



VIRGINIA STATE PARKS
ECONOMIC IMPACT REPORT
2017

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EXECUTIVE SUMMARY

Visitors attracted annually to Virginia State Parks trigger a large amount of economic activity throughout the state. This Executive Summary lists the key findings of the 2017 Virginia State Parks economic impact analyses:

- In 2017 visitors to Virginia's State Parks spent an estimated \$226.1M in the Commonwealth. Approximately 46% [\$104M] of this spending was by out-of-state visitors.
- The total economic activity stimulated by Virginia State Parks during 2017 was approximately \$304.6M.
- The total economic impact of Virginia State Parks during 2017 was approximately \$239.4M. 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.
- In 2017, for every \$1 of general tax revenue provided to state parks, \$13.08 on average was generated in fresh money that wouldn't 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 3,598 jobs in the state during 2017.
- In terms of wages and income, the economic activity spawned by Virginia State Parks was responsible for roughly \$113.6M in wage and salary income in 2017.
- Economic activity created by Virginia State Parks was associated with approximately \$176.5M in value-added effects which is a measure of the park system's contribution to the gross domestic product of the Commonwealth.
- Economic activity stimulated by Virginia State Parks generated approximately \$21.3M in state and local tax revenues during 2017. As such, \$1.17 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 the Virginia State 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 brought into travel-related businesses. 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 also calculated 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 research 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 third 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 spending (to the degree that it is not derived from visitor spending, i.e. the tax derived portion of the park budget), and capital investment (again, to the degree that it is not derived from visitor spending). 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 spending profiles represent spending both inside and outside of the park, but within the state. Other than visitors spending, park operational and capital spending 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 2.2% over 2016 amounts to adjust for the 2017 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.

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	\$3.70	\$37.88	\$79.84	\$119.66	\$6.02	\$133.61	\$11.22
Camping fees and charges	\$1.06	\$7.19	\$6.29	\$3.35	\$27.37	\$18.48	\$35.46
Restaurants and bars	\$13.91	\$49.87	\$49.35	\$23.42	\$12.67	\$40.35	\$32.95
Groceries and convenience items	\$14.96	\$31.37	\$20.58	\$32.09	\$26.58	\$29.32	\$19.78
Gas and oil (auto, RV, boat, etc...)	\$9.64	\$31.81	\$31.73	\$16.47	\$16.14	\$13.42	\$19.89
Transportation expenses (other)	\$1.30	\$2.84	\$9.56	\$4.17	\$2.80	\$21.08	\$7.50
Clothing	\$2.61	\$4.55	\$6.52	\$3.19	\$2.05	\$2.39	\$2.59
Sporting goods	\$4.07	\$3.76	\$6.97	\$6.79	\$29.02	\$3.96	\$7.71
Souvenirs and other expenditures	\$16.05	\$32.92	\$53.21	\$19.98	\$11.59	\$21.88	\$16.32
OVERALL PER PARTY:	\$63.59	\$202.19	\$264.04	\$229.12	\$134.25	\$284.48	\$153.41
OVERALL PER VISITOR:	\$16.10	\$51.19	\$66.84	\$58.01	\$33.99	\$72.02	\$38.84
^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 park location (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 then 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 2017 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 centralized reservations systems.

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 refine estimated counts of these non-paying visitor populations at various parks.

MEASURING ECONOMIC ACTIVITY VS. ECONOMIC IMPACT

True economic impact can only be 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, detailed 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).³ 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 }

³ Seven Bends and Widewater do not have operational spending because these parks are still under development.

TABLE 2: VISITOR SPENDING

PARK	DAY USER SPENDING	OVERNIGHT USER SPENDING	RESIDENT SPENDING	NON-RESIDENT SPENDING	TOTAL VISITOR SPENDING
DISTRICT 1					
Belle Isle	\$651K	\$572K	\$683K	\$541K	\$1.2M
Chippokes Plantation	\$1.8M	\$978K	\$1.6M	\$1.3M	\$2.8M
False Cape	\$624K	\$167K	\$429K	\$362K	\$791K
First Landing	\$21.4M	\$4.4M	\$14.0M	\$11.9M	\$25.9M
Kiptopeke	\$5.6M	\$2.5M	\$4.5M	\$3.7M	\$8.2M
York River	\$3.4M	\$1,841	\$1.8M	\$1.6M	\$3.4M
TOTAL D1	\$33.5M	\$8.8M	\$23.0M	\$19.4M	\$42.4M
DISTRICT 2					
Caledon	\$1.5M	\$23K	\$816K	\$723K	\$1.5M
Lake Anna	\$8.4M	\$1.2M	\$5.2M	\$4.5M	\$7.0M
Leesylvania	\$12.8M	\$0	\$6.8M	\$6.0M	\$12.8M
Mason Neck	\$2.8M	\$0	\$1.5M	\$1.3M	\$2.8M
Westmoreland	\$3.6M	\$2.8M	\$3.6M	\$2.9M	\$6.5M
TOTAL D2	\$29.1M	\$4.0M	\$17.8M	\$15.4	\$833.2
DISTRICT 3					
Douthat	\$2.5M	\$3.1M	\$3.2M	\$2.4M	\$5.6M
James River	\$1.4M	\$1.3M	\$1.6M	\$1.2M	\$2.8M
Natural Bridge	\$5.9M	0	\$3.1M	\$2.8M	\$5.9M
Shenandoah River	\$4.1M	\$1.7M	\$3.2M	\$2.7M	\$5.9M
Sky Meadows	\$5.1M	\$121K	\$2.8M	\$2.5M	\$5.3M
TOTAL D3	\$19.0M	\$6.2M	\$13.9M	\$11.6M	\$25.5M
DISTRICT 4					
Bear Creek Lake	\$1.2M	\$2.2M	\$1.9M	\$1.4M	\$3.4M
High Bridge Trail	\$6.3M	0	\$3.3M	\$2.9M	\$6.3M
Holliday Lake	\$1.0M	\$464K	\$816K	\$674K	\$1.5M
Pocahontas	\$17.3M	\$4.8M	\$12.0M	\$10.1M	\$22.1M
Powhatan	\$2.4M	\$511K	\$1.5M	\$1.4M	\$2.9M
Sailor's Creek Battlefield	\$472K	0	\$250K	\$222K	\$472K
Twin Lakes	\$1.8M	\$710K	\$1.4M	\$1.2M	\$2.5M
TOTAL D4	\$30.5M	\$8.7M	\$21.2M	\$17.9M	\$39.1M
DISTRICT 5					
Claytor Lake	\$5.5M	\$2.6M	\$4.4M	\$3.6M	\$8.0M
Fairy Stone	\$2.8M	\$1.3M	\$2.3M	\$1.8M	\$4.1M
Occoneechee	\$3.2M	\$1.2M	\$2.4M	\$2.0M	\$4.4M
Smith Mountain Lake	\$10.4M	\$1.6M	\$6.4M	\$5.5M	\$11.9M
Staunton River	\$2.1M	\$927K	\$1.7M	\$1.4M	\$3.0M
Staunton River Battlefield	\$1.2M	0	\$616K	\$548K	\$1.2M
TOTAL D5	\$25.2M	\$7.6M	\$17.8M	\$14.8M	\$32.6M
DISTRICT 6					
Grayson Highlands	\$4.9M	\$1.2M	\$3.3M	\$2.8M	\$6.1M
Hungry Mother	\$4.1M	\$2.6M	\$3.7M	\$3.0M	\$6.7M
Natural Tunnel	\$3.1M	\$644K	\$2.0M	\$1.7M	\$3.7M
New River Trail	\$31.0M	\$219K	\$16.5M	\$14.7M	\$31.2M
Southwest VA Museum	\$1.8M	\$21K	\$991K	\$879K	\$1.9M
Wilderness Road	\$4.2M	0	\$2.2M	\$2.0M	\$4.2M
TOTAL D6	\$49.1M	\$4.6M	\$26.5M	\$25.1M	\$53.8M

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	\$2.4M	\$2.1M	\$1.8M	\$2.0M
Chippokes Plantation	\$4.9M	\$4.7M	\$4.8M	\$4.3M	\$3.6M	\$4.0M
False Cape	\$2.3M	\$2.3M	\$2.3M	\$2.1M	\$1.9M	\$2.0M
First Landing	\$30.7M	\$30.7M	\$30.7M	\$25.0M	\$22.0M	\$23.5M
Kiptopeke	\$11.0M	10.1M	\$10.6M	\$9.2M	\$7.5M	\$8.4M
York River	\$4.9M	\$4.7M	\$4.8M	\$4.1M	\$3.5M	\$3.8M
TOTAL D1	\$56.2M	\$54.8	\$55.5M	\$46.8M	\$40.3M	\$43.6M
DISTRICT 2						
Caledon	\$2.4M	\$2.4M	\$2.4M	\$2.1M	\$1.8M	\$2.0M
Lake Anna	\$12.4M	\$12.9M	\$12.7M	\$10.3M	\$9.4M	\$9.9M
Leesylvania	\$15.9M	\$16.6M	\$16.2M	\$13.1M	\$12.0M	\$12.6M
Mason Neck	\$4.3M	\$4.5M	\$4.4M	\$3.7M	\$3.4M	\$3.6M
Westmoreland	\$9.4M	\$9.0M	\$9.2M	\$8.0M	\$6.7M	\$7.4M
Widewater	\$2.5M	\$2.3M	\$2.4M	\$2.5M	\$2.0M	\$2.3M
TOTAL D2	\$46.9M	\$47.7M	\$47.3M	\$39.7M	\$35.3M	\$37.8M
DISTRICT 3						
Douthat	\$8.5M	\$8.2M	\$8.4M	\$7.3M	\$6.2M	\$6.8M
James River	\$4.2M	\$4.0M	\$4.1M	\$3.6M	\$3.0M	\$3.3M
Natural Bridge	\$7.0M	\$6.7M	\$6.9M	\$5.7M	\$4.8M	\$5.3M
Seven Bends	\$7.0M	\$6.7M	\$6.9M	\$5.7M	\$4.8M	\$5.3M
Shenandoah River	\$7.6M	\$7.6M	\$7.6M	\$6.3M	\$5.6M	\$6.0M
Sky Meadows	\$7.2M	\$7.5M	\$7.4M	\$6.0M	\$5.5M	\$5.8M
TOTAL D3	\$41.5M	\$40.7M	\$41.1M	\$34.6M	\$29.9M	\$32.3M
DISTRICT 4						
Bear Creek Lake	\$4.8M	\$4.6M	\$4.5M	\$4.1M	\$3.5M	\$3.8M
High Bridge Trail	\$8.5M	\$8.2M	\$8.4M	\$7.2M	\$6.1M	\$6.7M
Holliday Lake	\$2.3M	\$2.2M	\$2.3M	2.0M	\$1.7M	\$1.9M
Pocahontas	\$26.9M	\$26.9M	\$26.9M	\$22.1M	\$19.5M	\$20.8M
Powhatan	\$5.9M	\$5.9M	\$5.9M	\$5.3M	\$4.7M	\$5.0M
Sailor's Creek Battle.	\$1.1M	\$1.1M	\$1.1M	\$1.0M	\$1.0M	\$1.0M
Twin Lakes	\$5.7M	\$5.3M	\$5.5M	\$5.2M	\$4.2M	\$4.7M
TOTAL D4	\$55.2M	\$54.2M	\$54.7M	\$46.9M	\$40.7M	\$43.8M
DISTRICT 5						
Claytor Lake	\$10.5M	\$10.1M	\$10.3M	\$8.8M	\$7.4M	\$8.1M
Fairy Stone	\$5.8M	\$5.3M	\$5.6M	\$4.9M	\$4.0M	\$4.5M
Occoneechee	\$6.3M	\$5.8M	\$6.1M	\$5.4M	\$4.4M	\$4.9M
Smith Mountain Lake	\$14.4M	\$14.4M	\$14.4M	\$11.8M	\$10.4M	\$11.1M
Staunton River	\$4.4M	\$4.1M	\$4.3M	\$3.8M	\$3.5M	\$3.7M
Staunton River Battle.	\$2.1M	\$1.9M	\$2.0M	\$1.9M	\$1.5M	\$1.7M
TOTAL D5	\$43.5M	\$41.6M	\$42.6M	\$36.6M	\$31.2M	\$33.9M
DISTRICT 6						
Grayson Highlands	\$7.7M	\$7.0M	\$7.4M	\$6.3M	\$5.1M	\$5.7M
Hungry Mother	\$9.3M	\$8.5M	\$8.9M	\$7.8M	\$7.2M	\$7.5M
Natural Tunnel	\$7.9M	\$7.3M	\$7.6M	\$7.1M	\$6.5M	\$6.8M
New River Trail	\$39.0M	\$35.9M	\$37.5M	\$32.2M	\$26.1M	\$29.2M
SW VA Museum	\$3.2M	\$2.9M	\$3.1M	\$2.7M	\$2.2M	\$2.5M
Wilderness Road	\$6.4M	\$5.9M	\$6.2M	\$5.5M	\$4.4M	\$5.0M
TOTAL D6	\$73.5M	\$67.5M	\$70.5M	\$61.6M	\$51.5M	\$56.6M

TABLE 4: JOBS ATTRIBUTED TO VIRGINIA STATE PARKS

PARK	DIRECT JOBS	INDIRECT JOBS	INDUCED JOBS	TOTAL JOBS	FTE JOBS ^a
DISTRICT 1					
Belle Isle	20.0	3.3	3.9	27.2	24.8
Chippokes Plantation	41.5	6.3	8.0	55.9	50.9
False Cape	16.5	3.2	3.7	23.5	21.4
First Landing	290.3	37.6	49.4	372.2	338.7
Kiptopeke	98.0	13.2	17.7	128.9	117.3
York River	42.6	6.2	7.8	56.7	51.6
TOTAL D1	508.9	69.8	90.5	664.4	604.6
DISTRICT 2					
Caledon	20.7	3.2	3.9	27.8	25.3
Lake Anna	110.9	14.7	19.8	145.5	132.4
Leesylvania	145.8	19.6	25.7	191.1	173.9
Mason Neck	37.1	5.7	7.0	49.8	45.3
Westmoreland	80.2	12.0	14.8	107.0	97.4
Widewater	12.1	1.8	4.2	18.1	16.5
TOTAL D2	406.8	57.0	75.4	539.3	490.8
DISTRICT 3					
Douthat	70.6	10.9	13.3	94.9	86.4
James River	36.1	5.5	6.6	48.2	43.9
Natural Bridge	65.4	8.5	11.3	85.1	77.4
Seven Bends	0.8	0.1	0.3	1.3	1.2
Shenandoah River	69.7	9.6	12.2	91.4	83.2
Sky Meadows	63.7	9.0	11.6	84.3	76.7
TOTAL D3	306.3	43.6	55.3	405.2	368.7
DISTRICT 4					
Bear Creek Lake	41.2	6.2	7.5	55.0	50.1
High Bridge Trail	75.4	10.7	13.7	99.9	90.9
Holliday Lake	20.5	3.1	3.7	27.3	24.8
Pocahontas	246.0	33.0	43.0	322.0	293.0
Powhatan	43.1	7.5	9.3	59.9	54.5
Sailor's Creek Battlefield	8.6	1.6	1.8	12.1	11.0
Twin Lakes	42.0	6.5	9.3	57.8	52.6
TOTAL D4	476.8	68.6	88.3	634	576.9
DISTRICT 5					
Claytor Lake	93.6	12.6	16.8	123	111.9
Fairy Stone	49.8	7.3	9.2	66.2	60.2
Occoneechee	54.3	7.6	10.1	72.1	65.6
Smith Mountain Lake	133.1	17.7	23.1	174	158.3
Staunton River	38.9	5.8	7.1	51.8	47.1
Staunton River Battlefield	16.6	2.7	3.4	22.7	20.7
TOTAL D5	386.3	53.7	69.7	509.8	463.9
DISTRICT 6					
Grayson Highlands	71.9	9.5	12.4	93.8	85.4
Hungry Mother	81.6	11.8	14.8	108.2	98.5
Natural Tunnel	59.7	9.4	12.8	81.9	74.5
New River Trail	356.9	48.3	62.9	468.1	426.0
Southwest VA Museum	26.2	4.2	5.1	35.5	32.3
Wilderness Road	55.0	8.4	10.4	73.8	67.2
TOTAL D6	651.3	91.6	118.4	861.3	783.8
^a Full-time equivalent (FTE) jobs are defined as total hours worked divided by average 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	20.0	\$535K	\$658K
	Indirect Effect	3.3	\$186K	\$362K
	Induced Effect	3.9	\$179K	\$337K
	Total Effect	27.2	\$900K	\$1.4M
Total state and local taxes	\$142K			
Chippokes Plantation	Direct Effect	41.5	\$1.1M	\$1.4M
	Indirect Effect	6.3	\$364K	\$686K
	Induced Effect	8.0	\$370K	\$695K
	Total Effect	55.9	\$1.9M	\$2.8M
Total state and local taxes	\$306K			
False Cape	Direct Effect	16.5	\$513K	\$617K
	Indirect Effect	3.2	\$177K	\$349K
	Induced Effect	3.7	\$172K	\$322K
	Total Effect	23.5	\$861K	\$1.3M
Total state and local taxes	\$116K			
First Landing	Direct Effect	290.3	\$6.9M	\$9.7M
	Indirect Effect	37.6	\$2.2M	\$4.0M
	Induced Effect	49.4	\$2.3M	\$4.3M
	Total Effect	377.2	\$11.4M	\$17.9M
Total state and local taxes	\$2.3M			
Kiptopeke	Direct Effect	98.0	\$2.5M	\$3.5M
	Indirect Effect	13.2	\$787K	\$1.4M
	Induced Effect	17.7	\$815K	\$1.5M
	Total Effect	128.9	\$4.1M	\$6.4M
Total state and local taxes	\$780K			
York River	Direct Effect	42.6	\$1.1M	\$1.5M
	Indirect Effect	6.2	\$358K	\$670K
	Induced Effect	7.8	\$362K	\$679K
	Total Effect	56.7	\$1.8M	\$2.8M
Total state and local taxes	\$362K			

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	20.7	\$547K	\$705K
	Indirect Effect	3.2	\$182K	\$347K
	Induced Effect	3.9	\$181K	\$340K
	Total Effect	27.8	\$910K	\$1.4M
Total state and local taxes	\$155K			
Lake Anna	Direct Effect	110.9	\$2.8M	\$3.9M
	Indirect Effect	14.7	\$879K	\$1.6M
	Induced Effect	19.8	\$916K	\$1.7M
	Total Effect	145.5	\$4.6M	\$7.2M
Total state and local taxes	\$891K			
Leesylvania	Direct Effect	145.8	\$3.6M	\$4.9M
	Indirect Effect	19.6	\$1.2M	\$2.1M
	Induced Effect	25.7	\$1.2M	\$2.2M
	Total Effect	191.1	\$5.9M	\$9.3M
Total state and local taxes	\$1.1M			
Mason Neck	Direct Effect	37.1	\$977K	\$1.3M
	Indirect Effect	5.7	\$323K	\$614K
	Induced Effect	7.0	\$324K	\$607K
	Total Effect	49.8	\$1.6M	\$2.5M
Total state and local taxes	\$279K			
Westmoreland	Direct Effect	80.2	\$2.1M	\$2.9M
	Indirect Effect	12.0	\$694K	\$1.3M
	Induced Effect	14.8	\$683K	\$1.3M
	Total Effect	107.0	\$3.4M	\$5.4M
Total state and local taxes	\$651K			
Widewater	Direct Effect	12.1	\$656K	\$869K
	Indirect Effect	1.8	\$126K	\$200K
	Induced Effect	4.2	\$194K	\$364K
	Total Effect	18.1	\$976K	\$1.4M
Total state and local taxes	\$88K			

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	70.6	\$1.8M	\$2.6M
	Indirect Effect	10.9	\$630K	\$1.1M
	Induced Effect	13.3	\$616K	\$1.2M
	Total Effect	94.9	\$3.1M	\$4.9M
Total state and local taxes	\$585K			
James River	Direct Effect	36.1	\$915K	\$1.2M
	Indirect Effect	5.5	\$314K	\$581K
	Induced Effect	6.6	\$306K	\$574K
	Total Effect	48.2	\$1.5M	\$2.4M
Total state and local taxes	\$284K			
Natural Bridge	Direct Effect	65.4	1.6M	2.2M
	Indirect Effect	8.5	504K	907K
	Induced Effect	11.3	521K	977K
	Total Effect	85.1	2.6M	4.1M
Total state and local taxes	\$518K			
Seven Bends	Direct Effect	0.8	\$46K	\$61K
	Indirect Effect	0.1	\$9K	\$14K
	Induced Effect	0.3	\$14K	\$25K
	Total Effect	1.3	\$68K	\$100K
Total state and local taxes	\$7K			
Shenandoah River	Direct Effect	69.7	\$1.7M	\$2.4M
	Indirect Effect	9.6	\$561K	\$1.0M
	Induced Effect	12.2	\$564K	\$1.1M
	Total Effect	91.4	\$2.8M	\$4.4M
Total state and local taxes	\$550K			
Sky Meadows	Direct Effect	63.7	\$1.6M	\$2.2M
	Indirect Effect	9.0	\$525K	\$971K
	Induced Effect	11.6	\$583K	\$1.0M
	Total Effect	84.3	\$2.7M	\$4.1M
Total state and local taxes	\$491K			

TABLE 8: EMPLOYMENT, LABOR INCOME, VALUE-ADDED, TAX REVENUES: DISTRICT 4				
PARK	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED
Bear Creek Lake	Direct Effect	41.2	\$1.0M	\$1.5M
	Indirect Effect	6.2	\$362K	\$653K
	Induced Effect	7.5	\$348K	\$653K
	Total Effect	55.0	\$1.7M	\$2.8M
Total state and local taxes	\$346K			
High Bridge Trail	Direct Effect	75.4	\$1.9M	\$2.6M
	Indirect Effect	10.7	\$624K	\$1.2M
	Induced Effect	13.7	\$634K	\$1.2M
	Total Effect	99.9	\$3.2M	\$4.9M
Total state and local taxes	\$583K			
Holliday Lake	Direct Effect	20.5	\$519K	\$666K
	Indirect Effect	3.1	\$174K	\$330K
	Induced Effect	3.7	\$173K	\$324K
	Total Effect	27.3	\$866K	\$1.3M
Total state and local taxes	\$150K			
Pocahontas	Direct Effect	246.4	\$6.0M	\$8.5M
	Indirect Effect	33.0	\$2.0M	\$3.5M
	Induced Effect	42.9	\$2.0M	\$3.7M
	Total Effect	322.4	\$10.0M	\$15.7M
Total state and local taxes	\$2.0M			
Powhatan	Direct Effect	43.1	\$1.3M	\$1.8M
	Indirect Effect	7.5	\$423K	\$772K
	Induced Effect	9.3	\$429K	\$804K
	Total Effect	59.9	\$2.2M	\$3.3M
Total state and local taxes	\$340K			
Sailor's Creek Battlefield	Direct Effect	8.6	\$252K	\$298K
	Indirect Effect	1.6	\$87K	\$175K
	Induced Effect	1.8	\$84K	\$159K
	Total Effect	12.1	\$424K	\$632K
Total state and local taxes	\$60K			
Twin Lakes	Direct Effect	42.0	\$1.3M	\$1.8M
	Indirect Effect	6.5	\$385K	\$694K
	Induced Effect	9.3	\$430K	\$807K
	Total Effect	57.8	\$2.2M	\$3.3M
Total state and local taxes	\$324K			

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	93.6	\$2.4M	\$3.4M
	Indirect Effect	12.6	\$751K	\$1.3M
	Induced Effect	16.8	\$774K	\$1.5M
	Total Effect	123	\$3.9M	\$6.1M
Total state and local taxes	\$760K			
Fairy Stone	Direct Effect	49.8	\$1.3M	\$1.8M
	Indirect Effect	7.3	\$425K	\$768K
	Induced Effect	9.2	\$423K	\$794K
	Total Effect	66.2	\$2.1M	\$3.3M
Total state and local taxes	\$408K			
Oconeechee	Direct Effect	54.3	\$1.4M	\$2.0M
	Indirect Effect	7.6	\$452K	\$809K
	Induced Effect	10.1	\$467K	\$877K
	Total Effect	72.1	\$2.3M	\$3.7M
Total state and local taxes	\$439K			
Smith Mountain Lake	Direct Effect	133.1	\$3.3M	\$4.5M
	Indirect Effect	17.7	\$1.0M	\$1.9M
	Induced Effect	23.1	\$1.1M	\$2.0M
	Total Effect	174.0	\$5.4M	\$8.4M
Total state and local taxes	\$1.1M			
Staunton River	Direct Effect	38.9	\$988K	\$1.3M
	Indirect Effect	5.8	\$332K	\$618K
	Induced Effect	7.1	\$329K	\$617K
	Total Effect	51.8	\$1.6M	\$2.6M
Total state and local taxes	\$301K			
Staunton River Battlefield	Direct Effect	16.6	\$473K	\$618K
	Indirect Effect	2.7	\$155K	\$290K
	Induced Effect	3.4	\$156K	\$293K
	Total Effect	22.7	\$784K	\$1.2M
Total state and local taxes	\$126K			

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	71.9	\$1.7M	\$2.4M
	Indirect Effect	9.5	\$557K	\$1.0M
	Induced Effect	12.4	\$571K	\$1.1M
	Total Effect	93.8	\$2.9M	\$4.4M
Total state and local taxes	\$552K			
Hungry Mother	Direct Effect	81.6	\$2.1M	\$2.8M
	Indirect Effect	11.8	\$689K	\$1.3M
	Induced Effect	14.8	\$681K	\$1.3M
	Total Effect	108.2	\$3.4M	\$5.4M
Total state and local taxes	\$655K			
Natural Tunnel	Direct Effect	59.7	\$1.8M	\$2.4M
	Indirect Effect	9.4	\$549K	\$1.0M
	Induced Effect	12.8	\$590K	\$1.1M
	Total Effect	81.9	\$3.0M	\$4.5M
Total state and local taxes	\$451K			
New River Trail	Direct Effect	356.9	\$8.8M	\$12.1M
	Indirect Effect	48.3	\$2.8M	\$5.2M
	Induced Effect	62.9	\$2.9M	\$5.5M
	Total Effect	468.1	\$14.6M	\$22.7M
Total state and local taxes	\$2.8M			
Southwest VA Museum	Direct Effect	26.2	\$708K	\$901K
	Indirect Effect	4.2	\$237K	\$457K
	Induced Effect	5.1	\$235K	\$442K
	Total Effect	35.5	\$1.2M	\$1.8M
Total state and local taxes	\$195K			
Wilderness Road	Direct Effect	55.0	\$1.4M	\$1.9M
	Indirect Effect	8.4	\$478K	\$906K
	Induced Effect	10.4	\$479K	\$899K
	Total Effect	73.8	\$2.4M	\$3.7M
Total state and local taxes	\$415K			

ECONOMIC IMPACTS OF CAPITAL IMPROVEMENT SPENDING

This section details the effects of capital improvement spending during 2016. 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: CHIPPOKES PLANTATION [SPENT: \$256K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	2.0	\$108K	\$144K	\$256K
Indirect Effect	0.3	\$21K	\$33K	\$61K
Induced Effect	0.7	\$32K	\$60K	\$100K
Total Effect	3.0	\$161K	\$237K	\$417K

State and local taxes from capital construction: \$15K

TABLE 11B: CAPITAL CONSTRUCTION: CLAYTOR [SPENT: \$482K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	3.7	\$203K	\$269K	\$482K
Indirect Effect	0.6	\$40K	\$63K	\$116K
Induced Effect	1.3	\$60K	\$113K	\$188K
Total Effect	5.6	\$303K	\$446K	\$785K

State and local taxes from capital construction: \$27K

TABLE 11C: CAPITAL CONSTRUCTION: DOUTHAT [SPENT: \$430K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	2.8	\$155K	\$214K	\$430K
Indirect Effect	0.9	\$47K	\$79K	\$141K
Induced Effect	1.1	\$50K	\$93K	\$155K
Total Effect	4.8	\$251K	\$387K	\$725K

State and local taxes from capital construction: \$24K

TABLE 11D: CAPITAL CONSTRUCTION: FAIRY STONE [SPENT: \$117K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.9	\$47K	\$63K	\$117K
Indirect Effect	0.2	\$11K	\$17K	\$31K
Induced Effect	0.3	\$14K	\$27K	\$44K
Total Effect	1.3	\$72K	\$107K	\$192K

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

TABLE 11E: CAPITAL CONSTRUCTION: FALSE CAPE [SPENT: \$186K]				
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EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.2	\$67K	\$93K	\$186K
Indirect Effect	0.4	\$20K	\$34K	\$61K
Induced Effect	0.5	\$22K	\$40K	\$67K
Total Effect	2.1	\$109K	\$168K	\$314K

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

TABLE 11F: CAPITAL CONSTRUCTION: FIRST LANDING [SPENT: \$38K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.2	\$14K	\$19K	\$38K
Indirect Effect	0.1	\$4K	\$7K	\$13K
Induced Effect	0.1	\$4K	\$8K	\$14K
Total Effect	0.4	\$22K	\$34K	\$64K

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

TABLE 11G: CAPITAL CONSTRUCTION: GRAYSON HIGHLANDS [SPENT: \$100K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.7	\$37K	\$51K	\$100K
Indirect Effect	0.2	\$10K	\$17K	\$31K
Induced Effect	0.3	\$12K	\$22K	\$36K
Total Effect	1.1	\$59K	\$90K	\$167K

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

TABLE 11H: CAPITAL CONSTRUCTION: HIGH BRIDGE [SPENT: \$86K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.5	\$30K	\$41K	\$86K
Indirect Effect	0.2	\$10K	\$16K	\$29K
Induced Effect	0.2	\$10K	\$18K	\$30K
Total Effect	0.9	\$49K	\$75K	\$145K

State and local taxes from capital construction: \$5K

TABLE 11I: CAPITAL CONSTRUCTION: HUNGRY MOTHER [SPENT: \$74K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.5	\$29K	\$39K	\$74K
Indirect Effect	0.1	\$7K	\$11K	\$21K
Induced Effect	0.2	\$9K	\$17K	\$28K
Total Effect	0.8	\$45K	\$68K	\$123K

State and local taxes from capital construction: \$4K

TABLE 11J: CAPITAL CONSTRUCTION: KIPTOPEKE [SPENT: \$578K]				
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EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	4.5	\$243K	\$323K	\$578K
Indirect Effect	0.7	\$48K	\$76K	\$140K
Induced Effect	1.6	\$72K	\$135K	\$225K
Total Effect	6.7	\$363K	\$534K	\$943K

State and local taxes from capital construction: \$33K

TABLE 11K: CAPITAL CONSTRUCTION: LAKE ANNA [SPENT: \$473K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	3.7	\$200K	\$265K	\$473K
Indirect Effect	0.6	\$38K	\$61K	\$113K
Induced Effect	1.3	\$59K	\$111K	\$185K
Total Effect	5.5	\$298K	\$438K	\$770K

State and local taxes from capital construction: \$27K

TABLE 11L: CAPITAL CONSTRUCTION: LEESYLVANIA [SPENT: \$21K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.1	\$8K	\$10K	\$21K
Indirect Effect	0.0	\$2K	\$4K	\$7K
Induced Effect	0.1	\$2K	\$5K	\$8K
Total Effect	0.2	\$12K	\$19K	\$35K

State and local taxes from capital construction: \$1K

TABLE 11M: CAPITAL CONSTRUCTION: NATURAL TUNNEL [SPENT: \$1.1M]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	8.6	\$469K	\$623K	\$1.1M
Indirect Effect	1.3	\$92K	\$146K	\$268K
Induced Effect	3.0	\$139K	\$261K	\$434K
Total Effect	13.0	\$700K	\$1.0M	\$1.8M

State and local taxes from capital construction: \$63K

TABLE 11N: CAPITAL CONSTRUCTION: OCCONEECHEE [SPENT: \$373K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	2.9	\$157K	\$209K	\$373K
Indirect Effect	0.4	\$31K	\$49K	\$89K
Induced Effect	1.0	\$47K	\$87K	\$145K
Total Effect	4.4	\$234K	\$345K	\$607K

State and local taxes from capital construction: \$21K

TABLE 11O: CAPITAL CONSTRUCTION: POCAHONTAS [SPENT: \$165K]				
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EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.2	\$64K	\$87K	\$165K
Indirect Effect	0.3	\$16K	\$26K	\$47K
Induced Effect	0.4	\$20K	\$37K	\$62K
Total Effect	1.9	\$100K	\$151K	\$274K

State and local taxes from capital construction: \$9K

TABLE 11P: CAPITAL CONSTRUCTION: POWHATAN [SPENT: \$998K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	6.5	\$359K	\$498K	\$998K
Indirect Effect	2.1	\$108K	\$184K	\$327K
Induced Effect	2.5	\$115K	\$216K	\$359K
Total Effect	11.0	\$582K	\$898K	\$1.7M

State and local taxes from capital construction: \$56K

TABLE 11Q: CAPITAL CONSTRUCTION: SEVEN BENDS [SPENT: \$108K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.8	\$46K	\$61K	\$108K
Indirect Effect	0.1	\$9K	\$14K	\$26K
Induced Effect	0.3	\$14K	\$25K	\$42K
Total Effect	1.3	\$68K	\$100K	\$176K

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

TABLE 11R: CAPITAL CONSTRUCTION: SHENANDOAH RIVER [SPENT: \$39K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.3	\$17K	\$22K	\$39K
Indirect Effect	0.0	\$3K	\$5K	\$9K
Induced Effect	0.1	\$5K	\$9K	\$15K
Total Effect	0.5	\$25K	\$36K	\$64K

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

TABLE 11S: CAPITAL CONSTRUCTION: SKY MEADOWS [SPENT: \$59K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.4	\$21K	\$30K	\$59K
Indirect Effect	0.1	\$6K	\$11K	\$19K
Induced Effect	0.1	\$7K	\$13K	\$21K
Total Effect	0.7	\$35K	\$53K	\$100K

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

TABLE 11T: CAPITAL CONSTRUCTION: SMITH MOUNTAIN LAKE [SPENT: \$10K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	0.1	\$4K	\$5K	\$10K
Indirect Effect	0.0	\$1K	\$2K	\$3K
Induced Effect	0.0	\$1K	\$2K	\$4K
Total Effect	0.1	\$6K	\$9K	\$17K

State and local taxes from capital construction: \$568

TABLE 11U: CAPITAL CONSTRUCTION: STAUNTON RIVER BATTLEFIELD [SPENT: \$183K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.2	\$66K	\$91K	\$183K
Indirect Effect	0.4	\$20K	\$34K	\$60K
Induced Effect	0.5	\$21K	\$40K	\$66K
Total Effect	2.0	\$107K	\$164K	\$308K

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

TABLE 11V: CAPITAL CONSTRUCTION: TWIN LAKES [SPENT: \$1.2M]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	8.9	\$486K	\$645K	\$1.2M
Indirect Effect	1.4	\$95K	\$151K	\$277K
Induced Effect	3.1	\$144K	\$271K	\$449K
Total Effect	13.5	\$725K	\$1.1M	\$1.9M

State and local taxes from capital construction: \$66K

TABLE 11W: CAPITAL CONSTRUCTION: WESTMORELAND [SPENT: \$257K]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	1.7	\$92K	\$128K	\$257K
Indirect Effect	0.5	\$28K	\$47K	\$84K
Induced Effect	0.6	\$30K	\$56K	\$92K
Total Effect	2.8	\$150K	\$231K	\$433K

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

TABLE 11x: CAPITAL CONSTRUCTION: WIDEWATER [SPENT: \$1.5M]				
EFFECT TYPE	EMPLOYMENT	LABOR INCOME	TOTAL VALUE-ADDED	OUTPUT
Direct Effect	12.1	\$656K	\$869K	\$1.5M
Indirect Effect	1.8	\$125K	\$200K	\$368K
Induced Effect	4.2	\$194K	\$364K	\$604K
Total Effect	18.1	\$976K	\$1.4M	\$2.5M

State and local taxes from capital construction: \$88K

{ Operational Spending Section Begins on the Next Page }

ECONOMIC IMPACTS OF OPERATIONAL SPENDING

This section details the effects of operational spending not supported by visitor revenues during 2016. 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	\$223K	\$673K	\$450K	\$943K
Chippokes Plantation	\$491K	\$1.1M	\$566K	\$1.2M
False Cape	\$65K	\$572K	\$507K	\$1.0M
First Landing	\$2.1M	\$1.5M	0	0
Kiptopeke	\$976K	\$1.1M	\$122K	\$255K
York River	\$125K	\$509K	\$384K	\$806K
TOTAL D1	\$4.0M	\$5.4M	\$1.4M	\$4.2M
DISTRICT 2				
Caledon	\$40K	\$335K	\$294K	\$617K
Lake Anna	\$1.0M	\$897K	0	0
Leesylvania	\$637K	\$1.0M	\$363K	\$762K
Mason Neck	\$121K	\$607K	\$486K	\$1.0M
Westmoreland	\$1.1M	\$1.6M	\$456K	\$957K
TOTAL D2	\$2.9M	\$4.4M	\$1.5M	\$3.3M
DISTRICT 3				
Douthat	\$1.6M	\$1.9M	\$363K	\$762K
James River	\$671K	\$1.0M	\$358K	\$751K
Shenandoah River	\$1.3M	\$936K	\$239K	\$501K
Sky Meadows	\$840K	\$1.1M	\$239K	\$864K
TOTAL D3	\$211K	\$622K	\$412K	\$2.9M
DISTRICT 4				
Bear Creek Lake	\$587K	\$835K	\$248K	\$521K
High Bridge Trail	\$55K	\$541K	\$486K	\$1.0M
Holliday Lake	\$223K	\$488K	\$265K	\$556K
Pocahontas	\$1.7K	\$1.6K	0	0

PARK (CONTINUED)	TOTAL VISITOR REVENUE	PARK OPERATIONAL EXPENDITURE	NET EXPENDITURE FROM NON- VISITOR SOURCES	ECONOMIC IMPACT FROM OPERATIONAL SPENDING
Powhatan	\$112K	\$483K	\$371K	\$778K
Sailor's Creek Battlefield	\$55K	\$327K	\$272K	\$570K
Twin Lakes	\$408K	\$779K	\$371K	\$778K
TOTAL D4	\$3.1M	\$5.1M	\$2.0M	\$4.2M
DISTRICT 5				
Claytor Lake	\$1.5M	\$1.4M	0	0
Fairy Stone	\$850K	\$1.1M	\$229K	\$481K
Occoneechee	\$691K	\$841K	\$150K	\$315K
Smith Mountain Lake	\$1.1M	\$1.2M	\$71K	\$148K
Staunton River	\$411K	\$787K	\$376K	\$789K
Staunton River Battlefield	\$251	\$209K	\$209K	\$438K
TOTAL D5	\$4.5M	\$5.5M	\$1.0M	\$2.2M
DISTRICT 6				
Grayson Highlands	\$701K	\$854K	\$153K	\$320K
Hungry Mother	\$1.6M	\$2.1M	\$465K	\$976K
Natural Tunnel	\$642K	\$1.4M	\$759K	\$1.6M
New River Trail	\$274K	\$1.4M	\$1.1M	\$2.3M
Southwest VA Museum	\$40K	\$491K	\$451K	\$945K
Wilderness Road	\$65K	\$761K	\$697K	\$1.5M
TOTAL D6	\$3.4M	\$7.0M	\$3.6M	\$7.6
OPERATIONAL SPENDING IMPACTS:	\$22.5M	\$32.9M	\$11.7M	\$24.4M

CONCLUSIONS

This 2017 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 \$304.6M to the Commonwealth's economy; whereas, the economic impact was estimated at \$239.4M in 2017. 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 localities.

There were also a number of other economic indicators that were strong in 2017. Economic activity surrounding visitation to Virginia's State Parks supported approximately 3,598 jobs, \$113.6M in wage and salary income, and \$176.5M in value-added effects. Moreover, economic activity stimulated by Virginia State Parks generated approximately \$21.3M in state and local taxes during 2017. As such, \$1.17 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 depends 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 future 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 in 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. In fact, even residents who do not visit parks value their existence.

In addition, state parks 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.

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 of 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), variables 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.

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 marketing plans, economic impact analyses, feasibility studies, and executive education seminars.

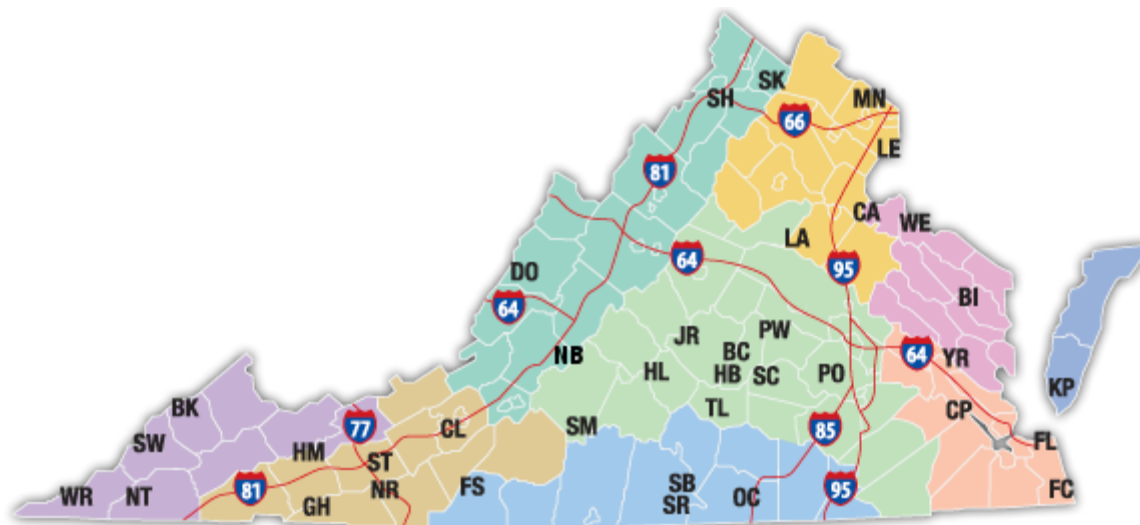
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APPENDICES

APPENDIX A: MAP OF VIRGINIA STATE PARKS



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. 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.

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 – 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 tourism 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 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}