

RESEARCH BRIEF

**Employment Outcomes of NOVA Graduates:
Information Systems Technology, A.A.S. and Certificate Programs**

Introduction

This Research Brief presents the employment outcomes of 573 NOVA graduates of the Information Systems Technology, A.A.S. and Certificate programs from 2007 through 2017 (Section I) and provides employment data for Information Systems Technology (A.S. and B.S.) graduates (Section II).¹ The employment data includes target occupations, job postings, companies hiring, and highly desired job skills and qualifications for Information Systems Technology (A.S. and B.S.) graduates in the NOVA region during the specified period.²³

Data were extracted utilizing the Economic Modeling Specialists International (EMSI) product, which provides employment data derived from government sources, online job posting activity, and professional networking profiles (e.g., LinkedIn) and résumés. EMSI employment data were also used to determine the employment outcomes and workforce credentials of NOVA graduates.

Key Findings

- Eighty-four percent of graduates of NOVA's Information Systems Technology (A.A.S. and Certificate) programs are employed in their field.
- The employment opportunities for Information Systems Technology (A.S. and B.S.) graduates in the NOVA region are favorable for target occupations including Computer Systems Analyst, Network and Computer Systems Administrators, and Computer and Information Systems Managers.
 - Regionally, these target occupations have frequent job openings, expected job growth, and median hourly earnings higher than national median hourly earnings for these occupations.
- Providence Health & Services, Leidos Holdings, General Dynamics, Deloitte, and Caci International are the top five companies hiring Information Systems Technology (A.S. and B.S.) graduates in the NOVA region.

¹ Graduates may have earned additional degrees beyond the Information Systems Technology A.A.S. or Certificate programs.

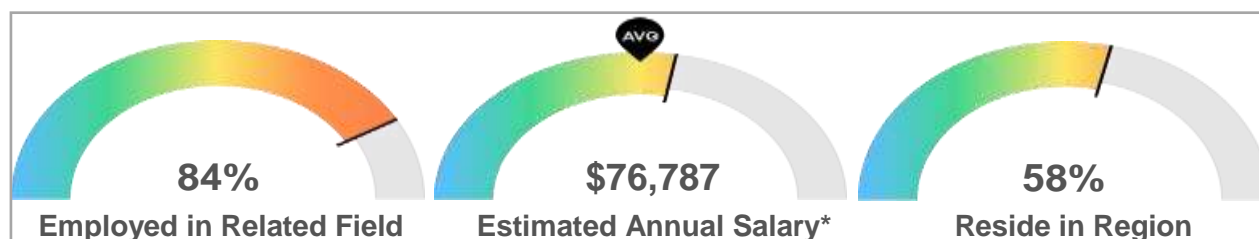
² Job postings comprise both full-time and part-time positions.

³ The NOVA region refers to Arlington County, Fairfax County, Loudoun County, Prince William County, Alexandria City, Fairfax City, Falls Church City, Manassas City, Manassas Park City, and Washington, D.C.

Section I. Employment Outcomes of NOVA Graduates

This section provides recent (2019) employment outcomes information for 573 NOVA graduates of Information Systems Technology, A.A.S. and Certificate programs who graduated from 2007 through 2017.⁴⁵ Of these graduates, 84 percent were employed in information systems technology-related occupations, and 58 percent resided within the NOVA region. The average estimated annual salary among these graduates was \$76,787—15 percent more than the average estimated annual salary among all NOVA graduates from 2007 through 2017 (Figure 1).

Figure 1. Employment Outcomes of NOVA Information Systems Technology (A.A.S. and Certificate) Graduates: 2007 through 2017



* The average estimated annual salary among all NOVA 2007 through 2017 graduates was \$66,652.

Alumni Occupations

The top occupations of graduates of NOVA's Information Systems Technology, A.A.S. and Certificate programs were Computer User Support Specialists (12 percent), and Network and Computer Systems Administrators (8 percent) (Table 1).

Table 1. Occupations among NOVA Information Systems Technology (A.A.S. and Certificate) Graduates: 2007 through 2017

Occupations	SOC Code**	Graduates	
		#	%
Computer User Support Specialists	15-1151	70	12.2
Network and Computer Systems Administrators	15-1142	43	7.5
Web Developers	15-1134	24	4.2
Graphic Designers	27-1024	17	3.0
Software Developers of Applications	15-1132	17	3.0
Computer Systems Analysts	15-1121	15	2.6
Computer Occupations (non-specific)	15-1199	14	2.4
Customer Service Representatives	43-4051	14	2.4
Information Security Analysts	15-1122	14	2.4
Management Analysts	13-1111	14	2.4
Secretaries and Administrative Assistants (excluding Legal, Medical, and Executive)	43-6014	11	1.9
Market Research Analysts and Marketing Specialists	13-1161	10	1.8
Retail Salespersons*	41-2031	10	1.8
Office Clerks (non-specific)	43-9061	9	1.6
Software Developers of Systems Software	15-1133	9	1.6
<i>Unclassified Occupation*</i>	<i>99-9999</i>	<i>29</i>	<i>5.1</i>

*Occupations classified as out-of-field and not related to Information Systems Technology programs of study.

**Standard Occupational Classification (SOC) is a U.S. Bureau of Labor Statistics occupational coding standard (<https://www.bls.gov/soc/>)

Note: Occupations with percentages less than 1.5% are not included in the table.

⁴ Graduates of Information Systems Technology A.A.S. and Certificate programs include Information Systems Technology (A.A.S. and C.S.C.), Network Administration (C.S.C.), Network Engineering (C.S.C.), and Web Design (C.S.C. and Certificate) graduates.

⁵ Graduates may have earned additional degrees beyond the Information Systems Technology (A.A.S. or Certificate).

Employers and Job Titles of Alumni

The top employers of graduates of NOVA's Information Systems Technology, A.A.S. and Certificate programs were Northern Virginia Community College (3 percent), General Dynamics Corporation (1 percent), and Caci International (1 percent) (Table 2).

Table 2. Top 20 Employers of NOVA Information Systems Technology (A.A.S. and Certificate) Graduates: 2007 through 2017

Employers	Graduates	
	#	%
Northern Virginia Community College	16	2.8
General Dynamics Corporation	8	1.4
Caci International, Inc.	7	1.2
Navy Federal Credit Union	6	1.1
Verizon Communications Inc.	4	0.7
Accenture, Inc.	3	0.5
Amazon.com, Inc.	3	0.5
County of Burlington	3	0.5
George Mason University	3	0.5
International Business Machines Corporation	3	0.5
Lockheed Martin Corporation	3	0.5
Mantech International Corporation	3	0.5
Papa John's International, Inc.	3	0.5
United States Marine Corps	3	0.5
Association of American Railroads	2	0.4
Fairfax County Virginia	2	0.4
Financial Crimes Enforcement Network	2	0.4
Kaiser Permanente	2	0.4
Science Applications International Corporation	2	0.4
Staples, Inc.	2	0.4

The most popular job titles among graduates of NOVA's Information Systems Technology, A.A.S. and Certificate programs were Web Developer (3 percent), Graphic Designer (2 percent), Customer Service Representative (2 percent) and IT Network Administrator (2 percent) (Table 3).

Table 3. Top 10 Job Titles of NOVA Information Systems Technology (A.A.S. and Certificate) Graduates: 2007 through 2017

Job Titles	Graduates	
	#	%
Web Developer	15	2.6
Graphic Designer	12	2.1
Customer Service Representative	10	1.8
IT Network Administrator	10	1.8
IT Help Desk Specialist	9	1.6
Network Engineer	9	1.6
Information Security Analyst	8	1.4
Systems Administrator	8	1.4
Systems Engineer	8	1.4
IT Support Analyst	7	1.2
Operations Analyst	6	1.1
Project Manager	6	1.1
Software Engineer	6	1.1

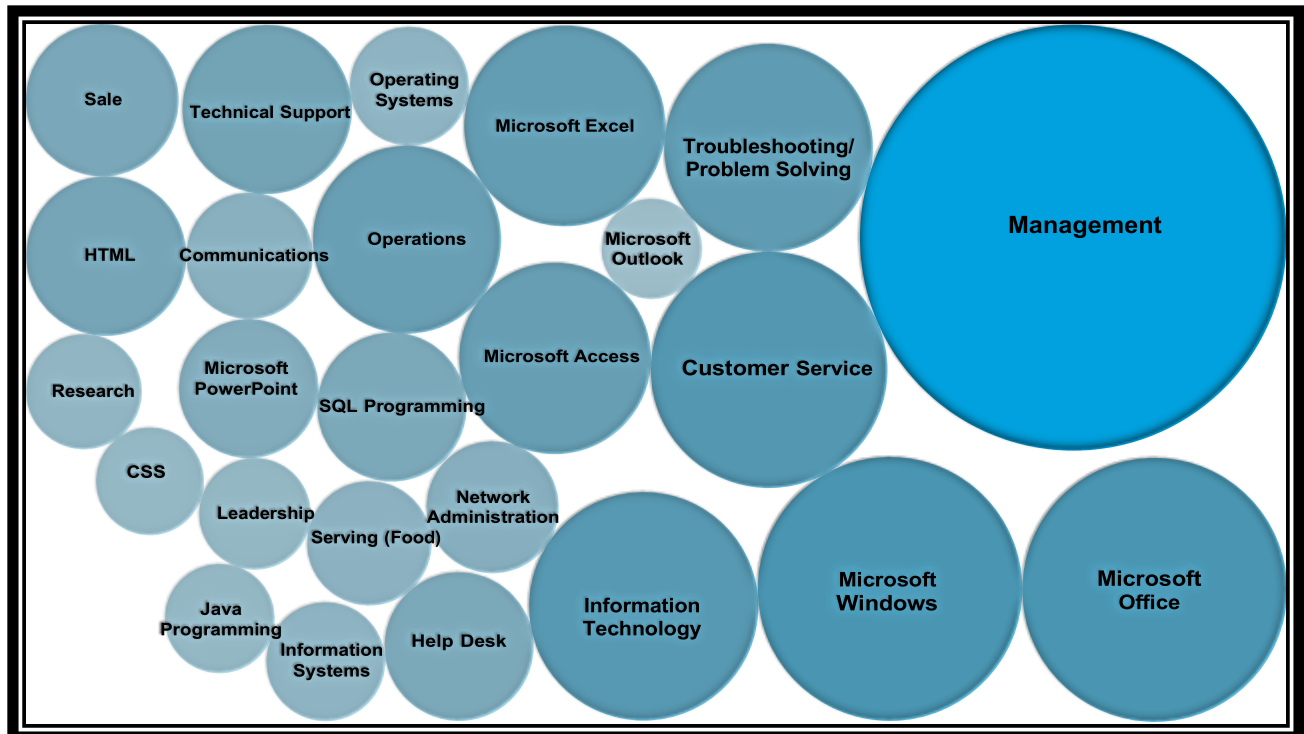
Alumni Skills

The top hard and common skills of graduates of NOVA's Information Systems Technology, A.A.S. and Certificate programs included management (41 percent), Microsoft Office (26 percent), and Microsoft Windows (26 percent) (Table 4 and Figure 2, below).⁶

Table 4. Top 10 Hard and Common Skills of NOVA Information Systems Technology (A.A.S. and Certificate) Graduates: 2007 through 2017

Hard and Common Skills	Graduates	
	#	%
Management	234	40.8
Microsoft Office	147	25.7
Microsoft Windows	147	25.7
Customer Service	132	23.0
Information Technology	128	22.3
Troubleshooting/Problem Solving	117	20.4
Microsoft Excel	113	19.7
Microsoft Access	108	18.9
Operations	106	18.5
Technical Support	96	16.8

Figure 2. Hard and Common Skills of NOVA Information Systems Technology (A.A.S. and Certificate) Graduates: 2007 through 2017



⁶ Hard skills are defined as technical or specialized skills often acquired through formal education, while common skills refer to soft and transferable skills broadly utilized in various professions.

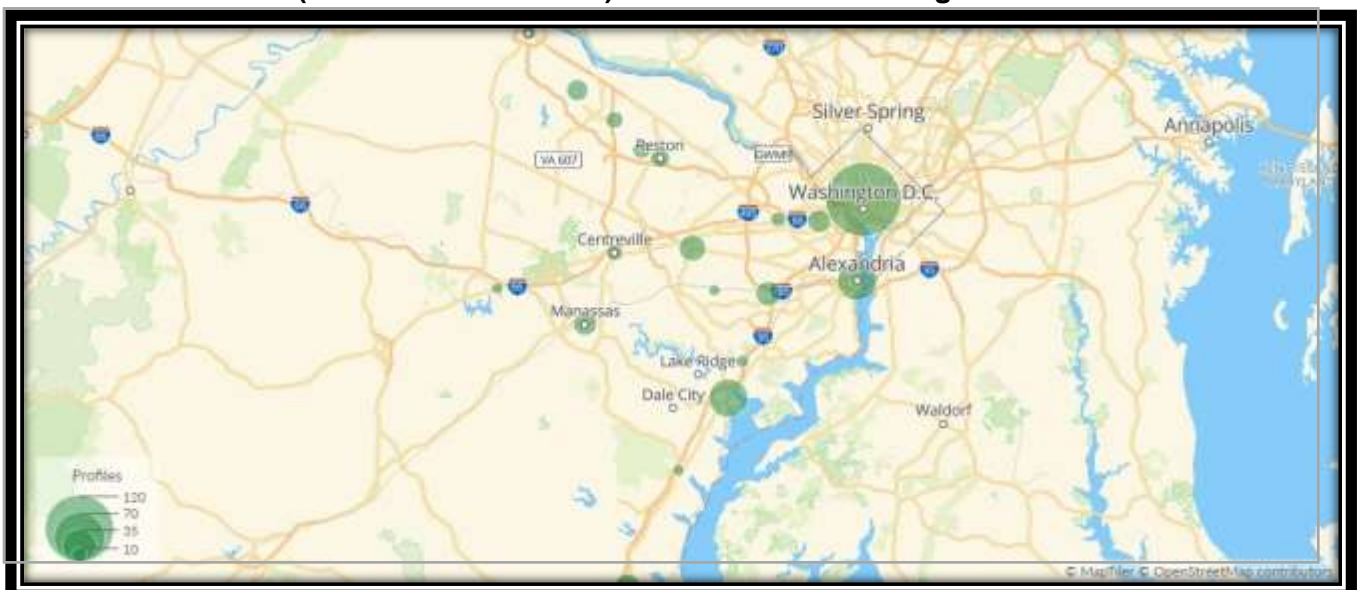
Alumni Locations

The top locations where graduates of NOVA's Information Systems Technology A.A.S. and Certificate programs resided included Washington, D.C. (25 percent), Alexandria, VA (8 percent), Woodbridge, VA (8 percent), and Fairfax, VA (4 percent). Overall, sixty-six percent resided in the state of Virginia (Table 5 and Figure 3, below).

Table 5. Top 20 Locations of NOVA Information Systems Technology (A.A.S. and Certificate) Graduates: 2007 through 2017

Locations	Graduates	
	#	%
Washington, D.C.	144	25.1
Alexandria, VA	45	7.9
Woodbridge, VA	45	7.9
Fairfax, VA	24	4.2
Springfield, VA	21	3.7
Stafford, VA	20	3.5
Arlington, VA	19	3.3
Manassas, VA	19	3.3
Ashburn, VA	17	3.0
Reston, VA	14	2.4
Herndon, VA	13	2.3
Fredericksburg, VA	12	2.1
Sterling, VA	12	2.1
Centreville, VA	11	1.9
Falls Church, VA	10	1.8
Leesburg, VA	9	1.6
Lorton, VA	8	1.4
Burke, VA	7	1.2
Dumfries, VA	7	1.2
Gainesville, VA	7	1.2

Figure 3. Locations of NOVA Information Systems Technology (A.A.S. and Certificate) Graduates: 2007 through 2017



Section II. Regional Employment Opportunities for NOVA Graduates

This section presents regional employment opportunities data and provides job postings for target occupations within the NOVA region for Information Systems Technology (A.S. and B.S.) graduates.⁷

Target Occupations

In 2018, regionally, there were about 57,000 jobs and 4,000 job openings in target occupations for Information Systems Technology (A.S. and B.S.) graduates.⁸ Among these target occupations, median hourly earnings were \$56.50—24 percent higher than the \$45.52 national median hourly earnings for these target occupations. The projected job growth among these target occupations is 4 percent from 2018 to 2023—4 percentage points fewer than the projected national growth for these target occupations (8 percent). Annual job openings for target occupations for Information Systems Technology (A.S. and B.S.) graduates were greatest for Computer Occupations (1,100 openings) and Computer Systems Analysts (830 openings) (Table 6).

Table 6. NOVA Region Job Openings, Earnings, and Growth of Target Occupations: 2018

Target Occupations	# of Jobs	# of Job Openings	Median Hourly Earnings	% Job Growth (2018 – 2023)	Location Quotient*
Computer Occupations (non-specific)	15,731	1,100	\$56.12	1.4%	4.3
Computer Systems Analysts	11,050	830	\$50.64	4.9%	2.0
Network and Computer Systems Administrators	7,259	493	\$47.24	2.3%	2.1
Computer and Information Systems Managers	7,091	600	\$82.50	5.1%	2.0
Information Security Analysts	6,488	594	\$55.51	11.0%	6.6
Computer Network Architects	3,843	262	\$62.76	0.8%	2.8
Web Developers	2,508	228	\$42.82	9.3%	1.4
Database Administrators	2,013	144	\$49.92	3.5%	2.0
Computer and Information Research Scientists	751	56	\$65.72	3.1%	4.0

*Location Quotient = the ratio of an occupation's share of employment in a given area to that occupation's share of employment in the U.S. as a whole. For example, an occupation that makes up 10 percent of employment in a specific metropolitan area compared with 2 percent of U.S. employment would have a location quotient of 5 for the area (signifying the occupation is roughly 5 times more concentrated regionally than nationally).

From January 2018 through December 2018, there was an average of about 3,600 Information Systems Technology graduates hired monthly for target occupations in the NOVA region.⁹ The top average monthly job hires were for Computer Occupations (779 hires), and Computer and Information Systems Managers (750 hires) (Table 7, below, and Figure 4, next page).

Table 7. NOVA Region Top Job Hires in Target Occupations: 2018

Target Occupations	Avg. Monthly Hires*	Target Occupations	Avg. Monthly Hires*
Computer Occupations (non-specific)	779	Computer and Information Research Scientists	277
Computer and Information Systems Managers	750	Web Developers	141
Network and Computer Systems Administrators	497	Information Security Analysts	135
Computer Network Architects	475	Database Administrators	60
Computer Systems Analysts	471		

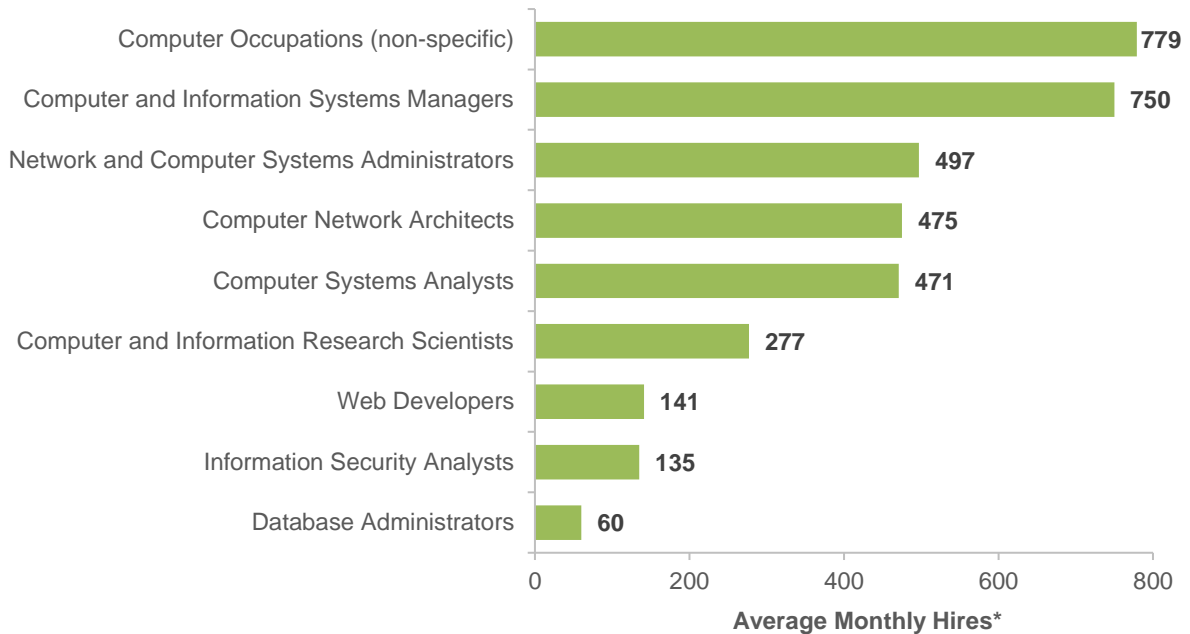
* Average monthly hires include Information Systems Technology graduates with an A.S., B.S., or post-baccalaureate degree.

⁷ The NOVA region refers to Arlington County, Fairfax County, Loudoun County, Prince William County, Alexandria City, Fairfax City, Falls Church City, Manassas City, Manassas Park City, and Washington, D.C.

⁸ The Information Systems Technology A.S. and B.S. were the minimum degree qualifications in these job postings.

⁹ Includes Information Systems Technology graduates with an A.S., B.S., or post-baccalaureate degree

Figure 4. NOVA Region Top Job Hires in Target Occupations: 2018



* Average monthly hires include Information Systems Technology graduates with an A.S., B.S., or post-baccalaureate degree

From January 2018 through December 2018, the top job postings website sources for target occupations for Information Systems Technology (A.S. and B.S.) graduates in the NOVA region were Next.com (41,794 postings) and My.jobs (24,362 postings) (Table 8).

Table 8. Top 20 Job Posting Sources for Target Occupations in NOVA Region: 2018

Website	# of Target Job Postings on Website
Nexxt.com	41,794
My.jobs	24,362
Dice.com	20,985
Clearancejobs.com	20,287
Employmentcrossing.com	20,090
Jobserve.com	18,506
Virginiajobnetwork.com	17,942
Geebo.com	16,202
Careerboard.com	14,256
Bluecollarcrossing.com	11,988
Careerbuilder.com	10,800
Jobs.net	10,385
Monster.com	9,828
Beyond.com	9,542
Jobing.com	8,494
Resume-library.com	7,403
Recruiternetworks.com	7,179
Washingtonpost.com	7,140
Americasjobexchange.com	5,893
Disabledperson.com	5,135

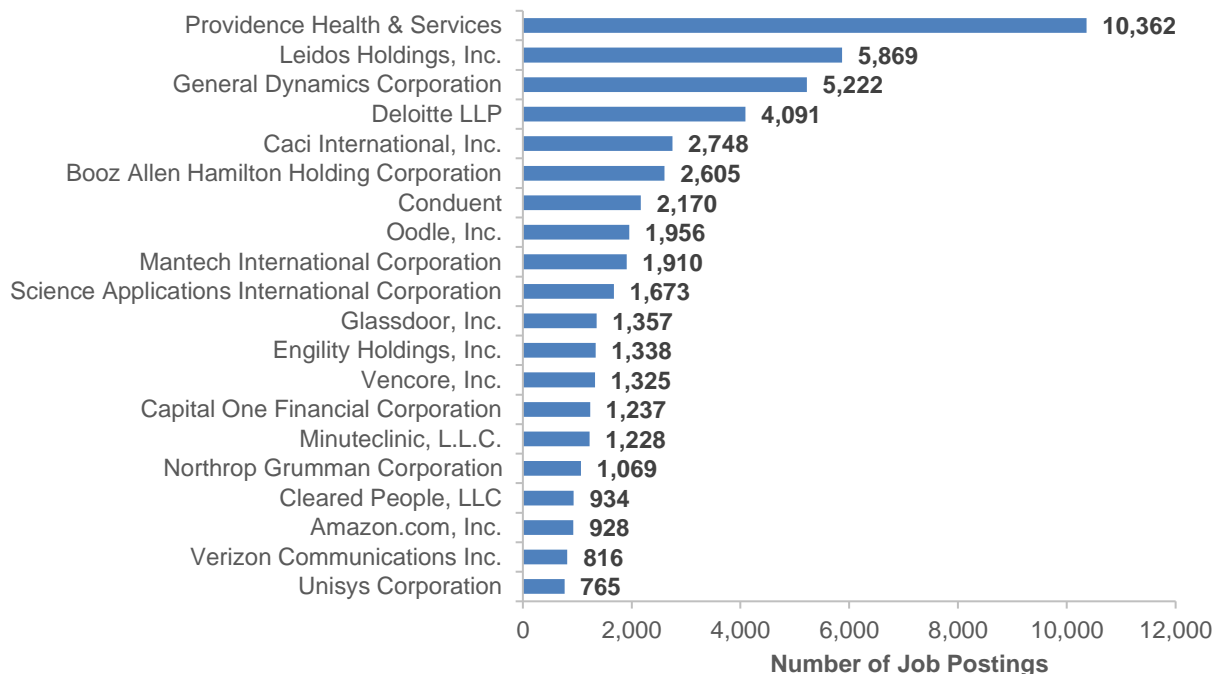
Job Postings in NOVA Region

Companies in the NOVA region with the most job postings from January 2018 through December 2018 for Information Systems Technology (A.S. and B.S.) graduates included Providence Health & Services (10,362 postings), Leidos Holdings (5,869 postings), and General Dynamics Corporation (5,222 postings) (Table 9 and Figure 5, below).

Table 9. Top 20 Companies Posting Jobs in the NOVA Region: 2018

Company Name	# of Unique Job Postings	Median Duration of Job Posting (# of days)
Providence Health & Services	10,362	42
Leidos Holdings, Inc.	5,869	24
General Dynamics Corporation	5,222	47
Deloitte, LLP	4,091	55
Caci International, Inc.	2,748	65
Booz Allen Hamilton Holding Corporation	2,605	63
Conduent	2,170	20
Oodle, Inc.	1,956	24
Mantech International Corporation	1,910	35
Science Applications International Corporation	1,673	40
Glassdoor, Inc.	1,357	34
Engility Holdings, Inc.	1,338	51
Vencore, Inc.	1,325	62
Capital One Financial Corporation	1,237	48
Minuteclinic, L.L.C.	1,228	63
Northrop Grumman Corporation	1,069	51
Cleared People, LLC	934	49
Amazon.com, Inc.	928	56
Verizon Communications, Inc.	816	66
Unisys Corporation	765	46

Figure 5. Top 20 Companies Posting Jobs in the NOVA Region: 2018



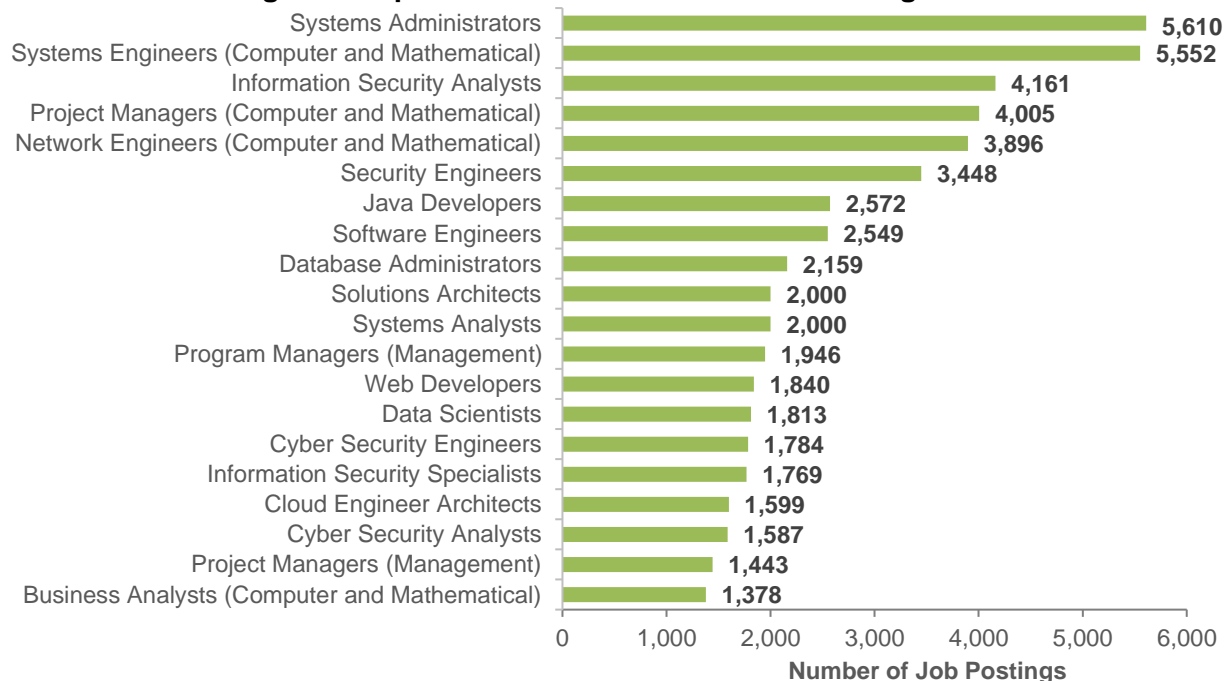
Job Titles in NOVA Region

From January 2018 through December 2018, the most frequently posted job titles for Information Systems Technology (A.S. and B.S.) graduates in the NOVA region were for Systems Administrators (5,610 postings) and Systems Engineers/Computer and Mathematical (5,552 postings) (Table 10 and Figure 6, below).

Table 10. Top 20 Posted Job Titles in the NOVA Region: 2018

Job Title	# of Unique Job Postings	Median Duration of Job Posting (# of days)
Systems Administrators	5,610	36
Systems Engineers (Computer and Mathematical)	5,552	46
Information Security Analysts	4,161	45
Project Managers (Computer and Mathematical)	4,005	37
Network Engineers (Computer and Mathematical)	3,896	43
Security Engineers	3,448	41
Java Developers	2,572	34
Software Engineers	2,549	46
Database Administrators	2,159	36
Solutions Architects	2,000	49
Systems Analysts	2,000	41
Program Managers (Management)	1,946	44
Web Developers	1,840	41
Data Scientists	1,813	41
Cyber Security Engineers	1,784	42
Information Security Specialists	1,769	47
Cloud Engineer Architects	1,599	51
Cyber Security Analysts	1,587	46
Project Managers (Management)	1,443	40
Business Analysts (Computer and Mathematical)	1,378	32

Figure 6. Top 20 Posted Job Titles in the NOVA Region: 2018



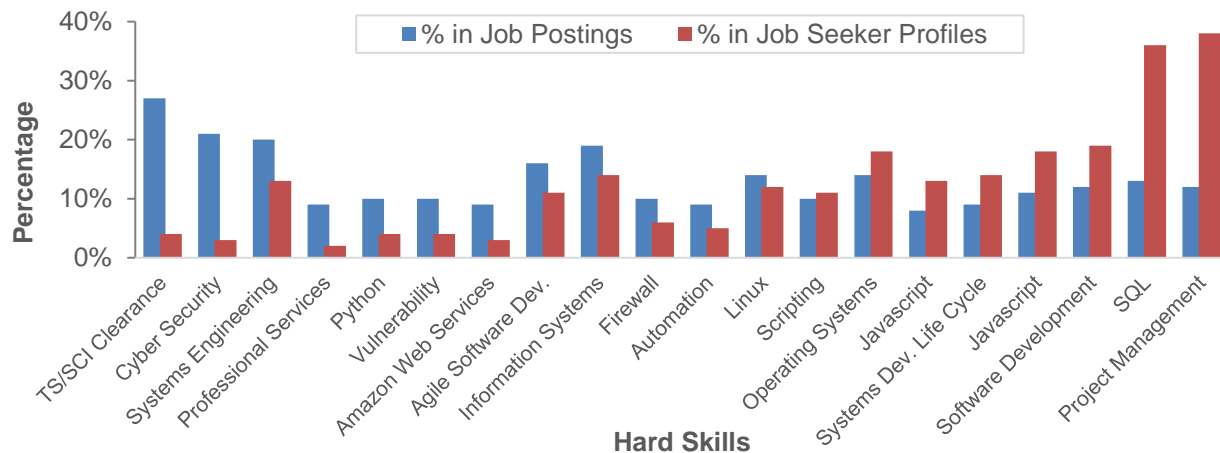
Desired Hard Skills

Table 11 and Figure 7 (below) show disproportions between the top *hard* skills that NOVA region employers sought among their job applicants and the hard skills that Information Systems Technology (A.S. and B.S.) graduates mentioned in their job-seeker profiles from January 2018 through December 2018.¹⁰ Cyber Security, Systems Engineering, and Professional Services were among the most desired hard skills in job postings that were disproportionately mentioned in job-seeker profiles. These differences represent potential areas in which job applicants could align their hard skills more closely with their prospective employers' desired skills.

Table 11. Top 20 Desired Hard Skills for Information Systems Technology Graduates: 2018

Hard Skills	% of Job Postings Mentioning Skill	% of Job Seeker Profiles Mentioning Skill	Difference in Percentage
Top Secret-Sensitive Compartmented Info. (TS/SCI Clearance)	27	4	-23
Cyber Security	21	3	-18
Systems Engineering	20	13	-7
Professional Services	9	2	-7
Python Programming Language	10	4	-6
Vulnerability	10	4	-6
Amazon Web Services	9	3	-6
Agile Software Development	16	11	-5
Information Systems	19	14	-5
Firewall	10	6	-4
Automation	9	5	-4
Linux	14	12	-2
Scripting	10	11	1
Operating Systems	14	18	4
JavaScript Programming Language	8	13	5
Systems Development Life Cycle	9	14	5
Java Programming Language	11	18	7
Software Development	12	19	7
SQL Programming Language	13	36	23
Project Management	12	38	26

Figure 7. Top 20 Desired Hard Skills for Information Systems Technology Graduates: Percentage Mentioned in Job Postings and Job Seeker Profiles in 2018



¹⁰ Hard skills are defined as technical or specialized skills often acquired through formal education.

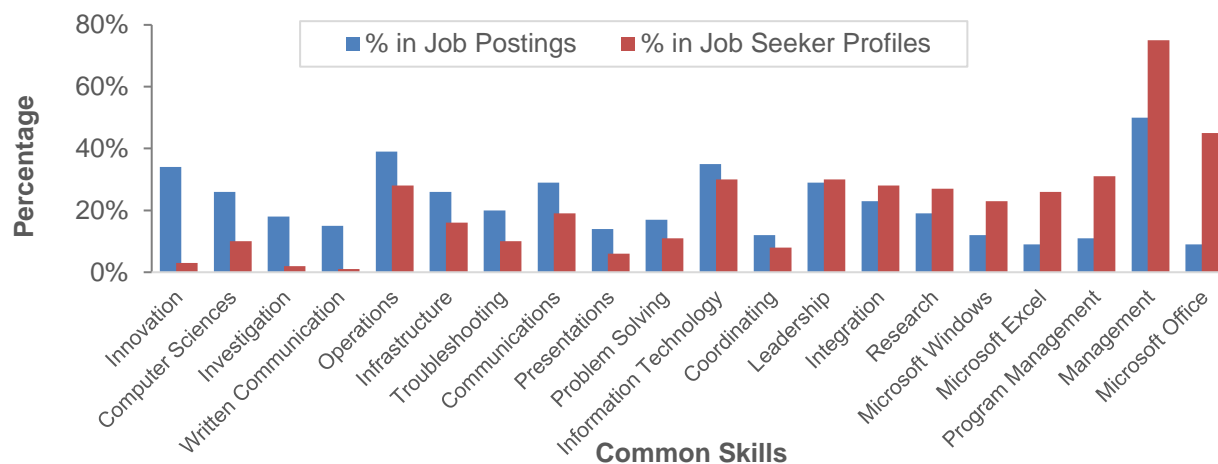
Desired Common Skills

Table 12 and Figure 8 (below) show disproportions between the top *common* skills that NOVA region employers sought among their job applicants and the common skills that Information Systems Technology (A.S. and B.S.) graduates mentioned in their job-seeker profiles from January 2018 through December 2018.¹¹ Innovation, computer sciences, and investigation were among the most desired common skills in job postings that were disproportionately mentioned in job-seeker profiles. These differences represent potential areas in which job applicants could align their common skills more closely with their prospective employers' desired skills.

Table 12. Top 20 Desired Common Skills for Information Systems Technology Graduates: 2018

Common Skills	% of Job Postings Mentioning Skill	% of Job Seeker Profiles Mentioning Skill	Difference in Percentage
Innovation	34	3	-31
Computer Sciences	26	10	-16
Investigation	18	2	-16
Written Communication	15	1	-14
Operations	39	28	-11
Infrastructure	26	16	-10
Troubleshooting (Problem Solving)	20	10	-10
Communications	29	19	-10
Presentations	14	6	-8
Problem Solving	17	11	-6
Information Technology	35	30	-5
Coordinating	12	8	-4
Leadership	29	30	1
Integration	23	28	5
Research	19	27	8
Microsoft Windows	12	23	11
Microsoft Excel	9	26	17
Program Management	11	31	20
Management	50	75	25
Microsoft Office	9	45	36

Figure 8. Top 20 Desired Common Skills for Information Systems Technology Graduates: Percentage Mentioned in Job Postings and Job Seeker Profiles in 2018



¹¹ Common skills refer to soft and transferable skills broadly utilized in various professions.

Desired Qualifications

The top desired qualifications for Information Systems Technology (A.S. and B.S.) graduates in NOVA region job postings from January 2018 through December 2018 included Certified Information Systems Security Professional (14,624 postings) and CompTIA Security+ (9,612 postings) (Table 13 and Figure 9, below)

Table 13. Top 20 Desired Qualifications Posted for Information Systems Technology Graduates: 2018

Job Qualifications	# of Job Postings
Certified Information Systems Security Professional	14,624
CompTIA Security+	9,612
Project Management Professional Certification	7,944
GIAC Certifications	6,889
IAT Level II Certification	5,351
Cisco Certified Network Associate	4,291
Certified Information Security Manager	3,934
Certified Ethical Hacker	3,877
ITIL Certifications	3,696
Microsoft Certified Systems Engineer	3,641
Cisco Certified Network Professional	3,306
Certified Information System Auditor (CISA)	3,159
GIAC Security Essentials Certification	2,297
GIAC Certified Incident Handler	2,225
Systems Security Certified Practitioner	2,193
ITIL Foundation Certification	2,113
Cisco Certified Network Associate Security (CCNA Security)	1,891
Microsoft Certified Systems Administrator (MCSA)	1,866
CompTIA Security+ CE	1,840
Master of Business Administration (MBA)	1,823

Figure 9. Top 20 Desired Qualifications Posted for Information Systems Technology Graduates: 2018

