

RESEARCH BRIEF

**Employment Outcomes of NOVA Graduates:
Biotechnology, A.A.S. and C.S.C. Programs**

Introduction

This Research Brief presents the employment outcomes of 60 NOVA graduates from the Biotechnology, A.A.S. and C.S.C. programs from 2010 through 2019 (Section I) and provides employment data for Biotechnology (A.S. and B.S.) graduates (Section II).^{1,2} The employment data include target occupations, job postings, employers hiring, and highly desired job skills and qualifications for Biotechnology (A.S. and B.S.) graduates in the Northern Virginia region during the specified period.³

Data were extracted using the Economic Modeling Specialists International (EMSI) Analyst product which provides employment data derived from government sources, online job posting activity, and professional networking profiles (e.g., LinkedIn) and résumés.⁴ Virginia Employment Commission (VEC) data were used to determine the employment outcomes and workforce credentials of NOVA graduates.⁵

Key Findings

- The employment opportunities for Biotechnology (A.S. and B.S.) graduates in the Northern Virginia region are favorable for target occupations.
 - Regionally, target occupations have frequent job openings and median hourly earnings that are higher than national median hourly earnings for target occupations.
- **Top Five Employers:** IQVIA, Anthem, Inc., Georgetown University, Inova Health System, and Capital One Financial Corporation are the top five employers hiring Biotechnology (A.S. and B.S.) graduates in the Northern Virginia region.
- **Top Five Job Titles:** Clinical Research Coordinators, Clinical Research Associates, Research Coordinators, Research Associates, and Data Science Managers are the top five job titles with job postings for Biotechnology (A.S. and B.S.) graduates in the Northern Virginia region.

¹ Graduates may have earned additional degrees beyond the Biotechnology (A.A.S. or C.S.C.)

² A.A.S. = Associate of Applied Science; C.S.C. = Career Studies Certificate; A.S. = Associate of Science; B.S. = Bachelor of Science.

³ Job postings comprise both full-time and part-time positions.

⁴ Economic Modeling Specialists International (EMSI): <https://www.economicmodeling.com/>

⁵ Virginia Employment Commission (VEC): <https://www.vec.virginia.gov/>

Section I. Employment Outcomes of NOVA Graduates

This section provides information regarding the employment outcomes of NOVA Biotechnology (A.A.S. and C.S.C.) graduates from 2010 through 2019.⁶ Of the 60 graduates analyzed, the average estimated annual starting salary within one year of graduation was \$33,870 for those who were employed full-time. This salary was approximately six percent less than the average estimated annual starting salary among *all* 2010-2019 NOVA graduates who were full-time employed within one year of graduation (\$36,168).⁷

Top Industries of Alumni

The top industries employing NOVA's Biotechnology (A.A.S. and C.S.C.) graduates were research and development in nanotechnology (20 percent); medical laboratories (13 percent); junior colleges (8 percent); and colleges, universities, and professional schools (7 percent) (see Table 1, below).

**Table 1. Top Industries Employing NOVA Biotechnology (A.A.S. and C.S.C.)
Graduates: 2010 through 2019**

Industries	NAICS Code*	Graduates	
		#	%
Research and Development in Nanotechnology	541713	12	20.0
Medical Laboratories	621511	8	13.3
Junior Colleges	611210	5	8.3
Colleges, Universities, and Professional Schools	611310	4	6.7
Temporary Help Services	561320	3	5.0
Veterinary Services	541940	3	5.0
Supermarkets and Other Grocery (excluding Convenience) Stores	445110	2	3.3
General Medical and Surgical Hospitals	622110	2	3.3
Professional Employer Organizations	561330	2	3.3
Department Stores	452210	2	3.3

*The North American Industry Classification System (NAICS) is a standard used by federal agencies such as the United States Census Bureau for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. (<https://www.census.gov/eos/www/naics/>)

Note: Industries with percentages less than 3.0 percent are not included in the table.

Top Employers and Job Titles of Alumni

The top employers of NOVA's Biotechnology (A.A.S. and C.S.C.) graduates included the Commonwealth of Virginia (17 percent), Quest Diagnostics, Inc. (10 percent), Howard Hughes Medical Institute (8 percent), and American Type Culture Collection (7 percent) (see Table 2, next page).

⁶ Graduates may have earned additional degrees beyond the Biotechnology, A.A.S. or C.S.C. awards.

⁷ Source: Virginia Employment Commission (VEC) as November 6, 2020.

**Table 2. Top Employers of NOVA Biotechnology (A.A.S. and C.S.C.)
Graduates: 2010 through 2019**

Employers	Graduates	
	#	%
Commonwealth of Virginia	10	16.7
Quest Diagnostics, Inc.	6	10.0
Howard Hughes Medical Institute	5	8.3
American Type Culture Collection	4	6.7
Bode Technology Group, Inc.	3	5.0
On Assignment Staffing Services LLC	2	3.3
Inova Health System	2	3.3

Note: Employers with percentages less than 3.0 percent are not included in the table.

Top Locations of Alumni

The top locations where NOVA's Biotechnology (A.A.S. and C.S.C.) graduates resided included Manassas, VA (20 percent), Alexandria, VA (8 percent), Woodbridge, VA (8 percent), Ashburn, VA (7 percent), Manassas Park, VA (7 percent), and Sterling, VA (7 percent). Overall, *all* program graduates resided in the Commonwealth of Virginia (see Table 3, below).

**Table 3. Top Locations of NOVA Biotechnology (A.A.S. and C.S.C.)
Graduates: 2010 through 2019**

Locations	Graduates	
	#	%
Manassas, VA	12	20.0
Alexandria, VA	5	8.3
Woodbridge, VA	5	8.3
Ashburn, VA	4	6.7
Manassas Park, VA	4	6.7
Sterling, VA	4	6.7
Fairfax, VA	3	5.0
Stafford, VA	3	5.0
Centreville, VA	2	3.3
Falls Church, VA	2	3.3
Lorton, VA	2	3.3
Springfield, VA	2	3.3

Note: Locations with percentages less than 3.0 percent are not included in the table.

Section II. Regional Employment Opportunities for NOVA Graduates

This section presents regional employment opportunities for graduates of Biotechnology degree programs (A.S. and B.S.). These data include job postings for target occupations within the Northern Virginia region.⁸

Target Occupations

In 2020, regionally, there were approximately 1,200 jobs and 100 job openings in target occupations for graduates of Biotechnology A.S. and B.S. degree programs.⁹ Among these target occupations, median hourly earnings were \$65.42, which was 29 percent higher than the \$50.91 national median hourly earnings for these target occupations. The projected regional job growth among these target occupations is 1 percent from 2020 to 2025, which is 5 percentage points lower than the projected national growth for these target occupations (6 percent). Annual job openings for target occupations for Biotechnology (A.S. and B.S.) graduates were greatest for Natural Sciences Managers (72 openings) (see Table 4, below).

Table 4. Northern Virginia Region Job Openings, Earnings, and Growth for the Target Occupations for Biotechnology Graduates: 2020

Target Occupation	# of Jobs	# of Job Openings	Median Hourly Earnings	% Job Growth (2020–2025)	Location Quotient*
Natural Sciences Managers	799	72	\$69.38	0.0%	1.9
Biological Scientists (general)	351	34	\$45.04	1.2%	1.1

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

From January 2020 through December 2020, on average, there were 66 graduates of Biotechnology degree programs hired each month for target occupations in the Northern Virginia region.¹⁰ The target occupation with the top average monthly job hires was Natural Sciences Managers (49 hires) (see Table 5, below, and Figure 1, next page).

Table 5. Northern Virginia Region Average Monthly Job Hires in Target Occupations for Biotechnology Graduates: 2020

Target Occupation	Average Monthly Hires*
Natural Sciences Managers	49
Biological Scientists (general)	17

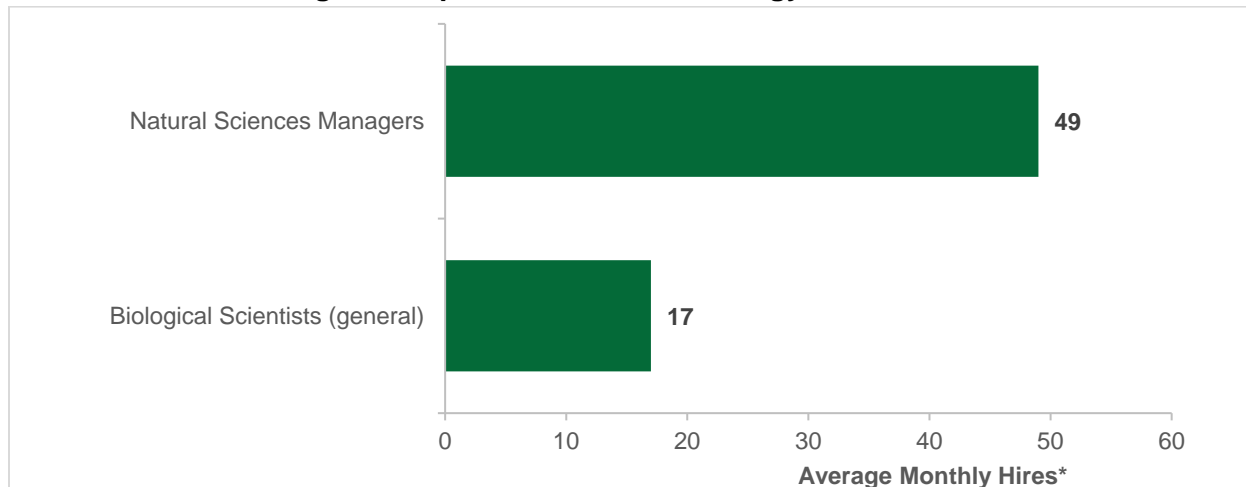
*Average monthly hires include Biotechnology graduates with an A.S., B.S., or post-baccalaureate degree.

⁸ The Northern Virginia 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.

⁹ A Biotechnology A.S. and B.S. were the minimum degree qualifications in these job postings.

¹⁰ Includes Biotechnology graduates with an A.S., B.S., or post-baccalaureate degree.

Figure 1. Northern Virginia Region Average Monthly Job Hires in Target Occupations for Biotechnology Graduates: 2020



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

From January 2020 through December 2020, the top website sources for job postings in target occupations in the Northern Virginia region for Biotechnology (A.S. and B.S.) graduates were Employmentcrossing.com (360 postings), Nexxt.com (313 postings), Dejobs.org (278 postings), Virginiajobnetwork.com (117 postings), and Worksourcewa.com (115 postings) (see Table 6, below).

Table 6. Top 20 Job Posting Sources for Target Occupations in the Northern Virginia Region for Biotechnology Graduates: 2020

Website	Number of Target Occupation Job Postings on Website
Employmentcrossing.com	360
Nexxt.com	313
Dejobs.org	278
Virginiajobnetwork.com	117
Worksourcewa.com	115
Entrylevelcrossing.com	104
Physicaltherapycrossing.com	100
Geebo.com	95
Pure-jobs.com	89
Educationcrossing.com	73
Monster.com	68
Disabledperson.com	64
Careerboard.com	63
Learn4good.com	63
Bebee.com	56
Nettemps.com	55
Diversity.com	49
Localjobs.com	49
Americasjobexchange.com	42
Usacares.org	41

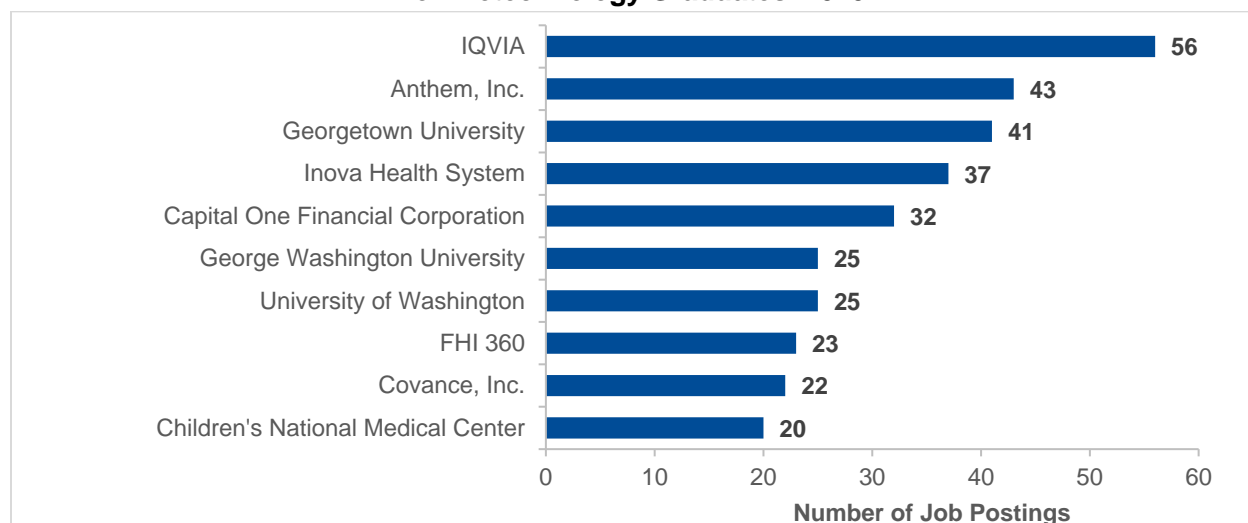
Job Postings in the Northern Virginia Region

Employers in the Northern Virginia region with the most job postings from January 2020 through December 2020 for graduates of Biotechnology degree programs (A.S. and B.S.) included IQVIA (56 postings), Anthem, Inc. (43 postings), Georgetown University (41 postings), Inova Health System (37 postings), and Capital One Financial Corporation (32 postings) (see Table 7 and Figure 2, below).

Table 7. Top 20 Employers Posting Jobs in the Northern Virginia Region for Biotechnology Graduates: 2020

Employer Name	Number of Unique Job Postings	Median Duration of Job Posting (in Number of Days)
IQVIA	56	50
Anthem, Inc.	43	14
Georgetown University	41	61
Inova Health System	37	46
Capital One Financial Corporation	32	9
George Washington University	25	68
University of Washington	25	83
FHI 360	23	44
Covance, Inc.	22	17
Children's National Medical Center	20	50
George Mason University	18	77
Docs	17	44
Leidos Holdings, Inc.	15	43
Accenture PLC	14	55
ATCC	14	23
Stryker Corporation	14	21
Huron Consulting Group, Inc.	13	83
Medstar Health	12	24
Henry M. Jackson Foundation	12	47
Kelly Services, Inc.	11	38

Figure 2. Top 10 Employers Posting Jobs in the Northern Virginia Region for Biotechnology Graduates: 2020



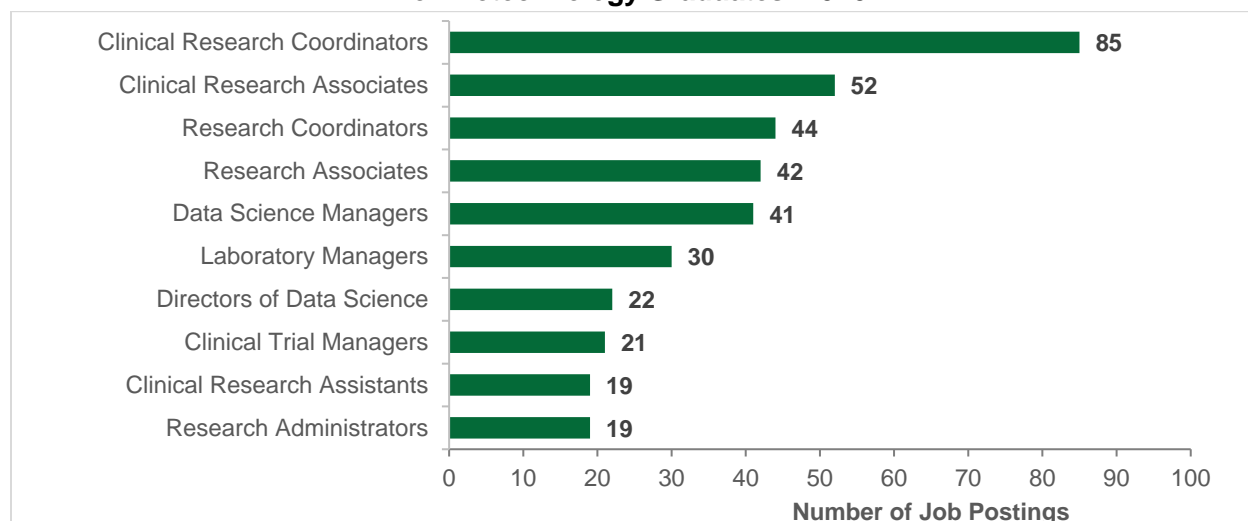
Job Titles in Northern Virginia Region

From January 2020 through December 2020, the most frequently posted job titles for Biotechnology (A.S. and B.S.) graduates in the Northern Virginia region were for Clinical Research Coordinators (85 postings), Clinical Research Associates (52 postings), Research Coordinators (44 postings), Research Associates (42 postings), and Data Science Managers (41 postings) (see Table 8 and Figure 3, below).

Table 8. Top 20 Posted Job Titles in the Northern Virginia Region for Biotechnology Graduates: 2020

Job Title	Number of Unique Job Postings	Median Duration of Job Posting (in Number of Days)
Clinical Research Coordinators	85	43
Clinical Research Associates	52	33
Research Coordinators	44	44
Research Associates	42	14
Data Science Managers	41	13
Laboratory Managers	30	42
Directors of Data Science	22	14
Clinical Trial Managers	21	34
Clinical Research Assistants	19	54
Research Administrators	19	37
Biologists	18	80
Clinical Research Site Managers	14	21
Clinical Project Managers	13	56
Research Managers	13	26
Lead Clinical Data Managers	12	79
Monitoring and Evaluation Managers	12	34
Associate Search Directors	11	69
Clinical Research Administrators	10	87
Clinical Research Managers	10	42
Data Scientists	10	41

Figure 3. Top 10 Posted Job Titles in the Northern Virginia Region for Biotechnology Graduates: 2020



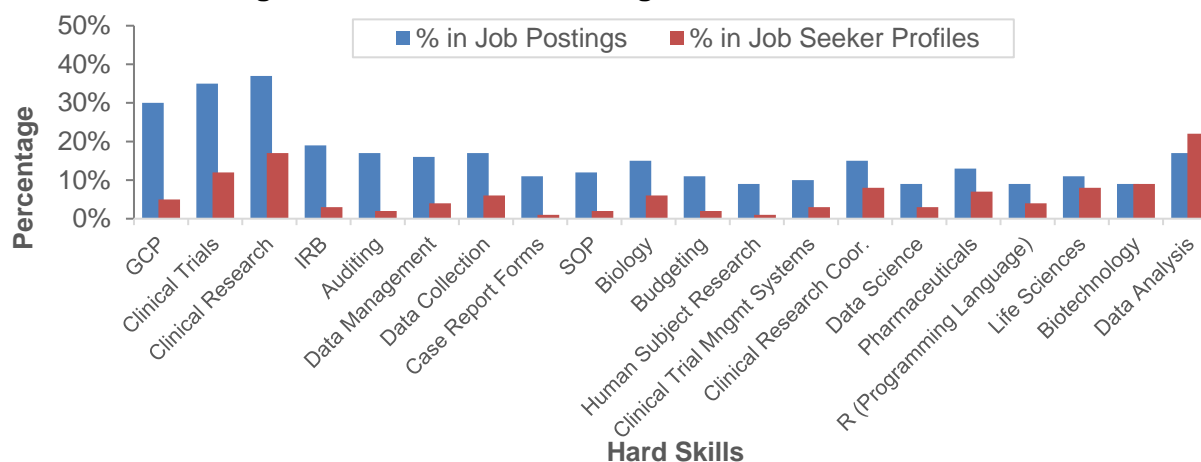
Desired Hard Skills

Table 9 and Figure 4 (see below) show disproportions between the top *hard* skills that Northern Virginia region employers sought among their job applicants and the hard skills that Biotechnology (A.S. and B.S.) graduates mentioned in their job-seeker profiles from January 2020 through December 2020.¹¹ Good Clinical Practices, Clinical Trials, and Clinical Research were among the most desired hard skills in job postings that were mentioned disproportionately 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 9. Top 20 Desired Hard Skills for Biotechnology Graduates: 2020

Hard Skills	% of Job Postings Mentioning Skill	% of Job Seeker Profiles Mentioning Skill	Difference in Percentage
Good Clinical Practices (GCP)	30	5	-25
Clinical Trials	35	12	-23
Clinical Research	37	17	-20
Institutional Review Board (IRB)	19	3	-16
Auditing	17	2	-15
Data Management	16	4	-12
Data Collection	17	6	-11
Case Report Forms	11	1	-10
Standard Operating Procedure	12	2	-10
Biology	15	6	-9
Budgeting	11	2	-9
Human Subject Research	9	1	-8
Clinical Trial Management Systems	10	3	-7
Clinical Research Coordination	15	8	-7
Data Science	9	3	-6
Pharmaceuticals	13	7	-6
R (Programming Language)	9	4	-5
Life Sciences	11	8	-3
Biotechnology	9	9	0
Data Analysis	17	22	5

Figure 4. Top 20 Desired Hard Skills for Biotechnology Graduates: Percentage Mentioned in Job Postings and Job Seeker Profiles in 2020



¹¹ Hard skills are defined as technical or specialized skills often acquired through formal education.

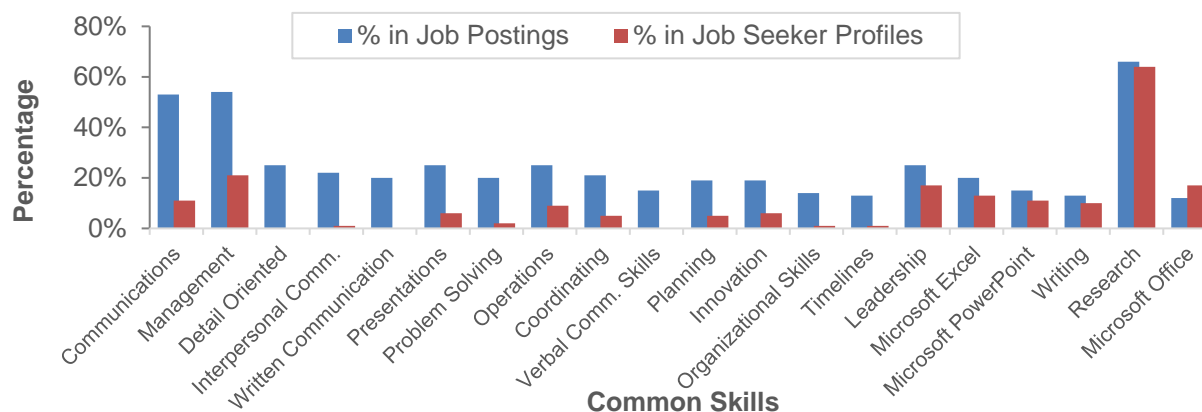
Desired Common Skills

Table 10 and Figure 5 (see below) show disproportions between the top *common* skills that Northern Virginia region employers sought among their job applicants and the common skills that Biotechnology (A.S. and B.S.) graduates mentioned in their job-seeker profiles from January 2020 through December 2020.¹² Communications, management, and detail-oriented were among the most desired common skills in job postings that were mentioned disproportionately 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 10. Top 20 Desired Common Skills for Biotechnology Graduates: 2020

Common Skills	% of Job Postings Mentioning Skill	% of Job Seeker Profiles Mentioning Skill	Difference in Percentage
Communications	53	11	-42
Management	54	21	-33
Detail-Oriented	25	0	-25
Interpersonal Communications	22	1	-21
Written Communication	20	0	-20
Presentations	25	6	-19
Problem Solving	20	2	-18
Operations	25	9	-16
Coordinating	21	5	-16
Verbal Communication Skills	15	0	-15
Planning	19	5	-14
Innovation	19	6	-13
Organizational Skills	14	1	-13
Timelines	13	1	-12
Leadership	25	17	-8
Microsoft Excel	20	13	-7
Microsoft PowerPoint	15	11	-4
Writing	13	10	-3
Research	66	64	-2
Microsoft Office	12	17	5

Figure 5. Top 20 Desired Common Skills for Biotechnology Graduates: Percentage Mentioned in Job Postings and Job Seeker Profiles in 2020



¹² Common skills refer to soft and transferable skills broadly utilized in various professions.

Desired Qualifications

From January 2020 to December 2020, the top desired qualifications for Biotechnology (A.S. and B.S.) graduates in job postings in the Northern Virginia region included Master of Business Administration (32 postings), Project Management Professional Certification (23 postings), Certified Clinical Research Associate (18 postings), and Bachelor of Science in Nursing (17 postings) (see Table 11 and Figure 6, below).

Table 11. Top 20 Desired Qualifications Posted for Biotechnology Graduates: 2020

Job Qualifications	# of Job Postings
Master of Business Administration (MBA)	32
Project Management Professional Certification	23
Certified Clinical Research Associate	18
Bachelor of Science in Nursing (BSN)	17
Doctor of Pharmacy (PharmD)	12
Bachelor of Science in Business	9
Medical Technologist	9
Bachelor of Science in Business Administration	8
Nurse Practitioner	8
Licensed Practical Nurse	4
Master of Public Administration	4
Certified Meeting Professional	3
LEED Accredited Professional (AP)	2
Chartered Alternative Investment Analyst	2
Certified Quality Auditor	2
Chartered Financial Analyst	2
American Medical Technologists	2
Master of Laws	1
Laboratory Animal Technologist (LATG)	1
Doctor of Dental Medicine (DMD)	1

Figure 6. Top 10 Desired Qualifications Posted for Biotechnology Graduates: 2020

