



PREPARED FOR
Northern Shenandoah Valley Regional Commission



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Economic Impact

A Proposed Rail-to-Trail in Shenandoah Valley

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1. Executive Summary

Northern Shenandoah Valley Regional Commission (NSVRC), working with local jurisdictions and community groups, intends to construct a 38.5-mile trail (Shenandoah Rail-Trail) from disused rail track currently owned by Norfolk Southern. The construction and maintenance of the trail, as well as spending by visitors to the trail, will generate significant economic impact in Shenandoah and Rockingham Counties.¹

- The estimated cost of the trail is \$11.7 million in 2019 dollars. The cumulative economic impact (direct, indirect, and induced) of trail construction is estimated to be \$14.4 million (in nominal dollars) in the region from 2020-30, supporting 80 cumulative jobs.

- The annual maintenance cost of the trail will be \$52,400 in 2027 dollars. The total economic impact (direct, indirect, and induced) of trail maintenance can reach \$75,173 per year after 2030.

- In the conservative scenario, Chmura estimated the following economic impact from visitor spending:

- The proposed trail will attract 195,924 visitors per year after it opens in 2030.
- Visitor spending will generate an estimated \$10.8 million economic impact per year, supporting 98 new jobs in Shenandoah and Rockingham Counties.

- The combined tax revenues for Shenandoah and Rockingham Counties and eight towns along the trail are estimated to be \$245,661 per year from 2030 onward.

- In the more optimistic scenario, Chmura estimated the following impact from visitor spending:

- The proposed trail will attract 280,334 visitors per year from 2030 onward.
- Visitor spending will generate an estimated \$15.5 million economic impact per year from 2030 onward, supporting 140 new jobs in the region.
- The combined tax revenues for Shenandoah and Rockingham Counties and eight towns along the trail are estimated to be \$351,443 per year from 2030 onward.

¹ The study area is defined as Shenandoah and Rockingham Counties. The study area is also referred to as the two-county region in this report.

2. Background

Since the mid-1960s, a movement began to convert abandoned or unused rail corridors into public trails (rails-to-trails or rail-trails).² In Virginia, there are currently several major rail-trails including the New River Trail, the Virginia Creeper Trail, the Washington and Old Dominion Trail, and the High Bridge Rail-Trail.

In Shenandoah Valley, Norfolk-Southern (NS) owns a railroad segment spanning over 38.5 miles, from Strasburg in Shenandoah County to Broadway in Rockingham County. NS discontinued the rail service in 2016. If the company abandons this railroad, Northern Shenandoah Valley Regional Commission (NSVRC), working with local jurisdictions and community groups, intends to turn it into a trail (Shenandoah Rail-Trail) to benefit local residents and attract visitors.

The benefit of a rail-trail to a community is multifold. Rail-trails create open and safe spaces for residents and visitors to engage in activities such as biking, walking, and birding. Rail-trails protect the environment by converting disused rail tracks into greenways and park systems, while also providing sanctuaries for birds and other animals. In addition, many local governments in rural America recognize rail-trails as an important smart-growth strategy which promotes tourism and job growth. Attractions such as rail-trails can contribute to local economies by bringing outside visitors to the community.

Chmura Economics & Analytics (Chmura) was contracted by NSVRC to estimate the economic impact of the proposed Shenandoah Rail-Trail in Shenandoah and Rockingham Counties. The first step of this process is to estimate the potential number of visitors to the trail. Chmura developed an econometric model to estimate the number of visitors to the Shenandoah Rail-Trail, which is based on historical attendance data of Virginia's State Parks. The number of visitors is a key driver for the economic impact of the proposed trail.

For the economic impact, Chmura estimated the impact of trail construction and maintenance. But the largest component of economic impact will come from visitor spending in the community, which was measured by combining the projected number of visitors with their spending estimates. In addition, Chmura presented the impact of an optimistic scenario which involves a boost in trail visitors from special trail events, other regional festivals, and existing cultural/heritage tourism in the northern Shenandoah Valley.

² Source: Evaluating the Economic Impact of the Proposed High Bridge Rail-Trail State Park, 2004. Prepared by Chmura Economics & Analytics.

3. Estimating Trail Visitors

Many factors determine the attendance of a trail, such as location, weather, amenities, and demographics. The best approach is to combine all these diverse factors using an econometric regression model. Chmura developed a model that was used to estimate visitor volume for other trails, including the High Bridge Rail-Trail project in central Virginia. Building upon that model, Chmura first refreshed this model by incorporating state park attendance data from 2006 to 2018. Chmura then utilized the updated model to estimate visitor volume for the proposed Shenandoah Rail-Trail.

3.1. Baseline Estimates of Trail Visitors

The goal of the model is to predict attendance at the proposed Shenandoah Rail-Trail. Like the High Bridge Rail-Trail, Shenandoah community leaders intend to turn the rail-trail into a state park if approved. As a result, past park attendance data from Virginia State Parks were used to estimate the relationship between park attendance and variables such as location, demographics, and amenities. Historic visitor attendance figures at 36 state parks in Virginia, from 1991 to 2018, were used in the regression analysis.³

A combination of variables was used to explain the attendance at state parks in Virginia. Chmura classified these variables into three categories: 1) demographic variables, which include population and income of the region where the park is located; 2) location variables, which disclose proximity of the park to interstate highways, colleges, and other parks; and 3) park capacity and amenities, which includes variables such as the size of the park and if boating and camping facilities are available. For a detailed description of the model and variables, please see Appendix 2.

Chmura's visitation model shows that many of the variables listed above play significant roles in driving state park visitation. It is not surprising that area population has a significant impact on park attendance, as a majority of visitors to most state parks are from local areas. Proximity to an interstate highway can boost park attendance as those roads make a state park more accessible to non-local visitors. Park amenities such as camping and boating facilities can also attract visitors seeking these recreational needs. The size of the park also matters, as bigger parks can accommodate more visitors than smaller ones. A new variable introduced is an indicator determining whether the park is a linear (rail-to-trail) park, as attendance figures show an enhanced degree of popularity for those parks. Chmura's model shows that being a linear park will indeed result in an extra boost to visitor figures.

Based on the proposed location and amenities of the Shenandoah Rail-Trail as well as the area population and income level, Chmura estimates that the annual attendance to the trail will be **195,924** when it is fully open in 2030. From 2027 through 2029, when the trail is partially open, the estimated number of visitors can reach 119,486. The most recent attendance figure for the High Bridge Rail-Trail reached 177,324 in 2018. A larger population base and better access to interstate highways indicate that the proposed Shenandoah Rail-Trail can attract a larger attendance than the High Bridge Rail-Trail. However, this number is considered conservative, as the model did not take into account other tourism attractions and events in the area. A conservative approach is preferred for planning purposes, but Chmura will also include an analysis of the economic impact for an optimistic scenario in this report.

3.2. Additional Visitors from Nearby Attractions, Civil War Historic Sites, Festivals, and Sporting Events

The 195,924 annual visits estimated above is conservative, as it does not take into account several advantageous factors that will likely attract many outside visitors. In addition, it does not take into account events that are planned by communities near the proposed Shenandoah Rail-Trail. This section provides an alternative and more optimistic estimate of the number of visitors that may result from these advantageous factors.

The proposed rail-trail will be located in the Shenandoah Valley, an area of natural beauty with many tourism attractions. Those nearby attractions are not considered in the model but could supply additional visitors to the proposed trail. To get a clear picture of tourism events that could boost the number of trail visitors, Chmura contacted officials for both counties and various towns along the proposed trail. Table 3.1 lists selected tourism attractions and events in Shenandoah and Rockingham Counties. Just from the information gathered by Chmura, the estimated total attendance at those events reached 461,144 in 2019. Visitors to those festivals and community events will likely be interested in visiting the trail. Even a small portion of tourists can boost the number of trail visitors significantly. Highlights of those events are summarized below.

New tourism development in the region includes Seven Bends State Park, which is scheduled to open in the fall of 2019. Also located near the proposed trail is Bryce Resort, a four-season destination for winter sports, mountain biking, ziplining, golf, and other outdoor activities. The annual Bryce Fest, Bryce Winter Fest, and other outdoor events at the resort attract over one hundred thousand visitors. Other tourism attractions close to the trail are Shenandoah Caverns and the Route 11 Potato Chip factory.⁴

For visitors interested in history, the area surrounding the proposed rail-trail also has Civil War significance. The trail will traverse Cedar Creek, Toms Brook, and New Market Civil War battlefields. Not far from the trail is the Virginia Museum of the Civil War. Participants of annual reenactments at New Market and Cedar Creek, as well as general visitors to those Civil War sites are estimated to be in the tens of thousands. With partnership and marketing, the "Civil War" factor can also increase the number of visits to the proposed trail, even if only a small portion of civil war tourists visit the trail.

³ Source: Virginia Department of Conservation and Recreation.

⁴ Source: Northern Shenandoah Valley Regional Commission.

ECONOMIC IMPACT OF RAIL-TO-TRAIL PROJECT

NORTHERN SHENANDOAH VALLEY REGIONAL COMMISSION

There are currently several major events occurring in northern Shenandoah Valley. The proposed rail-trail will closely parallel U.S. Route 11, a designated Virginia Scenic Byway. This road hosts the annual Route 11 Yard Crawl, a long chain of garage sales and flea markets from Stephens City to New Market. Typically held on the second Saturday of every August, this event draws crowds of bargain hunters throughout the region and across the eastern seaboard. Shenandoah County Fairgrounds and Shenandoah Downs are event venues with a year-round schedule, hosting events such as the Shenandoah County Fair, Harness Racing events, Autumnfest, concerts and other events. Another annual major event is the Shenandoah Valley Music Festival, usually taking place from mid-July through Labor Day in Orkney Springs, which is approximately 13 miles from the trail.⁵

The proposal rail-trail will go through the towns of Strasburg, Toms Brook, Maurertown, Woodstock, Edinburg, Mount Jackson, Timberville, and Broadway. The Town of New Market is nearby as well. Each town along the route hosts a myriad of festivals and community events throughout the year, as shown in Table 3.1.

The northern Shenandoah Valley also has an active biking and sports tourism community. For the second time in 5 years, the town of Woodstock will host part of the Bike Virginia event. This event typically attracts 1,500 to 1,600 participants each year.⁶ In addition, there are soccer tournaments, cross-country invitationals, and various sports tournaments that draw visitors to the area. The proposed Shenandoah Rail-Trail will create opportunities for many running and biking events throughout the year. Another event being considered is a Shenandoah Marathon which would utilize the proposed trail. Those sporting events would increase trail visitors as well.

Based on Chmura's research of attendance figures of those events, it is estimated that visitors to the Shenandoah Rail-Trail from nearby attractions, civil war historic sites, festivals, and sporting events could reach 84,410, a 43% boost over the baseline estimate. In the optimistic scenario, total number of visitors for the proposed Shenandoah Rail-Trail could reach **280,334**.

Table 3.1: Selected Tourism Attractions and Events in Rockingham and Shenandoah Counties

County	Attraction/Event	Town	Estimated Visitors
Rockingham	Rockingham County Fair	Harrisonburg	72,500
	Dayton Days Autumn Celebration	Dayton	40,000
	Elkton Autumn Days	Elkton	10,000
	Valley Fest Beer and Wine	Massanutten	4,000
	Rockingham County Lawn Parties and Festivals	Multiple Towns	
Shenandoah	Bike Virginia	Woodstock	1,600
	Shenandoah Autumnfest	Woodstock	3,000
	Shenandoah County Fair	Woodstock	36,613
	Shenandoah Downs and other Events at Fairgrounds	Woodstock	32,500
	Bryce Fest	Basye	10,000
	Bryce Resort Winter Fest	Basye	5,000
	Bryce Resort Outdoor Events	Basye	105,000
	Visitor Center	Strasburg	8,400
	Vintage in the Valley Festival	Strasburg	3,000
	Front Porch Friday Events	Strasburg	6,000
	FishFryFloat for Fathers' Day	Strasburg	300
	Harvest Festival	Strasburg	300
	Sip and Snack Mural Tour	Strasburg	100
	Grilled Cheese + Tomato Soup Festival	Strasburg	1,500
	Farm to Fork Fondo Cycling Event	Bell Grove	500

⁵ Ibid.

⁶ Source: Northern Virginia Daily, https://www.nvdaily.com/nvdaily/bike-virginia-organizers-map-out-routes-for-tour/article_9a193581-e489-5c07-9cc4-1d8c6e7d579c.html. Please note Bike Virginia is not an annual event and may not come to Woodstock in future years.

Table 3.1: Selected Tourism Attractions and Events in Rockingham and Shenandoah Counties

County	Attraction/Event	Town	Estimated Visitors
	5K Running Events	Strasburg	100
	Kids ROC (multiple)	Woodstock	475
	Community Safety Day	Woodstock	1,500
	Woodstock ROCS (multiple)	Woodstock	1,100
	Shenandoah Valley ArtFest/Vintage Woodstock	Woodstock	2,500
	Fireworks	Woodstock	6,000
	WoodsTACO	Woodstock	750
	Halloween on Court Square	Woodstock	1,800
	Light Up Woodstock and Holiday Parade	Woodstock	4,000
	Edinburg Mill	Edinburg	10,000
	Forest Service CCC Museum	Edinburg	1,000
	Ole Time Festival	Edinburg	10,000
	Mount Jackson Harvest Festival	Mount Jackson	1,500
	Shenandoah Uncorked	Quicksburg	1,350
	Oakney Springs Music Festival	Oakney Springs	6,500
	Cedar Creek & Bell Grove (including reenactment)	Middleton	42,873
	Route 11 Yard Crawl	New Market to Stephens City	22,973
	New Market and Central High Cross-Country Invitationals	New Market and Wood Stock	1,750
	New Market Battlefield Reenactment	New Market	3,460
	Cross Roads Music Fest	New Market	800
	Jammin' Foods Fest	New Market	400
	Rev3 Adventure Races		
	Annual Soccer Tournament		

Note: Bike Virginia may not happen in Woodstock in future years.

Source: Chmura communications with various county and town staff members

4. Economic Impact of the Shenandoah Rail-Trail

4.1. Economic Impact of Trail Construction

A preliminary estimate of the initial development cost for the rail-trail is \$11.7 million in 2019 fixed dollars. Using a 3.0% inflation rate, the total construction cost of the trail will be \$14.7 million in nominal dollars. This includes construction and surfacing of trails, repair of several bridges, and preliminary engineering. The demolition cost of the current railway is not included, as it is assumed that demolition will be completed by Norfolk Southern.

Table 4.1: Economic Impact of Rail-Trail Construction in Shenandoah and Rockingham Counties

		Direct	Indirect	Induced	Total
Total 2020-30	Spending (\$Million)	\$11.1	\$1.8	\$1.5	\$14.4
	Employment	55	11	14	80
Annual Average (2020-30)	Spending (\$Million)	\$1.0	\$0.2	\$0.1	\$1.3
	Employment	5	1	1	7

Note: Numbers may not sum due to rounding

Source: IMPLAN 2017, NSVRC, and Chmura

In terms of timing, total project development will last from 2020 to 2030. From 2020-23, the project will be in the stage of design and engineering. Construction is expected to start in 2024 and last until 2030. But it is expected that the trail will be partially open in 2027, and fully open in March 2030.⁷

Chmura entered different types of construction and development costs into the IMPLAN model to estimate the construction impact of the trail in Shenandoah and Rockingham Counties. Table 4.1 shows that the cumulative economic impact (direct, indirect, and induced) of construction is estimated to be \$14.4 million (in nominal dollars) in the region from 2020-30, supporting 80 cumulative jobs.⁸ This includes an estimated \$11.1 million directly spent in the region,⁹ creating 55 cumulative jobs. The total indirect impact is estimated to be \$1.8 million and 11 cumulative jobs in industries supporting construction, such as truck transportation and utilities. The total induced impact is estimated to be \$1.5 million and 14 cumulative jobs in the region from 2020-30. The induced jobs will be concentrated in consumer service-related industries such as restaurants, healthcare, and retail.

On an annual average basis, the economic impact (direct, indirect, and induced) of trail construction is estimated to be \$1.3 million (in nominal dollars) in Shenandoah and Rockingham Counties from 2020-30, supporting 7 annual jobs in the region. Based on the construction schedule, most of the construction-related impact will occur after 2023.

4.2. Economic Impact of Trail Maintenance

From 2027 onward, the Shenandoah Rail-Trail will be open to the public. The trail will be partially open for three years from 2027 to 2029, and fully open from 2030 onward.¹⁰ Trail maintenance spending will provide some economic impact in the region. It is estimated that the annual maintenance cost of the entire trail will be \$52,400 in 2027 dollars. For the first three years when the trail is partially open, maintenance cost is estimated to be \$17,500 in 2027 dollars.¹¹

Table 4.2: Economic Impact of Rail-Trail Maintenance in Shenandoah and Rockingham Counties

		Direct	Indirect	Induced	Total
Average 2027-29	Spending	\$18,019	\$3,166	\$2,486	\$23,671
	Employment	0.1	0.0	0.0	0.1
Annual 2030 Onward	Spending	\$57,224	\$10,055	\$7,895	\$75,173
	Employment	0.3	0.1	0.1	0.4

Note: Numbers may not sum due to rounding

Source: IMPLAN 2017, NSVRC, and Chmura

Table 4.2 presents the estimated economic impact of trail maintenance in Shenandoah and Rockingham Counties. This impact is limited in magnitude due to the relatively low amount of maintenance spending per year. From 2027-29, trail maintenance can generate an economic impact (direct, indirect, and induced) of \$23,671 (in current dollars) in Shenandoah and Rockingham Counties per year. From 2030 onward, when the trail is fully open, the

⁷ Source: NSVRC.

⁸ Estimated jobs include both full-time and part-time positions. Estimated jobs are based on the place of work.

⁹ This spending figure is smaller than the total project cost of \$14.7 million because not all construction spending will occur in the study region. Chmura used the IMPLAN model to estimate the percentage of project spending that will be spent within the region.

¹⁰ Source: NSVRC.

¹¹ Ibid.

total economic impact (direct, indirect, and induced) of trail maintenance can reach \$75,173 per year, supporting 0.4 job in Shenandoah and Rockingham Counties.

4.3. Economic Impact of Trail Visitor Spending

Major activities associated with the proposed Shenandoah Rail-Trail will be walking, biking, jogging, and potentially horseback riding. The trail can attract tens of thousands of visitors each year, and they will patronize regional businesses such as hotels, bed and breakfast (B&B) lodging establishments, restaurants, and retail venues. This will benefit the regional economies and generate significant economic impact in Shenandoah and Rockingham Counties.

To estimate the impact of trail visitor spending, two key pieces of information are needed. The first is the number of visitors to the trail, and the second is average spending per visitor. As explained in Section 2, based on regional population, income, trail access, and amenities of the Shenandoah Rail-Trail, the total number of visitors was estimated to be 195,924 per year when the trail is fully open. From 2027-29, when the trail is partially open, the estimated number of visitors will be lower, at 119,486 per year. In the optimistic scenario, involving additional trail-related events and spill-over effects from other tourism attractions, the annual number of visitors can reach 280,334.

Average visitor spending is estimated based on visitor profile data collected by Virginia Tourism Corporation (VTC).¹² The VTC survey found that visitors (both day trippers and overnight visitors) to the Shenandoah Valley region spent an average of \$65.20 per person per day in 2017. It is assumed that visitor spending such as food, lodging, and retail purchases will likely occur within half an hour's drive of the proposed Shenandoah Rail-Trail.¹³ Based on current retail, food service, and lodging businesses in the area, Chmura estimated that 51% of trail visitor spending would occur in Shenandoah and Rockingham Counties.¹⁴ Other cities outside the study region, such as Harrisonburg, will also benefit from trail visitor spending because they have a large number of lodging establishments and restaurants. It is estimated that from 2027-29, average annual visitor spending can reach \$4.8 million in Shenandoah and Rockingham Counties. In 2030, when the trail is fully open, annual visitor spending in the two counties is estimated to be \$8.2 million. In the optimistic scenario, annual visitor spending can reach \$11.7 million from 2030 onward. Based on the VTC study, visitor spending is allocated to different sectors such as gasoline, food and drink, lodging, and shopping.¹⁵

While direct spending by Shenandoah Rail-Trail visitors can contribute sizable amounts to local economies, this spending also has ripple effects throughout the two-county region. The ripple effects are summarized as indirect and induced effects. Indirect effects are generated because there are many industries supporting restaurants, gas stations, and other visitor-service businesses. Money spent by rail-trail visitors in restaurants and hotels increases the sales of the suppliers for these industries. This is called an indirect effect. The induced

Table 4.3: Economic Impact of Rail-Trail Visitor Spending in Shenandoah and Rockingham Counties

Scenarios			Direct	Indirect	Induced	Total
Partially Open	Average 2027-29	Spending (\$Million)	\$4.8	\$0.9	\$0.6	\$6.4
		Employment	47	6	6	59
Fully Open	Annual 2030 Onward	Spending (\$Million)	\$8.2	\$1.6	\$1.1	\$10.8
		Employment	78	10	10	98
Fully Open, Optimistic	Annual 2030 Onward	Spending (\$Million)	\$11.7	\$2.3	\$1.5	\$15.5
		Employment	111	14	15	140

Note: Numbers may not sum due to rounding

Source: IMPLAN 2017 and Chmura

The induced effect is caused by increased income of workers employed by industries serving rail-trail visitors. More visitors will result in more workers being hired. These newly hired workers will in turn increase their consumption, thus injecting more money into the regional economy.

Table 4.3 presents the estimated economic impact of rail-trail visitor spending in Shenandoah and Rockingham Counties for three scenarios: partially open, fully open, and fully open in an optimistic scenario. From 2027-29, when the trail is partially open, the annual total economic impact (direct, indirect, and induced) of rail-trail visitor spending is estimated at \$6.4 million (in nominal dollars) that can support 59 jobs in the two-county region. Of this impact, estimated direct visitor spending is \$4.8 million that can support 47 jobs in the region, mostly in tourism-related businesses such as hotels, gas stations, restaurants, and retail shops. The indirect impact is estimated to be \$0.9 million that can support six jobs in the study region. The induced impact is estimated to be \$0.6 million that can support six jobs in the two-county region.

¹² Source: Virginia Tourism Corporation. <https://www.vatc.org/research/travel-data-and-profiles/>.

¹³ This assumption results from discussions between Chmura and NSVRC.

¹⁴ This is estimated based on the number of tourism establishments in the two counties and the assumption that visitors to the trail will stay within a half-an-hour drive of the trail. Economic impact data from Virginia Tourism Corporation indicate that tourism spending in Shenandoah and Rockingham Counties accounted for 49% of total spending in northern Shenandoah Valley in 2017.

¹⁵ Source: Virginia Tourism Corporation. <https://www.vatc.org/research/economicimpact/>.

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From 2030 onward, when the trail is fully open, the overall annual economic impact (direct, indirect, and induced) of trail visitor spending in the two-county region is estimated to be \$10.8 million, supporting 98 jobs. In the optimistic scenario, which involves additional visitors due to trail events and spill-over from other tourism attractions, the overall annual economic impact (direct, indirect, and induced) of trail visitor spending in the two-county region is estimated to be \$15.5 million, supporting 140 jobs.

5. Local Fiscal Impact

The proposed Shenandoah Rail-Trail can generate tax revenue for local governments in Shenandoah and Rockingham Counties. In addition, tax revenues for incorporated towns along the trail were also estimated. Those towns are Strasburg, Toms Brook, Woodstock, Edinburg, Mount Jackson, and New Market in Shenandoah County, and Timberville and Broadway in Rockingham County. To be conservative, only tax revenue from the direct impact is estimated.¹⁶

During the construction phase, spending is subject to local business, professional, and occupational license (BPOL) tax. Similarly, trail maintenance spending in the two counties is also subject to BPOL tax. Neither Shenandoah nor Rockingham County has BPOL tax, so they will not benefit fiscally from spending on trail construction and maintenance. But during construction, six towns which impose a BPOL tax can receive a cumulative total of \$2,247 in tax revenue. BPOL tax revenue for towns from maintenance spending is negligible.¹⁷

On the other hand, spending by visitors to the Shenandoah Rail-Trail can generate tax revenue for Shenandoah and Rockingham County governments and towns along the trail. The main county taxes from visitor spending are local sales, meals, and lodging taxes.¹⁸ Shenandoah County has no meals tax, but all towns along the trail, except Toms Brook, impose a meals tax, varying between 5.0% and 6.0% (Table 5.1).¹⁹ For Rockingham County, the county's meals tax is 4.0%.²⁰ The town of Timberville and Broadway also have meals tax at 5.0% and 4.0%, respectively. The lodging tax rate for Shenandoah County is 2.0%, and towns along the trail, except Toms Brook and Edinburg, impose a lodging tax as well. In Rockingham County, the county has a 5.0% lodging tax,²¹ and the Town of Timberville also has a lodging tax at 4.0%, but Broadway does not have a lodging tax.

Virginia's sales tax rate is 5.3% of retail sales; 1% of retail sales is returned to local governments while the state retains 4.3% of total sales. For Shenandoah and Rockingham County governments, sales tax is applied to visitor spending on food and beverages, lodging, and retail goods. From 2027-29, when the trail is partially open, sales tax revenue is estimated to be \$20,268 for Shenandoah and \$17,908 for Rockingham. In 2030, when the trail is fully open, sales tax is estimated to be \$34,364 for Shenandoah and \$30,362 for Rockingham. In the optimistic scenario, sales tax is estimated to be \$49,169 for Shenandoah and \$43,443 for Rockingham in 2030. While towns sometimes receive sales tax revenue from county governments, they do not collect their own sales tax.

Outside sales tax, local governments will also benefit from meals tax from rail-trail visitor spending. Shenandoah County currently has no meals tax, but all towns along the trail, except Toms Brook, impose a meals tax, varying between 5.0% and 6.0%.²² The total meals tax for those towns is estimated to average \$32,614 from 2027-29 when the trail is partially open, \$55,297 in 2030 when the trail is fully open, and \$79,120 under the optimistic scenario in 2030. In Rockingham County, the county's meals tax rate is 4.0% of meal sales.²³ The towns of Timberville and Broadway also have a meals tax at 5.0% and 4.0%, respectively. The meals tax is estimated to average \$24,859 for the county and \$2,430 for two towns from 2027-29 when the trail is partially open, \$42,147 for the county and \$4,119 for the two towns in 2030 when the trail is fully open, and \$60,305 for the county and \$5,894 for two towns under the optimistic scenario in 2030.

Table 5.1: Meals and Lodging Tax for Towns near the Rail-Trail

County	Town	Meal Tax	Lodging Tax
Shenandoah	Strasburg	6.0%	6.0%
	Toms Brook	0.0%	0.0%
	Woodstock	5.0%	5.0%
	Edinburg	5.0%	0.0%
	Mount Jackson	5.5%	5.0%
	New Market	5.0%	5.0%
Rockingham	Timberville	5.0%	4.0%
	Broadway	4.0%	0.0%

Source: Weldon Cooper Center, University of Virginia and County Websites

¹⁶ This approach is recommended by Burchell and Listokin in *The Fiscal Impact Handbook*. Source: Burchell, R.W. and Listokin, D. 1978. *The Fiscal Impact Handbook: Estimating Local Costs and Revenues of Land Development*. Center for Urban Policy Research, New Brunswick, NJ; Rutgers, The State University of New Jersey.

¹⁷ The towns with BPOL taxes are Strasburg, Woodstock, Edinburg, New Market, Timberville and Broadway.

¹⁸ The tax estimated in this section is based on the current tax laws in Virginia.

¹⁹ Tax rates for towns are from Virginia Local Tax Rates, 2016, Weldon Cooper Center for Public Services, University of Virginia, in cooperation with Virginia Association of Counties and Virginia Municipal League.

²⁰ Rockingham County website, available at: <https://www.rockinghamcountyva.gov/326/Food-Beverage-Tax>.

²¹ For Shenandoah County, please see <https://ecode360.com/32866421>. For Rockingham County, please see http://www.dnronline.com/news/rockingham_county/county-approves-lodging-tax-hike/article_57a11557-6897-55e3-8951-26f69a7af1ce.html.

²² Shenandoah County is considering a proposal to impose a county meals tax.

²³ Rockingham County website, available at: <https://www.rockinghamcountyva.gov/326/Food-Beverage-Tax>.

ECONOMIC IMPACT OF RAIL-TO-TRAIL PROJECT

NORTHERN SHENANDOAH VALLEY REGIONAL COMMISSION

Similarly, visitor spending on lodging is subject to lodging tax in localities where such a tax is imposed. The lodging tax rate for Shenandoah County is 2.0%. Other towns along the trail, except Toms Brook and Edinburg, impose a lodging tax, varying between 5.0% to 6.0%.²⁴ The lodging tax is estimated to average \$2,140 for the county and \$20,968 for four towns from 2027-29 when the trail is partially open, \$3,628 for the county and \$35,550 for the four towns in 2030 when the trail is fully open, and \$5,201 for the county and \$50,866 for four towns under the optimistic scenario in 2030.

Table 5.2: Estimated Fiscal Impact from Rail-Trail Visitor Spending

Local Tax	Partially Open (Average 2027-29)		Fully Open (2030 Onward)		Optimistic (2030 Onward)		
	County Government	Town Governments	County Government	Town Governments	County Government	Town Governments	
Shenandoah County	Sales	\$20,268	\$0	\$34,364	\$0	\$49,169	\$0
	Meals	\$0	\$32,614	\$0	\$55,297	\$0	\$79,120
	Lodging	\$2,140	\$20,968	\$3,628	\$35,550	\$5,191	\$50,866
	BPOL	\$0	\$1,205	\$0	\$2,078	\$0	\$2,923
	Total Taxes	\$22,408	\$54,788	\$37,992	\$92,925	\$54,359	\$132,910
Rockingham County	Sales	\$17,908	\$0	\$30,362	\$0	\$43,443	\$0
	Meals	\$24,859	\$2,430	\$42,147	\$4,119	\$60,305	\$5,894
	Lodging	\$21,698	\$594	\$36,789	\$1,007	\$52,638	\$1,441
	BPOL	\$0	\$186	\$0	\$321	\$0	\$452
	Total Taxes	\$64,465	\$3,210	\$109,298	\$5,448	\$156,386	\$7,787
Two-County Total	Sales	\$38,176	\$0	\$64,726	\$0	\$92,611	\$0
	Meals	\$24,859	\$35,044	\$42,147	\$59,416	\$60,305	\$85,014
	Lodging	\$23,838	\$21,562	\$40,416	\$36,558	\$57,829	\$52,308
	BPOL	\$0	\$1,391	\$0	\$2,399	\$0	\$3,375
	Total Taxes	\$86,873	\$57,997	\$147,289	\$98,372	\$210,746	\$140,697

Source: Chmura

The lodging tax rate is 5.0% for Rockingham County.²⁵ The town of Timberville also has a lodging tax at 4.0%, but Broadway does not have a lodging tax. From 2027-29, when the trail is partially open, lodging tax revenue is estimated to be \$21,698 for Rockingham and \$594 for Timberville. In 2030, when the trail is fully open, lodging tax revenue is estimated to be \$36,789 for Rockingham and \$1,007 for Timberville. In the optimistic scenario, lodging tax revenue is estimated to be \$52,638 for Rockingham and \$1,441 for Timberville in 2030.

While Shenandoah and Rockingham Counties do not have BPOL taxes, six towns have such a tax, but the tax revenues generated from visitor spending are modest. From 2027-29, when the trail is partially open, BPOL tax revenue is estimated to be \$1,205 for Shenandoah towns and \$186 for Rockingham towns. In 2030, when the trail is fully open, BPOL tax is estimated to be \$2,078 for Shenandoah towns and \$321 for Rockingham towns. In the optimistic scenario, BPOL tax is estimated to be \$2,923 for Shenandoah towns and \$452 for Rockingham towns in 2030.

In summary, when the trail is fully open, visitor spending is estimated to generate \$37,992 in tax revenue for Shenandoah County and \$92,925 for towns in Shenandoah County. Tax revenue is estimated to be \$109,298 for Rockingham County and \$5,448 for towns in Rockingham County. In the optimistic scenario, visitor spending is estimated to generate \$54,359 in tax revenue for Shenandoah County, \$132,910 for towns in Shenandoah County, \$156,386 for Rockingham County, and \$7,787 for towns in Rockingham County in 2030.

²⁴ Lodging establishments in towns without town lodging tax will pay county lodging tax.

²⁵ For Shenandoah County, please see <https://ecode360.com/32866421>. For Rockingham County, please see http://www.dnronline.com/news/rockingham_county/county_approves_lodging_tax_hike/article_57a11557-6897-55e3-8951-26f69a7af1ce.html.

6. Other Benefits

The proposed Shenandoah Rail-Trail can also enhance the tourism industry in the northern Shenandoah Valley, and may generate other economic development benefits.

The proposed rail-trail can add to the outdoor recreation assets in the region and boost regional tourism. Trail walking and trail races, which have been popular around the country, are the easiest events to stage on the proposed trail. Trail events can be staged in consortium with many community-based festivals throughout the region to attract more visitors and induce them to stay longer. Another event being considered is a Shenandoah Marathon which would utilize the proposed trail. The mayor of one of the towns along the trail remarked that the trail can "keep these folks in the area for a while longer".²⁶ Local officials are excited about the opportunities to market the trail in conjunction with other assets. One tourism official mentioned that the county is primarily a destination for outdoor recreation, and he believes that the trail will enhance the offering within the community. Another tourism official told Chmura that the region is a huge outdoor tourism market especially for people from greater the Washington area, and that the rail-trail will certainly be "celebrated and explored".²⁷

Along with the potential of staging trail-related events or festivals, the trail could also attract businesses or investment, and help revitalize rural communities and small towns in the region. Many local officials Chmura reached out to expressed enthusiasm for the trail as a catalyst for the development of their towns. One official pointed out that his town has several older buildings along the proposed trail, which can be turned into bike shops or cafes. In addition, land around the trail adjacent to towns can be developed for vacation homes for active adults, early retirees or horse enthusiasts. Towns like Damascus, Virginia have taken advantage of the rail-trail to transform themselves.²⁸ Anecdotal stories also imply that that a trail can potentially increase the property values along the way. Towns in northern Shenandoah Valley can use the proposed rail-trail as part of their smart growth strategy for economic development.

The proposed rail-trail also has other social benefits to communities around it. Rail-trails create open and safe space for residents and visitors to engage in activities such as biking, walking, and birding. By doing so, they support physical activities and healthy lifestyles that can potentially improve the well-being of residents to lower healthcare costs for a locality. Rail-trails protect the environment by converting disused rail track into greenways and park systems, while also providing sanctuaries to birds and other animals, thus benefiting the environment.

²⁶ Source: Communications between Chmura and area officials.

²⁷ Ibid.

²⁸ Source: http://www.visitdamascus.org/wp-content/uploads/2016/06/Final-Report_Impact-of-Trails_Fall2011Studio_VT.pdf

Appendix 1: Impact Analysis Glossary

IMPLAN Professional—an economic impact assessment modeling system. It allows the user to build economic models to estimate the impacts of economic changes in states, counties, or communities. It was created in the 1970s by the Forestry Service and is widely used by economists to estimate the impact of specific events on the overall economy.

Input-Output Analysis—an examination of business-business and business-consumer economic relationships capturing all monetary transactions in a given period, allowing one to calculate the effects of a change in an economic activity on the entire economy (impact analysis).

Direct Impact—economic activity generated by a project or operation. For construction, this represents activity of the contractor; for operations, this represents activity by tenants of the property.

Overhead—construction inputs not provided by the contractor.

Indirect Impact—secondary economic activity that is generated by a project or operation. An example might be a new office building generating demand for parking garages.

Induced (Household) Impact—economic activity generated by household income resulting from direct and indirect impacts.

Ripple Effect—the sum of induced and indirect impacts. In some projects, it is more appropriate to report ripple effects than indirect and induced impacts separately.

Multiplier—the cumulative impacts of a unit change in economic activity on the entire economy.

Appendix 2: Model Dependent and Independent Variables

Dependent Variables

Historic *visitor attendance* at 36 state parks in Virginia is used as the independent variable in the regression analysis. Attendance is the variable that the analysis aims to predict, so we try to determine the factors that affect attendance at other parks in order to estimate the volume of visitors that can be expected at the Shenandoah Rail-Trail. Data for the analysis were obtained from the Virginia Department of Conservation and Recreation.

Independent Variables

A range of variables are used to substantiate the expected attendance at a state park in Virginia. Some of the variables such as population, income, and the presence of an interstate highway relate to the external environment in the area surrounding the park. Other variables, such as admission fees, boating access, and camping availability are direct measures of amenities offered by the parks in the sample. The following list itemizes each of the independent variables used in the analysis, states the rationale for choosing the variable, and cites the source of the data used to measure the variable. The results of the analysis are presented after reviewing the inputs to the statistical analysis.

Population: This variable refers to the population of the county in which each state park is located. If a park crosses county lines, then all counties are used. The population variable is used because it represents the potential pool of local visitors, and it is expected that areas with higher population would also have higher attendance at nearby state parks. Source: Bureau of Economic Analysis.

Per capita income: Per capita income is measured for the county in which each state park is located. If a park crosses county lines, then a weighted average of per capita income is used. This variable was chosen to test whether the income of a region's residents has an effect (positive or negative) on state park visitor attendance. Source: Bureau of Economic Analysis.

Interstate Indicator: The presence of an interstate is used as a dummy variable in the analysis. In other words, a simple "yes" or "no" is recorded in order to confirm if any portion of an interstate crosses the county in which a state park is located. This variable is incorporated because interstate highways make landmarks and parks accessible to a wider pool of the population. Source: Virginia Department of Transportation; Virginia Economic Development Partnership.

College Indicator: The college variable describes whether or not a college is located in the same county as the state park. This is a "yes" or "no" variable. If no college is present in that county, 0 is assigned; otherwise, 1 is assigned. The presence of a college is expected to draw more visitors to a given region for general purpose visits and graduations, etc. The rationale behind using this variable to determine park attendance is that some outside visitors may also visit the local state park and its amenities. Source: Virginia Economic Development Partnership.

Area: The area variable represents the acreage of each state park used in the sample. It is expected that a larger park would have a greater capacity for visitors, and as a result, have higher attendance figures. Source: Virginia Department of Conservation and Recreation.

Fee: The fee variable represents whether or not a state park charges an admission fee to enter or use the park. The fee variable is used to test if charging a fee has an impact on park visitor attendance. Source: Virginia Department of Conservation and Recreation.

Boat/Fishing Indicator: This variable describes whether or not motorboats are permitted at a particular state park, and if the park allows fishing. As a key amenity, the presence of recreational boating opportunities is expected to have a positive effect on park attendance. Source: Virginia Department of Conservation and Recreation.

Camp Indicator: The camp variable refers to the availability of any type of camping at a state park. Similar to the boating variable, camping is an amenity that is expected to positively benefit a state park in terms of attendance figures. Source: Virginia Department of Conservation and Recreation.

Cabin Indicator: The cabin variable refers to the availability of any type of cabin to rent. This amenity is expected to positively benefit a state park in terms of attendance figures. Source: Virginia Department of Conservation and Recreation.

Horse Indicator: This variable signifies whether or not a park allows horses. Some parks forbid horses, and this is one amenity that may affect attendance. Source: Virginia Department of Conservation and Recreation.

Other State Parks Indicator: This variable refers to whether or not there is another state park nearby that could draw visitors away. If there is another state park in the county of interest or the contiguous counties, then competition exists. While competition may reduce attendance, it also can increase attendance if they form a collection of attractions—making the area more appealing to visitors. Source: Virginia Department of Conservation and Recreation.

Linear Park Indicator: With the popularity of linear parks, this variable captures whether being a linear park itself can attract additional visitors. Source: Virginia Department of Conservation and Recreation.

Region Indicators: Chmura set three indicators for Northern Virginia, Richmond, and Hampton Roads. Parks in these three main population centers in Virginia may have some advantages in attracting more visitors. Source: Chmura.

Table A1: Model Estimate

Independent Variables	Coefficient Estimate
Intercept**	-0.1946
Population**	0.2785
College Indicator**	-0.6602
Per Capita Income**	0.6268
Highway Indicator**	0.5387
Acreage of the Park**	0.0589
Boat/Fishing Indicator	0.1090
Camp Indicator**	0.7138
Cabin Indicator**	1.3310
Fee Indicator**	0.3029
Competition Indicator**	0.4912
Horse Indicator**	-0.3549
Linear Park Indicator**	1.9530
Region Indicator - Northern Virginia **	0.8593
Region Indicator - Richmond **	0.1789
Region Indicator - Hampton Roads **	0.5422

** : Significant at 95% level

A log-log specification is used for non-dummy variables

Source: Chmura