GO VIRGINIA | VIRGINIA INITIATIVE FOR GROWTH & OPPORTUNITY IN EACH REGION

CREC CENTER FOR REGIONAL ECONOMIC COMPETITIVENESS

GOVA Region 7 Growth and Diversification Plan

2025

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EXECUTIVE SUMMARY

GO Virginia Region 7 (Northern Virginia) has long served as the Commonwealth's economic engine, powered by a high-wage, high-skill economy that leverages its proximity to the federal government and its dense concentration of technology, professional services, and data infrastructure. However, recent federal budget reductions and shifts in contracting priorities have highlighted the risks of relying too heavily on government spending. Virginia stands out as the only state to see a statistically significant rise in unemployment from May to June 2025, with Northern Virginia having lost 4,700 jobs in June 2025 alone. In Fairfax County, the scale of disruption is more striking as the number of unemployed residents jumped 34.7% compared to the previous year.[1] These trends, while revealing structural vulnerabilities, also create an important opportunity for Northern Virginia to accelerate economic diversification and expand into new areas of growth.

The 2025 GO Virginia Region 7 Growth and Diversification Plan captures this moment of transition, outlining the key dynamics shaping the regional economy and the opportunities that can define its next chapter. Accounting for 42% of Virginia's GDP and home to nearly one third of its workforce and population, Northern Virginia's economy continues to grow even as its high cost of living drive some residents to relocate to nearby counties.[2] Its highly educated workforce underpins competitiveness in professional services, government, IT, and cybersecurity, yet the severe economic impact of recent cuts in federal employment and contracting underscore the need to accelerate economic diversification.

Positioning Northern Virginia as the global hub for next-generation technologies offers a bold solution to the region's overreliance on federal spending, transforming its strengths in national security, data infrastructure, and talent into drivers of economic growth and diversification. By cultivating innovation and commercialization across high-potential industries, the region can build a more resilient and diversified economy.

This strategy centers on four priority industry clusters: **Computer Services**, which includes the region's world-class data infrastructure and provides a platform for artificial intelligence, advanced analytics, and cloud innovation; **Cybersecurity**, poised to expand beyond defense into fast-growing commercial markets; **Life Sciences**, where research assets and data expertise enable growth in biopharmaceuticals and health technology; and **Emerging Technologies**, including quantum, robotics, semiconductors, energy tech, and space systems. Together, these traded industry clusters form the foundation for the following seven priority goals:

GO VIRGINIA REGION 7 — PRIORITY GOALS

1. Leverage federal and defense technology strengths to expand into commercial and dual-use markets.
2. Build a leading global hub for IT-driven life sciences with bioinformatics, computational biology, and digital health.
3. Advance energy innovation through research and development in alternative energy technologies to address digital infrastructure requirements and constraints.
4. Support the growth of robotics, unmanned systems, and other advanced hardware applications, leveraging synergies with artificial intelligence and related fields to enhance regional competitiveness.
5. Accelerate product-based innovation to drive scalable growth to complement the region's strong services base.
6. Create targeted pathways for public sector employees and veterans to transition into private sector roles in the region’s key industries.
7. Foster stronger regional coordination among Northern Virginia's local jurisdictions and across the Greater Washington metro to align strategic priorities and build complementary strengths in next-generation technologies.

GO Virginia Region 7—Investment Priorities[3]

Strategic Focus: Region 7 invests in collaborative projects that create higher-paying jobs in traded industry clusters, expand out-of-state revenue, and align directly to the Region 7 Growth & Diversification Plan. Projects must involve two or more localities and demonstrate strong industry participation. Region 7's current emphasis is on the region's technology sector, with four priority industries as described in this plan.

Priority Project Types: Region 7 backs proposals in four program strategies: (1) Workforce development that fills documented skills gaps and creates a larger pool of qualified job candidates in the region's target industries; (2) Start-up & innovation ecosystem support that helps founders scale in traded sectors; (3) Cluster scale-up initiatives that support the growth of an emerging or nascent industry and drive measurable firm growth; and (4) Site & infrastructure projects that advance shared, job-creating assets (e.g., innovation districts) rather than general capital builds.

What Strong Proposals Must Demonstrate:

- Clear line of sight to net new, higher-wage jobs in traded sectors and out-of-state revenue
- Multi-locality collaboration with meaningful local participation and committed private-sector partners
- A credible plan to sustain operations post-grant
- Return on Investment (ROI) and quantified outcomes such as job creation, credentials, internships/apprenticeships, businesses served, and other outcomes as appropriate

Impact for Region 7

2017 - Present Date

33 Funded Projects

20.9M GO Virginia Funds granted to Region 7

13.9M Matching Funds Contributed

7,052 Jobs Created or Filled

9,564 Partners Engaged

Workforce Development

659 Credentials Awarded

28,029 People Trained

770 Internships Created

136 Students Dual Enrolled

Start Up Ecosystem

703 Businesses Created

230 Entrepreneurs Served

471M Capital Raised Site Development

Site Development

30,000 sq ft Construction Class A BSL 2 Research Facility

NOTE: See Appendix A for a full list of GO Virginia Region 7 projects.

INTRODUCTION

The Virginia Growth and Opportunity Fund (GO Virginia) was created in 2017 to expand jobs that pay higher than the regional average wages and attract additional investments to stimulate economic growth in the Commonwealth. To do this, it requires a focus on industries with high growth potential. Each region is given the autonomy to identify its own industry clusters that will yield the highest impact. Additionally, the program is specifically designed to incentivize regional collaboration amongst the localities included in Region 7 (Arlington County, Fairfax County, Loudoun County, Prince William County, and the independent cities of Alexandria, Fairfax City, Falls Church, Manassas, and Manassas Park). Since 2017, GO Virginia Region 7 has completed 33 projects with $20.9 million in GO Virginia Region 7 per capita funding. The 2025 Growth and Diversification (G&D) Plan provides a roadmap for using GO Virginia funding to promote economic growth, diversification, and high-quality job creation.

This plan was prepared by the Center for Regional Economic Competitiveness (CREC) with guidance, input, and support from the Region 7 Council and The SkillSource Group. The quantitative analysis in the plan utilized a variety of public data sources and subscription-based labor market information to provide robust economic and workforce insights. The qualitative analysis was gathered through five focus groups and individual interviews with Region 7 Council's recommended stakeholders. Individuals who provided input for this plan represent a diverse mix of perspectives across the region's target industries: Computer Services, Cybersecurity, Emerging Technologies, and Life Sciences.

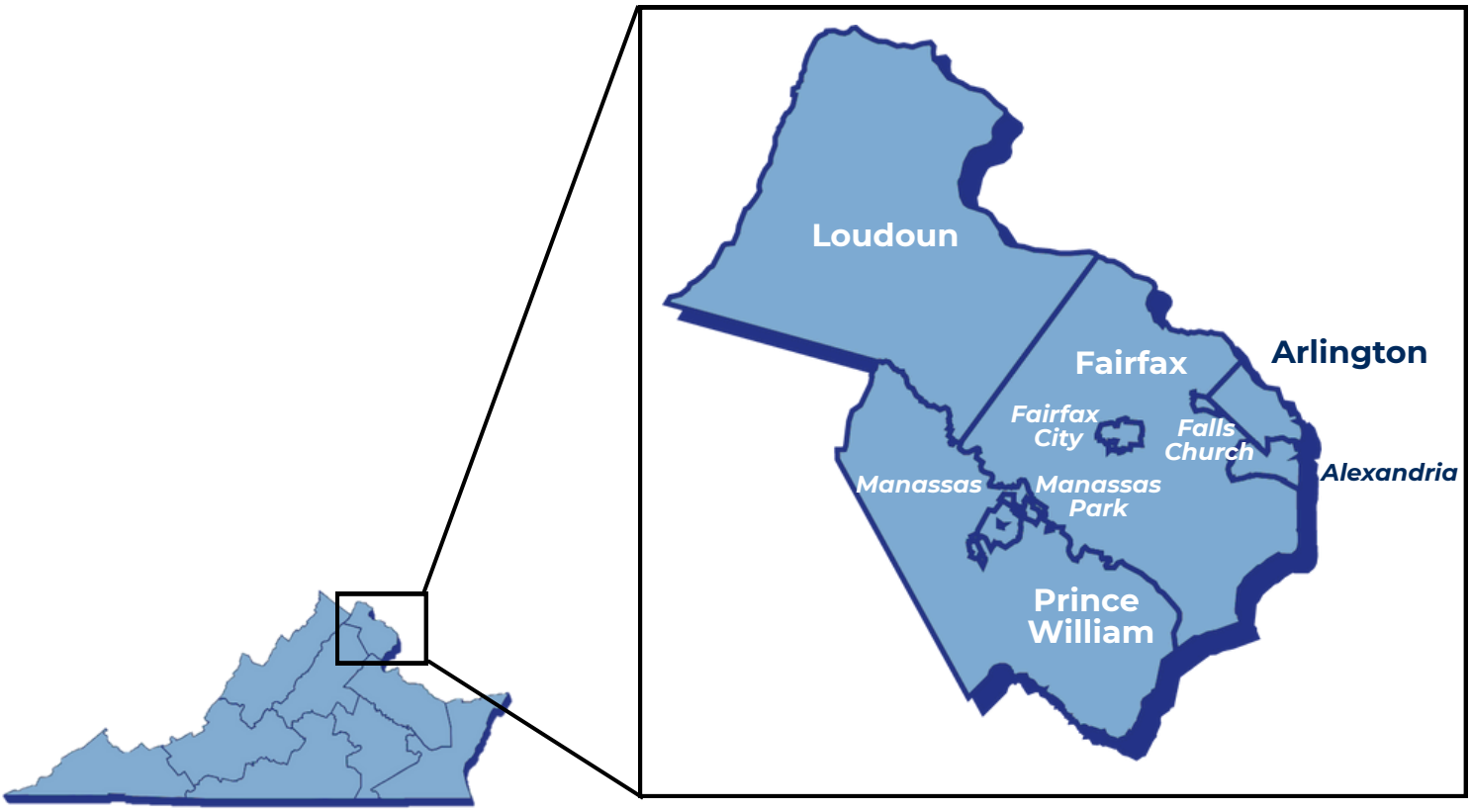
The plan opens with an overview of the region's demographic and economic trends, followed by a detailed analysis of the region's strategic and target industries. The plan concludes by identifying seven priority goals to advance the region's economic growth and diversification.

Northern Virginia's Economic Landscape

Northern Virginia serves as an economic engine for the Commonwealth of Virginia. **In 2024, the region generated 42% of Virginia's gross domestic product (GDP) and is home to 32% of its jobs and 30% of its population.**[4] Its proximity to the nation's capital significantly shapes the region's economy and demographic profile, creating a concentration of industries connected to defense, technology, policy, and professional services. The region encompasses nine counties and cities: Arlington County, Fairfax County, Loudoun County, Prince William County, and the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park.

Each jurisdiction contributes distinct strengths to the regional economy. Arlington County and the City of Alexandria feature dense urban environments, high concentrations of federal agencies, and a growing number of corporate headquarters. Fairfax County serves as the economic anchor of the region, with a diverse industry mix that includes information technology, consulting, and professional services. Loudoun County has experienced rapid growth in both population and business activity, driven in part by its leadership in data center development. Prince William County and the Cities of Manassas and Manassas Park continue to expand as residential and commercial centers, providing land availability and development opportunities to accommodate future growth. Falls Church, while geographically small, contributes a highly educated workforce and high per-capita income levels to the regional economy. The following section provides an updated analysis of Northern Virginia's evolving economic landscape.

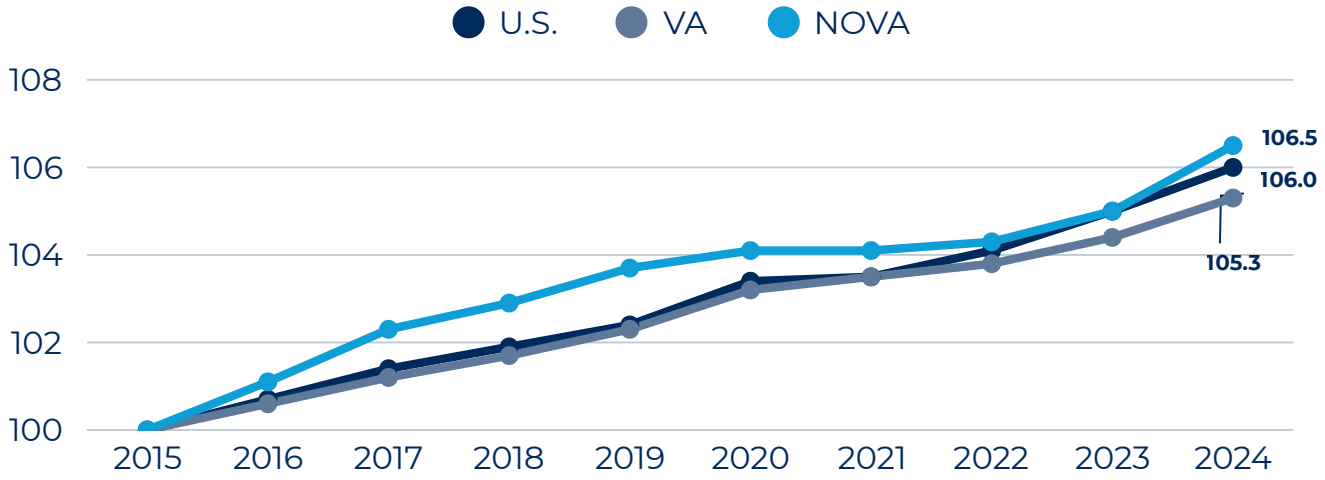
Figure 1. Map of GO Virginia Region 7 (Northern Virginia)



Population is Growing and Becoming More Diverse

Northern Virginia's population grew at a faster rate than that of both Virginia and the United States (see Figure 2). Between 2015 and 2024, Northern Virginia added approximately 158,000 new residents (an increase of 6.5%), and the region's total population stands at 2.6 million in 2024. According to the Northern Virginia Regional Commission, the region's population is expected to reach 3 million by 2040.[5]

Figure 2. Index of population growth in Northern Virginia, State of Virginia, and the United States, 2015-2024. Source: U.S. Census Bureau Population Estimates Program.



Northern Virginia is also becoming more diverse. The region's fastest growing populations are those who identify as two or more races and Asians, whose share of the population in 2024 is 17% and 4%, respectively. Meanwhile, White residents' share of the population has declined from 53% in 2015 to 47% in 2024. The region's share of Black/African American (12%) and Hispanic/Latino (19%) residents has remained relatively stable.[6]

Approximately 28% of Northern Virginia's population are born outside the United States, and international migration has historically been a key contributor to the region's population growth.[7] However, more Northern Virginia residents are moving out of Northern Virginia to other areas of the U.S. than are moving in, though it is worth noting that many departing residents have relocated to nearby areas such as Stafford County, VA; Spotsylvania County, VA; and Fauquier County, VA. The region's relatively high cost of living may be a contributing factor to the movement of residents to nearby counties just outside the region. Many new residents moving into the region also originate from nearby areas, notably from Washington, D.C.; Prince George's County, MD; and Montgomery County, MD.[8]

Figure 3. Components of Population Change in Northern Virginia, 2015-2024. Source: U.S. Census Bureau Population Estimates Program.

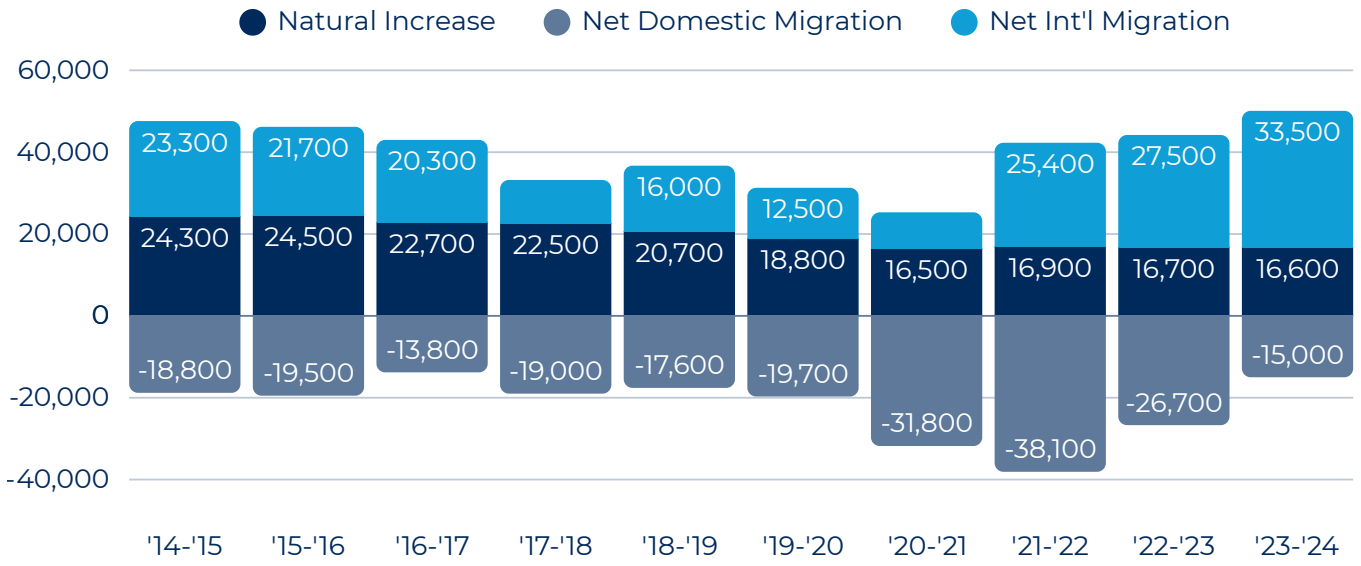


Table 1. Top five jurisdictions from which Region 7 is gaining residents and top five jurisdictions to which Northern Virginia is losing residents, 2019-2022. Source: Lightcast.

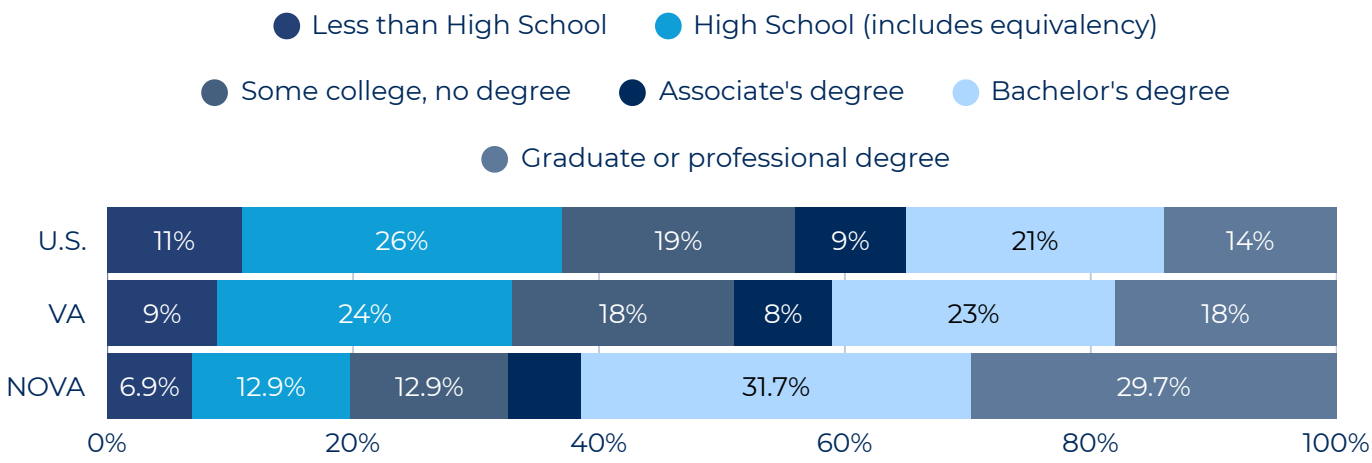
County/District	Net Migration	County/District	Net Migration
Washington, D.C.	+6,600	Stafford County, VA	-14,650
Montgomery County, MD	+2,750	Fauquier County, VA	-5,950
Prince Georges County, MD	+1,950	Spotsylvania County, VA	-5,700
Queens County, NY	+1,250	Frederick County, VA	-4,050
Honolulu County, HI	+955	Chesterfield County, VA	-2,150

Highly Educated Workforce Contributes to the Region's Economic Competitiveness

The educational attainment of Northern Virginia's residents is notably higher than the national average, and the region is considered to have one of the highest concentrations of bachelor's and graduate degree holders in the nation. In 2023, more than 60% of residents aged 25 and over held a bachelor's degree or higher, compared to 40% in Virginia and 43% in the United States. However, educational attainment within Northern Virginia varies by jurisdiction. Falls Church (80%), Arlington County (77%), Alexandria (66%), and Fairfax County (64%) are among the most educated localities in the U.S., while others such as Manassas (33%) and Manassas Park (25%) have a significantly lower share of college-educated residents.[9]

Northern Virginia's highly educated talent base provides a steady pipeline of professionals for fields such as information technology, cybersecurity, life sciences, and professional and technical services. This workforce has not only enabled the region to attract and retain major employers, but also positioned it as a national leader in knowledge-intensive sectors that demand advanced technical expertise. In addition, the region's attractiveness to skilled workers from across the country has helped sustain some of the nation's highest median household incomes. The extraordinary amount of human capital concentrated in Northern Virginia translates directly to the region's economic competitiveness.

Figure 4. Educational attainment levels in Northern Virginia, Virginia, and U.S., 2023. Source: U.S. Census Bureau American Community Survey

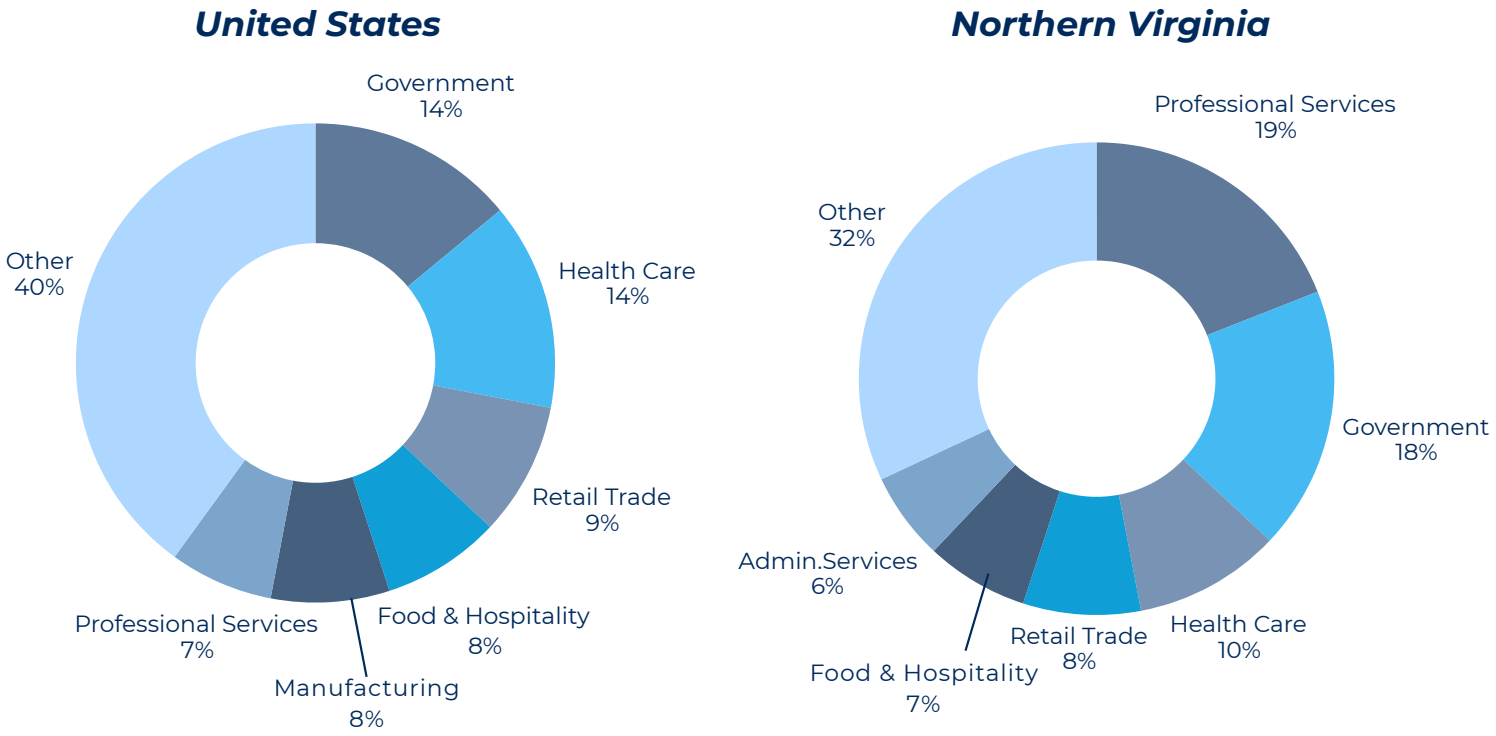


One potential contributor to the region's high concentration of college-educated residents is federal hiring requirements. As noted in the **2024 Talent Pipeline Initiative Report**, many federal government and contractor positions require at least a bachelor's degree, and this minimum education requirement and the historically outsized role of government-related employment in Northern Virginia likely played a key role in shaping the region's highly educated workforce.

Professional Services and Government Anchor Northern Virginia's Employment Base

Professional services and government account for 37% of all jobs in Northern Virginia. Approximately 1 in 5 jobs in the region fall under the professional services sectors, with computer systems design and programming, management consulting, engineering services, and R&D among the industries with the highest employment.[10] In Northern Virginia, professional services' share of employment is almost three times that of the United States (see Figure 5). Government employment accounts for another 1 in 6 jobs in the region.

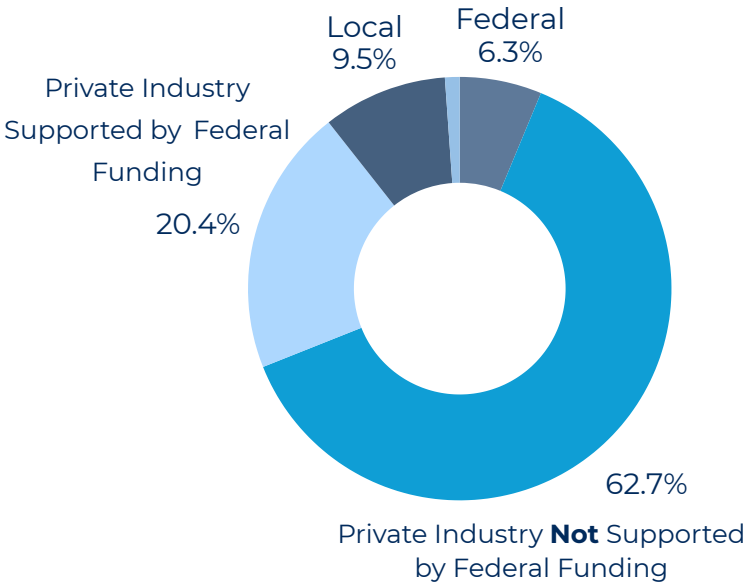
Figure 5. Breakdown of employment by economic sector: U.S. v.s. Northern Virginia, 2025. Source: U.S. Bureau of Labor Statistics and Lightcast



The concentration of employment in government and professional services has both strengthened and constrained Northern Virginia's economic trajectory. The federal government serves as an economic anchor, providing stability, high wages, and opportunities for a highly educated workforce. From major defense installations and contractors to global consulting firms, federal agencies and contractors have long shaped economic activity in the region. On the other hand, this reliance can expose the region to risks tied to shifts in federal spending, contracting, and policies. While government and professional services remain economic cornerstones, they also reinforce a dependence on federal dollars.

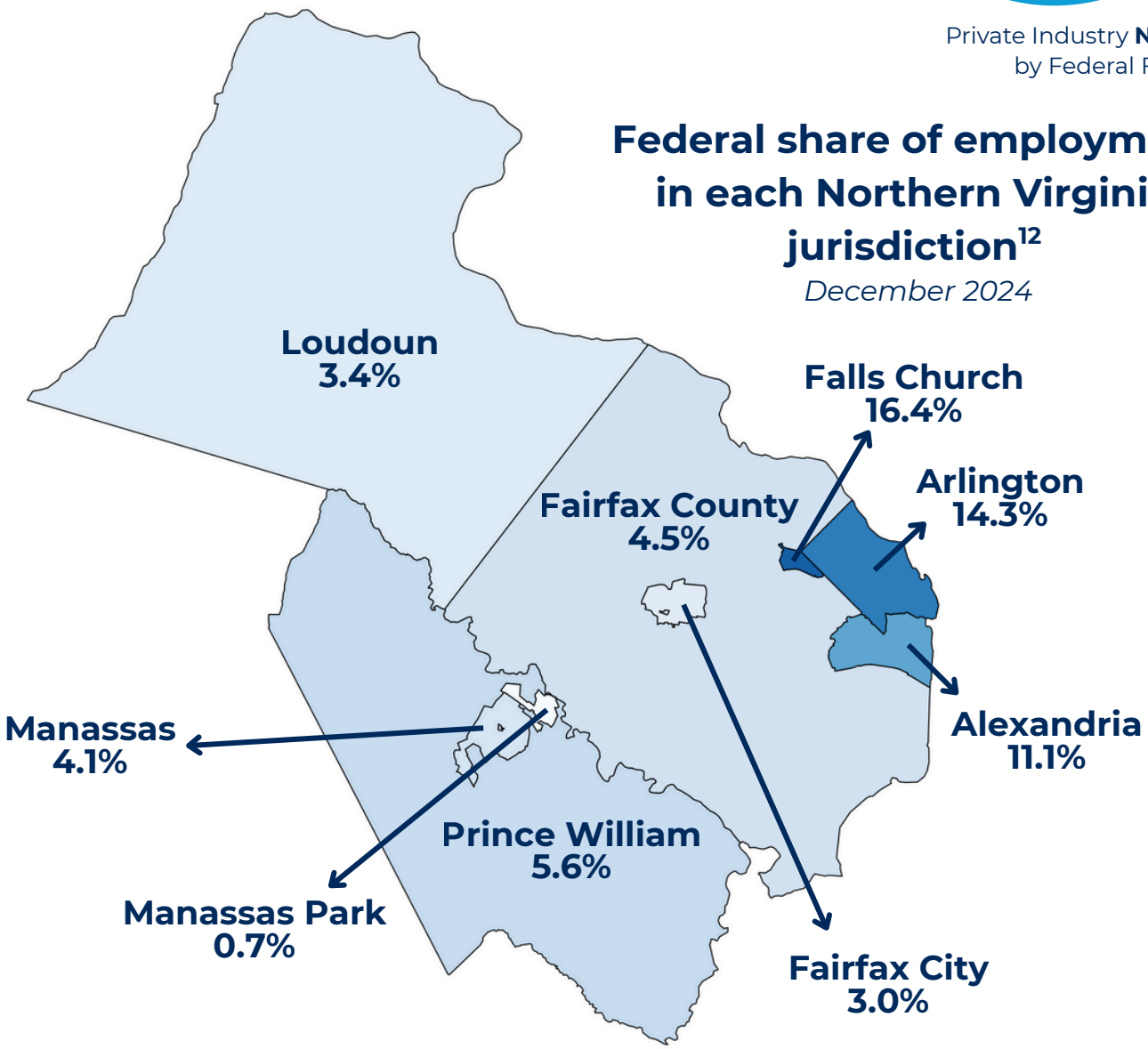
Of the 1.1 million private jobs in the region, 24.5% — more than a quarter million positions — are directly supported by federal contracts. Taken together, **more than one in four jobs (26.7%) in Northern Virginia is directly reliant on federal spending**, underscoring how deeply the region's economy is tied to federal funding streams.[11] Federal activity has helped shape not just jobs, but also the structure of the regional economy. As a result, reductions in contracts or agency budgets could trigger ripple effects that extend well beyond government payrolls.

Figure 6. Breakdown of employment in Northern Virginia by association with the Federal Government. Source: IMPLAN and U.S. Bureau of Labor Statistics



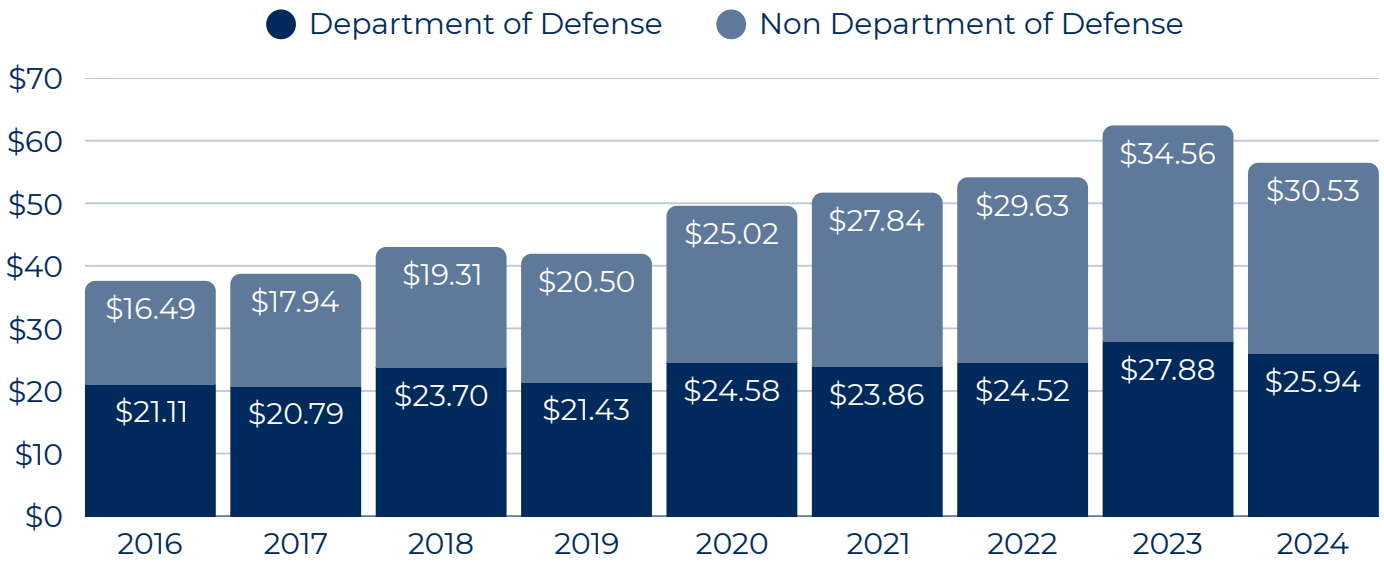
Federal share of employment in each Northern Virginia jurisdiction[12]

December 2024



Federal contracting plays an outsized role in shaping Northern Virginia's economy, channeling billions of dollars each year into local firms and fueling demand for highly skilled workers. The region's business landscape is deeply intertwined with federal priorities, as companies compete to deliver advanced technologies, professional services, and defense solutions that align with government needs. This connection creates a steady flow of high-wage jobs and reinforces the region's reputation as a hub for expertise in national security and innovation as long as federal dollars are flowing consistently.

Figure 7. Federal Spending Obligations (in Billions of Dollars) in Northern Virginia. Source: USASpending



In 2024...

70%

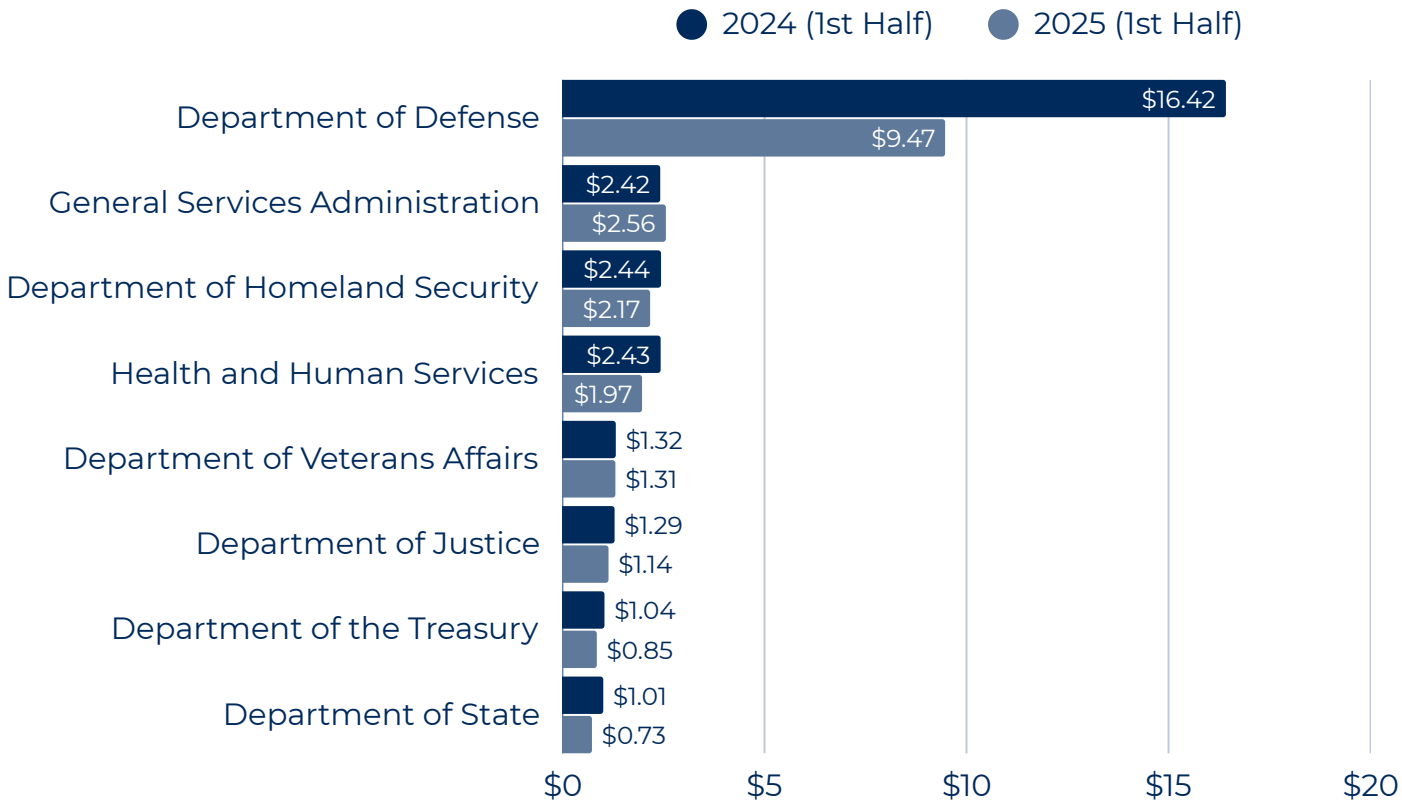
of contracts were in professional, scientific, and technical services

20%

of contracts were in computer systems design services

Federal contracting's outsized role in Northern Virginia also makes the region vulnerable to shifts in federal budgets, procurement cycles, and policy directions, which can ripple quickly through the local economy. A comparison of federal obligations to Northern Virginia companies between January 1 and July 15 in both 2024 and 2025 reveals a notable decline in federal spending - **contract obligations in the first half of 2025 are 27% lower compared to the same period in 2024.**[14]

Figure 8. Federal Spending Obligations (in Billions of Dollars) in Northern Virginia for the first halves of 2024 and 2025 (January 1 to July 15). Source: USASpending



The impacts of federal spending reductions are already showing in real-time data. **Virginia stands out as the only state to see a statistically significant rise in unemployment from May to June 2025, with Northern Virginia experiencing the most severe shock to its employment.** The region lost **4,700 jobs** in June 2025. In Fairfax County, the scale of disruption is more striking as the number of unemployed residents jumped **34.7%** over the past year, signaling mounting pressure on the local labor market.[15] As of August 2025, employment levels have remained the same.

These job losses reflect more than short-term fluctuations — they are early signs of how declining federal contracts are beginning to affect Northern Virginia's broader economy. As contract volumes fall, particularly in industries like consulting and IT, the region faces the risk of deeper private sector disruption, talent displacement, and lost momentum in key sectors. These trends are showing up in layoff notices and economic data across the region.

WARN notices—alerts of business closures and mass layoffs—have increased substantially across Virginia. As of November 2025, the number of WARN notices have more than doubled the total number in 2024.[16]

Total employees impacted by private contract terminations by agency.
Source: WARN Notices
July 2025

Agency for International Development	**258**
Department of Defense	**463**
Social Security Administration	**29**

Figure 9. Employees affected by closures and layoffs in Northern Virginia. Source: WARN Notices

Most WARN notices are concentrated in Northern Virginia and are driven by major contract cancellations tied to federal agencies like USAID, the Navy, and the Social Security Administration. These cuts have triggered private sector layoffs and operational slowdowns across key industries, affecting highly specialized professionals such as software engineers, consultants, and IT workers. In addition to contractor layoffs, federal agencies themselves are issuing WARNs. When the government shutdown began on October 1st, 2025, the U.S. Patent and Trademark Office issued a WARN notice for 126 layoffs in Alexandria. If these workers are not absorbed into new opportunities in the region, this could lead to a loss of institutional knowledge and a regional brain drain. Collectively, these developments suggest that federal spending reductions are already beginning to reshape employment patterns across Northern Virginia.

MITRE Corporation is a non-profit research organization that employs many workers in Northern Virginia. In April 2025, the organization announced the layoff of 442 employees at its McLean location. The decision follows the cancellation of over $28 million in federal contracts, which significantly impacted the organization's operations.[17]

Federal Government Dependence Impacts the Region's Entrepreneurship, Innovation, and Technology Ecosystem

For Northern Virginia's innovation ecosystem, the dependence on the Federal government rather than venture capital as drivers of innovation activity can limit entrepreneurial activity and slow business formation and expansion. As Federal procurement priorities often emphasize reliability, compliance, and incremental innovation over disruptive or untested models, many startups and small businesses tend to focus on ensuring alignment with government requirements rather than pursuing higher-risk ventures. This dynamic can limit the pace of experimentation and innovation, and it may contribute to the smaller share of jobs created by younger firms (5 years old or less) in Northern Virginia compared to the national average (see Figure 10).

Figure 10. Percentage of jobs created by young firms (5 years old or less) in Northern Virginia and the United States. Source: U.S. Census Bureau, Longitudinal Employer-Household Dynamics, Quarterly Workforce Indicators.

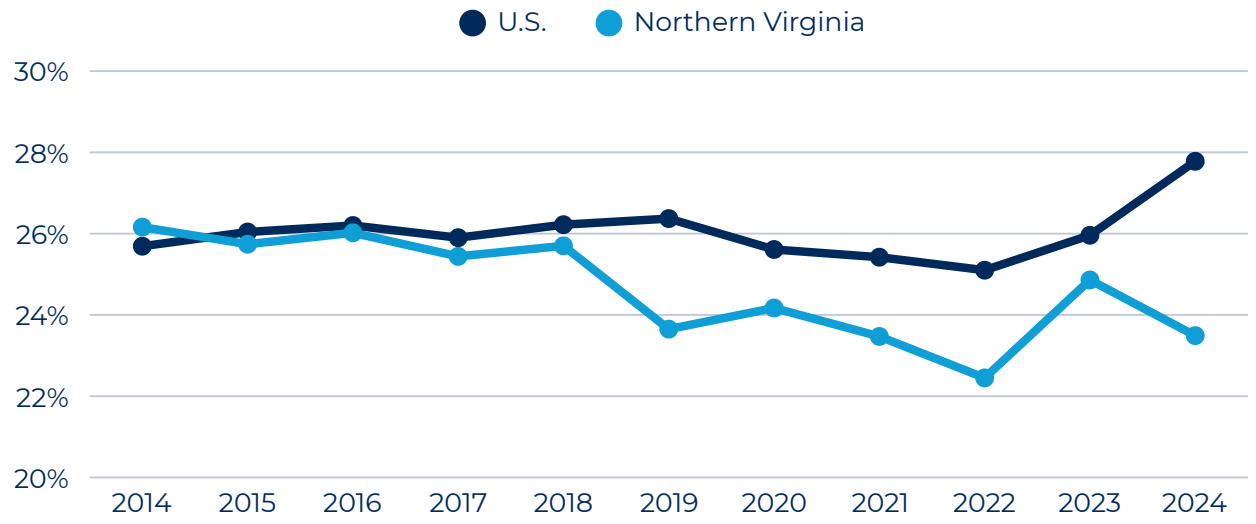
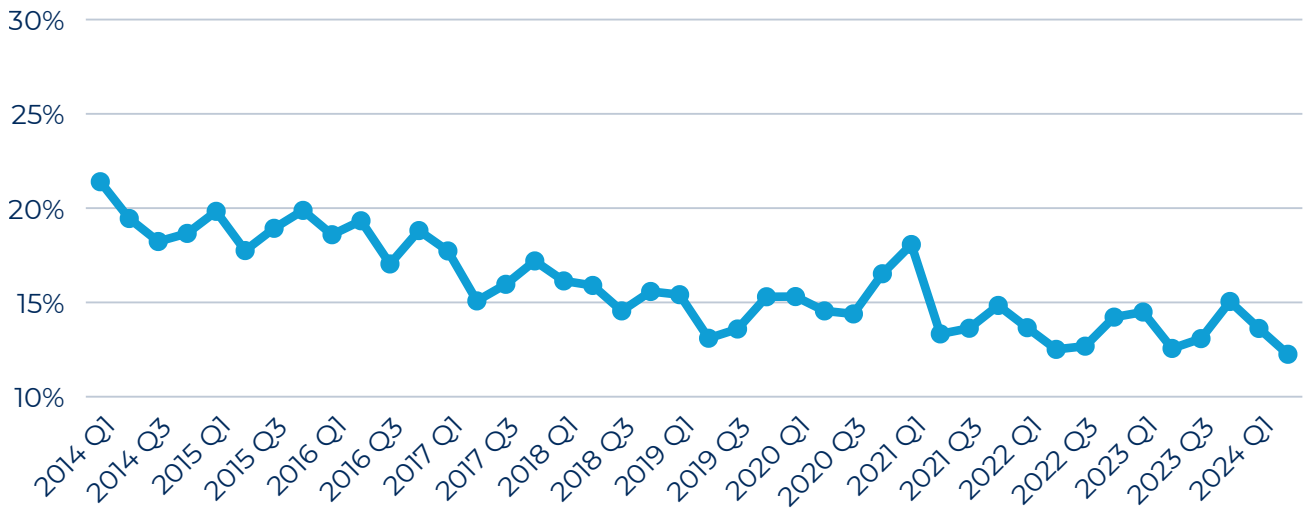


Figure 11. Share of new hires by young firms (5 years old or less) in professional and business services in Northern Virginia. Source: U.S. Census Bureau, Longitudinal Employer-Household Dynamics, Quarterly Workforce Indicators.



Yet, the deep talent pool that is sustained by government and professional services jobs—from software developers and information security analysts to accountants and project managers—provides the region with a strong foundation for growth in adjacent and complementary industries. According to the Northern Virginia Technology Council, the region employs approximately 376,000 technology workers (11% of the workforce), making it the second-largest metro by tech employment in the nation behind New York City.[18] Northern Virginia is also home to the highest concentration of data centers in the nation. Anchored in Loudoun County, this data center cluster experienced a 500% increase in colocation capacity between 2015 and 2023 and accounted for 92% of all new investment announced by the Virginia Economic Development Partnership in 2023.[19]

Case Study: Economic Impact of Data Centers in Loudoun County[20]

With its fiber-rich environment and a generous statewide policy that allows operators to purchase computers and other equipment without paying a sales tax, Northern Virginia has long attracted large-scale data centers and is well-situated for the type of data centers that can support the rise of AI technology. Currently, there are nearly 200 completed facilities hosting computer servers and other equipment in Loudoun County, taking up some 49 million square feet in an area nicknamed “Data Center Alley”. That makes the Northern Virginia region, by far, the largest market in the world, through which more than two-thirds of the global internet traffic passes.

The local economic impact of data centers is substantial. **For every $1 invested into data centers, Loudoun County receives $26 in tax revenue**, which helps fund services like schools and parks while also lowering the tax burden on residents. In fiscal year 2025, data centers are expected to contribute $895 million in county tax revenue, enough to cover most of Loudoun County’s estimated $940 million operating budget.

However, the growth of data centers in Loudoun County and across Northern Virginia is straining energy and environmental systems, driving massive electricity demand, heavy water use, and reliance on diesel backup power that impacts local health and environment. Addressing this challenge requires innovative solutions, from more energy-efficient technology to alternative sources of energy, to sustain data centers’ economic benefits while reducing burdens on surrounding communities.

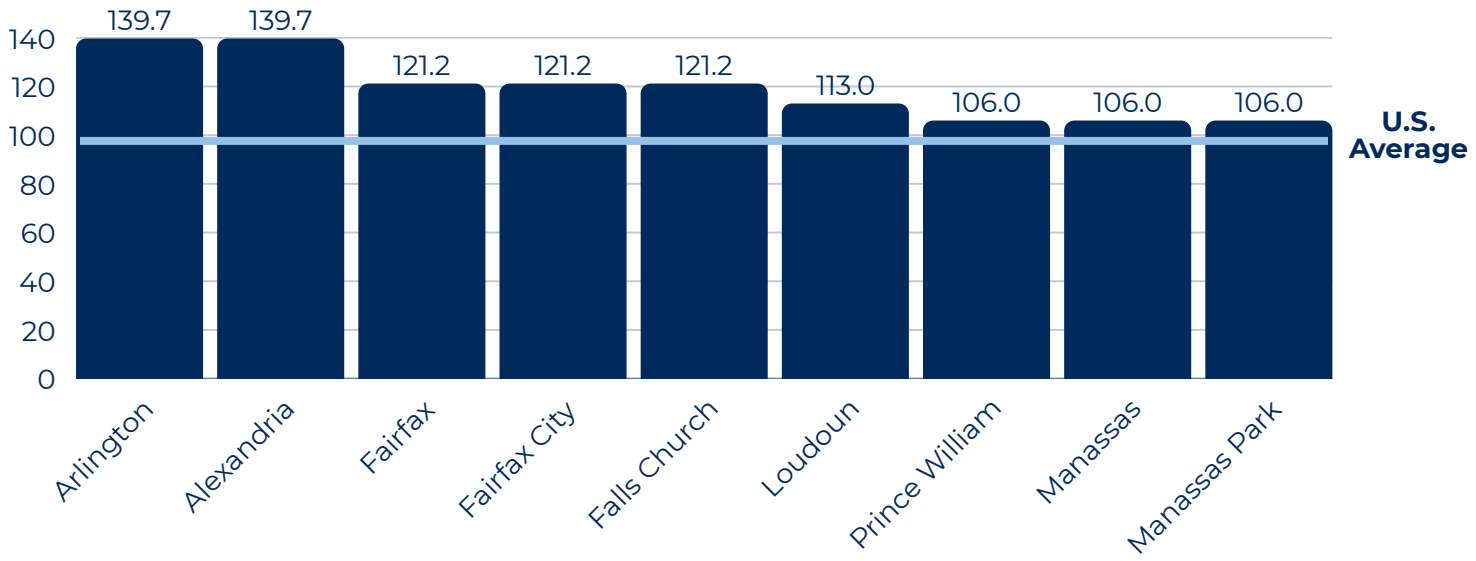
Cost of Living and Congestion Threatens the Region's Long-Term Competitiveness

Northern Virginia's prosperity is reflected in its status as the wealthiest region in the Commonwealth, with a median household income of $145,100 in 2023—well above both Virginia ($91,000) and the United States ($78,500). Out of all 3,144 jurisdictions in the U.S., three of the five highest ranked jurisdictions for median household income are in Northern Virginia: Loudoun County (1st), Falls Church (4th), and Fairfax County (5th).[21]

High household incomes in Northern Virginia is directly tied to the region's concentration of high-paying industries and occupations, particularly in professional services, information technology, and government-related work. While these earnings contribute to a relatively strong quality of life, they also mask significant challenges related to affordability. Higher wages in Northern Virginia are paired with a cost of living that consistently exceeds national averages across all nine jurisdictions of Northern Virginia (see Figure 11).

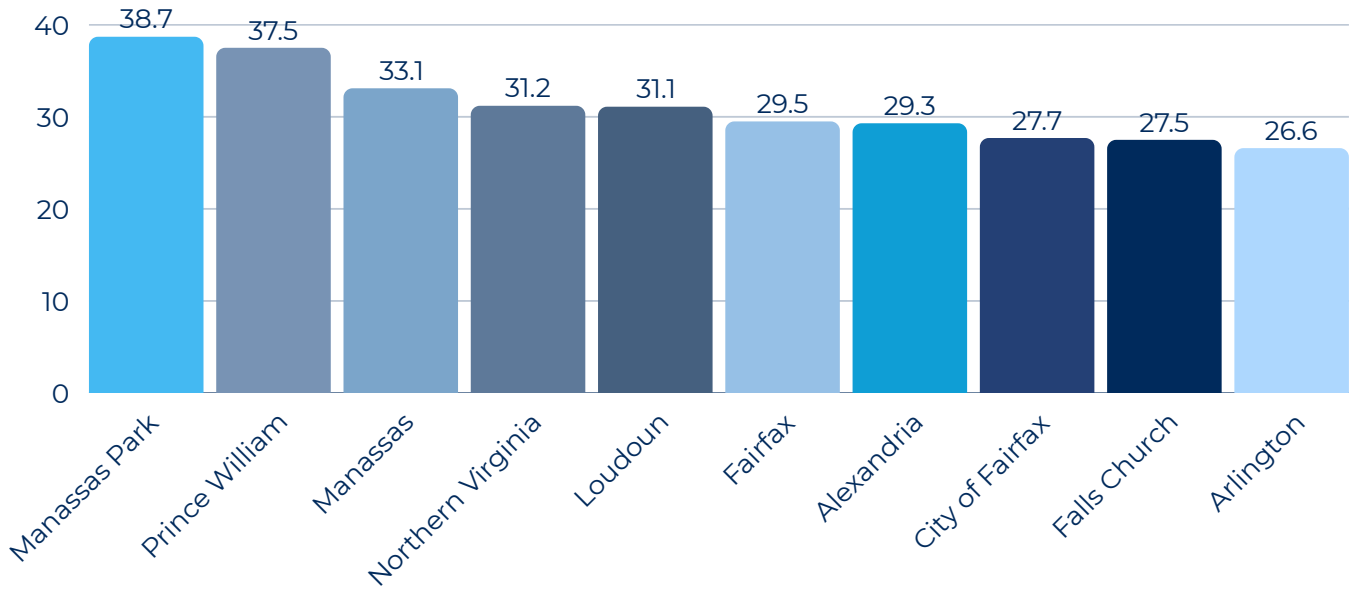
The disparities within the region underscore how affordability pressures shape where residents choose to live and work. In 2025, residents of Arlington County and the City of Alexandria faced living costs nearly 40 percent higher than the national average, making them the most expensive areas in Northern Virginia. Similarly, residents of Fairfax County, along with Fairfax City and the City of Falls Church, faced living costs that were 21% above the national average. In contrast, Prince William County, the City of Manassas Park, and the City of Manassas emerged as the most cost-manageable localities, with costs only 6% higher than the U.S. average.[22] These patterns reflect how affordability often pushes middle-income households further from the region's core employment centers, contributing to longer commutes and intensifying congestion along major corridors.

Figure 11. Cost of Living Index in Northern Virginia, 2025. Source: Council for Community and Economic Research 2025 Cost of Living Index County Data



In 2025, the Washington, D.C. metro area overtook Los Angeles as the U.S. metro with the worst traffic according to annual rankings by Consumer Affairs Magazine. Workers in Northern Virginia commute on average 31 minutes each way, and residents in jurisdictions further away from the region's employment hubs face notably longer commutes (see Figure 12).[23] As return-to-office mandates from the federal government and large employers continue to push workers back to the office, commute times and congestion may continue to impose costs on workers and strain the region's infrastructure.

Figure 12. Average travel time to work (in minutes) in Northern Virginia, 2023. Source: U.S. Census Bureau American Community Survey



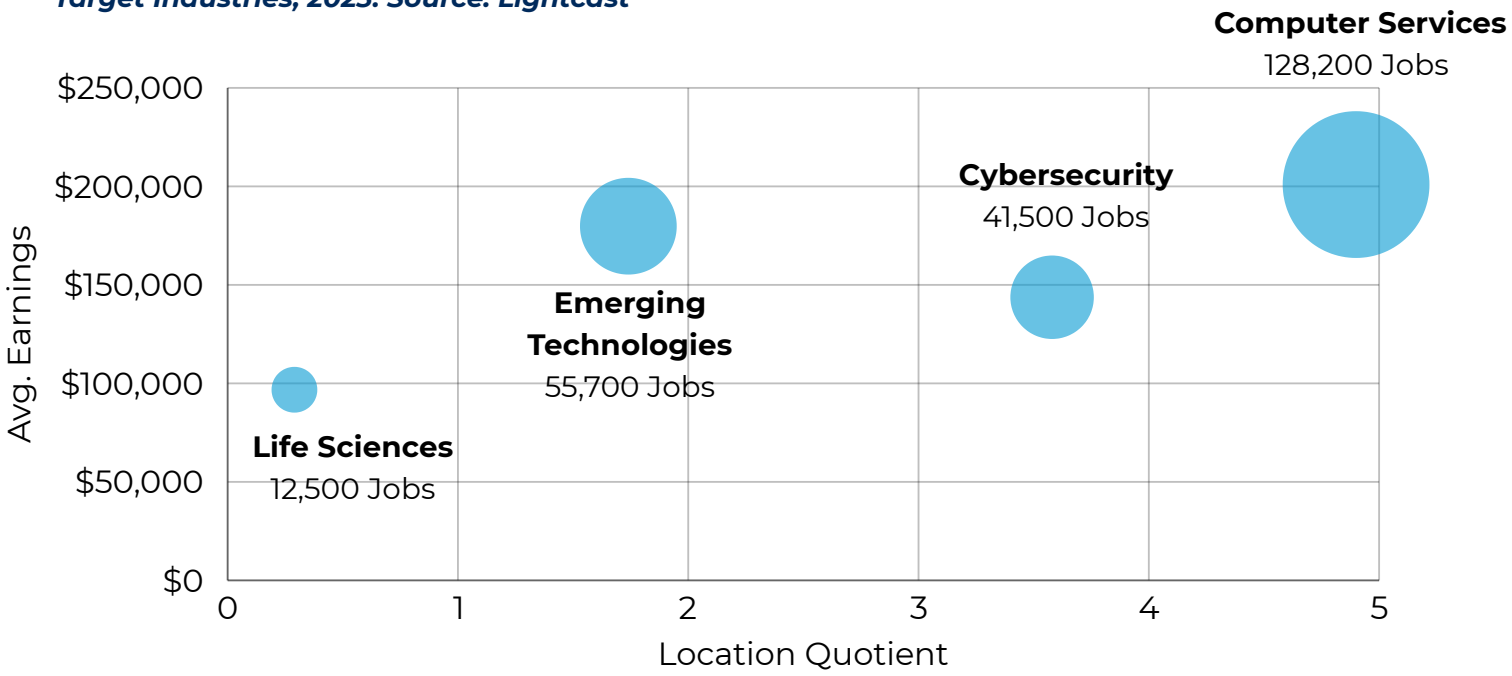
Taken together, high costs of living and persistent traffic congestion present risks to the region's long-term competitiveness. For workers in critical but lower-paying occupations, housing affordability has become a significant barrier to living close to employment hubs, often forcing trade-offs between living costs and commute time. For employers, this dynamic presents a challenge to talent recruitment and retention, particularly as younger professionals and families consider alternative places to live that offer more affordable lifestyles. Over time, these pressures could erode Northern Virginia's ability to sustain its historic population and employment growth, even as it continues to benefit from a highly educated workforce and concentration of high-wage jobs. Addressing these challenges will be essential to maintaining the region's position as a leading economic center in both Virginia and the nation.

NORTHERN VIRGINIA'S TARGET INDUSTRIES

Northern Virginia's future economic success depends on strengthening industry clusters that demonstrate strong regional presence, provide high-wage employment, and offer growth potential in the region's evolving economic landscape. **The 2025 Plan focuses on four target clusters—Computer Services, Cybersecurity, Life Sciences, and Emerging Technologies—while also taking a forward-looking approach to anticipate and nurture new areas of innovation.** Although artificial intelligence is catalogued within the Emerging Technologies cluster, it is important to recognize that artificial intelligence is a transformative force across all clusters, shaping the future of computer services, cybersecurity, life sciences, and beyond. By preparing for the next wave of emerging technologies, the region can position itself to remain competitive and resilient in a rapidly changing global economy.

The definitions for these target clusters largely follow the definitions used in the **2024 Talent Pipeline Initiative Report**. The Emerging Technologies cluster has been expanded to include artificial intelligence, quantum, aerospace, robotics, semiconductors, and energy tech to reflect the region's growing position in advanced technologies and increasing investment in tech talent development. The Life Sciences cluster adapted the definition used in the **2021 Growth and Diversification Plan** and the **2023 Growth and Diversification Plan**.

Figure 13. Location Quotient, Average Annual Earnings, and Jobs in Four Northern Virginia Target Industries, 2023. Source: Lightcast

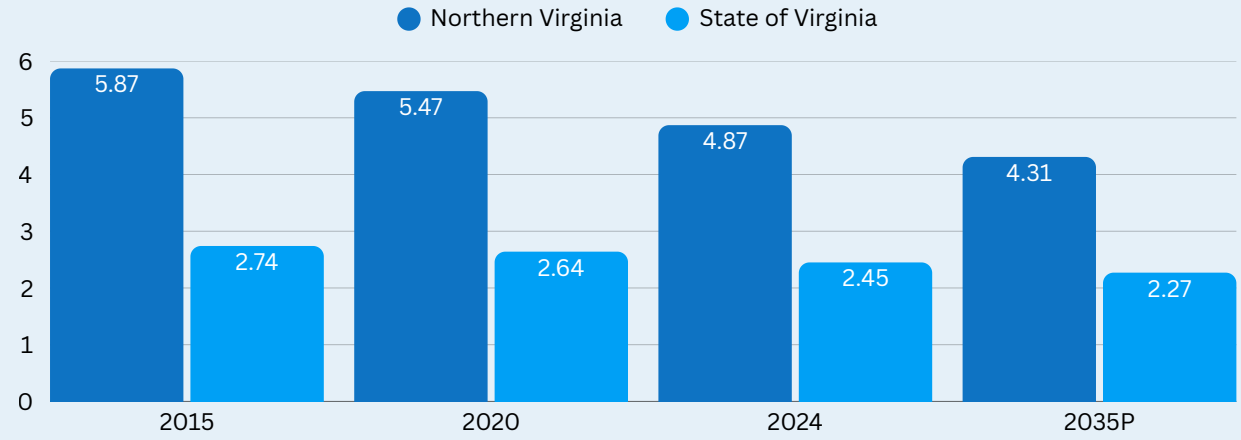


NOTE: Size of bubble denotes number of jobs. Location Quotient (LQ) is calculated by dividing an industry cluster's share in a region by that of the United States. LQ is a way to measure a region's concentration or specialization in an industry cluster compared to the nation to indicate how competitive an industry is. An LQ greater than 1.0 indicates that a region is more concentrated or specialized in an industry compared to the United States, with greater than 1.2 meaning the region is highly specialized in the industry. Conversely, an LQ less than 1.0 indicates that a region is relatively less specialized than the United States.

COMPUTER SERVICES

The Computer Services industry cluster is a pillar of Northern Virginia's economy, driving high-wage employment and generating significant economic output. Many firms in the region support federal contracting and innovation, supplying IT infrastructure and software solutions that bolster both government and commercial operations. Critically, Computer Services encompasses, among other industries, data centers and other forms of data infrastructure.

Economic Specialization in Computer Services (U.S. Average = 1.00)



Assets

- World-class tech workforce
- Fast-growing computer design industry
- State-of-the-art digital infrastructure
- Federal proximity advantage

Challenges

- Persistent talent gap, especially in technology management positions
- Gaps in access to early-stage capital
- Gaps in entrepreneurship ecosystem connectivity
- Managing impacts of data center demand on infrastructure and communities

NOTE: A full SWOT analysis linking this cluster to GO Virginia's four investment strategies can be found in Appendix C

Opportunities exist for Northern Virginia's computer services cluster to diversify beyond its dependence on federal contracting and the challenges of competing for talent in a high-cost region. The concentration of technology firms, cloud computing, and data infrastructure provides a strong platform for new avenues of growth. Fostering entrepreneurship and supporting the development of high-growth technology companies will be critical to driving innovation and reducing reliance on federal demand. Emerging fields such as artificial intelligence, advanced analytics, and quantum computing present strong opportunities for startups and scale-ups that can bring new products to market. Partnerships between universities, research centers, and industry can accelerate commercialization, while the region's extensive data center capacity and global connectivity create unique advantages for scaling new ventures and attracting private investment.

128,200

Jobs

8.6% of total regional employment

9,500

Business Locations

77% employ less than 10 workers

$39.6B

Economic Output

12.7% of the region's total GDP

$200,900

Average Earnings

73% higher than the regional average

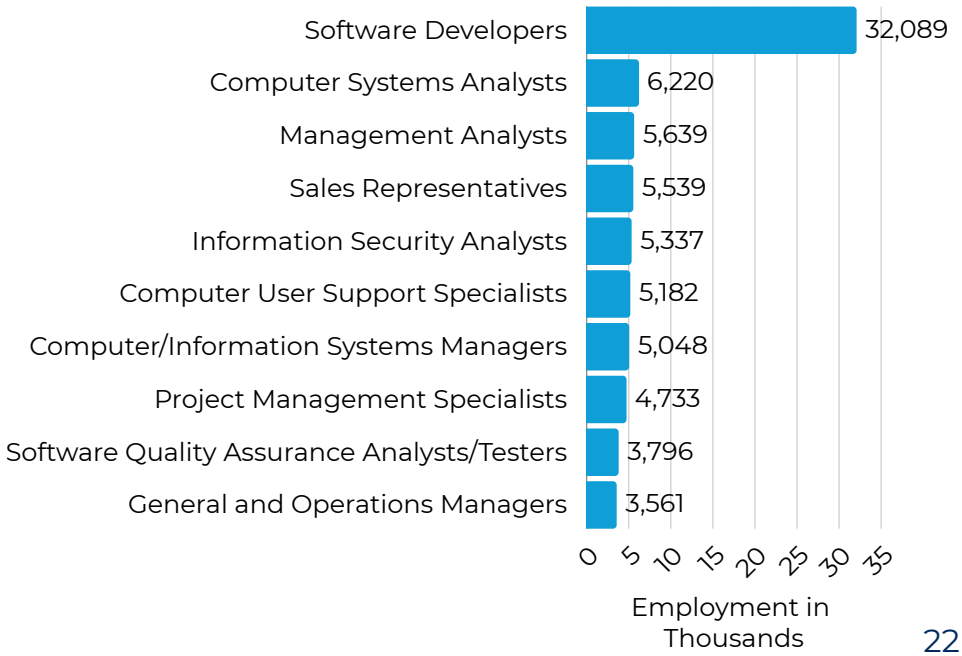
43% earnings growth since 2015

Computer Services includes firms that design, develop, and manage information technology systems, software, and digital infrastructure. In Northern Virginia, the cluster is anchored by federal contractors, IT consulting firms, data centers, and cybersecurity providers that serve both government and commercial markets.

Table 2: Top Industries in Computer Services, 2024. Source: Lightcast

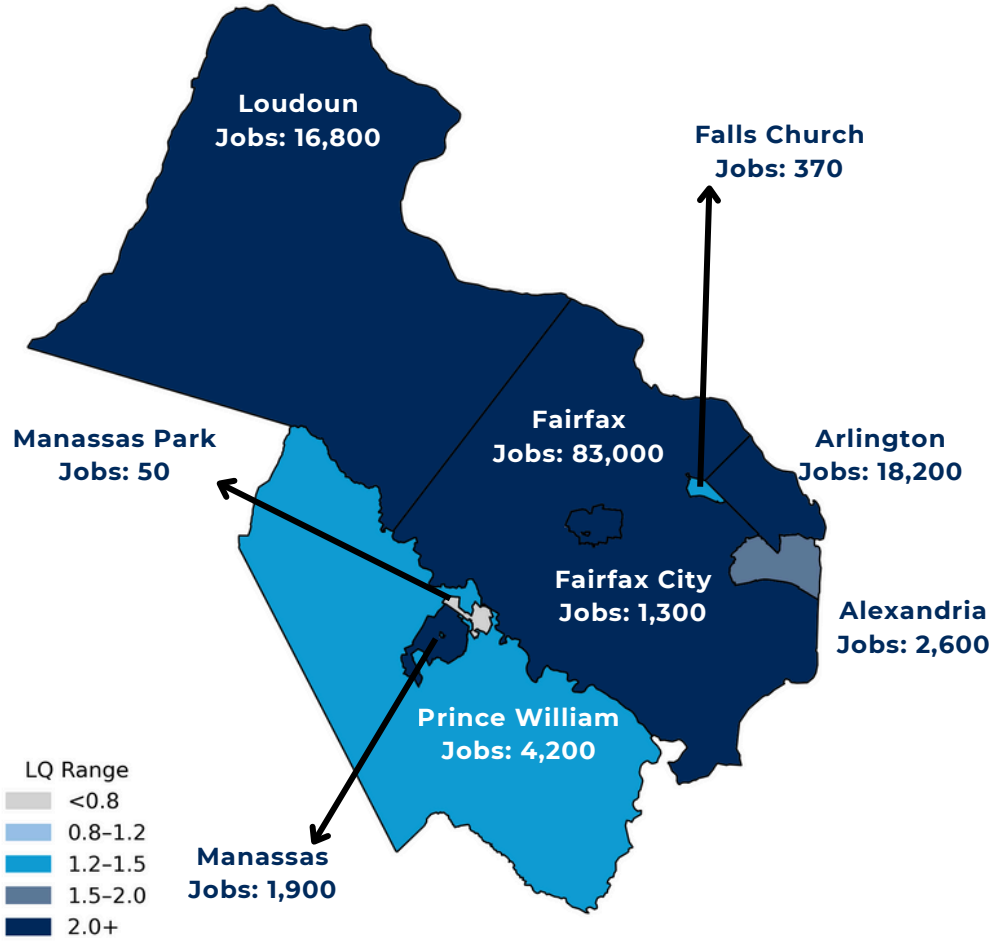
Cluster Subsectors	2024 Jobs	2020-2024 % Jobs Change	2024 LQ	Average Earnings
Systems Design	72,000	-11%	7.03	$201,839
Custom Programming	33,000	8%	3.35	$190,258
Infrastructure Providers, Data Processing & Hosting	13,800	32%	3.25	$245,286
Other Computer Related Services	7,200	20%	5.74	$171,121
Facilities Management	2,100	27%	2.88	$148,529

Figure 14: Employment by Occupation, 2024. Source: Lightcast



Employment in the Computer Services industry is overwhelmingly concentrated in Fairfax County, which accounts for 65% of the region's Computer Services jobs. This reflects Fairfax's role as the core of the region's technology economy, supported by its deep federal contracting base and strong corporate presence. Arlington County contributes 14% of employment, drawing on its dense urban workforce and proximity to Washington, D.C., while Loudoun County makes up another 13%, powered by its world-leading data center sector. The remaining jurisdictions together account for less than 10% of regional computer services employment: Prince William County (3%), Alexandria City (2%), Manassas City (1%), and Fairfax City, Falls Church City, and Manassas Park City collectively representing just over 1%.[24] This distribution highlights the dominance of Fairfax County as the region's anchor for computer services, with Arlington and Loudoun serving as secondary hubs, and the smaller jurisdictions contributing niche strengths in cybersecurity, defense, and entrepreneurial activity.

Computer Services Jobs and Job Concentration in Northern Virginia by Jurisdiction



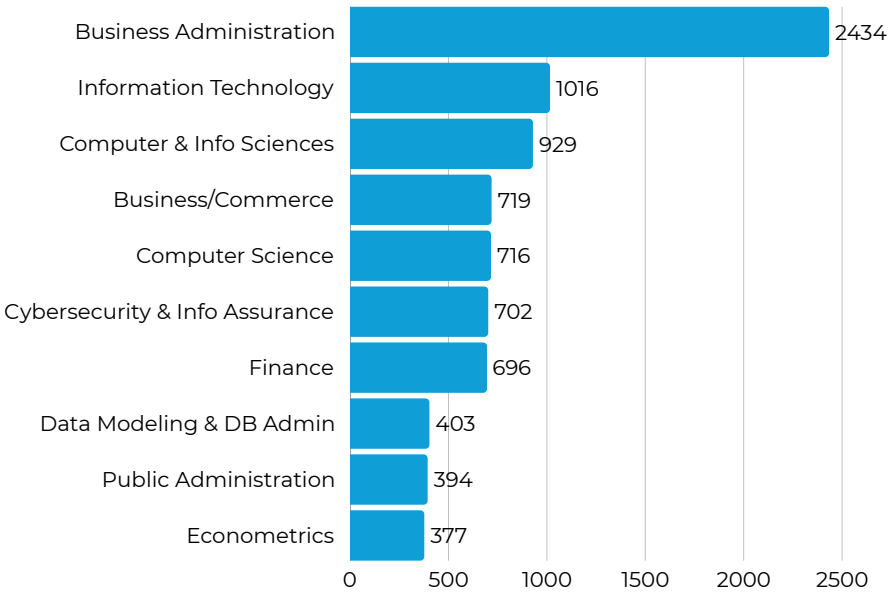
NOTE: Location Quotient (LQ) is calculated by dividing an industry cluster's share in a region by that of the United States. LQ is a way to measure a region's concentration or specialization in an industry cluster compared to the nation to indicate how competitive an industry is. An LQ greater than 1.0 indicates that a region is more concentrated or specialized in an industry compared to the United States, with greater than 1.2 meaning the region is highly specialized in the industry. Conversely, an LQ less than 1.0 indicates that a region is relatively less specialized than the United States.

Skills Gap Analysis of Northern Virginia's Computer Services Industry

In general, jobs in the Computer Services industry have flexible entry requirements. Approximately 40% of job postings do not require a bachelor's degree and 28% do not specify years of experience. Amazon, Leidos, and Booz Allen Hamilton are among the region's employers driving demand for workers in this industry. From the talent supply side, George Mason University produces more tech graduates than any other four year institution in Virginia, with 40% of its students majoring in STEM fields.[25]

Core competencies which exhibit the largest skill gaps include **Computer Science knowledge**, **Amazon Web Services (AWS)**, and **Agile Methodology**. This pattern indicates that rapid industry growth and evolving technology requirements are advancing faster than the supply of qualified workers. In addition, **security clearances** are the most critical qualification that distinguish Northern Virginia's Computer Services cluster from other regions in the nation. A **Top Secret-Sensitive Compartmented Information Clearance (TS/SCI Clearance)** is the most required type of security clearance, representing 23% of total job postings in the cluster.[26] This reflects the cluster's deep integration with federal contracting work.

Figure 15: Completions of Top Programs from Educational Institutions in the DMV Region in 2023, Source: IPEDS



Illustrative List of Relevant Training Programs in Northern Virginia

Master's in Computer Science and Applications

Master's in Systems Engineering

Graduate Certificate in Urban Computing

Bachelor's in Applied Computer Science

Bachelor's and Master's in Computer Science

PhD in Computer Science

Master's in Information Technology

Bachelor's in Cloud Computing

Associate's in Cloud Computing

Associate's in Information Technology

In-Demand Skills for Northern Virginia's Computer Services Industry[27]

In-Demand Skills	Description
Computer Science	Involves understanding algorithms, data structures, programming languages, and software development, which enable the design and implementation of efficient solutions to complex problems.
Amazon Web Services	Collection of remote computing services, including storage, databases, and application services, offered by Amazon.com.
Agile Methodology	Project management approach that emphasizes flexibility, collaboration, and iterative progress through small, incremental changes.
Python (Programming Language)	High-level, interpreted programming language widely used for web development, scientific computing, data analysis and visualization, artificial intelligence and machine learning.
Automation	Encompasses the design, implementation, and management of systems that execute repetitive tasks, data processing, and control operations.
Scripting	Computer programming skill that involves writing code to automate processes or perform specific tasks.
Microsoft Azure	Cloud computing platform that offers a wide range of services and tools to help organizations build, deploy, and manage their applications and infrastructure in the cloud.
Cyber Security	Encompasses knowledge of security protocols, risk assessment, and incident response strategies that safeguard information technology assets.
Scalability	Involves the design and implementation of solutions that can efficiently expand in response to increased demand without compromising performance.
DevOps	Set of practices that combines software development and IT operations, aimed at shortening the development lifecycle and delivering high-quality software continuously.

GOVA PROJECT SPOTLIGHT:
Career Investigations: Pathways to Your Future

Project: Career Investigations: Pathways to Your Future

Applicant: Alexandria City Public Schools and JASON Learning

Investment Strategy: Workforce Development

Grant: $100,000

Photo: Alexandria City Public Schools

The “Career Investigations: Pathways to Your Future” project, led by Alexandria City Public Schools (ACPS) in collaboration with JASON Learning and six Northern Virginia school divisions, aimed to address the lack of early career awareness among middle school students. Funded by a $100,000 GO Virginia Region 7 grant, the initiative developed a 9-week curriculum aligned with Virginia’s Career Investigations competencies and focused on high-demand industries, including Computer Software, Cybersecurity, Life Sciences, and Emerging Technologies.

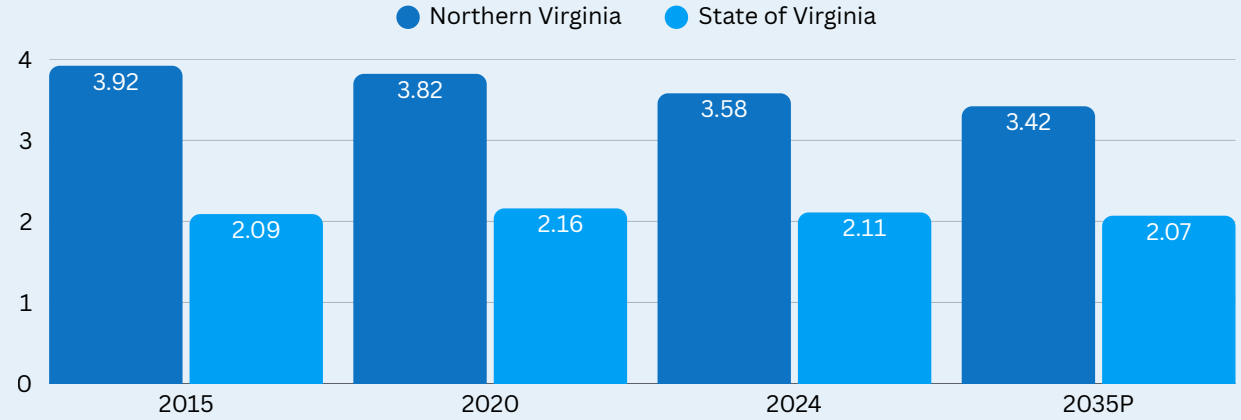
A key goal was to introduce students to career pathways in Computer Software and Services, helping them understand the skills, certifications, and educational paths needed for success in this rapidly growing field. JASON Learning developed dedicated curriculum units for Computer Software, featuring interactive lessons, real-world examples, and role model videos from Northern Virginia tech professionals. These modules emphasized digital literacy, problem-solving, and innovation—core competencies for careers in software development and IT services.

The curriculum was piloted in Fairfax County and Alexandria City summer programs and reached 3,782 students across participating districts. It was integrated into advisory periods and elective courses, supported by professional development for educators. The content remains freely accessible via the JASON Digital Platform, ensuring long-term scalability.
By aligning with GO Virginia’s Growth and Diversification Plan, the project strengthened the regional talent pipeline in technology sectors. It laid the foundation for future initiatives such as internships, dual enrollment, and digital portfolio development, empowering students to pursue careers in computer software and related industries.

CYBERSECURITY

The Cybersecurity industry cluster is one of Northern Virginia's core economic strengths. The region is approximately 3.5x more specialized in cybersecurity than the U.S. as a whole. In 2024, the cluster provided 41,500 jobs, comprising 2.8% of regional employment. Cybersecurity jobs paid an average annual wage of $147,021, about $2,000 higher than the region's median household income in the same year.[28] However, the cluster has recently experienced employment declines that are likely driven in part by layoffs in the tech sector across the country.

Economic Specialization in the Cybersecurity Industry (U.S. Average = 1.00)



Assets

- Unparalleled proximity to Federal cybersecurity and defense institutions
- Deep cybersecurity talent pool
- Strong industry collaboration and information networks

Challenges

- Insufficient on-ramps for entry-level workers
- Security clearance barriers
- High barriers for startups, especially around procurement complexity
- Competition for talent among employers

Northern Virginia's cybersecurity cluster is anchored by its proximity to federal agencies, the Department of Defense, and the intelligence community, creating one of the largest concentrations of cybersecurity talent and firms in the nation. A significant share of the State of Virginia's cybersecurity workforce is located in the region, and demand for cybersecurity workers continues to outpace supply across both government and commercial sectors. While federal contracting remains the dominant driver, opportunities exist to leverage this talent base to foster entrepreneurship and support high-growth companies that can expand into commercial markets such as healthcare, financial services, and cloud security. These dynamics position Northern Virginia not only as a federal cybersecurity hub but as a potential global leader in commercial cybersecurity innovation.

NOTE: A full SWOT analysis linking this cluster to GO Virginia's four investment strategies can be found in Appendix C

41,500

Jobs

3% of total regional employment

+137%

Growth
in Database Architects
(2014-2024)

3,386

Job Openings
(2023-2024)

One in three openings are for database architects

$73.24

Average Hourly Wage

68% higher than the regional average

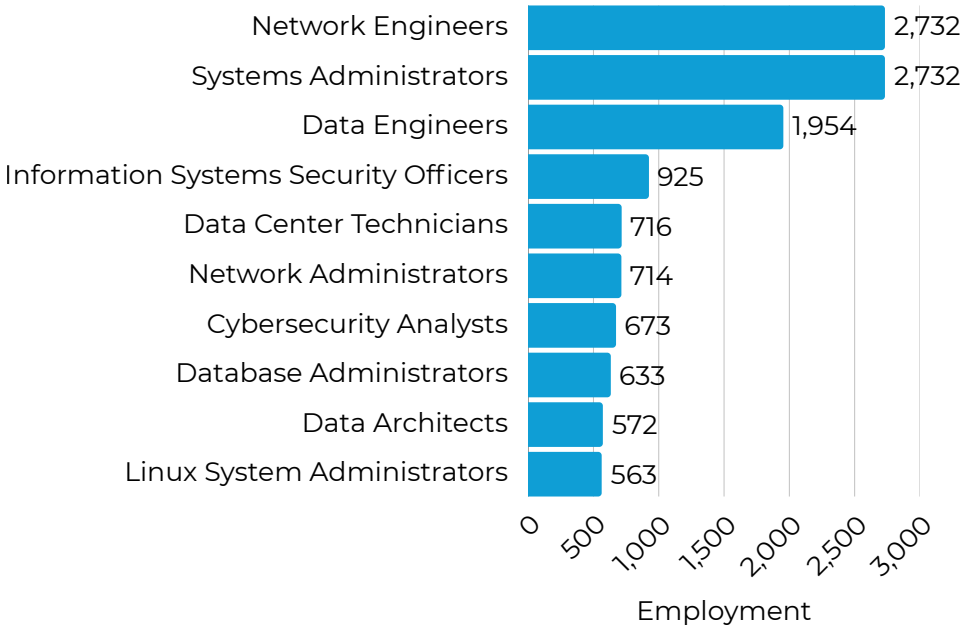
28% wage growth since 2015

Cybersecurity in Northern Virginia includes firms and workers who protect IT systems, networks, and digital infrastructure from cyber threats. Computer Systems and Information Security Analysts comprise a majority of the region's cybersecurity jobs.

Table 3: Top Occupations in Cybersecurity, 2024. Source: Lightcast

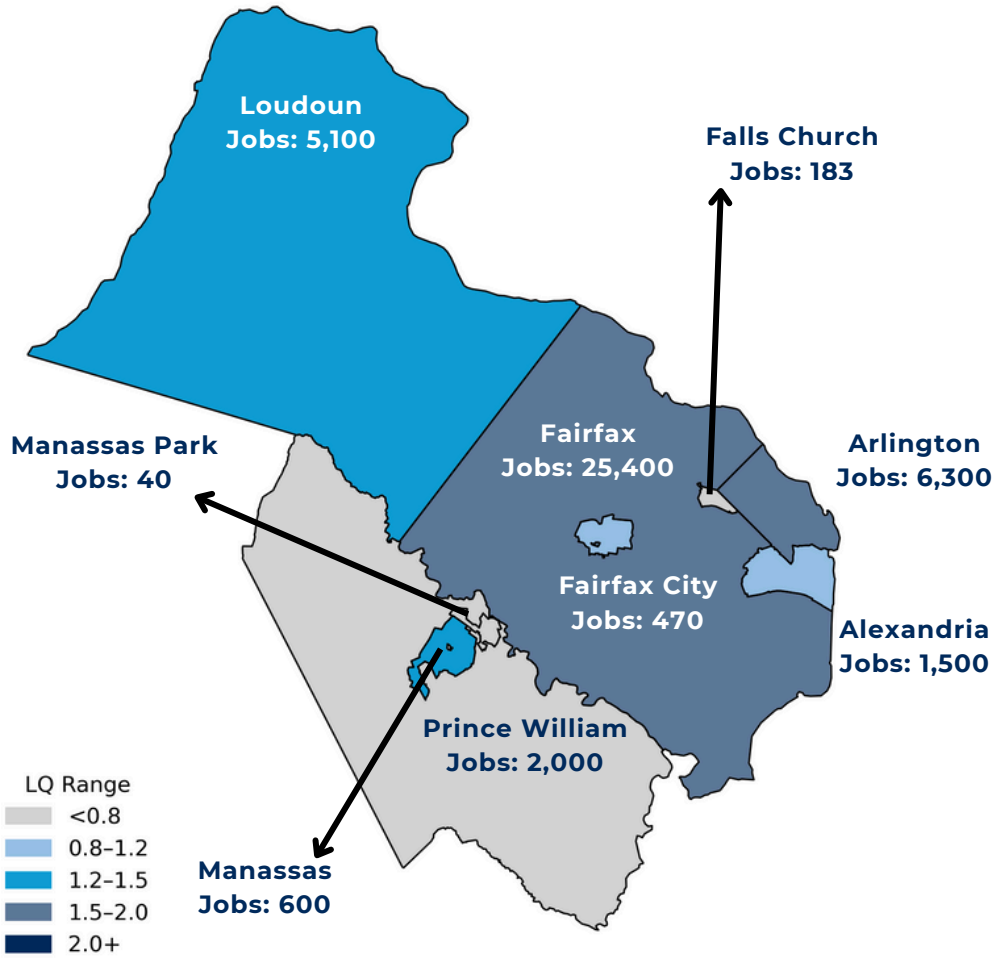
Cluster Subsectors	2024 Jobs	2020-2024 % Jobs Change	2024 LQ	Average Earnings
Computer Systems Analysts	11,278	-25%	2.56	$139,021
Information Security Analysts	11,455	8%	6.97	$152,762
Computer Network Architects	5,445	-3%	3.54	$177,396
Database Administrators	1,804	-37%	2.79	$122,268
Database Architects	4,717	48%	8.51	$195,337
Network and Computer Systems Administrators	6,789	-27%	2.40	$131,740

Figure 16: Top Job Titles in Job Postings, July 2023-July 2025. Source: Lightcast



Cybersecurity employment in Northern Virginia totals 41,500 jobs, with Fairfax County commanding the largest share at 61%, reflecting its concentration of federal contractors, defense integrators, and proximity to key national security agencies. Arlington County accounts for 15%, benefiting from its adjacency to Washington, D.C., while Loudoun County holds 12%, supported by its globally significant data center industry. Smaller but notable concentrations are found in Prince William County (5%) and Alexandria City (4%), with the remaining independent cities together representing under 4% of employment.[29] Overall, the cluster is heavily anchored by Fairfax, Arlington, and Loudoun, while other jurisdictions contribute niche strengths that round out the region's cybersecurity ecosystem.

Cybersecurity Jobs and Job Concentration in Northern Virginia by Jurisdiction



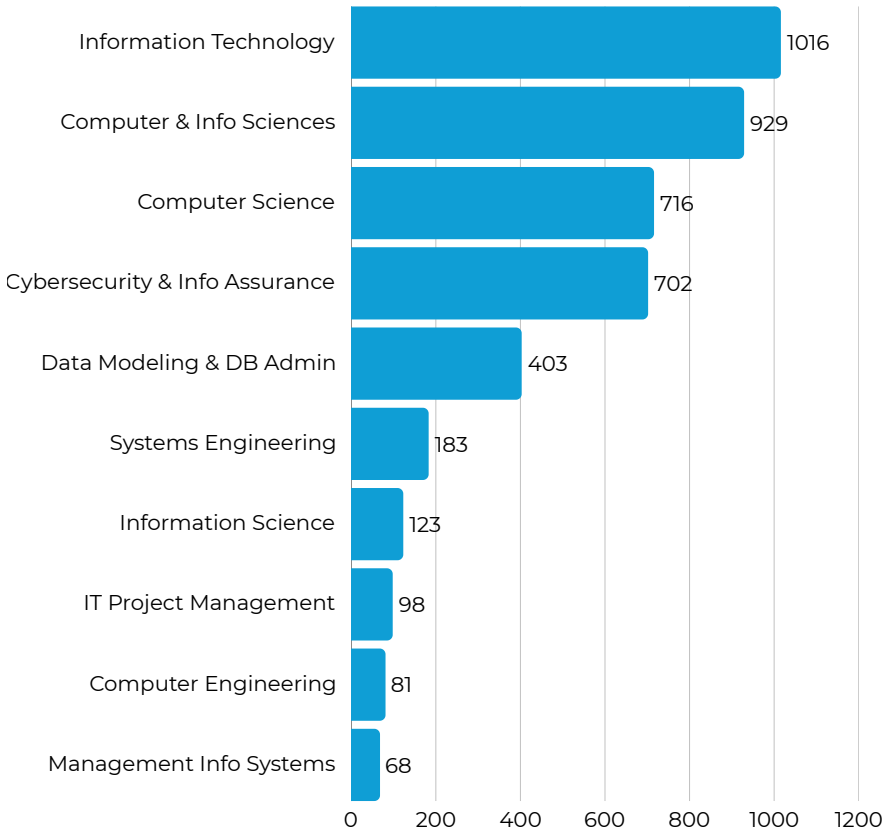
NOTE: Location Quotient (LQ) is calculated by dividing an industry cluster's share in a region by that of the United States. LQ is a way to measure a region's concentration or specialization in an industry cluster compared to the nation to indicate how competitive an industry is. An LQ greater than 1.0 indicates that a region is more concentrated or specialized in an industry compared to the United States, with greater than 1.2 meaning the region is highly specialized in the industry. Conversely, an LQ less than 1.0 indicates that a region is relatively less specialized than the United States.

Skills Gap Analysis of Northern Virginia's Cybersecurity Industry

The Cybersecurity industry requires some formal educational and professional experience. Most jobs in the region require a bachelor's degree at a minimum, and some require 4-6 years of experience. Major employers actively recruiting cybersecurity talent in Northern Virginia include Leidos, Amazon, and General Dynamics.[30]

Security clearances continue to represent the most frequently required qualification for cybersecurity positions. **Top Secret-Sensitive Compartmented Information (TS/SCI) clearances** are particularly essential, accounting for 20 percent of job postings that specify additional requirements besides education and work experience.[31] This may create significant barriers to entry for candidates without existing security clearances.

Figure 17: Completions of Top Programs from Educational Institutions in the DMV Region in 2023. Source: IPEDS



Illustrative List of Relevant Training Programs in Northern Virginia

George Mason University

Graduate Certificate in Applied Cybersecurity

Master's in Applied Information Technology

Bachelor's and Master's in Cybersecurity Engineering

Master's in Information Security and Assurance

Marymount University

Master's in Cybersecurity

Virginia Tech

Bachelor's in Cybersecurity Management and Analytics

NOVA Northern Virginia Community College

Associate's in Cybersecurity

Associate's in Information Systems Technology

Associate's in Computer Science

In-Demand Skills for Northern Virginia's Cybersecurity Industry[32]

In-Demand Skills	Description
Cloud Security	Involves understanding policies, technologies, and controls designed to protect data, applications, and services hosted in cloud environments, including risk management practices, compliance requirements, and security measures that safeguard cloud infrastructure from threats and vulnerabilities.
Computer Science	Involves understanding algorithms, data structures, programming languages, and software development, which enable the design and implementation of efficient solutions to complex problems.
Amazon Web Services	Collection of remote computing services, including storage, databases, and application services, offered by Amazon.com.
Scripting	Computer programming skill that involves writing code to automate processes or perform specific tasks.
Operating Systems	Encompasses knowledge of system architecture, process management, memory management, and file systems, which enable efficient resource allocation and user interaction.
Automation	Encompasses the design, implementation, and management of systems that execute repetitive tasks, data processing, and control operations.
Linux	Open-source operating system that is popular in server environments and for development work, requiring specialized skills in installation, configuration, and maintenance, as well as proficiency in the use of command-line interfaces.
Python (Programming Language)	High-level, interpreted programming language widely used for web development, scientific computing, data analysis and visualization, artificial intelligence and machine learning.
Firewall	Software program that is designed to protect a network or computer system from unauthorized access or malicious activities by controlling network traffic.
Information Systems	Organized system for collecting, storing, and processing data – this skill requires the understanding of hardware, software, data management, and networking principles that facilitate the effective use of information technology.
Network Routing	Process of selecting a path for traffic in a network, requiring specialized skills and knowledge of routing protocols such as OSPF, BGP, and EIGRP.

GOVA PROJECT SPOTLIGHT: Virginia Cyber Skills Academy

Photo: Women's Society of Cyberjutsu

Project: Virginia Cyber Skills Academy

Applicant: SANS Institute and Women's Society of Cyberjutsu

Investment Strategy: Workforce Development

Grant: $699,000

The Virginia Cyber Skills Academy (VCSA), funded by a $699,000 GO Virginia grant, was launched to strengthen the region's technology workforce by addressing pandemic-driven unemployment and leveraging the region's growing cybersecurity sector. The program focused on upskilling and reskilling individuals for high-demand cybersecurity roles through industry-recognized training and certifications. Key activities included a Cyber Career Exploration and Employer Fair, which engaged 500+ participants, and intensive SANS training courses aligned with the NICE Cybersecurity Workforce Framework. Participants received certifications such as GFACT, GSEC, and GCIH, along with career support and membership in the Women's Society of Cyberjutsu for networking and mentorship.

Outcomes:

- 99 individuals enrolled; 66 achieved certification (94% of goal).
- 48 participants secured employment or salary increases post-training.
- Diversity impact: 65 women and 54% BIPOC representation, exceeding industry averages.

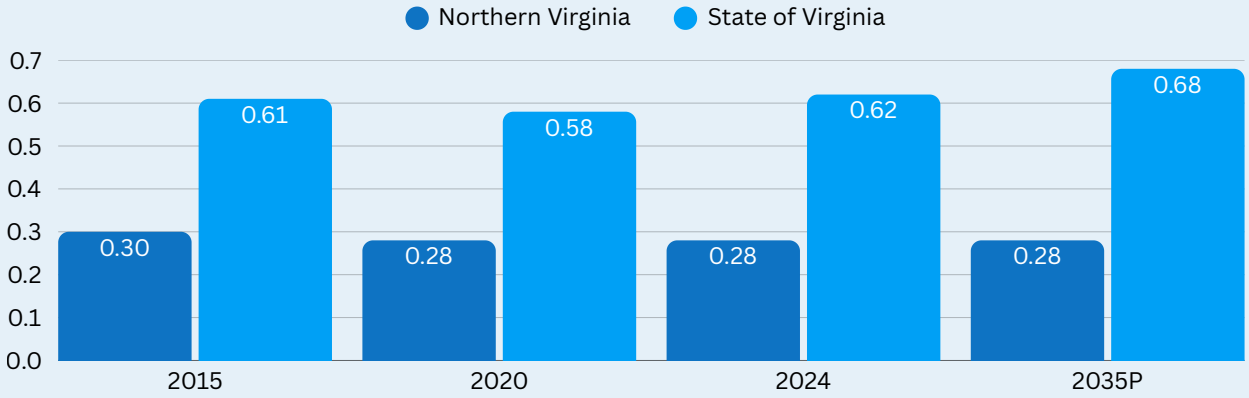
Regional Impact:

The project advanced workforce diversification and filled critical cybersecurity roles, supporting economic recovery and security priorities. While the program is paused pending new funding, strong demand and employer interest underscore its sustainability potential. VCSA demonstrated that rapid, immersive training can effectively build a qualified, diverse cyber workforce for Northern Virginia.

LIFE SCIENCES

Life sciences is an emerging pillar of Northern Virginia's economy. While the region's specialization in life sciences is lower than that of Virginia and the national average, recent years have seen notable growth in biopharmaceuticals, medical research, and health technology, supported by expanding lab space and investments in applied R&D. In 2024, the region's life sciences industry accounted for 12,500 jobs that paid on average $96,774 in earnings.[33] The region's concentration of data-driven firms combined with proximity to anchor institutions such as George Mason University's Science and Technology Campus in Manassas and the National Institute of Health in Maryland provides a strong foundation for convergence between life sciences and fields such as artificial intelligence and cybersecurity.

Economic Specialization in Life Sciences (U.S. Average = 1.00)



Assets

- Strong opportunities for growth in computational life sciences, bioinformatics, and digital health
- Presence of anchor institutions such as GMU's SciTech Campus
- Robust digital infrastructure to support data-intensive life science research
- Extensive wet lab facilities

Challenges

- Regulatory and funding hurdles for startups
- Talent attraction and retention, especially for smaller companies

Northern Virginia's life sciences industry is poised for significant growth, fueled by recent strategic investments. These investments include the July 2025 launch of the region's first Innovation District, anchored at George Mason University's SciTech Campus in Manassas,[34] AstraZeneca's investment to build its largest-ever manufacturing facility in Virginia,[35] and American Type Culture Collection's $54.7 million expansion of its bioresource campus in Manassas.[36] Combined with the region's robust educational institutions, extensive web lab facilities, and proximity to life science assets in other parts of the DC metro, these investments underscore Northern Virginia's trajectory toward becoming a leading center for life sciences innovation.

NOTE: A full SWOT analysis linking this cluster to GO Virginia's four investment strategies can be found in Appendix C

12,500

Jobs

1% of total regional employment

568

Business Locations

22 employees per business location on average

$2.7B

Economic Output

1% of the region's total GDP

$96,774

Average Annual Earnings

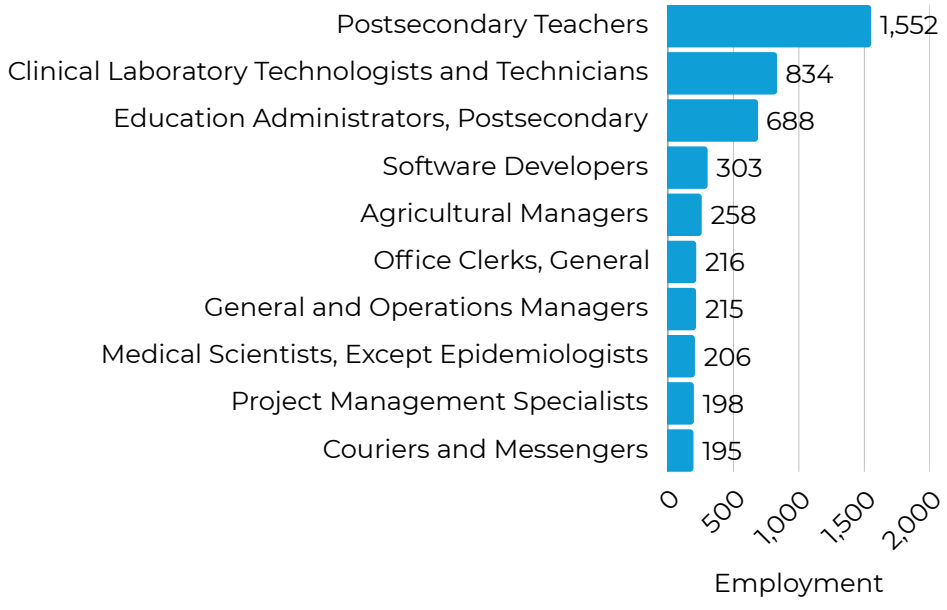
29% earnings growth since 2015

Life Sciences encompasses companies engaged in biotechnology, pharmaceuticals, medical devices, and related research and development. In Northern Virginia, the cluster is anchored by federal contractors, research institutions, and biotech firms that support both public health initiatives and commercial healthcare markets.

Table 4: Top Industries in Life Sciences, 2024. Source: Lightcast

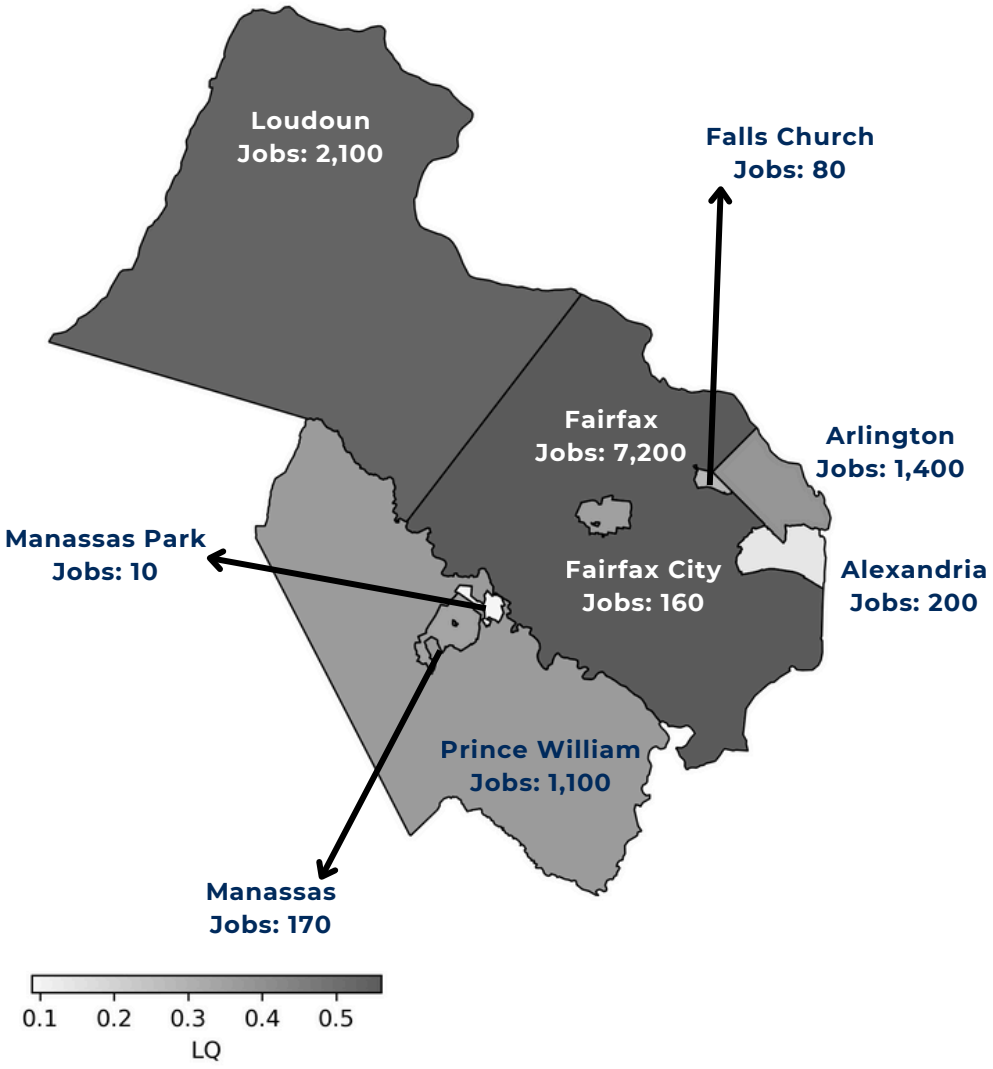
Cluster Subsectors	2024 Jobs	2020-2024 % Jobs Change	2024 LQ	Average Earnings
Colleges, Universities, and Professional Schools	4,387	-3%	0.31	$64,562
Medical Laboratories	3,286	9%	1.57	$91,270
Research and Development in Biotechnology (excl. Nanobio.)	802	3%	0.44	$169,287
Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	783	-22%	0.38	$143,180
Crop Production	619	23%	0.09	$36,803
Surgical and Medical Instrument Manufacturing	583	12%	0.42	$181,292

Figure 18: Employment by Occupation, 2024. Source: Lightcast



Northern Virginia's life sciences sector is experiencing significant growth, with employment concentrated in key innovation hubs. Fairfax County accounts for roughly 58% of the region's life sciences workforce, followed by Loudoun County at 17%, Arlington at 11%, and Prince William at 9%, while smaller jurisdictions make up the remainder.[37] Recent developments underscore the region's expanding prominence: AstraZeneca announced its largest-ever U.S. manufacturing facility in Virginia, focusing on GLP-1 medications and creating hundreds of new jobs,[38] while George Mason University's new Life Sciences and Engineering Building at the SciTech Campus in Manassas enhances research and education infrastructure with over 30 specialized labs.[39] These investments reinforce Northern Virginia's emergence as a hub for high-tech life sciences innovation.

Life Sciences Jobs and Job Concentration in Northern Virginia by Jurisdiction



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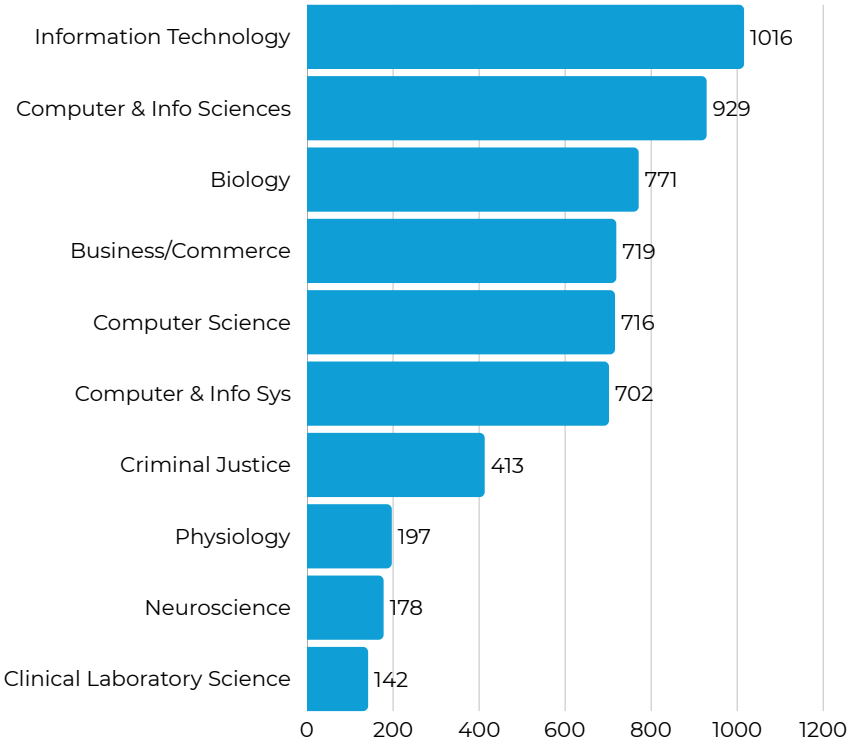
Skills Gap Analysis of Northern Virginia's Life Sciences Industry

The Life Sciences cluster spans research, production, technical support, and commercialization, with varying requirements across the value chain. R&D offers the most accessible entry points for new graduates, with nearly half of job postings not specifying experience requirements. Nevertheless, major employers such as Inova Center for Personalized Health, Bode Technology, and Parabon Nanolabs tend to value **professionals who can combine scientific expertise with data analytics and regulatory knowledge.**

Technical support and commercialization roles demand higher qualifications. Most technical support positions require a bachelor's degree and several years of experience, with the largest gaps in IT-related skills such as computer science, AWS, and agile methods. Commercialization roles are the most education-intensive in the cluster, with project management emerging as both the top skill in demand and the area with the greatest shortage, fueling widespread calls for Project Management Professional (PMP) certification.[40]

Figure 19: Completions of Top Programs from Educational Institutions in the DMV Region in 2023. Source: IPEDS



Illustrative List of Relevant Training Programs in Northern Virginia

Bachelor's and Master's in Biology

Bachelor's in Neuroscience

PhD in Bioinformatics and Computational Biology

PhD in Biosciences

Bachelor's in Biomedical Engineering

Associate's in Biotechnology

Associate's in Medical Laboratory Technology

Associate's in Biology

In-Demand Skills for Northern Virginia's Life Sciences Industry[41]

In-Demand Skills	Description
Bioinformatics	Involves data management, warehousing, visualization, analysis and modeling of complex biological data to provide insights into biological processes and facilitate discovery of new drugs, disease markers and potential genetic targets.
Computational Biology	Application of computational techniques and tools to analyze and interpret biological data, encompassing the use of algorithms, statistical models, and simulations to understand complex biological systems and processes.
Molecular Biology	Encompasses techniques for analyzing genetic material, understanding cellular processes, and exploring molecular interactions.
Tissue Engineering	Involves the design and fabrication of scaffolds, cell culture techniques, and the application of growth factors to restore, maintain, or improve tissue function.
Genomics	Involves the sequencing, analysis, and interpretation of DNA to understand how it affects various traits or diseases.
Good Laboratory Practice	Set of principles and guidelines that ensure the quality and integrity of non-clinical laboratory studies, often encompassing the organization, conduct, and documentation of laboratory work to promote reliability and reproducibility of results.
FDA Regulations	Rules and guidelines established by the Food and Drug Administration to ensure the safety, efficacy, and security of food, drugs, medical devices, and cosmetics. This skill encompasses knowledge of compliance requirements, labeling standards, and approval processes that govern the development and marketing of these products.
Bioprocess	Biological operations and techniques used to develop products from living organisms or their components, often encompassing the design, optimization, and control of cells, enzymes, or microorganism processes to manufacture biopharmaceuticals, biofuels, and other bioproducts.
Project Management	Ability to manage the application of processes, methods, skills, knowledge, and experience to achieve specific project objectives according to the project acceptance criteria within agreed parameters.

GOVA PROJECT SPOTLIGHT:
Northern Virginia Bioscience Center

Photo: Prince William County Government

Project: Northern VA Bioscience Center

Applicant: Prince William County Economic Development and Holladay Properties

Investment Strategy: Site Development

Grant: $500,000

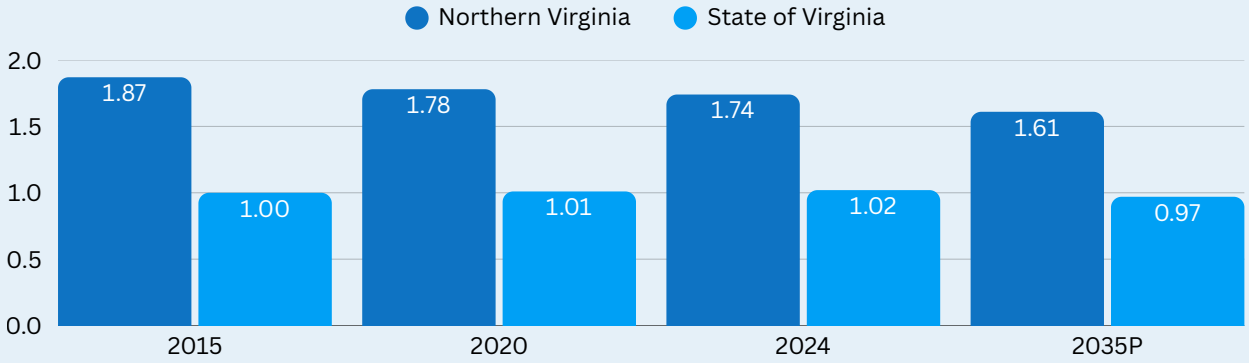
The Northern Virginia Bio Science Center, a 30,000-square-foot BSL-2 wet lab facility developed by Holladay Properties in partnership with Prince William County, opened in 2022 as a transformative addition to the region's life sciences ecosystem. Conceived to address the critical shortage of wet lab space in Northern Virginia, the center offers state-of-the-art laboratories and specialized equipment for companies graduating from the Prince William Science Accelerator and other biotech firms seeking to expand.

The project delivered significant outcomes. It retained forty jobs and created sixty new life science positions, with additional opportunities emerging in bioinformatics and data analytics. By providing scalable wet lab space locally, the center reduced the outflow of companies to Maryland and strengthened Northern Virginia's competitiveness as a biotech hub. It also fostered collaboration with George Mason University and statewide initiatives such as VA Bio Connect, creating a clear pathway for research commercialization. The facility achieved federal BSL-2 certification and incorporated advanced safety and engineering standards, ensuring compliance and readiness for tenants.

EMERGING TECHNOLOGIES

Emerging technologies in Northern Virginia include artificial intelligence, quantum, semiconductors, robotics, energy technology, and aerospace. These industries have expanded significantly over the past decade, with regional employment growing by 15% since 2015. Today, emerging technologies account for approximately 55,700 jobs with average earnings of $179,620. The region's specialization in this key industry is more than 1.7x the national average, and its proximity to federal research agencies and commercial innovation labs provides a strong foundation for continued growth.[42]

Economic Specialization in Emerging Technologies (U.S. Average = 1.00)



Assets

- Strategic location and federal connectivity
- Second-highest concentration of technology workers among U.S. metro areas
- Robust talent pipeline
- Strong data infrastructure to support next-generation technologies

Challenges

- Industry focus on providing services rather than creating products, making it harder to scale up and achieve long-term growth
- Lack of clear career transition pathways for public sector workers
- Infrastructure strain from data centers
- Lack of access to resources for navigating policy and regulatory barriers

Northern Virginia has a unique opportunity to position itself as a global hub for next-generation technologies by leveraging its existing strengths while charting new areas of growth. Building on its leadership in data infrastructure, the region can become a national center of excellence in cybersecurity, artificial intelligence, and quantum computing, while simultaneously advancing energy innovation through the development and adoption of alternative energy solutions—critical to sustaining its data center economy. Growth in robotics and unmanned systems, particularly when paired with AI applications, presents another avenue to boost competitiveness in defense, aerospace, and advanced manufacturing. Achieving this vision will require coordinated regional strategies across jurisdictions, ensuring that investments are aligned, infrastructure is cutting-edge, and Northern Virginia continues to lead in both technological innovation and global market relevance.

NOTE: A full SWOT analysis linking this cluster to GO Virginia's four investment strategies can be found in Appendix C

55,700

Jobs

4.1% of total regional employment

2,850

Business Locations

20 employees per business location on average

$16.6B

Economic Output

5.7% of the region's total GDP

$179,620

Average Annual Earnings

54% higher than the regional average

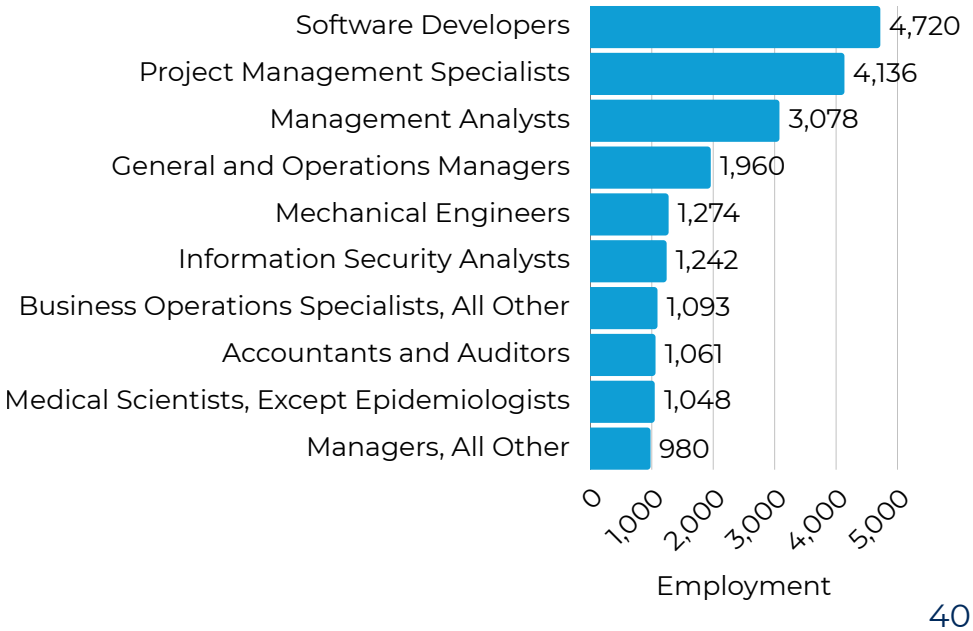
32% earnings growth since 2015

Emerging Technologies includes firms and organizations developing the next wave of transformative innovations such as artificial intelligence, quantum computing, robotics, and alternative energy solutions. In Northern Virginia, the cluster is driven by a dense network of federal research agencies, R&D contractors, and tech startups.

Table 5: Top Industries in Emerging Technologies, 2024. Source: Lightcast

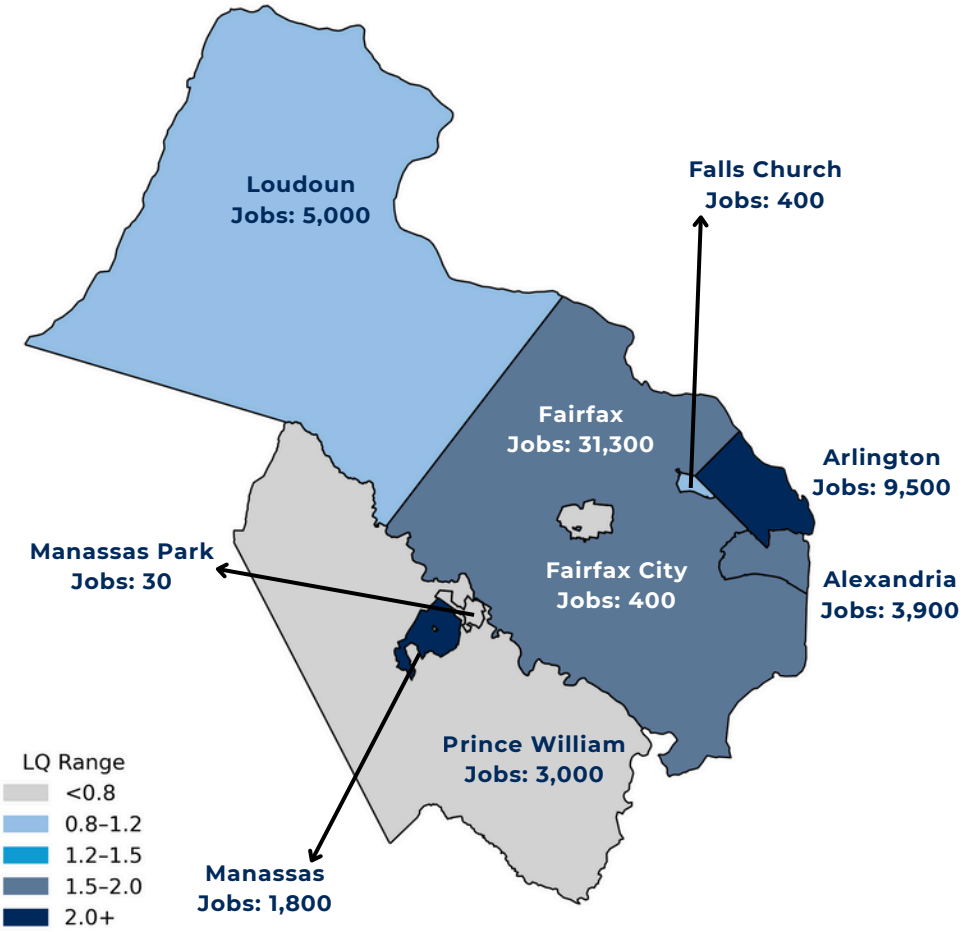
Cluster Subsectors	2024 Jobs	2020-2024 % Jobs Change	2024 LQ	Average Earnings
Engineering Services	26,135	8%	2.55	$174,474
R&D in Physical, Engineering & Life Sciences (excluding Nano/ Biotech)	15,119	15%	3.19	$182,395
Other Scientific and Technical Consulting Services	6,356	3%	2.8	$152,831
Software Publishers	4,647	15%	0.86	$238,227
Semiconductor and Related Device Manufacturing	1,076	-10%	0.62	$208,344
Bare Printed Circuit Board Manufacturing	505	40%	2.16	$107,839

Figure 20: Employment by Occupation, 2024. Source: Lightcast



Employment in Northern Virginia's emerging technologies sector is anchored by Fairfax County, which accounts for about 57% of the region's 55,700 jobs. This reflects Fairfax County's dominance in federal contracting and major tech and consulting firms (e.g., Booz Allen Hamilton, Leidos, SAIC, CACI International, etc.) as well as the presence of assets like the Center for Innovative Technology and George Mason University's expanding research enterprise. Arlington County follows with 17% of jobs and has the highest job concentration in Emerging Technologies, supported by its proximity to the Pentagon, federal R&D agencies, and a growing cluster of AI and cybersecurity startups. Loudoun County contributes 9% of employment, driven by its global leadership in data centers and growing focus on energy innovation, while Alexandria holds 7%, fueled by health tech and federal science agencies. Prince William makes up 5% of employment, where George Mason's SciTech campus and Micron Technology's multibillion-dollar expansion of its Manassas semiconductor fabrication plant are catalyzing growth in semiconductors and advanced manufacturing. The smaller jurisdictions—Fairfax City, Falls Church, Manassas, and Manassas Park—together account for approximately 5% of the workforce, often tied to niche firms and specialized labs.[43]

Emerging Technologies Jobs and Job Concentration in Northern Virginia by Jurisdiction



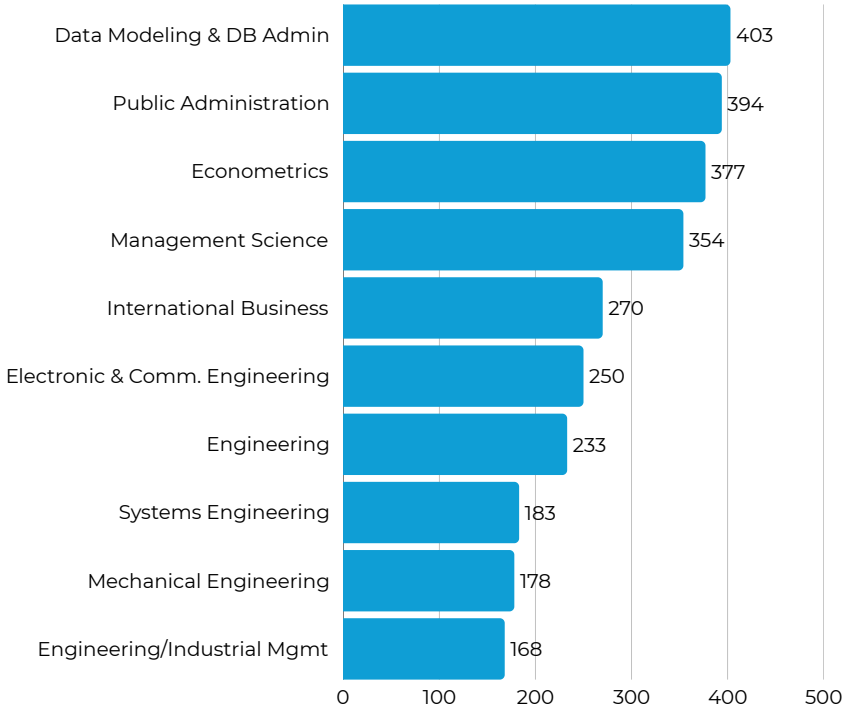
NOTE: Location Quotient (LQ) is calculated by dividing an industry cluster's share in a region by that of the United States. LQ is a way to measure a region's concentration or specialization in an industry cluster compared to the nation to indicate how competitive an industry is. An LQ greater than 1.0 indicates that a region is more concentrated or specialized in an industry compared to the United States, with greater than 1.2 meaning the region is highly specialized in the industry. Conversely, an LQ less than 1.0 indicates that a region is relatively less specialized than the United States.

Skills Gap Analysis of Northern Virginia's Emerging Technologies Industry

The Emerging Technologies cluster spans energy technology, artificial intelligence, quantum, aerospace, robotics, and semiconductors, with entry points ranging from technician roles to high-level R&D. Technician and production jobs are the most accessible, often requiring only an associate degree and modest experience, but employers report critical shortages in hands-on skills such as electronics and test equipment operation. Security clearances are more common than industry certifications, reflecting the sector's dependence on federal contracts.[44]

Science, engineering, and business roles demand bachelor's degrees and several years of experience, with persistent shortages in computer science, programming, and project management. PMP certification is the leading non-clearance credential, while IT and data roles show strong demand for cloud and agile skills but oversupply in traditional IT skills. **Major regional employers—including Lockheed Martin, Northrop Grumman, and Micron—anchor the cluster**, where security clearances remain the defining barrier across nearly all positions.[45]

Figure 21: Completions of Top Programs from Educational Institutions in the DMV Region in 2023. Source: IPEDS



Illustrative List of Relevant Training Programs in Northern Virginia

PhD in Robotics

Master's in Artificial Intelligence

Master's in Applied and Engineering Physics

Master's in Industrial and Systems Engineering

Master's in Mechanical Engineering

Master's in Emerging Technology

Master's in Technology Management

Associate's in Artificial Intelligence and Data Analytics

Associate's in Engineering Technology

Certificate in Engineering Technology/Technician Career Studies

In-Demand Skills for Northern Virginia's Emerging Technologies Industry[46]

In-Demand Skills	Description
Technician & Production	
Test Equipment	A skill that measures and analyzes electrical signals, equipment performance, and overall system functionality. Operating and maintaining these tools requires a specialized skill set that includes knowledge of electrical engineering, physics, and software programming.
Hand Tools	Involves knowledge of electrical principles, computer science, and physics, and is a specialized field that requires careful attention to detail and a thorough understanding of complex systems.
Electronics	Involves knowledge of electrical principles, computer science, and physics, and is a specialized field that requires careful attention to detail and a thorough understanding of complex systems.
Science & Engineering	
Python	A skill widely used for web development, scientific computing, data analysis and visualization, artificial intelligence and machine learning.
Computer Science	Involves understanding algorithms, data structures, programming languages, and software development, which enable the design and implementation of efficient solutions to complex problems.
Electrical Engineering	A skill used to create solutions for various applications, including energy distribution, telecommunications, and electronic devices, by ensuring efficient and reliable operation of electrical systems.
Machine Learning	A subset of artificial intelligence that involves the development of algorithms and statistical models that enable systems to perform tasks without explicit instructions.
Artificial Intelligence	Encompasses the development of algorithms and models that enable machines to perform tasks such as learning, reasoning, problem-solving, and understanding natural language.
Systems Engineering	Involves the application of engineering principles, methods, and techniques to optimize a system's performance, functionality, and cost-effectiveness while meeting the requirements and goals of stakeholders.

In-Demand Skills	Description
Management & Businesses	
Project Management	The ability to manage the application of processes, methods, skills, knowledge, and experience to achieve specific project objectives according to the project acceptance criteria within agreed parameters.
Microsoft Office	A common skill in the workplace, with proficiency in its various programs, which is often required for many different types of jobs.
Process Improvement	Involves the systematic evaluation of workflows, identifying inefficiencies, and implementing changes to enhance overall efficiency, reduce costs, and improve outcomes.
Finance	Involves understanding financial principles and practices that enable effective allocation of resources, risk assessment, and strategic planning.
Data Analysis	The ability to inspect, cleanse, transform, and model data with the goal to discover useful information, inform conclusions, and support decision-making.
IT & Data	
Computer Science	Involves understanding algorithms, data structures, programming languages, and software development, which enable the design and implementation of efficient solutions to complex problems.
Python	A skill widely used for web development, scientific computing, data analysis and visualization, artificial intelligence and machine learning.
Agile Methodology	A project management approach that emphasizes flexibility, collaboration, and iterative progress through small, incremental changes. This skill involves understanding principles and practices that facilitate adaptive planning, evolutionary development, and early delivery of valuable software.
Software Development	The process of designing, creating, testing, and maintaining computer programs or software applications. It involves a specialized skill set, including knowledge of programming languages, algorithms, databases, and user interface design.
Automation	Encompasses the design, implementation, and management of systems that execute repetitive tasks, data processing, and control operations.

GOVA PROJECT SPOTLIGHT: Nano-IMAGINE

Photo by Evan Cantwell/Office of University Branding

Project: Nano-IMAGINE

Applicant: George Mason University

Investment Strategy: Cluster Scale-Up

Grant: $2,500,000

The Nano-IMAGINE project, funded by a $2.5 million GO Virginia Region 7 grant, established Northern Virginia's first Class 1000 clean room and Nanofabrication Facility (NFF) at George Mason University. This state-of-the-art facility became a cornerstone for regional innovation, enabling hands-on workforce training, research, and industry collaboration in nanotechnology.

Despite early delays in facility opening, the project exceeded its training goals, preparing 191 individuals—including high school students, undergraduates, graduate students, and current workers— for careers in the high-tech sector. The program emphasized diversity, with 19% of participants from underrepresented groups and 9% veterans.

The NFF supported three local companies and one federal agency, facilitated the creation of Fusion Nanotech, and contributed to 16 confirmed job placements at Micron, with an estimated 152 additional trained individuals entering Virginia's workforce. The project also launched Nanotechnology Day, engaging over 400 K–12 students and families in STEM activities. Sustainability is ensured through training fees, a $934K NSF grant, and lab usage charges. The NFF is now a core asset in Mason's Innovation District, supporting long-term workforce development and commercialization. Nano-IMAGINE stands as a model for leveraging infrastructure and education to drive regional economic growth.

Positioning Northern Virginia as the Global Hub for Next-Generation Technologies

The preceding analysis highlights both the remarkable strengths and the pressing vulnerabilities of Northern Virginia's economy. On one hand, the region is home to one of the nation's most educated workforces, the largest concentration of data centers in the world, and a dense network of firms serving national defense, cybersecurity, and advanced technologies. On the other, recent federal budget reductions, layoffs tied to contracting shifts, and escalating costs of living have exposed the risks of an economy so heavily dependent on government spending. These dynamics underscore the urgency of accelerating economic diversification and building pathways that can sustain high-quality job growth in the context of shifting federal priorities.

To achieve this, Northern Virginia must lean into its core advantage: its unmatched position at the intersection of national security and technological innovation. The region's proximity to federal agencies, research universities, and private-sector innovators creates a platform for global leadership in next-generation industries such as artificial intelligence, cybersecurity, quantum computing, energy tech, semiconductors, and life sciences. By leveraging these strengths while addressing critical gaps in capital, talent, and ecosystem connectivity, Northern Virginia can evolve from a government-driven economy into a global hub for next-generation technologies.

The recommendations that follow provide a roadmap for realizing this vision. They are designed not as isolated initiatives, but as a coordinated strategy to reinforce one another across four critical dimensions:

1. Developing and leveraging regional assets;
2. Enhancing connectivity across the ecosystem;
3. Expanding access to private capital, and;
4. Strengthening the talent pipeline.

Each recommendation responds directly to the findings of this plan, offering targeted actions that translate analysis into actionable priorities. Taken together, these recommendations embody the region's core strategy for long-term economic diversification. By positioning Northern Virginia as the global hub for next-generation technologies, the region can safeguard its role as the Commonwealth's economic engine while creating new avenues for growth and diversification.

1 Leverage Northern Virginia's federal and defense technology strengths to expand into commercial and dual-use markets.

Target Industries	GOVA Investment Strategies	Performance Measures
• Emerging Technologies • Cybersecurity • Computer Services • Life Sciences	• Cluster Scale-Up • Entrepreneurship & Innovation • Site Development & Infrastructure	• Dual-use pilots launched • Firms served via dual-use transition supports (e.g., joint testbeds) • Private/venture capital leveraged by supported dual-use firms

Northern Virginia's unparalleled concentration of defense and national security agencies, federally funded R&D centers, and advanced digital infrastructure provides a foundation few other regions can match. These assets represent a core opportunity to drive economic diversification by turning federally driven innovation into dual-use and commercial applications. For example, Virginia Tech's Innovation Campus, the cutting-edge work at the HHMI Janelia Research Campus, and the Mid-Atlantic Aviation Partnership offer platforms that can be aligned with regional priorities in cybersecurity, artificial intelligence, quantum computing, and data infrastructure. By building stronger pathways from these research assets into commercialization—through new product development, startup formation, and partnerships with industry—the region can capture greater economic value from its federal presence while positioning itself at the forefront of next-generation technologies.

Unlocking the region's dual-use and commercialization potential depends on strengthening connectivity across the federal, private sector, and academic communities. Too often, these groups operate in parallel—federal agencies advancing mission-driven research, universities conducting cutting-edge science, and private firms focusing on customer delivery—without the integration needed to accelerate new products and companies. By building stronger platforms that connect entrepreneurs with federal missions, research institutions, and industry partners, Northern Virginia can more effectively translate R&D into scalable commercial ventures. Mentorship networks, joint testbeds, and curated accelerators such as the CCI Accelerator can bridge these communities and help innovators validate technologies, access capital, and build enterprises that serve both government and commercial markets.

Expanding access to growth capital will be essential to realizing these opportunities. Locally anchored funds, angel networks, and incentives tailored to dual-use technologies can help early-stage companies move beyond reliance on federal contracts and pursue scalable commercial opportunities. Greater access to seed and venture investment can strengthen competitiveness, support product-based growth, and build resilience in the regional economy.

Finally, sustaining this trajectory requires a workforce aligned with evolving dual-use industries. Northern Virginia's highly educated talent base, combined with assets like the Virginia Tech Innovation Campus and George Mason University, can fuel long-term growth if paired with expanded apprenticeships, mid-career training, and veteran-focused pathways. By scaling up talent pipelines across the career spectrum, the region can ensure that its workforce continues to drive innovation in cybersecurity, AI, quantum, and data infrastructure.

2	Build a leading global hub for IT-driven life sciences with bioinformatics, computational biology, and digital health.	
Target Industries • Life Sciences	**GOVA Investment Strategies** • Cluster Scale-Up • Workforce Development • Entrepreneurship & Innovation • Site Development & Infrastructure	**Performance Measures** • Cross-sector projects initiated (Life Sciences + IT) • Life sciences startups supported • Education and training program completions in bioinformatics and digital health • Growth funding secured by life science startups

Northern Virginia's IT competitiveness and data infrastructure, combined with its fast-growing base of biotechnology companies, extensive wet lab facilities, and proximity to federal agencies, positions the region to cultivate a globally competitive life sciences industry focused on IT-driven research and diagnostics. Anchors like Inova's Center for Personalized Medicine, the Northern Virginia Bioscience Center, and the Janelia Research Campus provide critical research capacity, while the region's robust IT sector creates a natural advantage in applying data-driven approaches to genomics, proteomics, and digital health solutions.

Going forward, Northern Virginia must strengthen ecosystem connectivity by linking its IT strengths to life sciences innovation. Partnerships between universities, healthcare systems, startups, and federal labs should be expanded to accelerate technology transfer in areas like AI-enabled drug discovery, diagnostics, and digital therapeutics. Initiatives such as the BioHub and Bio-Connect networks already demonstrate the potential of coordinated action, but scaling them will be essential for building density and attracting global attention.

In addition, supporting early-stage companies in securing growth funding requires building stronger connections between IT-focused venture investors and biotech entrepreneurs. Creating more regionally based funds that complement statewide programs such as those administered by the Virginia Innovation Partnership Corporation can help life science innovators access the growth capital they need to launch and scale their enterprises without significantly diluting ownership to outside investors.

Finally, the region must expand and diversify its talent base while ensuring that small and medium-sized life science companies can access the workforce they need to grow. Despite strong university and community college pipelines and a strong technical workforce, employers continue to cite shortages in specialized life sciences and digital health expertise. Supporting SMEs in creating on-ramps for early career professionals to gain experience in applied settings, such as through subsidized internships and externships, can help them attract entry-level talent. At the same time, strengthening bioinformatics training and expanding STEM programs in local schools will build a longer-term pipeline. Together, these measures can ensure that Northern Virginia develops the skilled workforce required to lead in IT-driven life sciences while giving smaller firms the tools to compete and innovate.

3	Advance energy innovation through research and development in alternative energy technologies to address digital infrastructure requirements and constraints.	
Target Industries • Computer Services • Emerging Technologies	**GOVA Investment Strategies** • Entrepreneurship & Innovation • Cluster Scale-Up • Workforce Development	**Performance Measures** • Energy pilots/demonstrations launched with utilities, data centers, or localities • MWh saved or peak-load reduction from pilots (where measurable) • Workers trained and credentials issued in fields related to energy efficiency technologies • Non-GO Virginia funding leveraged

Northern Virginia's status as the world's largest data center hub makes energy demand both a defining asset and a pressing challenge. With more than 200 data centers consuming massive amounts of electricity and straining local infrastructure, the region is at the forefront of a national conversation about sustainable energy use. This creates an urgent opportunity to advance regional leadership in energy innovation and the development of advanced technologies that drive energy efficiency. By leveraging assets like Dominion Energy's grid modernization efforts, Virginia Tech's energy research initiatives, and the Northern Virginia Regional Commission's work on sustainability, the region can position itself as the proving ground for solutions in renewable integration, energy storage, grid resiliency, and energy savings.

Fostering partnerships between utilities, local governments, universities, and technology companies can accelerate pilot projects and commercialization of novel energy solutions. Ongoing initiatives, such as Prince William County's investments in sustainable infrastructure and regional initiatives exploring microgrids and energy efficiency, demonstrate the value of cross-sector collaboration.[47] By connecting data center operators with energy innovators, Northern Virginia can build a more coordinated ecosystem that reduces environmental strain while creating new market opportunities for regional firms.

While billions have flowed into data infrastructure and digital growth, comparatively little investment has targeted energy innovation and technology in the region. Expanding state and regional funding tools, engaging federal programs such as the Department of Energy's applied research grants, and cultivating local venture activity in alternative energy technologies can help ensure that promising energy solutions scale in Northern Virginia. Linking data center operators—major global corporate customers—with startups and investors can create demand-driven innovation and attract additional private capital.

In talent and workforce matters, the region has an opportunity to expand specialized training in energy efficiency, grid technologies, and renewable systems. This expansion can build on existing programs related to alternative energy and sustainability offered by Northern Virginia Community College, George Mason University, and Virginia Tech. Additional opportunities exist to tie classroom training to internships and apprenticeships with data center operators, utilities providers, and alternative energy firms, thereby providing an on-ramp into the industry for early- and mid-career workers.

4	Support the growth of robotics, unmanned systems, and other advanced hardware applications, leveraging synergies with artificial intelligence and related fields to enhance regional competitiveness.	
Target Industries • Emerging Technologies	**GOVA Investment Strategies** • Cluster Scale-Up • Entrepreneurship & Innovation • Workforce Development	**Performance Measures** • Testbed/demonstration projects • Companies participating in shared labs/ranges (incl. with entities in other GOVA regions) • Funds raised by to robotics/unmanned systems firms • Robotics/mechatronics apprenticeships or credentials completed

Northern Virginia is well-positioned to capture growth in technologies such as robotics and unmanned systems, which are increasingly shaping both defense and commercial markets. The region's proximity to the federal government and defense agencies creates unique demand for unmanned platforms, advanced robotics, and AI-driven applications, while its thriving IT and cybersecurity clusters provide a strong foundation that enables the integration of software with hardware. Anchors like Virginia Tech's Innovation Campus, George Mason University's robotics and AI research, and industry leaders in aerospace and defense give Northern Virginia a strong base to expand these technologies.

Robotics and unmanned systems thrive when researchers, entrepreneurs, and end-users collaborate in testbeds and pilot projects. In addition to existing DoD partnerships, Northern Virginia can build on nearby assets such as the Northern Virginia Connected Vehicle Test Bed and the Virginia Advanced Air Mobility Smart Airspace Program (both managed by Virginia Tech), the Mason Autonomy and Robotics Center, and the Federal Aviation Administration's Unmanned Aerial Systems test ranges. Coordinating efforts across universities, federal labs, and private companies will accelerate dual-use applications, with artificial intelligence serving as a unifying driver for innovation in sensing, autonomy, and data integration.

Furthermore, there are opportunities to collaborate with robotics and UAV hubs in other GO Virginia regions—for example, leveraging research underway at Virginia Tech's Blacksburg campus and connecting with UAV and maritime autonomy activities in Hampton Roads and Norfolk. Creating venues for collaboration in the form of shared labs, demonstration sites, and applied R&D partnerships will help accelerate commercialization while raising Northern Virginia's visibility as a hub for robotics innovation.

Despite the role of federal procurement in supporting unmanned systems and robotics R&D, many early-stage companies still need to secure private funding to commercialize and scale their products. Expanding regional venture networks, aligning with national defense innovation funding streams, and cultivating angel investor interest in robotics and AI can serve as potential avenues to increase the availability of private capital.

Specialized skills in robotics, mechatronics, and unmanned systems remain in short supply, but the region is making strides in cultivating robotics talent (as illustrated by George Mason University's launch of Virginia's first robotics PhD program).[48] Going forward, expanding applied training through community colleges, internships, and apprenticeships can create new entry points for students and veterans while helping high-growth robotics firms access new talent.

5	Accelerate product-based innovation to drive scalable growth to complement the region's strong services base.	
Target Industries • Computer Services • Cybersecurity • Life Sciences • Emerging Technologies	**GOVA Investment Strategies** • Cluster Scale-Up • Entrepreneurship & Innovation	**Performance Measures** • Product-oriented firms served • Revenue and job growth among supported product firms • Funds raised by supported product firms • New IP/licensing or spinoffs supported

Northern Virginia's technology sector has long benefited from a strong services base tied to government contracting, providing a solid foundation of expertise, talent, and revenue. This strength creates an ideal springboard to expand into product-based innovation, where the region can leverage its deep bench of technical knowledge, federal partnerships, and growing entrepreneurial ecosystem to develop scalable solutions with national and global reach.[49] By cultivating more product-oriented companies alongside its established services base, Northern Virginia has the opportunity to attract greater venture investment, capture larger market share, and generate the kinds of high-growth firms that drive IPOs, industry leadership, and global competitiveness. With its existing assets, the region is well-positioned to emerge not just as a hub for delivering services, but as a launchpad for technology products that shape the future economy.

Building on its established strengths, Northern Virginia can unlock even greater potential by intentionally fostering product-based innovation alongside its services economy. With world-class universities, federal labs, and a thriving base of technology firms, the region has the ingredients to generate scalable products that can compete globally. Opportunities include expanding industry-university testbeds, expanding incubators and accelerators tailored to product development, offering supportive incentives, and connecting entrepreneurs with mentors, capital, and customers who can help validate and scale their solutions. This deliberate emphasis on product-based innovation can complement Northern Virginia's strong services base and position the region as both a trusted services leader and a launchpad for transformative technologies.

6 Create targeted pathways for public sector employees and veterans to transition into private sector roles in the region's key industries.

Target Industries	GOVA Investment Strategies	Performance Measures
• Computer Services • Cybersecurity • Life Sciences • Emerging Technologies	• Workforce Development	• Participants completing transition programs • Placement rate into target industries • Mentor matches (public-to-private mentors paired and active) • Host employers engaged (number of firms offering rotations/fellowships for transitioning workers)

Northern Virginia's deep connection to the federal government and military has cultivated one of the nation's strongest concentrations of talent in cybersecurity, intelligence, logistics, and advanced technology. This workforce—comprising tens of thousands of employees and veterans—represents a tremendous opportunity to strengthen the region's private sector innovation economy. By creating clearer pathways for these highly capable individuals to transition into roles in key technology industries, the region can both alleviate persistent talent shortages and fully harness the transferable skills of its public sector workforce.

To fully realize this opportunity, public sector leadership will be essential. Federal, state, and local agencies can play a catalytic role through public-private partnerships that co-invest in transition programs and create structured pathways into private industry. Initiatives such as short, intensive bootcamps in entrepreneurial problem-solving, customer-focused innovation, and agile project management can help translate government-honed expertise into industry-ready skills. Mentorship networks that connect transitioning workers with startup founders and industry leaders, along with fellowships and rotational programs inside growth-oriented firms, can provide hands-on experience and accelerate integration. With public partners engaged as sponsors and conveners, Northern Virginia can build a coordinated system that leverages its government-trained talent as a driver of growth in the region's key industries.

7

Foster stronger regional coordination among Northern Virginia's local jurisdictions and across the Greater Washington metro to align strategic priorities and build complementary strengths in next-generation technologies.

Target Industries	GOVA Investment Strategies	Performance Measures:
• Computer Services • Cybersecurity • Life Sciences • Emerging Technologies	• Cluster Scale-Up • Workforce Development • Entrepreneurship & Innovation • Site Development & Infrastructure	• Multi-locality projects approved (2 or more jurisdictions + industry/higher education partners) • Cross-jurisdiction memorandums of understanding (MOUs) or agreements executed for shared initiatives or assets • Shared assets stood up/expanded (innovation nodes, joint programs) • Number of business attraction and expansion projects involving cross-jurisdictional collaboration • Projects co-branded or co-funded with partner organizations in the District of Columbia and Maryland

Northern Virginia's innovation economy benefits from its scale and the diverse strengths of its jurisdictions, each contributing distinct assets, industry clusters, and talent pipelines. By aligning strategies and collaborating more intentionally, local governments can translate this diversity into a unified regional advantage. Stronger coordination across counties and cities would allow Northern Virginia to better concentrate resources, attract large-scale investment, and strengthen its position as a globally competitive hub for next-generation technologies such as AI, quantum, data infrastructure, and life sciences. At the same time, closer collaboration with Maryland and the District of Columbia would enable the Greater Washington region to enhance its visibility and competitiveness on the national and global stage.

Within Northern Virginia, greater integration of local innovation districts, workforce programs, and incentive strategies would allow assets to reinforce one another rather than operate in silos. Across the Greater Washington metro, collaboration offers the chance to leverage each jurisdiction's unique advantages—such as Maryland's federal labs, Washington, D.C.'s policy and regulatory expertise, and Northern Virginia's data and cybersecurity infrastructure—to create shared initiatives that elevate the region as a whole. By moving toward intentional collaboration, Northern Virginia and its neighbors can present a unified economic identity that attracts investment, talent, and high-growth companies while strengthening the region's global competitiveness in next-generation technologies.

Appendix A:
Awarded Projects in Region 7

Industry Cluster(s)	FY	Project Name	Applicant	Investment strategy Cluster Scale-up
Life Science	FY25	Working In Sync with Employers (WISE)	George Washington University	Workforce Development
Computer Software, Cyber, Life Sciences, Emerging Technologies	FY25	Marymount NOVATechWorks Hub	Marymount University	Workforce Development
Computer Software, Cyber, Life Sciences, Emerging Technologies	FY25	Pivot Academy	George Mason University	Entrepreneurship
Computer Software, Cyber, Life Sciences, Emerging Technologies	FY25	Innovation District	George Mason University	Cluster Scale-up
Computer Software, Cyber, Life Sciences, Emerging Technologies	FY24	SciTech Innovation District	George Mason University	Cluster Scale-up
Computer Software, Cyber, Life Sciences, Emerging Technologies	FY24	Career Investigations	Alexandria Public Schools + JASON	Workforce Development
Life Science	FY24	Future Kings Life Sciences Workforce Development Pilot Program	Future King, LLC	Workforce Development
Computer Software, Cyber, Life Sciences, Emerging Technologies	FY23	Talent Pathway Initiative (TPI)	CREC and GMU	Workforce Development
Emerging Tech (Semiconductor)	FY23	Virginia Alliance of Semiconductor Technology (VAST formerly VNNI)	Virginia Tech	Cluster Scale-up
Life Science	FY23	Project Collective Impact: Life Sciences Workforce Preparedness	George Mason University	Workforce Development
Cyber	FY23	Building a Sustainable Cybersecurity Ecosystem	Cyberguild	Workforce Development
N/A	FY23	Quantitative Metrics on Foreign Investment in Northern VA	NVRC	Cluster Scale-up
Computer Software, Cyber, Life Sciences, Emerging Technologies	FY22	Accelerate 2023/2024	George Mason University	Entrepreneurship
Emerging Technology	FY22	Nano-IMAGINE	George Mason University	Cluster Scale-up
Emerging Technology	FY22	Convene & Collaborate (REI)	George Mason University	Entrepreneurship
Emerging Technology	FY22	Future Kings STEM Pipeline Project Focused on Black and Latino Boys	Future Kings, LLC	Workforce Development
Emerging Technology	FY22	Innovation Center Roadmap	NOVA Labs	Entrepreneurship
Emerging Technology	FY22	Tech Set	Marymount University	Workforce Development
Emerging Technology	FY22	Virginia SBDC Cash Match CY2020-2021	George Mason University	Entrepreneurship

Appendix A:
Awarded Projects in Region 7 (Cont.)

Industry Cluster(s)	FY	Project Name	Applicant	Investment strategy Cluster Scale-up
Emerging Technology	FY21	SBDC ICAP Mentor Expansion Project	George Washington University	Workforce Development
Emerging Technology	FY21	Dual Enrollment Expansion Program for Information and Engineering Technology (DEEP IET)	NOVA - Northern VA Community College	Workforce Development
Emerging Technology	FY21	Innovation Forward	Northern Virginia Economic Development Alliance	Entrepreneurship
Cybersecurity	FY21	Virginia Cyber Skills Academies	Women's Society of Cybersecurity, SANS	Workforce Development
Cybersecurity	FY21	Smart City Works	Smart City Works	Cluster Scale-up
Cybersecurity	FY21	Community Medi-corps Program (Medi-corps)	GWU, Alexandria City and Arlington Public Schools, Alexandria Economic Dev. Partnership, etal	Workforce Development
Life Science	FY19	Northern Virginia Bioscience Center	Holladay Properties and PW Economic Development	Site Development
Life Science	FY19	Roadmap for Reskilling Leisure, Hospitality & Gig Workers for Technology Employment in post COVID economy	George Mason University/ Marymount Univ.	Workforce Development
Life Science	FY19	Pivoting Technology Businesses for Post COVID-19 Environment	George Mason University/ Marymount Univ.	Fast Access
Life Science	FY19	#BackToWork webinar series	Northern VA Chamber of Commerce	Fast Access
Life Science	FY19	#BackToWork website	Northern VA Chamber of Commerce	Fast Access
Life Science	FY19	COVID-19 Diagnostic Testing, Contact Tracing & Stress Assessment for Nurses	George Mason University	Fast Access
Computer Software	FY19	VA K12- Computer Science Pipeline	Loudoun and Chesapeake Public Schools	Workforce Development
Computer Software	FY19	NVTTP grant #2 - Apprenticeships	NOVA	Workforce Development
Computer Software	FY19	NOVA Fab Lab	NOVA	Workforce Development
Computer Software	FY19	NVTTP Grant #1	Northern Virginia Community College	Workforce Development

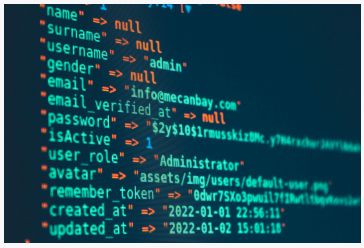
Appendix B:
Northern Virginia's Industry Sectors

NAICS Industry Sector	2024 Jobs	Job Growth Since 2015	2024 Location Quotient	2024 Average Earnings Per Job	Earnings Growth Since 2015
GO Virginia Region 7	1,480,904	8.9%	N/A	$116,417	37.7%
Agriculture, Forestry, Fishing and Hunting	1,424	0.9%	0.08	$43,725	48.3%
Mining, Quarrying, and Oil and Gas Extraction	436	-11.3%	0.09	$115,945	15.6%
Utilities	2,729	20.1%	0.54	$230,962	32.6%
Construction	84,073	18.0%	0.98	$99,882	48.8%
Manufacturing	22,091	7.7%	0.20	$119,775	11.2%
Wholesale Trade	23,421	0.2%	0.44	$170,114	38.8%
Retail Trade	113,169	-7.7%	0.82	$55,370	42.1%
Transportation and Warehousing	51,821	44.0%	0.80	$85,499	31.0%
Information	39,014	-0.4%	1.48	$206,522	41.9%
Finance and Insurance	42,178	6.3%	0.71	$187,001	35.7%
Real Estate and Rental and Leasing	24,810	9.0%	0.96	$103,421	36.6%
Professional, Scientific, and Technical Services	283,668	7.9%	2.74	$173,977	36.4%
Management of Companies and Enterprises	33,540	36.7%	1.51	$258,909	39.1%
Administrative and Support Services	86,141	3.4%	0.99	$85,571	51.1%
Educational Services	29,462	7.9%	0.78	$62,300	19.3%
Health Care and Social Assistance	147,799	37.4%	0.74	$88,128	37.1%
Arts, Entertainment, and Recreation	24,655	12.6%	0.92	$59,351	52.7%
Accommodation and Food Services	109,561	6.0%	0.89	$37,779	42.2%
Other Services (except Public Administration)	85,588	-9.6%	1.16	$66,676	43.9%
Government	272,569	7.6%	1.27	$130,611	30.5%
Other Industries	2,755	230.3%	1.50	$89,816	36.5%

Appendix C:
SWOT Analysis of Region 7 Target Industry Clusters

	Cluster Scale-Up	Workforce Development	Entreprenuership & Innovation	Site Development & Infrastucture
Strengths	**Computer Services** Deep base of IT firms serving federal missions **Cybersecurity** Proximity to DoD and DHS; dense concentration of cyber primes and specialized SMEs **Life Sciences** Strengths in bioinformatics, digital health, and diagnostics **Emerging Technologies** Dense federal R&D and defense missions combined with strong prime presence	**Computer Services** Large educated tech workforce, with strong talent pipelines **Cybersecurity** Large cleared workforce, strong academic programs, and talent pipelines **Life Sciences** Growing bio/health data talent pool; access to CS+ bio programs and clinical partnerships **Emerging Technologies** Deep CS/AI base, cleared talent, and strong academic programs	**Computer Services** Federal customer access, expanding product expertise, active support **Cybersecurity** Mission data access, active SBIR pipeline, and strong buyer network **Life Sciences** Growing health-IT venture activity and access to payers/providers for pilots **Emerging Technologies** Dual-use pathways, test ranges, and strong SBIR demand	**Computer Services** World-class data centers, hybrid cloud, and regional broadband **Cybersecurity** Strong networks, cybersecurity facilities, and dense data centers **Life Sciences** Proximity to regulators and hospital systems, with strong data infrastructure **Emerging Technologies** Data center backbone and access to test airspace/corridors and secure facilities
Weaknesses	**Computer Services** Overreliance on services/times-and-materials models, combined with limited scale of product firms **Cybersecurity** Service-heavy, with limited local product OEMs **Life Sciences** Few anchor biopharma OEMs and limited GMP/biomanufacturing capacity **Emerging Technologies** Capital-intensive and limited pilot production/prototyping facilities	**Computer Services** Mid-career upskilling gaps and competition for experienced engineers **Cybersecurity** Shortages in mid/senior roles, diversity gaps, and turnover **Life Sciences** Shortage of wet-lab technicians and QA/QC roles; Few mid-skill ladders **Emerging Technologies** Few quantum and robotics trainers, and limited cross-disciplinary micro-credentials	**Computer Services** Limited early-stage capital and founder mentorship with product and product-led growth experience **Cybersecurity** Limited local seed and Series A funding for cyber products, and fragmented mentor networks with Go-to-Market expertise **Life Sciences** Limited wet-lab access and specialized life science funds **Emerging Technologies** Fragmented founder networks and limited patient capital	**Computer Services** Growing energy constraints, limited grid capacity and permits, and few secure collaboration spaces for SMEs **Cybersecurity** Limited shared classified/SCIF spaces and restricted range access for SMEs **Life Sciences** Wet-lab and Biosafety Level capacity constraints; limited incubation and lab benches near transit **Emerging Technologies** Limited wet/clean rooms, EMI/ anechoic chambers, and hardware prototyping labs near metro areas
Opportunities	**Computer Services** Federal IP productization and Software-as-a-Service (SaaS) **Cybersecurity** Dual-use cyber (Zero Trust, OT/ICS, space, healthcare) and compliance solutions for smaller businesses **Life Sciences** IT-driven diagnostics, precision medicine, clinical AI, and government-to-commercial validation pathways **Emerging Technologies** Dual-use commercialization and collaboration with other Virginia regions	**Computer Services** Veteran/federal returnships, AI skills certificates, and employer-led reskilling programs **Cybersecurity** Security Operations Center (SOC) analyst apprenticeships, security clearance-oriented talent pipelines, and AI cyber training **Life Sciences** Lab, data, and clinical upskilling, with veteran re-entry into med-tech **Emerging Technologies** Rapid AI upskilling, veteran transitions to autonomy/robotics, quantum & AI certificates	**Computer Services** SBIR/STTR with matching, angel/ seed sidecars, and procurement pilots to validate new products **Cybersecurity** Mission-driven accelerators; CMMC sandboxes; joint lab-to-market with federal labs **Life Sciences** SBIR/STTR matches, hospital testbeds, and regulatory science collaborations **Emerging Technologies** AI, UAS, and Advanced Air Mobility accelerators; DoD/DOE/EDA funding; IP translation offices	**Computer Services** Data center efficiency and clean power pilots, secure collaboration suites, and shared test/dev environments **Cybersecurity** Expanded cyber ranges, modular SCIFs, and sovereign cloud/test enclaves for startups **Life Sciences** Expanded modular wet labs, shared core facilities, and secure health-data sandboxes with compute credits **Emerging Technologies** Expanded Smart Airspace/UAS corridors, flexible prototyping spaces, and clean power for high-compute
Threats	**Computer Services** Cyclical budgets, rising competition from Austin/Research Triangle, and consolidation **Cybersecurity** Rapidly evolving threats, incumbent lock-in, and federal procurement delays **Life Sciences** Competition from MD BioHealth, Boston, and RTP; reimbursement challenges **Emerging Technologies** Competition (TX, CO, MA), supply-chain/geopolitical risk in chips	**Computer Services** Talent poaching by Big Tech, clearance delays, and visa constraints **Cybersecurity** Wage inflation, churn, and remote competition **Life Sciences** Wage competition with DC/MD and burnout in clinical roles **Emerging Technologies** Limited instructors and national poaching by Big Tech	**Computer Services** Rapid AI/GenAI shifts outpacing local support, with non-local investors relocating startups **Cybersecurity** Coastal hubs outbidding founders and export/compliance risks **Life Sciences** Regulations and capital scarcity at seed/Series-A for wet-lab **Emerging Technologies** Export controls and long defense sales cycles	**Computer Services** Energy costs, compliance burdens, and land/housing affordability **Cybersecurity** Regulatory and insurance pressures, and grid/fiber resilience risks **Life Sciences** High build costs, zoning delays, and biosafety compliance burdens **Emerging Technologies** Energy/grid limits for compute, and permitting for flight tests and specialized labs

Appendix D:
Recent Business Location Announcements

Description of Major Wins for Region 7 in Target Sectors (After 2023)	
	**Jurisdiction**: Arlington County **Company**: Technomics, Inc. **Target Sector**: Computer Services **Announcement Date**: June 10, 2025 **Action**: The company will invest $5.375 million in facility expansion, creating 25,200 additional square feet and 248 new jobs. Source
	**Jurisdiction**: Alexandria City **Company**: Systems Planning & Analysis (SPA) **Target Sector**: Cybersecurity **Announcement Date**: August 20, 2025 **Action**: The company will expand its headquarters, purchasing and renovating its facility and nearly doubling its Alexandria-based workforce over the next five years. Source
	**Jurisdiction**: Fairfax County **Company**: 22nd Century Technologies Inc. **Target Sector**: Computer Services **Announcement Date**: June 27, 2025 **Action**: The company will invest $1 million to expand its headquarters in Fairfax County and offices across Virginia, supporting 880 new jobs to help deliver major federal and state contracts. Source
	**Jurisdiction**: Manassas City **Company**: Micron Technology, Inc. **Target Sector**: Computer Services **Announcement Date**: June 12, 2025 **Action**: The company will invest approximately $150 billion in domestic memory manufacturing and $50 billion in Research and Development company-wide, including an expansion and modernization of its plant in Manassas. Source
	**Jurisdiction**: Loudoun County **Company**: TTM Technologies, Inc. **Target Sector**: Computer Services **Announcement Date**: February 16, 2024 **Action**: The company will invest $13.4 million to expand in Loudoun County to consolidate and modernize its U.S. facilities to maximize current and future growth and expand its workforce. Source
	**Jurisdiction**: Prince William County **Company**: Granules Consumer Health **Target Sector**: Life Sciences **Announcement Date**: October 28, 2024 **Action**: The company will invest $1.5 million to expand its operations in Prince William County, installing new manufacturing lines at its existing facility, creating 99 new jobs. Source

Economic Development Announcements since 2023: Especially major wins for Region 7 in core sectors such as the recent Micron expansion, which bolsters the narrative of competitiveness of Region 7 in its target sectors.

Appendix E: Available Sites and Building Information*

Region 7 Locality	Use and Acreage of Available Sites	Square Footage of Available Buildings
Prince William	Commercial (179 Acres)	1,634,324 sq. ft.
	Office (41 Acres)	
	Light Industrial (100 Acres)	
	Heavy Industrial (177 Acres)	
	Mixed Use (101 Acres)	
Manassas	Light Industrial (19 Acres)	23,850 sq. ft.
Loudoun	Other (97 Acres)	875,466 sq. ft.
Falls Church	N/A	86,885 sq. ft.
Fairfax	N/A	5,112,359 sq. ft.
Alexandria	N/A	1,301,045 sq. ft.
Arlington	N/A	3,542,913 sq. ft.
Fairfax City	N/A	62,028 sq. ft.

** As of October 2025*

Source: Virginia Economic Development Partnership

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