

Virginia Leadership Summit 2013

Virginia's Workforce 2013 and Beyond:
Meeting the Demand Imperative
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CHMURA ECONOMICS & ANALYTICS

Virginia's Workforce 2013 and Beyond: Meeting the Demand Imperative

- Demand: What skills do businesses need?
- Supply:
 - What are students' interests?
 - Who is managing students expectations?
 - Are students getting the skills they need for the jobs of the future?
- Are Virginia communities attractive for expansion opportunities?

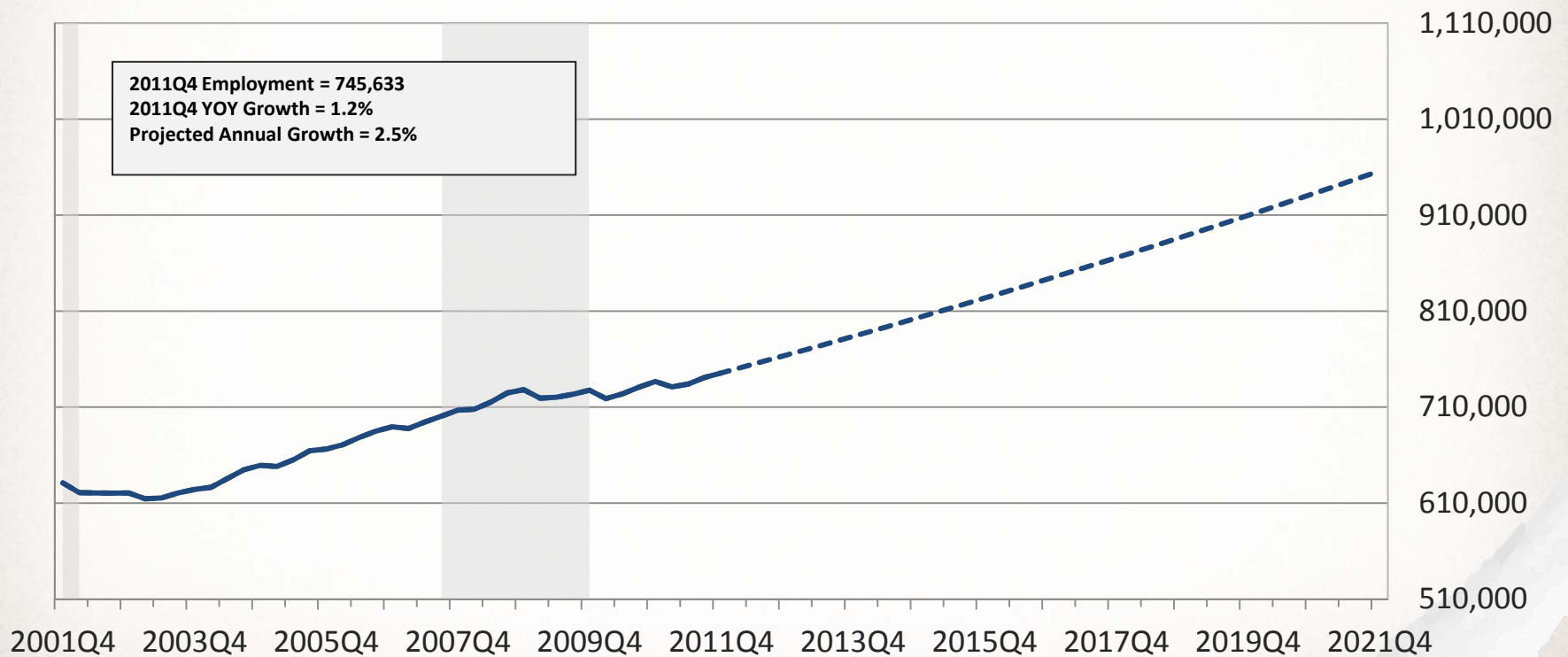
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**Demand Side:
Business Needs Now
and
In the Future**

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STEM-H Expected to Grow Faster than the 1.7% Annual Average for All Industries

Employment Growth in STEM-H Industries
Historical and Projected, Virginia



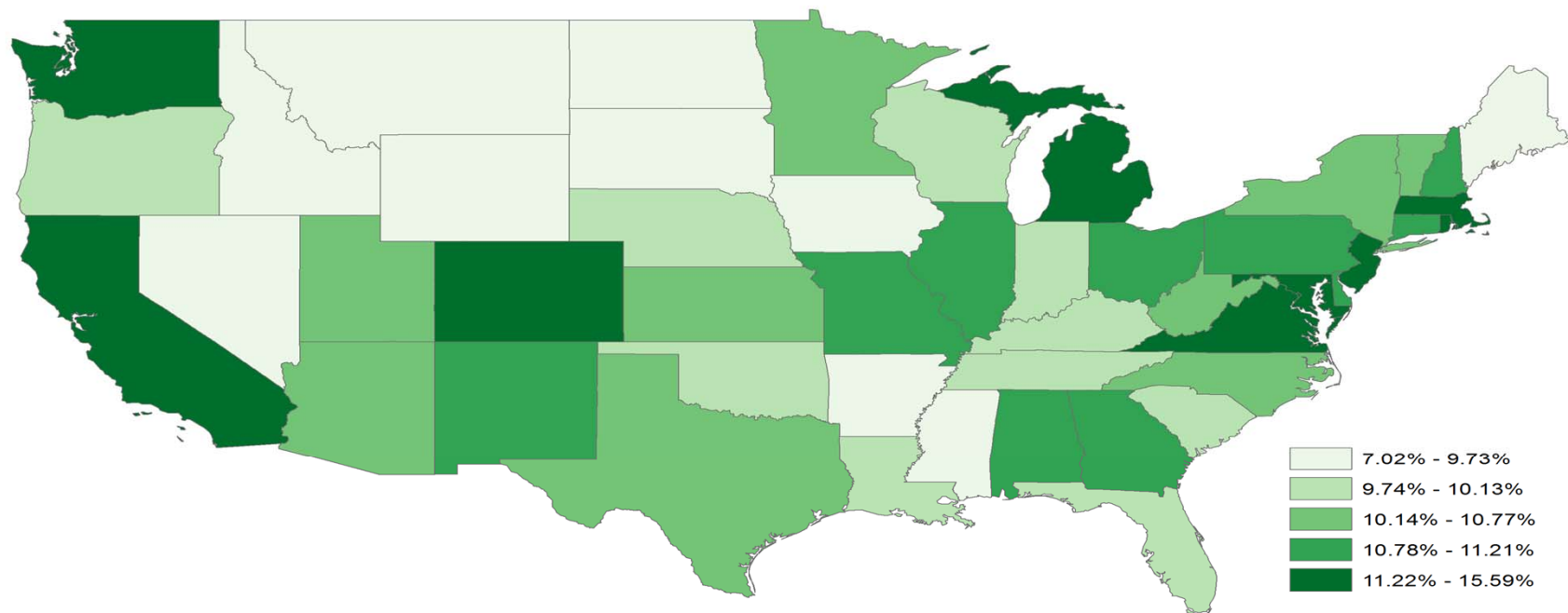
Note: shaded areas represent recessions.

Source: JobsEQ and the Bureau of Labor Statistics

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Concentration of STEM-H Job Needs

Percentage of Jobs in STEM-H Due to Expanding Payrolls and Retirement from 2012-2016 Relative to Total 4-Yr Job Needs



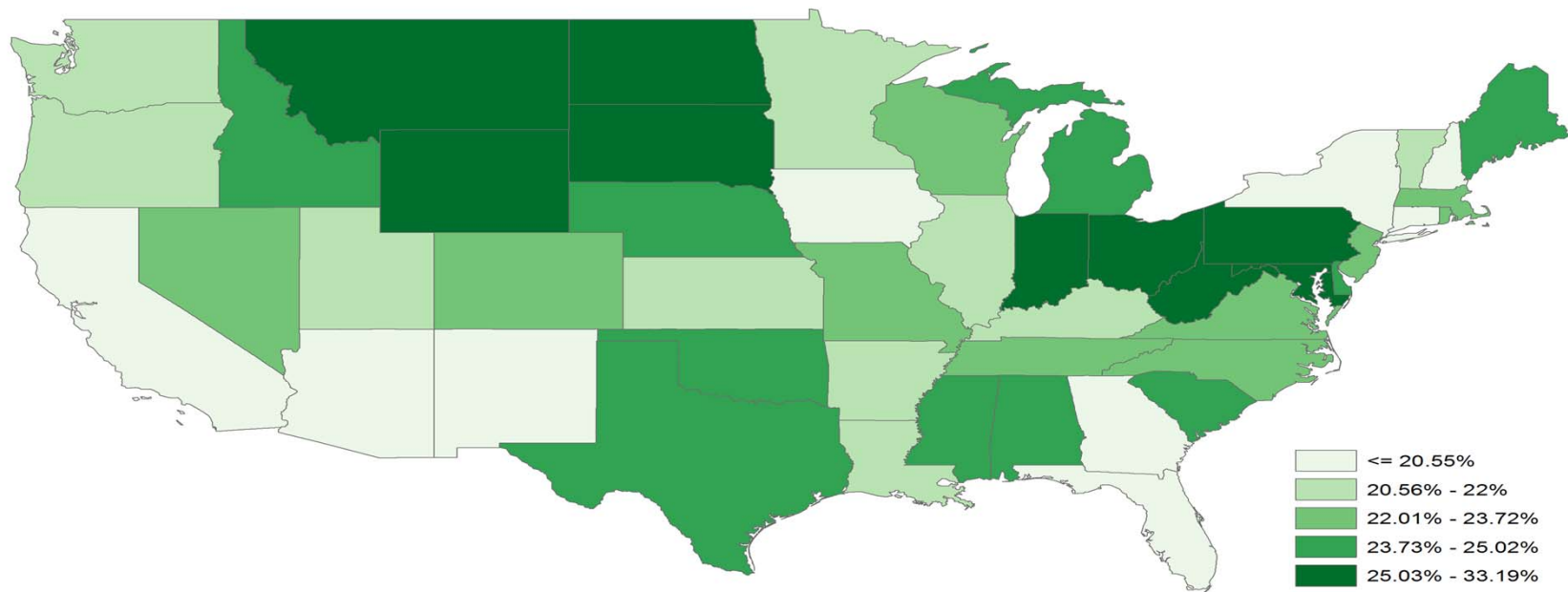
In Virginia, 13.8% of all the jobs to be filled in the next 4 years are expected to be STEM-H.

Source: Chmura Economics & Analytics

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STEM-H Post-secondary Awards

Percentage of Post-Secondary Awards that were STEM-H in 2011



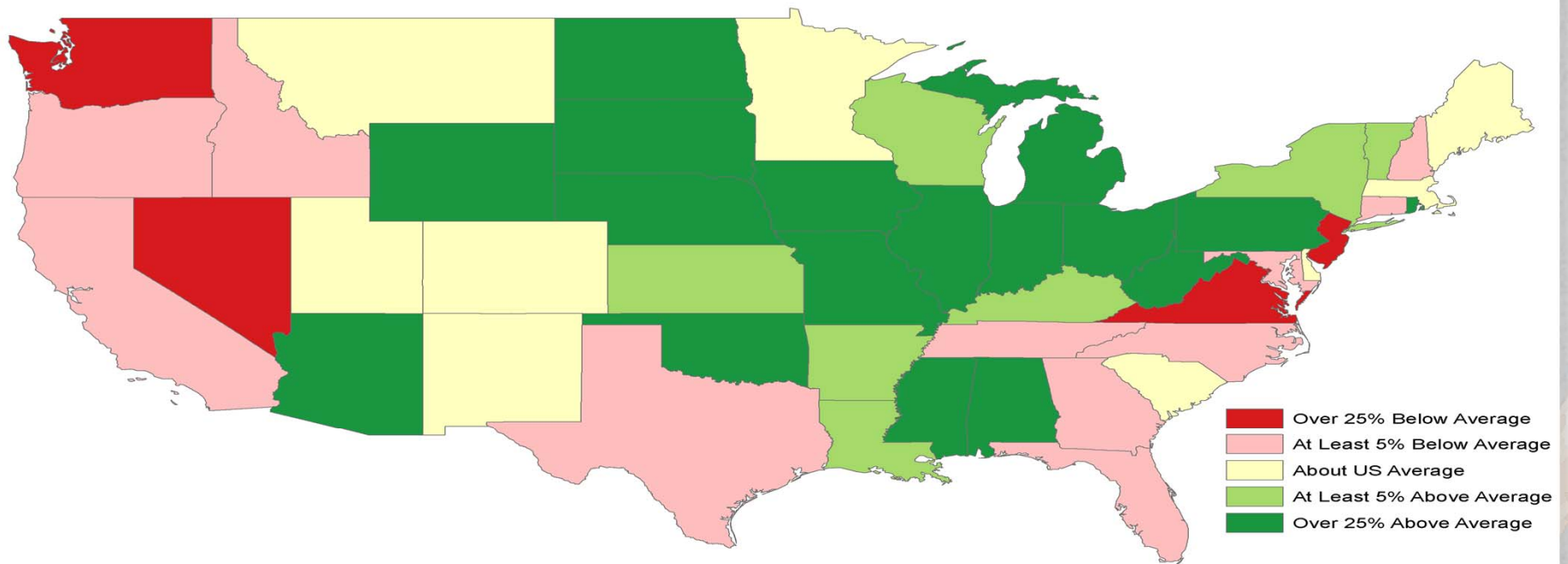
In Virginia, 23.1% of all post-secondary awards were STEM-H.

Source: NCES

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STEM-H Award-Alignment with Employer Needs

STEM-H Awards Relative to the U.S. Average: The number of STEM-H Degrees Awarded for Each STEM-H Job Opening



Virginia needs to graduate 28% more STEM-H students
To reach the national average (STEM-H awards / STEM-H demand).

Source: Chmura Economics & Analytics and NCES

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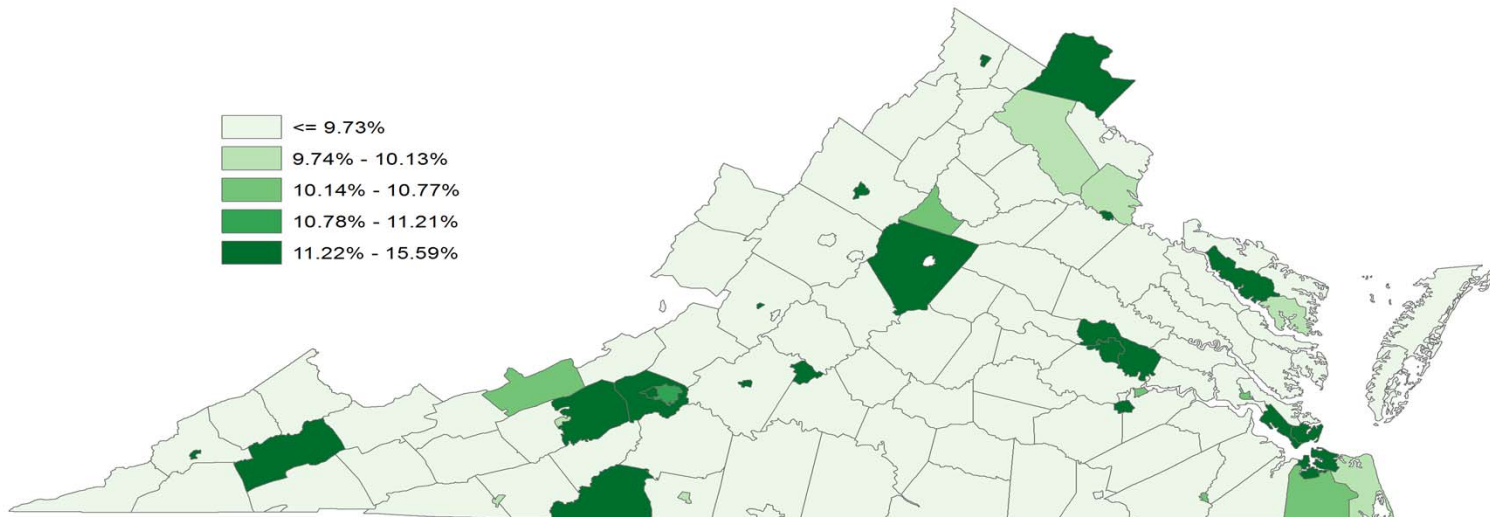
Where are Some of the Alignment Issues in Virginia?

- Under producing
 - Aerospace engineering and operations technician
 - Nuclear engineers
 - Electrical engineers
 - Computer support specialists
- Over producing
 - Forensic science technicians
 - Industrial engineering technicians
 - Industrial engineers

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Concentration of STEM-H Job Needs

Percentage of Jobs in STEM-H Due to Expanding Payrolls and Retirement from 2012-2016 Relative to Total 4-Yr Job Needs



Source: Chmura Economics & Analytics

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Big Picture: VA Occupations in Greatest Demand

Requiring a 2-Year Degree or More

	Major Occupation Group	Current Employment 2013Q1	2013Q1 – 2023Q1		
			Annual Growth Demand	Annual Repl Demand	Total Annual Demand
1	Education, Training, and Library	247,245	3,966	5,472	9,438
2	Business and Financial Operations	204,928	4,675	4,280	8,955
3	Computer and Mathematical	158,880	5,512	3,078	8,590
4	Healthcare Practitioners and Technical	177,044	4,587	3,571	8,158
5	Office and Administrative Support	202,457	3,219	4,422	7,641
6	Management	185,393	2,551	4,140	6,690
7	Installation, Maintenance, and Repair	112,945	2,036	2,556	4,592
8	Sales and Related	94,644	1,854	2,462	4,316
9	Architecture and Engineering	77,505	1,361	1,791	3,151
10	Construction and Extraction	57,889	1,551	1,526	3,077

Source: JobsEQ.

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Big Picture: VA Occupations in Greatest Demand

Requiring a 2-Year Degree or More

Detailed Occupation Group	Current Employment 2013Q1	2013Q1 – 2023Q1		
		Annual Growth Demand	Annual Repl Demand	Total Annual Demand
1 Customer Service Representatives	60,285	1,173	1,751	2,925
2 Registered Nurses	61,889	1,539	1,116	2,655
3 Elementary School Teachers, Ex. Special Ed.	42,685	778	950	1,728
4 Supervisors, Office & Admin. Support Workers	36,856	654	1,006	1,660
5 General and Operations Managers	53,694	500	1,024	1,524
6 Computer Support Specialists	26,382	767	735	1,502
7 Software Developers, Applications	27,685	1,150	311	1,461
8 Teacher Assistants	36,241	593	827	1,421
9 Accountants and Auditors	34,686	660	760	1,420
10 Bookkeeping, Accounting, and Auditing Clerks	47,202	818	530	1,348

Source: JobsEQ.

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Prepared for New Firm Expansion?

Virginia Aerospace Products and Parts Mfg.

Top 10 Occupations	Current Employment	Regional Average Wage	10-Year Replacement Demand	10-Year Growth Demand	10-Year Total Demand
1 Aircraft Structure, Surfaces, Rigging, Systems Assemblers	225	\$51,100	48	77	125
2 Aerospace Engineers	202	\$124,000	46	26	72
3 Machinists	152	\$41,200	30	32	62
4 Inspectors, Testers, Sorters, Samplers, and Weighers	135	\$35,200	31	23	54
5 Industrial Engineers	120	\$82,100	28	20	48
6 Aircraft Mechanics and Service Technicians	123	\$51,000	37	7	44
7 Mechanical Engineers	90	\$89,500	30	13	43
8 Logisticians	76	\$81,600	15	22	37
9 Software Developers, Systems Software	98	\$111,500	10	25	35
10 Team Assemblers	95	\$27,900	20	13	32

Source: JobsEQ.

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What If? 2,000 New Jobs by 2020?

Aerospace Products and Parts Mfg.

Top 10 Occupations	Current Employment	Regional Average Wage	10-Year Replacement Demand	10-Year Growth Demand	10-Year Total Demand
1 Aircraft Structure, Surfaces, Rigging, Systems Assemblers	225	\$51,100	67	276	125 343
2 Aerospace Engineers	202	\$124,000	65	176	72 241
3 Machinists	152	\$41,200	42	153	62 195
4 Inspectors, Testers, Sorters, Samplers, and Weighers	135	\$35,200	43	127	54 170
5 Industrial Engineers	120	\$82,100	38	113	48 151
6 Aircraft Mechanics and Service Technicians	123	\$51,000	52	92	44 144
7 Mechanical Engineers	90	\$89,500	42	80	43 122
8 Logisticians	76	\$81,600	14	106	37 120
9 Software Developers, Systems Software	98	\$111,500	27	83	35 111
10 Team Assemblers	95	\$27,900	21	87	32 108

Source: JobsEQ.

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130 Graduates in 2011-2012

Aircraft Mechanics: 174 a Year Needed for All Industries in Virginia

CIP Code	Title/School	Annual Degree Awards - Virginia		
		Certificates and 2yr Degrees	4yr Degrees	Postgraduate Degrees
47.0607	Airframe Mechanics and Aircraft Maintenance Technology/Technician			
	Aviation Institute of Maintenance-Chesapeake	56	0	0
	Aviation Institute of Maintenance-Manassas	38	0	0
	Blue Ridge Community College	30	0	0
47.0608	Aircraft Powerplant Technology/Technician			
	Blue Ridge Community College	6	0	0

Note: the above lists only postsecondary schools awarding degrees for these programs in the selected region; other training providers for these programs may exist in the region.

Source: NCES.

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Supply Side: Students

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Are Students Interested in STEM Jobs?

K-12 and Public Users

- Actors
- Photographers
- Fashion Designers
- Musicians and Singers
- Writers and Authors
- Registered Nurses
- Medical Assistants
- Producers and Directors
- Veterinarians
- Lawyers
- 1.8% of top 50 interests are in Core STEM
- 6.7% of top 50 interests are in STEM-H

Community College Students

- Registered Nurses
- Medical Assistants
- Licensed Practical and Licensed Vocational Nurses
- Photographers
- Actors
- Writers and Authors
- Teacher Assistants
- Interpreters and Translators
- Clinical, Counseling, and School Psychologists
- Police and Sheriff's Patrol Officers
- 1.9% of top 50 interests are in Core STEM
- 12.0% of top 50 interests are in STEM-H

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Source: Occupations followed in Wizard since 2004

Academic Year	STEM Degrees	All Other Degrees	Total Degrees	STEM as a Percentage of Total
1992-93	9,307	46,261	55,568	16.70%
1993-94	9,555	47,045	56,600	16.90%
1994-95	10,148	46,579	56,727	17.90%
1995-96	10,140	47,421	57,561	17.60%
1996-97	10,328	47,601	57,929	17.80%
1997-98	9,974	47,725	57,699	17.30%
1998-99	10,278	48,812	59,090	17.40%
1999-00	10,706	49,717	60,423	17.70%
2000-01	10,844	49,615	60,459	17.90%
2001-02	10,975	49,496	60,471	18.10%
2002-03	11,032	52,128	63,160	17.50%
2003-04	11,147	54,664	65,811	16.90%
2004-05	11,604	58,384	69,988	16.60%
2005-06	11,824	60,638	72,462	16.30%
2006-07	11,870	62,482	74,352	16.00%
2007-08	12,088	66,741	78,829	15.30%
2008-09	12,314	70,263	82,577	14.90%
2009-10	13,027	75,746	88,773	14.70%
2010-11	14,703	84,309	99,012	14.80%

http://research.schev.edu/completions/stem_trends.asp

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Who's Managing Student Expectations?

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Are VA Communities Attractive for Expansion Opportunities?

- Competitive tax structure
- Prepared workforce
- Market access through transportation infrastructure
- Local leadership
- Regionalism

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