



VIRGINIA STATE PARKS
ECONOMIC IMPACT REPORT
2018

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EXECUTIVE SUMMARY

Visitors attracted annually to Virginia’s State Parks trigger a large amount of economic activity throughout the state. This Executive Summary lists the key findings of the 2018 Virginia State Parks economic impact analyses:

- In 2018, visitors to Virginia’s State Parks spent an estimated \$249.1M in the Commonwealth. Approximately 46% [\$113.7M] of this spending was by out-of-state visitors.
- The total economic activity stimulated by Virginia State Parks during 2018 was approximately \$338.7M.
- The total economic impact of Virginia State Parks during 2018 was approximately \$267.1M. Economic impact is a measure of “fresh money” infused into the state’s economy that likely would have not been generated in the absence of the park system.
- At the individual park level, economic impacts range from \$961K to \$31.3M (not including parks under development).
- In 2018, for every \$1 of general tax revenue provided to state parks, \$14.06, on average, was generated in fresh money that would not be there if not for the operation of Virginia State Parks.
- Regarding employment, the economic activity stimulated by visitation to Virginia State Parks supported approximately 3,858 jobs in the state during 2018.
- In terms of wages and income, the economic activity spawned by Virginia State Parks was responsible for roughly \$133.2M in wage and salary income in 2018.
- Economic activity created by Virginia State Parks was associated with approximately \$203.9M in value-added effects which is a measure of the park system’s contribution to the gross domestic product of the Commonwealth. These effects are especially important at the park-by-park level where most of the impact is retained in the local area.
- Economic activity stimulated by Virginia State Parks generated approximately \$24M in state and local tax revenues during 2018. As such, \$1.26 in state and local taxes were generated for every dollar of tax money spent on the park system.

INTRODUCTION

This study estimates the economic activity and impacts that Virginia State Parks create in Virginia's economy. Specific objectives include:

- Assessing the direct and secondary economic activity and impacts of Virginia State Parks on a state-wide level;
- Estimating the direct and secondary economic activity and impacts of each specific park;
- Identifying economic benefits derived from non-residents of Virginia;
- Estimating spending derived from both day-user and overnight-user groups; and
- Modeling the economic benefits derived from park operational spending and capital improvement projects.

Achieving the above objectives, this study details the distribution of travel and recreational impacts of Virginia State Parks among the six park districts. The secondary economic impact items referred to above include indirect effects such as job creation and revenues realized by suppliers to businesses where visitors spend their money. Secondary effects also include induced outcomes such as the increased spending power of those working in tourism, recreation, and supporting industries. In addition, a value-added effect is estimated which models Virginia State Parks' contribution to the gross domestic product of the Commonwealth.

To fulfill the above objectives, the next section of this report describes the research procedures employed in this study. Subsequently, the study results are presented. Like any research, this study is subject to limitations which are also described herein. The report ends with a brief conclusion section that summarizes key findings and also addresses some societal benefits provided by Virginia State Parks that cannot be included in econometric input-output modeling, but are worthy of discussion.

This report represents the fourth year's work of an ongoing agreement between Virginia Tech and the Virginia Department of Conservation and Recreation in which Virginia Tech produces annual economic activity reports for Virginia State Parks. As will be explained later in this report, this agreement calls for the continuous refinement of each economic modeling variable:

reviewing and offering suggestions for refining park attendance counting practices; administering a visitor spending survey to better understand spending patterns by visitor segment; and, incorporation of the most recent IMPLAN multipliers to model how money produces secondary economic effects in Virginia.

While every effort was made to make this report clear and understandable to a non-economist audience, readers are advised that there is a glossary of terms contained in Appendix B.

METHODS

DIRECT IMPACT MEASUREMENT

Economic activity of the state park system is created primarily from three sources: park visitor spending, the parks' operational expenditures (to the degree that they are not derived from visitor revenues, i.e. the tax derived portion of the park budget), and capital investment (again, to the degree that it is not derived from visitor revenues). In terms of visitor spending profiles, customized spending profiles were developed for Virginia State Parks by collecting 3,802 completed spending surveys from park visitors during 2016. The spending profile survey was added as a supplemental section on the agency's ongoing visitor satisfaction survey. The spending profiles that resulted from the analysis of the survey data and removal of data outliers are listed in Table 1.¹ These profiles represent spending both inside and outside of the park, but within the state. Other than visitors' spending, park operational and capital expenditure amounts were provided by the Virginia Department of Conservation and Recreation (DCR).

Additional primary data was collected in the parks during 2017 to further calibrate the economic impact modeling. More specifically, park staff recorded 762 vehicle observation hours as well as 679 visitor interviews to calibrate model estimations regarding the average number of occupants per vehicle (day use; camping; cabins) and the ratio of local, non-local,² and non-resident visitors.

{ Table 1 is Presented on the Next Page }

¹ The figures in Table 1 are increased 1.9% over 2017 amounts to adjust for the 2018 U.S. inflation rate.

² Non-local visitors are defined as Virginia residents who drive 50 miles or more (one-way) to visit the park.

DAY VISITORS				OVERNIGHT VISITORS			
SPENDING CATEGORY	LOCAL DAY VISITOR	NON-LOCAL DAY VISITOR	NON-RESIDENT DAY VISITOR	RESIDENT CABIN GUEST	RESIDENT CAMPING GUEST	NON-RESIDENT CABIN GUEST	NON-RESIDENT CAMPING GUEST
Hotels, motels, cabins and B&B	\$0.95	\$9.77	\$20.60	\$30.87	\$1.55	\$34.47	\$2.89
Camping fees and charges	\$0.27	\$1.86	\$1.62	\$0.86	\$7.06	\$4.77	\$9.15
Restaurants and bars	\$3.59	\$12.87	\$12.73	\$6.04	\$3.27	\$10.41	\$8.50
Groceries and convenience items	\$3.86	\$8.09	\$5.31	\$6.11	\$6.86	\$7.56	\$5.10
Gas and oil (auto, RV, boat, etc...)	\$2.49	\$8.21	\$8.19	\$4.25	\$4.16	\$3.46	\$5.13
Transportation expenses (other)	\$0.33	\$0.73	\$2.47	\$1.03	\$0.72	\$5.44	\$1.94
Clothing	\$0.67	\$1.17	\$1.68	\$0.82	\$0.53	\$0.62	\$0.67
Sporting goods	\$1.05	\$0.97	\$1.80	\$1.75	\$7.49	\$1.02	\$1.99
Souvenirs and other expenditures	\$4.14	\$8.49	\$13.73	\$2.65	\$2.99	\$5.64	\$4.21
OVERALL PER VISITOR:	\$17.35	\$52.16	\$68.13	\$54.38	\$34.63	\$73.39	\$39.58

^a This Table does not include park operational or capital improvement spending.

SECONDARY IMPACT MEASUREMENT

As well as measuring the direct effects of visitor spending, this study also calculated secondary effects which comprise economic activity from subsequent rounds of re-spending of visitor dollars. There are two types of secondary effects: indirect and induced. Indirect effects describe the changes in sales, income and jobs to businesses that supply goods and services to the entities where visitors spend their money directly – including in the park (Stynes et al., 2000). Induced effects entail the changes in economic activity in the region stimulated by household spending of income earned through direct and indirect effects of visitor spending.

Secondary spending is calculated through the use of multipliers. Multipliers reflect the degree of interdependency between sectors in a region’s economy and can vary substantially across regions and sectors (Stynes et al., 2000). As an illustration: if the multiplier for the hotel sector in a given region is 1.67, it can be estimated that every dollar spent at a hotel results in 67 cents of secondary economic activity in the region. Economic multipliers for the State of Virginia are

commercially available in an economic impact estimation software titled IMPLAN commercialized by MIG, Inc. Therefore, the most recent IMPLAN multipliers were purchased and used in this study to calculate secondary economic impacts. Used by more than 1,000 entities, IMPLAN is said to be the most widely adopted regional economic analysis software in the industry for calculating indirect and induced economic effects (Dougherty, 2011).

VISITATION MEASUREMENT

Park attendance counts for 2018 were provided to the researchers by the Virginia Department of Conservation and Recreation. The attendance counting practices used in Virginia are in concert with accepted guidelines in the U.S. recreational park industry (see for example: *America's Byways Resource Center 2010*; Bezies, et al., 2011). For instance, automated vehicle counting technology is utilized at many unstaffed park entry points by multiplying vehicle counts by standard occupancy multipliers, with adjustments made for service vehicle traffic and park re-entry traffic. Overnight visitor calculations are made by multiplying site occupancies by standard multipliers, as well as employing information from the centralized reservations system.

The 2016 and 2017 data collection efforts described earlier in this Methods section proved useful in calibrating attendance multipliers. As such, to tabulate the modeling attendance for this study, per party multipliers of 3.4, 3.2, and 4.2 for day use, camping, and cabins (respectively) were used as model inputs. Further, some Virginia State Parks experience unpaid attendance by those, for example, who park outside the gates and pass through on foot or bicycle. In an effort to remain conservative, only 33% of non-paying day visitors were included in this study's input-output modeling. Continuing efforts are underway by Virginia State Park management to refine estimated counts of these non-paying visitor populations at various parks.

MEASURING ECONOMIC ACTIVITY VS. ECONOMIC IMPACT

Economic impact in this study is calculated using the “fresh money” flowing into an area as opposed to including spending by the local residents of the area. Therefore, this current study offers results compartmentalized according to the following categories:

Economic activity – economic output modeling that includes all visitor spending and consequent multiplier effects by both locals and non-locals as well as any money spent by parks that was not supported by visitor spending. Consequently, economic activity figures represent all of the economic activity stimulated by a park location within the state.

- Unadjusted economic activity: economic activity output figures computed using statewide IMPLAN multipliers.
- Adjusted economic activity: calibrated economic activity output figures based upon whether a given park's county(ies) has economic activity above or below the state average.

Economic impact – economic output modeling that includes all visitor spending and consequent multiplier effects by 1) in-state residents traveling more than 50 miles one-way to visit the park; and 2) all out-of-state visitors. Economic impact modeling also includes any money spent by parks (operational and capital improvements) that was not supported by visitor spending. Although operational and capital improvement spending derive (in part) from tax monies, they demonstrate economic impact when infused into local areas where parks exist.

Thus, economic impact figures reflect all of the “fresh money” entering an economy as a result of a given state park.

- Unadjusted economic impact: economic impact output figures computed using statewide IMPLAN multipliers. Also, unadjusted figures do not deduct spending by visitors who report that the park was not their primary destination.
- Adjusted economic impact: calibrated economic impact output figures based upon whether a given park's county(ies) has economic activity above or below the state average. Adjusted economic impact figures are also reduced by 12% (Magnini and Uysal, 2015a) to account for spending by park visitors who would have traveled and spent money in the state regardless of whether the park existed.

RESULTS

This section of the report contains the results of the economic modeling. First, visitor spending findings are presented (see Table 2). Second, economic activity and economic impact are reported (see Table 3). Third, job-related results are detailed (see Table 4). Fourth, park-by-park findings are listed (see Tables 5-10). Next, outcomes of capital investments are displayed (see Table 11). Lastly, the effects of park operational spending are reported (see Table 12). It is important to note that the system-wide economic results (for example, those listed in the Executive Summary) are slightly different than the individual district results summed together because the overall system-wide IMPLAN modeling accounts for different indirect and induced effects than simply summing the individual district results. The glossary contained in Appendix B offers definitions of key terms used in this results section.

{ Table 2 is Presented on the Next Page }

TABLE 2: VISITOR SPENDING*

PARK	DAY USER SPENDING	OVERNIGHT USER SPENDING	RESIDENT SPENDING	NON-RESIDENT SPENDING	TOTAL VISITOR SPENDING
DISTRICT 1					
Belle Isle	\$669K	\$654K	\$740K	\$583K	\$1.3M
Chippokes Plantation	\$1.7M	\$1.3M	\$1.7M	\$1.3M	\$3.0M
False Cape	\$734K	\$222K	\$520K	\$436K	\$1.0M
First Landing	\$18.0M	\$5.7M	\$12.9M	\$10.8M	\$23.7M
Kiptopeke	\$6.0M	\$3.3M	\$5.1M	\$4.2M	\$9.3M
York River	\$3.2M	\$0	\$1.7M	\$1.5M	\$3.2M
TOTAL D1	\$30.3M	\$11.2M	\$22.6M	\$18.8M	\$41.5M
DISTRICT 2					
Caledon	\$1.9M	\$30K	\$1.0M	\$926K	\$1.9M
Lake Anna	\$6.5M	\$1.5M	\$4.3M	\$3.7M	\$8.0M
Leesylvania	\$11.3M	\$0	\$6.0M	\$5.3M	\$11.3M
Mason Neck	\$2.9M	\$0	\$1.5M	\$1.4M	\$2.9M
Westmoreland	\$4.0M	\$3.0M	\$3.9M	\$3.1M	\$7.0M
Widewater (opened fall 2018)	\$68K	\$0	\$36K	\$32K	\$68K
TOTAL D2	\$26.7M	\$4.6M	\$16.8M	\$14.5M	\$31.2M
DISTRICT 3					
Douthat	\$2.7M	\$3.6M	\$3.7M	\$2.6M	\$6.3M
James River	\$1.7M	\$1.8M	\$2.0M	\$1.5M	\$3.5M
Natural Bridge	\$9.7M	\$0	\$2.3M	\$7.4M	\$9.7M
Shenandoah River	\$2.4M	\$2.1M	\$2.5M	\$2.0M	\$4.5M
Sky Meadows	\$4.8M	\$210K	\$2.6M	\$2.3M	\$5.0M
TOTAL D3	\$21.3M	\$7.7M	\$13.1M	\$15.8M	\$29.0M
DISTRICT 4					
Bear Creek Lake	\$1.1M	\$2.4M	\$2.0M	\$1.5M	\$3.5M
High Bridge Trail	\$6.9M	\$0	\$3.7M	\$3.3M	\$7.0M
Holliday Lake	\$1.2M	\$570K	\$975K	\$803K	\$1.8M
Pocahontas	\$19.2M	\$6.6M	\$14.1M	\$11.7M	\$25.8M
Powhatan	\$2.1M	\$523K	\$1.4M	\$1.2M	\$2.6M
Sailor's Creek Battlefield	\$494K	\$0	\$261K	\$232K	\$494K
Twin Lakes	\$1.9M	\$854K	\$1.5M	\$1.2M	\$2.7M
TOTAL D4	\$32.9M	\$11.0M	\$24.0M	\$19.9M	\$43.9M
DISTRICT 5					
Claytor Lake	\$6.3M	\$3.4M	\$5.3M	\$4.3M	\$9.7M
Fairy Stone	\$2.6M	\$1.8M	\$2.5M	\$2.0M	\$4.5M
Occoneechee	\$3.6M	\$1.4M	\$2.7M	\$2.2M	\$5.0M
Smith Mountain Lake	\$8.3M	\$2.0M	\$5.6M	\$4.7M	\$10.3M
Staunton River	\$2.0M	\$1.2M	\$1.8M	\$1.5M	\$3.2M
Staunton River Battlefield	\$458K	\$0	\$242K	\$215K	\$458K
TOTAL D5	\$23.3M	\$9.8M	\$18.1M	\$14.9M	\$33.2M
DISTRICT 6					
Grayson Highlands	\$5.2M	\$1.6M	\$3.7M	\$3.1M	\$6.8M
Hungry Mother	\$4.8M	\$3.4M	\$4.6M	\$3.7M	\$8.2M
Natural Tunnel	\$2.2M	\$905K	\$1.7M	\$1.4M	\$3.1M
New River Trail	\$33.6M	\$374K	\$18.0M	\$16.0M	\$34.0M
Southwest VA Museum	\$1.0M	\$22K	\$556K	\$492K	\$1.0M
Wilderness Road	\$3.8M	\$0	\$2.0M	\$1.8M	\$3.8M
TOTAL D6	\$50.6M	\$6.3M	\$30.6M	\$26.5M	\$56.9M

* Slight differences in sums of addition are due to rounding of the figures.

TABLE 3: ECONOMIC ACTIVITY AND IMPACT OF VIRGINIA STATE PARKS

PARK	ECONOMIC ACTIVITY (UNADJUSTED) ^a	ECONOMIC ACTIVITY (ADJUSTED) ^b	ECONOMIC ACTIVITY (AVERAGE)	ECONOMIC IMPACT (UNADJUSTED) ^c	ECONOMIC IMPACT (ADJUSTED) ^d	ECONOMIC IMPACT (AVERAGE)
DISTRICT 1						
Belle Isle	\$2.4M	\$2.3M	\$2.3M	\$2.1M	\$1.8M	\$1.9M
Chippokes Plantation	\$6.6M	\$6.4M	\$6.5M	\$5.9M	\$5.0M	\$5.5M
False Cape	\$2.3M	\$2.3M	\$2.3M	\$2.1M	\$1.8M	\$2.0M
First Landing	\$28.4M	\$28.4M	\$28.4M	\$23.1M	\$20.3M	\$21.7M
Kiptopeke	\$11.3M	\$10.4M	\$10.8M	\$9.2M	\$7.5M	\$8.3M
York River	\$4.5M	\$4.3M	\$4.4M	\$3.8M	\$3.2M	\$3.5M
TOTAL D1	\$55.5M	\$54.1M	\$54.7M	\$46.2M	\$39.6M	\$42.9M
DISTRICT 2						
Caledon	\$2.8M	\$2.8M	\$2.8M	\$2.4M	\$2.1M	\$2.2M
Lake Anna	\$10.3M	\$10.8M	\$10.6M	\$8.6M	\$7.3M	\$7.9M
Leesylvania	\$14.2M	\$14.7M	\$14.4M	\$11.7M	\$10.7M	\$11.2M
Mason Neck	\$4.3M	\$4.5M	\$4.4M	\$3.7M	\$3.4M	\$3.5M
Westmoreland	\$9.3M	\$9.0M	\$9.2M	\$7.8M	\$6.6M	\$7.2M
Widewater	\$7.9M	\$8.2M	\$8.0M	\$7.9M	\$7.2M	\$7.5M
TOTAL D2	\$48.8M	\$50.0M	\$49.4M	\$42.1M	\$37.3M	\$39.5M
DISTRICT 3						
Douthat	\$8.9M	\$8.5M	\$8.7M	\$7.5M	\$6.4M	\$6.9M
James River	\$4.9M	\$4.7M	\$4.8M	\$4.1M	\$3.5M	\$3.8M
Natural Bridge ¹	\$12.3M	\$11.8M	\$12.1M	\$12.2M	\$10.3M	\$11.2M
Seven Bends	\$327K	\$327K	\$327K	\$327K	\$288K	\$307K
Shenandoah River	\$6.0M	\$6.0M	\$6.0M	\$5.0M	\$4.4M	\$4.7M
Sky Meadows	\$6.7M	\$7.0M	\$6.9M	\$5.6M	\$4.7M	\$5.2M
TOTAL D3	\$39.1M	\$38.3M	\$38.8M	\$34.7M	\$29.5M	\$32.1M
DISTRICT 4						
Bear Creek Lake	\$5.1M	\$4.9M	\$5.0M	\$4.3M	\$3.7M	\$4.0M
High Bridge Trail	\$9.2M	\$8.8M	\$9.0M	\$7.6M	\$6.5M	\$7.0M
Holliday Lake	\$2.6M	\$2.5M	\$2.6M	\$2.2M	\$1.9M	\$2.1M
Pocahontas	\$33.3M	\$33.3M	\$33.3M	\$27.7M	\$24.4M	\$26.0M
Powhatan	\$3.9M	\$3.9M	\$3.9M	\$3.3M	\$2.9M	\$3.1M
Sailor's Creek Battle.	\$1.2M	\$1.1M	\$1.1M	\$1.0M	\$880K	\$961K
Twin Lakes	\$4.4M	\$4.0M	\$4.2M	\$3.8M	\$3.1M	\$3.4M
TOTAL D4	\$59.7M	\$58.5M	\$59.1M	\$49.9M	\$43.4M	\$46.6M
DISTRICT 5						
Claytor Lake	\$11.9M	\$11.4M	\$11.7M	\$9.8M	\$8.3M	\$9.1M
Fairy Stone	\$5.7M	\$5.2M	\$5.5M	\$4.8M	\$3.8M	\$4.3M
Occoneechee	\$8.3M	\$7.7M	\$8.0M	\$7.3M	\$5.9M	\$6.6M
Smith Mountain Lake	\$12.6M	\$12.6M	\$12.6M	\$10.3M	\$9.1M	\$9.7M
Staunton River	\$5.1M	\$4.7M	\$4.9M	\$4.3M	\$3.5M	\$3.9M
Staunton River Battle.	\$1.0M	\$926K	\$966K	\$905K	\$732K	\$819K
TOTAL D5	\$44.6M	\$42.5M	\$43.7M	\$37.4M	\$31.3M	\$34.4M
DISTRICT 6						
Grayson Highlands	\$8.3M	\$7.7M	\$8.0M	\$6.8M	\$5.5M	\$6.1M
Hungry Mother	\$11.1M	\$10.2M	\$10.7M	\$9.3M	\$7.5M	\$8.4M
Natural Tunnel	\$5.2M	\$4.7M	\$4.9M	\$4.5M	\$3.6M	\$4.0M
New River Trail	\$42.2M	\$38.8M	\$40.5M	\$34.6M	\$28.1M	\$31.3M
SW VA Museum	\$2.2M	\$2.1M	\$2.1M	\$1.9M	\$1.6M	\$1.8M
Wilderness Road	\$5.8M	\$5.3M	\$5.6M	\$5.0M	\$4.0M	\$4.5M
TOTAL D6	\$74.8M	\$68.8M	\$71.8M	\$62.1M	\$50.3M	\$56.1M

TABLE 4: JOBS ATTRIBUTED TO VIRGINIA STATE PARKS					
PARK	DIRECT JOBS	INDIRECT JOBS	INDUCED JOBS	TOTAL JOBS	FTE JOBS^a
DISTRICT 1					
Belle Isle	19.9	2.3	4.4	26.6	24.2
Chippokes Plantation	49.4	6.3	11.4	67.1	61.1
False Cape	17	2.1	4.3	23.4	21.3
First Landing	262.5	33.1	46.1	341.7	310.9
Kiptopeke	102.9	13.2	18.2	134.4	122.3
York River	38.7	4.8	7.7	51.2	46.6
TOTAL D1	490.4	61.8	92.1	644.4	586.4
DISTRICT 2					
Caledon	24.2	3	4.9	32	29.1
Lake Anna	89.9	12	16.6	118.5	107.8
Leesylvania	126.1	16	23.4	165.5	150.6
Mason Neck	36.7	4.5	7.6	48.8	44.4
Westmoreland	81.1	10.8	15.1	107	97.4
Widewater	35.5	5.8	12.9	54.2	49.3
TOTAL D2	393.5	52.1	80.5	526	478.6
DISTRICT 3					
Douthat	73.9	9.9	14.7	98.6	89.7
James River	43.1	5.4	8.3	56.8	51.7
Natural Bridge	107.2	14.2	19.8	141.3	128.6
Seven Bends	1.9	0.2	0.7	2.8	2.5
Shenandoah River	53	6.7	9.9	69.7	63.4
Sky Meadows	59	7.3	11.5	77.8	70.8
TOTAL D3	338.1	43.7	64.9	447	406.7
DISTRICT 4					
Bear Creek Lake	42.3	5.6	8.5	56.3	51.2
High Bridge Trail	80.1	10.1	15.4	105.6	96.1
Holliday Lake	23.3	2.7	4.7	30.7	27.9
Pocahontas	289.8	38.6	53.6	382.1	347.7
Powhatan	33.5	4.1	6.8	44.4	40.4
Sailor's Creek Battlefield	8.8	1	2.2	12	10.9
Twin Lakes	35.3	4.8	7.4	47.4	43.1
TOTAL D4	513.1	66.9	98.6	678.5	617.3
DISTRICT 5					
Claytor Lake	106.7	13.9	19.2	139.8	127.2
Fairy Stone	49.4	6.6	9.2	65.2	59.3
Occoneechee	65	8.8	13.7	87.4	79.5
Smith Mountain Lake	112.9	14.6	20.4	147.9	134.6
Staunton River	42.2	5.5	8.6	56.3	51.2
Staunton River Battlefield	7.8	0.9	1.9	10.6	9.6
TOTAL D5	384	50.3	73	507.2	461.4
DISTRICT 6					
Grayson Highlands	77.2	9.5	13.8	100.5	91.5
Hungry Mother	97.3	12.5	18.4	128.2	116.7
Natural Tunnel	42.7	5.2	9.2	57.1	52.0
New River Trail	376.5	47.9	69.2	493.6	449.2
Southwest VA Museum	17	2	4.1	23.1	21.0
Wilderness Road	48.7	5.9	10.3	64.9	59.1
TOTAL D6	659.4	83	125	867.4	789.5
^a Full-time equivalent (FTE) jobs: total hours worked divided by avg. annual hours worked in full-time jobs.					

EMPLOYMENT, LABOR INCOME, VALUE-ADDED, AND TAX REVENUES

Tables 5-10 add further detail to previously presented results by partitioning the direct, indirect, and induced effects of labor income and value-added figures for each park, as well as tax revenues generated.

TABLE 5: EMPLOYMENT, LABOR INCOME, VALUE-ADDED, TAX REVENUES: DISTRICT 1				
PARK	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED
DISTRICT 1				
Belle Isle	Direct Effect	19.9	\$693K	\$881K
	Indirect Effect	2.3	\$140K	\$250K
	Induced Effect	4.4	\$206K	\$386K
	Total Effect	26.6	\$1.0M	\$1.5M
Total state and local taxes	\$149K			
Chippokes Plantation	Direct Effect	49.4	\$1.8M	\$2.3M
	Indirect Effect	6.3	\$396K	\$678K
	Induced Effect	11.4	\$538K	\$1.0M
	Total Effect	67.1	\$2.7M	\$4.0M
Total state and local taxes	\$381K			
False Cape	Direct Effect	17.0	\$688K	\$868K
	Indirect Effect	2.1	\$125K	\$225K
	Induced Effect	4.3	\$201K	\$377K
	Total Effect	23.4	\$1.0M	\$1.5M
Total state and local taxes	\$127K			
First Landing	Direct Effect	262.5	\$6.8M	\$9.3M
	Indirect Effect	33.1	\$2.0M	\$3.5M
	Induced Effect	46.1	\$2.2M	\$4.1M
	Total Effect	341.7	\$11.0M	\$16.9M
Total state and local taxes	\$2.1M			
Kiptopeke	Direct Effect	102.9	\$2.7M	\$3.7M
	Indirect Effect	13.2	\$814K	\$1.4M
	Induced Effect	18.2	\$856K	\$1.6M
	Total Effect	134.4	\$4.3M	\$6.7M
Total state and local taxes	\$853K			
York River	Direct Effect	38.7	\$1.2M	\$1.6M
	Indirect Effect	4.8	\$292K	\$517K
	Induced Effect	7.7	\$363K	\$681K
	Total Effect	51.2	\$1.8M	\$2.8M
Total state and local taxes	\$307K			

TABLE 6: EMPLOYMENT, LABOR INCOME, VALUE-ADDED, TAX REVENUES: DISTRICT 2				
PARK	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED
DISTRICT 2				
Caledon	Direct Effect	24.2	\$744K	\$984K
	Indirect Effect	3.0	\$182K	\$322K
	Induced Effect	4.9	\$228K	\$429K
	Total Effect	32.0	\$1.2M	\$1.7M
Total state and local taxes	\$191K			
Lake Anna	Direct Effect	89.9	\$2.4M	\$3.4M
	Indirect Effect	12.0	\$736K	\$1.3M
	Induced Effect	16.6	\$782K	\$1.5M
	Total Effect	118.5	\$4.0M	\$6.1M
Total state and local taxes	\$749K			
Leesylvania	Direct Effect	126.1	\$3.5M	\$4.7M
	Indirect Effect	16.0	\$983K	\$1.7M
	Induced Effect	23.4	\$1.1M	\$2.1M
	Total Effect	165.5	\$5.6M	\$8.5M
Total state and local taxes	\$1.0M			
Mason Neck	Direct Effect	36.7	\$1.2M	\$1.6M
	Indirect Effect	4.5	\$272K	\$484K
	Induced Effect	7.6	\$359K	\$674K
	Total Effect	48.8	\$1.8M	\$2.7M
Total state and local taxes	\$287K			
Westmoreland	Direct Effect	81.1	\$2.2M	\$3.1M
	Indirect Effect	10.8	\$661K	\$1.1M
	Induced Effect	15.1	\$712K	\$1.3M
	Total Effect	107.0	\$3.6M	\$5.5M
Total state and local taxes	\$685K			
Widewater	Direct Effect	35.5	\$2.1M	\$2.7M
	Indirect Effect	5.8	\$411K	\$646K
	Induced Effect	12.9	\$606K	\$1.1M
	Total Effect	54.2	\$3.1M	\$4.5M
Total state and local taxes	\$284K			

TABLE 7: EMPLOYMENT, LABOR INCOME, VALUE-ADDED, TAX REVENUES: DISTRICT 3				
PARK	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED
DISTRICT 3				
Douthat	Direct Effect	73.9	\$2.2M	\$3.1M
	Indirect Effect	9.9	\$607K	\$1.0M
	Induced Effect	14.7	\$693K	\$1.3M
	Total Effect	98.6	\$3.5M	\$5.4M
Total state and local taxes	\$648K			
James River	Direct Effect	43.1	\$1.3M	\$1.7M
	Indirect Effect	5.4	\$326K	\$569K
	Induced Effect	8.3	\$392K	\$737K
	Total Effect	56.8	\$2.0M	\$3.0M
Total state and local taxes	\$348K			
Natural Bridge	Direct Effect	107.2	\$2.9M	\$4.1M
	Indirect Effect	14.2	\$879K	\$1.5M
	Induced Effect	19.8	\$932K	\$1.8M
	Total Effect	141.3	\$4.7M	\$7.4M
Total state and local taxes	\$919K			
Seven Bends	Direct Effect	1.9	\$119K	\$142K
	Indirect Effect	0.2	\$12K	\$22K
	Induced Effect	0.7	\$32K	\$61K
	Total Effect	2.8	\$163K	\$225K
Total state and local taxes	\$12K			
Shenandoah River	Direct Effect	53.0	\$1.5M	\$2.0M
	Indirect Effect	6.7	\$413K	\$715K
	Induced Effect	9.9	\$467K	\$878K
	Total Effect	69.7	\$2.4M	\$3.6M
Total state and local taxes	\$437K			
Sky Meadows	Direct Effect	59.0	\$1.7M	\$2.3M
	Indirect Effect	7.3	\$447K	\$788K
	Induced Effect	11.5	\$539K	\$1.0M
	Total Effect	77.8	\$2.7M	\$4.1M
Total state and local taxes	\$469K			

TABLE 8: EMPLOYMENT, LABOR INCOME, VALUE-ADDED, TAX REVENUES: DISTRICT 4				
PARK	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED
DISTRICT 4				
Bear Creek Lake	Direct Effect	42.3	\$1.3M	\$1.8M
	Indirect Effect	5.6	\$340K	\$586K
	Induced Effect	8.5	\$398K	\$748K
	Total Effect	56.3	\$2.0M	\$3.1M
Total state and local taxes	\$364K			
High Bridge Trail	Direct Effect	80.1	\$2.3M	\$3.1M
	Indirect Effect	10.1	\$621K	\$1.1M
	Induced Effect	15.4	\$723K	\$1.4M
	Total Effect	105.6	\$3.7M	\$5.6M
Total state and local taxes	\$644K			
Holliday Lake	Direct Effect	23.3	\$724K	\$937K
	Indirect Effect	2.7	\$166K	\$295K
	Induced Effect	4.7	\$220K	\$413K
	Total Effect	30.7	\$1.1M	\$1.6M
Total state and local taxes	\$177K			
Pocahontas	Direct Effect	289.8	\$7.9M	\$11.0M
	Indirect Effect	38.6	\$2.4M	\$4.1M
	Induced Effect	53.6	\$2.5M	\$4.7M
	Total Effect	382.1	\$12.8M	\$19.8M
Total state and local taxes	\$2.4M			
Powhatan	Direct Effect	33.5	\$1.0M	\$1.4M
	Indirect Effect	4.1	\$252K	\$442K
	Induced Effect	6.8	\$317K	\$596K
	Total Effect	44.4	\$1.6M	\$2.4M
Total state and local taxes	\$261K			
Sailor's Creek Battlefield	Direct Effect	8.8	\$368K	\$457K
	Indirect Effect	1.0	\$59K	\$109K
	Induced Effect	2.2	\$105K	\$198K
	Total Effect	12.0	\$532K	\$764K
Total state and local taxes	\$64K			
Twin Lakes	Direct Effect	35.3	\$1.1M	\$1.5M
	Indirect Effect	4.8	\$287K	\$500K
	Induced Effect	7.4	\$349K	\$656K
	Total Effect	47.4	\$1.8M	\$2.7M
Total state and local taxes	\$290K			

TABLE 9: EMPLOYMENT, LABOR INCOME, VALUE-ADDED, TAX REVENUES: DISTRICT 5				
PARK	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED
DISTRICT 5				
Claytor Lake	Direct Effect	106.7	\$2.8M	\$3.9M
	Indirect Effect	13.9	\$858K	\$1.5M
	Induced Effect	19.2	\$901K	\$1.7M
	Total Effect	139.8	\$4.6M	\$7.1M
Total state and local taxes	\$897K			
Fairy Stone	Direct Effect	49.4	\$1.4M	\$1.9M
	Indirect Effect	6.6	\$403K	\$694K
	Induced Effect	9.2	\$433K	\$814K
	Total Effect	65.2	\$2.2M	\$3.4M
Total state and local taxes	\$425K			
Occoneechee	Direct Effect	65.0	\$2.1M	\$2.8M
	Indirect Effect	8.8	\$550K	\$937K
	Induced Effect	13.7	\$642K	\$1.2M
	Total Effect	87.4	\$3.2M	\$4.9M
Total state and local taxes	\$538K			
Smith Mountain Lake	Direct Effect	112.9	\$3.0M	\$4.2M
	Indirect Effect	14.6	\$900K	\$1.6M
	Induced Effect	20.4	\$959K	\$1.8M
	Total Effect	147.9	\$4.9M	\$7.5M
Total state and local taxes	\$940K			
Staunton River	Direct Effect	42.2	\$1.3M	\$1.8M
	Indirect Effect	5.5	\$329K	\$576K
	Induced Effect	8.6	\$407K	\$763K
	Total Effect	56.3	\$2.1M	\$3.1M
Total state and local taxes	\$338K			
Staunton River Battlefield	Direct Effect	7.8	\$318K	\$397K
	Indirect Effect	0.9	\$52K	\$96K
	Induced Effect	1.9	\$91K	\$172K
	Total Effect	10.6	\$461K	\$665K
Total state and local taxes	\$57K			

TABLE 10: EMPLOYMENT, LABOR INCOME, VALUE-ADDED, TAX REVENUES: DISTRICT 6				
PARK	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED
DISTRICT 6				
Grayson Highlands	Direct Effect	77.2	\$2.0M	\$2.8M
	Indirect Effect	9.5	\$584K	\$1.0M
	Induced Effect	13.8	\$648K	\$1.2M
	Total Effect	100.5	\$3.3M	\$5.0M
Total state and local taxes	\$610K			
Hungry Mother	Direct Effect	97.3	\$2.8M	\$3.8M
	Indirect Effect	12.5	\$766K	\$1.3M
	Induced Effect	18.4	\$868K	\$1.6M
	Total Effect	128.2	\$4.4M	\$6.7M
Total state and local taxes	\$807K			
Natural Tunnel	Direct Effect	42.7	\$1.4M	\$1.9M
	Indirect Effect	5.2	\$315K	\$560K
	Induced Effect	9.2	\$432K	\$812K
	Total Effect	57.1	\$2.2M	\$3.3M
Total state and local taxes	\$337K			
New River Trail	Direct Effect	376.5	\$10.3M	\$14.0M
	Indirect Effect	47.9	\$2.9M	\$5.2M
	Induced Effect	69.2	\$3.3M	\$6.1M
	Total Effect	493.6	\$16.5M	\$25.3M
Total state and local taxes	\$3.1M			
Southwest VA Museum	Direct Effect	17.0	\$668K	\$842K
	Indirect Effect	2.0	\$117K	\$214K
	Induced Effect	4.1	\$194K	\$364K
	Total Effect	23.1	\$979K	\$1.4M
Total state and local taxes	\$126K			
Wilderness Road	Direct Effect	48.7	\$1.6M	\$2.1M
	Indirect Effect	5.9	\$359K	\$641K
	Induced Effect	10.3	\$482K	\$906K
	Total Effect	64.9	\$2.4M	\$3.6M
Total state and local taxes	\$379K			

ECONOMIC IMPACTS OF CAPITAL IMPROVEMENT SPENDING

This section details the effects of capital improvement spending during 2018. These capital improvement expenditures were already included in the economic activity and economic impact models reported earlier in this report, but are broken-out separately in this section to demonstrate how such expenditures infuse money into the economies of parks' host communities.

TABLE 11A: CAPITAL CONSTRUCTION: BELLE ISLE [SPENT: \$49K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.3	\$18K	\$25K	\$49K
Indirect Effect	0.1	\$5K	\$9K	\$16K
Induced Effect	0.1	\$6K	\$11K	\$18K
Total Effect	0.5	\$29K	\$45K	\$83K

State and local taxes from capital construction: \$3K

TABLE 11B: CAPITAL CONSTRUCTION: CALEDON [SPENT: \$4K]*				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.0	\$2K	\$2K	\$4K
Indirect Effect	0.0	\$477	\$799	\$1K
Induced Effect	0.0	\$512	\$962	\$2K
Total Effect	0.0	\$3K	\$4K	\$7K

State and local taxes from capital construction: \$253

TABLE 11C: CAPITAL CONSTRUCTION: CHIPPOKES [SPENT: \$1.3M]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	9.7	\$569K	\$740K	\$1.3M
Indirect Effect	1.6	\$113K	\$178K	\$320K
Induced Effect	3.6	\$168K	\$315K	\$524K
Total Effect	14.9	\$850K	\$1.2M	\$2.2M

State and local taxes from capital construction: \$78K

TABLE 11D: CAPITAL CONSTRUCTION: CLAYTOR LAKE [SPENT: \$133K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.0	\$57K	\$74K	\$133K
Indirect Effect	0.2	\$11K	\$18K	\$32K
Induced Effect	0.4	\$17K	\$31K	\$52K
Total Effect	1.5	\$85K	\$123K	\$217K

State and local taxes from capital construction: \$8K

*In this report, a monetary amount without a "K" or "M" is smaller than \$1,000 and is represented in actual value.

TABLE 11E: CAPITAL CONSTRUCTION: FALSE CAPE [SPENT: \$168K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.1	\$64K	\$86K	\$168K
Indirect Effect	0.3	\$17K	\$28K	\$50K
Induced Effect	0.4	\$20K	\$37K	\$62K
Total Effect	1.8	\$101K	\$151K	\$280K

State and local taxes from capital construction: \$10K

TABLE 11F: CAPITAL CONSTRUCTION: FIRST LANDING [SPENT: \$170K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.2	\$72K	\$94K	\$170K
Indirect Effect	0.2	\$14K	\$23K	\$41K
Induced Effect	0.5	\$21K	\$40K	\$67K
Total Effect	1.9	\$107K	\$157K	\$278K

State and local taxes from capital construction: \$10K

TABLE 11G: CAPITAL CONSTRUCTION: GRAYSON HIGHLANDS [SPENT: \$94K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.7	\$40K	\$52K	\$94K
Indirect Effect	0.1	\$8K	\$13K	\$23K
Induced Effect	0.3	\$12K	\$22K	\$37K
Total Effect	1.1	\$60K	\$87K	\$154K

State and local taxes from capital construction: \$6K

TABLE 11H: CAPITAL CONSTRUCTION: HIGH BRIDGE [SPENT: \$61K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.4	\$22K	\$30K	\$61K
Indirect Effect	0.1	\$7K	\$11K	\$19K
Induced Effect	0.2	\$7K	\$13K	\$22K
Total Effect	0.6	\$36K	\$54K	\$102K

State and local taxes from capital construction: \$3K

TABLE 11I: CAPITAL CONSTRUCTION: HUNGRY MOTHER [SPENT: \$95K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.7	\$40K	\$53K	\$95K
Indirect Effect	0.1	\$8K	\$13K	\$23K
Induced Effect	0.3	\$12K	\$22K	\$37K
Total Effect	1.1	\$60K	\$88K	\$155K

State and local taxes from capital construction: \$6K

TABLE 11J: CAPITAL CONSTRUCTION: KIPTOPEKE [SPENT: \$46K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.3	\$17K	\$23K	\$46K
Indirect Effect	0.1	\$5K	\$8K	\$15K
Induced Effect	0.1	\$5K	\$10K	\$17K
Total Effect	0.5	\$27K	\$41K	\$78K

State and local taxes from capital construction: \$3K

TABLE 11K: CAPITAL CONSTRUCTION: LAKE ANNA [SPENT: \$378K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	2.4	\$143K	\$192K	\$378K
Indirect Effect	0.7	\$39K	\$65K	\$115K
Induced Effect	1.0	\$45K	\$84K	\$139K
Total Effect	4.0	\$227K	\$341K	\$632K

State and local taxes from capital construction: \$22K

TABLE 11L: CAPITAL CONSTRUCTION: LEESYLVANIA [SPENT: \$9K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.1	\$3K	\$4K	\$9K
Indirect Effect	0.0	\$931	\$2K	\$3K
Induced Effect	0.0	\$999	\$2K	\$3K
Total Effect	0.1	\$5K	\$8K	\$15K

State and local taxes from capital construction: \$492

TABLE 11M: CAPITAL CONSTRUCTION: NATURAL TUNNEL [SPENT: \$6K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.0	\$2K	\$3K	\$6K
Indirect Effect	0.0	\$616	\$1K	\$2K
Induced Effect	0.0	\$661	\$1K	\$2K
Total Effect	0.1	\$3K	\$5K	\$10K

State and local taxes from capital construction: \$326

TABLE 11N: CAPITAL CONSTRUCTION: NEW RIVER TRAIL [SPENT: \$121K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.9	\$52K	\$67K	\$121K
Indirect Effect	0.1	\$10K	\$16K	\$29K
Induced Effect	0.3	\$15K	\$29K	\$48K
Total Effect	1.4	\$77K	\$112K	\$198K

State and local taxes from capital construction: \$7K

TABLE 11O: CAPITAL CONSTRUCTION: OCCONEECHEE [SPENT: \$1.2M]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	8.8	\$513K	\$669K	\$1.2M
Indirect Effect	1.5	\$105K	\$166K	\$297K
Induced Effect	3.2	\$152K	\$285K	\$475K
Total Effect	13.5	\$770K	\$1.1M	\$2.0M

State and local taxes from capital construction: \$71K

TABLE 11P: CAPITAL CONSTRUCTION: POCAHONTAS [SPENT: \$926K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	5.8	\$350K	\$470K	\$926K
Indirect Effect	1.7	\$97K	\$160K	\$283K
Induced Effect	2.3	\$109K	\$205K	\$341K
Total Effect	9.8	\$556K	\$835K	\$1.6M

State and local taxes from capital construction: \$53K

TABLE 11Q: CAPITAL CONSTRUCTION: POWHATAN [SPENT: \$165K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.2	\$70K	\$91K	\$165K
Indirect Effect	0.2	\$14K	\$22K	\$40K
Induced Effect	0.4	\$21K	\$39K	\$65K
Total Effect	1.8	\$105K	\$152K	\$270K

State and local taxes from capital construction: \$10K

TABLE 11R: CAPITAL CONSTRUCTION: SEVEN BENDS [SPENT: \$56K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.4	\$24K	\$31K	\$56K
Indirect Effect	0.1	\$5K	\$7K	\$13K
Induced Effect	0.1	\$7K	\$13K	\$22K
Total Effect	0.6	\$36K	\$51K	\$91K

State and local taxes from capital construction: \$3K

TABLE 11S: CAPITAL CONSTRUCTION: SHENANDOAH RIVER [SPENT: \$41K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.3	\$17K	\$23K	\$41K
Indirect Effect	0.0	\$3K	\$5K	\$10K
Induced Effect	0.1	\$5K	\$10K	\$16K
Total Effect	0.5	\$25K	\$38K	\$67K

State and local taxes from capital construction: \$2K

TABLE 11T: CAPITAL CONSTRUCTION: SMITH MOUNTAIN LAKE [SPENT: \$4K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.0	\$1K	\$2K	\$4K
Indirect Effect	0.0	\$432	\$723	\$1K
Induced Effect	0.0	\$463	\$870	\$2K
Total Effect	0.0	\$2K	\$4K	\$7K

State and local taxes from capital construction: \$228

TABLE 11U: CAPITAL CONSTRUCTION: STAUNTON RIVER [SPENT: \$218K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.3	\$80K	\$109K	\$218K
Indirect Effect	0.4	\$24K	\$40K	\$70K
Induced Effect	0.5	\$25K	\$48K	\$79K
Total Effect	2.3	\$129K	\$197K	\$367K

State and local taxes from capital construction: \$13K

TABLE 11V: CAPITAL CONSTRUCTION: TWIN LAKES [SPENT: \$241K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.5	\$89K	\$120K	\$241K
Indirect Effect	0.5	\$26K	\$43K	\$76K
Induced Effect	0.6	\$28K	\$53K	\$88K
Total Effect	2.5	\$143K	\$216K	\$405K

State and local taxes from capital construction: \$14K

TABLE 11W: CAPITAL CONSTRUCTION: WESTMORELAND [SPENT: \$218K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.3	\$80K	\$108K	\$218K
Indirect Effect	0.4	\$24K	\$40K	\$70K
Induced Effect	0.5	\$25K	\$48K	\$79K
Total Effect	2.3	\$129K	\$196K	\$367K

State and local taxes from capital construction: \$12K

TABLE 11X: CAPITAL CONSTRUCTION: WIDEWATER [SPENT: \$4.8M]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	34.8	\$2.0M	\$2.6M	\$4.8M
Indirect Effect	5.7	\$405K	\$636K	\$1.1M
Induced Effect	12.8	\$600K	\$1.1M	\$1.9M
Total Effect	53.3	\$3.0M	\$4.4M	\$7.8M

State and local taxes from capital construction: \$278K

ECONOMIC IMPACTS OF OPERATIONAL SPENDING

This section details the effects of operational spending not supported by visitor revenues during 2018. This operational spending was already included in the economic activity and economic impact models reported earlier in this report, but is also presented separately in this section to demonstrate how such operational spending infuses money into the economies of parks' host communities.

TABLE 12: ECONOMIC IMPACT OF NON-VISITOR SUPPORTED PARK OPERATIONAL SPENDING				
(PORTION OF PARK BUDGET DERIVED FROM VISITOR REVENUE REMOVED TO AVOID DOUBLE COUNTING)				
PARK	TOTAL VISITOR REVENUE	PARK OPERATIONAL EXPENDITURE	NET EXPENDITURE FROM NON-VISITOR SOURCES *	ECONOMIC IMPACT FROM OPERATIONAL SPENDING *
DISTRICT 1				
Belle Isle	\$328K	\$742K	\$414K	\$704K
Chippokes Plantation	\$427K	\$929K	\$502K	\$853K
False Cape	\$65K	\$560K	\$495K	\$877K
First Landing	\$2.3M	\$1.8M	\$0	\$0
Kiptopeke	\$1.1M	\$1.1M	\$0	\$0
York River	\$119K	\$524K	\$405K	\$689K
TOTAL D1	\$4.4M	\$5.6M	\$1.8M	\$3.1M
DISTRICT 2				
Caledon	\$39K	\$309K	\$270K	\$477K
Lake Anna	\$1.0M	\$1.1M	\$52K	\$95K
Leesylvania	\$612K	\$1.1M	\$458K	\$843K
Mason Neck	\$125K	\$661K	\$536K	\$987K
Westmoreland	\$1.1M	\$1.3M	\$180K	\$305K
Widewater	\$0	\$1,760	\$1,760	\$3,238
TOTAL D2	\$2.9M	\$4.4M	\$1.5M	\$2.7M
DISTRICT 3				
Douthat	\$1.5M	\$2.0M	\$562K	\$955K
James River	\$681K	\$1.0M	\$368K	\$626K
Natural Bridge	\$1.7M	\$1.8M	\$170K	\$288K
Seven Bends	\$0	\$133K	\$133K	\$226K
Shenandoah River	\$851K	\$1.1M	\$249K	\$441K
Sky Meadows	\$210K	\$698K	\$488K	\$897K
TOTAL D3	\$4.8M	\$6.8M	\$2.0M	\$3.4M
DISTRICT 4				
Bear Creek Lake	\$559K	\$939K	\$379K	\$645K

PARK (CONTINUED)	TOTAL VISITOR REVENUE	PARK OPERATIONAL EXPENDITURE	NET EXPENDITURE FROM NON-VISITOR SOURCES	ECONOMIC IMPACT FROM OPERATIONAL SPENDING
High Bridge Trail	\$60K	\$566K	\$506K	\$860K
Holliday Lake	\$219K	\$528K	\$309K	\$525K
Pocahontas	\$1.7M	\$2.0M	\$290K	\$547K
Powhatan	\$164K	\$487K	\$323K	\$513K
Sailor's Creek Battlefield	\$14K	\$336K	\$322K	\$549K
Twin Lakes	\$485K	\$856K	\$371K	\$601K
TOTAL D4	\$3.2M	\$5.7M	\$2.5M	\$4.2M
DISTRICT 5				
Claytor Lake	\$1.6M	\$1.5M	\$0	\$0
Fairy Stone	\$973K	\$1.1M	\$130K	\$211K
Occoneechee	\$722K	\$912K	\$190K	\$307K
Smith Mountain Lake	\$1.1M	\$1.2M	\$127K	\$224K
Staunton River	\$444K	\$883K	\$438K	\$710K
Staunton River Battlefield	\$32K	\$287K	\$255K	\$414K
TOTAL D5	\$4.8M	\$5.9M	\$1.1M	\$1.6M
DISTRICT 6				
Grayson Highlands	\$771K	\$920K	\$149K	\$242K
Hungry Mother	\$1.7M	\$2.2M	\$486K	\$787K
Natural Tunnel	\$691K	\$1.4M	\$756K	\$1.2M
New River Trail	\$317K	\$1.4M	\$1.0M	\$1.7M
Southwest VA Museum	\$54K	\$579K	\$526K	\$851K
Wilderness Road	\$57K	\$823K	\$766K	\$1.2M
TOTAL D6	\$3.6M	\$7.3M	\$3.7M	\$6.0M
OPERATIONAL SPENDING IMPACTS:	\$23.8M	\$35.7M	\$12.6M	\$21.1M
*In the final two columns of this Table, an entry of zero represents a situation in which operating revenues exceeded operating expenses.				

CONCLUSIONS

This 2018 economic impact study underscores the importance of the State Park system to the economy of Virginia. The economic activity spawned by Virginia's State Parks contributed approximately \$338.7M to the Commonwealth's economy; whereas, the economic impact was estimated at \$267.1M in 2018. The difference between the economic activity amount (includes spending by local residents) and the economic impact amount (does not include spending by local residents) illustrates that Virginia's State Parks not only attract fresh-money from outside of the area, but also serve to limit the economic leakage of money from within Virginia. In other words, the parks help entice locals to spend their money inside the Commonwealth as opposed to pursuing such recreational outings in other states/regions.

Although an extremely rainy year reduced the number of day visitors to Virginia's parks during 2018, overnight visitors (particularly cabin guests), who often book their visits well in advance, were less impacted by the rain. As seen earlier in this report (e.g. Table 1), overnight visitors spend more money around the Commonwealth than do day visitors. In addition, the most recent IMPLAN multipliers are strong due to the current economic climate. Therefore, the economic impact metrics for 2018 were robust. Economic activity surrounding visitation to Virginia's State Parks supported approximately 3,858 jobs, \$133.2M in wage and salary income, and \$203.9M in value-added effects. Moreover, economic activity stimulated by Virginia State Parks generated approximately \$24M in state and local tax revenues during 2018. As such, \$1.26 in state and local taxes were generated for every dollar of tax money spent in the park system.

According to Crompton (1993), the validity and reliability of an economic impact study depend on: 1) the accuracy of visitor spending estimates; 2) adherence of statistical rules applied in the study in particular pertaining to the use of the multiplier coefficients; and 3) reasonable attendance estimates. First, in terms of spending estimates, customized spending profiles were developed by the research team by collecting spending data from 3,802 park visitors during 2016. Second, regarding the multiplier coefficients, the most recent IMPLAN multipliers were utilized. Third, in terms of attendance estimation, as described earlier in this report, during 2017 park staff recorded 762 vehicle observation hours as well as 679 visitor interviews to calibrate model estimations regarding the average number of occupants per vehicle (day use; camping; cabins) and the ratio of local, non-local and non-resident visitors. In any state park system, these modeling inputs should be continually evaluated and refined through time because all three (spending, multipliers, and attendance) are dynamic and change according to economic and other external conditions. To state differently, this study is part of an overall effort that encompasses continuous refinement of all modeling inputs including visitation counting techniques in Virginia's State Parks.

Not only do Virginia State Parks produce economic-related results, but they also help foster a host of other societal benefits that cannot be incorporated into econometric modeling. They each serve as settings for rest, relaxation, recreation, and rejuvenation that increase visitors' quality of life. The parks serve as medicine for the mind, body and soul and help reduce the manifestation of



Park Rx America is a non-profit organization whose mission is to decrease the burden of chronic disease, increase health and happiness, and foster environmental stewardship, by virtue of prescribing Nature during the routine delivery of healthcare.

many of society's ailments due to the reduction of stress experienced by visitors. Along these lines, as described in the above call-out box, a relatively recently launched program focuses on incorporating outdoor recreation in healthcare prescriptions. In fact, Virginia State Parks is one of the first state park systems in the country to partner with Park Rx America in an effort to encourage healthcare providers to prescribe outdoor recreation for patients (Hedelt, 2018).

Even non-visitors value parks. That is, even people who do not visit parks, value their existence and want to see them preserved (Greenley, Walsh, and Young, 1981; Institute for Service Research, 2018). Therefore, parks have an *existence value* by which even those who do not visit are typically glad that they exist. In addition, parks have a *bequest value* in that both visitors and non-visitors want parks preserved for future generations.

State parks also help insulate Virginia's tourism infrastructure from economic cycles. When the economy flourishes, people visit state parks... when the economy contracts, people STILL visit state parks. Thus, many other businesses within Virginia's tourism infrastructure (e.g. restaurants, gas stations, etc...) often benefit from the steady, relatively recession-resistant flow of visitors to Virginia's State Parks. Along these lines, many of Virginia's State Parks help inject money into economically-strained areas of Virginia. In fact, the majority of Virginia's State Parks are located in areas that are below the statewide average of commonly employed economic indicators such as median income.

Another benefit of the state park system is an increase in values of those real estate properties adjacent to a park. A well-known [highly cited] researcher, Dr. John Crompton, published a study in 2005 in which he analyzed the findings of a collection of studies that have attempted to estimate the influence that park proximity has on real estate values in the United States. In doing so, he concluded that (Crompton, 2005; p. 203):

“...a positive impact of 20% on property values abutting or fronting a passive park is a reasonable starting point guideline for estimating such a park's impact.”

Based upon Dr. Crompton's research, it is not unreasonable to extrapolate that, *on average*, across the State of Virginia, abutting or fronting a state park location increases property value by approximately 20%. This statement regarding real estate values should not be taken out of context of the following parameters: The phrase 'on average' is purposefully included because a number of factors influence real estate prices. For example, in rural areas, variables such as road frontage, easements, soil, and timber availability can influence property-specific pricing. In oceanfront areas (e.g. First Landing State Park), factors such as proximity to weekly rentals, ocean views, proximity to a traffic light, and availability of parking can influence property-specific pricing.

In summary, while this study estimated many economic impacts of Virginia's State Parks such as jobs, labor income, value-added, and state and local taxes generated, it is prudent to note that a number of other benefits (both tangible and intangible) could not be included in the modeling. For example, because parks contribute to local residents' quality of life, they are an amenity that is considered in some business expansion decisions: the Amazon corporation listed *total park acreage* as a criterion in selecting their HQ2 site during 2018 (Ohnesorge, 2018).

INVESTIGATOR BIO

Dr. Vincent Magnini holds a Ph.D. in International Business / Marketing from Old Dominion University, an MBA from Wichita State University, and a Bachelor's of Science in Hospitality and Tourism Management from Virginia Tech. He was recently ranked as one of the top 12 most prolific hospitality researchers worldwide and holds editorial board appointments on all of the top-ranked research journals in the field. Further, he is a U.S. Fulbright Scholar. He has published six books and more than 150 articles and reports. Dr. Magnini has also been featured on National Public Radio's (NPR) *All Things Considered*, *With Good Reason*, *Pulse on the Planet* and cited in the *New York Times* and *Washington Post*.

Dr. Magnini regularly consults for a number of constituencies in the hospitality and tourism sectors. The consulting activities include projects such as strategic master plans, economic impact analyses, feasibility studies, and executive education seminars.

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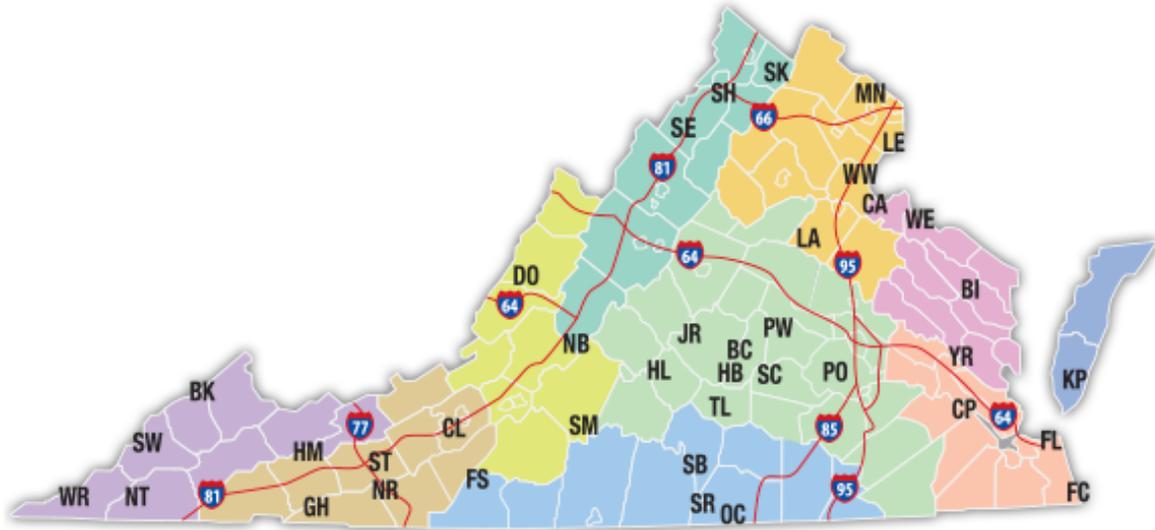
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Endnote:

¹. The economic activity of Natural Bridge State Park was under-estimated in 2017 because the portion of visitors that were local residents was erroneously set at the district-default of 50 percent. The actual economic activity of the park during 2017 is calculated at \$13.3M. The 2018 models in this report are correct.

APPENDICES

APPENDIX A: MAP OF VIRGINIA STATE PARKS



- | | | |
|---------------------------|---|--|
| Bear Creek Lake (BC) | James River (JR) | Shenandoah River (SH) |
| Belle Isle (BI) | Kiptopeke (KP) | Shot Tower (ST) |
| Breaks Interstate (BK) * | Lake Anna (LA) | Sky Meadows (SK) |
| Caledon (CA) | Leesylvania (LE) | Smith Mountain Lake (SM) |
| Chippokes Plantation (CP) | Mason Neck (MN) | Southwest Virginia
Museum Historical (SW) |
| Claytor Lake (CL) | Natural Bridge (NB) | Staunton River (SR) |
| Douthat (DO) | Natural Tunnel (NT) | Staunton River Battlefield (SB) |
| Fairy Stone (FS) | New River Trail (NR) | Tabb Monument |
| False Cape (FC) | Occoneechee (OC) | Twin Lakes (TL) |
| First Landing (FL) | Pocahontas (PO) | Westmoreland (WE) |
| Grayson Highlands (GH) | Powhatan (PW) | Widewater (WW) |
| High Bridge Trail (HB) | Sailor's Creek
Battlefield Historic (SC) | Wilderness Road (WR) |
| Holliday Lake (HL) | Seven Bends (SE) ** | York River (YR) |
| Hungry Mother (HM) | | |

Source of map: www.dcr.virginia.gov/state-parks/find-a-park

APPENDIX B: GLOSSARY OF TERMS

{ Many of the definitions in this glossary are paraphrased directly from
Stynes et al. (2000) MGM2 users' manual }

Direct effects – the changes in sales, income and jobs in an area as a result of first-round visitor spending.

Economic impact – economic output modeling that includes all visitor spending and consequent multiplier effects by 1) in-state residents traveling more than 50 miles one-way to visit the park; and 2) all out-of-state visitors. In addition, economic impact models include capital construction and operation expenditures not derived from visitor spending. Thus, economic impact figures reflect all of the “fresh money” entering an area’s economy as a result of a given state park.

- **Unadjusted economic impact** - economic impact output figures computed using statewide IMPLAN multipliers.
- **Adjusted economic impact** – calibrated economic impact output figures based upon whether a given park’s county(ies) has economic activity above or below the state average. Adjusted economic impact figures are also reduced by 12% (Magnini and Uysal, 2015a) to account for spending by park visitors who would have traveled and spent money in the state regardless of whether the park existed.

Economic activity – economic output modeling that includes all visitor spending and consequent multiplier effects by both locals and non-locals as well as any money spent by parks that was not supported by visitor spending. Consequently, economic activity figures represent all of the economic activity stimulated by a park location within the state.

- **Unadjusted economic activity** - economic activity output figures computed using statewide IMPLAN multipliers.
- **Adjusted economic activity** – calibrated economic activity output figures based upon whether a given park’s county(ies) has economic activity above or below the state average.

Indirect effects – the changes in sales, income and jobs to businesses that supply goods and services to the park location.

Induced effects – the changes in economic activity in the region stimulated by household spending of income earned through direct and indirect effects of visitor spending.

IMPLAN – a computer-based input / output economic modeling system. With IMPLAN one can estimate 528 sector input / output models for any region consisting of one or more counties. IMPLAN includes procedures for generating multipliers and estimating impacts by applying final demand changes to the model.

Multipliers – these estimates express the magnitude of the secondary effects in a given geographic area and are often in the form of a ratio of the total change in economic activity relative to the direct change. Multipliers reflect the degree of interdependency between sectors in a region’s economy and can vary substantially across regions and sectors.

Secondary effects – the changes in economic activity from subsequent rounds of re-spending of dollars. There are two types of secondary effects: indirect and induced (see above).

Value-added (also termed ‘gross regional product’) – the sum of total income and indirect business taxes. Value-added is a commonly used measure of the contribution of a region to the state/national economy because it avoids the double counting of intermediate sales and incorporates only the ‘value-added’ by the region to final products.

{END OF REPORT}