

UMASS DONAHUE INSTITUTE

# Market Analysis for the UMass Center at Springfield

Prepared for the UMass President's Office

*by* UMass Donahue Institute Economic and Public Policy Research

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# **Research Team**

This work was researched and developed by the Economic and Public Policy Research (EPPR) group at the UMass Donahue Institute.

Key project members included:

University of Massachusetts Donahue Institute (UMDI):

- Dr. Lynn Griesemer, Executive Director
- Sharon Vardatira, Director, Nonprofit Funding and Fiscal Solutions
- Dr. Mark Melnik, Director, Economic and Public Policy Research (EPPR)
- Becky Loveland, Senior Research Manager, EPPR
- Carrie Bernstein, State Data Center Manager/Lead Research Analyst, EPPR
- Lindie Martin, Research Analyst, EPPR
- Hinlan Wong, Research Analyst, EPPR
- William Proulx, Senior Research Analyst, EPPR

University of Massachusetts Center at Springfield:

- Dan Montagna, Director of Operations
- Jamina Scippio-McFadden, Director of Student Services/Academic Support/Marketing and Community Relations
- Hannah Forbes-Smith, Executive Assistant/Fiscal Support Specialist

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## **Executive Summary**

The UMass Center at Springfield, a system-wide satellite center of the University of Massachusetts, was established in 2014 to provide an education and workforce development facility to meet the needs of the Greater Springfield community. The Center offers coursework through partnerships with higher educational institutions, including all the UMass campuses and local community colleges, and currently hosts 3-4 active research entities in several different fields.

The following market analysis was conducted by the Economic and Public Policy Research unit of the UMass Donahue Institute to connect labor market opportunities for students and program offerings, and to identify additional fields of study and partners which may be able to broaden the Center's activities and help sustain it. The needs of industry leaders, job projections, workforce characteristics, potential business partnerships, and interest among academic partners were all considered in identifying high-potential new offerings at the UMass Center at Springfield. To this end, seven exploratory meetings were held as focus groups with industry leaders and academics interested in creating educational offerings at the Center. The new fields under discussion were identified through partnerships with higher educational institutions and key industries in the region: Education, Engineering, Cybersecurity, Hospitality, Government/Public Services, Public Health and Human Services, and Information Technology. These groups, facilitated by Sharon Vardatira, Director of Nonprofit Funding and Fiscal Solutions at the UMass Donahue Institute, also helped provide detailed information on relevant certifications and trainings specific to each field of study. In addition, data on area demographics, occupations, and educational patterns were examined to help highlight ideal fields to target in the region. Of particular note, training for Registered Nurses continues to stand out, both in terms of job growth and reasonably high entry-level wages. In addition, Management continues to be a relevant area of study with great potential for benefit to area students.

In addition to identifying specific degree areas, UMDI and the UMass Center at Springfield conducted focus groups to identify workforce needs and gaps, to inform program and course design. Across multiple fields, focus group participants identified the need for:

- applied, problem-based learning;
- building student and job-seeker awareness of specific academic fields and career opportunities;
- computer and digital literacy at various skill levels and across all fields of study;
- 'soft' skills, encompassing professional etiquette, appropriate service- and customer-oriented conduct, writing, and verbal communication including public speaking and interpersonal communication.

The focus groups also yielded specific marketing and outreach suggestions from participants for the Center. Recommendations include:

- program offerings in Information Technology, Cybersecurity and Engineering
- providing required certification training for Police and Firefighters
- offering selected certifications or continuing education for educators

Members of focus groups also suggested networking with potential partners within these industries to understand the potential market to develop new programs and trainings attuned to demand.

## **Technical Report**

## **Springfield Center Overview**

The UMass Center at Springfield, a system-wide satellite center of the University of Massachusetts, was established in 2014 to provide an education and workforce development facility to meet the needs of the Greater Springfield community. The Center offers courses through educational partners including all the UMass campuses (Amherst, Boston, Dartmouth, Lowell, and Worcester), UMassOnline, Holyoke Community College, and Springfield Technical Community College. Both on-site and online classes are offered. Currently, the Center has enrolled 300 students for on-site classes and hosts courses for certificate programs, as well as Bachelor's and Master's degrees in a variety of disciplines. These disciplines include healthcare and nursing, business management, addiction counseling, education, architecture and design, adult basic education and a degree-completion program called University Without Walls, a UMass Amherst major. There are six regular classrooms, one computer classroom, and three classrooms dedicated to the specialized nursing curriculum at the facility. The Center also houses a computer lab, breakout rooms with distance learning capabilities, student learning commons, conference rooms, a reception area, and offices for staff and faculty. On-site classes provide state of the art technology including a simulated lab at the facility, which is designed for future home health aides and visiting nurses. The facility also welcomes a large number of meetings, retreats and workshops from both educational partners and groups from the Greater Springfield community. The Center provides educational offerings to residents of Springfield and the surrounding region. The following analysis describes the demographics, socioeconomics, educational attainment and employment opportunities for residents and households in the area.

## Springfield and the Surrounding Region



#### Figure 1: Regional Map of Hampden County and Springfield NECTA

Source: American Fact Finder, accessed September, 2015 http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?fpt=table

Springfield is the third largest city in New England, located in Hampden County. The demographic and employment data available use three different geographies, and one of them is a larger region known as a NECTA, shown in the largest yellow area in the map on the previous page. In this report, Greater Springfield is defined as the Springfield NECTA.<sup>1</sup> The Center's primary focus is providing educational opportunities to people in Springfield and surrounding cities. Socioeconomic issues in the area of low educational attainment, high poverty rates, and low household income, are more pronounced in the city than the larger region. Residents of Springfield also earn lower wages and have lower levels of educational attainment compared to Massachusetts residents overall.

## **Demographics and Socioeconomics**

Springfield has been particularly impacted by deindustrialization and significant changes in industrial base of the economy, resulting in higher concentrations of poverty, low household income, and other challenging socioeconomic indicators. Residents of the city earn lower wages and have lower levels of educational attainment than the rest of the region, and compared to Massachusetts as a whole. While the city is racially and ethnically diverse, it is majority white. As shown in Figure 2, Springfield has better representation of African American non-Hispanic residents and Hispanic or Latino residents than the state and the rest of the Greater Springfield area. The following table shows the population size and demographics of Massachusetts, Greater Springfield, and Hampden County, followed by the city of Springfield by itself.

	Geographic Area									
Population, Ethnicity	Massachusetts		Springfie	eld NECTA	Hampde	n County	Springfield			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Total Population	6,745,408	-	742,514	-	468,161	-	153,994	-		
Not Hispanic or Latino:	6,015,314		618,362		359,372		88,511			
White	4,977,913	74%	528,319	71%	302,002	65%	51,926	34%		
Black / African American	439,433	7%	49,694	7%	36,262	8%	28,742	19%		
American Indian and Alaska Native	8,451	0%	1,548	0%	507	0%	213	0%		
Asian	411,917	6%	23,511	3%	10,243	2%	3,018	2%		
Native Hawaiian and Other Pacific Islander	414	0%	112	0%	29	0%	29	0%		
Some other race	42,145	1%	2,678	0%	2,479	1%	55	0%		
Two or more races	135,041	2%	12,500	2%	7,850	2%	4,528	3%		
Hispanic or Latino:	730,094	11%	124,152	17%	108,789	23%	65,483	43%		

#### Figure 2: Total Population, Race and Ethnicity for State, Region, County and City

Source: U.S. Census Bureau, 2014 American Community Survey, 1 year estimates

In general, the socioeconomic data in Springfield reflect ongoing economic disparities between the region and the state. Poverty levels in the city are nearly twice the poverty rate within the Greater Springfield

<sup>&</sup>lt;sup>1</sup> Springfield NECTA (New England City and Town Area) is a metropolitan statistical area that is delineated by the U.S. Census Bureau. The Greater Springfield area is defined as the Springfield, MA-CT NECTA throughout this report. See Figure 1 for a map of this region.

region. Springfield's poverty rate of 32 percent is much higher than the state, at 12 percent, as well as being higher than the region in which it is situated. See Figure 3, following.

	Geographic Area								
Households by Poverty Status	Massach	nusetts	Springfiel	d NECTA	Springfield				
	Number	Percent	Number	Percent	Number	Percent			
Income in the past 12 months below poverty level	757,235	12%	111,109	16%	47,044	32%			
Income in the past 12 months at or above poverty level	5,752,437	88%	585,160	84%	101,556	68%			

Source: U.S. Census Bureau, 2014 American Community Survey, 1 year estimates

Rates of educational attainment in Springfield show lower levels of advanced education than in the state as a whole.<sup>2</sup> A large proportion of residents have particularly low levels of educational attainment: 26 percent do not hold a high school degree. More than half (57 percent) of Springfield residents over age 25 have no higher education experience. The city also has fewer Bachelor's degree and advanced degree holders than the state and the region. Educational attainment is represented visually below for easier comparison. For a table of this data, see Appendix A, Figure 9.



Figure 4: Educational Attainment Among Residents Aged 25 Years or More

Source: U.S. Census Bureau, 2014 American Community Survey, 1-year estimates

Springfield residents have lower income levels than Massachusetts residents overall. Roughly 40 percent of households in Springfield make \$25,000 or less a year. There are also relatively fewer Springfield and regional households in the highest income brackets compared to the state and the region. Despite the fact that the region includes Springfield residents, Greater Springfield appears to be on par with the rest of the

<sup>&</sup>lt;sup>2</sup> Appendix A at the end of this report contains accompanying data for the figures in this section.

state, with 30 percent of residents earning \$50,000 to \$100,000, while the city of Springfield lags in all but the bottom two quintiles of household income (see Figure 5). This implies that the population in the area surrounding Springfield makes markedly more than residents within the city. Household income is represented visually below for easier comparison. For a table of this data, see Appendix A, Figure 10.





## **Employment Analysis**

An analysis of occupational data shows that the job market in the city of Springfield has a limited number of growing, well-paid opportunities. Identifying these jobs can allow the Center to plan courses of training connected to good employment options in the region. This analysis brings together information on job growth projected for Hampden County and entry-level pay for that occupation in the Greater Springfield region.<sup>3</sup> The following bubble chart (Figure 6) identifies the most promising opportunities, highlighting occupations which are both projected to be growing, and are reasonably well-paid at the entry level in the Greater Springfield region.<sup>4</sup> The area in the upper right of the chart contains these promising jobs. The higher up on the graph an occupation appears, the higher the number of openings currently projected in that occupation in Hampden County. The further to the right an occupation appears on the graph, the better-paid it is at the entry level in the Greater Springfield region. Registered Nursing is far and away the stand-out job in the area which is both paid at a higher wage and growing. Higher-paying jobs include Registered Nurses, Secondary School Teachers, Medical and Health Services Managers, Accountants and Auditors, Education Administrators, and Nurse Practitioners. Apart from Registered Nurses, fast-growing occupations like Social and Human Service Assistants, Child Care Workers, and Personal Care Aides, shown in the mid-to-upper left, have lower wages.

Source: U.S. Census Bureau, 2014 American Community Survey, 1-year estimates

<sup>&</sup>lt;sup>3</sup> These are the finest level of data available, however, note that the Greater Springfield region is a larger area than the county.

<sup>&</sup>lt;sup>4</sup> For a full table of all occupations with their entry-level wages and average annual openings, see Appendix B.



#### Figure 6: Bubble Chart of All Springfield Area Occupations Projected Openings, Regional Entry Wages

Sources: MA EOLWD LMI Short Term Projections, 2014, US BLS OES for Springfield MA-CT NECTA May 2014 <u>http://www.bls.gov/oes/current/oes\_78100.htm</u>

The occupational analysis highlights several fields in the region that are either growing or higher paying at the entry level. Entry level requirements for jobs vary from trainings and Associate degrees to the Bachelor's degree level and more. To take this analysis further, data on educational requirements was added for each selected job, and the jobs were divided into two groups: occupations requiring certificates and/or Associate degrees, and those requiring a Bachelor's degree or more education. Jobs known to pay less than the poverty level for a family of four (less than \$23,000) were not considered. Likewise, for the time and expense of studying for a Bachelor's degree, only jobs which pay \$35,000 or more at the entry level were considered as reasonable investments for students. Again, the number of job opportunities in the county is provided, along with the entry-level wage in the Greater Springfield region. With this approach, the following tables, Figures 7 and 8, highlight the most promising occupational groups, showing education and training requirements and entry-level compensation. Within each category, the first job listed has the most job openings projected for the area.

Figure 7, following, shows the top-growing more highly-paid occupations requiring Associate degrees or post-secondary non-degree awards (certificates) for entry-level jobs in the region. This selection is limited to occupations paid \$23,000 or more at the entry level. This table, shown in Figure 7, shows that Registered Nurses, Nursing Assistants, Preschool Teachers, and General/Operations Managers each show growth in Hampden County, while RNs (again), Physical Therapist Assistants, and General/Operations Managers show reasonably high entry-level wages in Greater Springfield. All of these types of jobs are performed by qualified candidates with Associate degrees or, in some cases, certifications.

Cluster Name**	Occupation Title	Projected Annual Openings Total, 10+	Entry Level* Wage (23,000+)	Specified Degree Program	Entry Level Requirements
	Registered Nurses	172	\$59,540	Registered Nursing	Associate degree/ Bachelor's degree and RN License
	Licensed Practical and Licensed Vocational Nurses	40	\$43,260	Licensed Practical/Vocational Nurse Training	Postsecondary non-degree award, and licensing as NCLEX-PN
Doctors, Dentists and Nurses	Medical Records and Health Information Technicians	16	\$31,640	Health Information/ Medical Records Administration/ Administrator	Postsecondary non-degree award, RHIT or CTR certification
	Dental Hygienists	12	\$71,130	Dental Hygiene/ Hygienist	Associate degree, NERB Diagnostic Skills Exam or completion of clinical exam
	Nursing Assistants	84	\$25,070	Practical Nursing, Vocational Nursing and Nursing Assistants, Other	Postsecondary non-degree award, CNA certification
Health Aides	Physical Therapist Assistants	12	\$51,590	Physical Therapy/ Therapist	Associate degree
	Dental Assistants	12	\$34,340	Dental Assisting/ Assistant	Postsecondary non-degree award, ADA National Board exam and NERB exam
Education	Preschool Teachers, Except Special Education	78	\$25,200	Kindergarten/ Preschool Education and Teaching	Associate degree, MA EEC License
Management and Legal (incl. Edu. Admin.)	General and Operations Managers	64	\$66,950	Operations Management and Supervision	Associate degree
Administrative and Sales	Eligibility Interviewers, Government Programs	10	10 \$35,200 Public Administration and Social Service Professions, Other		Associate degree
Computer, Math, Engineering and Sciences	Computer User Support Specialists	10	\$38,120	Computer Support Specialist	Bachelor's degree/ Associate Degree/Postsecondary non- degree award

Figure 7: Non-Deg	ree Award	is and Ass	ociate D	egree O	ccupatio	ns:
Clusters Ranked by	∕ Total Proj	iected Job	Openings	s for the S	Springfield	d Area

Sources: MA EOLWD LMI Short Term Projections, 2014, US BLS OES for Springfield MA-CT NECTA May 2014 <u>http://www.bls.gov/oes/current/oes\_78100.htm</u><sup>5</sup>

<sup>&</sup>lt;sup>5</sup> \*Entry level wage reflects the OES 2014 annual 25th percentile wage. This variable is representative of the Springfield NECTA region, and other data in table are representative of Hampden County WIA.

Figure 8, below, shows occupations paying \$35,000 or more to start, that require a Bachelor's degree or more education. As in the prior figure, entry-level requirements and the number of job openings are listed. Regionally-growing occupations at this level include Accountants and Auditors, and Elementary and Secondary School Teachers. There is little overlap between the growing jobs and those that are higher paying: the highest-paying jobs are Internists (Doctors), Pharmacists, and Nurse Practitioners, which are each projected to grow at only 10-13 job openings per year.

Cluster Name***	Occupation Title	Projected Annual Openings Total, 10+	Entry Level* Wage (35,000+)	Specified Degree Program	Entry Level Requirements
	Accountants and Auditors	47	\$54,870	Accounting	Bachelor's degree, Certified Public Accountant (CPA) exam
	Social and Community Service Managers	34	\$45,170	Community Organization and Advocacy	Bachelor's degree
	Education Administrators, Postsecondary	30	\$55,410	Ed. Admin. and Supervision	Master's degree, MTEL exam
Mgmt and Legal	Medical and Health Services Managers	29	\$73,850	Health and Medical Admin. Svcs	Bachelor's degree
Education	Human Resources Specialists	19	\$46,390	HR Management and Services	Bachelor's degree
Aamin.)	Education Administrators, Elementary and Secondary School	15	\$79,730	Ed. Admin. and Supervision	Master's degree
	Cost Estimators	14	\$45,160	Construction Management	Bachelor's degree
	Training and Development Specialists	13	\$46,680	Business Administration, Mgmt., & Operations	Bachelor's degree
	Physical Therapists	26	\$71,430	Physical Therapy/Therapist	Doctoral or professional degree, National Physical Therapy exam

Figure 8: Minimur	n Bachelo	r's Degree	Occupation	ons:		
Clusters Ranked b	y Total Pro	jected Job	Openings i	for the	Springfield	Area

Note: Only those occupations with a total of 10 projected annual openings or more, offering entry level wages of \$23,000 or more are included in this list.

<sup>\*\*</sup>Groupings created by UMDI. For the full crosswalk listing of Occupational Clusters and the SOC Major Categories included, see Figure 13, Appendix B.

			1		
Doctors, Dentists	Physician Assistants	22	\$70,410	Physician Assistant	Master's degree, PANCE exam and licensing
and Nurses	Physicians and Surgeons, All Other	22 \$59,500		Health Services/Allied Health/Health Sciences, General	Doctoral or professional degree, Board Exam and Residency
Doctors.	Occupational Therapists	13	\$62,640	Occupational Therapy/Therapist	Master's degree, NBCOT exam
	Internists, General	13	\$165,290	Medicine; Pre- Medicine; Physiology, Pathology and Related Sciences	Doctoral or professional degree, Board Exam and Residency
Dentists and Nurses	Speech-Language Pathologists	11	\$61,490	Speech-Language Pathology/Pathologist	Master's degree, CCC-SLP
(cont.)	Nurse Practitioners	10	\$82,620	Family Practice Nurse/Nurse Practitioner	Master's degree, APRN certification
	Pharmacists	10	\$104,800	Pharmacology and Toxicology	Doctoral or professional degree, North American Pharmacist Licensure Exam (NAPLEX) tests and Multistate Pharmacy Jurisprudence Exam (MPJE)
	Elementary School Teachers, Except Special Education	67	\$51,960	Elementary Education and Teaching	Bachelor's degree, MTEL exam and licensing
	Secondary School Teachers, Except Special and Career/Technical Education	54	\$53,860	**	Bachelor's degree, MTEL exam and licensing
	Middle School Teachers, Except Special and Career/Technical Education	34	\$53,980	**	Bachelor's degree, MTEL exam and licensing
Education	Kindergarten Teachers, Except Special Education	18	\$52,590	Kindergarten/Preschl. Education and Teaching	Bachelor's degree, MTEL exam and licensing
	Special Education Teachers, Kindergarten and Elementary Schl.	12	\$51,330	Special Education and Teaching	Bachelor's degree, MTEL exam and licensing

	Adult Basic and Secondary Education and Literacy Teachers and Instructors	10	\$42,690	Adult and Continuing Education and Teaching	Bachelor's degree, ABE Teacher's license
Education (cont.)	Special Education Teachers, Secondary School	10	\$45,480	Special Education and Teaching	Bachelor's degree, MTEL exam and licensing
	Healthcare Social Workers	38	\$44,840	Clinical/Medical Social Work	Master's degree
Services,	Child, Family, and School Social Workers	32	\$36,510	Family and Community Services	Bachelor's degree
Arts and Protective	Educational, Guidance, School, and Vocational Counselors	28	\$46,850	Counselor Education/School Counseling and Guidance Svcs	Master's degree
Computer, Math,	Clinical, Counseling, and School Psychologists	26	\$47,940	Clinical, Counseling and Applied Psychology	Doctoral or professional degree, Professional Practice in Psychology exam
Engineering and	Civil Engineers	13	\$60,660	Civil Engineering, General	Bachelor's degree, FE exam
Sciences	Computer Systems Analysts	11	\$63,180	Computer Sys. Analysis/Analyst	Bachelor's degree

Sources: MA EOLWD LMI Short Term Projections, 2014, US BLS OES for Springfield MA-CT NECTA May 2014<sup>6</sup>

# **Focus Group Discussions**

UMDI conducted seven focus groups with regional academic and industry leaders between November 2015 and January 2016 to explore potential additional programs and offerings at the Center. Each group was narrowly defined to a specific field to provide insight on local needs, interest in creating new coursework, relevant credentials needed, and market potential. Topics for groups were chosen based on both the industry's presence in Greater Springfield and interest from higher educational institutions. Focus groups were held at the UMass Center at Springfield on the following topics:

- Education
- Engineering

<sup>&</sup>lt;sup>6</sup> \*Entry level wage reflects the OES 2014 annual 25th percentile wage. This variable is representative of the Springfield NECTA region, and other data in table are representative of Hampden County WIA.

<sup>\*\*</sup> Varies: Secondary and Middle School teachers may obtain undergraduate degrees in a variety of fields.

Note: Only those occupations with a total of 10 projected annual openings or more, and offering entry level wages of \$35,000 or more are included in this list.

<sup>\*\*\*</sup>Groupings created by UMDI. For the full list of Occupational Clusters and SOC Major Categories included, see Fig.15, Appendix B.

- Cybersecurity
- Hospitality
- Government
- Public Health and Human Services
- Information Technology

The purpose of the focus groups was to elicit information on workforce gaps, relevant certifications and trainings, and interest on the part of the industry and the academic partners. All levels of education were asked about, as well as what employers needed from educated, entry-level newcomers to the field. Each group typically had 7-14 attendees with a facilitator asking questions, an observer taking notes, and a representative from the UMass Center at Springfield to answer questions specifically related to the Center. Groups were asked similar questions based on a list of suggested prompts. Additional clarifications, probing, and field-specific questions were also posed. The focus group prompts referenced by the facilitator can be found in Appendix E. Attendee names and affiliations can be found in Appendix D. These meetings also encouraged developing opportunities for the Center, allowing industry and higher education participants to interface with the Center while illustrating and exploring the potential it has in downtown Springfield. Participants provided valuable, field-specific insight and suggestions to help inform the Center's future endeavors.

Each of the focus groups discussed the state of the particular industry and local workforce and certification and training issues within the field. Beyond that, other common themes arose from the discussions. The most frequently mentioned themes across all the groups were the need for: applied, problem-based learning; academic guidance and job opportunities; computer literacy; professional conduct; and verbal communication skills. Additional suggestions included ways to make the Center more attractive; how to address skills gaps; transferability of curricula and local college partnerships; language and cultural training and education; and business partnerships and development opportunities. The recommendations below only reflect the opinions from the participants present at the groups and do not necessarily represent the entire industry or field.

## **Group-Specific Observations**

Specific observations for each group are listed below. Classes, programs, certifications, and trainings are also identified for each group.

#### Education

There was agreement among participants in the education group that regional job opportunities will continue to grow in this field over the next 10 years. Several voiced the belief that universal pre-Kindergarten will be federally required, and this would increase the demand for pre-K teachers dramatically. However, even at this level, teachers may be required to have a Bachelor's degree, certificate, and licensure, which will be more challenging for people pursuing the career, particularly given the low pay offered for these jobs. Participants suggested the following courses and programs would be popular and serve teachers' needs:

- Early Childhood credentialing
- Continuing Education Units for Early Education and Care
- Early intervention
- Secondary-level Math credentialing

- Secondary-level Science credentialing
- Secondary-level English Language Learners credentialing
- Stand-alone University Without Walls courses for degree completion (not program-based)

In light of education workers often being parents themselves, one participant made the recommendation to design classes for both students and their children, to make it more feasible for parents to attend classes. As in other groups, participants noted a lack of understanding of the variety of opportunities within education. One participant suggested a specific course for the Center called Introduction to Schools, which would be designed to familiarize students with the range the field has to offer in a hands-on way.

#### Engineering

According to several participants in this group, there is a high regional demand among employers for applicants with a four-year Bachelor of Science in Engineering Technology degree. One participant described regional employment demand as ten jobs for every one person graduating with an engineering degree. This attendee noted demand for skilled labor in the fields of laser optics and mechanical engineering in particular. Members of this group recommended the following certifications and degrees in Engineering:

- Bachelor of Science degree in Engineering Technology considered a fundamental necessity
- Fundamentals of Engineering (FE)
- Engineering In Training (EIT) Note: EIT is a high level of distinction, must have passed an FE exam
- Professional Engineer (PE)
- Project Management Professional (PMP)
- New England transportation technician certification
- Lean certification
- Computer Aided Design (CAD)

Skills in teamwork and project management, as well as problem solving and abstract math were considered important, and not always present in typical applicants. Participants described a need for outreach to minorities and women to encourage their participation in the engineering field. The value of hands-on experiences was also mentioned. Examples provided included both Maker events where attendees of all ages can build machines and do other high-tech hands-on activities, and afterschool programs, such as ones to design assistive technologies with students, to help people get interested in Engineering. Participants stressed the importance of problem-based learning, as well as the need to expose learners to the variety of opportunities in the field. One participant suggested a physical space that would serve as a hub for people to learn about careers educational and business opportunities.

#### Cybersecurity

Cybersecurity is becoming increasingly pertinent for businesses. Corporations and financial services are still in a process of realizing they need experts in this field. Participants felt that candidates with a Ph.D. or Master's degree in computer science can easily find a job with a high salary. A strong recommendation from the group was for the Center to communicate with employers and industries in Springfield to identify demand for workforce training at the Center. A term broader than 'cybersecurity' may help businesses and students identify with the program. One suggestion was 'cyber security and risk management'. Network security, emergency preparedness, behavioral and game theory, and information technology/computer science more generally were also mentioned, as well as the cross-functional needs of businesses. Participants believed the field has a gender gap. Some suggested that the Center host networking events or existing programs to attract young women and minorities to information technology and to the Center, to encourage those who may have some knowledge but lack confidence in their skills. Attracting women and

minorities to cybersecurity and supporting their continued involvement could be beneficial for the field, as well as influential for the Center and the Springfield community. Participants believed that in a digitallyproliferating world, companies of all sizes need to broaden their knowledge and understanding of cybersecurity. In addition, small businesses and local governments in particular may struggle to afford the staff to meet their security needs. Participants also noted that comparatively lower wages in the region can mean that information technology talent leaves the area, causing organizations to have to work to bring in qualified applicants in this field. Suggestions for certifications and programs included:

- Certified Information Systems Security Professional (CISSP)
- International Association of Privacy Professionals (IAPP)
- Risk management
- Network security
- Emergency preparedness and security awareness (across multiple fields)
- Trainings for user education for all types of employees (not just specialists in the field)

#### Hospitality

Hospitality was broadly defined to include hotels, food service, culinary arts, hotel and restaurant management, convention and performance venue staffing, and other similar work. Some participants anticipated an increase in hospitality jobs when the newly proposed casino in Springfield is built and becomes operational. One participant believed that MGM would be interested in skills training, not credits or degrees, and that there may be emphasis on hiring experienced workers at entry-level jobs. Another participant held that mid-level managers and perhaps even bank tellers' skills would be of interest. Community colleges can assist the Center in providing workforce training opportunities. Recommended specific courses, certifications and programs were:

- ServSafe certification
- Occupational Safety and Health Administration (OSHA) training
- Professional standards training
- Training for business owners and entrepreneurs (certificate)
- Social media, and business marketing, customer service training
- Instruction in how to train employees and training for mid-level managers how to help co-workers

#### Classes:

- Computer literacy and language classes
- Business Spanish classes for Spanish speakers and Spanish for food service

#### Government

Since this group consisted of planners, administrators, and local government, there were highly varied observations from multiple perspectives. An increase in demand for trained planners and a lower demand for public servants was noted by participants. The need for technical skills and public speaking skills were specifically mentioned among public planners, especially community collaboration with diverse audiences. Municipal government, local planning commissions, and Chambers of Commerce would be valuable collaborations to host a networking event for students in industry. Career assessments for students in this industry were also seen as being helpful. Recommendations for classes, programs, and degrees are below:

- Bachelor's degree
- Master's degree for entry level in field
  - Masters in Regional Planning (MRP)
  - Master's in Business Administration (MBA)
  - Master's in Public Administration (MPA)

#### Certifications and classes:

- Teacher recertification needed for planning
- American Institute of Certified Planners (AICP)
- Firefighter and police required trainings
- Spanish for law enforcement/legal

#### **Public Health and Human Services**

Many of the participants in this group agreed that public health and human services is a growing field with a variety of career paths. Since this group covers a wide range of disciplines, there were many fields represented in the room. There were professors from public health and nursing, non-profit leaders, and community organization representatives. One participant highlighted the pivotal role collaboration plays between non-profits and for-profits within the field. Another identified greater need for entry-level workers. Mental health, primary care, addiction, and telehealth were considered current 'hot' areas. Certifications and trainings may be particularly helpful for this field to help people learn quickly for less time and money, and for Executive Directors who cannot commit more time. Suggestions for certifications, classes, and trainings are:

- Certified Health Officers (for serving on Boards of Health)
- Certification in grant writing development

Classes and trainings:

- Conversational Spanish for beginners, short course for professionals
- Medical Spanish
- Writing for professionals
- Email construction and basic computer skills
- Public speaking
- Leadership
- Non-profit management
- Grant management
- Marketing/design
- Basic research for non-profits
- Paralegal

#### Information Technology

This group encompassed not only some professionals in cybersecurity, but also representatives from local business development, information technology policy industry, and the computer science field. Many members of this group felt the computer science and information technology field is growing rapidly. There are technical and non-technical skills and training needed in the industry, such as:

- Coding
- Mobile app development
- Project management and teamwork
- Knowledge of internal computer mechanisms
- Threat intrusion, monitoring, and detection
- Learning agility, practical application of knowledge, and problem solving
- Case/options analysis
- Cost/benefit analysis
- Knowledge of national, international, and operational policy
- Social engineering
- Mathematical aptitude
- Linguistic aptitude and translating technical jargon into lay and business language
- Digital information literacy (paradoxically often weak in computer science students)
- Specific programs: C++, C#, SQL, .NET, Java

Perhaps surprisingly, participants readily identified the importance of soft skills such as learning agility, problem solving skills, adaptability, and communication. One participant considered these types of intelligences just as important in the field as technical and coding skills are due to frequent technology changes. A candidate's ability to solve problems and predict unforeseen issues is important for protecting information and being adaptable to change in the field. These skills can be developed through practical applications training and hand-on programs such as internships and apprenticeships. Non-traditional students with talent in problem-solving, planning, project management, and good people skills were considered crucial to the field. Those possessing these qualities, according to participants, are often not self-identifying even though they are needed and valued. Several mentions were made of students unsure of what career path to pursue post-college. Various opportunities could be highlighted through career/job fairs, hackathons, and other professional networking events, with participants again identifying the idea of the Center as a hub and physical nexus for businesses, professional development for job seekers, potential students, and collaboration. Programs could also be tailored to mid-career professionals in the workforce for another market to tap.

## **Further Suggestions**

Additional general suggestions were made across several groups, regardless of theme, for strengthening the Center's reach and market. These included:

- ways to increase the attractiveness of the Center to prospective students;
- specific suggestions for marketing;
- ways to align offerings with the local population and retain local youth in the area;
- cross-group workforce gaps in soft skills which can be increased among students regardless of field;
- the importance of curriculum planning for transfer into and out of other programs, including 2+2 programs;
- language and cultural training; and

• the importance of developing business partnerships.

#### Increasing the Center's attractiveness

All of the groups expressed the importance of having programs that are attractive to outsiders. Some suggestions to make the Center more appealing were to focus on marketing and outreach strategies. Participants recommended finding a demographic target for each course or program. Recommendations included more outreach to surrounding communities to determine the demand of certain programs in the Springfield region. The government focus group mentioned demand for professional development, specifically in municipal government (fire, police, and department of public works) – a need currently met outside the region, implying that a local offering may prove attractive. Evening classes were seen as the most feasible time of delivery for working professionals. Consistent with suggestions for certifications and training programs, in some cases, participants believed that the three-credit model is not as attractive or applicable to community needs, due to the time it takes to obtain a degree. The Cybersecurity group also suggested that more workforce training in the field to surrounding businesses would have high attendance, if properly fitted to the market: the Center was advised to communicate with local businesses which use data to identify their specific needs prior to establishing a new program. The Public Health and Human Services group thought the Center would be most attractive if relevant certifications were offered (for certifications relevant to reach group, see the group-specific findings, below).

#### Specific marketing suggestions

Groups also offered specific marketing advice to promote the Center and attract more students. Some groups suggested more advertising to highlight the center and its functions. Some participants from the education group were not aware of the Center's services. Marketing suggestions that were mentioned across the groups included:

- Creation of program access on local cable TV
- Social media and digital marketing
- Internship and career fairs to bring in community members and employers
- Blog or newsletter regarding center updates and offerings
- Guest lectures along with print and media marketing for lecture

(The Center is already pursuing all of these marketing strategies, with the exception of local cable TV.)

#### Retention and alignment with market

Retention of recent graduates in downtown Springfield came up as a concern for the area. There was discussion of the importance of creating opportunities for people to stay in the Pioneer Valley, including a pipeline for students to connect with potential future employers within Springfield to attract and retain youth in the city. The Engineering group suggested a Maker space or Maker movement, a space for hands-on learning, to get more people in the community involved. The Education group suggested extended campus programs and transportation. Coordination of the time of class offerings with the potential attendees should also be considered to increase use of the Center.

#### Addressing workforce skills gaps in transferrable and 'soft' skills

All groups were asked about workforce gaps and desirable courses and programs that would help advance workers, specifically entry level workers, in the field. Many employers present in the focus groups believed entry-level employees are not prepared enough. General skills gaps across all the groups that need to be strengthened among pre-college and college students are:

- Communication skills (written and verbal)
- Business, leadership, and project management skills
- Computer skills (programming, coding, website design)
- Teamwork and collaboration
- Public speaking (being able to communicate technical knowledge)
- Community collaboration with diverse audiences
- Graphic communication (portfolios, poster presentations)
- Writing
- Computer literacy
- Professionalism
- Problem solving

According to several participants, strong concise writing skills are lacking within undergraduate programs and are a major necessity for a professional career. Computer literacy is also a concern, especially in hospitality industry. Inadequacy of soft skills was the most frequently discussed skills gap. Specific soft skills that are lacking among undergraduate students applying for entry-level positions include professionalism, communication skills, problem solving, work environment behavior, dress etiquette, and critical thinking. Giving students more life experiences through internships and co-ops were suggested to improve these gaps. If students have more experience in the workforce with guidance and training, the soft skills gaps will likely diminish. The Center could help fill this gap through hosting career and internship fairs, as well as potentially through curricula covering these skills within the context of specific fields.

#### Transferability

Community colleges in the Greater Springfield region provide students and employees with workforce training opportunities as well as a strong education experience. Several groups touched on the importance 2+2 programs in the greater Springfield region, and expressed value with the Center's collaboration with community colleges. 2+2 programs align community college curricula so that students can transfer into four-year programs more seamlessly, with requirements fulfilled for the first two years, for degree completion with a Bachelor's at the four-year institution. Springfield Technical Community College and Holyoke Community College already offer courses at the Center, and representatives attending focus groups expressed desire to continue and enhance program offerings in multiple areas. The Education group was particularly interested in making the transfer process from community college to four-year institution easier. A strong partnership and communication among UMass system and these local community colleges could help students find the ideal educational path for their career.

#### Language and cultural training and education

A member of the UMass Amherst Spanish and Portuguese program joined most of the focus groups, participating around the topic of languages. Several participants felt that employers, teachers, and students in high school and college need language and cultural training in the greater Springfield region. There are many different populations and cultures of people that live around Springfield. The facilitator asked about the demand for Spanish language training at the Center and all groups assented that there is demand in the area. Spanish was recommended for students, teachers, and employers. Spanish for industry-specific classes were advocated, such as Spanish for the medical field. English as a Second Language (ESL) was also suggested in one of the groups. Several groups saw value in cultural training along with language education. Other languages were proposed as becoming important within the Springfield region, including Russian, Somali, Eastern European (including Romanian), and Vietnamese. These are only a couple of the many

cultures throughout the region. One participant believed that more immigrants from Syria and other wartorn countries will continue to migrate and settle in the area, which would best be planned for in advance. A participant from the government focus group was concerned that information can be lost in translation. There is interest in more people that are bi-lingual. Culture and language training for common languages in the community would be helpful for employers and educational delivery systems.

#### Business partnerships and development opportunities

Since funds are tight within the public higher education system across the state, business partnerships and sponsors are becoming increasingly important for campuses and particularly for the Center. Many discussions throughout the focus groups touched on the importance of business partners and sponsors that are located in downtown Springfield. Continued communication with local business to determine workforce needs will prove to be useful when structuring programs, and developing job pipelines. The Information Technology group suggested reaching out the both small and large businesses in the community to tailor programs and offerings to be most beneficial and yield the most participants. Partnerships and collaboration could result in more resources and opportunities for the Center, as well as expand programs and offerings.

## **Summary of Fields of Interest**

Drawing together the qualitative and quantitative analysis, several potential areas of focus are suggested by the research: **Nursing, Education, Management, Engineering, Government**, and **Cybersecurity**. In addition, feedback suggests the value of career and educational guidance for students, as well as working to an epicenter of networking, innovation, and employment opportunities. This final section suggests approaches to integrating these promising directions for the Center.

The first section of this report highlights significant socioeconomic challenges for people in the region. These challenges suggest additional need for affordable institutions for advanced learning and training to help people improve their opportunities in the labor market, tailored to regional conditions.

The occupational analysis which follows shows few opportunities in the region which are both growing and pay well at the entry level, apart from Registered Nursing. While area job growth is more limited than in other regions, analysis of the occupational data nevertheless informs the fields of interest highlighted below. Regional degree trends, included and analyzed in Appendix C, are informative but necessarily less clear-cut than the occupational analysis and focus group findings included in the body of this report, because educational uptake may indicate student interest (a market) but it may also denote educational needs already being locally met (competition). There is also collaboration at the Center with multiple higher education institutions to host classes and training at the Center by the original degree-granting institution. Overall, degree trends have mostly been in keeping with the local labor market opportunities. Analysis which brings together information about regional employment opportunities and focus group input therefore become the main sources of actionable findings for the Center.

In summarizing the focus group and labor market findings, several fields rise to the top of the analysis, either for the prevalence of growing, higher-paying entry-level jobs projected for the region, or for potential partnerships with the Center. Nursing, Education, Management, Engineering, Government/Public Service, and Information Technology Cybersecurity show promise. Some of these are fields with potential for opportunities for workers. Others offer the possibility to cultivate special programs and develop relationships with industry with tailored educational offerings. Hospitality, Public Health, and Human Services are fields that typically offer with low wages, but hold some potential for job growth in

Springfield. Each field may require a specialized approach, with specific certifications, trainings, classes, and innovative educational approaches. Developing systems for supporting student achievement, maturation, and understanding of available fields, certifications, and career opportunities is also recommended.

Considering projected occupational growth, student interest as denoted by educational trends, and focus group together, select areas of study merit the following approaches:

**Nursing** in particular, specifically the training of Registered Nurses, remains a stand-out job opportunity in the region for both growth and entry-level pay. This strength of the Center should continue to be well-represented. Aligned health fields, including Physical Therapy, also offer good pay, although no other highly-paid occupation is projected to grow as much as Registered Nursing.

In the field of **Education**, there are opportunities but some jobs can be very low-paying. Interest in educating educators may need to be balanced with considerations of pay levels for entry-level and early education occupations. Offering targeted educational certifications and continuing education credits may help serve existing educators without overstepping the promise of this area. For example, forging new partnerships with entities such as the Springfield public school system, if feasible, could be fruitful to serve the existing workforce and helping those workers obtain the credentials to advance. In addition to teachers, there are two growing ancillary occupations of note for their moderate growth and slightly higher pay: Educational, Guidance, School, and Vocational Counselors; and Clinical, Counseling, and School Psychologists. In addition, Education Administrators are highly paid positions that are growing more slowly, but still offer some additional options for high-level development for education workers in the region.

**Management** continues to be a high-paying profession, with some growth projected for General and Operations Managers. For this reason, mid-career management training for professionals, structured in a way that conveniently complements an ongoing career, is a worthy program to continue and expand upon. This program may dovetail with some cyber security training and classes if offerings are designed specifically for managers.

**Engineering** would represent a new field for the Center, which may be uniquely poised to partner with local businesses and higher educational institutions to create an innovative, hands-on program. Enthusiasm for developing a program to instill problem-solving skills and support women and minorities in this field was evident in the group convened. Anecdotal reports of demand in the field, and the need for new ways of learning could be developed into a regional pipeline of excellent new candidates to engaging jobs.

Within **Government**, another new area of opportunity identified within the focus groups is specific **trainings** for area **Firefighters** and **Police**. Currently municipalities send these frontline workers far afield for required trainings. Follow-up with local departments to further gauge the need is warranted, as it would develop a new and ongoing line of trainings within the Center. For local front-line public service workers, the Center's location could prove to be a crucial competitive advantage. **Public Policy** and **Planning** degree offerings may also be well-suited to the Center's location for students interested in engaging with urban and applied municipal issues. The fields of **Information Technology** and **Cybersecurity** have considerable overlap. There is great potential for partnership in these industries. For example, UMass Amherst recently launched the Trust Assurance and Cybersecurity (TAC) certificate program, with its first class beginning April 26<sup>th</sup>: "Internet, Law and Policy". The Information Technology and Computer Science areas are high-paying fields which seek well-trained critical thinkers who are good at project management, communication, and working in teams. In addition, a multitude of other fields are demanding computer literacy from entry-level workers. There is therefore high potential for cross-fertilization of this topic into other fields, hosted at the Center.

In each of these fields, the Center can offer a new locus of activity. Academic and industry participants reflected an increasing need for the development of professional maturity, critical-thinking skills, and applied learning opportunities, as well as a need for information tailored to career and learning opportunities and guidance within these promising fields. In addition to bringing new fields of study for the Center, crucial approaches to becoming a key resource in the region for learning, training, empowering, and connecting students to new opportunities may include: adding additional support for planning and communicating career paths, creating a channel for industries to connect to talent, and developing the Center as a hub for innovative learning and mentoring activities.

# Appendix A: Springfield Area Demographics and Socioeconomics

#### Figure 9: Educational Attainment

	Geographic Area							
Educational Attainment for	Massach	nusetts	Springfiel	d NECTA	Sprin	gfield		
Residents Aged 25 Years or More	Number	Percen t	Number	Percen t	Numbe r	Percen t		
No high school degree	479,847	10%	62,598	13%	23,818	26%		
High school diploma or GED	1,161,03 2	25%	137,744	28%	28,508	31%		
Some college, no degree	730,927	16%	88,350	18%	16,168	17%		
Associate degree	365,816	8%	48,185	10%	8,217	9%		
Bachelor's degree	1,077,99 3	23%	84,560	17%	9,902	11%		
Master's degree	594,755	13%	51,975	11%	4,762	5%		
Professional and Doctorate degree	243,981	5%	16,968	3%	1,430	2%		
Total	4,654,35 1	100%	490,380	100%	92,805	100%		

Source: U.S. Census Bureau, 2014 American Community Survey, 1 year estimates

#### Figure 10: Households by Income

	Geographic Area					
Households by Income	Massachusetts		Springfield NECTA		Springfield	
	Number	Percent	Number	Percent	Number	Percent
Less than \$25,000	507,343	20%	64,798	24%	22,356	40%
\$25,000 to \$50,000	451,012	18%	62,087	23%	13,495	24%
\$50,000 to \$75,000	399,608	16%	46,302	17%	7,713	14%
\$75,000 to \$100,000	315,315	12%	36,293	13%	5,276	9%
\$100,000 to \$150,000	432,435	17%	40,425	15%	4,892	9%
\$150,000 to \$200,000	207,558	8%	13,720	5%	1,266	2%
\$200,000 or more	236,065	9%	11,840	4%	818	1%
Total	2,549,336	100%	275,465	100%	55,816	100%

Source: U.S. Census Bureau, 2014 American Community Survey, 1 year estimates

# Appendix B: Occupational Employment

Figure	11.	Ton	25 Occu	national	Total	Δnnual	Joh	Onenings
Iguie		TOP	23 OCCu	pational	ισιαι	Amuai	300	Opennigs

		Annual Average	Entry	
Cluster Name**	Occupation Title	Openings Total	Level* Wage	Entry Level Requirements
				Master's degree, and NCMH
	Mental Health Counselors	55	\$29,850	exam and licensure
	Mental Health and Substance Abuse			Bachelor's degree, and
	Social Workers	43	\$26,480	licensure
	Healthcare Social Workers	38	\$44,840	Master's degree, and licensure
Computer, Math,	Rehabilitation Counselors	32	\$26,030	Master's degree, and licensure
Engineering and	Child, Family, and School Social Workers	32	\$36,510	Bachelor's degree
Sciences	Educational, Guidance, School, and Vocational Counselors	28	\$46,850	Master's degree
	Clinical, Counseling, and School			Doctoral or professional degree, Professional Practice
	Psychologists	26	\$47,940	in Psychology exam
	Community and Social Service Specialists, All Other	21	\$34,350	Bachelor's degree
	General and Operations Managers	64	\$66,950	Associate degree
				Bachelor's degree, Certified
	Accountants and Auditors	47	\$54,870	Public Accountant CPA exam
Management	Social and Community Service Managers	34	\$45,170	Bachelor's degree
and Legal	Education Administrators,			
	Postsecondary	30	\$55,410	Master's degree, MTEL exam
	Medical and Health Services Managers	29	\$73,850	Bachelor's degree
	Human Resources Specialists	19	\$46,390	Bachelor's degree
	Registered Nurses	172	\$59,540	Associate degree/ Bachelor's degree and RN License
Doctors, Dentists and Nurses	Licensed Practical and Licensed Vocational Nurses	40	\$43,260	Postsecondary non-degree award, and licensing as NCLEX-PN
	Dhusical Thoropists	20	671 400	Doctoral or professional degree, National Physical
	Physical Inerapists	26	\$71,430	Destoral or professional
	Physicians and Surgeons, All Other	22	\$59,500	degree
	Physician Assistants	22	\$70,410	Master's degree

#### Market Analysis — UMass Satellite Center at Springfield

	Preschool Teachers, Except Special	70	625 200	Associate degree, MA EEC
	Euucation	78	325,200	LICENSE
	Elementary School Teachers, Except			Bachelor's degree, MTEL
	Special Education	67	\$51,960	exam and licensing
Education	Secondary School Teachers, Except			Bachelor's degree, MTEL
Lucation	Special and Career/Technical Education	54	\$53,860	exam and licensing
	Middle School Teachers, Except Special			Bachelor's degree, MTEL
	and Career/Technical Education	34	\$53,980	exam and licensing
	Kindergarten Teachers, Except Special			Bachelor's degree, MTEL
	Education	18	\$52,590	exam and licensing
Health Aides				Postsecondary non-degree
	Nursing Assistants	84	\$25,070	award, CNA certification

Sources: MA Executive Office of Labor and Workforce Development (EOLWD) Labor Market Information (LMI) Short Term Projections, 2014, US BLS OES for Springfield MA-CT NECTA May 2014 http://www.bls.gov/oes/current/oes\_78100.htm

\*Entry level wage based on OES 25th percentile wage and is representative of Springfield NECTA area. \*\*Groupings created by UMDI. For the full crosswalk listing of Occupational Clusters and the SOC Major Categories included, see Figure 13, Appendix B.

#### Figure 12: Occupational Employment, Projected Total Openings, and Entry Level Wage

Cluster Name**	Occupation Title	Total Employment 2014	Projected Annual Total Openings	Entry Level Wage
	Heavy and Tractor-Trailer Truck Drivers	2,573	75	\$35,260
	Bus Drivers, School or Special Client	1,754	69	\$25 <i>,</i> 680
	Laborers & Freight, Stock & Material Movers, Hand	1,777	60	\$20,360
	Light Truck or Delivery Services Drivers	1,870	44	\$24,000
	Maintenance and Repair Workers, General	1,643	36	\$30,410
	Packers and Packagers, Hand	963	30	\$21,840
	Automotive Service Technicians and Mechanics	1,170	29	\$28,990
	Driver/Sales Workers	971	27	\$20,770
Repair and	Machinists	998	26	\$36,730
Manufacturing	Parking Lot Attendants	419	24	\$20,230
	Taxi Drivers and Chauffeurs	402	22	\$20,030
	Team Assemblers	1,372	22	\$22,150
	Industrial Machinery Mechanics	413	19	\$37,800
	First-Line Supvsr. of Mech., Installers, & Repairers	714	18	\$45,360
	Packaging & Filling Machine Operators & Tenders	779	18	\$19,220
	Inspectors, Testers, Sorters, Samplers, & Weighers	761	16	\$30,080
	First-Line Supvsr. Production & Operating Workers	1,076	15	\$45,390
	Industrial Truck and Tractor Operators	539	12	\$29,550

Material-Moving Machine and Vehicle Operators	375	12	\$41,
Heating, Air Conditioning, and Refrigeration			
Mechanics and Installers	456	12	\$41,
HelpersProduction Workers	683	12	\$20,
Computer-Controlled Machine Tool Operators,			
Metal and Plastic	345	11	\$36,
Tire Repairers and Changers	223	10	\$21,
Grinding, Lapping, Polishing, & Buffing Machine			
Tool Setters, Operators, & Tenders Metal & Plastic	294	8	\$29,
Bakers	233	8	\$19,
Bus & Truck Mechanics & Diesel Engine Specialists	292	8	\$42,
First-Line Supervisors of Helpers, Laborers, and			
Material Movers, Hand	248	8	\$42,
Telecommunications Equipment Installers and			
Repairers, Except Line Installers	319	8	\$43,
Cleaners of Vehicles and Equipment	274	8	\$19
Aircraft Mechanics and Service Technicians	318	8	\$58
Bus Drivers, Transit and Intercity	236	7	\$34
Water and Wastewater Treatment Plant and			
System Operators	185	7	\$41,
Coating, Painting, and Spraying Machine Setters,			
Operators, and Tenders	303	6	\$27
Printing Press Operators	411	6	\$31
Laundry and Dry-Cleaning Workers	219	6	\$18
Automotive Body and Related Repairers	263	5	\$36
Mobile Heavy Equipment Mechanics, Except			
Engines	155	5	\$47
Automotive and Watercraft Service Attendants	149	5	\$19
Multiple Machine Tool Setters, Operators, and			
Tenders, Metal and Plastic	207	4	\$23
Production Workers, All Other	153	4	\$24
Mixing and Blending Machine Setters, Operators,			
and Tenders	117	4	\$26
Cabinetmakers and Bench Carpenters	183	4	\$26
Molding, Coremaking, and Casting Machine			
Setters, Operators, and Tenders, Metal and Plastic	324	4	\$27
Plating and Coating Machine Setters, Operators,			
and Tenders, Metal and Plastic	228	4	\$27
Machine Feeders and Offbearers	187	4	\$30
Lathe and Turning Machine Tool Setters,			
Operators, and Tenders, Metal and Plastic	201	4	\$32
Structural Metal Fabricators and Fitters	130	4	\$33

	Extruding and Drawing Machine Setters,			
	Operators, and Tenders, Metal and Plastic	177	4	\$33,450
	Refuse and Recyclable Material Collectors	121	4	\$33,530
	Milling and Planing Machine Setters, Operators,			
	and Tenders, Metal and Plastic	240	4	\$39,830
	Electrical and Electronics Repairers, Commercial			
	and Industrial Equipment	174	4	\$55,340
	Telecommunications Line Installers and Repairers	196	4	\$69,870
	Security and Fire Alarm Systems Installers	126	3	\$38,710
	Print Binding and Finishing Workers	171	2	\$25,970
	Cutting, Punching, and Press Machine Setters,			
	Operators, and Tenders, Metal and Plastic	241	2	\$27,210
	Electrical and Electronic Equipment Assemblers	145	2	\$28,410
	Cutting and Slicing Machine Setters, Operators,			
	and Tenders	150	2	\$29,810
	Maintenance Workers, Machinery	163	2	\$31,020
	Butchers and Meat Cutters	115	2	\$31,460
	Paper Goods Machine Setters, Operators, and			
	Tenders	239	2	\$33,210
	Tool and Die Makers	181	1	\$41,550
	Sewing Machine Operators	223	1	\$22,000
	Retail Salespersons	7,360	285	\$18,890
	Cashiers	4,197	226	\$18,280
	Office Clerks, General	4,240	91	\$23,630
	Stock Clerks and Order Fillers	2,/18	86	\$19,440
	Customer Service Representatives	2,582	68	\$23,640
	Secretaries and Administrative Assistants, Except	2 740	EA	¢20 E00
	Eight Line Supervisers of Datail Sales Workers	2,740	54	\$29,500 ¢22,500
	First-Line Supervisors of Office and Administrative	2,455	52	\$32,580
	Support Workers	2 0/12	50	\$40.370
	Medical Secretaries	1 525	19	\$22,220
Administrative	Recontionists and Information Clarks	1,323	40	\$32,320
and Sales	Receptionists and mornation cierks	1,511	45	\$24,100
	BOOKKeeping, Accounting, and Auditing Clerks	2,686	35	\$30,790
	Carpenters	1,281	35	\$40,230
	Tellers	661	34	\$24,510
	Sales Representatives, Wholesale and			
	Manufacturing, Except Technical and Scientific	1 75 0	24	¢40.020
		1,752	34	\$49,020
		1,489	32	\$33,260
	Shipping, Receiving, and Trattic Clerks	945	24	\$27,540
	Billing and Posting Clerks	860	22	\$31,710
	Electricians	840	22	\$49,660

Sales Representatives, Services, All Other	539	17	\$37,8
Postal Service Mail Carriers	513	17	\$50,6
Counter and Rental Clerks	453	16	\$20,9
Insurance Sales Agents	589	14	\$39,2
Plumbers, Pipefitters, and Steamfitters	411	14	\$43,5
Dispatchers, Except Police, Fire, and Ambulance	272	12	\$30,2
Bill and Account Collectors	338	12	\$32,2
First-Line Supervisors of Construction Trades and			
Extraction Workers	589	11	\$49,2
Parts Salespersons	335	10	\$23,0
Eligibility Interviewers, Government Programs	224	10	\$35,2
Painters, Construction and Maintenance	393	9	\$31,2
Real Estate Sales Agents	504	9	\$31,6
Production, Planning, and Expediting Clerks	376	9	\$41,8
Library Assistants, Clerical	159	9	\$22,2
Roofers	314	8	\$34,4
Postal Service Mail Sorters, Processors, and			
Processing Machine Operators	1,101	8	\$52,7
Hotel, Motel, and Resort Desk Clerks	160	8	\$19,7
Payroll and Timekeeping Clerks	242	7	\$34,8
Sheet Metal Workers	199	6	\$33,1
Insurance Claims and Policy Processing Clerks	252	6	\$34,8
Sales Representatives, Wholesale and			
Manufacturing, Technical and Scientific Products	346	6	\$46,7
Operating Engineers and Other Construction			
Equipment Operators	308	6	\$49,9
First-Line Supervisors of Non-Retail Sales Workers	446	6	\$55,3
Police, Fire, and Ambulance Dispatchers	177	5	\$32,7
Farmworkers and Laborers, Crop, Nursery, and			
Greenhouse	134	5	\$19,2
Mail Clerks and Mail Machine Operators, Except	140		627.0
Postal Service	140	4	\$27,9
Urder Clerks	183	4	\$29,2
Advertising Sales Agents	140	4	\$34,1
Human Resources Assistants, Except Payroll and	174	л	621 2
Hindekeeping	275	4	\$34,2
	3/3	4	239,5 620.0
File UPLIKS	10/	4	ş20,9
Service	189	2	\$26.6
Couriers and Messengers	263	2	\$78 Q
	110	5 7	\$20,0

	Carpet Installers	130	2	\$31,020
	Construction and Building Inspectors	119	2	\$36,230
	Information and Record Clerks, All Other	110	2	\$38,570
	Computer Operators	129	2	\$47,680
	Postal Service Clerks	107	2	\$55,580
	Loan Interviewers and Clerks	166	1	\$30,100
	Word Processors and Typists	226	1	\$35,240
	General and Operations Managers	3,098	64	\$66,950
	Accountants and Auditors	1,491	47	\$54,870
	Social and Community Service Managers	639	34	\$45,170
	Education Administrators, Postsecondary	740	30	\$55,410
	Medical and Health Services Managers	787	29	\$73,850
	Human Resources Specialists	824	19	\$46,390
	Education Administrators, Elementary and			
	Secondary School	479	15	\$79,730
	Cost Estimators	308	14	\$45,160
	Financial Managers	802	14	\$64,320
	Training and Development Specialists	441	13	\$46,680
	Managers, All Other	491	12	\$61,410
	Property, Real Estate, and Community Association			
	Managers	279	10	\$36,560
	Administrative Services Managers	466	10	\$60,320
	Sales Managers	513	10	\$68,130
Management and Legal	Market Research Analysts and Marketing Specialists	381	9	\$43.060
	Food Service Managers	503	8	\$26.360
	Business Operations Specialists, All Other	580	8	\$52.820
	Management Analysts	473	8	\$59.330
	Construction Managers	466	8	\$62,300
	Computer and Information Systems Managers	395	8	\$81.180
	Fundraisers	185	7	\$37.420
	Compliance Officers	275	7	\$50.160
	Financial Analysts	311	7	\$53.640
	Human Resources Managers	193	7	\$67.890
	Wholesale and Retail Buyers, Except Farm		-	+ ,
	Products	229	6	\$40,200
	Purchasing Agents, Except Wholesale, Retail, and			
	Farm Products	328	6	\$49,590
	Architectural and Engineering Managers	288	6	\$108,330
	Public Relations and Fundraising Managers	145	5	\$75,220
	Marketing Managers	256	5	\$81,300

		1	Ι	
	Loan Officers	247	4	\$44,610
	Personal Financial Advisors	151	4	\$48,630
	Tax Examiners and Collectors, and Revenue	112		654 750
	Agents	113	4	\$51,750
	Industrial Production Managers	277	4	\$73,440
	Tax Preparers	134	2	\$42,440
	Logisticians	106	2	\$56 <i>,</i> 350
	Transportation, Storage, and Distribution	120	2	669 920
		120	2	\$00,050 \$20,510
	Financial Specialists, All Other	118	1	\$39,510
	Waiters and Waitresses	2,738	150	\$18,160
	Childcare Workers	2,169	148	\$19,420
	Personal Care Aides	2,571	122	\$20,820
	Counter Attendants, Cafeteria, Food Concession,		100	440.000
	and Coffee Shop	1,100	106	\$18,280
	Amusement and Recreation Attendants	1,241	102	-
	Janitors and Cleaners, Except Maids and	2.004	75	ć10 200
		3,604	75	\$19,380
	Bartenders	1,384	61	\$18,100
	Serving Workers	1,354	54	\$23,120
	Landscaping and Groundskeeping Workers	1,873	54	\$26,030
	Dishwashers	859	52	\$18,270
	Food Preparation Workers	1,535	50	\$18,570
	Police and Sheriff's Patrol Officers	1,319	40	\$43,210
Services, Arts	Protective Service Workers, All Other	327	38	\$21,210
and Protective	Hosts and Hostesses, Restaurant, Lounge, and			
	Coffee Shop	307	34	\$18,480
	Hairdressers, Hairstylists, and Cosmetologists	841	29	\$18,650
	Lifeguards, Ski Patrol, and Other Recreational			
	Protective Service Workers	265	28	\$17,900
	Cooks, Restaurant	844	27	\$20,540
	Firefighters	1,041	26	\$39,730
	Cooks, Institution and Cafeteria	572	20	\$23,920
	Maids and Housekeeping Cleaners	1,010	20	\$18,610
	Fitness Trainers and Aerobics Instructors	722	18	\$23,180
	First-Line Supervisors of Personal Service Workers	604	16	\$33,930
	Dining Room and Cafeteria Attendants and			
	Bartender Helpers	281	16	\$18,510
	Recreation Workers	506	15	\$18,830
	Security Guards	1,010	14	\$19,650

l	First-Line Supervisors of Housekeeping and			
	Janitorial Workers	427	13	\$27,500
	Food Preparation and Serving Related Workers, All			
	Other	174	12	\$18,820
	First-Line Supervisors of Fire Fighting and			
	Prevention Workers	276	10	\$54,890
	First-Line Supervisors of Police and Detectives	276	8	\$67,180
	Skincare Specialists	169	7	\$22,350
	Cooks, Short Order	276	6	\$22,300
	Crossing Guards	242	4	\$25,870
	Pest Control Workers	112	3	\$27,420
	First-Line Supervisors of Landscaping, Lawn			
	Service, and Groundskeeping Workers	239	3	\$42,920
	Chefs and Head Cooks	122	2	\$35,870
	Social and Human Service Assistants	2,743	166	\$23,810
	Mental Health Counselors	1,338	55	\$29,850
	Mental Health and Substance Abuse Social			
	Workers	832	43	\$26,480
	Healthcare Social Workers	655	38	\$44,840
	Rehabilitation Counselors	623	32	\$26,030
	Child, Family, and School Social Workers	658	32	\$36,510
	Educational, Guidance, School, and Vocational			
	Counselors	727	28	\$46,850
	Clinical, Counseling, and School Psychologists	562	26	\$47,940
	Substance Abuse and Behavioral Disorder			
	Counselors	440	24	\$39,350
Computer,	Community and Social Service Specialists, All	211	21	624.250
Math,	Other	311	21	\$34,350
Engineering	Lawyers	904	14	\$68,690
and Sciences		406	13	\$60,660
	Mechanical Engineers	353	12	\$67,250
	Computer Systems Analysts	359	11	\$63,180
	Computer User Support Specialists	632	10	\$38,120
	Electrical Engineers	253	8	\$78,010
	Paralegals and Legal Assistants	437	7	\$34,810
	Network and Computer Systems Administrators	431	7	\$52,610
	Chemists	204	7	\$64,970
	Software Developers, Applications	437	6	\$50,760
	Industrial Engineers	191	6	\$68,490
	Community Health Workers	122	5	\$30,430
	Biological Technicians	119	5	\$40,070
	Computer Programmers	189	5	\$58,820



	Electrical and Electronics Engineering Technicians	215	4	\$47,700
	Environmental Scientists and Specialists, Including			
	Health	134	4	\$48,390
	Database Administrators	147	4	\$53,470
	Environmental Engineers	133	4	\$66,580
	Operations Research Analysts	130	4	\$76,980
	Architectural and Civil Drafters	113	2	\$37,330
	Computer Network Architects	140	2	\$49,300
	Mechanical Drafters	104	2	\$53,200
	Computer Occupations, All Other	106	2	\$63,910
	Preschool Teachers, Except Special Education	1,286	78	\$25,200
	Teacher Assistants	2,527	71	\$23,610
	Elementary School Teachers, Except Special Education	1,987	67	\$51,960
	Secondary School Teachers, Except Special and Career/Technical Education	1,641	54	\$53,860
	Middle School Teachers, Except Special and Career/Technical Education	991	34	\$53,980
	Coaches and Scouts	453	20	\$18,650
	Kindergarten Teachers, Except Special Education	380	18	\$52,590
	Self-Enrichment Education Teachers	504	14	\$32,430
	Library Technicians	202	12	\$30,900
	Special Education Teachers, Kindergarten and			
	Elementary School	532	12	Ş51,330
	Adult Basic and Secondary Education and Literacy	220	10	¢42.600
Education	Special Ed. Teachers, Secondary Sch	250	10	\$42,090
Lucation	Librariana	494	10	\$45,460 ¢45,700
	Librarians	334	9	\$45,790
	Special Education Teachers, Preschool	212	8	\$44,340
	Instructional Coordinators	291	8	\$47,560
	Health Specialties Teachers, Postsecondary	152	/	\$37,650
	Career/Technical Ed. Teachers, Secondary Sch.	241	/	\$57,420
	Graphic Designers	250	6	\$38,440
	Special Education Teachers, Middle School	285	6	\$53,200
	Nursing Instructors & Teachers, Postsecondary	124	6	\$54,430
	Interpreters and Translators	111	5	\$34,090
	English Language and Literature Teachers,	210		610 250
	Posisecondary	210	5	- 248,250 €20.200
	Reporters and correspondents	114	4	⇒29,30U
	Public Relations Specialists	198	4	\$43,100
	Business Teachers, Postsecondary	1//	4	\$53,130
	Mathematical Science Teachers, Postsecondary	186	4	\$56,640

	Psychology Teachers, Postsecondary	115	4	\$57,640
	Engineering Teachers, Postsecondary	134	4	\$65,550
	Art, Drama, and Music Teachers, Postsecondary	140	4	\$66,030
	Writers and Authors	145	3	\$29,790
	Photographers	238	2	\$27,970
	Registered Nurses	5,676	172	\$59,540
	Licensed Practical & Lic. Vocational Nurses	1,121	40	\$43,260
	Physical Therapists	591	26	\$71,430
	Physicians and Surgeons, All Other	654	22	\$59,500
	Physician Assistants	563	22	\$70,410
	Medical Records and Health Information			
	Technicians	376	16	\$31,640
	Occupational Therapists	401	13	\$62,640
	Internists, General	554	13	\$165,290
	Dental Hygienists	310	12	\$71,130
	Pharmacy Technicians	629	11	\$23,620
	Speech-Language Pathologists	349	11	\$61,490
Doctors,	Nurse Practitioners	253	10	\$82,620
Dentists and	Pharmacists	373	10	\$104,800
Nurses	Emergency Medical Technicians and Paramedics	268	8	\$32,950
	Opticians, Dispensing	200	7	\$24,360
	Radiologic Technologists	385	6	\$50,700
	Pediatricians, General	244	6	\$137,720
	Surgeons	157	6	\$160,970
	Surgical Technologists	207	5	\$36,610
	Dietitians and Nutritionists	149	4	\$50,670
	Medical and Clinical Laboratory Technologists	169	4	\$58,330
	Psychiatrists	106	4	\$165,730
	Respiratory Therapists	132	3	\$56,500
	Dentists, General	126	3	\$100,380
	Occupational Health and Safety Specialists	104	2	\$70,300
	Nursing Assistants	3,122	84	\$25,070
	Home Health Aides	1,358	75	\$22,480
	Medical Assistants	1,106	34	\$30,160
	Dental Assistants	381	12	\$34,340
Health Aldes	Physical Therapist Assistants	279	12	\$51,590
	Psychiatric Aides	215	4	\$21,380
	Medical Transcriptionists	105	2	\$35,150
	Healthcare Support Workers, All Other	115	2	\$36,260

Sources: MA EOLWD Short Term Projections, 2014, US BLS OES for Springfield MA-CT NECTA May 2014 http://www.bls.gov/oes/current/oes\_78100.htm \*Entry level wage based on OES 25th percentile wage and is representative of Springfield NECTA area.

\*\*Groupings created by UMDI, full crosswalk listing of Occupational Clusters and SOC Major Categories below.

#### Figure 13: Major SOC Crosswalk to Cluster Names

New Cluster Name	Major SOC Name	Major SOC (2-digit)
	Management Occupations	11
Management and Legal	Business and Financial Operations Occupations	13
	Legal Occupations	23
Computer Math Engineering	Computer and Mathematical Occupations	15
computer, Math, Engineering	Architecture and Engineering Occupations	17
	Life, Physical, and Social Science Occupations	19
Education	Education, Training, and Library Occupations	25
Doctors, Dentists and Nurses	Healthcare Practitioners and Technical Occupations	29
Health Aides	Healthcare Support Occupations	31
	Community and Social Service Occupations	21
Sorvices Arts and Protective	Arts, Design, Entertainment, Sports, and Media Occupations	27
Services, Arts and Protective	Protective Service Occupations	33
	Personal Care and Service Occupations	39
Administrative and Sales	Office and Administrative Support Occupations	43
Administrative and Sales	Sales and Related Occupations	41
Repair and Manufacturing	Installation, Maintenance, and Repair Occupations	49
	Production Occupations	51

Crosswalk and cluster name categories created by UMDI.

# Appendix C: Educational Trends

## **Discussion and Data on Educational Trends**

Current educational trends demonstrate student interest in particular fields of study and serve to illustrate the focus of educational demand. The numbers of graduations at the Bachelor's and Master's degree level show that students enrolled in Hampden County educational institutions are particularly interested in the growing fields of Education; Public Administration and Social Service Professions; Business, Management, Marketing, and Related Support Services; and Health Professions and Related Programs, followed by Psychology and Homeland Security, Law Enforcement, Firefighting, Related Protective Services. Student preferences in majors may be aligned with the job market, as these fields are consistent with many of the growing jobs in the region. Bachelor degree conferrals outnumbered Master's degree conferrals in the county, with 3,628 Bachelor degrees and 2,016 Master's degrees conferred, for a total of 5,644. See Figure 14, below, for the top 20 degrees in Hampden County at the Bachelor's and Master's degree levels.

Top 20 Majors for Bachelor's and Master's in					
Hampden County	<b>Bachelor's</b>	Master's	Total	Pct.	Rank
Education	235	806	1041	18%	1
Public Administration and Social Service Professions	575	436	1011	18%	2
Business, Management, Marketing, Related Svcs	547	250	797	14%	3
Health Professions and Related Programs	399	221	620	11%	4
Psychology	267	163	430	8%	5
Homeland Security, Law Enforcement, Firefighting, & Related Protective Services	337	22	359	6%	6
Parks, Recreation, Leisure and Fitness Studies	217	43	260	5%	7
Liberal Arts & Sciences, General Studies, Humanities	218		218	4%	8
Communication, Journalism, and Related Programs	140		140	2%	9
Biological and Biomedical Sciences	116	1	117	2%	10
Engineering	80	8	88	2%	11
Visual and Performing Arts	78		78	1%	12
Social Sciences	78		78	1%	12
English Language and Literature/Letters	66	10	76	1%	14
History	58	11	69	1%	15
Legal Professions and Studies	43	24	67	1%	16
Computer and Information Sciences & Support Svcs	48		48	1%	17
Multi/Interdisciplinary Studies	28		28	0%	18
Natural Resources and Conservation	28		28	0%	18
Mathematics and Statistics	24		24	0%	20

#### Figure 14: Top 20 Degrees Conferred in Hampden County, Bachelor's and Master's Level Only

Source: US Department of Education (DOE) National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) conferrals data. 2013 is the most recent data available.

UMass Donahue Institute Economic and Public Policy Research

The two Hampden County community colleges, Holyoke Community College and Springfield Technical Community College, are attracting and training students in a wide variety of fields, but primarily in Liberal Arts (29%), Health Professions (21%), and Business (13%). Given the prevalence of Healthcare and Management opportunities, which are growing and higher-paying in the region compared to other jobs, community college students may be responding to job markets in their selection of major. The most popular major in the region, with 606 completions last year, was Liberal Arts, making up almost a third of all Associate Degrees and certificates requiring one to two years of study. Health Professions and Related Programs was a close second, with 441 degrees conferred, accounting for about a fifth of all degrees conferred at this level. This field offers growing jobs in the region, many of which are paid at livable wages. Business degrees at the Associate level and certificates were also remarkably popular, with this field accounting for 276 degrees conferred in the county, 247 of which were Associate. Several other fields garnered degree and certificate conferrals last year, including Homeland Security, Law Enforcement, Firefighting, and Related Protective Services; and Engineering Technologies & Engineering-Related Fields. See the following table for the top majors at Holyoke Community College and Springfield Technical Community College.

	Number of Degrees Conferred									
Top Majors, Associate Degrees / Certificates,	>1, < 2	< 1		Total						
Holyoke Community College & Springfield	academic	academic		Associate	Pct. of					
<b>Technical Community College (Hampden County)</b>	years	year	Associate	and < 2 yrs	Total	Rank				
Liberal Arts & Sciences, Gen. Studies, Humanities			606	606	29%	1				
Health Professions and Related Programs	104	17	320	441	21%	2				
Business, Management, Marketing, Related Svcs	22	7	247	276	13%	3				
Homeland Security, Law Enforcement, Firefighting, and Related Protective Services	17		156	173	8%	4				
Engineering Technologies & EnginRelated Fields	29		115	144	7%	5				
Public Administration and Social Svc Professions	45		25	70	3%	6				
Computer & Information Sciences & Support Svcs	10		57	67	3%	7				
Visual and Performing Arts	8		54	62	3%	8				
Engineering			50	50	2%	9				
Personal and Culinary Services		30		30	1%	10				
Education	1		27	28	1%	11				
Communications Technologies/Technicians and Support Services	4		20	24	1%	12				
Mechanic and Repair Technologies/Technicians	21			21	1%	13				
Parks, Recreation, Leisure and Fitness Studies	7		12	19	1%	14				
Family and Consumer Sciences/Human Sciences			16	16	1%	15				
Precision Production	14			14	1%	16				
Biological and Biomedical Sciences			6	6	0%	17				
Agriculture, Agriculture Operations & Related Sci.	1		2	3	0%	18				
Mathematics and Statistics			3	3	0%	18				
Construction Trades			2	2	0%	20				

Figure	15: Top Degrees	<b>Conferred in</b>	Hampden County	Community	Colleges,	Associate Level or Less
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Source: US DOE NCES IPEDS conferrals data. 2013 is the most recent data available.

The choices of community college students transferring to UMass are worth examining in particular since, as former students at 2-year institutions seeking 4-year degrees at UMass Amherst, this group may have similar interests and constraints as students who are willing to consider study at the Center within the range of their educational options. The majority of students transferring into UMass Amherst from Holyoke Community College and Springfield Technical Community College are choosing to enroll in the school of Natural Sciences. Humanities/Fine Arts and Management also draw noticeably large portions of students. Very few transfer students are undeclared when they arrive at UMass Amherst. From 2015 on, all students are required to declare their major upon entry. See the following table for the general fields of study that regional community college transfer students entered into at UMass Amherst in the past five years. These choices could indicate interest in similar programs at the UMass Springfield Center, or could be related to available courses in certain fields at the community colleges.

Holyoke CC	UMass School/College	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014	Spring 2015
	College of Social and Behavioral Sciences	17	9	10	6	13	8	19	5	12	11
	College of Natural Sciences	31	12	37	12	42	7	38	16	38	10
	College of Humanities and Fine Arts	20	8	24	14	14	7	26	6	10	9
	Isenberg School of Management	29	25	27	11	24	10	18	16	34	9
	College of Engineering	9	1	4	2	4	2	6	1	7	3
	School of Public Health and Health Sciences	9	3	10	4	7	1	9	3	10	2
	College of Information and Computer Sciences	0	0	2	0	0	0	0	0	0	0
	Undeclared/Other	4	3	7	1	1	1	1	1	1	0
Total Transfe Community (	rs from Holyoke College	119	61	121	50	105	36	117	48	112	44

#### Figure 16: Fields of Study of UMass Amherst Transfer Students from Area Community Colleges

STCC	UMass School/College	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014	Spring 2015
	College of Natural Sciences	5	2	16	2	19	5	17	2	14	6
	Isenberg School of Management	7	6	7	3	5	4	8	6	10	5
	College of Engineering	7	2	8	4	13	1	13	3	12	3
	School of Public Health and Health Sciences	1	0	2	0	0	1	2	1	1	3
	College of Information and Computer Sciences	2	1	3	0	3	0	0	1	1	2
	College of Social and Behavioral Sciences	2	0	2	1	3	5	4	1	4	1
	College of Humanities and Fine Arts	6	2	8	4	11	0	7	2	5	0
	Undeclared/Other	2	0	1	2	2	0	1	3	2	0
Total Transfers from Springfield Technical Community College		32	13	47	16	56	16	52	19	49	20

#### Market Analysis — UMass Satellite Center at Springfield

Greenfield CC	UMass School/College	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014	Spring 2015
	College of Humanities and Fine Arts	9	2	12	5	5	2	16	2	10	3
	College of Natural Sciences	8	4	12	8	20	7	21	6	19	6
	College of Social and Behavioral Sciences	11	2	13	0	10	1	20	4	10	3
	College of Engineering	8	4	6	1	5	0	5	0	5	2
	Isenberg School of Management	14	3	8	7	7	3	13	3	5	4
	School of Public Health and Health Sciences	0	3	0	2	4	0	3	2	6	3
	College of Information and Computer Sciences	1	0	4	1	1	1	1	1	1	1
	Undeclared/Other	3	0	8	1	1	1	0	0	0	0
Total Transfe Community (	rs from Greenfield College	54	18	63	25	53	15	79	18	56	22

Berkshire CC	UMass School/College	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014	Spring 2015
	College of Humanities and Fine Arts	3	3	5	1	5	2	4	0	1	0
	College of Natural Sciences	9	1	8	2	9	5	7	2	7	1
	College of Social and Behavioral Sciences	5	2	4	1	3	1	4	0	5	0
	College of Engineering	2	0	4	1	1	1	8	0	3	0
	Isenberg School of Management	5	0	4	1	4	1	9	1	4	2
	School of Public Health and Health Sciences	1	1	0	0	0	1	1	1	1	0
	College of Information and Computer Sciences	0	1	0	0	2	0	0	0	0	0
	Undeclared/Other	3	0	2	1	1	1	1	0	1	0
Total Transfe Community (	rs from Berkshire College	28	8	27	7	25	12	34	4	22	3

Source: University of Massachusetts Amherst Office of Institutional Research, custom table, Fall 2015.

For publications containing current (rather than times series) data on the same topic, see UMass Amherst OIR, 2/17/2015 "Selected Admissions, Enrollment and Retention Statistics, Massachusetts and Western Massachusetts Community College Transfer Students: Entering Cohorts Fall 2008 – Spring 2014"

# **Appendix D: Focus Group Participants**

#### Education

Patti Hallberg: CEO of Girl Scouts Kevin Lynn: Executive Director of FutureWorks Jason Irizarry: Director Urban Education at UMass Amherst Eric Lieberman: Education Specialist at Early Education and Care Erin Craft: Regional Director at Early Education and Care Robin Hodgkinson: Executive Director at Community Education Project Leigh Arabik: Human Resources Manager at Holyoke Springfield Chicopee Headstart Tim Collins: President at Springfield Education Association (SEA) Sheila Gould: Early Childhood Education Coordinator at Holyoke Community College Joan Giovannini: Elementary and Secondary Education Coordinator at Holyoke Community College Dexter Johnson: CEO of YMCA in Springfield Louis Marentes: Associate Professor at UMass Amherst Spanish and Portuguese Department Lydia Martinez: Assistant Superintendent of Springfield Public Schools

#### Engineering

Karen Dodge: Transportation Specialist at UMass Transportation Center David Ford: Professor and Associate Dean at UMass Amherst Engineering Department Adrienne Smith: Dean of Engineering and Technology at Springfield Technical Community College Nick Massa: Engineering Professor at Springfield Technical Community College Vladimir Caceres: Civil Engineer for Town of Agawam Tom Barrup: Engineering Professor at Holyoke Community College Eric Bernardin: Vice President of Fuss and O'Neill Inc. Greg Brown: Associate Dean Student Advising at UMass Amherst College of Engineering

#### Cybersecurity

Em Chiu: MBA student at UMass Amherst Melanie Knoebel: MBA student at UMass Amherst Anna Nagurney: Professor at UMass Amherst Isenberg School of Management Alex Schwartz: Director of Programing and Curriculum at Tech Foundry Natalie Sacco: Director of Operations at Tech Foundry Natalie Blais: Senior Assistant to the Chancellor, UMass Amherst Chancellor's office Tracy Mitrano: Academic Dean of UMass Cybersecurity Programs, former Director of IT Policy at Cornell Brian Levine: Professor at UMass Amherst College of Information and Computer Sciences

#### Hospitality

Mary Kay Wydra: President of Greater Springfield Convention and Visitors Bureau (GSCVB) Michelle Goldberg: Marketing director of Greater Springfield Convention and Visitors Bureau (GSCVB) Henry Figueredo: Manager at Sodexo (supplies food to school districts and towns) Jay Minkarah: President/CEO of Develop Springfield Ann Burke: Vice President of Economic Development Council (EDC) Kristine Ricker Choleva: Department Chair of Hospitality Management & Culinary Arts at HCC Norma Nunnally: Human Resources Manager at Sodexo Morgan Drewniany: Interim Director Springfield Cultural District **Government** Vladimir Caceres: Civil Engineer for town of Agawam Denise Jordan: Chief of Staff for City of Springfield Satu Zoller: Associate Director Center for Public Policy and Administration UMass Amherst Rob Bristow: Professor at Westfield State Marc Strange: Director of Planning for Town of Agawam Henry Figueredo: Manager at Sodexo (supplies food to school districts and towns) Luis Marentes: Associate Professor UMass Amherst Spanish and Portuguese Department

#### **Public Health and Human Services**

Shannon Rudder: Executive Director of MotherWoman Megan Person: Program Manager of Human Service Forum Kathleen Dowd: Executive Director of Human Service Forum David Buchannan: Professor in Public Health at UMass Amherst Jean DeMartinis: Associate Professor at UMass Amherst College of Nursing Luis Marentes: Associate Professor at UMass Amherst Spanish and Portuguese Department Dora Robinson: President and CEO of United Way Pioneer Valley

#### **Information Technology**

Todd Campbell: Assistant Vice President EIRM at MassMutual Chris Misra: Chief Technology Officer at UMass Amherst Alex Schwartz: Director of Programing and Curriculum at Tech Foundry Jackie Fallon: President for FIT Staffing Elisa Rose: HR Generalist at Health New England (HNE) Jeff Lomma: Branch Manager at Westfield Bank Cathy Wickens: IT Learning Consultant at MassMutual Michael Abbate: COO at Common Capital Ann Burke: Vice President of Economic Development Council (EDC) Jim Barrett: Managing Partner at Meyers Brothers Kalicka, P.C. Paul Silva: Executive Director at Valley Venture Mentors Dave Malloy: Client Service Manager at United Personnel Tracy Mitrano: Academic Dean of UMass Cybersecurity Programs, former Director of IT Policy at Cornell

# Appendix E: Focus Group Prompt Options

1. What workforce gaps are there, and where is the growth in employment in this field (*industry folks* may be most familiar with this)? And what new classes or programs could meet these needs (both industry and academic folks may know)? (Alternatively: What offerings would most help workers advance, and for entry level workers to enter the field?)

2. What areas of training and skills are most crucial in this field?

3. What are the most needed educational levels in this field, and most useful way to deliver those programs, considering potential barriers for students?

- Certificates vs.
- Bachelor's degree vs.
- Grad degree, including Master's or Ph.Ds., vs.
- Associate to Bachelor's programs (2+2s)
- ... or something specific to this field?

4. Is it different for entry-level workers and established workers?

5. How can the Center meet the training needs and educational requirements for this field in the region?

6. Based on external factors – such as the political landscape, or changing local demographics, or environmental changes – how do you think the field/industry will be impacted or will change over the next 10 years?

7. What needs around Spanish and Portuguese language, or more broadly the Hispanic/Latino culture, do you see as important to the region in developing academic offerings?