OIR

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Math-Based Program Completions and Labor Market Demand

This Research Brief presents math-based program completions and labor market statistics for the Northern Virginia Community College (NOVA) service area.[1] The following four CIP programs are included in the tables below: **Mathematics (27.01), Applied Mathematics (27.03), Mathematics and Statistics, Other (27.99), and Mathematics and Computer Science (30.08)**.[2]

It is important to note that NOVA does not offer any programs that technically fall under any of these CIP code classifications. Rather, NOVA offers a Science A.S. degree with a Mathematics Specialization, which falls under the Biological and Physical Sciences CIP code (30.0101). However, George Mason University and Marymount University – two frequent local transfer institutions for NOVA students – both offer bachelor's, master's, and doctoral degrees in programs that fall under the four CIP codes analyzed here.

The tables below reveal the following major findings:

- Regional, state, and national completions of math, applied math, math/statistics, and math/computer science increased from 2011 to 2015.
- The location quotient for math-related jobs in NOVA's service area is 2.17, signifying that this area has a higher concentration of math-related jobs than the national average.[3]

[1] Service area data includes the following nine locations: Arlington County, Fairfax County, Loudoun County, Prince William County, Alexandria City, Fairfax City, Falls Church City, Manassas City, and Manassas Park City.

[2] Every postsecondary degree/certificate program in the U.S. falls under a six-digit Classification of Instructional Programs (CIP) Code as developed by the U.S. Department of Education's National Center for Education Statistics (NCES). The purpose of the CIP Code is to provide a taxonomic scheme that will support the accurate tracking, assessment, and reporting of fields of study and program completions activity.

[3] The location quotient is 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 in question.

- Mathematicians have the highest median hourly earnings of all math-related occupations at $68.16, but account for only a small number of math-related jobs in the area.
- Most of the workers in math-related occupations have earned a bachelor's degree or higher academic credential.

Table 1. Five-Year Completion Trends: 2011 through 2015

Location	2011 Completions	2015 Completions	% Change
NOVA	0	0	0.0%
Region	57	86	50.9%
State	678	872	28.6%
Nation	26,030	32,821	26.1%

Table 2. Regional Completions by Award: 2015

Award Level	Completions	
	#	%
Bachelor's degree	51	59.3%
Postbaccalaureate certificate	4	4.7%
Master's degree	20	23.3%
Doctoral degree	11	12.8%
Total	**86**	**100.0%**

Table 3. Regional Completions by Institution and Award: 2015

Institution	Bachelor's Degree		Postbaccalaureate Certificate		Master's Degree		Doctoral Degree	
	#	%	#	%	#	%	#	%
George Mason University	49	96.1%	4	100.0%	20	100.0%	11	100.0%
Marymount University	2	3.9%	0	0.0%	0	0.0%	0	0.0%
Total	**51**	**100.0%**	**4**	**100.0%**	**20**	**100.0%**	**11**	**100.0%**

Table 4. Five-Year Projections for Target Occupations: 2016 through 2021

Occupation	2016 Jobs	Annual Openings	Median Hourly Earnings	Projected Growth (2016-2021)	Location Quotient (2016)*
Postsecondary Teachers	6,986	277	$34.36	10.0%	0.54
Computer Occupations, All Other	6,576	144	$53.64	4.3%	3.23
Financial Analysts	4,207	163	$45.34	8.4%	1.74
Financial Specialists, All Other	2,070	34	$45.09	3.0%	1.80
Economists	858	35	$58.21	5.8%	4.79
Natural Sciences Managers	798	24	$63.04	4.3%	1.65
Statisticians	558	31	$49.52	17.9%	1.96
Mathematical Science Occupations, All Other	336	9	$32.79	5.1%	18.1
Biological Scientists, All Other	299	10	$43.79	2.3%	1.01
Mathematicians	146	6	$68.16	10.3%	4.40
Actuaries	97	8	$61.28	25.8%	0.49
Regional	**22,931**	**741**	**$42.49**	**8.3%**	**2.17****
National	**2,321,965**	**74,240**	**$36.01**	**6.8%**	**1.00**

*See footnote 3 for explanation of Location Quotient

**Weighted average of the Location Quotients for all Target Occupations

Table 5. National Educational Attainment of Target Occupations: 2016

Occupation	< High School Diploma	High School Diploma or Equivalent	Some College, No Degree	Associate's Degree	Bachelor's Degree	Master's Degree	Doctoral Degree
Postsecondary Teachers	0.2%	0.2%	2.4%	2.0%	16.2%	35.7%	43.3%
Computer Occupations, All Other	0.7%	8.1%	22.4%	14.5%	38.8%	14.4%	1.2%
Financial Analysts	0.2%	2.7%	8.0%	3.0%	45.3%	35.6%	5.2%
Financial Specialists, All Other	1.2%	10.4%	16.6%	8.7%	37.7%	22.9%	2.6%
Economists	0.8%	0.0%	0.6%	0.2%	25.6%	37.2%	35.7%
Natural Sciences Managers	0.6%	1.4%	4.0%	2.3%	33.2%	31.4%	27.2%
Statisticians	0.0%	0.1%	4.8%	2.9%	30.1%	42.8%	19.3%
Mathematical Science Occupations, All Other	0.0%	0.1%	4.8%	2.9%	30.1%	42.8%	19.3%
Biological Scientists, All Other	0.1%	0.2%	2.1%	2.2%	43.8%	32.0%	19.6%
Mathematicians	0.0%	0.1%	4.8%	2.9%	30.1%	42.8%	19.3%
Actuaries	0.0%	0.0%	1.5%	0.0%	61.3%	23.9%	13.3%