

The Regional Economic Benefits of Investing \$2 Billion in Virginia's I-81 Corridor



Prepared by **ARTBA** American Road
& Transportation
Builders Association

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About the American Road & Transportation Builders Association

ARTBA is a federation whose primary goal is to aggressively grow and protect transportation infrastructure investment to meet the public and business demand for safe and efficient travel. In support of this mission, ARTBA also provides programs and services designed to give its more than 8,000 public and private sector members a global competitive edge.

ARTBA's The Transportation Investment Advocacy Center™ (TIAC) is a first-of-its kind, dynamic education program and Internet-based information resource designed to help private citizens, legislators, organizations and businesses successfully grow transportation investment at the state and local levels through the legislative and ballot initiative processes. It's powered by: www.transportationinvestment.org.

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I. Executive Summary

An investment of \$2 billion in highway improvements on Virginia's Interstate Highway I-81 will generate over \$4.3 billion in business output, wages and tax revenue along the region's corridor, supporting over 15,240 local jobs across all sectors of the economy.

In addition to the immediate economic activity, the manufacturing, distribution, warehousing and retail businesses dependent on I-81 for freight shipments will benefit from improved roadway conditions, less congestion and the alleviation of key freight traffic bottlenecks.

This report examines how a \$2 billion increase in capital spending on Virginia I-81 would stimulate immediate business activity in the cities, counties and rural areas that comprise the immediate area surrounding the Interstate corridor.

The economic benefits include increased output from local businesses, a larger state and local government revenue base and new jobs. The capital investment will enhance safety and facilitate economic activity for decades by improving access to jobs, services, materials and markets.

Immediate Economic Benefits of Increasing Investment

The construction activity from a \$2 billion investment along the I-81 corridor will yield the following benefits:

- Sales and output by I-81 corridor businesses in all sectors will increase by \$3.4 billion each year.
- These investments will contribute \$1.8 billion to the state gross domestic product (GSP).¹
- State and local tax revenues will grow by \$119.8 million.
- An additional 15,243 jobs would be supported or created throughout the economy, with 51 percent of the employment outside of the construction industry.
- Those workers will earn an average of \$768.2 million per year.

¹ GSP is the value added by an industry to the overall economy. This is the state equivalent of national Gross Domestic Product, or GDP. It is the difference between total sales by businesses in the state and the cost of intermediate goods..

The economic ripple effect begins when highway, street and bridge contractors purchase inputs (such as materials) from Virginia businesses operating in the I-81 corridor, in addition to other firms inside and outside of the state, as they complete work on projects.

The employees of the construction firms and supplier industries spend their earnings by purchasing clothing, food and other goods and services, thereby creating additional demand throughout the I-81 corridor. In addition to the \$3.4 billion increase in sales in the I-81 corridor, this investment will also spur an additional \$1.2 billion in sales for businesses located in other parts of Virginia.

The local tax base grows as payroll and sales volumes increase, providing state and local municipalities with additional revenues to reinvest in the area.

Local businesses, as well as the state, national and international businesses that ship goods along the I-81 corridor, will all benefit in the longer-run as improvements to the Interstate are made. That additional benefit is not quantified in this report.

Economic Impacts of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor

Total Output	\$3.4 billion
Total Value Added (GSP)	\$1.8 billion
Earnings	\$768.2 million
Employment	15,243 jobs
Total Tax Revenues	\$119.8 million
State Payroll Tax	\$2.2 million
Federal Payroll Tax	\$58.8 million
State Individual Income Tax	\$38.7 million
State & Local Sales Tax	\$20.2 million
Total Impact	\$4.3 billion

II. Supporting Business Growth & Investment in the I-81 Corridor

I-81 is the longest Interstate in Virginia, running 326 miles in length along the western part of the state, from Virginia's southern border with Kentucky all the way to the northern border with West Virginia near Winchester. The entire I-81 is over 800 miles, spanning from the Canadian border in upstate New York to its endpoint in Tennessee. The highway does not serve major metropolitan areas and is a freight alternative to the north-south running I-95 corridor, which is often congested.²

The I-81 corridor includes 12 counties and nine cities and districts.³ The route has 90 interchanges and major connections with I-66, I-64, I-77 and I-581. Portions of I-81 overlap with both I-77 and I-64. In addition to major highways, Class I rail lines owned by Norfolk Southern and CSX operate within the footprint of the I-81 corridor. The Roanoke Regional Airport, the Shenandoah Valley Airport and the Virginia Inland Port are other multi-modal facilities located along I-81.

I-81 is a major freight corridor and has resulted in a high concentration of freight-related economic activity compared to the rest of Virginia:

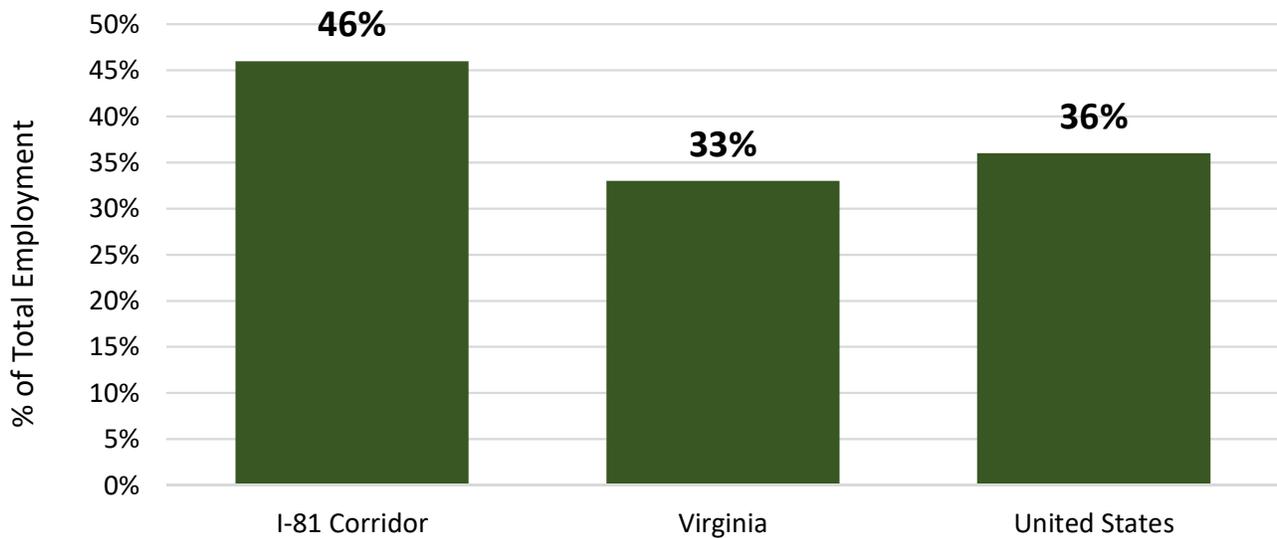
- Overall, freight-related and dependent jobs account for 46 percent of total employment along the I-81 corridor, according to data from the U.S. Census Bureau and Bureau of Labor Statistics. This compares to 33 percent of employment in Virginia and 36 percent of employment nationwide. Freight intensive and dependent industries include agriculture, natural resources and mining, manufacturing, construction, transportation and warehousing, wholesale and retail trade.⁴
- One in five jobs in the I-81 corridor, or nearly 22 percent of employment, is in the freight-dependent agricultural, mining, construction or manufacturing industries. The I-81 corridor has a higher concentration of this type of industry—statewide these sectors account for 13 percent of employment in Virginia and 15 percent of employment nationwide.
- The concentration of manufacturing jobs alone is more than double the statewide average—manufacturing employment accounts for 17 percent of all jobs in the I-81 corridor. In the entire state of Virginia, manufacturing jobs represent 7 percent of total employment. One in four manufacturing jobs in Virginia is in the I-81 corridor.

² Virginia Department of Transportation (VDOT), *I-81 Corridor Improvement Study, Freight Diversion and Forecast Technical Report*, (VDOT, 2007)

³ "Interstate 81 Corridor Improvement Plan", Major Projects, Virginia Commonwealth Transportation Board, last accessed November 26, 2018, http://www.ctb.virginia.gov/projects/major_projects/i-81_study.asp

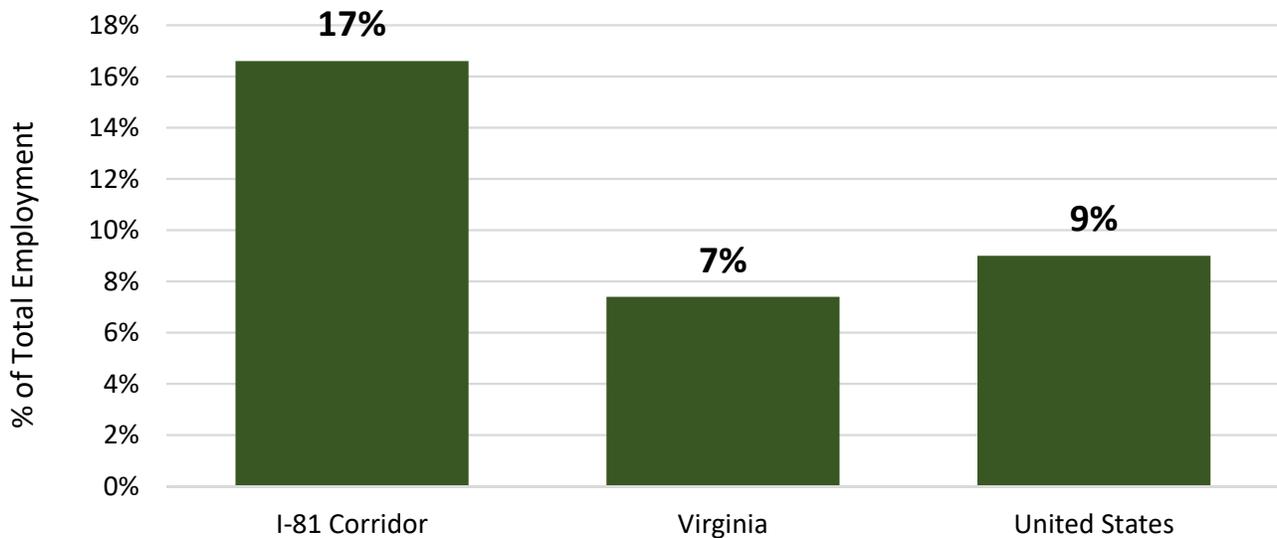
⁴ Transportation Research Board (TRB) National Cooperative Freight Research Program, *Public and Private Sector Interdependence in Freight Transportation Markets*, (Washington, DC: TRB, 2009).

Freight-Dependent and Intensive Jobs, by Area



Source: U.S. Bureau of Labor Statistics. Freight intensive and dependent industries include agriculture, natural resources and mining, manufacturing, construction, transportation and warehousing, wholesale and retail trade.

Manufacturing Employment, by Area



Source: U.S. Bureau of Labor Statistics.

As more businesses locate in the I-81 corridor and the economy grows, truck travel on the Interstate is forecasted to grow at a compounded average annual growth rate of 2.8 percent through 2035.⁵ Most of I-81 is considered a freight bottleneck, meaning the level of traffic is above capacity and prohibits the efficient flow of freight movement.⁶ In addition to freight shipments by the businesses located in the corridor, I-81 is a major highway for transporting goods across the state of Virginia to other destinations.

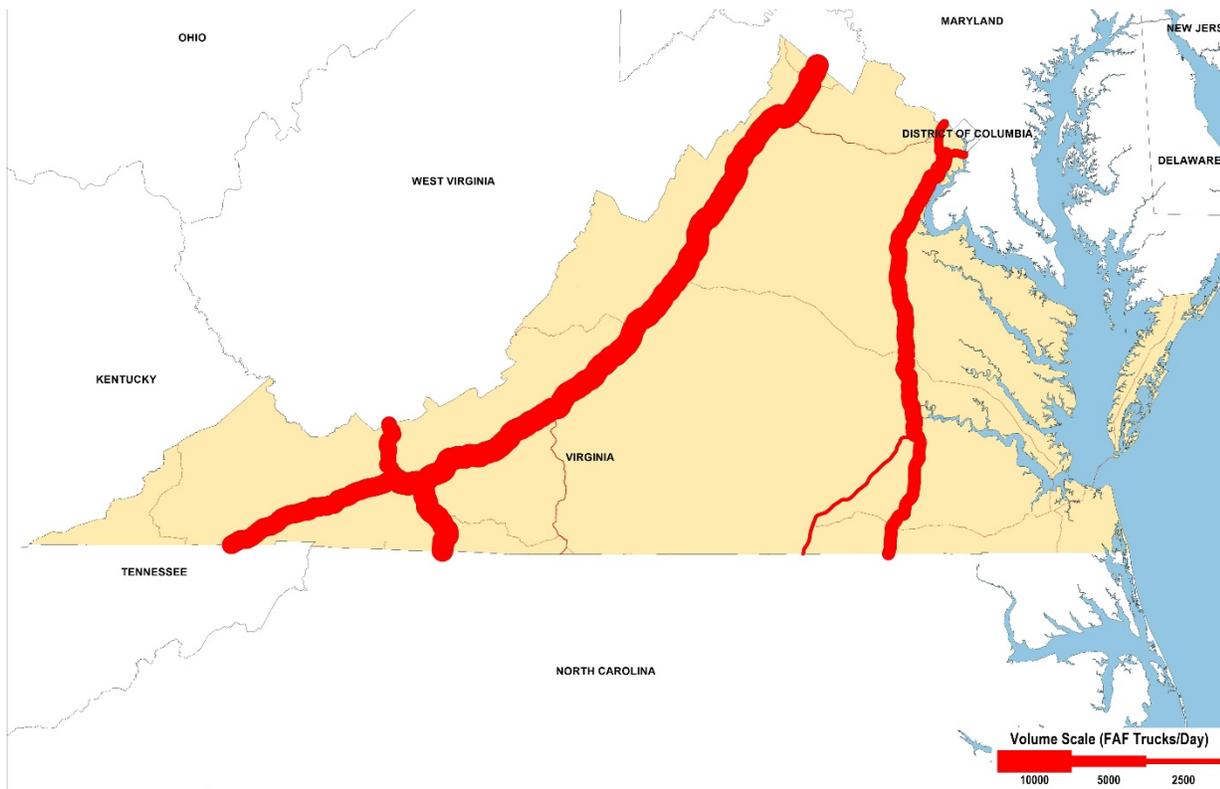
By 2040, over half of the value of freight on Virginia highways—53 percent— will be domestic and international shipments that are just passing through the state.⁷ An estimated 22 percent of the value of truck shipments will be inbound goods, 17 percent will be shipments from Virginia businesses to out of state trading partners, and 8 percent will be in-state shipments.

⁵ VDOT, *I-81 Corridor Improvement Study, Freight Diversion and Forecast Technical Report*

⁶ VDOT, Multimodal Transportation Planning Office, *Virginia Statewide Multimodal Freight Study, Final Report* (VDOT, 2010)

⁷ Virginia Office of Intermodal Planning and Investment, *VTrans2040 Virginia Freight Element*, (2017) <http://www.vtrans2040.com/>.

Projected Volume of Domestic and International Freight Traffic Passing Through Virginia, 2045



Source: FHWA Office of Freight Management and Operations, Freight Analysis Framework (FAF), Version 4.3, 2017. Includes Major flows of domestic and international through freight moving by truck on highway segments with more than twenty-five FAF trucks per day and between places typically more than fifty miles apart.

Congestion continues to be an issue in urban areas along the I-81 corridor—not only for truck traffic, but employees trying to get to work. Commuters in Roanoke, Winchester, Bristol and Harrisonburg can spend between 10 to 20 hours a year stuck in traffic, at an annual cost of \$240 to \$465 per commuter.⁸ This adds up to over 7.3 million hours of delay, costing commuters a total of \$170 million each year.

Major Business Investments on the I-81 Corridor

Improvements to I-81 will provide incentives for area businesses to continue to invest in the corridor. There were 29 companies that announced nearly \$583 million in major facility expansions or new investments along the I-81 corridor in fiscal year 2017.⁹ This accounts for 29 percent of all the projects announced in Virginia that year. This investment will create an estimated 3,675 jobs, according to the companies. Some of the largest investments include:

- Amazon plans to spend \$105 million to build an ecommerce warehouse and distribution center in Frederick County, creating 1,100 jobs.
- Navy Federal Credit Union will invest \$100 million for expanding their services and support facility in Frederick County, employing 1,400 people.
- Wal-Mart will expand a distribution center in Rockingham County, supporting 123 jobs and spending \$6 million.
- Canatal Steel USA in Botetourt County and Steel Dynamics Roanoke Bar Division in Roanoke City will expand their steel structure fabrication and production facilities.
- Hershey Chocolate of Virginia, Inc will expand manufacturing facilities and production lines in Augusta County to support an additional 69 jobs, investing nearly \$50 million.
- Additional investments will be made by such diverse companies as Qualtrax, Inc, Spectrum Brands, Lake Regional Medical, Parkway Brewing Company, Shamrock Farms, MillersCoors LLC, Winchester Metals and 84 Lumber.

The importance of a robust transportation network and highways like I-81 has been well documented by business analysts, economists and the research community.¹⁰ Overall estimates are that every \$1 increase in the highway, street and bridge capital stock generates a total of 30 cents in business savings.¹¹

⁸ "2015 Urban Mobility Scorecard," Urban Mobility Information, Texas A&M Transportation Institute, last accessed November 26, 2018, <https://mobility.tamu.edu/ums/>

⁹ Virginia Economic Development Partnership (VEDP), *Annual Report Fiscal Year 2017*, (VEDP, 2017)

¹⁰ Glen Weisbrod, Don Very, & George Treyz, "Measuring Economic Costs of Urban Traffic Congestion to Business." *Transportation Research Record*, No. 1839 (2003).

¹¹ Nadiri, M. Ishaq and Theofanis P. Mamuneas, *Contribution of Highway Capital to Output and Productivity Growth in the U.S. Economy and Industries*, (Federal Highway Administration, 1998)

Some of these specific benefits include:

- **Staying Competitive:** The overall business environment in the United States is changing, and there is likely to be a greater importance placed on logistics and global transportation networks.¹² The value of total truck freight shipments on Virginia roads is expected to increase from \$386.37 billion in 2016 to \$696.48 billion in 2045. Truck shipments of Virginia goods for export alone are estimated to increase from \$11.16 billion in 2016 to \$44.17 billion—an increase of over 295 percent.¹³
- **Access to Labor:** A better transportation system means that it is easier for employees to get to work and businesses are able to recruit from a larger pool of potential workers. Investment in highways, streets and bridges allows businesses to benefit from an expanded labor pool of specialized workers, which means access to more productive employees.^{14 15}
- **Increased Market Share & More Customers:** A good transportation system means that Virginia I-81 businesses can reach a greater pool of customers. Local industries will benefit from these larger markets and reduced transaction costs.¹⁶
- **Business Expansion:** Virginia I-81 businesses will increase their output of goods and services at higher levels of investment. A modern transportation system enables business growth, expansion and increased hiring. Reducing congestion has a demonstrable impact on shipping volume and on prices, with a rate of return of about 10 percent a year, as a conservative estimate.¹⁷
- **Increase in Demand for Inputs:** As the economy expands, businesses will purchase more goods from their suppliers and will increase their demand for private capital. This includes buying more vehicles, equipment, office supplies or even building new plants and factories.¹⁸
- **Reducing Production Costs:** Economic studies show that reduced costs for inputs is one of the main business benefits from an increase in transportation investment. Typically, businesses pay less for inputs when they have access to larger markets.¹⁹

¹² Ronald McQuaid, Malcom Greig, Austin Smith, & James Cooper, "The Importance of Transport in Business' Location Decisions," January 2003, < http://stopstanstedexpansion.com/documents/sse10_appendix_9.pdf>.

¹³ FHWA Freight Analysis Framework

¹⁴ Daniel Graham, "Agglomeration Economies and Transport Investment", *OECD/ITF Joint Transport Research Centre Discussion Papers*, No. 2007/11 (2007), OECD Publishing, Paris, <https://doi.org/10.1787/234743465814>.

¹⁵ Weisbrod, 20.

¹⁶ McQuaid, 29.

¹⁷ Zhigang Li and Yu Chen, "Estimating the Social Return to Transport Infrastructure: A Price-Difference Approach Applied to a Quasi-Experiment," *Journal of Comparative Economics*, Vol. 41 (3),(2013) pg. 669-683.

¹⁸ The magnitude of the effect of highway capital on output will differ by industry, with the largest difference observed between manufacturing and non-manufacturing industries.

¹⁹ It is an industry standard to use elasticities of supply and demand for materials as a measure of the impact of a change in transportation infrastructure investment. Based on a study conducted by the FHWA, the output elasticity of materials is usually the largest. The elasticity of labor and capital inputs is the second largest.

- **Agglomeration Economies:** Firms benefit by locating near one another, even if they are competitors. This is known as the agglomeration of market activity. This happens because a group of firms will attract a greater number of suppliers and customers than one company alone. Lower transportation costs are a key factor for agglomeration and will be important in attracting new firms to an area.²⁰ Increasing returns to local industries can be anticipated in areas with intermodal linkages or intra-modally, as between major highways. The I-81 corridor has attracted a large share of businesses in freight-related industries, including manufacturing, distribution, transportation and warehousing.
- **More Efficient Operations:** With an efficient transportation system, businesses can make better decisions about their products, inputs and workforce without worrying about poor roadways or congestion. Businesses respond in a variety of ways to congestion. Some businesses may change their mix of labor and capital, reduce the daily deliveries made by a driver or serve a smaller, more specialized market. All of these adjustments can mean a loss for business productivity and market share.²¹
- **Intra-Industry Linkages:** Virginia industries are heavily interlinked, relying on other industries for the supply of inputs or for final processing. These linkages rely on an efficient network of well-maintained highways, roads, bridges and railways.
- **Fostering Innovation:** Transportation infrastructure investment is closely linked with economic competitiveness. Research suggests that highway investment results in industry growth and innovation.²² Innovation results from infrastructure better supporting business activity. Infrastructure also attracts research and development firms for the large return on investment it offers.
- **Emergency Management Operations:** A well-invested transportation system will ensure that evacuation routes remain efficient and accessible during natural disasters. In addition, the proper transportation investments will ensure that road networks are resilient to future super storms.
- **Spillover Savings:** In addition to the cost-lowering impact of reducing road roughness, increasing average speed and reducing total user and travel time costs on firms, reducing congestion has a demonstrable impact on shipping volume and on prices, with a return of about 10 percent a year, as a conservative estimate.²³ Lower transport costs also have a quantifiable effect on firm choices with respect to suppliers and relatively improve firm hiring ability. Reducing transportation costs will have a significant spillover effect on all industries in the state and can be expected to be reflected in relatively lowering the cost of goods within the state, for both consumers and businesses.²⁴

²⁰ Jean-Paul Rodrigue, *The Geography of Transport Systems*, (New York: Routledge, 2017), <https://people.hofstra.edu/geotrans/eng/ch2en/conc2en/ch2c4en.html>.

²¹ Weisbrod, 4.

²² Katherine Bell. "Investing in Infrastructure Means Investing in Innovation." *Harvard Business Review*, March 15, 2012, <https://hbr.org/2012/03/we-know-the-uss-infrastructure/>.

²³ Li, 669-683.

²⁴ ICF Consulting & HLB Decision-Economics, *Economic Effects of Transportation: The Freight Story*, (2002) https://ops.fhwa.dot.gov/freight/documents/freightstory_12902.pdf.

Benefits of Highway Investment: Support from Economic Literature

The overall economic benefits of transportation investment to a state and region's economic activity are well documented in the economics literature. There are numerous studies that have found a positive correlation between transportation infrastructure investment and economic development. Although the exact impact of the investment has varied among studies, the fact that there is a positive relationship is widely accepted.²⁵

Some of the main findings include:

- A recent study commissioned by the U.S. Treasury Department found that for every **\$1 in capital spent on select projects, the net economic benefit ranged between \$3.50 and \$7.00.**²⁶ Released in December 2016, "40 Proposed U.S. Transportation and Water Infrastructure Projects of Major Economic Significance" also explores some of the challenges of completing the work. The report found that a lack of public funding was "by far the most common factor hindering the completion" of the projects.
- A 2005 report by Dr. Robert Shapiro and Dr. Kevin Hassett found that the U.S. transportation network provides more than **\$4 in direct benefits for every \$1 in direct costs** that taxpayers pay to build, operate and maintain this system.²⁷ These economic benefits include lower costs and higher productivity for businesses, and time savings and additional income for workers. The authors noted that the estimate substantially understates the full net benefits of the U.S. transportation network and does not take into account the increased benefit from better access to schools and hospitals, or other ways these investments support economic growth and allow American workers and companies to compete successfully on the global stage.
- According to an analysis by TRIP, a national transportation research group, the average **return to every \$1 spent on highway, street and bridge investment is \$5.20**, which takes the form of lower maintenance costs, fewer delays, improved safety and less congestion. This analysis is based on the U.S. Department of Transportation's Conditions and Performance Report.

²⁵ Economic studies have found output elasticities ranging from as high as 0.56 (Aschauer 1989) to a low of 0.04 (Garcia-Mila and McGuire 1992). This means that a 1 percent increase in highway investment will result in between 0.04 to 0.56 percent increase in output. Most of this variation is because studies have a different focus—looking at different types of investment measures and output at either the national, state or county level.

²⁶ U.S. Department of Treasury, *40 Proposed U.S. Transportation and Water Infrastructure Projects of Major Economic Significance*, (Washington, DC: 2017), <https://www.treasury.gov/connect/blog/Documents/final-infrastructure-report.pdf>.

²⁷ R. Shapiro and K. Hassett, *Healthy Returns: The Economic Impact of Public Investment in Surface Transportation*, (2005), http://www.sonecon.com/docs/studies/returns_0505.pdf.

- A study by Dr. Alicia Munnell of the Federal Reserve Bank of Boston concluded that states that invested more in infrastructure tended to have greater output, more private investment and more employment growth.²⁸ Her work found that a **1 percent increase in public capital will raise national output by 0.15 percent**²⁹. She further notes that the major impact of public capital output is from investment in highways and water and sewer systems. Other public capital investments, such as school buildings and hospitals, had virtually no measurable impact on private production.³⁰ Munnell also concludes that public capital and infrastructure investment have a significant positive impact on a state's private employment growth and private sector output.
- Federal Highway Administration economist Theresa Smith reached similar conclusions, finding that a **10 percent increase in highway capital stock will increase a state's gross state product by 1.2 to 1.3 percent**.³¹
- Additional studies have found that transportation infrastructure investments have an impact on the attractiveness of local communities, which helps determine local economic activity and land values. In general, most studies find that locations close to large transportation infrastructure investment have higher land values.³²

Overall, the benefits from investing to maintain and improve a state's transportation network are greater than the cost and can help support economic growth throughout the economy for years to come.

²⁸ Alicia Munnell, "How Does Public Infrastructure Affect Regional Economic Performance," *New England Economic Review*, September/October 1990 (1990).

²⁹ Munnell's elasticity for private capital is 0.31, so that a 1 percent increase in private capital will raise national output by 0.31 percent. This is in line with other studies of returns from private capital investment.

³⁰ Munnell says she is not implying that government-provided education and health services have no effect on productivity, but rather "the stock of buildings ... may not be the best indicator of the quality of education services; teachers' salaries, for example, might be a better measure."

³¹ Theresa Smith, "The Impact of Highway Infrastructure on Economic Performance," *Public Roads* Vol. 57 – No. 4 (Spring 1994).

³² A synopsis of these studies is available in the Transportation Research Board's *Expanding Metropolitan Highways: Implications for Air Quality and Energy Use – Special Report 245*, 1995.

III. The Economic Impacts of Investing \$2 Billion on I-81 on Major Industry Sectors

An investment of \$2 billion on Interstate 81 would have a positive economic impact on all sectors of the local economy along the corridor. Transportation capital investments trigger immediate economic activity that creates and sustains jobs and tax revenues yet yield long-lived capital assets that facilitate economic growth for the next generation by providing access to jobs, services, materials and markets.

This ripple effect is felt through all sectors of the I-81 corridor economy – contractors purchase materials and workers spend their earnings while they work on projects, creating demand in other sectors of the economy. As jobs are created or sustained, these employees earn more and spend more, and businesses increase sales. This results in larger payroll and sales volumes, providing the state and local municipalities with additional tax revenues to reinvest in Virginia.

The construction activity from a \$2 billion investment along the I-81 corridor will yield the following overall benefits:

- Sales and output by I-81 corridor businesses in all sectors will increase by \$3.4 billion each year.
- These investments will contribute \$1.8 billion to the state gross domestic product (GSP).³³
- State and local tax revenues will grow by \$119.8 million.
- An additional 15,243 jobs would be supported or created throughout the economy, with 51 percent of the employment outside of the construction industry.
- Those workers will earn an average of \$768.2 million per year.

The investment will benefit all sectors of the economy, including an additional \$502 million in output for the manufacturing industry, supporting 1,431 jobs. Output in the wholesale trade, retail trade and real estate industries will each increase by over \$100 million.

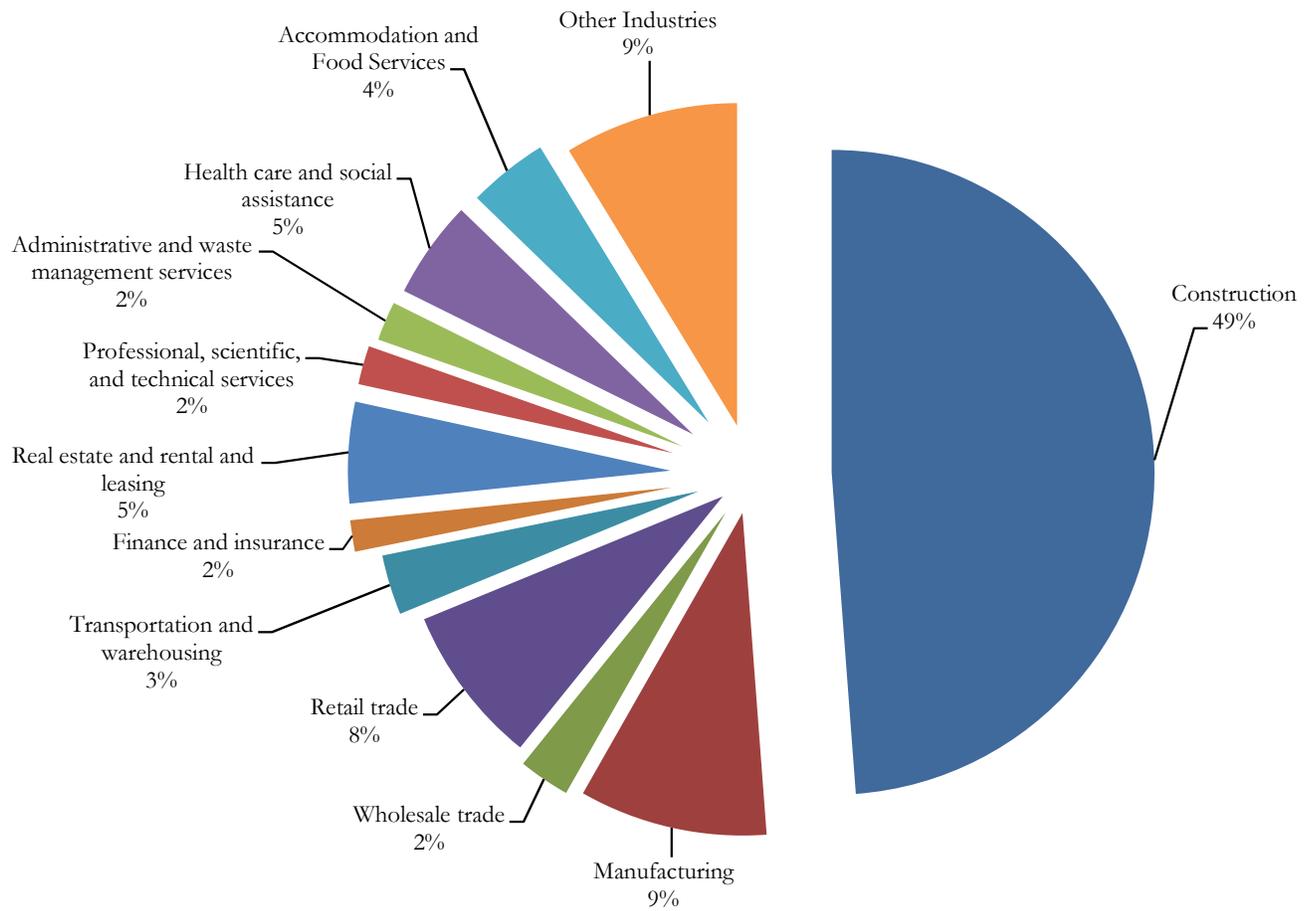
³³ GSP is the value added by an industry to the overall economy. This is the state equivalent of national Gross Domestic Product, or GDP. It is the difference between total sales by businesses in the state and the cost of intermediate goods.

**Economic Impacts of \$2 Billion in Highway and Bridge Construction
Investment in Virginia's I-81 Corridor**

Industry	Impact on Industry Output (in millions)	Jobs Supported/ Created
Agriculture, forestry, fishing, and hunting	\$5.2	63
Mining	\$75.8	373
Utilities	\$17.8	21
Construction	\$2,011.2	7,406
Manufacturing	\$502.2	1,431
Wholesale trade	\$100.4	389
Retail trade	\$105.2	1,213
Transportation and warehousing	\$86.2	457
Information	\$22.6	92
Finance and insurance	\$63.0	237
Real estate and rental and leasing	\$116.2	769
Professional, scientific, and technical services	\$54.8	295
Management of companies and enterprises	\$34.0	130
Administrative and waste management services	\$29.2	296
Educational services	\$10.6	145
Health care and social assistance	\$96.8	745
Arts, entertainment, and recreation	\$5.0	86
Accommodation and Food Services	\$43.2	610
Other services	\$48.2	414
Total industry impact*	\$3,427.8	15,243

*Does not include impact on government output.

I-81 Corridor Jobs Supported/Created by a \$2 Billion Highway and Bridge Construction Investment



The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Agriculture, forestry, fishing, and hunting

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Agriculture, Forestry, Fishing, and Hunting sector:

- Over \$5 million in additional economic output
- A \$2.2 million increase in gross state product (GSP)
- Supporting or creating an additional 63 jobs. These workers will earn \$1.2 million in wages
- \$435.6 thousand in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

Impact of an Additional \$2 Billion	
Industry Output	\$5.2 million
Value Added (contribution to GSP)	\$2.2 million
Employment	63 people
Total Payroll	\$1.2 million
Total Tax Revenues	\$435.6 thousand
State Payroll Tax Contribution	\$3.4 thousand
Federal Payroll Tax Contribution	\$91.8 thousand
State Individual Income Tax Contribution	\$282.6 thousand
State & Local Sales Tax Contribution	\$57.9 thousand

SECTOR OVERVIEW

This sector contributed \$66.7 million to the region's economic activity in 2017, accounting for 0.1% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$116.0 million, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 112 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$17.2 million. These businesses contribute an estimated \$1.4 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$28,225 each year. The Agriculture, Forestry, Fishing and Hunting sector comprises establishments primarily engaged in growing crops, raising animals, harvesting timber, and harvesting fish and other animals from a farm, ranch, or their natural habitats.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$116.0 million	18	0.1%
Value Added (contribution to GSP)	\$66.7 million	18	0.1%
Establishments	112 businesses	17	0.5%
Employment	609 people	17	0.2%
Average Annual Salary	\$28,225	14	
Total Payroll	\$17.2 million	18	0.1%
Total Tax Revenues	\$5.8 million	19	0.2%
State Payroll Tax Contribution	\$48.1 thousand	18	0.1%
Federal Payroll Tax Contribution	\$1.3 million	18	0.1%
State Individual Income Tax Contribution	\$48.1 million	19	0.3%
State & Local Sales Tax Contribution	\$1.8 million	11	0.3%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Mining

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Mining sector:

- Nearly \$76 million in additional economic output
- A \$47.2 million increase in gross state product (GSP)
- Supporting or creating an additional 373 jobs. These workers will earn \$11.4 million in wages
- \$3.6 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$75.8 million
Value Added (contribution to GSP)	\$47.2 million
Employment	373 people
Total Payroll	\$11.4 million
Total Tax Revenues	\$3.6 million
State Payroll Tax Contribution	\$31.9 thousand
Federal Payroll Tax Contribution	\$872.1 thousand
State Individual Income Tax Contribution	\$2.6 million
State & Local Sales Tax Contribution	\$147.1 thousand

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$176.7 million to the region's economic activity in 2017, accounting for 0.3% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$307.1 million, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 57 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$31.9 million. These businesses contribute an estimated \$2.5 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$53,212 each year. The Mining, Quarrying, and Oil and Gas Extraction sector comprises establishments that extract naturally occurring mineral solids, such as coal and ores; liquid minerals, such as crude petroleum; and gases, such as natural gas.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$307.1 million	17	0.3%
Value Added (contribution to GSP)	\$176.7 million	17	0.3%
Establishments	57 businesses	18	0.3%
Employment	599 people	18	0.2%
Average Annual Salary	\$53,212	4	
Total Payroll	\$31.9 million	17	0.2%
Total Tax Revenues	\$7.2 million	18	0.3%
State Payroll Tax Contribution	\$89.2 thousand	17	0.2%
Federal Payroll Tax Contribution	\$2.4 million	17	0.2%
State Individual Income Tax Contribution	\$89.2 million	18	0.4%
State & Local Sales Tax Contribution	\$550.6 thousand	15	0.1%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Utilities

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Utilities sector:

- Nearly \$18 million in additional economic output
- A \$9.2 million increase in gross state product (GSP)
- Supporting or creating an additional 21 jobs. These workers will earn \$2.4 million in wages
- \$3.0 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

Impact of an Additional \$2 Billion	
Industry Output	\$17.8 million
Value Added (contribution to GSP)	\$9.2 million
Employment	21 people
Total Payroll	\$2.4 million
Total Tax Revenues	\$3.0 million
State Payroll Tax Contribution	\$6.7 thousand
Federal Payroll Tax Contribution	\$183.6 thousand
State Individual Income Tax Contribution	\$2.8 million
State & Local Sales Tax Contribution	\$0.0

SECTOR OVERVIEW

This sector contributed \$36.4 million to the region's economic activity in 2017, accounting for 0.1% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$63.3 million, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 44 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$6.2 million. These businesses contribute an estimated \$490.7 thousand in state and federal payroll taxes. Individuals working in this sector earn an average of \$71,127 each year. The Utilities sector comprises establishments engaged in the provision of the following utility services: electric power, natural gas, steam supply, water supply, and sewage removal.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$63.3 million	19	0.1%
Value Added (contribution to GSP)	\$36.4 million	19	0.1%
Establishments	44 businesses	19	0.2%
Employment	87 people	19	0.02%
Average Annual Salary	\$71,127	1	
Total Payroll	\$6.2 million	19	0.04%
Total Tax Revenues	\$12.1 million	17	0.4%
State Payroll Tax Contribution	\$17.3 thousand	19	0.04%
Federal Payroll Tax Contribution	\$473.4 thousand	19	0.04%
State Individual Income Tax Contribution	\$17.3 million	15	1.2%
State & Local Sales Tax Contribution	\$0.0	18 (tied)	0.0%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Construction

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Construction sector:

- Over \$2 billion in additional economic output
- A \$1.0 billion increase in gross state product (GSP)
- Supporting or creating an additional 7,406 jobs. These workers will earn \$438.8 million in wages
- \$57.7 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$2.0 billion
Value Added (contribution to GSP)	\$1.0 billion
Employment	7,406 people
Total Payroll	\$438.8 million
Total Tax Revenues	\$57.7 million
State Payroll Tax Contribution	\$1.2 million
Federal Payroll Tax Contribution	\$33.6 million
State Individual Income Tax Contribution	\$17.1 million
State & Local Sales Tax Contribution	\$5.8 million

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$2.1 billion to the region's economic activity in 2017, accounting for 3.7% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$3.7 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 2,104 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$806.6 million. These businesses contribute an estimated \$64.0 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$46,639 each year. The Construction sector comprises establishments primarily engaged in the construction of buildings or engineering projects (e.g., highways and utility systems).

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$3.7 billion	8	3.7%
Value Added (contribution to GSP)	\$2.1 billion	8	3.7%
Establishments	2,104 businesses	4	9.7%
Employment	17,295 people	5	4.7%
Average Annual Salary	\$46,639	10	
Total Payroll	\$806.6 million	5	5.6%
Total Tax Revenues	\$115.8 million	8	4.2%
State Payroll Tax Contribution	\$2.3 million	5	5.5%
Federal Payroll Tax Contribution	\$61.7 million	5	5.5%
State Individual Income Tax Contribution	\$2.3 million	7	4.3%
State & Local Sales Tax Contribution	\$11.9 million	6	1.8%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Manufacturing

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Manufacturing sector:

- Over \$502 million in additional economic output
- A \$176.8 million increase in gross state product (GSP)
- Supporting or creating an additional 1,431 jobs. These workers will earn \$78.2 million in wages
- \$8.4 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$502.2 million
Value Added (contribution to GSP)	\$176.8 million
Employment	1,431 people
Total Payroll	\$78.2 million
Total Tax Revenues	\$8.4 million
State Payroll Tax Contribution	\$219.0 thousand
Federal Payroll Tax Contribution	\$6.0 million
State Individual Income Tax Contribution	\$1.9 million
State & Local Sales Tax Contribution	\$303.4 thousand

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$11.2 billion to the region's economic activity in 2017, accounting for 19.6% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$19.4 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 888 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$3.0 billion. These businesses contribute an estimated \$241.0 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$50,106 each year. The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$19.4 billion	1	19.6%
Value Added (contribution to GSP)	\$11.2 billion	1	19.6%
Establishments	888 businesses	11	4.1%
Employment	60,651 people	2	16.6%
Average Annual Salary	\$50,106	8	
Total Payroll	\$3.0 billion	1	21.3%
Total Tax Revenues	\$341.0 million	2	12.5%
State Payroll Tax Contribution	\$8.5 million	1	20.8%
Federal Payroll Tax Contribution	\$232.5 million	1	20.8%
State Individual Income Tax Contribution	\$8.5 million	3	8.7%
State & Local Sales Tax Contribution	\$19.2 million	4	3.0%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Wholesale trade

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Wholesale Trade sector:

- Over \$100 million in additional economic output
- A \$68.2 million increase in gross state product (GSP)
- Supporting or creating an additional 389 jobs. These workers will earn \$27.4 million in wages
- \$4.1 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

Impact of an Additional \$2 Billion	
Industry Output	\$100.4 million
Value Added (contribution to GSP)	\$68.2 million
Employment	389 people
Total Payroll	\$27.4 million
Total Tax Revenues	\$4.1 million
State Payroll Tax Contribution	\$76.7 thousand
Federal Payroll Tax Contribution	\$2.1 million
State Individual Income Tax Contribution	\$913.2 thousand
State & Local Sales Tax Contribution	\$1.0 million

SECTOR OVERVIEW

This sector contributed \$3.3 billion to the region's economic activity in 2017, accounting for 5.8% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$5.8 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 950 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$864.0 million. These businesses contribute an estimated \$68.5 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$52,213 each year. The Wholesale Trade sector comprises establishments engaged in wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$5.8 billion	5	5.8%
Value Added (contribution to GSP)	\$3.3 billion	5	5.8%
Establishments	950 businesses	10	4.4%
Employment	16,548 people	7	4.5%
Average Annual Salary	\$52,213	5	
Total Payroll	\$864.0 million	4	6.0%
Total Tax Revenues	\$158.5 million	7	5.8%
State Payroll Tax Contribution	\$2.4 million	4	5.9%
Federal Payroll Tax Contribution	\$66.1 million	4	5.9%
State Individual Income Tax Contribution	\$2.4 million	8	4.2%
State & Local Sales Tax Contribution	\$51.1 million	3	7.9%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Retail trade

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Retail Trade sector:

- Over \$105 million in additional economic output
- A \$69.6 million increase in gross state product (GSP)
- Supporting or creating an additional 1,213 jobs. These workers will earn \$31.4 million in wages
- \$11.5 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

Impact of an Additional \$2 Billion	
Industry Output	\$105.2 million
Value Added (contribution to GSP)	\$69.6 million
Employment	1,213 people
Total Payroll	\$31.4 million
Total Tax Revenues	\$11.5 million
State Payroll Tax Contribution	\$87.9 thousand
Federal Payroll Tax Contribution	\$2.4 million
State Individual Income Tax Contribution	\$1.1 million
State & Local Sales Tax Contribution	\$7.9 million

SECTOR OVERVIEW

This sector contributed \$3.4 billion to the region's economic activity in 2017, accounting for 5.9% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$5.8 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 3,529 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$1.3 billion. These businesses contribute an estimated \$105.8 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$24,651 each year. The Retail Trade sector comprises establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$5.8 billion	4	5.9%
Value Added (contribution to GSP)	\$3.4 billion	4	5.9%
Establishments	3,529 businesses	1	16.2%
Employment	54,124 people	3	14.8%
Average Annual Salary	\$24,651	16	
Total Payroll	\$1.3 billion	3	9.3%
Total Tax Revenues	\$536.1 million	1	19.6%
State Payroll Tax Contribution	\$3.7 million	3	9.1%
Federal Payroll Tax Contribution	\$102.1 million	3	9.1%
State Individual Income Tax Contribution	\$3.7 million	6	5.3%
State & Local Sales Tax Contribution	\$381.5 million	1	59.1%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Transportation and warehousing

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Transportation and Warehousing sector:

- Over \$86 million in additional economic output
- A \$41.8 million increase in gross state product (GSP)
- Supporting or creating an additional 457 jobs. These workers will earn \$21.8 million in wages
- \$2.4 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$86.2 million
Value Added (contribution to GSP)	\$41.8 million
Employment	457 people
Total Payroll	\$21.8 million
Total Tax Revenues	\$2.4 million
State Payroll Tax Contribution	\$61.0 thousand
Federal Payroll Tax Contribution	\$1.7 million
State Individual Income Tax Contribution	\$630.2 thousand
State & Local Sales Tax Contribution	\$9.1 thousand

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$2.1 billion to the region's economic activity in 2017, accounting for 3.8% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$3.7 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 699 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$766.8 million. These businesses contribute an estimated \$60.8 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$44,523 each year. The Transportation and Warehousing sector includes industries providing transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$3.7 billion	7	3.8%
Value Added (contribution to GSP)	\$2.1 billion	7	3.8%
Establishments	699 businesses	12	3.2%
Employment	17,223 people	6	4.7%
Average Annual Salary	\$44,523	11	
Total Payroll	\$766.8 million	7	5.4%
Total Tax Revenues	\$85.0 million	10	3.1%
State Payroll Tax Contribution	\$2.1 million	7	5.2%
Federal Payroll Tax Contribution	\$58.7 million	7	5.2%
State Individual Income Tax Contribution	\$2.1 million	13	2.6%
State & Local Sales Tax Contribution	\$470.1 thousand	16	0.1%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Information

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Information sector:

- Nearly \$23 million in additional economic output
- A \$13.2 million increase in gross state product (GSP)
- Supporting or creating an additional 92 jobs. These workers will earn \$4.8 million in wages
- \$948.3 thousand in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

Impact of an Additional \$2 Billion	
Industry Output	\$22.6 million
Value Added (contribution to GSP)	\$13.2 million
Employment	92 people
Total Payroll	\$4.8 million
Total Tax Revenues	\$948.3 thousand
State Payroll Tax Contribution	\$13.4 thousand
Federal Payroll Tax Contribution	\$367.2 thousand
State Individual Income Tax Contribution	\$501.2 thousand
State & Local Sales Tax Contribution	\$66.5 thousand

SECTOR OVERVIEW

This sector contributed \$968.5 million to the region's economic activity in 2017, accounting for 1.7% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$1.7 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 372 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$268.3 million. These businesses contribute an estimated \$21.3 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$50,438 each year. The Information sector comprises establishments engaged in producing and distributing information and cultural products, providing the means to transmit or distribute these products as well as data or communications.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$1.7 billion	14	1.7%
Value Added (contribution to GSP)	\$968.5 million	14	1.7%
Establishments	372 businesses	13	1.7%
Employment	5,319 people	14	1.5%
Average Annual Salary	\$50,438	7	
Total Payroll	\$268.3 million	13	1.9%
Total Tax Revenues	\$55.1 million	14	2.0%
State Payroll Tax Contribution	\$751.2 thousand	13	1.8%
Federal Payroll Tax Contribution	\$20.5 million	13	1.8%
State Individual Income Tax Contribution	\$751.2 million	10	3.1%
State & Local Sales Tax Contribution	\$4.9 million	8	0.8%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Finance and insurance

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Finance and Insurance sector:

- \$63 million in additional economic output
- A \$35.4 million increase in gross state product (GSP)
- Supporting or creating an additional 237 jobs. These workers will earn \$13.8 million in wages
- \$1.9 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$63.0 million
Value Added (contribution to GSP)	\$35.4 million
Employment	237 people
Total Payroll	\$13.8 million
Total Tax Revenues	\$1.9 million
State Payroll Tax Contribution	\$38.6 thousand
Federal Payroll Tax Contribution	\$1.1 million
State Individual Income Tax Contribution	\$819.2 thousand
State & Local Sales Tax Contribution	\$1.1 thousand

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$2.5 billion to the region's economic activity in 2017, accounting for 4.3% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$4.3 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 1,423 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$795.2 million. These businesses contribute an estimated \$63.1 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$56,082 each year. The Finance and Insurance sector comprises establishments primarily engaged in financial transactions (including the creation, liquidation, or change in ownership of financial assets) and/or in facilitating financial transactions.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$4.3 billion	6	4.3%
Value Added (contribution to GSP)	\$2.5 billion	6	4.3%
Establishments	1,423 businesses	7	6.5%
Employment	14,180 people	11	3.9%
Average Annual Salary	\$56,082	3	
Total Payroll	\$795.2 million	6	5.6%
Total Tax Revenues	\$112.1 million	9	4.1%
State Payroll Tax Contribution	\$2.2 million	6	5.4%
Federal Payroll Tax Contribution	\$60.8 million	6	5.4%
State Individual Income Tax Contribution	\$2.2 million	5	5.3%
State & Local Sales Tax Contribution	\$74.4 thousand	17	0.0%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Real estate and rental and leasing

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Real Estate and Rental and Leasing sector:

- Over \$116 million in additional economic output
- A \$82.2 million increase in gross state product (GSP)
- Supporting or creating an additional 769 jobs. These workers will earn \$18.2 million in wages
- \$23.2 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$116.2 million
Value Added (contribution to GSP)	\$82.2 million
Employment	769 people
Total Payroll	\$18.2 million
Total Tax Revenues	\$23.2 million
State Payroll Tax Contribution	\$51.0 thousand
Federal Payroll Tax Contribution	\$1.4 million
State Individual Income Tax Contribution	\$21.6 million
State & Local Sales Tax Contribution	\$91.4 thousand

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$6.6 billion to the region's economic activity in 2017, accounting for 11.6% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$11.5 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 968 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$183.8 million. These businesses contribute an estimated \$14.6 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$37,755 each year. The Real Estate and Rental and Leasing sector comprises establishments primarily engaged in renting, leasing, or otherwise allowing the use of tangible or intangible assets, and establishments providing related services.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$11.5 billion	2	11.6%
Value Added (contribution to GSP)	\$6.6 billion	2	11.6%
Establishments	968 businesses	9	4.5%
Employment	4,867 people	15	1.3%
Average Annual Salary	\$37,755	12	
Total Payroll	\$183.8 million	14	1.3%
Total Tax Revenues	\$158.7 million	6	5.8%
State Payroll Tax Contribution	\$514.5 thousand	14	1.3%
Federal Payroll Tax Contribution	\$14.1 million	14	1.3%
State Individual Income Tax Contribution	\$514.5 million	1	14.7%
State & Local Sales Tax Contribution	\$7.4 million	7	1.1%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Professional, scientific, and technical services

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Professional, Scientific, and Technical Services sector:

- Nearly \$55 million in additional economic output
- A \$34.0 million increase in gross state product (GSP)
- Supporting or creating an additional 295 jobs. These workers will earn \$21.8 million in wages
- \$4.1 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$54.8 million
Value Added (contribution to GSP)	\$34.0 million
Employment	295 people
Total Payroll	\$21.8 million
Total Tax Revenues	\$4.1 million
State Payroll Tax Contribution	\$61.0 thousand
Federal Payroll Tax Contribution	\$1.7 million
State Individual Income Tax Contribution	\$2.3 million
State & Local Sales Tax Contribution	\$51.6 thousand

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$2.0 billion to the region's economic activity in 2017, accounting for 3.5% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$3.5 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 1,871 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$759.3 million. These businesses contribute an estimated \$60.2 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$51,650 each year. The Professional, Scientific, and Technical Services sector comprises establishments that specialize in performing professional, scientific, and technical activities for others.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$3.5 billion	9	3.5%
Value Added (contribution to GSP)	\$2.0 billion	9	3.5%
Establishments	1,871 businesses	6	8.6%
Employment	14,701 people	10	4.0%
Average Annual Salary	\$51,650	6	
Total Payroll	\$759.3 million	8	5.3%
Total Tax Revenues	\$178.0 million	4	6.5%
State Payroll Tax Contribution	\$2.1 million	8	5.2%
Federal Payroll Tax Contribution	\$58.1 million	8	5.2%
State Individual Income Tax Contribution	\$2.1 million	2	12.4%
State & Local Sales Tax Contribution	\$3.0 million	9	0.5%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Management of companies and enterprises

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Management of Companies and Enterprises sector:

- \$34 million in additional economic output
- A \$20.4 million increase in gross state product (GSP)
- Supporting or creating an additional 130 jobs. These workers will earn \$14.0 million in wages
- \$1.4 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

Impact of an Additional \$2 Billion	
Industry Output	\$34.0 million
Value Added (contribution to GSP)	\$20.4 million
Employment	130 people
Total Payroll	\$14.0 million
Total Tax Revenues	\$1.4 million
State Payroll Tax Contribution	\$39.2 thousand
Federal Payroll Tax Contribution	\$1.1 million
State Individual Income Tax Contribution	\$319.6 thousand
State & Local Sales Tax Contribution	\$0.0

SECTOR OVERVIEW

This sector contributed \$1.6 billion to the region's economic activity in 2017, accounting for 2.8% of the region's Gross State Product (GSP).* Total sales in the industry were an estimated \$2.8 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 135 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$609.9 million. These businesses contribute an estimated \$48.4 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$66,406 each year. The Management of Companies and Enterprises sector comprises establishments that hold the securities of (or other equity interests in) companies and enterprises.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$2.8 billion	10	2.8%
Value Added (contribution to GSP)	\$1.6 billion	10	2.8%
Establishments	135 businesses	16	0.6%
Employment	9,185 people	12	2.5%
Average Annual Salary	\$66,406	2	
Total Payroll	\$609.9 million	10	4.3%
Total Tax Revenues	\$70.9 million	12	2.6%
State Payroll Tax Contribution	\$1.7 million	10	4.2%
Federal Payroll Tax Contribution	\$46.7 million	10	4.2%
State Individual Income Tax Contribution	\$1.7 million	14	2.4%
State & Local Sales Tax Contribution	\$0.0	18 (tied)	0.0%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Administrative and waste management services

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Administrative and Waste Management Services sector:

- Over \$29 million in additional economic output
- A \$18.4 million increase in gross state product (GSP)
- Supporting or creating an additional 296 jobs. These workers will earn \$10.0 million in wages
- \$1.5 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$29.2 million
Value Added (contribution to GSP)	\$18.4 million
Employment	296 people
Total Payroll	\$10.0 million
Total Tax Revenues	\$1.5 million
State Payroll Tax Contribution	\$28.0 thousand
Federal Payroll Tax Contribution	\$765.0 thousand
State Individual Income Tax Contribution	\$673.1 thousand
State & Local Sales Tax Contribution	\$11.7 thousand

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$1.1 billion to the region's economic activity in 2017, accounting for 1.9% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$1.9 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 985 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$479.3 million. These businesses contribute an estimated \$38.0 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$32,582 each year. The Administrative and Support and Waste Management and Remediation Services sector comprises establishments performing routine support activities for the day-to-day operations of other organizations.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$1.9 billion	13	1.9%
Value Added (contribution to GSP)	\$1.1 billion	13	1.9%
Establishments	985 businesses	8	4.5%
Employment	14,712 people	9	4.0%
Average Annual Salary	\$32,582	13	
Total Payroll	\$479.3 million	11	3.4%
Total Tax Revenues	\$72.2 million	11	2.6%
State Payroll Tax Contribution	\$1.3 million	11	3.3%
Federal Payroll Tax Contribution	\$36.7 million	11	3.3%
State Individual Income Tax Contribution	\$1.3 million	9	3.6%
State & Local Sales Tax Contribution	\$701.1 thousand	14	0.1%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Educational services

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Educational Services sector:

- Nearly \$11 million in additional economic output
- A \$6.6 million increase in gross state product (GSP)
- Supporting or creating an additional 145 jobs. These workers will earn \$4.6 million in wages
- \$544.0 thousand in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

Impact of an Additional \$2 Billion	
Industry Output	\$10.6 million
Value Added (contribution to GSP)	\$6.6 million
Employment	145 people
Total Payroll	\$4.6 million
Total Tax Revenues	\$544.0 thousand
State Payroll Tax Contribution	\$12.9 thousand
Federal Payroll Tax Contribution	\$351.9 thousand
State Individual Income Tax Contribution	\$156.4 thousand
State & Local Sales Tax Contribution	\$22.8 thousand

SECTOR OVERVIEW

This sector contributed \$373.8 million to the region's economic activity in 2017, accounting for 0.7% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$649.8 million, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 243 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$172.9 million. These businesses contribute an estimated \$13.7 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$24,368 each year. The Educational Services sector comprises establishments that provide instruction and training in a wide variety of subjects.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$649.8 million	15	0.7%
Value Added (contribution to GSP)	\$373.8 million	15	0.7%
Establishments	243 businesses	15	1.1%
Employment	7,097 people	13	1.9%
Average Annual Salary	\$24,368	17	
Total Payroll	\$172.9 million	15	1.2%
Total Tax Revenues	\$22.7 million	15	0.8%
State Payroll Tax Contribution	\$484.2 thousand	15	1.2%
Federal Payroll Tax Contribution	\$13.2 million	15	1.2%
State Individual Income Tax Contribution	\$484.2 million	16	0.8%
State & Local Sales Tax Contribution	\$1.3 million	12	0.2%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Health care and social assistance

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Health Care and Social Assistance sector:

- Nearly \$97 million in additional economic output
- A \$57.8 million increase in gross state product (GSP)
- Supporting or creating an additional \$744.8 jobs. These workers will earn \$36.8 million in wages
- \$3.6 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$96.8 million
Value Added (contribution to GSP)	\$57.8 million
Employment	745 people
Total Payroll	\$36.8 million
Total Tax Revenues	\$3.6 million
State Payroll Tax Contribution	\$103.0 thousand
Federal Payroll Tax Contribution	\$2.8 million
State Individual Income Tax Contribution	\$703.9 thousand
State & Local Sales Tax Contribution	\$9.3 thousand

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$4.4 billion to the region's economic activity in 2017, accounting for 7.8% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$7.7 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 2,367 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$3.0 billion. These businesses contribute an estimated \$239.9 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$49,391 each year. The Health Care and Social Assistance sector comprises establishments providing health care and social assistance for individuals.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$7.7 billion	3	7.8%
Value Added (contribution to GSP)	\$4.4 billion	3	7.8%
Establishments	2,367 businesses	3	10.9%
Employment	61,249 people	1	16.8%
Average Annual Salary	\$49,391	9	
Total Payroll	\$3.0 billion	2	21.2%
Total Tax Revenues	\$298.5 million	3	10.9%
State Payroll Tax Contribution	\$8.5 million	2	20.7%
Federal Payroll Tax Contribution	\$231.4 million	2	20.7%
State Individual Income Tax Contribution	\$8.5 million	4	6.2%
State & Local Sales Tax Contribution	\$716.0 thousand	13	0.1%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Arts, entertainment, and recreation

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Arts, Entertainment, and Recreation sector:

- \$5 million in additional economic output
- A \$2.6 million increase in gross state product (GSP)
- Supporting or creating an additional 86 jobs. These workers will earn \$1.6 million in wages
- \$287.4 thousand in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

Impact of an Additional \$2 Billion	
Industry Output	\$5.0 million
Value Added (contribution to GSP)	\$2.6 million
Employment	86 people
Total Payroll	\$1.6 million
Total Tax Revenues	\$287.4 thousand
State Payroll Tax Contribution	\$4.5 thousand
Federal Payroll Tax Contribution	\$122.4 thousand
State Individual Income Tax Contribution	\$134.2 thousand
State & Local Sales Tax Contribution	\$26.4 thousand

SECTOR OVERVIEW

This sector contributed \$203.3 million to the region's economic activity in 2017, accounting for 0.4% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$353.4 million, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 315 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$65.2 million. These businesses contribute an estimated \$5.2 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$17,138 each year. The Arts, Entertainment, and Recreation sector includes a wide range of establishments that operate facilities or provide services to meet varied cultural, entertainment, and recreational interests of their patrons.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$353.4 million	16	0.4%
Value Added (contribution to GSP)	\$203.3 million	16	0.4%
Establishments	315 businesses	14	1.4%
Employment	3,807 people	16	1.0%
Average Annual Salary	\$17,138	18	
Total Payroll	\$65.2 million	16	0.5%
Total Tax Revenues	\$13.2 million	16	0.5%
State Payroll Tax Contribution	\$182.7 thousand	16	0.4%
Federal Payroll Tax Contribution	\$5.0 million	16	0.4%
State Individual Income Tax Contribution	\$182.7 million	17	0.6%
State & Local Sales Tax Contribution	\$2.1 million	10	0.3%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Accommodation and food services

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Accommodation and Food Services sector:

- Over \$43 million in additional economic output
- A \$24.0 million increase in gross state product (GSP)
- Supporting or creating an additional 610 jobs. These workers will earn \$12.4 million in wages
- \$2.8 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$43.2 million
Value Added (contribution to GSP)	\$24.0 million
Employment	610 people
Total Payroll	\$12.4 million
Total Tax Revenues	\$2.8 million
State Payroll Tax Contribution	\$34.7 thousand
Federal Payroll Tax Contribution	\$948.6 thousand
State Individual Income Tax Contribution	\$346.7 thousand
State & Local Sales Tax Contribution	\$1.5 million

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$1.6 billion to the region's economic activity in 2017, accounting for 2.7% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$2.7 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 2,043 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$669.1 million. These businesses contribute an estimated \$53.1 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$15,914 each year. The Accommodation and Food Services sector comprises establishments providing customers with lodging and/or preparing meals, snacks, and beverages for immediate consumption.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$2.7 billion	11	2.7%
Value Added (contribution to GSP)	\$1.6 billion	11	2.7%
Establishments	2,043 businesses	5	9.4%
Employment	42,041 people	4	11.5%
Average Annual Salary	\$15,914	19	
Total Payroll	\$669.1 million	9	4.7%
Total Tax Revenues	\$173.3 million	5	6.3%
State Payroll Tax Contribution	\$1.9 million	9	4.6%
Federal Payroll Tax Contribution	\$51.2 million	9	4.6%
State Individual Income Tax Contribution	\$1.9 million	12	2.6%
State & Local Sales Tax Contribution	\$96.4 million	2	14.9%

The Economic Benefits of \$2 Billion in Highway and Bridge Construction Investment in Virginia's I-81 Corridor...

Other services

A \$2 billion increase in highway, street and bridge investment in Virginia's I-81 corridor will generate the following economic benefits to the Other Services sector:

- Over \$48 million in additional economic output
- A \$27.0 million increase in gross state product (GSP)
- Supporting or creating an additional 414 jobs. These workers will earn \$16.6 million in wages
- \$2.2 million in additional tax revenues

Increasing transportation spending will have a positive economic impact on this sector in two ways. The first is through direct purchases from transportation construction firms and suppliers involved in building, maintaining and operating the region's highways and bridges. The second effect is when employees of transportation firms spend their wages and make purchases throughout the economy.

Impact of an Additional \$2 Billion	
Industry Output	\$48.2 million
Value Added (contribution to GSP)	\$27.0 million
Employment	414 people
Total Payroll	\$16.6 million
Total Tax Revenues	\$2.2 million
State Payroll Tax Contribution	\$46.5 thousand
Federal Payroll Tax Contribution	\$1.3 million
State Individual Income Tax Contribution	\$630.1 thousand
State & Local Sales Tax Contribution	\$301.5 thousand

* GSP is the value added by an industry to the overall economy. GSP for Virginia's I-81 corridor is estimated to be \$57.07 billion in 2017, based on state data from the U.S. Bureau of Economic Analysis. That is the difference between total sales and the intermediate goods. Gross output is the measure of total industry sales for both intermediate and final goods. Gross output for Virginia's I-81 corridor is estimated to be \$99.21 billion in 2017.

SECTOR OVERVIEW

This sector contributed \$1.3 billion to the region's economic activity in 2017, accounting for 2.2% of the region's Gross State Product (GSP).^{*} Total sales in the industry were an estimated \$2.2 billion, which includes goods and services for final consumers as well as any inputs sold to other industries.

This sector includes 2,647 establishments and sole proprietorships in Virginia's I-81 corridor with an existing payroll valued at \$400.9 million. These businesses contribute an estimated \$31.8 million in state and federal payroll taxes. Individuals working in this sector earn an average of \$25,444 each year. The Other Services (except Public Administration) sector comprises establishments engaged in providing services not specifically provided for elsewhere in the classification system.

	Current Value	Regional Ranking	Percentage of Region Total
Industry Output	\$2.2 billion	12	2.2%
Value Added (contribution to GSP)	\$1.3 billion	12	2.2%
Establishments	2,647 businesses	2	12.2%
Employment	15,756 people	8	4.3%
Average Annual Salary	\$25,444	15	
Total Payroll	\$400.9 million	12	2.8%
Total Tax Revenues	\$69.8 million	13	2.6%
State Payroll Tax Contribution	\$1.1 million	12	2.7%
Federal Payroll Tax Contribution	\$30.7 million	12	2.7%
State Individual Income Tax Contribution	\$1.1 million	11	2.6%
State & Local Sales Tax Contribution	\$14.1 million	5	2.2%

IV. Methodology

According to the Virginia Commonwealth Transportation Board, Virginia's I-81 corridor comprises the following cities, counties and districts: Augusta, Botetourt, Frederick, Montgomery, Pulaski, Roanoke, Rockbridge, Rockingham, Shenandoah, Smyth, Washington, and Wythe Counties; the cities of Bristol, Harrisonburg, Roanoke, Salem, Staunton and Winchester; and the Districts of Bristol, Salem and Staunton.

The impact of an increase in transportation construction spending is calculated using the U.S. Department of Commerce Regional Input-Output Modeling System (RIMS II). RIMS II is based on input output (I-O) tables. For a given industry, the I-O tables show the industrial distribution of inputs purchased and outputs sold.

Research shows that RIMS II multipliers are similar to other regional I-O models based on in-depth and often expensive surveys. According to the U.S. Department of Commerce, RIMS multipliers have been used to estimate such things as the regional impact of military base closings, tourist expenditures, new energy facilities, offshore drilling and the opening or closing of manufacturing plants and other facilities. The highway, street and bridge construction multipliers in this report are used frequently to analyze the impact of new construction projects, including transportation construction. The construction multipliers are specific to the region comprising Virginia's I-81 corridor, and include the following counties: Augusta, Botetourt, Bristol, Buena Vista, Frederick, Harrisonburg, Lexington, Montgomery, Pulaski, Radford, Rockbridge, Rockingham, Roanoke, Roanoke (Independent City), Salem, Shenandoah, Smyth, Staunton, Washington, Waynesboro, and Winchester. These multipliers are based on benchmark regional data from 2016 and industry data from the 2007 benchmark series, as published by the U.S. Department of Commerce. These multipliers are standard for this type of analysis and are the latest information available.

Industry value added (contribution to GSP) for Virginia is the most recent data from the U.S. Bureau of Economic Analysis GSP estimates for the state, broken out by industry, for 2017. Value added for each industry in Virginia's I-81 corridor was estimated by taking the I-81 corridor's percent share of employment for each industry and multiplying it by Virginia gross output by industry. Industry output for Virginia was estimated by taking Virginia's percent share of national GSP for each industry and multiplying it by national gross output by industry. Industry output for Virginia's I-81 corridor was estimated by taking the I-81 corridor's percent share of employment for each industry and multiplying it by Virginia gross output by industry.

The state payroll tax rate is calculated using the average employer tax rate as a percent of total wages. The source for this information is the National Association of State Workforce Agencies (NASWA) and the U.S. Department of Labor Employment Training Administration (ETA) Financial Handbook 394. The federal payroll tax rate is estimated to be 7.65 percent.

Total Virginia individual income tax collections in FY 2017 were \$13.05 billion, from the Virginia Department of Taxation Fiscal Year 2017 Annual Report. Total income tax collections by county and city were from Table 1.7 of the Virginia Department of Taxation Fiscal Year 2017 Annual Report, and were for taxable year 2015. Total income tax collections for Virginia's I-81 corridor were estimated by including only the counties and cities in the region. The region's share of income tax liability was calculated by dividing the region's total 2015 income tax collections by the statewide total of 2015 income tax collections; the I-81 corridor's income tax collections are estimated to comprise 7.1 percent of Virginia income tax collections in 2015. The I-81 corridor was then estimated to comprise 7.1 percent of total Virginia income tax collections in FY 2017, totaling \$927.63 million. Income tax collections

attributable to each industry in Virginia were calculated by multiplying each industry's percent of Virginia GSP by total Virginia income tax revenues in FY 2017. Income tax collections attributable to each industry in Virginia's I-81 corridor were calculated by multiplying each industry's percent of Virginia GSP by total I-81 corridor income tax revenues in FY 2017.

State and local sales and use tax revenues for Virginia are estimated by multiplying the sales tax rate for each locality by the amount of taxable sales for each industry in each county and city, and then adding up the estimated revenues. In 2017, the sales tax rates for Virginia were: 6 percent in Hampton Roads (comprising Isle of Wight and Southampton Counties, and the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk and Virginia Beach); 6 percent in Northern Virginia (comprising Arlington, Fairfax, Loudoun, and Prince William Counties, and the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park); 7 percent in Historic Triangle (comprising James City and York Counties and the city of Williamsburg); and 5.3 percent everywhere else in Virginia. Taxable sales by industry, county and city in calendar year 2017 were provided in the 2017 annual report by the Center for

Economic Policy Studies at the Weldon Cooper Center for Public Service at the University of Virginia. State and local sales and use tax revenues for Virginia's I-81 corridor were estimated by including only the counties and cities in the region.

Employment and economic impact of the public sector is not included in the 19 sector analysis.

Employment and establishment data was calculated using the U.S. Census Bureau's County Business Patterns 2016 data, the latest year available. Since County Business Patterns data underestimates employment in the Agriculture, Forestry, Fishing and Hunting sector, employment and establishment data for that sector was calculated using the U.S. Department of Labor's Quarterly Census of Employment and Wages for 2017. However, Quarterly Census of Employment and Wages data was not available for Botetourt, Frederick, Roanoke, Rockbridge, Rockingham, Shenandoah, and Smyth Counties as well as the cities of Harrisonburg, Roanoke, Salem, and Winchester for that sector, so County Business Patterns employment and establishment data was used for those counties. All 2016 payroll data has been adjusted for inflation to 2017 dollars using the Bureau of Labor Statistics Consumer Price Index.

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