

# **ECONOMIC IMPACT OF THE PROPOSED SHENANDOAH RAIL TRAIL**



**SEPTEMBER 24, 2021**

PREPARED FOR THE SHENANDOAH VALLEY RAIL TRAIL  
EXPLORATORY PARTNERSHIP BY DR. ROBERT CLINE

**Dr. Robert Cline** is a public finance economist who received his Ph.D. at the University of Michigan and his B.A. in economics from the College of William and Mary. In addition to teaching economics at the graduate and undergraduate levels, he was the tax research director for the states of Michigan and Minnesota. As Director of Tax Policy Economics in the National Tax Practice at Ernst & Young, he directed the accounting firm's national economic and fiscal impact practice. He completed tax policy and impact studies for public and private clients in over 45 states before retiring to the Shenandoah Valley.

COVER PHOTO BY ROBERT CLINE | *One of 23 Shenandoah Rail Trail Major Trestles*

## EXECUTIVE SUMMARY

The Shenandoah Rail Trail is a proposed 48.5-mile, multiuse recreational trail to be built along an out-of-service portion of the Norfolk Southern railroad track in the Northern Shenandoah Valley of Virginia. The trail would run through three counties (Warren, Shenandoah, and Rockingham) and nine towns in the valley, from Front Royal in the north to Broadway in the south. Additional towns along the railroad right-of-way include Strasburg, Toms Brook, Woodstock, Edinburg, Mount Jackson, New Market and Timberville.

This study estimates the additional spending, jobs, income and taxes that the three-county region can expect from the new tourist spending in the region generated primarily by non-residents (from other regions in Virginia, as well as from other states) who come to use the trail. This is new economic activity that would not occur in the absence of the trail.



Railroad Station Museum in Strasburg

Photo by Robert Cline



New River Trail, Austinville, VA

Photo by Robert Cline



Broadway's Heritage Park



Toms Brook Trestle

A detailed economic model for the three-county region is used to estimate the significant, regional economic impacts expected from the Shenandoah Rail Trail. The key findings of this analysis are:

- The new annual spending in the region due to visitors to the Shenandoah Rail Trail is projected to be **\$32.3 million (in 2030 dollars) a year** when the trail is fully opened. This is a measure of the increased sales of retailers, restaurants, hotels and motels and other businesses located in the region.
- The new regional spending is expected to generate **319 new jobs in 2030**. The largest number of jobs will be in tourist-related businesses including restaurants, hotels and motels, and retail stores.
- The expanded economy will generate substantial new income for business employees, the self-employed and unincorporated businesses. This **additional annual "labor income" is estimated to be \$10 million in 2030**.
- The expanded economy in the region will generate higher tax revenue each year for state and local governments: **\$1.7 million for counties, \$0.2 million for towns, and \$0.6 million for the state**.
- In addition to the above, on-going annual economic impacts, the construction of the rail trail is expected to generate a cumulative total of **\$18.7 million in spending and 104 jobs over the construction period**.

## INTRODUCTION

The Shenandoah Rail Trail is a proposed 48.5-mile, multiuse recreational trail to be built along an out-of-service portion of the Norfolk Southern railroad track in the Northern Shenandoah Valley of Virginia. The trail would run through three counties (Warren, Shenandoah, and Rockingham) and nine towns in the valley, from Front Royal in the north to Broadway in the south.<sup>1</sup> The trail corridor traverses the beautiful Shenandoah Valley flanked by mountains on two sides. It travels across rural farmland and through historic small towns and civil war and other historical sites. In sections, it parallels or crosses the North Fork of the Shenandoah River.

*View of Inactive Rail Corridor in the Shenandoah Valley*



*Proposed Route of the Shenandoah Rail Trail in the Shenandoah Valley*



The Shenandoah Rail Trail will be a *destination trail*, using the terminology of the Rails-to-Trails Conservancy, the national organization advocating for rail trails. A destination trail is described as a rural rail trail that has expansive views and passes through woods, farmland and smaller, picturesque towns. These trails are longer than urban and suburban rail trails, have fewer road crossings, and generate higher economic impacts for local communities. Like the proposed Shenandoah Rail Trail, destination trails often run through the center of smaller towns on old railroad rights-of-way. This proximity to downtown retail businesses makes it easier for trail users to support local businesses.

Local residents of the three counties will also be heavy users of the proposed trail. A recent survey conducted by the Virginia Department of Transportation reports that 94% of the respondents from the region agreed or strongly agreed that they would use the trail if built for walking, biking, running, and other recreational uses. The local residents will benefit directly from the health and safety benefits of the use of the trail.

The now inactive railroad line was a catalyst in the economic development of this region in the 19th century. The conversion to the Shenandoah Rail Trail has the strong potential for further strengthening the economic vitality of the same region in the Northern Shenandoah Valley over 100 years later. This study provides an updated and expanded analysis of the potential economic benefits of the proposed rail trail to the residents, businesses, and local governments of the three-county region.<sup>2</sup>



ECONOMIC IMPACTS OF THE TRAIL

Overview

This study estimates the expected economic and tax benefits of the Shenandoah Rail Trail in the combined counties of Warren, Shenandoah and Rockingham. This region has an estimated population of 166,000, employs nearly 87,000 people and covers almost 1,600 square miles.

Table 1 shows where the jobs are in the region. The economy is most dependent upon health and education (both public and private) and agriculture (including agriculture-related processing and manufacturing), which account for 17% and 14%, respectively, of the three-county employment. The next two largest job sectors are professional and personal services (13%) and wholesale and retail trade (10%). As shown in the table, other manufacturing only accounts for 6% of total jobs. The Shenandoah Rail Trail is expected to significantly increase the region’s tourist-related businesses, including lodging and food services (restaurants) that currently account for a relatively small share (7%) of total regional jobs.

**Table 1: Distribution of Current Jobs in the Three-County Region**

SECTORS OF THE ECONOMY	JOBS	% OF TOTAL JOBS
Health and education	14,347	17%
Agriculture related	12,314	14%
Professional/personal services	10,856	13%
Wholesale and retail trade	8,522	10%
Construction	6,900	8%
Transportation	6,946	8%
Lodging and food services	5,967	7%
Finance and real estate	5,331	6%
Manufacturing	5,553	6%
Government	5,379	6%
Other Industries	4,468	5%
Totals	86,584	100%

Note: 2019 data

This study estimates the additional jobs, income and economic activity that the rail trail can generate when fully opened in 2030. It is important to understand that the estimated economic impacts are the *new* jobs and economic activity in the region due to the trail. In other words, visitors from outside the region (from other parts of Virginia and other states) will be spending money (directly related to their use of the new trail) that they would not be spending in the region in the absence of the trail.<sup>3</sup> A stronger regional economy will be fueled primarily by this new injection of spending. In a real sense, the new tourism spending represents an “export” of a regional service to consumers who reside outside the region.



*Blend of Old and New Architecture Along the Track in Mount Jackson*

*Photo by Robert Cline*

## ***Forecast of Shenandoah Rail Trail Users and New Spending***

The key input in estimating the economic impact of the proposed rail trail is an estimate of the potential users of the trail. This study uses information on the number of users and their spending patterns for existing rail trails as the foundation for the trail user forecast. Fortunately, there is a directly comparable Virginia rail trail, the New River Trail, that can be used to anchor the overall annual user estimate.

The New River Trail in southwestern Virginia is 57 miles long and follows the New River in sections. Like the Shenandoah Rail Trail, it is a destination rail trail. The rail trail was built on an abandoned rail line constructed by Norfolk Western in the late 1800s. The trail is located 70 miles south of Roanoke and shares similar geographic features with the proposed Shenandoah Rail Trail. As reported in the latest available Virginia Department of Conservation and Recreation annual state park attendance report, there were 768,000 visitors to New River Trail in 2020.

This study projects that in 2030, when the Shenandoah Rail Trail is fully opened, the total number of annual visitors to the proposed trail will be 726,000.<sup>4</sup> The appendix to this report describes how this estimate was derived starting from the New River Trail attendance information and supplementing with information from other rail trails.

A portion of the visitor spending of the new trail users will generate added economic activity in the three counties. To estimate this spending, the number of trail visitors (divided into locals and non-locals) is multiplied by estimates of the amount of expected spending per visitor to derive total visitor spending. Information from the Virginia Department of Conservation and Recreation annual state park economic impact studies, along with tourist expenditure information from the Shenandoah Valley Region Travel Profile prepared by the Virginia Tourism Corporation, were used in deriving the visitor spending estimates. (See the appendix for more details.)



*Shenandoah County Courthouse in Woodstock  
(Oldest County Courthouse West of the Blue Ridge)*

*Photo by Robert Cline*





Downtown Woodstock

Multiplying the projected number of visitors by estimated per visitor spending generates a visitor-related spending total. To model the economic impact of the Shenandoah Rail Trail, total tourist spending was then disaggregated into seven separate spending categories, including lodging, retail spending, recreation, and restaurants.<sup>5</sup> As explained in the next section, the estimated new visitor spending amounts are used as inputs in a regional economic model to estimate the three-county economic impacts expected from the construction and use of the Shenandoah Rail Trail.



Old Edinburg Hotel (c. 1900) in Edinburg

Photo by Robert Cline

*Economic Impact Estimates*

The expected impact of the trail-related, new spending in the three-county region is estimated using the IMPLAN model for the region. This is a static, input-output model that provides a detailed description of the regional economy and allows the user to add new spending to the economy. The model then traces the interactions among all the region’s industries (and trade with other regions) to estimate the additional jobs and economic activity resulting from the new, trail-related spending.<sup>6</sup>

Table 2 provides a high-level summary of the results of running the IMPLAN model for the combined three-county area in response to the new spending in the region. The last column, the total column, highlights the higher annual economic activity:

- ▶ The new spending in the region due to visitors to the Shenandoah Rail Trail, is projected to be **\$32.3 million** (in 2030 dollars) when the trail is fully opened. This is a measure of the increased sales of retailers, restaurants, hotels and motels and other businesses located in the region. This additional revenue is used to cover purchases from other firms, both within and outside the region, wages and salaries for employees, and business profits.
- ▶ The new regional spending is expected to generate **319** new jobs in 2030 (part-time plus full-time jobs). The largest number of tourist-related jobs are in restaurants, hotels and motels, and retail stores.
- ▶ The expanded economy will generate substantial new annual income for business employees, the self-employed and unincorporated businesses. This additional “labor income” is estimated to be **\$10 million** a year in 2030.<sup>7</sup>

**Table 2: Summary of Annual Economic Impacts of Shenandoah Rail Trail (\$2030)**

ECONOMIC MEASURES	COMPONENTS OF ECONOMIC IMPACT			
	DIRECT	INDIRECT	INDUCED	TOTAL
Spending (\$millions)	23.4	6.0	2.9	32.3
Employment	265	37	17	319
Income (\$millions)	7.3	1.7	0.8	10

Notes:

*Impacts modeled for 2030 when trail is fully opened.*

*Employment is full- plus part-time jobs.*

*Income is the additional labor income earned in the region.*

The totals in the last column of Table 2 are composed of three separate pieces: the direct, indirect and induced impacts. The impacts for each component are shown in the first three columns of economic impacts. *Direct* impacts measure the additional economic activity (sales) related to the estimated new visitor spending at restaurants, hotels and motels and retail businesses. This “first-round” activity results in additional economic activity as these businesses purchase inputs from other businesses in the region. This is shown in the *Indirect* impact column. Finally, the residents of the three-county region will spend a portion of their higher incomes from the new activity on goods and services in the region. This creates the third component, the *Induced* economic impact shown in the third column.



Crossing Over River at Memorial Park in Timberville

Photo by Robert Cline

Note that dividing total spending by direct spending (a ratio of 1.38) indicates that every dollar of new trail-related spending by trail users generates \$0.38 of indirect and induced additional spending in the region. This is the beneficial multiplier effect of economic development: \$1.00 of spending new to the region results in a total of \$1.38 in additional regional economic activity.



## *Government Tax Revenues*

The IMPLAN model also provides estimates of the additional tax revenue that will be generated from the economic growth shown in Table 2. This estimate is based on the relationship between actual government tax collections by type of government and the level of income and economic activity in the region. Note that in addition to any sales, meals and lodging taxes, total taxes include real and personal property taxes and other business-related taxes. The model projects that the additional economic activity related to the Shenandoah Rail Trail will generate the following:

- ▶ \$1.7 million of new annual county tax revenue in the three-county region.<sup>8</sup>
- ▶ \$0.2 million in new taxes for the towns in Warren, Shenandoah and Rockingham counties.
- ▶ \$0.6 million of new state tax revenue.<sup>9</sup>

## *Economic Impact of Trail Construction*

The construction of the Shenandoah Rail Trail will also generate one-time, new economic activity in the region. A revised estimate of the costs of construction are being prepared as part of the Department of Conservation and Recreation's feasibility study of the proposed trail. In the absence of this new information, this study includes a preliminary estimate of the impact of the costs of construction based on the information from the earlier 2019 economic impact study. The cost and economic impact estimates from the earlier study were inflated by 30%, the ratio of the extended trail length to the initial trail length, to produce these preliminary estimates.

Based on this extrapolation of the cumulative economic impacts over the period of construction, trail construction will generate an additional:

- \$18.7 million in spending in the region, and
- 104 jobs

Note that, unlike new trail user spending, this additional economic stimulus will end when the trail is completed by 2030.



*Historic Rail Depot in Downtown Front Royal*

*Photo by Robert Cline*

## APPENDIX: STUDY METHODOLOGY

This appendix provides additional details on the Shenandoah Rail Trail economic and tax impact modeling.

### *Estimating Users*

The modeling begins with an estimate of the projected number of users when the trail is fully opened in 2030. To estimate potential trail users:

- ▶ The beginning point is the reported 2020 annual attendance at the comparable New River rail trail park in southwest Virginia. (Note: the number of reported New River visitors exceeded one million in several prior years before improvements in reporting methods.) The 2020 attendance number is reduced by approximately 12% to recognize that the New River Trail visitors included primitive campers and boaters on the river.
- ▶ Of the total visitor estimate, it is assumed that 30% are locals residing in the three counties. Only 20% of the locals were included in the economic impact analysis, assuming they would switch recreation spending from other regions to the three-county region.
- ▶ The visitor estimate was grown an average of 2.5% a year to project users to 2030 levels. This accounts for both growth in population and household income.
- ▶ The non-local visitor number was then increased by 10% assuming that non-residents already visiting the region for other reasons would extend their stays to use the new trail.

### *Estimating Visitor Spending*

The 2030 Shenandoah Rail Trail visitors estimate was used as the basis of estimating new visitor spending in the region, as follows:

- ▶ Virginia state park and visitor spending data was used to estimate the per visitor spending for trail users. The per visitor spending estimates, \$70 per day for non-locals and \$20 per day for locals, were multiplied by each visitor category to derive total spending.
- ▶ The resulting 2030 total visitor spending estimate was then disaggregated into seven separate expenditure amounts, including restaurants, gas, lodging and other retail purchases. Virginia state park data from the annual economic impact report was used to distribute total spending by expenditure category.

### *Model Estimation*

The Shenandoah Rail Trail economic impacts were estimated as follows:

- ▶ The disaggregated visitor spending amounts were further divided into subcategories of activities (such as wholesale, retail, transportation and product purchases) for the retail spending categories; other expenditure amounts were modeled as commodity purchases.
- ▶ In total, 14 different direct spending estimates were entered into the IMPLAN model to produce the estimated economic and tax estimates reported in the study.

## ENDNOTES

- <sup>1</sup> The nine towns are: Front Royal, Strasburg, Toms Brook, Woodstock, Edinburg, Mount Jackson, New Market, Timberville and Broadway.
- <sup>2</sup> A study prepared by Chmura in 2019, *Economic Impact: A Proposed Rail-to-Trail in Shenandoah Valley*, estimated economic activity that could be generated by a shorter rail trail on the same inactive railroad track. The current study is an updated study using more recent regional economic data. It also expands the earlier study by including a third county (Warren), added by an extension of the trail to Front Royal, and incorporating information from existing rail trails in Virginia and other states. In some cases, the new study also makes changes in the economic impact modeling methodology.
- <sup>3</sup> While local residents will be significant users of the Shenandoah Rail Trail, most of their trail-related spending is not “new” to the region. Rather, most of their trail-related spending represents a redistribution of spending they would likely have spent on other goods and services in the three-county region. Little of this spending is new money that will increase overall economic activity in the region. (See the exception discussed in the following note.)
- <sup>4</sup> The estimated number of visitors includes a small percentage of local users (7%) who are assumed to have been making trail-related expenditures at trails outside of the region before the construction of the Shenandoah Rail Trail. The new trail will shift this spending back into the three-county region. All the other trail users are assumed to be visitors from outside the region and their spending is treated as new money to the region.
- <sup>5</sup> The distribution of total tourist-related expenditures was based on survey information on average spending per visitor per day reported in the *Virginia State Parks Economic Impact Report 2019* prepared by Vincent Magnini at Virginia Tech.
- <sup>6</sup> The model includes detailed economic information for over 500 sectors of the three-county economy, including employment, income and sales. The IMPLAN model used in this study is a more recent version of the model used in the original Chmura study. It is also the model that Virginia Tech uses in preparing the Virginia State Parks Economic Impact Reports for various years.
- <sup>7</sup> The IMPLAN results show that labor income is roughly 55% of the total incomes generated by the economic expansion. The other components of income are property income (i.e., profits and other returns to capital), and selected taxes.
- <sup>8</sup> The tax estimates in this study are significantly higher than in the initial Chmura study primarily for two reasons: 1) they reflect the expanded trail length, additional county and increased annual visitor estimate; and 2) they include property taxes and any other taxes related to non-labor income. The higher level of economic activity will generate increases in land and property values which are large components of local tax revenues. The IMPLAN model provides estimates of this more comprehensive set of state and local taxes.
- <sup>9</sup> The IMPLAN model estimates \$1.3 million in new state taxes. However, this includes new taxes from higher three-county spending that is attributed to spending by trail users from other Virginia regions. This is a redistribution of spending within the state, not new state spending from out-of-state visitors. The model’s state tax estimate is reduced to remove this “double-counting” based on estimates of where visitors to the New River Trail reside.



The **Shenandoah Rail Trail Exploratory Partnership** is an unincorporated coalition of public, private and non-profit organizations along the proposed Shenandoah Valley Rail Trail that have come together with the vision of transforming an unused single-track railroad corridor from Broadway to Front Royal into a multi-use almost 50-mile trail re-connecting communities, businesses, schools and many local cultural and historic resources.

[shenandoahrailtrail.org](http://shenandoahrailtrail.org)