Virginia Tech
Pamplin College of Business

VIRGINIA STATE PARKS
ECONOMIC IMPACT REPORT
2019

Vincent P. Magnini, Ph.D.

Delivered January 2020

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

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 2019 Virginia State Parks economic impact analyses:

- In 2019, visitors to Virginia's State Parks spent an estimated $286.2M in the Commonwealth. Approximately 45% [$130.2M] of this spending was by out-of-state visitors.

- The total economic activity stimulated by Virginia State Parks during 2019 was approximately $437.7M.

- The total economic impact of Virginia State Parks during 2019 was an estimated $343M. 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 $795K to $43.3M (not including parks under development).

- In 2019, for every $1 of general tax revenue provided to state parks, $17.68, 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 4,180 jobs in the state during 2019.

- In terms of wages and income, the economic activity spawned by Virginia State Parks was responsible for roughly $167M in wage and salary income in 2019.

- Economic activity created by Virginia State Parks was associated with approximately $260.7M 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 $25.3M in state and local tax revenues during 2019. As such, roughly $1.30 in state and local taxes were generated for every dollar of tax money spent on the park system.

INTRODUCTION

More than 250,000 volunteer hours recorded annually; a Facebook fan base in excess of 100,000; and, approximately 25,000 Twitter followers: these facts evidence the attachment that many people have to Virginia's State Park system. The question surfaces, however, how this loyalty and attachment translates into economic-based metrics? To address this overarching question, this study estimates the economic activity and impacts that Virginia State Parks create in the Commonwealth's economy. Specific objectives include:

- Modeling the direct and secondary economic activity and impacts of Virginia State Parks on a state-wide level including metrics such as jobs supported / associated labor income, tax revenues generated, and contributions to the gross domestic product through value-added effects.

- Assessing 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

- Parsing-out the economic benefits derived from park operational spending and capital improvement projects.

In accord with 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's 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 fifth year's work of an ongoing memorandum of understanding (MOU) 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.

Moreover, it is also prudent to note that the economic models change each time a new park is added to the system or is under development with capital outlays. Since the inception of this MOU many new parks have either come to fruition or are in the pipeline producing economic activity through site-specific capital investments. Examples of new or pipeline parks include, for instance, Clinch River, Machicomoco, Mayo River, Middle Peninsula, Natural Bridge, Seven Bends, and Widewater.

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 section begins on next page}

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 1.7% over 2018 amounts to adjust for inflation.

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

TABLE 1: AVERAGE VISITOR SPENDING: PROFILES BY SEGMENT (PER PARK DAY)[a]

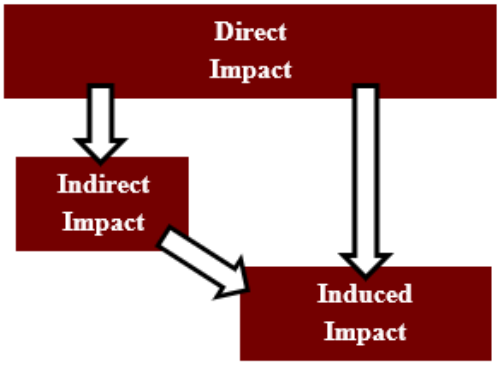
	DAY VISITORS			OVERNIGHT VISITORS			
SPENDING CATEGORY	LOCAL DAY VISITOR	NON-LOCAL DAY VISITOR	NON-RESIDENT DAY VISITOR	RESIDENT CABIN GUEST	RESIDENT CAMPING GUEST	NON–RESIDENT CABIN GUEST	NON–RESIDENT CAMPING GUEST
Hotels, motels, cabins and B&B	$0.61	$9.58	$20.59	$32.39	$1.41	$36.05	$2.77
Camping fees and charges	$0.15	$1.76	$1.51	$0.71	$8.20	$4.68	$10.31
Restaurants and bars	$3.52	$12.95	$12.82	$5.98	$3.15	$10.42	$8.47
Groceries and convenience items	$3.80	$8.10	$5.27	$6.04	$6.80	$7.52	$5.02
Gas and oil (auto, RV, boat, etc…)	$2.53	$8.35	$8.33	$4.32	$4.23	$3.52	$5.22
Transportation expenses (other)	$0.34	$0.75	$2.51	$1.04	$0.73	$5.53	$1.97
Clothing	$0.55	$1.06	$1.58	$0.67	$0.37	$0.46	$0.51
Sporting goods	$0.94	$0.86	$1.70	$1.62	$7.45	$0.88	$1.86
Souvenirs and other expenditures	$5.21	$9.64	$14.96	$2.54	$2.88	$5.58	$4.12
OVERALL PER VISITOR:	**$17.65**	**$53.05**	**$69.27**	**$55.31**	**$35.22**	**$74.64**	**$40.25**

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

SECONDARY IMPACT MEASUREMENT

In addition to assessing the direct impacts of the park system's economic activity, this study also models secondary or ripple effects which comprise economic activity from subsequent rounds of re-spending of money. As shown in Figure 1, there are two types of ripple effects: indirect and induced. Indirect effects entail the changes in sales, income and jobs of suppliers to entities included in direct impact (Stynes et al., 2000). Induced effects encapsulate the changes in economic activity in the region stimulated by household spending of income earned through direct and indirect effects.

FIGURE 1: ECONOMIC RIPPLE



Indirect and induced effects are estimated using economic multipliers. Multipliers reflect the extent of interdependency between sectors in a region's economy and can vary significantly between regions and sectors (Stynes et al., 2000). Here is a simple example of how a multiplier can be interpreted: if the multiplier for the restaurant sector in a given region is 1.37 then it can be estimated that every dollar spent at a restaurant results in 37 cents of secondary economic activity in the region.

The economic multipliers, as well as calculations of job supported, tax revenues generated, and value-added effects were facilitated through the use of IMPLAN software. Specifically, 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 employed in this study to guide the estimation of indirect and induced economic impacts.

VISITATION MEASUREMENT

Park attendance counts for 2019 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.

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 likely 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). This visitor spending is portioned according to day use versus overnight and by Virginia resident versus non-resident. Second, economic activity and economic impact are reported (see Table 3). Third, job-related results are detailed (see Table 4). In the jobs outputs, both estimated total jobs and full-time equivalent (FTE) jobs are reported. FTE jobs represent total hours worked divided by the average annual hours worked in full-time jobs.

Fourth, park-by-park findings are listed in Tables 5-10 (see Appendix A for a map of park locations). The park-by-park results include estimated state and local tax revenues generated by each park's economic activity. While IMPLAN does not separate state and local tax revenue model outputs, in Virginia the split can be estimated at approximately 60-40 (state-local) for this type of tourism-related spending (https://www.vatc.org/research/economicimpact/).

Next in this results section, outcomes of capital investments are displayed (see Table 11). Lastly, the effects of park operational spending are reported (see Table 12). To reiterate, these capital improvement and operational components are already included in each park's modeling presented in Tables 5-10 but are partitioned as stand-alone modeling components in Tables 11 and 12 to tease-out the economic contributions of these elements. On a separate note, 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	$671K	$893K	$883K	$680K	$1.6M
Chippokes Plantation	$4.1M	$1.5M	$3.1M	$2.5M	$5.6M
False Cape	$794K	$232K	$557K	$469K	$1.0M
First Landing	$23.4M	$6.7M	$16.3M	$13.8M	$30.1M
Kiptopeke	$1.3M	$3.6M	$2.8M	$2.1M	$4.9M
York River	$6.1M	$0	$3.2M	$2.9M	$6.1M
TOTAL D1	**$36.4M**	**$12.8M**	**$26.9M**	**$22.4M**	**$49.3M**
DISTRICT 2					
Caledon	$2.0M	$55K	$1.1M	$978K	$2.1M
Lake Anna	$5.1M	$5.4M	$5.9M	$4.6M	$10.5M
Leesylvania	$19.3M	$15K	$10.2M	$9.1M	$19.3M
Mason Neck	$3.4M	$0	$1.8M	$1.6M	$3.4M
Westmoreland	$2.8M	$3.3M	$3.5M	$2.7M	$6.2M
Widewater	$748K	$0	$360K	$352K	$748K
TOTAL D2	**$33.3M**	**$8.8M**	**$22.9M**	**$19.3M**	**$42.2M**
DISTRICT 3					
Douthat	$1.5M	$4.6M	$3.5M	$2.6M	$6.1M
James River	$1.6M	$2.2M	$2.2M	$1.6M	$3.8M
Natural Bridge	$11.6M	$0	$2.8M	$8.9M	$11.6M
Shenandoah River	$1.9M	$2.4M	$2.4M	$1.9M	$4.3M
Sky Meadows	$7.2M	$237K	$3.9M	$3.5M	$7.5M
TOTAL D3	**$23.9M**	**$9.4M**	**$14.8M**	**$18.5M**	**$33.3M**
DISTRICT 4					
Bear Creek Lake	$1.1M	$2.5M	$2.1M	$1.5M	$3.6M
High Bridge Trail	$5.3M	$0	$2.8M	$2.5M	$5.3M
Holliday Lake	$1.2M	$475K	$894K	$741K	$1.6M
Pocahontas	$34.2M	$3.8M	$20.3M	$17.7M	$38.0M
Powhatan	$3.2M	$887K	$2.2M	$1.9M	$4.0M
Sailor's Creek Battlefield	$739K	$0	$391K	$348K	$739K
Twin Lakes	$3.7M	$1.2M	$2.7M	$2.2M	$4.9M
TOTAL D4	**$49.3M**	**$8.9M**	**$31.4M**	**$26.8M**	**$58.2M**
DISTRICT 5					
Claytor Lake	$6.3M	$3.5M	$5.4M	$4.4M	$9.9M
Fairy Stone	$2.0M	$2.2M	$2.4M	$1.8M	$4.2M
Occoneechee	$2.0M	$1.9M	$2.2M	$1.7M	$4.0M
Smith Mountain Lake	$13.7M	$0	$7.3M	$6.5M	$13.7M
Staunton River	$2.5M	$1.1M	$2.0M	$1.6M	$3.6M
Staunton River Battlefield	$486K	$0	$257K	$229K	$486K
TOTAL D5	**$27.0M**	**$8.8M**	**$19.5M**	**$16.3M**	**$35.8M**
DISTRICT 6					
Grayson Highlands	$4.7M	$1.9M	$3.6M	$3.0M	$6.6M
Hungry Mother	$6.0M	$3.1M	$5.2M	$4.1M	$9.1M
Natural Tunnel	$4.1M	$1.2M	$2.9M	$2.4M	$5.2M
New River Trail	$25.2M	$404K	$13.6M	$12.0M	$25.6M
Southwest VA Museum	$1.4M	$24K	$773K	$684K	$1.5M
Wilderness Road	$4.6M	$0	$2.4M	$2.2M	$4.6M
TOTAL D6	**$46.0M**	**$6.6M**	**$28.3M**	**$24.4M**	**$52.6M**

* 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	$2.9M	$2.8M	$2.9M	$2.5M	$2.1M	$2.3M
Chippokes Plantation	$10.0M	$9.6M	$9.8M	$8.4M	$7.1M	$7.7M
False Cape	$2.4M	$2.4M	$2.4M	$2.1M	$1.8M	$2.0M
First Landing	$44.4M	$44.4M	$44.4M	$35.6M	$31.3M	$33.5M
Kiptopeke	$7.3M	$6.7M	$7.0M	$6.1M	$4.9M	$5.5M
York River	$9.4M	$9.0M	$9.2M	$7.6M	$6.4M	$7.0M
TOTAL D1	**$76.5M**	**$75.0M**	**$75.8M**	**$62.2M**	**$53.6M**	**$57.9M**
DISTRICT 2						
Caledon	$3.4M	$3.4M	$3.4M	$2.8M	$2.5M	$2.6M
Lake Anna	$15.6M	$16.2M	$15.9M	$12.8M	$11.7M	$12.3M
Leesylvania	$28.9M	$30.0M	$29.4M	$23.0M	$21.1M	$22.1M
Mason Neck	$5.6M	$5.8M	$5.7M	$4.5M	$4.1M	$4.3M
Westmoreland	$10.2M	$9.4M	$9.8M	$8.6M	$7.2M	$7.9M
Widewater	$2.9M	$3.0M	$3.0M	$2.7M	$2.5M	$2.6M
TOTAL D2	**$66.5M**	**$67.8M**	**$67.2M**	**$54.4M**	**$49.1M**	**$51.7M**
DISTRICT 3						
Douthat	$10.0M	$9.6M	$9.8M	$8.5M	$7.2M	$7.9M
James River	$5.9M	$5.6M	$5.8M	$4.9M	$4.1M	$4.5M
Natural Bridge	$17.6M	$16.9M	$17.3M	$17.4M	$14.7M	$16.0M
Seven Bends	$1.0M	$1.0M	$1.0M	$879K	$879K	$879K
Shenandoah River	$6.3M	$6.3M	$6.3M	$5.1M	$4.5M	$4.8M
Sky Meadows	$11.6M	$12.1M	$11.9M	$9.4M	$8.6M	$9.0M
TOTAL D3	**$52.5M**	**$51.6M**	**$52.0M**	**$46.2M**	**$40.0M**	**$43.1M**
DISTRICT 4						
Bear Creek Lake	$5.5M	$5.3M	$5.4M	$4.6M	$3.9M	$4.3M
High Bridge Trail	$10.3M	$9.9M	$10.1M	$8.7M	$7.4M	$8.0M
Holliday Lake	$2.8M	$2.7M	$2.8M	$2.3M	$2.0M	$2.1M
Pocahontas	$57.4M	$57.4M	$57.4M	$46.1M	$40.5M	$43.3M
Powhatan	$6.2M	$6.2M	$6.2M	$5.0M	$4.4M	$4.7M
Sailor's Creek Battle.	$1.4M	$1.3M	$1.4M	$1.2M	$982K	$1.1M
Twin Lakes	$7.7M	$7.1M	$7.4M	$6.3M	$5.1M	$5.7M
TOTAL D4	**$91.4M**	**$90.0M**	**$90.7M**	**$74.3M**	**$64.3M**	**$69.3M**
DISTRICT 5						
Claytor Lake	$14.3M	$13.7M	$14.0M	$11.5M	$9.7M	$10.6M
Fairy Stone	$6.6M	$6.0M	$6.3M	$5.5M	$4.5M	$5.0M
Occoneechee	$6.6M	$6.1M	$6.4M	$6.2M	$5.0M	$5.6M
Smith Mountain Lake	$20.3M	$20.3M	$20.3M	$16.1M	$14.2M	$15.3M
Staunton River	$6.0M	$5.5M	$5.7M	$6.0M	$4.8M	$5.4M
Staunton River Battle.	$1.0M	$944K	$985K	$879K	$711K	$795K
TOTAL D5	**$54.7M**	**$52.5M**	**$53.6M**	**$46.2M**	**$38.9M**	**$42.5M**
DISTRICT 6						
Clinch River	$937K	$862K	$900K	$937K	$862K	$900K
Grayson Highlands	$9.9M	$9.1M	$9.5M	$7.9M	$6.4M	$7.2M
Hungry Mother	$13.9M	$12.8M	$13.4M	$11.4M	$9.2M	$10.3M
Natural Tunnel	$8.6M	$7.9M	$8.2M	$7.1M	$5.7M	$6.4M
New River Trail	$39.1M	$36.0M	$37.6M	$31.4M	$25.4M	$28.4M
SW VA Museum	$2.7M	$2.5M	$2.6M	$2.2M	$1.8M	$2.0M
Wilderness Road	$7.7M	$7.1M	$7.4M	$6.3M	$5.1M	$5.7M
TOTAL D6	**$82.8M**	**$76.2M**	**$79.5M**	**$67.2M**	**$54.5M**	**$60.9M**

TABLE 4: JOBS ATTRIBUTED TO VIRGINIA STATE PARKS

PARK	DIRECT JOBS	INDIRECT JOBS	INDUCED JOBS	TOTAL JOBS	FTE JOBS[a]
DISTRICT 1					
Belle Isle	19.7	2.8	5.0	27.5	25.0
Chippokes Plantation	64.9	11.5	15.4	91.8	83.5
False Cape	15.1	2.2	4.1	21.4	19.5
First Landing	299.3	57.2	64.5	421.1	383.2
Kiptopeke	49.5	8.8	11.0	69.3	63.1
York River	63.1	11.8	14.0	88.9	80.9
TOTAL D1	**511.6**	**94.3**	**114**	**720**	**655.2**
DISTRICT 2					
Caledon	22.5	4.1	5.2	31.7	28.8
Lake Anna	104.4	19.7	22.7	146.8	133.6
Leesylvania	194.1	37.4	42.1	273.5	248.9
Mason Neck	37.2	6.6	8.6	52.4	47.7
Westmoreland	64.4	12.8	14.6	91.8	83.5
Widewater	16.3	2.5	4.8	23.7	21.6
TOTAL D2	**438.9**	**83.1**	**98**	**619.9**	**564.1**
DISTRICT 3					
Douthat	64.5	11.9	14.8	91.3	83.1
James River	39.8	6.9	9.0	55.7	50.7
Natural Bridge	117.7	23.2	25.3	166.1	151.2
Seven Bends	6.6	0.9	2.4	9.9	9.0
Shenandoah River	42.8	7.6	9.4	59.8	54.4
Sky Meadows	77.7	14.6	17.3	109.6	99.7
TOTAL D3	**349.1**	**65.1**	**78.2**	**492.4**	**448.1**
DISTRICT 4					
Bear Creek Lake	37.5	6.4	8.5	52.4	47.7
High Bridge Trail	61.6	12.7	15.0	89.3	81.3
Holliday Lake	19.1	3.0	4.6	26.7	24.3
Pocahontas	381.0	74.9	82.7	538.6	490.1
Powhatan	42.3	7.5	9.5	59.2	53.9
Sailor's Creek Battlefield	9.6	1.4	2.4	13.4	12.2
Twin Lakes	51.7	9.4	11.6	72.7	66.2
TOTAL D4	**602.8**	**115.3**	**134.3**	**852.3**	**775.6**
DISTRICT 5					
Claytor Lake	96.8	18.3	20.7	135.8	123.6
Fairy Stone	43.4	8.0	9.7	61.1	55.6
Occoneechee	42.0	8.2	9.6	59.8	54.4
Smith Mountain Lake	136.3	26.6	29.3	192.1	174.8
Staunton River	39.4	7.0	9.2	55.6	50.6
Staunton River Battlefield	6.8	0.9	1.8	9.5	8.6
TOTAL D5	**364.7**	**69**	**80.3**	**513.9**	**467.6**
DISTRICT 6					
Clinch River	4.3	0.7	1.5	6.5	5.9
Grayson Highlands	66.7	12.4	14.5	93.6	85.2
Hungry Mother	94.0	17.0	20.9	131.9	120.1
Natural Tunnel	57.5	9.9	13.3	80.7	73.4
New River Trail	262.4	49.8	57.6	369.9	336.6
Southwest VA Museum	17.9	2.8	4.4	25.1	22.8
Wilderness Road	51.4	8.9	12.0	72.4	65.9
TOTAL D6	**554.2**	**101.5**	**124.2**	**780.1**	**710.0**

[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	19.7	$850K	$1.1M
	Indirect Effect	2.8	$167K	$268K
	Induced Effect	5.0	$248K	$473K
	Total Effect	27.5	$1.3M	$1.9M
Total state and local taxes	$157K			
Chippokes Plantation	Direct Effect	64.9	$2.4M	$3.3M
	Indirect Effect	11.5	$697K	$1.1M
	Induced Effect	15.4	$763K	$1.5M
	Total Effect	91.8	$3.9M	$5.9M
Total state and local taxes	$533K			
False Cape	Direct Effect	15.1	$688K	$902K
	Indirect Effect	2.2	$137K	$223K
	Induced Effect	4.1	$201K	$384K
	Total Effect	21.4	$1.0M	$1.5M
Total state and local taxes	$117K			
First Landing	Direct Effect	299.3	$9.7M	$13.9M
	Indirect Effect	57.2	$3.4M	$5.6M
	Induced Effect	64.5	$3.2M	$6.1M
	Total Effect	421.1	$16.3M	$25.6M
Total state and local taxes	$2.5M			
Kiptopeke	Direct Effect	49.5	$1.7M	$2.5M
	Indirect Effect	8.8	$528K	$852K
	Induced Effect	11.0	$546K	$1.0M
	Total Effect	69.3	$2.8M	$4.4M
Total state and local taxes	$431K			
York River	Direct Effect	63.1	$2.1M	$3.0M
	Indirect Effect	11.8	$704K	$1.1M
	Induced Effect	14.0	$694K	$1.3M
	Total Effect	88.9	$3.5M	$5.5M
Total state and local taxes	$522K			

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	22.5	$803K	$1.1M
	Indirect Effect	4.1	$246K	$401K
	Induced Effect	5.2	$256K	$488K
	Total Effect	31.7	$1.3M	$2.0M
Total state and local taxes	$185K			
Lake Anna	Direct Effect	104.4	$3.4M	$5.0M
	Indirect Effect	19.7	$1.2M	$1.9M
	Induced Effect	22.7	$1.1M	$2.1M
	Total Effect	146.8	$5.7M	$9.1M
Total state and local taxes	$925K			
Leesylvania	Direct Effect	194.1	$6.3M	$9.0M
	Indirect Effect	37.4	$2.2M	$3.6M
	Induced Effect	42.1	$2.1M	$4.0M
	Total Effect	273.5	$10.6M	$16.6M
Total state and local taxes	$1.6M			
Mason Neck	Direct Effect	37.2	$1.3M	$1.9M
	Indirect Effect	6.6	$394K	$640K
	Induced Effect	8.6	$425K	$811K
	Total Effect	52.4	$2.2M	$3.3M
Total state and local taxes	$303K			
Westmoreland	Direct Effect	64.4	$2.2M	$3.2M
	Indirect Effect	12.8	$767K	$1.2M
	Induced Effect	14.6	$726K	$1.4M
	Total Effect	91.8	$3.7M	$5.9M
Total state and local taxes	$585K			
Widewater	Direct Effect	16.3	$821K	$1.0M
	Indirect Effect	2.5	$162K	$265K
	Induced Effect	4.8	$239K	$457K
	Total Effect	23.7	$1.2M	$1.8M
Total state and local taxes	$125K			

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	64.5	$ 2.3M	$3.4M
	Indirect Effect	11.9	$721K	$1.2M
	Induced Effect	14.8	$736K	$1.4M
	Total Effect	91.3	$ 3.8M	$5.9M
Total state and local taxes	$590K			
James River	Direct Effect	39.8	$1.4M	$2.0M
	Indirect Effect	6.9	$415K	$667K
	Induced Effect	9.0	$446K	$852K
	Total Effect	55.7	$2.3M	$3.6M
Total state and local taxes	$344K			
Natural Bridge	Direct Effect	117.7	$3.7M	$5.5M
	Indirect Effect	23.2	$1.4M	$2.2M
	Induced Effect	25.3	$1.3M	$2.4M
	Total Effect	166.1	$6.4M	$10.1M
Total state and local taxes	$1.0M			
Seven Bends	Direct Effect	6.8	$310K	$408K
	Indirect Effect	0.9	$56K	$91K
	Induced Effect	1.8	$89K	$170K
	Total Effect	9.5	$455K	$670K
Total state and local taxes	$47K			
Shenandoah River	Direct Effect	42.8	$1.5M	$2.1M
	Indirect Effect	7.6	$458K	$738K
	Induced Effect	9.4	$465K	$889K
	Total Effect	59.8	$2.4M	$3.7M
Total state and local taxes	$367K			
Sky Meadows	Direct Effect	77.7	$2.6M	$3.7M
	Indirect Effect	14.6	$872K	$1.4M
	Induced Effect	17.3	$856K	$1.6M
	Total Effect	109.6	$4.4M	$6.8M
Total state and local taxes	$646K			

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	37.5	$1.3M	$1.9M
	Indirect Effect	6.4	$388K	$620K
	Induced Effect	8.5	$422K	$806K
	Total Effect	52.4	$2.2M	$3.4M
Total state and local taxes	$330K			
High Bridge Trail	Direct Effect	61.6	$2.3M	$3.2M
	Indirect Effect	12.7	$756K	$1.3M
	Induced Effect	15.0	$742K	$1.4M
	Total Effect	89.3	$3.8M	$5.9M
Total state and local taxes	$532K			
Holliday Lake	Direct Effect	19.1	$759K	$1.0M
	Indirect Effect	3.0	$178K	$289K
	Induced Effect	4.6	$229K	$436K
	Total Effect	26.7	$1.2M	$1.8M
Total state and local taxes	$151K			
Pocahontas	Direct Effect	381.0	$12.3M	$17.7M
	Indirect Effect	74.9	$4.5M	$7.3M
	Induced Effect	82.7	$4.1M	$7.8M
	Total Effect	538.6	$20.9M	$32.8M
Total state and local taxes	$3.2M			
Powhatan	Direct Effect	42.3	$1.5M	$2.1M
	Indirect Effect	7.5	$446K	$725K
	Induced Effect	9.5	$469K	$896K
	Total Effect	59.2	$2.4M	$3.7M
Total state and local taxes	$343K			
Sailor's Creek Battlefield	Direct Effect	9.6	$409K	$545K
	Indirect Effect	1.4	$86K	$139K
	Induced Effect	2.4	$120K	$230K
	Total Effect	13.4	$614K	$914K
Total state and local taxes	$74K			
Twin Lakes	Direct Effect	51.7	$1.8M	$2.6M
	Indirect Effect	9.4	$562K	$908K
	Induced Effect	11.6	$576K	$1.1M
	Total Effect	72.7	$2.9M	$4.6M
Total state and local taxes	$439K			

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	96.8	$3.1M	$4.5M
	Indirect Effect	18.3	$1.1M	$1.8M
	Induced Effect	20.7	$1.0M	$2.0M
	Total Effect	135.8	$5.2M	$8.3M
Total state and local taxes	$834K			
Fairy Stone	Direct Effect	43.4	$1.5M	$2.2M
	Indirect Effect	8.0	$482K	$773K
	Induced Effect	9.7	$483K	$922K
	Total Effect	61.1	$2.5M	$3.9M
Total state and local taxes	$391K			
Occoneechee	Direct Effect	42.0	$1.5M	$2.1M
	Indirect Effect	8.2	$490K	$796K
	Induced Effect	9.6	$478K	$913K
	Total Effect	59.8	$2.4M	$3.8M
Total state and local taxes	$378K			
Smith Mountain Lake	Direct Effect	136.3	$4.4M	$6.3M
	Indirect Effect	26.6	$1.6M	$2.6M
	Induced Effect	29.3	$1.5M	$2.8M
	Total Effect	192.1	$7.4M	$11.6M
Total state and local taxes	$1.1M			
Staunton River	Direct Effect	39.4	$1.5M	$2.0M
	Indirect Effect	7.0	$419K	$680K
	Induced Effect	9.2	$456K	$870K
	Total Effect	55.6	$2.3M	$3.6M
Total state and local taxes	$333K			
Staunton River Battlefield	Direct Effect	6.8	$310K	$408K
	Indirect Effect	0.9	$56K	$91K
	Induced Effect	1.8	$89K	$170K
	Total Effect	9.5	$455K	$670K
Total state and local taxes	$52K			

TABLE 10: EMPLOYMENT, LABOR INCOME, VALUE-ADDED, TAX REVENUES: DISTRICT 6				
PARK	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED
DISTRICT 6				
Clinch River	Direct Effect	4.3	$261K	$311K
	Indirect Effect	0.7	$50K	$82K
	Induced Effect	1.5	$76K	$144K
	Total Effect	6.5	$387K	$537K
Total state and local taxes	$33K			
Grayson Highlands	Direct Effect	66.7	$2.2M	$3.1M
	Indirect Effect	12.4	$745K	$1.2M
	Induced Effect	14.5	$720K	$1.4M
	Total Effect	93.6	$3.7M	$5.7M
Total state and local taxes	$550K			
Hungry Mother	Direct Effect	94.0	$3.3M	$4.6M
	Indirect Effect	17.0	$1.0M	$1.6M
	Induced Effect	20.9	$1.0M	$2.0M
	Total Effect	132.0	$5.3M	$8.3M
Total state and local taxes	$802K			
Natural Tunnel	Direct Effect	57.5	$2.1M	$3.0M
	Indirect Effect	9.9	$594K	$961K
	Induced Effect	13.3	$660K	$1.3M
	Total Effect	80.7	$3.4M	$5.2M
Total state and local taxes	$476K			
New River Trail	Direct Effect	262.4	$8.7M	$12.4M
	Indirect Effect	49.8	$3.0M	$4.8M
	Induced Effect	57.6	$2.9M	$5.5M
	Total Effect	369.9	$14.6M	$22.7M
Total state and local taxes	$2.2M			
Southwest VA Museum	Direct Effect	17.9	$728K	$984K
	Indirect Effect	2.8	$169K	$274K
	Induced Effect	4.4	$219K	$417K
	Total Effect	25.1	$1.1M	$1.7M
Total state and local taxes	$141K			
Wilderness Road	Direct Effect	51.4	$1.9M	$2.6M
	Indirect Effect	8.9	$533K	$866K
	Induced Effect	12.0	$595K	$1.1M
	Total Effect	72.4	$3.0M	$4.6M
Total state and local taxes	$416K			

ECONOMIC IMPACTS OF CAPITAL IMPROVEMENT SPENDING*

This section details the effects of capital improvement spending during 2019. These capital improvement expenditures were already included in the economic activity and economic impact models reported earlier in this report but are also presented separately in this section to demonstrate how such expenditures infuse money into the economies of parks' host communities.

TABLE 11A: CAPITAL IMPROVEMENTS: CALEDON [SPENT: $57K]

EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.3	$17K	$23K	$57K
Indirect Effect	0.1	$7K	$13K	$24K
Induced Effect	0.1	$6K	$11K	$19K
Total Effect	0.5	$30K	$47K	$100K

State and local taxes from capital improvements: $4K

TABLE 11B: CAPITAL IMPROVEMENTS: CHIPPOKES [SPENT: $747K]

EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	5.8	$340K	$404K	$747K
Indirect Effect	1.1	$74K	$122K	$228K
Induced Effect	2.0	$101K	$192K	$323K
Total Effect	8.9	$515K	$718K	$1.3M

State and local taxes from capital improvements: $45K

TABLE 11C: CAPITAL IMPROVEMENTS: CLINCH RIVER [SPENT: $501K]

EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	3.9	$228K	$271K	$501K
Indirect Effect	0.7	$50K	$82K	$153K
Induced Effect	1.4	$68K	$129K	$217K
Total Effect	6.0	$345K	$482K	$871K

State and local taxes from capital improvements: $31K

TABLE 11D: CAPITAL IMPROVEMENTS: DOUTHAT [SPENT: $465K]

EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	2.5	$148K	$201K	$465K
Indirect Effect	1.0	$59K	$105K	$190K
Induced Effect	1.0	$50K	$96K	$162K
Total Effect	4.5	$257K	$402K	$817K

State and local taxes from capital improvements: $30K

*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 IMPROVEMENTS: FAIRY STONE [SPENT: $85K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.6	$36K	$44K	$85K
Indirect Effect	0.1	$9K	$15K	$28K
Induced Effect	0.2	$11K	$21K	$35K
Total Effect	1.0	$56K	$80K	$148K

State and local taxes from capital improvements: $5K

TABLE 11F: CAPITAL IMPROVEMENTS: FALSE CAPE [SPENT: $225K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.7	$99K	$119K	$225K
Indirect Effect	0.3	$23K	$38K	$71K
Induced Effect	0.6	$30K	$57K	$95K
Total Effect	2.6	$152K	$214K	$391K

State and local taxes from capital improvements: $14K

TABLE 11G: CAPITAL IMPROVEMENTS: FIRST LANDING [SPENT: $549K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	3.6	$214K	$268K	$549K
Indirect Effect	1.0	$61K	$106K	$195K
Induced Effect	1.4	$67K	$128K	$214K
Total Effect	5.9	$342K	$502K	$958K

State and local taxes from capital improvements: $34K

TABLE 11H: CAPITAL IMPROVEMENTS: GRAYSON HIGHLANDS [SPENT: $280K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	2.2	$127K	$151K	$280K
Indirect Effect	0.4	$28K	$46K	$86K
Induced Effect	0.8	$38K	$72K	$120K
Total Effect	3.3	$193K	$269K	$486K

State and local taxes from capital improvements: $17K

TABLE 11I: CAPITAL IMPROVEMENTS: HIGH BRIDGE [SPENT: $1.1M]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	5.8	$348K	$480K	$1.1M
Indirect Effect	2.5	$146K	$262K	$475K
Induced Effect	2.4	$121K	$230K	$386K
Total Effect	10.7	$615K	$972K	$2.0M

State and local taxes from capital improvements: $74K

TABLE 11J: CAPITAL IMPROVEMENTS: HUNGRY MOTHER [SPENT: $28K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.2	$13K	$15K	$28K
Indirect Effect	0.0	$3K	$5K	$9K
Induced Effect	0.1	$4K	$7K	$12K
Total Effect	0.3	$20K	$27K	$49K

State and local taxes from capital improvements: $2K

TABLE 11K: CAPITAL IMPROVEMENTS: KIPTOPEKE [SPENT: $131K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.6	$39K	$54K	$131K
Indirect Effect	0.3	$16K	$31K	$58K
Induced Effect	0.3	$14K	$26K	$43K
Total Effect	1.2	$69K	$111K	$232K

State and local taxes from capital improvements: $9K

TABLE 11L: CAPITAL IMPROVEMENTS: LAKE ANNA [SPENT: $218K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.1	$64K	$90K	$218K
Indirect Effect	0.5	$29K	$52K	$93K
Induced Effect	0.5	$23K	$43K	$73K
Total Effect	2.0	$116K	$185K	$384K

State and local taxes from capital improvements: $14K

TABLE 11M: CAPITAL IMPROVEMENTS: NATURAL TUNNEL [SPENT: $9K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.1	$4K	$5K	$9K
Indirect Effect	0.0	$1K	$2K	$3K
Induced Effect	0.0	$1K	$2K	$4K
Total Effect	0.1	$6K	$9K	$16K

State and local taxes from capital improvements: $553

TABLE 11N: CAPITAL IMPROVEMENTS: NEW RIVER TRAIL [SPENT: $202K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.6	$92K	$109K	$202K
Indirect Effect	0.3	$20K	$33K	$62K
Induced Effect	0.5	$27K	$52K	$86K
Total Effect	2.4	$139K	$194K	$350K

State and local taxes from capital improvements: $12K

TABLE 11O: CAPITAL IMPROVEMENTS: OCCONEECHEE [SPENT: $378K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.9	$114K	$159K	$378K
Indirect Effect	0.8	$49K	$88K	$159K
Induced Effect	0.8	$40K	$75K	$128K
Total Effect	3.5	$203K	$322K	$665K

State and local taxes from capital improvements: $25K

TABLE 11P: CAPITAL IMPROVEMENTS: POCAHONTAS [SPENT: $1.3M]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	7.1	$422K	$559K	$1.3M
Indirect Effect	2.6	$154K	$273K	$496K
Induced Effect	2.8	$140K	$268K	$450K
Total Effect	12.4	$716K	$1.1M	$2.2M

State and local taxes from capital improvements: $81K

TABLE 11Q: CAPITAL IMPROVEMENTS: POWHATAN [SPENT: $1K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.0	$566	$673	$1K
Indirect Effect	0.0	$123	$203	$380
Induced Effect	0.0	$167	$320	$538
Total Effect	0.0	$856	$1K	$2K

State and local taxes from capital improvements: $75

TABLE 11R: CAPITAL IMPROVEMENTS: SEVEN BENDS [SPENT: $601K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	4.6	$273K	$325K	$601K
Indirect Effect	0.9	$59K	$98K	$184K
Induced Effect	1.6	$82K	$154K	$260K
Total Effect	7.1	$414K	$577K	$1.0M

State and local taxes from capital improvements: $36K

TABLE 11S: CAPITAL IMPROVEMENTS: SKY MEADOWS [SPENT: $84K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.4	$25K	$35K	$84K
Indirect Effect	0.2	$11K	$20K	$35K
Induced Effect	0.2	$9K	$17K	$28K
Total Effect	0.8	$45K	$72K	$149K

State and local taxes from capital improvements: $6K

TABLE 11T: CAPITAL IMPROVEMENTS: SMITH MOUNTAIN LAKE [SPENT: $17K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.1	$5K	$7K	$17K
Indirect Effect	0.0	$2K	$4K	$8K
Induced Effect	0.0	$2K	$3K	$6K
Total Effect	0.2	$9K	$14K	$31K

State and local taxes from capital improvements: $1K

TABLE 11U: CAPITAL IMPROVEMENTS: STAUNTON RIVER [SPENT: $135K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.7	$40K	$56K	$135K
Indirect Effect	0.3	$17K	$31K	$57K
Induced Effect	0.3	$14K	$27K	$45K
Total Effect	1.2	$71K	$114K	$237K

State and local taxes from capital improvements: $9K

TABLE 11V: CAPITAL IMPROVEMENTS: WESTMORELAND [SPENT: $675K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	3.5	$210K	$288K	$675K
Indirect Effect	1.5	$85K	$154K	$280K
Induced Effect	1.5	$72K	$138K	$231K
Total Effect	6.4	$369K	$580K	$1.2M

State and local taxes from capital improvements: $44K

TABLE 11W: CAPITAL IMPROVEMENTS: WIDEWATER [SPENT: $761K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	5.9	346K	$411K	$761K
Indirect Effect	1.1	$75K	$124K	$233K
Induced Effect	2.1	$103K	$196K	$329K
Total Effect	9.0	$524K	$731K	$1.3M

State and local taxes from capital improvements: $46K

ECONOMIC IMPACTS OF OPERATIONAL SPENDING

This section details the effects of operational spending not supported by visitor revenues during 2019. 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. Because the majority of parks are located in areas of the Commonwealth in which economic activity is recorded below statewide metrics, such operations-related spending can be a boon to these economies. The development of Clinch River State Park in far southwest Virginia will likely further illustrate this point in coming years as the park will be a blue ways design [land parcels connected by water] in one of the most economically-recessed areas of the state (Grizzle, 2019).

TABLE 12: ECONOMIC IMPACTS 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	$240K	$854K	$613K	$693K
Chippokes Plantation	$489K	$1.1M	$571K	$645K
False Cape	$81K	$545K	$464K	$529K
First Landing	$2.4M	$1.5M	$0	Reflected in park revenue model
Kiptopeke	$1.1M	$1.3M	$202K	$226K
Middle Peninsula	$5K	$105	$0	Reflected in park revenue model
York River	$120K	$541K	$420K	$475K
TOTAL D1	**$4.4M**	**$5.8M**	**$2.3M**	
DISTRICT 2				
Caledon	$49K	$292K	$243K	$277K
Lake Anna	$1.1M	$1.1M	$41K	$47K
Leesylvania	$553K	$1.1M	$533K	$614K
Mason Neck	$132K	$626K	$494K	$569K
Westmoreland	$1.4M	$1.4M	$65K	$73K
Widewater	$44K	$464K	$420K	$277K
TOTAL D2	**$3.2M**	**$5.0M**	**$1.8M**	

(Continued on next page)

PARK (CONTINUED)	TOTAL VISITOR REVENUE	PARK OPERATIONAL EXPENDITURE	EXPENDITURES FROM NON-VISITOR SOURCES	ECONOMIC IMPACT FROM OPERATIONAL SPENDING
DISTRICT 3				
Douthat	$1.5M	$1.9M	$354K	$400K
James River	$652K	$1.0M	$363K	$410K
Natural Bridge	$1.8M	$1.6M	$0	Reflected in park revenue model
Seven Bends (not open)	$25	$269K	$269K	$307K
Shenandoah River	$864K	$1.0M	$167K	$190K
Sky Meadows	$231K	$717K	$486K	$560K
TOTAL D3	**$5.0M**	**$6.4M**	**$1.6M**	
DISTRICT 4				
Bear Creek Lake	$576K	$928K	$352K	$398K
High Bridge Trail	$51K	$559K	$508K	$574K
Holliday Lake	$202K	$625K	$423K	$478K
Pocahontas	$1.9M	$1.8M	$0	Reflected in park revenue model
Powhatan	$171K	$527K	$357K	$407K
Sailor's Creek Battlefield	$13K	$322K	$309K	$349K
Twin Lakes	$444K	$865K	$421K	$476K
TOTAL D4	**$3.3M**	**$5.6M**	**$2.4M**	
DISTRICT 5				
Claytor Lake	$1.5M	$1.5M	$0	Reflected in park revenue model
Fairy Stone	$898K	$1.1M	$232K	$259K
Occoneechee	$758K	$939K	$181K	$202K
Smith Mountain Lake	$1.1M	$1.2M	$136K	$154K
Staunton River	$442K	$926K	$484K	$541K
Staunton River Battlefield	$3K	$278K	$275K	$307K
TOTAL D5	**$4.7M**	**$6.0M**	**$1.3M**	
DISTRICT 6				
Clinch River	$0	$58K	$58K	$65K
Grayson Highlands	$833K	$801K	$0	Reflected in park revenue model
Hungry Mother	$1.7M	$2.3M	$603K	$674K
Natural Tunnel	$646K	$1.4M	$803K	$898K
New River Tail	$267K	$1.4M	$1.1M	$1.1M
Southwest Virginia Museum	$39K	$514K	$474K	$530K
Wilderness Road	$53K	$868K	$815K	$911K
TOTAL D6	**$3.6M**	**$7.4M**	**$3.9M**	
*In the net expenditure column, an entry of zero represents a situation in which operating revenues exceeded operating expenses.				

CONCLUSIONS

The findings of this economic activity and impact study illuminate the importance of the State Park system to the economy of Virginia. The economic activity was approximately $437.7M; whereas, the economic impact was estimated at $343M in 2019. The economic activity spawned by the park system supported approximately 4,180 jobs, $167M in wage and salary income, and $260.7M in value-added effects. Moreover, economic activity stimulated by Virginia State Parks generated approximately $25.3M in state and local tax revenue – approximately 60 percent ($15.2M) to the state and the remainder ($10.1M) returned to local municipalities. As such, roughly $1.30 in tax revenues were generated for every dollar of tax money spent in the park system.

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.

Numerous factors drove the increased impacts in 2019 compared to 2018. First, 2018 was one of the rainiest years in recorded history in Virginia. Second, as individual parks continue to draft customized business plans, they are increasingly honing-in on revenue generating opportunities; for example, the opportunities associated with *interpretising* (selling merchandise and souvenirs that fit the themes of various interpreting programs delivered). Third, as explained in the introduction section of this report, more parks are opening or are in the pipeline and are producing economic activity through site-specific capital investments. Examples of new or pipeline parks include, for instance, Clinch River, Machicomoco, Mayo River, Middle Peninsula, Natural Bridge, Seven Bends, and Widewater.

In a state park economic impact study, it is important to understand that all modeling inputs are dynamic. That is, according to Crompton (1993), the validity and reliability of an economic impact study depend on: 1) the accuracy of visitor spending estimates; 2) adherence to 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.

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 many of society's ailments due to the reduction of stress experienced by visitors.

Everyone values parks - even non-visitors. 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.

Although not specifically modeled in this study, 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 on commonly employed economic indicators such as median income. Eventually, after enough years of data have been gathered, this buffering of economic cycles will likely become evident in longitudinal modeling.

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.

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). In summary, people not only want to visit nice places, they are also drawn to live and work in nice places – parks help make areas more livable and appealing.

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 hospitality research journals in the field. Further, he is a U.S. Fulbright Scholar. He has published six books and more than 200 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. He has conducted research projects and /or delivered workshops to the state park systems of Florida, Kentucky, North Carolina, South Carolina, Virginia, and West Virginia.

RELATED REFERENCES AND NOTES

America's Byways Resource Center (2010). *An Economic Impact Tool for National Scenic Byways and All-American Roads: A Technical Manual.* Published in conjunction with Federal Highway Administration. America's Byways Resource Center, Duluth, MN.

Bezies, N., Calvetti, B., and Poppa, M. (2011). *Improved methods of visitor attendance collection at Massachusetts state parks* (WORCESTER POLYTECHNIC INSTITUTE).

Crompton, J. L. (2005). The impact of parks on property values: empirical evidence from the past two decades in the United States. *Managing Leisure*, 10(4), 203-218.

Crompton, J. L. (1993). Economic impact analysis: Myths and misapplication. *Trends*, 30(4), 9-14.

Dougherty, R. (2011). *2010 Maryland State Parks Economic Impact and Visitor Study*. Maryland Office of Tourism Development: Department of Business and Economic Development; in collaboration with the Maryland Department of Natural Resources; Cecil County Tourism, Office of Economic Development; Maryland Association of Destination Marketing Organizations; Governor's State Park Advisory Commission.

Greenley, D. A., Walsh, R. G., & Young, R. A. (1981). Option value: empirical evidence from a case study of recreation and water quality. *The Quarterly Journal of Economics*, *96*(4), 657-673.

Grizzle, W. (2019). Clinch River State Park One Step Closer to Realization (August 7, 2019): https://www.leedaily.com/2019/08/12/clinch-river-state-park-one-step-closer-to-realization/

Hedelt, R. (2018). Gov. Ralph Northam officially opens Widewater State Park, touting benefits of the outdoors. *The Freelance-Star* (November 8).

Institute for Service Research (2018). 5-Year Strategic Marketing Plan for Florida State Parks.

Magnini, V.P. and Uysal, M. (2015a). *Economic Significance and Impacts of West Virginia State Parks and Forests.* Report prepared for the Department of West Virginia State Parks and Forests by the Institute for Service Research December 2015).

Magnini, V.P. and Uysal, M. (2015b). *West Virginia State Parks Marketing Research Study.* Report prepared for the Department of West Virginia State Parks and Forests by the Institute for Service Research (November 2015).

Mowen, A., Graefe, A., Trauntvein, N., and Stynes, D. (2012). *The Economic Significance and Impact of Pennsylvania State Parks: An Updated Assessment of 2010 Park Visitor Spending on the State and Local Economy.* Penn State University, Department of Recreation, Park and Tourism Management, State College, Pennsylvania.

Ohnesorge, L. (2018). "Amazon will split HQ2 between two cities, report says." Triangle Business Journal (Nov 5, 2018).

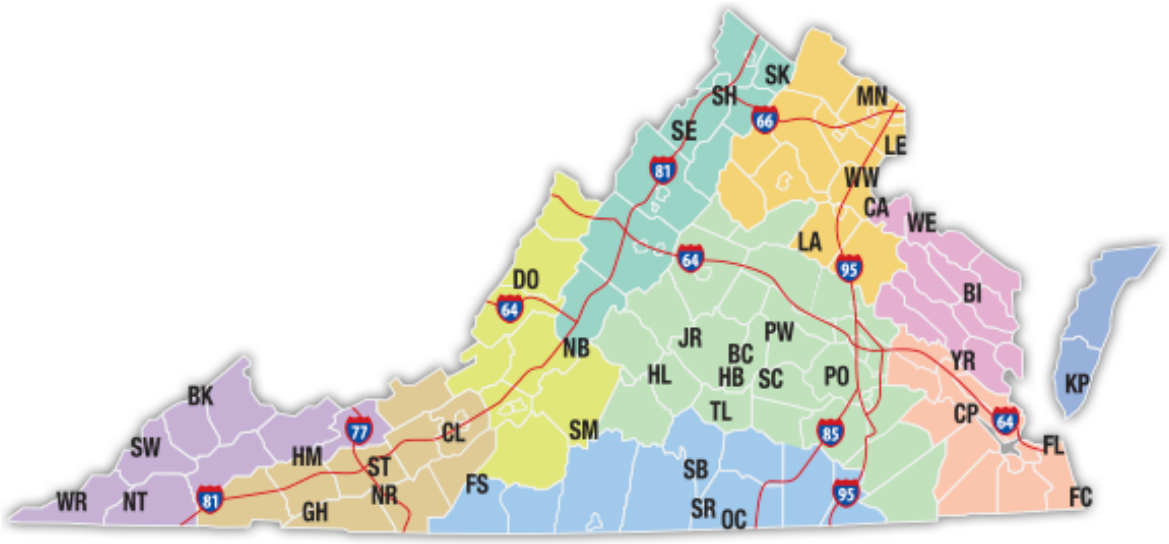
Stynes, D. J., Propst, D. B., Chang, W., & Sun, Y. (2000). Estimating national park visitor spending and economic impacts: The MGM2 model. *Report to the National Park Service. East Lansing, MI: Department of Park, Recreation and Tourism Resources, Michigan State University*.

Stynes, D. (2012). *Economic Contribution of the Chesapeake Bay Gateways and Watertrails Network to Local Economies*. Retrieved from: http://www.baygateways.net/pubs/CBGN_Econ_Study_Tech_Report_FINAL_January_2012.pdf

www.vatc.org/research/economicimpact/: Virginia Tourism Corporation (accessed 1/22/20).

APPENDICES

APPENDIX A: MAP OF VIRGINIA STATE PARKS



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

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 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. In addition, economic impact models include capital improvements 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 likely would have traveled and spent money in the state regardless of whether the park existed.

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 more than 500 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 previously listed definitions).

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}