9% | **12%** |
| Eating Out | 17% | 22% | --- | 25% | **22%** |
| *- Food total* | *40%* | *35%* | *32%* | *34%* | *34%* |
| Recreation Equip | 10% | 9% | --- | 2% | **9%** |
| Other retail | 12% | 11% | --- | 14% | **12%** |
| *- Retail total* | *22%* | *20%* | *23%* | *15%* | *21%* |
| Lodging | 11% | 27% | 23% | 35% | **25%** |
| Automobile | 28% | 19% | 22% | 15% | **20%** |

*Sources: See appendix.*

We can compare these estimates to studies of visitors to National Parks, National Monuments, and National Historic Sites. Researchers at Michigan State University devised a system for estimating the economic impacts of National Parks Service (NPS) visitor spending. This system is called the "Money Generation Model", version 2, or just MGM2 (website: web4.canr.msu.edu/mgm2). The Money Generation Model was originally developed by Ken Hornback; Daniel Stynes and Dennis Propst updated the estimation technique and developed MGM2. The MGM2 database contains estimates of total visitor spending and total number of visitors to various NPS facilities.

Based on the information in the MGM2 database, we calculated the median of average spending of visitors to NPS facilities in New York State in 2003. We then expressed this median in 2007/8 dollars. Median visitor spending was \$48.11 across all the NPS sites in New York State. We performed a similar calculation for all NPS facilities in the New England states. Median visitor spending, expressed in 2007/8 dollars, across all NPS sites in New England was \$65.76. Estimates of spending per visitor for National Parks typically are higher than average visitor spending for state park systems. This is because National Parks, on average, attract more non-local visitors who travel longer distances (and incur larger expenses) to visit the National Parks. The median per visitor expenditure figures for NPS site in New York and New England are certainly higher than the estimates obtained from our review of other state park studies.

However, the expenditure figures for NPS sites in the northeast do fall within our range for non-local expenditures per visitor (between $34 and $70). This suggests that our estimates of non-local visitor expenditures are probably reasonable when compared to estimates applied to the National Parks.

## D. Economic Impact Assessments: Direct and Indirect Effects Only

Tables A4 through A7 replicate the tables in the main text of the report that present the estimates of the economic impacts of government and visitor spending. However, Tables A4 through A7 only include the direct and indirect effects. Induced effects are excluded from these estimates. Table A4 corresponds to Table 3, Table A5 to Table 4, Table A6 to Table 5, and Table A7 to Table 9.

Table A4. Economic impact of state operating expenditures for fiscal year 2008/9 on regional and state economies, direct and indirect effects only.

|  | Employment | Output | Emp. Income |
|---|---|---|---|
|  | # jobs | ($ millions) | |
| Allegany | 203 | $11.6 | $4.7 |
| Capital/Saratoga | 948 | $64.8 | $22.1 |
| Central | 294 | $18.6 | $7.6 |
| Finger Lakes | 274 | $17.6 | $7.6 |
| Genesee | 186 | $11.6 | $4.7 |
| Long Island | 1,212 | $92.7 | $37.6 |
| New York City | 361 | $24.4 | $11.2 |
| Niagara Frontier | 328 | $32.3 | $17.5 |
| Palisades | 468 | $34.4 | $11.3 |
| Taconic | 277 | $21.3 | $8.0 |
| Thousand Islands | 227 | $13.1 | $3.9 |
| **STATE** | **4,777** | **$342** | **$136** |

*Sources: See appendix.*

Table A5. Economic impact of state capital expenditures for fiscal year 2008/9 on regional and state economies, direct and indirect effects only.

| | Employment | Output | Emp. Income |
|---|---|---|---|
| | # jobs | ($ millions) | |
| Allegany | 62 | $5.6 | $1.7 |
| Capital/Saratoga | 137 | $14.4 | $5.4 |
| Central | 70 | $7.2 | $2.7 |
| Finger Lakes | 52 | $5.1 | $1.8 |
| Genesee | 57 | $5.9 | $2.1 |
| Long Island | 213 | $25.1 | $10.7 |
| New York City | 62 | $6.6 | $2.7 |
| Niagara Frontier | 52 | $6.5 | $3.0 |
| Palisades | 94 | $9.8 | $3.7 |
| Taconic | 168 | $19.1 | $7.7 |
| Thousand Islands | 76 | $7.3 | $2.6 |
| **STATE** | **1,044** | **$113** | **$44** |

*Sources: See appendix.*

Table A6. Economic impact of total state expenditures for fiscal year 2008/9 on regional and state economies, direct and indirect effects only.

| | Employment | Output | Employment Income |
|---|---|---|---|
| | # jobs | ($ millions) | |
| Allegany | 264 | $17.2 | $6.4 |
| Capital/Saratoga | 1,085 | $79.1 | $27.5 |
| Central | 364 | $25.9 | $10.4 |
| Finger Lakes | 326 | $22.7 | $9.5 |
| Genesee | 243 | $17.5 | $6.8 |
| Long Island | 1,426 | $117.8 | $48.3 |
| New York City | 423 | $31.1 | $13.9 |
| Niagara Frontier | 381 | $38.9 | $20.5 |
| Palisades | 562 | $44.2 | $15.0 |
| Taconic | 444 | $40.4 | $15.7 |
| Thousand Islands | 303 | $20.4 | $6.5 |
| **STATE** | **5,822** | **$455** | **$181** |

*Sources: See appendix.*

Table A7. Economic impact of estimated non-local visitor expenditures on regional and state economies, direct and indirect effects only (2007/8 season).

| | Employment | | Output | | Employment Income | |
|---|---|---|---|---|---|---|
| | Low | High | Low | High | Low | High |
| | # jobs | | ($ millions) | | | |
| Allegany | 253 | 521 | $14 | $30 | $5 | $10 |
| Capital/Saratoga | 738 | 1,518 | $52 | $108 | $19 | $38 |
| Central | 523 | 1,077 | $33 | $69 | $11 | $24 |
| Finger Lakes | 620 | 1,277 | $39 | $80 | $14 | $28 |
| Genesee | 171 | 353 | $12 | $24 | $4 | $8 |
| Long Island | 1,019 | 2,098 | $83 | $172 | $29 | $59 |
| New York City | 95 | 195 | $6 | $12 | $2 | $4 |
| Niagara Frontier | 1,838 | 3,784 | $168 | $346 | $63 | $131 |
| Palisades | 184 | 378 | $13 | $27 | $5 | $9 |
| Taconic | 199 | 410 | $16 | $34 | $6 | $12 |
| Thousand Islands | 246 | 507 | $15 | $30 | $5 | $10 |
| **STATE** | **5,885** | **12,117** | **$452** | **$931** | **$162** | **$334** |

*Sources:  See appendix.*

## References

Arizona Department of Commerce (2001). 'Economic Impact of Arizona State Parks.' Prepared by the Arizona Hospitality Research and Source Center, Northern Arizona University, June 2009.

California Department of Parks and Recreation, Marketing Division (2001). 'Economic Impacts on Local Economies by Visitors to California State Parks from 1999 to 2002: An Update of the 1995 Analysis." October 2001. (www.parks.ca.gov/pages/712/files/102501b2.pdf)

Cole, Shu Tian, C. Randal Vessell, and Tao Zhu (2003). '2002 State Economic Impacts of Missouri State Park Visitors.' Report submiited to the Missouri Department of Natual Resources, Division of State Parks, February 2003.

Crompton, John L. and Juddson Culpepper (2006). 'The Economic Contributions of Texas State Parks in Fiscal Year 2006.' Report commissioned by the Texas Coalition for Conservation, Dec. 2006.

Greenwood, Jerusha B. and Candace G. Vick (2008). 'Economic Contribution of Visitors to Selected North Carolina State Parks.' Report Prepared for the North Carolina Department of Environment and Natural Resources, Division of Parks and Recreation, May, 2008.

Horowitz, Karen and Mark Planting. (2006). 'Concepts and Methods of the Input-Output Accounts,' Bureau of Economic Analysis, Washington, DC, September.

Leonard, Jerry (2008). 'Wildlife Watching in the U.S.: The Economic Impacts on National and State Economies in 2006.' U.S. Fish and Wildlife Service, Washington, DC.

Mates, William J. and Reyes, Jorge L. (2004). 'Economic Value of New Jersey State Parks and Forests.' Report Prepared for the New Jersey Department of Environmental Protection, Division of Science, Research, and Technology.

Minnesota Department of Natural Resources (2002). 'Contributions of the Minnesota State Park System to State and Regional Economies' (Office of Management and Budget Services), August 2002.

Stynes, Daniel and Ya-Yen Sun (2005). 'Impacts of Visitor Spending on the Local Economy: Fort Stanwix National Monument, 2003.' National Park Service, Social Science Program and Michigan State University.

Texas Comptroller of Public Accounts (2008). 'Texas State Parks: Natural Economic Assets,' Austin, TX, September.