September 24, 2014

CENTRAL FLORIDA TALENT GAP ANALYSIS

The availability of a skilled workforce is widely recognized as one of the most critical factors in economic development. Expansion and relocation decisions hinge on the ability to hire workers with the skills and experience companies demand. The Talent Gap Analysis study was undertaken through a partnership with CareerSource Central Florida, Brevard, and Flagler Volusia and the Florida High Tech Corridor Council to align the skills needed by area business with Floridians seeking employment.

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Introduction

While distinctive in many ways, including the types of industry and business ecosystem, in the Central and Eastern areas of the Florida High Tech Corridor, issues related to filling open positions are similar to other counties in the region.

The jobs today are different than jobs of 40 years ago and will be different in 10 years. Students entering college in the fall will have to update their technical knowledge and skills throughout the four year education to be relevant at graduation. The FHTC is home to innovative companies harnessing the latest technology requiring new skills and understanding of how to effectively integrate these tools into the workplace.

Innovation is occurring in all industries including Manufacturing with 3D printing, Hospitality with Walt Disney World's MagicBand[1], Healthcare with integrated medical records systems and advances in robotic surgery, Financial Services with Business Analytics, Aerospace with unmanned aircraft systems, Modeling and Simulation with Dismounted Soldier Training Systems (DSTS), and Education with expanding online resources such as Code School.

Innovation requires a workforce that has resources to continuously learn and refresh skills. No industry is left untouched by technology and changing skills. While some low skilled jobs within an industry remain essentially unchanged, the employee operates in a technology-dependent environment. The employee must understand how their responsibilities interact with the technology to be effective and to have a pathway to higher paying jobs. For example, the new Disney MagicBand, a recently-deployed RFID visitor experience management system required training of 60,000 employees, including maids, transport drivers, servers, and sales clerks, to assist more than 30 million Florida guests annually, and 121.4 million guests globally per year.

A skills gap is defined as the difference in the skills required on the job and the actual skills possessed by the worker. The challenge for business is balancing training for staff and finding and hiring the talent. The balance is achieved in partnerships with education, workforce, and economic development organizations.

The Central Florida Talent Gap Analysis was undertaken through a partnership with CareerSource Central Florida (CSCF), Brevard, and Flagler Volusia and the Florida High Tech Corridor Council to align the skills needed by area business with Floridians seeking employment.

This study is an extension of the Tampa Bay Information Technology Workforce Analysis released in October 2012 and Hillsborough-Pinellas Manufacturing Workforce Analysis released August, 2013 supported by Florida High Tech Corridor Council and the partners[2] in the Tampa Bay area of the Corridor.

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[1] Vacation management system

[2] CareerSource Hillsborough and Pinellas, Tampa Hillsborough Economic Development Corporation, Pinellas Economic Development Department, Tampa Bay Technology Forum (IT study only), Tampa Bay Partnership.

The study's major focus was to identify solutions that will widen the talent pool to create opportunities to fill positions with qualified talent. The study engaged a variety of industry sector leaders to identify issues and solutions through an online survey, interviews, and focus group discussions.

The talent gap issue is not only a Central Florida concern. Worldwide, 35 percent of over 38,000 employers surveyed report they are experiencing difficulty filling jobs due to lack of available talent. This represents a slight rise in comparison to the 2012 Manpower survey and is the highest proportion of employers expressing concern about talent shortages since 2007. Additionally, the proportion of employers reporting an impact on client-facing[3] abilities to a high or medium degree has swelled to well over half (54%). [4]

Summary of Findings

The jobs are here in Central Florida. The challenge is how to connect candidates with the necessary skills required for the open and projected jobs identified by this research.

- *What skills are missing or challenging to find in the workforce?*
- *Where are the needed skills to be learned?*
- *What are the barriers to developing talent for the jobs that will fuel economic growth in Central Florida?*

This report will review these questions to assist the community in focusing efforts to expand the talent pipeline and fill jobs with existing talent.

The online survey was conducted from March 3 through April 15, 2014, resulting in 269 survey responses from companies representing 91,393 employees, which equates to 6 percent of the region's workforce of 1.5 million. The respondents reported 5,542 open and future jobs in the region with 66 percent representing anticipated hires over the next 2-3 years. Manufacturing, Finance, Other, and Hospitality led the list of open positions. Manufacturing reported the greatest number of both open and new positions.

Difficulty hiring was reported by 61 percent of the companies, with Manufacturing and Hospitality reporting the greatest challenges (84% and 83%, respectively). The top three reasons reported on the survey, and validated in interviews and focus groups, were related to a lack of skilled applicants. Soft skills were identified as critical for success in the workplace and a key determinant for hiring. Motivation was considered important by almost all (95%) of the respondents, followed by oral communication (92%) and time management (90%).

Soft touch recruitment or through networking, are preferred by companies, which identified employee referrals (65%) as a key strategy for recruiting talent. As Human Resources budgets shrink, the use of recruiting firms has declined except for C-Level positions.

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[3] The employee interacts directly with the customer, in person.
[4] (Manppower Group, 2013) p.2

Training is provided to current staff by 85 percent of the companies in the survey, with 61 percent providing structured learning to new hires. Training is a considerable investment by companies, which are generally interested in working with educational institutions to identify high need skills for inclusion in the curriculum.

The Region

The Central Florida Talent Gap survey included the eastern end of the Florida High Tech Corridor including the regions covered by CareerSource of Central Florida, Brevard, and Flagler Volusia, representing the counties of Brevard, Flagler, Lake, Orange, Osceola, Seminole, Sumter, and Volusia.

Figure 1 Study Region

There are three CareerSource workforce organizations in the study region that are actively working with area companies to help businesses recruit, train and retain qualified employees, CareerSource Central Florida, CareerSource Flagler Volusia, and CareerSource Brevard.

Business services teams assist employers in hiring, retention, and training the skilled workers needed to grow Central Florida businesses. Business services teams work directly with area employers to align their demand for skilled talent with the needs of those seeking employment and career development opportunities. The CareerSource organizations assist businesses to efficiently connect talent to the open job, including:

- Training assistance to businesses for new hires and incumbent workers
- Training assistance for job seekers on new in-demand skills
- Career counseling for job seekers
- Youth employment programs for job seekers between 14 and 21
- Virtual jobs fairs
- Assistance for companies managing periods of downsizing, partnering with others to bring forward resources to best serve the business and its affected employees, such as the Aerospace workforce transition program offered by CareerSource Brevard.

Florida's High Tech Corridor region spans 23 counties across the state, connected by three research universities, more than 20 local and regional economic development organizations, 14 community and state colleges, 12 regional workforce boards, countless industry groups and the thousands of innovative companies that call this region home. This study incorporated eight counties in the central and eastern portion and complements a 2012 study in the western end of the Corridor that included Citrus, Hernando, Hillsborough, Manatee, Pasco, Pinellas, Polk, and Sarasota counties.

Figure 2 - Florida High Tech Corridor Region
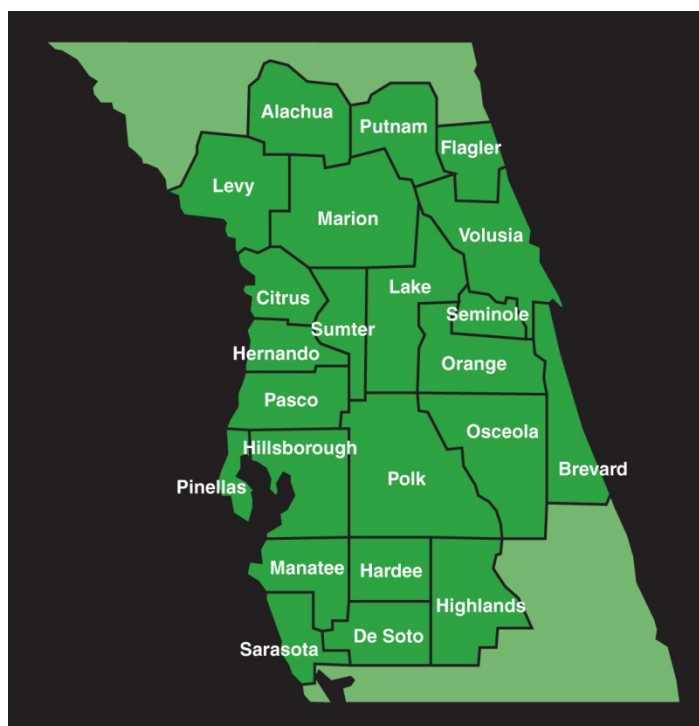
The Florida High Tech Corridor Council's primary focus is to foster applied research between Corridor universities and their high tech industry partners. These programs offer businesses the opportunity to connect to the talent development in the region.

- The Matching Grants Research Program is designed to develop commercially applicable emerging technologies, resulting in the generation of new jobs, healthy competition, and a strong economy[5].
- Florida Virtual Entrepreneur Center puts everything an entrepreneur needs to start, grow or relocate a business at his or her fingertips with a free online library of local, state and national commercial and governmental resources.
- GrowFL provides technical assistance to companies that move beyond the start-up stage and is offered statewide by the University of Central Florida Economic Gardening Institute.

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[5] http://www.floridahightech.com/research.php

- **2+2 Associate Degree** is a major workforce initiative that invested more than $1.1 million into the creation of technology degree and certificate programs with partner community and state colleges including:
  - ✓ Microelectronics – Valencia College
  - ✓ Biotechnology – St. Petersburg College
  - ✓ Modeling, Simulation & Robotics – Daytona State College
  - ✓ Photonics – UCF and other state and community colleges
  - ✓ IT Security – State College of Florida, Manatee-Sarasota
  - ✓ Wireless Technologies – Polk State College
  - ✓ Digital Media – Seminole State College of Florida
  - ✓ Certificate Programs
  - ✓ Aerospace Technician Program – Eastern Florida State College
  - ✓ Manufacturing Center of Excellence – Hillsborough Community College

- **techPATH** is an educational initiative involving representatives from a variety of academic affiliations and high tech companies, "cultivating tomorrow's workforce" in the Corridor's 23 counties through a variety of innovative programs. These programs include techCAMPs, which offer educators and students experience in various high tech environments and provide tools for classroom applications. A program of techPATH, **stemCONNECT** assists classroom teachers in sharing the latest and most interesting tech concepts with their students, through virtual sessions taught by engaging expert speakers in the STEM fields. The program links 6-12 classrooms with industry or academic experts from around the region.

Employment

The region generates nearly $14B in total wages quarterly for all industries, with an average monthly employment of 1.6M[6] (See Figure 3). The unemployment rate in April 2014 was similar to the United States and Florida rates. Region 12 had the lowest unemployment rate, which was lower than the State and US rates, as published May 16th, 2014.[7] (See Figure 4)

Figure 3 Regional Wages

Regional Wages	
Region	**Total all Wages, All Industries**
11 (Flagler and Volusia)	$1,417,423,655
12 (Lake, Orange, Osceola, Seminole and Sumter)	$10,461,214,021
13 (Brevard)	$2,051,924,835
Total Regional Quarterly Wages	**$13,930,562,511**

Source: Department of Economic Opportunity, Quarterly Census of Employment and Wages Program (QCEW).

Figure 4 - Local Area Unemployment by Workforce Region

LOCAL AREA UNEMPLOYMENT STATISTICS BY WORKFORCE REGION					
(NOT SEASONALLY ADJUSTED)					
		APRIL 2014			**April 2013**
CAREERSOURCE REGI	**LABOR FORCE**	**EMPLOYMENT**	**UNEMPLOYMENT**		
			LEVEL	**RATE (%)**	**RATE (%)**
REGION 11 (Flagler and Volusia)					
	290,323	272,969	17,354	6.0	7.6
REGION 12 (Lake, Orange, Osceola, Seminole, and Sumter)					
	1,229,388	1,163,443	65,945	5.4	6.8
REGION 13 (Brevard)					
	262,528	245,958	16,570	6.3	7.8
Total Region	1,782,239	1,682,370	99,869		
Florida				5.7	7.1
United States				5.9	7.1

Source: LAUS Unemployment Statistics for Current Month, April 2014, http://www.floridajobs.org/labor-market-information/data-center/statistical-programs/local-area-unemployment-statistics

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[6] Source: Department of Economic Opportunity, Quarterly Census of Employment and Wages Program (QCEW).
[7] LAUS Unemployment Statistics for Current Month – April 2014, http://www.floridajobs.org/labor-market-information/data-center/statistical-programs/local-area-unemployment-statistics

Population

Orange County is the most populated county in the study region and has the youngest population with a median age of 33.7 years compared to Sumter at 62.7 years.

Figure 5 2010 Census Profile

		Region 11	Region 12					Region 13	
Subject	Florida	Brevard County	Lake County	Orange County	Osceola County	Seminole County	Sumter County	Flagler County	Volusia County
2010 Census Profile of General Population and Housing Characteristics **Florida and Counties**									
SEX AND AGE									
Total Population	18,801,310	543,376	297,052	1,145,956	268,685	422,718	93,420	95,696	494,593
Median age (years)	40.7	45.5	45.6	33.7	35.6	38.2	62.7	47.5	45.3
Population 18 years and over	14,799,219	435,690	235,311	875,809	198,269	325,537	84,908	76,660	401,320
Population 65 years and over	3,259,602	110,712	71,825	110,919	29,656	50,677	40,530	23,405	104,289

Source: U.S. Census Bureau, 2010 Census.
Prepared by the Florida Legislative Office of Economic and Demographic Research, May 5, 2011.

Colleges and Universities

Businesses are attracted to areas with colleges and universities to support both innovation and talent development and recruitment. The region is home to more than 44 colleges and technical schools that prepare qualified talent to enter the workforce. The programs range from certification-based programs to advanced degrees. College career centers (n=35%), Job fairs (31%), and Internships (25%) were sources businesses used to recruit talent. The following is a list of the colleges most frequently identified as a resource to businesses.

Figure 6 Top Educational Institutions Businesses Recruit

Top Educational Institutions Businesses Most Likely to Recruit	
University of Central Florida (Orlando)	119
Daytona State College (Daytona Beach)	54
University of Florida (Gainesville)	52
Valencia College (Orlando)	49
Bethune-Cookman University (Daytona Beach)	34
Seminole State College of Florida (Sanford)	34
Florida State University (Tallahassee)	31
Stetson University (Deland)	29
Full Sail University (Winter Park)	25
Embry-Riddle Aeronautical University (Daytona Beach)	24
Florida Institute of Technology (Melbourne)	22
Mid Florida Tech (Orlando)	22
Total Companies responding*	**269**

Q61 - Multiple response question.

The colleges described below offer programs that were designed in response to business needs and were all identified as the colleges offering the largest number of graduates. (See Appendix for full list). During interviews and focus groups, respondents were complimentary of the quality of education but identified the need to increase flexibility to incorporate new technologies.

[University of Central Florida](#), with an enrollment of 60,000, is the second largest university in the nation, and is a dynamic entrepreneurial institution. UCF is an academic and research leader in optics, modeling and simulation, engineering and computer science, education and hospitality management, and digital media. UCF is home to the Center for Research and Education in Optics and Lasers (CREOL), the nation's only college-level program of its kind, and serves as a center of excellence in research and education, as well as an economic driver for the industry. The program offers interdisciplinary graduate programs leading to MS and Ph.D. degrees in Optics, as well as a specialization in Photonics within the BSEE degree[8]. CREOL has produced numerous start-ups through its incubator program as part of the internationally recognized UCF Business Incubation Program.

[Daytona State College](#)(DSC) has partnered with the Volusia and Flagler County school districts to form the Advanced Technology College, which allows high school juniors and seniors to earn college credits via dual enrollment. DSC offers the Associate of Arts and various Associate of Science degrees, in addition to six bachelor's degrees: Bachelor of Applied Science, Bachelor of Education, Bachelor of Science in Engineering Technology, Bachelor of Science in Business Management, Bachelor of Science in Nursing, and Bachelor of Science in Information Technology.

While the main campus is outside the study region, the [University of Florida (UF)](#) is a major contributor of talent to the Central Florida talent pipeline. UF is one of the three major research universities in the state with $740 million in research expenditures, generating 106,000 jobs statewide and contributing $8.76 billion annually to the state economy. UF is home to the Florida Innovation Hub, a startup technology incubator, which has created 250 new jobs in Gainesville since its inception in 2011.[9] UF's presence in the study region has expanded with the addition of its Research and Academic Center at Lake Nona Medical City and a Graduate School of Architecture in downtown Orlando.

[Valencia College](#) was named the best community college in the nation as the inaugural winner of the Aspen Prize for Community College Excellence. The college offers a wide range of degrees and career programs, including Arts & Entertainment, Business, Engineering and Technology, Health Sciences, Hospitality & Culinary, Information Technology, Radiological and Imaging Sciences, as well as University Parallel programs that allows students to earn an Associate's degree and transfer to state universities. One out of four UCF graduates started at Valencia.[10]

Orange County Public Schools, The School District of Osceola County, and Valencia College are partners in the Career Pathways program, which offers students the opportunity to focus on technical high school programs that will help train them for high skill, high wage occupations. Sixteen national career clusters have been designated and career pathways have been developed around these clusters. Each career pathway shows the transition from the high school program to

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[8] http://www.creol.ucf.edu/About/
[9] (Valencia College, 2010-2011)
[10] http://valenciacollege.edu/aadegrees/

postsecondary education, including technical centers, Valencia, and baccalaureate programs. 21,326 students were enrolled in one or more Career Pathways program areas in 2010-2011. [11]

Bethune-Cookman University is a private historically black university in Daytona Beach with an enrollment of 3,787 [12] and offering degrees leading to jobs in Information Technology, Finance, Hospitality Management, Education, Nursing, Computer Engineering, Information Systems and more.

The Department of Hospitality Management program was identified during interviews as a source of management talent. The program offers a degree leading to the Bachelor of Science in Hospitality Management. Students must take an equal balance of lodging, food, and tourism courses, in addition to other School of Business courses. Students are required to participate in two internships providing "real-world" experience, with employers such as Walt Disney World, Marriott, Starwood, Hilton, and Sodexho.[13]

Seminole State College (SCC) is a public state college with four campuses in Central Florida. Seminole State is the eighth-largest member institution of the Florida College System and has established a number of partnerships with regional businesses to develop a talent pipeline. In partnership with the Central Florida Auto Dealers' Association, SCC opened the Automotive Training Center in January 2007. The Center of Economic Development opened in fall 2007 and partners Central Florida's economic development leaders with the College to train the region's workforce in business/technology-related programs and to attract and retain leading technology companies to Central Florida. The College's Altamonte Springs Campus opened in January 2008 and houses SCC's Healthcare Program, a diverse offering of A.A. degrees and adult education.

In recent years, Seminole State has deployed a number of courses via distance learning. In 2006, Seminole State partnered with UCF to launch DirectConnect to UCF, which guarantees Seminole State graduates admission to the university and academic advising by university counselors.

Florida Polytechnic Institute is the state's newest college designed to be nimble and responsive to rapidly advancing technology and the needs of high tech firms. Florida Poly will be the first in the state to offer courses in emerging technologies like Motion Intelligence, Big Data Analytics and Cloud Virtualization, fields that are already changing our world.[14]

The region has a rich selection of quality educational institutions that have a shared history of collaborating with businesses to design training opportunities that expand the rapid changes in the needs of businesses. During interviews and focus groups, businesses were interested in working more closely with education to strengthen their relationships to target the needed skill sets for graduates to be successful in the workplace.

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[11]

[12] Bethune-Cookman Fall 2013 Institutional Profile http://www.cookman.edu/documents/oirpa/IP2013f.pdf
[13] http://www.bethune.cookman.edu/academics/schools/sb/programs/hospmang/index.html
[14] (Florida High Tech Corridor Council, , 2014)
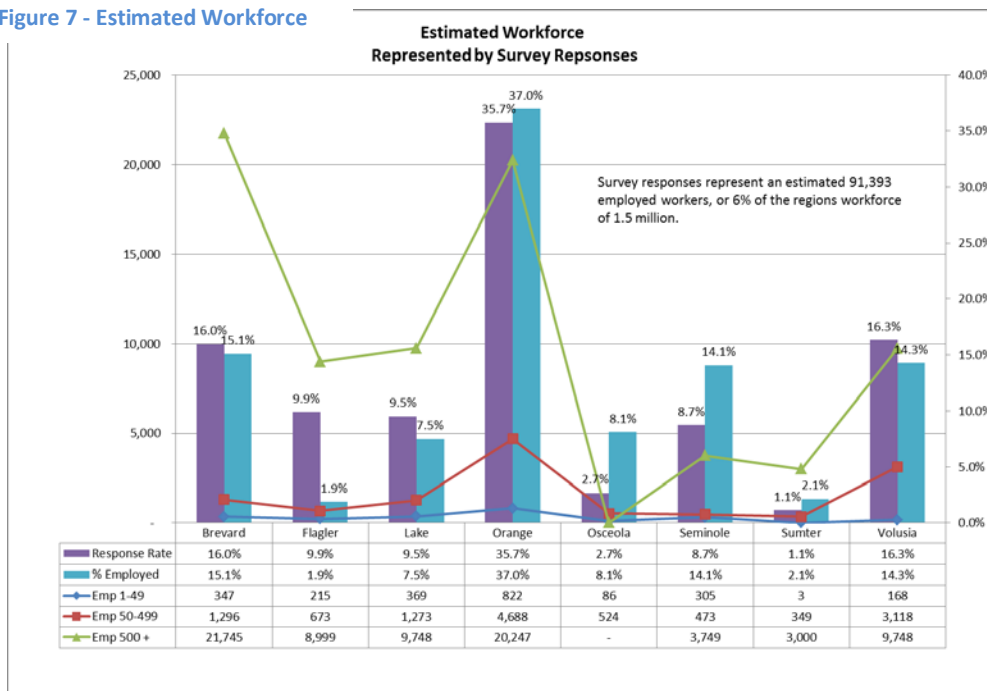
The Study Methodology

The Corridor Council and CareerSource Central Florida entered into a contract for the project management of the study with the author of the *Tampa Bay Information Technology Workforce Analysis* and established a partnership with CareerSource Brevard and CareerSource Volusia Flagler.

The project consisted of an online survey distributed throughout the region to businesses[15] of all sizes in the region. Interviews were conducted with 21 leaders from different industries to expand understanding of the issues. Five focus groups were also conducted throughout the region to validate the survey results and gain additional insight into solutions and partnership opportunities.

The survey was designed by the CareerSource Central Florida Talent Gap team with review and input[16] from colleges, EDOs and community partners. The survey was opened for six weeks from March 3 through April 14, 2014, resulting in 269 completed surveys from companies representing 91,393 employees, or 6 percent of the workforce. A majority (66%) of the respondents were companies with less than 50 employees. The response rate by county was representative of the regional workforce except in Flagler, which had a higher than expected response rate, and Osceola and Seminole, which were below the percentage of employed in the respective counties. Company leadership was more likely to respond with 63 percent of the responses submitted by the CEO and VP/Director. Sixty-one percent of responses were from persons who lived in the area more than 10 years.

Figure 7 - Estimated Workforce

Estimated Workforce Represented by Survey Repsonses

Survey responses represent an estimated 91,393 employed workers, or 6% of the regions workforce of 1.5 million.

	Brevard	Flagler	Lake	Orange	Osceola	Seminole	Sumter	Volusia
Response Rate	16.0%	9.9%	9.5%	35.7%	2.7%	8.7%	1.1%	16.3%
% Employed	15.1%	1.9%	7.5%	37.0%	8.1%	14.1%	2.1%	14.3%
Emp 1-49	347	215	369	822	86	305	3	168
Emp 50-499	1,296	673	1,273	4,688	524	473	349	3,118
Emp 500 +	21,745	8,999	9,748	20,247	-	3,749	3,000	9,748

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[15] Over 12,000 surveys were distributed by the partners.
[16] CareerSource Flagler Volusia, CareerSource Brevard, UCF-Operational Excellence & Assessment, Valencia College, Lake County Schools, Lake County Chamber of Commerce.

Response by Industry

Industries in which more companies reported having positions open as well as difficulty hiring also had a higher response rate to the survey. Companies in Business Services, Manufacturing, and Education responded at a rate that was significantly higher than the proportion of such companies represented in the region. Manufacturing and Business Services represented the highest proportion of companies reporting difficulty hiring as well as the companies reporting the greatest number of planned new hires.

Figure 8 Survey Responses by Company Size

Survey Reponses by Company Size

Company Size	Percent
Emp 1-49	65%
Emp 50-499	25%
Emp 500 +	9%
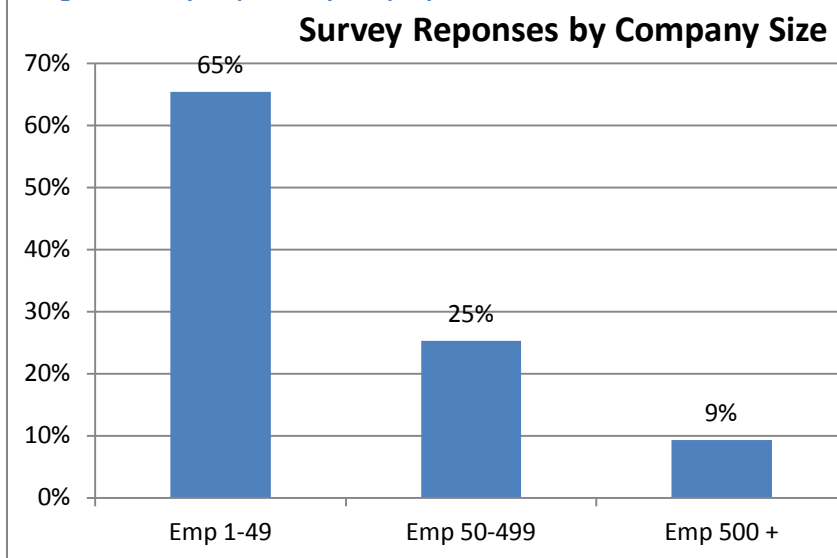
Figure 9 - Percent Survey Response Compared to % Industry Type

% Survey Response Compared to % Industry Type

|	Hospitality	Construction	Education	Finance	Govt	Health	Mfg	Other	Bus. Serv	Science & Tech	Retail	Trans/ Communication
% Companies In Region	21%	11%	1%	5%	1%	9%	3%	8%	1%	17%	17%	3%
% Response	4%	8%	13%	6%	7%	5%	14%	14%	15%	9%	1%	3%
% Hiring	5%	8%	12%	7%	7%	6%	15%	11%	16%	8%	2%	3%
% Difficulty Hiring	6%	7%	8%	5%	8%	7%	19%	13%	15%	9%	1%	2%
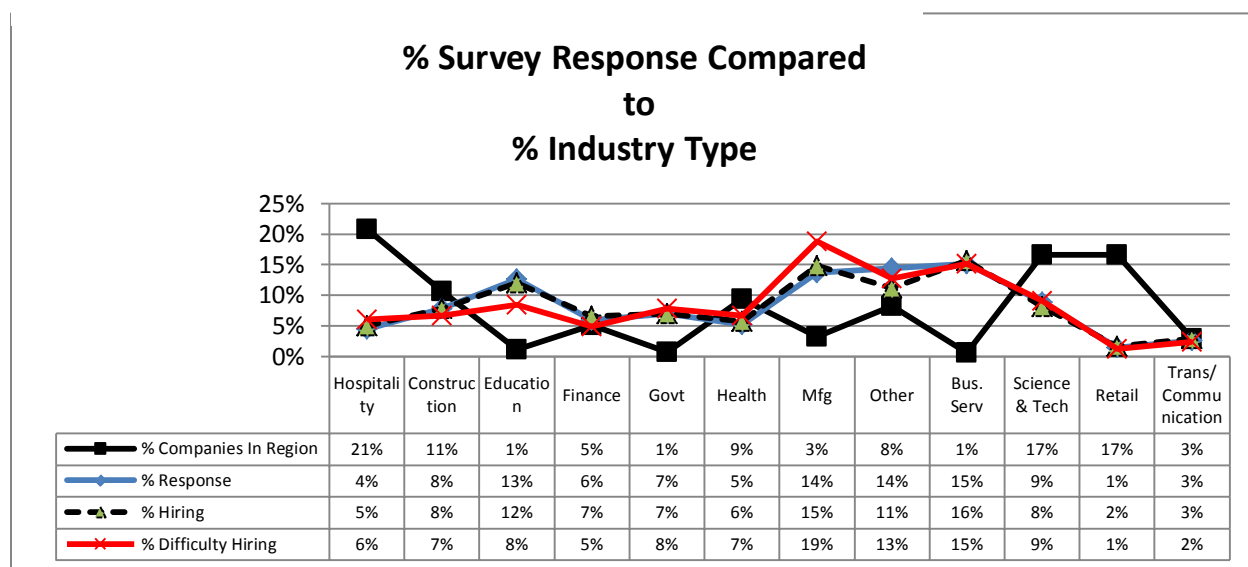
Where are the Jobs?

The respondents reported 5,542 open and future jobs in the region with 66 percent representing anticipated hires over the next 2-3 years. Manufacturing, Finance, Other, and Hospitality led the list of open positions. Manufacturing reported the greatest number of both open and new positions.

➢ Manufacturing reported the greatest number of vacant positions (n= 531) and the greatest number of anticipated new hires (n=713).

➢ Finance and Insurance reported having the second highest number of job openings (n=689), which includes one company projecting 600 new customer service openings.

➢ The Government sector reported few current openings but reported 426 planned hires over the next 2-3 years with Fire Fighters (n=151) exceeding all other open positions.

➢ Hospitality reported slightly more current openings (n=283) than planned new hires (n=260).

➢ Construction reported more future openings (n=172) than current (n=136), for jobs requiring high school degrees for eight of the top 10 positions.

➢ Education reported the second highest number of current openings (n=207), including a current need for Educational, Vocational, and School Counselors (n=91).

➢ Transportation and Utilities ranked in the middle of the industries hiring because of the projected current and future need for school bus drivers (n= 45/203) and a future need for electrical pool line installers (n=15).

Figure 10 - Open & Projected

➢ Healthcare also reported more future hires, however six of the top 10 positions require post graduate degrees and licensing in the resident state.

➢ Professional and Technical Services Aerospace reported the fewest openings, with all openings requiring advanced degrees, licensing or certifications, and offering the highest median annual salary in the region.

Open and Projected New Jobs

Source: Central Florida Talent Gap Survey Q9-59; N=269
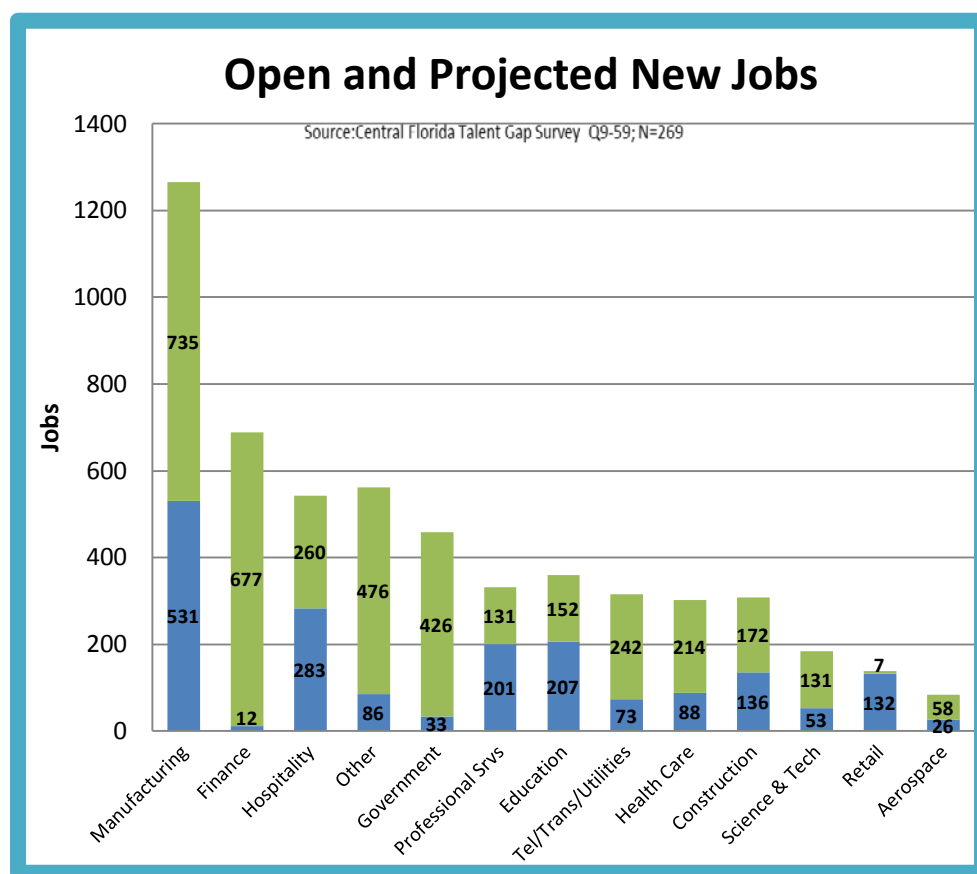
Manufacturing

Manufacturing reported the third highest average salary statewide at $53,284, behind Information and Financial Activities, and above the statewide average of $43,213[17]. The positions reported by manufacturers with the most vacancies and new openings included Assembler, CNC Machine Operator, Warehouse Worker, and Industrial Machinery. One respondent projected a need for 201 Sewer Machine Operators over the next two years. Manufacturing will have replacement hiring needs as a result of an aging workforce with 25.4 percent of the current workforce over the age of 55[18].

Figure 11 Top 15 Manufacturing Open and Projected New Jobs

Top 15 Manufacturing Open and Projected New Jobs						
Industry	Open Positions		Future Openings		Total	
Assembler	122		101		223	
Sewer Machine Technician	0		201		201	
CNC Machine Operator	31		45		76	
Warehouse Workers	18		34		52	
Industrial Machinery Mechanics	43		7		50	
Production Lead	26		22		48	
Maintenance Mechanics	21		19		40	
Fabricator	18		22		40	
Mig Welders	22		13		35	
multi-faceted welding/manufacturing-fabrication (trade schooled or long-term diversified training)	15		15		30	
Machine Operators	4		23		27	
Final Unit Assembler	14		11		25	
Welder - Fabricators	13		11		24	
Parts Inspection/Finish Repair Technician - similar skills to auto body repair	12		12		24	
Tig Welders	8		14		22	
Sub-Total		367		550		917
All other opening		<u>164</u>		<u>185</u>		<u>349</u>
Total Manufacturing		**531**		**735**		**1266**

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[17] Source: Florida Department of Economic Opportunity, Bureau of Labor Market Statistics, Quarterly Census of Employment and Wages Program. Released February 2014.

[18] Source: DOE PowerPoint, Florida Manufacturing Bureau of Labor Market Statistics March 2014 Labor Statistics Data Release Date: April 18, 2014 U.S. Census Bureau, Longitudinal Employer-Household Dynamics (LEHD), 2012. Slide 10.

There is a stigma about entering the field of Manufacturing at both the high school and college levels which was confirmed in the interviews and focus groups. Yet there are positions open requiring a range of educational attainment, from high school diplomas to doctoral degrees. Employers reported a need for talent with foundational skills in place, at all educational levels, including specialized engineering knowledge, the ability to use and understand measuring devices, and reading blueprints.

Higher wages were found in occupations with greater training requirements. Eight of the fifteen largest manufacturing occupations require additional certification beyond a high school diploma[19]. The highest paid positions, and most challenging to fill, include Physicists ($73.66/hr.), computer and information systems managers ($64.20/hr.), engineering managers ($57.65/hr.), and industrial production managers ($49.96/hr.).

According to the Florida Department of Economic Opportunity (DEO), Manufacturing will require continued training of incumbent and new workers due to an increased use of technology in production, design, and quality control. Thanks to technological improvements, Manufacturing has been on a long term trend of output gains even as employment has declined. During interviews, employers repeated the need for higher skilled workers to utilize the increasingly complex equipment and who have the ability to implement the processes needed to move to more customized manufacturing[20].

Optics and Photonics

In the current NAICS[21] structure, Optics and Photonics, one of the fastest growing high tech industries in the world, is embedded in Manufacturing (Code 31-33) and Professional, Scientific, and Technical Services (Code 54). The survey did not include questions specific to this industry, however, through interviews and focus group input, talent issues were identified. Defined as an enabling technology,

> "*Optics and photonics are the science and application of light. Specifically, photonics generates, controls and detects light to advance robotics, manufacturing, medical imaging, next-generation displays, defense technologies, biometric security, image processing, communications, astronomy, and much more. Photonics forms the backbone of the Internet; guides energy exploration; and keeps our men and women in uniform safe with night vision, GPS, and physiological feedback on the battlefield. Simply put, photonics addresses and solves the challenges of a modern world while enhancing our quality of life; improving our health, safety and security; and driving economic growth, job creation, and global competiveness[22].*"

There is virtually no field of human activity on which optics and photonics has not made an impact, and new applications are emerging at an amazing pace. Advanced Manufacturing, including Optics and Photonics, harnesses the efficiency of mass production and marries it to the flexibility of custom manufacturing. The goal is to respond quickly to customer demand by using high-precision information technology, generation of high-power and low-cost ultra-short pulsed lasers, as well as additive

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[19] Ibid., slide 9

[20] (FEO - Florida Department of Economic Opportunity, April 18, 2014)

[21] North American Industry Classification System, http://www.naics.com/search/

[22] eBook, Harnessing Light: Optical Science and Engineering for the 21st Century, http://www.nap.edu/openbook.php?record_id=5954, Date, 1998,The National Academies Press

manufacturing, also known as 3D printing. Specialized training is required to maintain a skilled labor force that can apply the technology in responding to current demands.

According to the Florida High Tech Corridor Council, "…the field of optics and photonics brings a surge of high tech activity to the region. Home to one of only three degree-granting optics institutions in the United States and a host of specialized companies, the Corridor is at the heart of some of the world's greatest advancements in the industry.[23]

The Center for Research and Education in Optics and Lasers (CREOL), at the University of Central Florida, the only college-level program of its kind, serves as a center of excellence in research and education, as well as an economic driver for the industry. The program offers interdisciplinary graduate programs leading to MS and Ph.D. degrees in Optics, as well as a specialization in Photonics within the BSEE degree[24]. CREOL has produced numerous start-ups through its incubator as part of the internationally recognized UCF Business Incubation Program.

Other educational programs that are developing talent for this cluster in Florida include programs at University of South Florida, Indian River State College, and Valencia College. However, the challenge for Optics and Photonics is the lack of awareness of the career path to high paying jobs in this field. One program addressing the awareness issue is now in its fifth year at Wekiva High School in Winter Park. The school's Photonics Academy creates several options for students as a dual-degree program designed to engage students early in their high school career, and to prepare them for employment in laser and photonics related occupations as technicians. The Photonics Academy program enables a student to graduate from Valencia College with an Associate of Science (AS) degree with a Laser & Photonics Specialization at the same time they graduate from high school.

Indian River State College offers[25] students several additional options:

➢ The Electronics Engineering Technology degree offers specialization options in lasers and photonics, robotics and industrial automation, process control, computer technology, telecommunication, and solar energy.
➢ Laser and Photonics Certification - upon completion of this program, a student will be able to test, maintain, and troubleshoot as well as have a good working knowledge in safety and handling of lasers, optical devices, and optical systems. Integrated into the instructional content are communications skills, leadership skills, human relations skills, employability skills, safe and efficient work practices, use of circuit diagrams and schematics, soldering, laboratory practices, and technical recording and reporting.

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[23] http://www.floridahightech.com/hightechindustry/optics.php
[24] http://www.creol.ucf.edu/About/
[25] http://irsc.smartcatalogiq.com/en/Current/Catalog/AAS-Degrees-Certificates/Electronics-Engineering-Technology

Many companies will hire engineers and send them back to school to learn the technology. The major need is to incorporate information about Optics and Photonics into the classroom beginning in elementary through high school.

The identification of career options begins with businesses speaking to students and parents, and generating awareness of the exciting options through internship opportunities, lab tours, and boot camp style training using lab equipment as instructional materials.

The National Photonics Initiative (NPI) is a collaborative alliance among industry, academia and government seeking to raise awareness of photonics - the application of light - and drive US funding and investment in five key photonics-driven fields critical to US competitiveness and national security: advanced manufacturing, communications and information technology, defense and national security, energy, and health and medicine[26]. The Florida Photonics Cluster (FPC) and the Florida High Tech Corridor Council are supporting the initiative to drive awareness through communication channels with the photonics industry and other Florida resources.

Hospitality and Retail

Hospitality represented four percent of the survey responses yet companies classified as Hospitality represent 21 percent of all companies in the region. Timeshare Sales Agents were identified as the greatest area of need (n=40) and future expansion (n=100).   Other positions that have both current and future need include Servers (n=136), Off Property Contract Marketing (n=68), and Cooks (n=55).

In a recent study published by OrlandoJobs.com[27], the Hospitality and Leisure Industry was identified as "the true job creation leader for Central Florida." While other industries were negatively impacted, the Hospitality and Leisure industry in Central Florida weathered the downturn in the economy growing 30 percent since 2002[28]. There exists a stigma that this industry has only low wage jobs, yet the number of positions related to sales offer competitive wages and commissions. The average salary for Timeshare Sales Agent in the Orlando area is $65,000 with an Executive Timeshare Manager earning $240,000, exceeding salaries in the Las Vegas area for similar jobs.

An informal survey conducted by the Hotel & Lodging Association of Volusia County[29] in February 2014 found that employers generally started housekeeping, janitors and maintenance workers above minimum wage and provided paid vacation/PTO, with many employers funding or subsidizing health insurance. Several reported offering 401k plans to full time employees and regular bonuses to high performers.

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[26] http://www.lightourfuture.org/
[27] **2014 Employment Outlook for Central Florida,** www.OrlandoJobs.com/whitepaper.
[28] (Stratton J. , 2013)
[29] Informal survey conducted by Bob Davis, Pres./CEO Hotel & Lodging Association of Volusia County , February 2014, by email, of members of the association

Tipped positions many times are viewed as low paying based on the salary alone. However, the tips generated can go underreported suppressing the real income figures. Servers can earn from $12 to $35 per hour depending on the nature of the restaurant, based on an average tip of 15 percent to 20 percent. The employee is required to have foundational skills including ability to count and handle money, use an electronic order system, and provide high quality customer service.

Career path opportunities in Hospitality are less understood by job seekers. Many of the positions require soft skills and knowledge of the industry, which often are learned on the job. Valencia College[30] offers a series of degrees related to hospitality and food services that can lead to high paying jobs, such as Banquet and Food Service managers who can earn between $45,000[31] and $80,000[32].

There is a need to develop a career path for workers in the hospitality industry that encourages entry level staff - maids, maintenance, servers- to acquire skills that would allow them to move into progressively more responsible positions and increase income. Several colleges and universities offer a number of certificate and degreed programs to assist in meeting the goals. The use of online learning could support the goals of the on-the-job learner.

Retail represented less than 2 percent of the responses and reported 139 job openings, of which 130 were current openings for Counter and Rental Clerks[33]. Salaries range from $17,210 to $43,270 per year with a medium of $23,370, and generally require a high school degree and the fundamental skills of counting and handling money, along with customer service skills.

Education

Teaching positions (n=118) represent the jobs in greatest demand in education with 52 percent (n=61) of the open positions reported as future hires and 39 percent (n=47) as currently vacant. Business Teacher at the postsecondary level represented 27 percent (n=32) of the openings with 21 currently open. Business Teachers provide instruction on business administration and management, such as accounting, finance, human resources, labor and industrial relations, marketing, and operations research. It includes both teachers primarily engaged in teaching and those who do a combination of teaching and research[34]. Business education provides students with a window into area businesses and skills required to be successful in the workplace.

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[30] http://valenciacollege.edu/asdegrees/hospitality/rfsm.cfm

[31] Occupational Outlook Handbook, http://www.bls.gov/ooh/business-and-financial/meeting-convention-and-event-planners.htm Retrieved, May 8, 2014.

[32] Interview with Hospitality expert during Talent Gap Study, March, 2014.

[33] According to the Bureau of Labor Statistics, the positions would support the expanding Hospitality industry in the region. Clerks include such jobs as receive orders, generally in person, for repairs, rentals, and services. May describe available options, compute cost, and accept payment. Excludes "Counter Attendants, Cafeteria, Food Concession, and Coffee Shop" (35-3022), "Hotel, Motel, and Resort Desk Clerks" (43-4081), "Order Clerks" (43-4151), and "Reservation and Transportation Ticket Agents and Travel Clerks" (43-4181).

[34] Occupational Employment and Wages, May 2013, 25-1011 Business Teachers, Postsecondary http://www.bls.gov/oes/CURRENT/oes251011.htm

Educational, Vocational, and School Counselors were reported as the position in highest demand with 92 percent currently open (n=91). The role of the position is to counsel individuals and provide group educational and vocational guidance services[35]. The position focuses on increasing the student's awareness of how to transition to the workforce. The Career Development Coordinator will develop and deliver career services to students by providing career advising, major/career information, job search preparation, specialized outreach programming, career workshops, career-related handouts and publications, relevant web-based resources, and marketing of services or events. The need to increase students' awareness of career opportunities in different industries was a significant point of concern expressed during the study interviews and focus groups.

Thirty-two new Postsecondary Health Specialties and Elementary school teaching positions were identified as a need over the next 2 years. In Florida elementary education is projected to grow 21 percent through 2021. Growth is expected due to projected increases in enrollment as well as declines in student–teacher ratios. Competitive salaries and promotional opportunities were viewed as more significant (73% and 89%) issues to retaining staff than retirements (41%).

Postsecondary Health Specialties Teachers teach courses in fields such as dentistry, laboratory technology, medicine, pharmacy, public health, therapy, and veterinary medicine[36.] These positions will be needed to provide training to one of the high demand jobs in the health care industry – Home Health Aides.

The Location Quotient[37], an indication of the supply of talent in a region, suggests that a slight shortage of talent exists from which to recruit Postsecondary Business Teachers, despite wages that are comparable to national averages. Currently there are 1,600 employed in the position in the study region, with median salaries above the national annual mean[38]. Junior Colleges offer the highest average Counselor salary ($56,510) in the industry.

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[35] (Labor, 2014) 21-1012 Educational, Guidance, School and Vocational Counselors

[36] Excludes "Nursing Instructors and Teachers, Postsecondary" (25-1072) and "Biological Science Teachers, Postsecondary" (25-1042) who teach medical science.

[37]The location quotient is the ratio of the area concentration of occupational employment to the national average concentration. A location quotient greater than one indicates the occupation has a higher share of employment than average, and a location quotient less than one indicates the occupation is less prevalent in the area than average.

[38] Bureau of Labor Statistics, U.S Department of Labor http://www.bls.gov/current/oes211012.htm, Educational, Guidance, School Vocational Counselors, Accessed May 15,2014

Figure 12 - Education Location Quotient

Position	Location Quotient [1]	Orlando MSA[2]	National[2]	Total/Net New Jobs by 2021[3]
Business Teacher, Post-Secondary	.89	$90,570	$89,100	1,050/239
Educational, Vocational, and School Counselors	.62	$56,770	$56,112	1,768/338
Elementary Teachers	.97	$47,440	$56,320	12,449/2,142
Health Specialties Teachers, Post-Secondary	.52	$70,250	105,880	807/172

1. Source: http://www.bls.gov/current/oes211012.htm
[2] Annual Mean Wage
[3] (DOE, 2013-2021), Workforce Region 12

Construction

Employment of construction laborers and helpers is projected to grow 25 percent from 2012 to 2022, much faster than the average for all occupations. Laborers and helpers work in all fields of construction, and demand for these workers will mirror the level of overall construction activity[39]. Of the jobs reported open in the survey (n=308), 55 percent were future hires including laborers (n=49), Construction Managers (n=44), Carpenters (n=42), and Cement Masons (n=28).

Figure 13 Construction Jobs

Construction Jobs	Open	2-3 Years	Total
Construction Laborers	14	35	49
Construction Managers	21	23	44
Carpenters	13	29	42
Cement Masons and Concrete Finishers	8	20	28
Subtotal	**56**	**107**	**163**
All other jobs	80	107	145
All Construction Jobs	136	172	308

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[39] Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2014-15 Edition*, Construction Equipment Operators, on the Internet at http://www.bls.gov/ooh/construction-and-extraction/construction-equipment-operators.htm (visited *May 01, 2014*).

Health Care

"The Bureau of Labor Statistics projected that the health care and social assistance industry would produce 28 percent of the new jobs in the U.S. over the decade. Extended longevity and an aging population, combined with expanding insurance coverage under Obamacare, are increasing the demand for all kinds of health professionals." (Forbes, 2013)

Thirty-two percent (n=97) of the health care positions opened in the health care industry were Home Health Aides with 80 percent new hires over the next 2-3 years. Home Health Aides provide routine individualized healthcare such as changing bandages and dressing wounds, and applying topical medications to the elderly, convalescents, or persons with disabilities at the patient's home or in a care facility[40]. The career path is expected to grow 40 percent through 2021 in response to the aging Baby Boomer cohort. Home Health aides are expected to reduce the cost of care by providing support for the elderly to stay at home longer.

Registered Nurses are one of the most in-demand positions in the state with a projected growth rate of 25 percent, yet only 20 open positions were reported in the survey, with 14 future hires. During interviews it was noted that the regional colleges are a great source for entry level talent but companies still had difficulty filling all open positions with experienced nurses. In some health care facilities, 20-40 nurses are hired each month.

Recruitment of RNs is expensive for any facility. A recent study published in the *Journal of Nursing Administration*[41] estimated a total cost of between $62,100 and $67,100 to replace a single RN. When vacancy rates reach high single or double digits, the cost to the facility is significant and its likely impact on other resources such as workload, overtime, nurse replacements, etc., will also be significant.

An additional cost not often discussed is the human costs of turnover and recruitment on the nursing staff. While a position is empty, the workload of the missing nurse must be absorbed into others' workload. Should a new nurse be hired, the nursing staff usually does a good deal of orientation of the new employee. Temporary employees also require additional work by staff RNs since they must provide support to the temporary employees in becoming familiarized with the new environment and patients[42].

Targeted Case managers[43] provide case management services which includes assisting clients in gaining access to needed financial and insurance benefits, employment, medical, social, education, assessment of functional abilities and needs, and other services. These support services include working with the client and his/her natural support system to develop and implement the service plan. It also includes

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[40] Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2014-15 Edition*, Home Health Aides, on the Internet at http://www.bls.gov/ooh/healthcare/home-health-aides.htm (visited *May 10, 2014*).

[41] Jones, CB, The Cost of Nurse Turnover, Part 2, Journal of Nursing Administration, 35(1), 41-49

[42] http://www.nursingworld.org/MainMenuCategories/ThePracticeofProfessionalNursing/workforce/Recruitment

[43] Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2014-15 Edition*, Social and Community Service Managers, on the Internet at http://www.bls.gov/ooh/management/social-and-community-service-managers.htm (visited *May 15, 2014*).

follow-up to determine the status of services and the effectiveness of activities related to the successful implementation of the service plan toward enhancing the recipient's inclusion in the community. A bachelor's degree or higher is required along with awareness of the social, economic and cultural factors that affect the health of families. These positions are generally filled by someone with a nursing degree and experience. The average salary for the position nationally is $59,970. However the position responsibilities can vary by organization, thus creating a salary range based on actual job description of $28-$58,000 annually. The need is growing faster than average to meet the increased complexity of receiving and finding social benefits.

During interviews it was noted that the Affordable Care Act has added some unique stresses on the health care industry, most significantly in the increased need for Pharmacists and Pharmacy Technicians[44] who help the pharmacists dispense prescription medication to customers or health professionals. Both positions have an average or above average talent pool available in the area.

Financial Services

The Financial Services and Insurance sector is expected to level off overall, expanding by less than one percent. The expected growth of industries that specialize in customer service should lead to more job openings in the coming years, as will consumers' increasing appetite for products that require service and support. The Bureau of Labor Statistics projects Customer Service positions to grow 12.6 percent between 2012 and 2022, which is about as fast as the average for all occupations. (Taylor, 2014)

Eighty-one percent (n=608) of the future job openings reported in the Talent Gap Survey in this industry are customer service openings, with Personal Financial Advisors the next highest with 29 positions expected to be open over the next two years. The job qualifications require a range of degrees, from high school to college, depending on the type of customer support required. During the interviews, the hiring manager discussed the need for talent to demonstrate the foundational skills for workforce success – customer service and critical thinking skills to solve problems that deviate from the standard, and the work ethic of timeliness and dependability.

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[44] Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2014-15 Edition*, Pharmacy Technicians, on the Internet at http://www.bls.gov/ooh/healthcare/pharmacy-technicians.htm (visited *May 12, 2014*).

Figure 14 - Top 5 Finance and Insurance Open and Projected New Jobs

Top 5 Finance and Insurance Open and Projected New Jobs					
Finance and Insurance	**# Current Openings**		**# Future Hires**		**Total**
Customer Service	0		606		**606**
Personal Financial Advisors	0		29		**29**
Sales	2		12		**14**
Financial Analysts	0		10		**10**
Accountants and Auditors	0		6		**6**
Subtotal		2		663	**665**
All other positions		10		14	**24**
Total All Positions	**12**	**677**		**677**	**689**

The Financial Advisor[45] advises clients on financial plans using knowledge of tax and investment strategies, securities, insurance, pension plans and real estate. Duties include assessing clients' assets, liabilities, cash flow, insurance coverage, tax status, and financial objectives. The Bureau of Labor estimates the field will expand 20 percent through 2021 however the talent pool to recruit new talent is below the standard (.52) indicating possible difficulties in finding the qualified talent.

Government

Overall, the government sector is not projected to expand through 2021. However respondents reported a need for 151 firefighters over the next 2-3 years. In fact, of those responding to the survey from the Government sector, 92 percent of all jobs openings were identified as future hires, of which 72 percent required high school, Postsecondary Adult Vocational, or Associates Degree. See Appendix for list of jobs.

Figure 15 Government Open and Projected New Jobs

Government Open and Projected New Jobs			
Government - Federal, State, or Local	**# Future Hires**		**Total**
Fire Fighters	151		**151**
First-Line Supervisors of Helpers, Laborers & Material-Movers, hand	30		**30**
Landscaping and Grounds keeping Workers	30		**30**
Financial Analysts	18		**18**
Economic Self Sufficiency (Case Worker)	10		**17**
Subtotal		239	246
All Other Positions		187	213
Total All Positions		**426**	**459**

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[45] Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2014-15 Edition*, Financial Analysts, on the Internet at http://www.bls.gov/ooh/business-and-financial/financial-analysts.htm (visited *May 15, 2014*).

Professional Services

Attorneys (N=46) and Legal Assistance/Paralegals (n=39) were the highest reported job openings, split between current and future openings. The industry is projected to increase by less than 2 percent; however Attorneys and Paralegals are estimated to grow at 19 percent and 30 percent, respectively. The mean annual salary for Paralegals and Legal Assistants is also slightly above the national average of $46,990 with a mean average in of $48,526. The average mean salary for an Attorney in Region 12 (Lake Orange, Osceola, Seminole and Sumter) is $135,930, slightly above the national mean average of $131,990. Employment of lawyers is projected to grow 10 percent from 2012 to 2022, about as fast as the average for all occupations[46]. Competition for jobs should continue to be strong because more students graduate from law school each year than there are jobs available[47]. Both occupations have equal numbers of currently open positions and future hires.

Accountants and Auditors represent the next greatest number of new (n=17) and open positions (n=15). According to the BLS, the average mean salary for an Accountant in the region is $65,690, slightly below the national average of $72,500. The growth rate of the profession is positive at 17 percent. Employment of accountants and auditors is projected to grow 13 percent from 2012 to 2022, about as fast as the average for all occupations. In general, employment growth of accountants and auditors is expected to be closely tied to the health of the overall economy. As the economy grows, these workers will continue to be needed to prepare and examine financial records[48]. The role of the Accountant and Auditor has been changing over the past 10 years as technology has increased the risks and vulnerabilities of companies requiring constant upgrading of skills. Increased technical skills are required by Auditors to remain successful in the workplace.

Open positions in the higher skilled professional positions generally found in this industry result in higher recruitment, training, and on-boarding costs. The cost-per-hire for high-tech industry was $3,357, compared with $1,062 for service industries[49].

Scientific & Technical, Aerospace

Of the 84 open positions in Scientific & Technical and Aerospace sector, most require a Master's degree and offer a salary range from $73,000 to $103,000. While survey results showed that the Aerospace and Scientific & Technical sectors reported little difficulty filling positions, during the interview process Scientific & Technical leaders indicated difficulty in finding qualified personnel. New college graduates did not have enough experience to lead teams and required supervision. Finding technical positions has been an ongoing challenge for a number of years and will continue unless more students enter the field.

The Aerospace industry in Brevard County was affected with the closing of Kennedy Space Center in 2010. Many of the skilled workers left the area, retired early after a long period of unemployment, or

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[46] Bureau of Labor Statistics, U.S. Department of Labor, Occupational Employment Statistics, accesseshttp://www.bls.gov/current/oes231011.htm, (visited *May 12, 2014*).

[47] (Labor, 2014) , Lawyers, Bureau of Labor Statistics, U.S. Department of Labor

[48] B (Labor, 2014) , Accountants and Auditors. http://www.bls.gov/current/oes132011.htm, (visited May 8, 2014)

[49] (Eliza Jacobs, 2011)

accepted positions not requiring as high a skill level[50]. CareerSource Brevard managed a program to find jobs for the high-skilled talent; however, there were few similar positions available in the area.

Other Industries

Eighty percent (n= 31)of the companies responding as *Other Industries* were companies with less than 50 employees, of which approximately three-quarters were under 10 employees. The number of job openings ranged from 1 to 100 projected hires for Cashiers and Processors.

According to the Small Business Administration Office of Advocacy reports that small businesses create 7 out of every 10 new jobs in the United States[51]. The ability for small companies to train staff to maintain the latest skills and required certifications can be a challenge. During focus group discussions the requirement for companies to pay for state mandated licensing and certification for non-degreed positions creates a hardship when the staff leave for a job paying as little as $.50 more an hour. If the certifications were on the Career and Professional Education (CAPE) list, students could complete the program before graduation and obtain employment at graduation.

Florida Ports

Florida has 12 ports with high paying jobs that support activities in port and at sea. The in-port jobs include standard business support positions with the at-sea positions governed by maritime law requiring graduation from a maritime academy or maritime trade school. Graduation from a maritime academy gives the successful student a Bachelor Degree as well as the Third Engineer Merchant Marine license. Maritime industry trade schools offer students both the prospect of entry level positions, and license renewals and upgrades. The Propeller Club of Port Canaveral works with K-12 students providing scholarships for students interested in pursuing a maritime career, speaking to students and providing tours of the port. Plans are being developed to create a four-year maritime college in Florida to train and retain the talent to manage the 10 deep water ports and miles of navigable rivers, and support the cruise ship business that supports the local economy.

Cargo activity at Port Canaveral is expected to increase significantly with the continued growth of the 2.8 million-barrel Seaport Canaveral fuel tank farm and the further development of bulk cargo facilities to serve the Central Florida market. New deep-water cargo berths are under construction and will provide access to more than 60 acres available for development. Historically large imports of cement and lumber are expected to rebound as the national economy and housing markets recover, and plans are proceeding for potential containerized cargo via domestic marine highway or international feeder service to Central Florida distribution hubs and consumer markets. The port is home to more than 200 tenant businesses, encompassing light manufacturing, professional services, restaurants, retail, marina and other port-related activities. In addition to these uses, the port provides major recreational

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[50] "Former space workers struggle after last space shuttle",http://usatoday30.usatoday.com/money/economy/employment/story/2012-07-15/space-workers-jobs/56234378/1
[51] (Advocacy, 2013)

facilities, (e.g., the Jetty Park campground) and public beach and waterside parks, serving both visitors and the local community.

Port Canaveral is currently home to seven year-round cruise ships from three major cruise lines – Carnival Cruise Lines, three Disney Cruise Lines and Royal Caribbean International. The excellent beaches, recreational and cultural amenities, shopping, the Kennedy Space Center and the Orlando theme parks and attractions offer port-of-call visitors many options to fill their day[52].

The Maritime Industry will need to replace Port Engineers, Port Captains, Barge, Harbor and River Pilots and Marine Chemists. The Barge and River Pilots need to have detailed knowledge of the local waters, which comes from either experience and or living around and on the waters over many years.

Maintaining the channels will require marine biologists and engineers. Ecologists will be needed to assure the quality of the local waters. The industry offers numerous job opportunities with high-paying jobs for both men and women. There are currently several female pilots that work out of Port Canaveral.
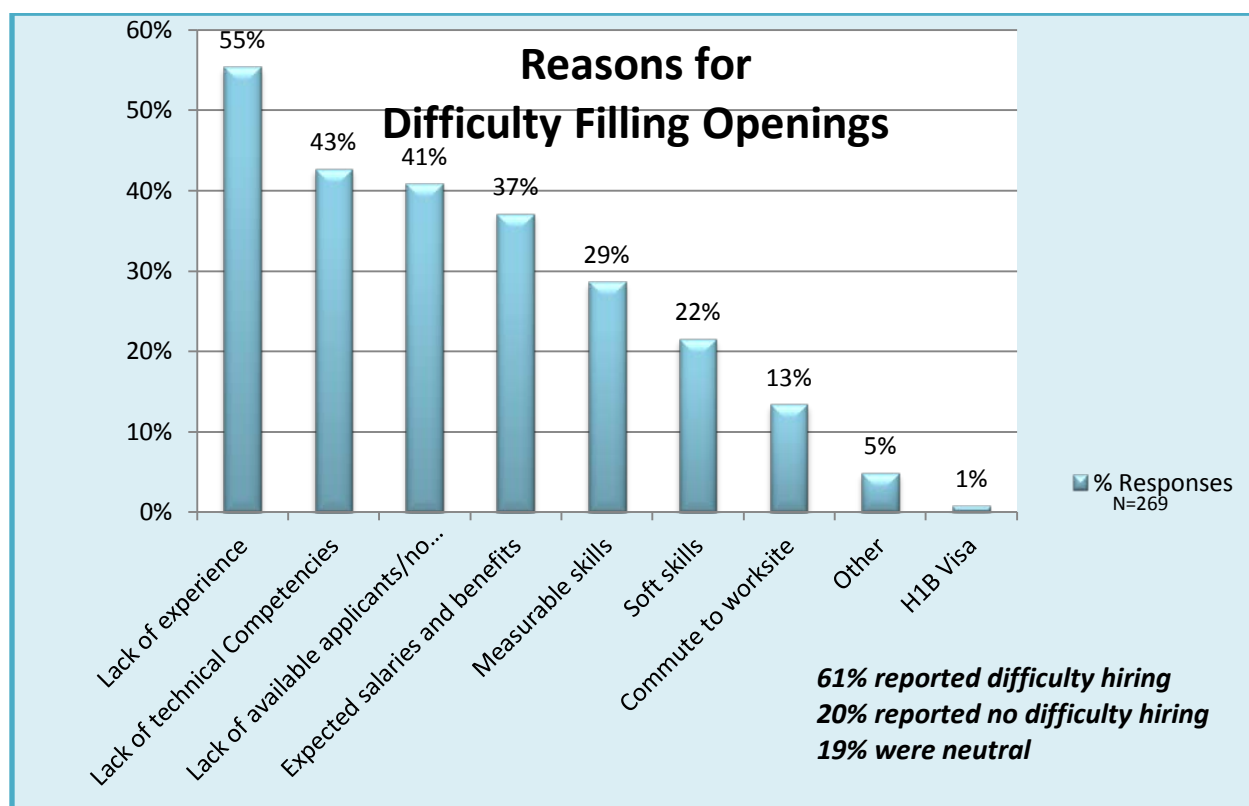
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[52] http://flaports.org/ports/port-canaveral/

Findings

Difficulty Hiring and Recruiting

Of the 269 companies responding to the survey, 61 percent reported difficulties hiring staff, which is slightly below the 66 percent national rate (Robert Half, 2013). A majority (55%) stated that lack of experience was a reason for not filling a position. Lack of technical competencies and lack of available applicants were the next most frequent responses. Forty percent of businesses reported that lack of skills drive entry level job vacancies in a national study[53]. During interviews, it was reported that HR staff were seeing candidates that had no interest in working, candidates arriving at the interview with family in tow, inappropriate dress, and having no knowledge of the company or job for which they had applied.

Manufacturing companies reported the greatest difficulty filling positions (84%), followed by Hospitality (83%), Health Care (79%), Government (65%) and Professional Services (61%).

Figure 16 Reasons for Difficulty Filling Open Positions

Reasons for Difficulty Filling Openings

- Lack of experience: 55%
- Lack of technical Competencies: 43%
- Lack of available applicants/no...: 41%
- Expected salaries and benefits: 37%
- Measurable skills: 29%
- Soft skills: 22%
- Commute to worksite: 13%
- Other: 5%
- H1B Visa: 1%

% Responses N=269

61% reported difficulty hiring
20% reported no difficulty hiring
19% were neutral

[53] (Mona Mourshed; Jigar Patel; Katrin Suder, 2014)

When asked "what were the most significant challenges to growth", a shortage of skilled and experienced workers was the identified as the top issue. Few companies were interested in increasing the use of H-1B Visas to fill open positions.

Figure 17 Workforce Barriers

Workforce Growth Barriers
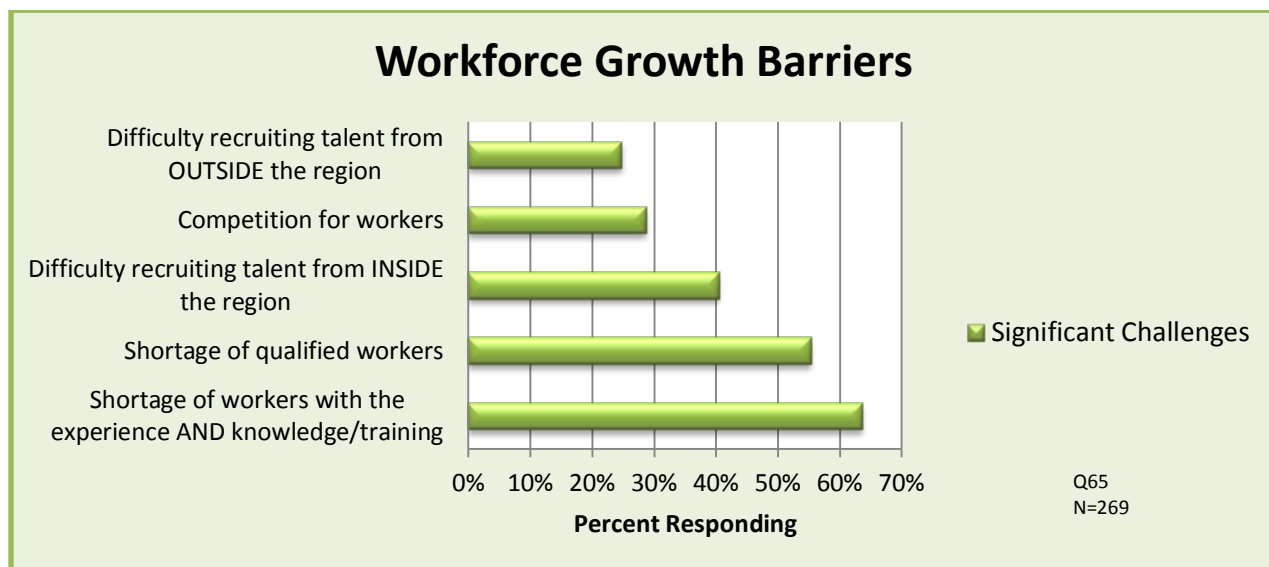
While 56 percent of the companies reported making no changes in business practices to fill jobs, 40 percent reported an increase in training for new hires, for interns, and for incumbent workers.

Figure 18 Changes in Business Practices

Change in Business Practices to Fill Jobs
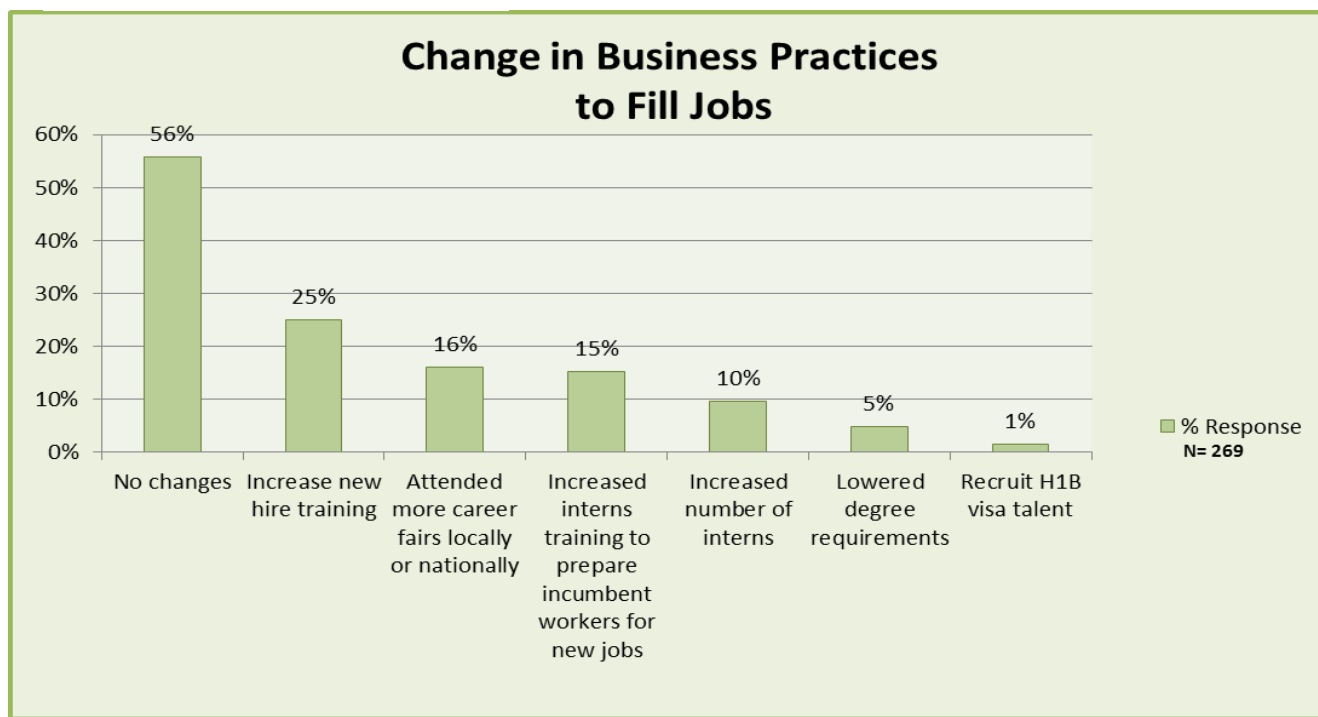
The need for persons with 3 - 5 years of experience was the greatest challenge for most companies, who reported in interviews and focus groups that such people have needed experience to manage work teams and an understanding of the industry sector. A large concern expressed by businesses is staff leaving after being trained and becoming productive, though tenure on the job has actually lengthened on average and has been around three years for the past three decades for 25-34 year olds. (Ferguson & Lorin Hitt, 2014)P 64-65.   There was much discussion about the value of hiring a "job hopper" to fill positions requiring experience.

Studies reveal that more than half of hiring managers say that the most productive years on the job are between three and seven years[54] , thus the importance of focusing on retention strategies.

Long Term Unemployed

The factors attributed to a person experiencing long term unemployment relate to the state of the economy, as measured by the unemployment rate when they were laid off, according to a study by Ben Casselman using the Current Population Survey Data. Those laid off during the 2009 recession remained unemployed longer because of the slower than expected recovery[55]. According Casselman, "No other characteristic — age, sex, race, marital status, education or occupation, among others — had even close to that big an effect."

Someone who loses a job when the unemployment rate is 8 percent or higher is, on average, three and a half times more likely to end up long-term unemployed than someone who gets laid off when the unemployment rate is under 6 percent. Men are a bit more likely to become long-term unemployed than women; blacks are more likely than whites; and, most significantly, older workers are more likely than younger. Casselman states this is consistent with both anecdotal evidence and quantitative research suggesting that older workers have more trouble finding jobs, due partly to implicit (and occasionally explicit) age discrimination[56].

A number of studies have shown candidates with long gaps in their work history are often rejected even if their prior experience is well-suited for a job. It could be bias: a sense that anyone out of work that long must be damaged goods. It could be a fear that their skills have atrophied[57]. However, during interviews employers are more interested in a long term unemployed person that has been active while out of the workforce volunteering, seeking to refresh skills, and obtaining new certifications, rather than "sitting around waiting." During the interviews and focus groups, several businesses related stories of individuals not accepting a job because the salary was below their standards. Many professionals who had been laid off had a difficult time finding work, at the same pay, in the same industry, and chose to wait longer until they could find a similar job.

It appears that the long term unemployed seeking to update their skills are in a good position to find a job.

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[54] (Ferguson & Lorin Hitt, 2014)
[55] (Casselman, 2014)
[56] (Casselman, 2014)
[57] (Stratton J. , 2013)

Recruitment

There are many costs associated with recruitment, from direct costs including the paperwork necessary to separate former employees and conduct exit interviews to the costs of advertising open positions, sifting through resumes and interviewing candidates, and conducting initial training. The Society for Human Resource Management (SHRM) estimates that replacing a single employee costs roughly one and half times that employee's annual salary. Finding a suitable replacement can take anywhere from three to six months. Considering that most people only give two weeks' notice, the indirect costs become painfully clear[58].

Indirect costs of turnover[59] include lost understanding, lower productivity, missed opportunities and missed deadlines. Non-quantifiable costs include the dip in morale if many employees begin to leave indicating that something is very wrong. This is especially true of long-term employees who are in good standing with the company[60].

Recruitment strategies are key to the success in finding and keeping talent, and represent a major cost for employers. To replace a vacant position it costs[61]:

> ➢ 30-50 percent of the annual salary of entry level positions
> ➢ 150 percent for mid-level positions
> ➢ 400 percent for specialized positions

As an example of the cost of a vacancy, companies in the region reported 53 current and future Software Engineer vacancies. The average annual mean salary in the region is $86,070, equating to a recruitment cost of up to $344,280 for each position.   There are an estimated 608 customer service positions open with an average salary of $28,800[62] or $8,640 per vacant position. Assemblers cost a manufacturing company approximately $8,286.

Position	Open Positions	Annual Salary	Est. Cost of Vacancy
Software engineers	53	$ 86,070	$ 344,280
Customer Service Reps	608	$ 28,800	$ 8,640
Bus Driver	248	$ 27,880	$ 8,364
Assembler	223	$ 27,620	$ 8,286
Fire Fighters	151	$ 41,560	$ 62,340

Figure 19 Cost of Vacant Position

The economic loss resulting from open positions can result in:**[63]**

> ➢ Loss of sales volume, reduced service fulfillment, and customer attrition

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[58] (Bridge Capitla Solutions, Inc, 2014)

[59] Estimating the Cost of a turnover
https://plus.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CEAQFjAC&url=http%3A%2F%2Fwww.shrm.org%2FTemplatesTools%2FSamples%2FMetrics%2FDocuments%2FTurnover%2520Costs.xls&ei=Jfh9U9H2NMeYqAbTmYCYDA&usg=AFQjCNHl3GH6XnJXZ_vvQPzPCkZ1i_RapA&sig2=PMmMKOgJDcFBhhCrUnW6AQ

[60] (Bridge Capitla Solutions, Inc, 2014)

[61] Ropella. (2014). Rpella.com. Retrieved January 16, 2014, from The Cost of Vacant Positions: http://www.ropella.com/pdfs/Ropella-Cost_of_Vacant_Postions.pdf

[62] (Labor, 2014) http://www.bls.gov/current/oes434051.htm, Customer Service Rep, Accessed, May 15, 2014

[63] Ropella: The Cost of Vacant Positions, http://www.ropella.com/index.php/toolbox/articles/the_cost_of_unfilled_jobs

- ➢ Delays in product development and new product launches
- ➢ Revenue delay from increased Time-To-Market,
- ➢ Lower quality work
- ➢ Reduced leadership and idea generation
- ➢ Accelerating turnover
- ➢ Frustration over perceived lack of corporate support
- ➢ Increased poaching of high-demand talent

When companies recruit, assessing the candidates to ensure a fit with the corporate culture, supervisors, and work teams requires a thoughtful and strategic approach. In health care, the opportunity to evaluate talent during the mandatory clinical rotations offers a broader window into the personality of the candidate. Other industries can utilize internships or apprenticeships to assess candidates. Smaller companies are less likely to have the budget to support an intensive search and interview process. Many mid-size to large companies have established "Academies" as an entry point providing training on the business processes and any additional skills needed that have not been acquired in the classroom. This strategy allows for the company and employee to assess corporate fit, motivation, and application of skills before they "meet the client."

There are positions that when left unfilled, will indirectly impact a company's productivity. There is a projected need for Child Care Workers (n=36), which are traditionally high turnover positions because of the lower pay scales. Vacancies result in Child Care providers unable to meet child-to-adult ratios, impacting the number of children in care and parents' ability to work. Leaving Educational, Vocational, and School Counselors (n=99) and Teachers (47) positions open impacts the skills development of the future workforce, particularly the counseling that is needed to identify career opportunities in the high-demand jobs.

Cost of a Bad Hire
The cost of a bad hire is equally as damaging, particularly for small to mid-size companies that operate on small margins and with lean HR staffs. Studies have shown that, on average, supervisors spend 17 percent of their time managing poorly performing employees. HR professionals reported that a poor hire cost them productivity (39%) and fewer sales (11%).[64] According to the U.S Department of Labor, the average cost of a bad hire can be 30 percent of the individual's first year potential earnings. A bad hire at the management level can result in significantly higher financial costs to a company.

Recruitment Methods
Employee referral was the most frequent recruiting method reported by companies participating in the survey as well as in the focus groups. According to *Jobvite*[65], the average employee will have 150

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[64] (Robert Half, 2014)

[65] http://theundercoverrecruiter.com/infographic-employee-referrals-hire/ Jobvite is an online recruiting platform for the social web providing applicant tracking, recruiting CRM and social recruiting software solutions.

contacts on social media networks – 100 employees translates to around 15,000 contacts (and possible candidates). The impact of employee referrals on the recruitment process includes:[66]
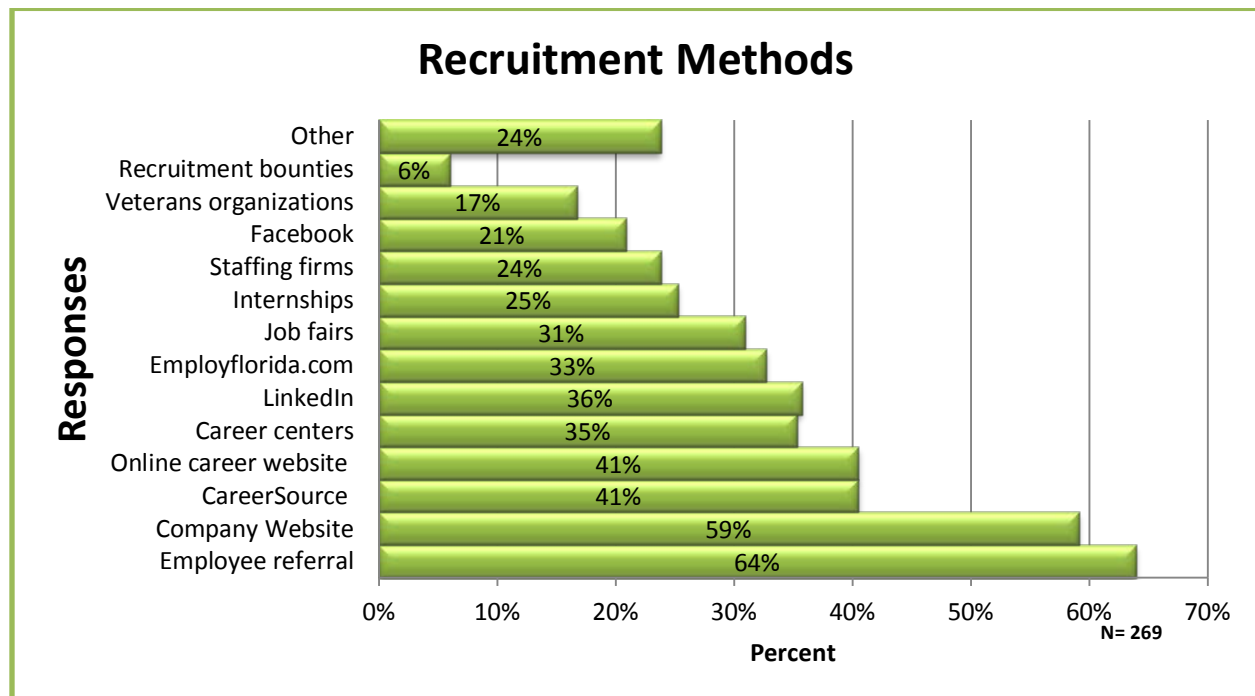
> The highest *applicant to hire* conversion rate – while only 7 percent apply through an employee, this group represents 40 percent of all hires.

> Applicants hired from a referral begin their position quicker than applicants found via job boards and career sites (29 days compared with 39 days via job boards and 55 via career sites).

> Overall, referral hires have greater job satisfaction and stay longer at companies – 46 percent stay over 1 year, 45 percent over 2 years and 47 percent over 3 years.

> Sales persons are the most hired position from employee referrals.

> Sixty-seven percent of employers and recruiters said the recruiting process was shorter, and 51 percent said it was less expensive to recruit via referrals.

The current employee takes accountability for the new hire and assists with integration into the company culture. However, only six percent of the survey respondents paid recruitment bounties to employees. The 11 companies reporting using recruitment bounties all agreed that they were having difficulty filling positions. Professional Services and Technical and Scientific were among the top two using bounties. During the interview process, respondents noted the need for a higher level of technical skill and experience required a greater effort to find the right talent; bounties attracted talent.

As budgets were slashed during the recession, new tools were created to propel the use of social recruiting and use of the bounty. LinkedIn Bounty Network and Bright Networks/Job Bounties are just two examples of new tools being used to reduce recruitment costs with fewer staff. The rise in the use of social recruitment strategies is evidenced in the responses to recruitment methods in the survey: employee referrals (n=64%) and LinkedIn (n=35%).

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[66] IBID.

Figure 20 Recruitment Methods

Recruitment Methods

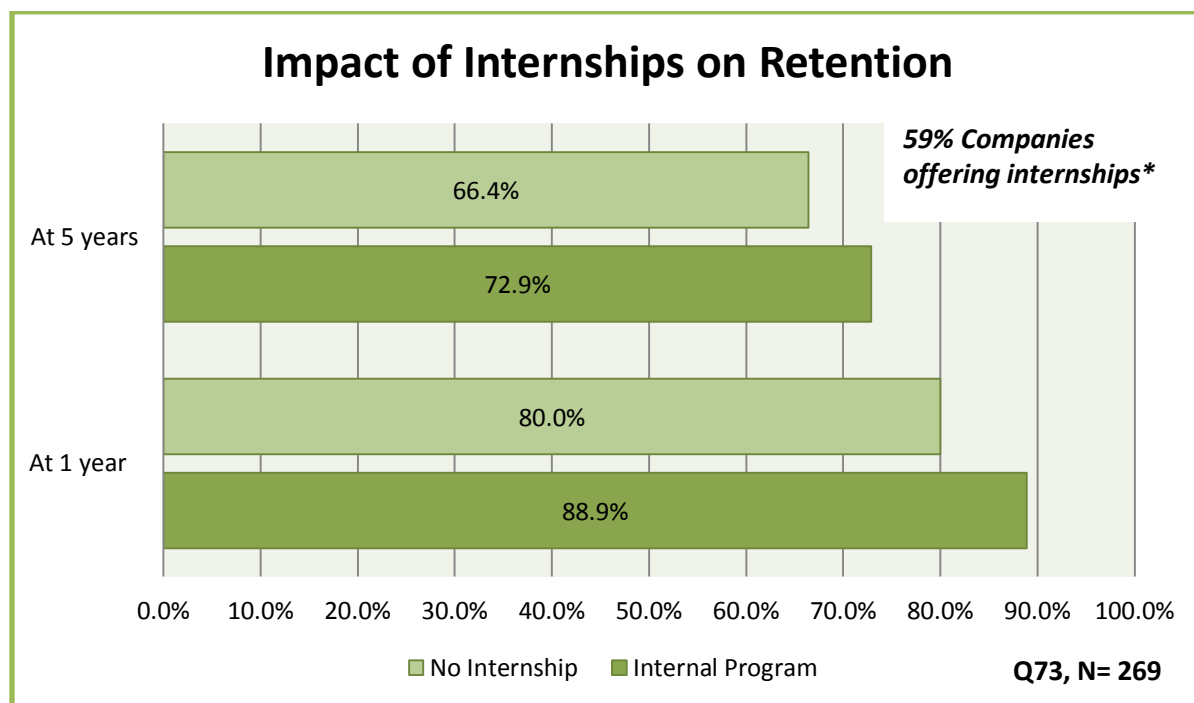| Response	Percent
Other	24%
Recruitment bounties	6%
Veterans organizations	17%
Facebook	21%
Staffing firms	24%
Internships	25%
Job fairs	31%
Employflorida.com	33%
LinkedIn	36%
Career centers	35%
Online career website	41%
CareerSource	41%
Company Website	59%
Employee referral	64%

N= 269

Company websites are increasingly dynamic and market jobs as well as the corporate culture. Many prospective candidates, particularly from the Millennial cohort, are seeking information about a company's mission and perspective on work-life balance and are able to "observe" this information on the company website.

Craigslist (n=12), newspapers (n=7), and word-of-mouth (n=9) were some of the methods (n=64) reported under *Other.*

Internships

While employee referral provides the "high touch" hiring approach, Internships offer a unique opportunity to source talent, with 59 percent of survey respondents offering internships. According to the 2014 National Association of Colleges and Employers (NACE) Internship Study [67] employees who completed an internship or co-op program with their employer are more likely to be with the company at both the one-year and five-year retention benchmarks. In 2013, NACE reported that 89 percent of interns offered employment remained with the company one year later and 73 percent were there five years later, compared to 80 percent and 66 percent, respectively, hired without an internship.

**Figure 21 - Impact of Internships on Retention**

Impact of Internships on Retention

59% Companies offering internships*

- At 5 years: 66.4% (No Internship), 72.9% (Internal Program)
- At 1 year: 80.0% (No Internship), 88.9% (Internal Program)

□ No Internship ■ Internal Program

Q73, N= 269

Retention

Compensation is attributed to the top three retention-related issues identified in the study (see chart below), with more experienced talent leaving after several years of experience. (Additional responses (78%) reflecting talent leaving the regional workforce included retirement (17%), leaving the area (18%), and leaving the workforce for other reasons (25%).)

Figure 22 Retention Challenges
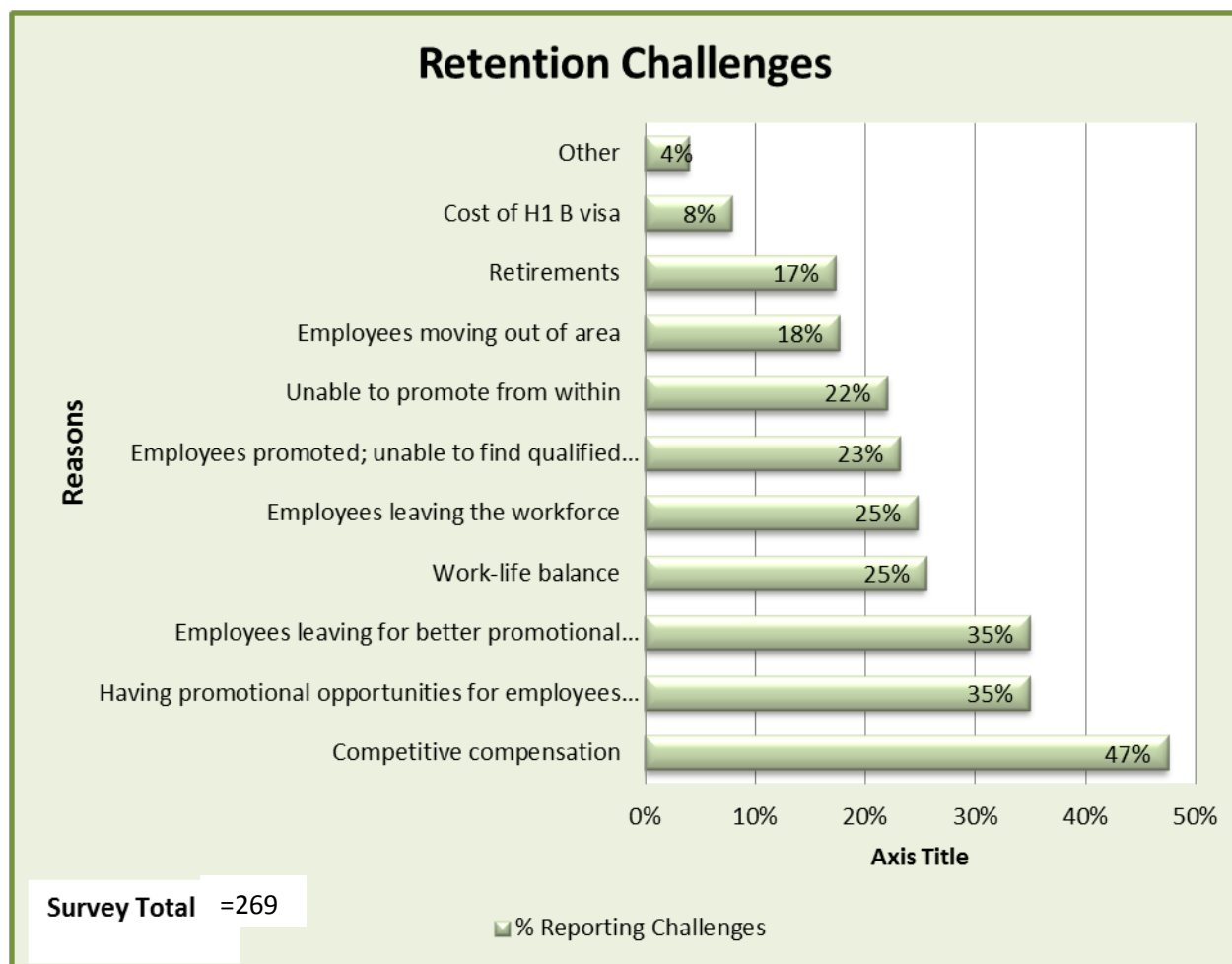
A commonly held perception is that Millennials are job-hoppers in search of the perfect position. This is true according to a 2012 Career Builder study of generational differences.[68] However, tenure rates have remained the same for 25-34 year old workers for the past three decades.[69] Today's 25–34 year olds will take a job out of college that is not necessarily a good fit for them but will allow them to earn money to pay off college debt. In research assessing why applicants apply for a job, 21 percent of younger workers (18-29) chose work-life balance among the top three reasons for applying. Development opportunities also are more appealing to young professionals; 14 percent selected training opportunities as a top

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[68] (Ferguson & Lorin Hitt, 2014) page 63
[69] (Ferguson & Lorin Hitt, 2014) page 65

reason for applying. Millennials look more to flexible workplaces and learning environments, while older workers are drawn to brand prestige[70]. Millenials were adversely affected by the 2008 recessions and the slow recovery because they had recently entered the job market and were the least experienced and were more likely to be laid off than their more experienced counterparts.

The Nursing field experiences high turnover and according to the American Nursing Association[71] continuing education is a motivational factor for retaining nurses, as are factors including flexible scheduling and competitive pay. Sixty-six percent of survey respondents stated that "cultural fit" was an important part of the hiring decision. During interviews "culture is king" was a universal criterion when making a hiring decision. Candidates had to have the right mix of hard and soft skills to be considered, with "potential to learn" a consideration for those who lacked experience. As the economy rebounds nurses in the area are working less hours and are able to easily relocate.

In the survey, retirement did not appear to be a major problem for companies, however, in the focus groups, the age of the workforce and worker replacement, particularly in Manufacturing, was of concern. Baby Boomers staying in the workforce longer can provide an opportunity for experienced workers to mentor new hires.

Training

A significant challenge for companies responding to the survey is finding talent with 3-5 years of experience (n=60%). As an alternative, developing existing staff is the most commonly used strategy to address skills gaps, according to the 2013 MANPOWER 2013 Talent Gap Research[72]. Employers responding to the Central Florida survey noted the lack of promotional opportunities as a retention challenge (25%). Interviews further clarified that the opportunity deficit is caused by a lack of qualified internal candidates which can be mitigated by additional training and experience.

According to a recent Bersin by Deloitte study on corporate learning trends,[73] the technology and manufacturing industries showed the biggest budgetary gains last year with both sectors showing 20 percent increases in training expenditures. Bersin's analysis says that these significant investments are backed by strong rationale because technology is a high-growth, fast-paced arena that demands almost constant change, and, U.S. manufacturing is undergoing major shifts to remain competitive at a global level. Overall the spending on training rose 12 percent in 2012.

During the interviews, companies discussed in-house training programs designed to prepare new hires to be successful in the workplace. Larger companies spend on average $706 per employee/year nationally for training. Mature companies that have effective learning and development programs spend

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[70] (Ferguson & Lorin Hitt, 2014), p128

[71] According to American Nursing Association continuing education is a motivational factor for retaining nurses. Other factors include flexible scheduling; competitive pay

[72] (Manppower Group, 2013)p.10.

[73] (Bersin by Deloitte, 2013) http://www.tlnt.com/2013/01/23/new-study-says-spending-on-training-jumped-by-12-last-year/
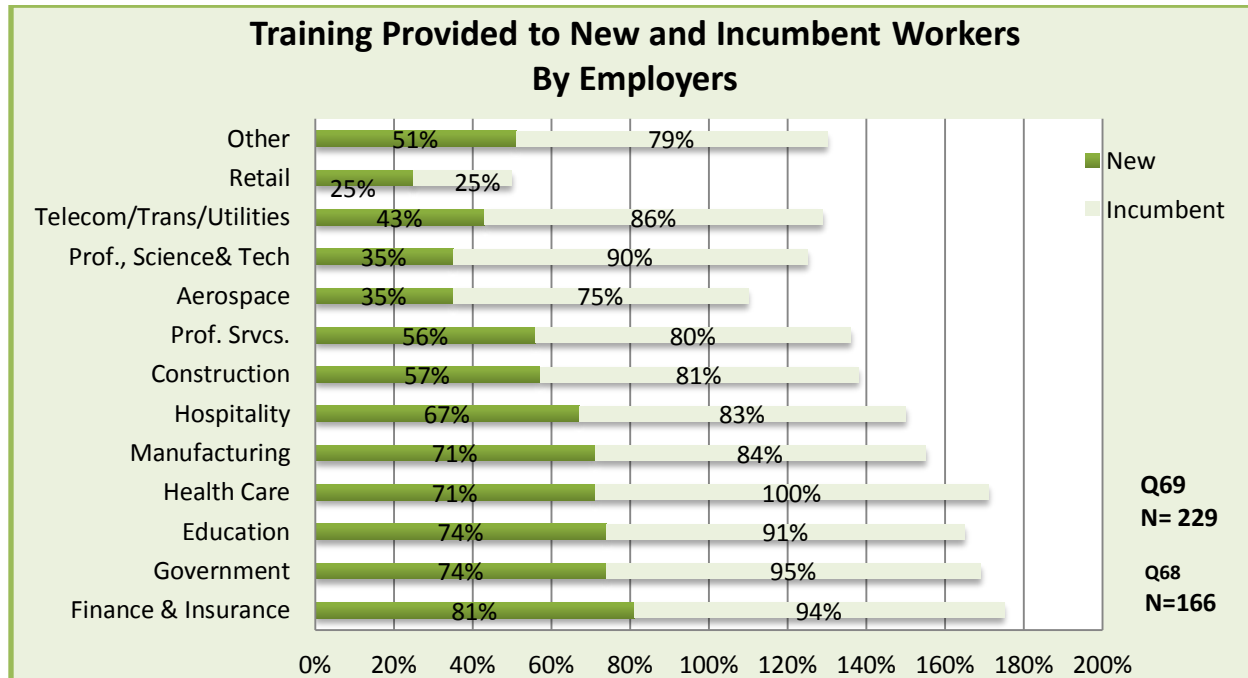
even more, averaging $867 per employee/year building the required human capital within their organizations[74].

The Bersin by Deloitte study also noted that large companies are spending money on social learning which engages the employee in a formal course AND a discussion of the learning. Companies with effective social learning programs also organize employee networks, connecting novices to experts through expertise directories, and sharing knowledge through communities of practice.[75] The result is the move from a blended to continuous learning environment. Employers in the Central Florida area reported similar training program strategies to generate talent and retain the current workforce.

During focus group discussion, Central Florida businesses concurred that a continuously learning workforce is necessary to maintain a competitive edge. The willingness of new hires, both long-term unemployed and new graduates, to embrace continuous learning, is an expected value that managers consider when making hiring decisions.

Of the companies participating in the study, 57 percent reported having a formalized training program for new hires and 82 percent provided continuous training to seasoned staff. Finance & Insurance, Government, Education, and Health Care reported the highest rates of providing training to both new and incumbent staff. These industries are highly regulated, with rapid changes in policy, practices and knowledge.

Figure 23 Training Provided to New & Incumbent Workers by Employers

Training Provided to New and Incumbent Workers By Employers

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[74] (Bersin by Deloitte, 2013)

[75] http://www.tlnt.com/2013/01/23/new-study-says-spending-on-training-jumped-by-12-last-year/

The industries where technology is central to the business reported the highest rate of training for existing staff to maintain the skills set of employees. There are many jobs in Construction, Manufacturing and Aerospace that require training that qualifies employees to handle specialized equipment. This training is costly for the individual and also for small companies, especially when the positions turn over frequently due to the rigor of the environment. Adding more construction and manufacturing certifications to the CAPE list and encouraging students to complete the certifications prior to graduation, would benefit the smaller businesses

Companies in the Central Florida region reported increased new hire training (25%) and internal training (15%) when asked what changes a company has made to increase the talent pool to fill positions. Many used the services of the CareerSource organizations and requested an increase in the opportunities for small companies that have small profit margins. CareerSource organizations administer two training grant initiatives across the state – Quick Response Training (QRT) and Incumbent Worker Training (IWT) – to help businesses and workers advance and maintain competitiveness and technological skills. The local workforce boards offer a host of training initiatives also designed to boost worker competitiveness, such as On-the-Job Training, Employed Worker Training, internships and more.

Soft Skills

Soft skills are difficult to quantify, but can impact the success of an employee in the workplace. Also known as "people skills," they relate to the way a person interacts within the corporate culture with teams and customers. Hard or teachable skills, learned in the classroom or on the job, are quantifiable skills that an employer can match to a specific function in the company. Depending on the job requirements, many employers reported that they would hire someone exhibiting soft skills that had the required degree and no experience rather than a person with the technical skills and experience but lacking critical soft skills.

Figure 24 Soft Skills in Demand
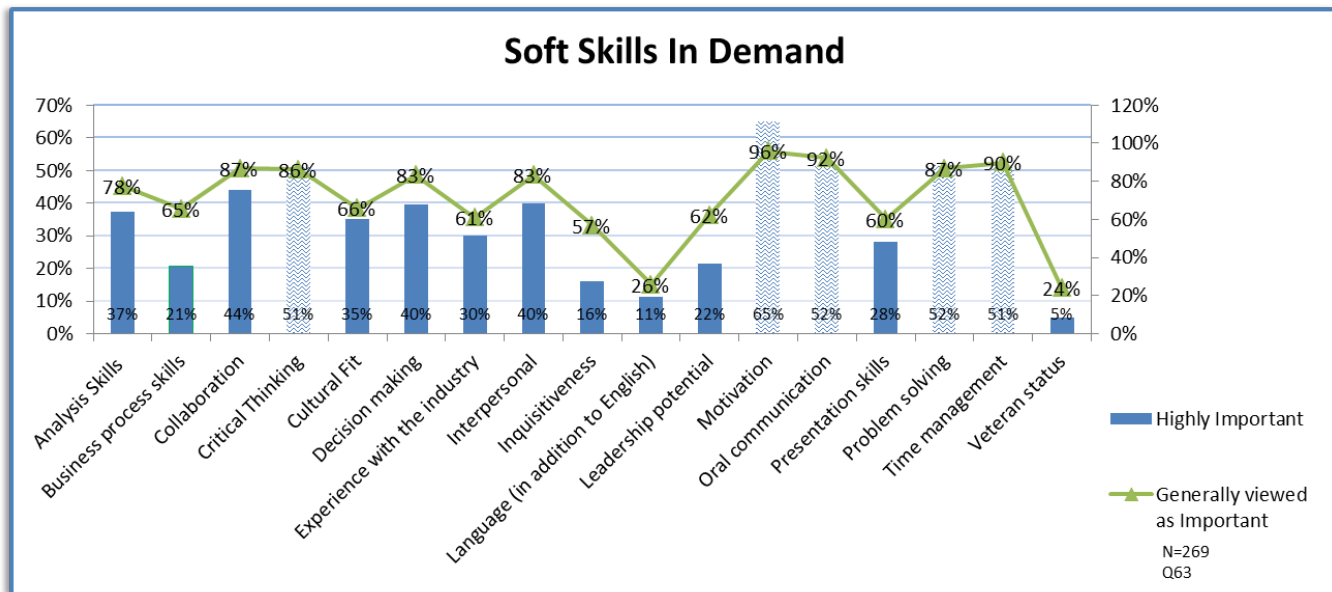
"Would you hire Socrates?" is the title of an opinion piece in the *Wall Street Journal* that asks businesses what skills they are really seeking in new hires – experienced and new graduates. It identified a recent analysis of the Census Bureau data by the Association of American Colleges and Universities and the National Center for Higher Education Management Systems, which found that "at the peak earning ages (56-60 years), workers who majored as undergraduates in the humanities or social sciences earn annually on average about $2,000 *more* than those who majored as undergraduates in professional or pre-professional fields[76]." What a Liberal arts degree teaches is critical thinking which is one of the top five soft skills that employers are seeking in both new and experienced workforce.

During the interviews with business leaders in the region, critical thinking and collaboration skills were identified as very important skills for staff to possess when solving problems related to competitive markets and slim profit margins. A recent study of U.S executives say they need a workforce equipped with skills beyond the traditional "three R's" of reading, writing and arithmetic to grow their business in the 21st century. Additionally they note that most staff members are "average" in the critical "four Cs": Critical thinking, communication, collaboration, and creativity.[77]

The level of technical skills a person is expected to bring to the job varies based on complexity of the task; however, there are few positions where critical thinking and problem solving are not required. As an example, an Assembler, a job in high demand with over 223 vacancies in the regions, and a salary range of $11-$13 per hour, requires critical thinking skills. A job description for recent openings stated…"*The position requires mechanical assembling, troubleshooting, and inspecting product. Ability to read (and understand) blueprints and schematics.*" A high school degree or equivalent was required. A Design Engineer at the same company, with a Bachelor's and experience, is required to apply technical knowledge to customer needs and design solutions that "…establish credibility and be decisive while supporting organization's overall goals," as well as a thorough understanding of continuous process improvement.

During interviews, fundamental skills such as counting money and basic math and reading, combined with critical thinking and problem solving, increase the success of employees.

Motivation was the most highly rated soft skill and it was reported during the interviews and focus groups that many candidates lacked the motivation to do the job. Some employers found candidates unwilling to enter the job market until their unemployment benefits were exhausted, rather than take a job that either paid lower than previous jobs or in which conditions were too challenging.
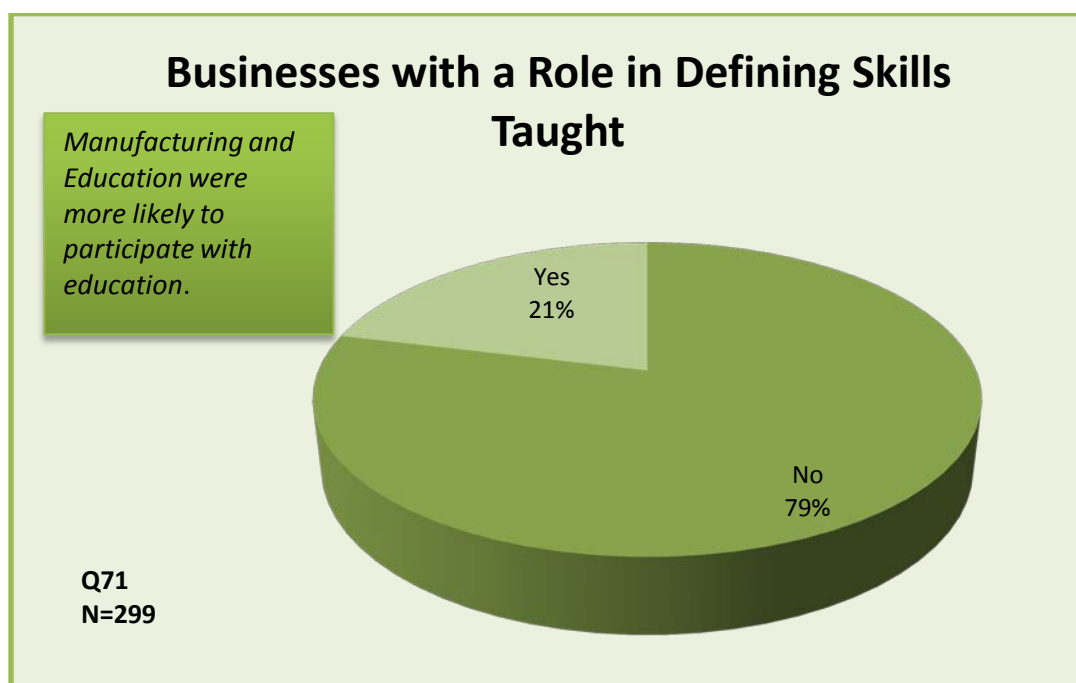
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[76] (Samuelson, 2014)

[78] Fifty–seven of the 269 respondents reported having input. Of this group Manufacturing (N=16) and Education (n=14) represented 28% and 25% respectively.

Business and Education Partnerships

According to the Talent Gap Online survey, only 21 percent (n= 57) of respondents have a role in influencing the curriculum at area educational institutions. Manufacturing and Education represented the industries reporting the most participation in skills development.[78] Business participation was frequently on College Advisory Boards (34%) and presentations to students (23%), with 20 percent of the businesses participating in curriculum development. During interviews and focus groups, businesses were very interested in participating in the definition of the skills students need prior to entering the workforce. The integration of the needed skills into various phases of the educational process are key to the preparation of graduates to enter the workforce using such tools as internships, boot camps, self-learning, and classroom engagements.

Figure 25 - Business with a Role in Defining Skills Taught

Businesses with a Role in Defining Skills Taught

Manufacturing and Education were more likely to participate with education.

Yes
21%

No
79%

**Q71
N=299**

Education provides students with knowledge and critical thinking skills, yet businesses hire skilled workers – someone *who has some special skill, knowledge, or ability in the skill needed for the position.* There is a need to refine the pathways taken by students on their journey from education to employment that integrates the knowledge learned in the classroom and the skills required by business. The jobs skills are constantly changing and some will be obsolete at the conclusion of a four-year college degree.

The journey from education to employment is defined by parallel tracks that require the student to decide a pathway based many times only on classroom experience. Many make decisions without knowledge of a wide range of career options, practiced skills, or exposure to area businesses. The

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[78] Fifty–seven of the 269 respondents reported having input. Of this group Manufacturing (N=16) and Education (n=14) represented 28% and 25% respectively.

students can struggle with the relevancy of classroom knowledge and application of that knowledge on the job.   (Mona Mourshed; Jigar Patel; Katrin Suder, 2014)

As we enter the Shift Age[79], the age of constant change, there will be one constant – the speed with which students need to acquire workforce skills will increase rapidly. Students now more than ever need to learn how to think strategically, continuously learn, practice, wonder, and inquire. The student must be given opportunities to think through problems and work on multidisciplinary teams to create solutions using relevant knowledge gained in the classroom combined with the skills required in the workforce.

The need to infuse new learning opportunities for students to acquire the foundational and technical skills needed by employers is evidenced by the growing cost of education. The emergence of Massive Open Online Courses (MOOC)[80] holds the promise of resisting the upward-trending cost curve of a traditional education[81], and creates an opportunity to blend learning platforms. The blending of the traditional classroom-based learning and online and experiential learning, with internships and boot camps, can lead to an increase in students acquiring the necessary skills before entering the workplace. Internships and boot camps facilitate increased awareness by students of the variety of career opportunities which will result in an increase in the talent pool.

The expansion of certification programs that emerge from new learning strategies can include the development of industry-defined programs that require demonstration of competency through testing and demonstration of skills learned. The new certifications can be added to the CAPE list to increase the number of students competing certifications before graduation.

The Career and Professional Education (CAPE) Act was created by the Florida Legislature with the intent to attract and retain targeted, high-value industries and to develop a knowledge-based economy. It seeks to ensure that education, industry, workforce and economic development partners in every community are collaborating to create new and meaningful opportunities for students. By providing young people with the cutting-edge training and certifications they need for high-skill, high-wage jobs in Florida's target industries, CAPE supports diversification of the state economy.

CareerSource Florida, in collaboration with the Florida Department of Education and the Florida Department of Economic Opportunity, annually approves and publishes the state's Comprehensive Industry Certification List. This list is used by school districts in planning and designing programs that support their regional economies. Additions to the list are considered for occupations that are either in demand or tied to emerging industries, or meet certain other criteria.[82]

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[79] (Houle, Entering the Shift Age, 2012) Shift Age definition speed of change now part of our environment, it is constantly accelerating

[80] Massive open online courses – free online courses available to anyone, allows the participant to audit or take a test to measure competency.

[81] (Douglas Belkin, 2014)

[82] http://careersourceflorida.com/initiatives/career-professional-education-act-cape/

CareerSource Brevard – Industry Partnerships

An interesting model has emerged in Brevard County where CareerSource Brevard has contracted with Eastern Florida State College (EFSC) to manage the Industry Advisory Boards established to provide input on curriculum development. It is a complementary to CareerSource Brevard's service delivery model, with priority on the qualified talent needs of businesses. The College has a focus on the education of students and development of skills that will help them move into the regional economy. In coordination with EFSC, CareerSource Brevard conducts, facilitates or coordinates development of vibrant advisory panels as requested by the College, and mutually agreed to by the parties. There are eleven Industry Advisory Groups. See Appendix for list of Advisory Boards.

Workforce Diversity

Diversity in the workplace — cultural, religious, age, gender and race, among other differences — includes people from different backgrounds working together. Diversity of thought creates the opportunity for innovation and change as businesses evolve to compete in the global marketplace.

The impact of Millennials[83] on the workplace and the relationship between the generations was a topic of both the interviews and focus groups. The generational shift currently going on in the workforce is due to the promotion of Millennials into positions of authority through this decade, bringing their connectedness through technology, collaborative way of engagement, their impatience and need for feedback, along with a strong sense of civic mindedness to the workplace. Following right behind the Millennials are Digital Natives[84], a generation that has never known a world without a cell phone, internet and multiple mobile devices.[85] They have always been able to search for information online, used computers to complete school work, and have more social media friends than attend their school.
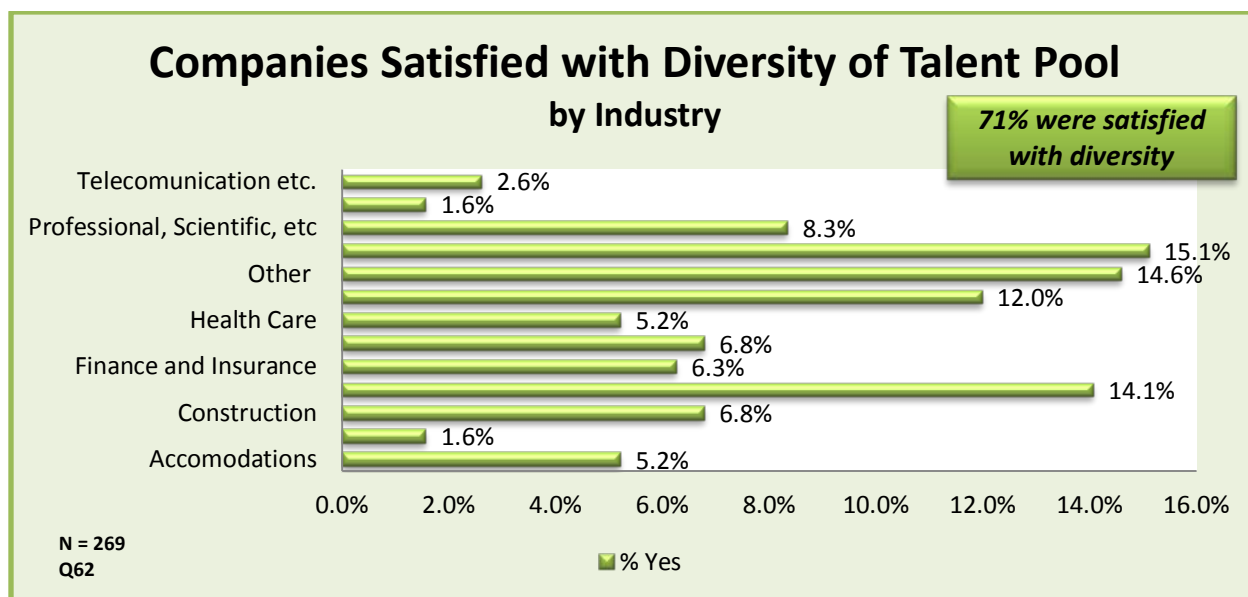
When asked about the ability to recruit a diverse workforce, 71 percent of business leaders reported satisfaction with the candidate pool. During interviews and focus groups, the ability to recruit minorities and women for engineering and technical positions was noted as difficult. It was noted in the focus groups that women were more likely to be recruited out of the area for higher salaries after 1 – 2 years on the job.

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[83] The Millennial generation is a group of young people whose birth years range from **1980** to **2000**.

[84] Digital natives are born after 1980. Those born after 2001 are considered the all-digital native and will rival the Millennial in the workplace 7-10 years.

[85] (Houle, Entering the Shift Age, 2012) pp.95-96

Figure 26 - Companies Satisfied with Diversity of Talent Pool, By Industry

Companies Satisfied with Diversity of Talent Pool
by Industry

71% were satisfied with diversity

Industry	% Yes
Telecomunication etc.	2.6%
	1.6%
	8.3%
Professional, Scientific, etc	15.1%
	14.6%
Other	12.0%
	5.2%
Health Care	6.8%
	6.3%
Finance and Insurance	14.1%
Construction	6.8%
	1.6%
Accomodations	5.2%

N = 269
Q62

% Yes

Recent trends in undergraduate enrollment reflect the growth and changing composition of the U.S. college-age population. Most notable, minorities are an increasing fraction of undergraduate students, and whites are a decreasing fraction. More women than men are enrolling in college. Overall, more women than men graduate from college with a bachelor's degree, however men earn a higher proportion of degrees in many science and engineering fields(STEM) of study.[86] While the overall percentage of 24 year olds in the United Sates with STEM degrees is five percent, it is just two percent among African Americans and 2.2 percent for Latinos.[87] Studies have identified that the attrition rate for minorities from STEM degree programs is greater among minorities. A potential role for business to increase the graduation rate among STEM students is to assist in engaging those students early through internships, classroom preparation, and curriculum design that introduces the newest technologies.

Marketing

Marketing the region to attract both experienced and qualified talent was an issue discussed in focus groups and interviews. Marketing the wide range of high paying jobs is key for companies to be able to recruit talent into the area. Marketing strategies need to address opportunities for family members to find a job and have access to a quality education. While the area is well known for the hospitality industry, businesses agreed there was a need to market the region to attract more diverse types of businesses and talent from outside the area. One business leader welcomes competition to increase the local talent pool and to attract more talent to the area. As the industries diversify, a multidisciplinary range of graduates will find rewarding jobs and remain in the area.

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[86] (Foundation, 2013)
[87] http://www.onlineuniversities.com/blog/2012/06/10-startling-stats-about-minorities-stem/

The need to broadcast the relationship of area colleges and universities as a source of talent for a wide range of industries was mentioned frequently in interviews and focus groups. In a recent article in the *Orlando Business Journal*, Andrew Tosh, CEO of GameSim Inc., stated that he expanded in Orlando because of the talent his company was able to find[88]. Positions currently open at GameSim are highly technical software developers, entry level and experienced.

Many of the business leaders agreed that focusing a marketing strategy on all industries in the area would assist their recruitment efforts. The smaller companies with limited HR staff have a difficult time recruiting and believe a well-defined local marketing strategy would be effective. Bringing talent in from outside the area can be costly, particularly if they leave after a year. An increased *regional* marketing effort will reduce the recruitment costs of businesses.

Addressing the talent gap issue with aggressive and innovative solutions will encourage businesses to relocate to and expand in the region because of our commitment to a trained and qualified workforce.

Next Steps

The talent gap is traditionally defined by the number of open positions rather than by the width of the talent pipeline. The I-4 corridor is home to many educational institutions teaming with businesses to provide the skills training to fill open positions. A solution driven talent discussion should focus on the resources available and create new options for students, long term unemployed, and incumbent workers, to learn emerging skills defined by business and integrated into all levels of the learning process. Foremost in a corporate decision to relocate or expand is access to "a workforce that fulfills the company's vision and improves its ability to deliver a product or service"[89]. We know the high demand skills. Focus on strengthening and expanding the skills development options to produce the talent will develop the current workforce and prepare a pathway for future talent as well.

The decision by USAA to expand in Tampa in 2013, following the 2012 Technology Talent Gap study[90], is evidence that this is a positive approach to regional economic development. The company stated the commitment to "real world training for high demand jobs and streamlined internships to fill gaps between corporate need and available skills...helped Tampa stand out from the rest." (Manning, 2014)

The rapid pace of change necessitates a similar pace for skills development. During interviews and focus group sessions, expanding skills development strategies in the regions and clarifying the career pathways that utilize the high demand skills, were identified as the key to filling open positions. The challenge is to find the balance between current education and business collaboration and innovative strategies to widen the talent that strengthen the economic base of the region.

The Technology Talent Gap Analysis identified similar issues in 2012. The study recommendations were implemented by a leadership team lead by the Tampa Bay Technology Forum. Many of the

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[88] Abraham Aboraya, Orlando Business Journal, "3 Questions with Andrew Tosh, CEO of GameSim Inc. – and brother to a star", p. 8, April 18, 2014
[89] (Burnell)
[90] (Patricia K. Gehant, 2012)

recommendations implemented were based on the theory that students benefit from learning with more experienced peers and professionals. Scaffolding or cooperative learning, assisting the student learn elements of new tasks that are beyond the learners capability, are considered effective ways of developing skills and strategies.[91]   The implementation process was initially funded with $95,000 in support from 12 major companies in the region for *Grow Tampa Bay Tech*, a program tasked with the implementation of the recommendations. Below is a short summary of the programs successfully implemented in the first 16 months after the study, all of which focus on the widening of the talent pipeline.

1. **TBTF Student Chapters** – TBTF coordinated with campus Student Life groups at area colleges to establish Student Chapters to create a conduit for businesses directly to the students. The Chapters are run by students and all communication flows through the students. Chapters are currently established at USF St. Petersburg, USF Tampa, University of Tampa, and St. Petersburg College. The Chapters can be a new student life opportunity or collaboration with existing groups such as the ISM, Enactus, and Business or Marketing clubs. ***Grow*** staff connect campus leaders to companies interested in speaking either individually or on a panel. Student leaders communicate with the professionals and discuss the topics and logistics.

Professionals engage one on one with students enabling businesses to identify potential interns or job candidates, showcase the corporate culture, and discuss career opportunities, share skills needed to fulfill job opportunities. TBTF's role is to facilitate the connections and to manage the contact information as students and faculty change roles and responsibility.

Successes –

- ✓ A student realized the importance of internships and extended his graduation date a semester to complete 2 internships, after hearing several speakers discussing how an internship benefited their career choice.

- ✓ The Student Chapter president was able to network with CIO's and HR professionals from area companies and was s hired as a summer intern and was told she would be hired at graduation if she successfully completed the program. She is completing her sophomore year in college.

2. **TECH TREK** – Students from area colleges learn about local companies in a daylong event where they are bused to three companies per trip. One of the issues identified in the study was lack of knowledge by area students of local businesses. The students learn to network with the C level staff of each company, learn about skills needed for open positions, corporate culture, and an understanding of the pathway to employment.

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[91] (McLeod, 2012)

Successes –

- ✓ This has been an eye opener for students to learn about local companies and skills needed to find a job.

- ✓ Four trips to 12 companies, engaging 110 students.

- ✓ One has scheduled a second trip this summer.

- ✓ Students now requesting companies or industries that they would like to visit

- ✓ Student feedback is very positive. They are beginning to relate classroom experiences to workplace.

3. **Internships** – *Grow* staff provided training on Internship best practices, benefits and connections to Career Centers. Grow staff also assist companies find interns efficiently through networking events providing an opportunity to engage with students to assess cultural fit, and then proceed with the formal interview process. Grow staff will vet the students prior to being invited to participate. Specific activities include:

  - ➢ Market opportunities to students in the Grow student network

  - ➢ Set up focused events for student and businesses to network

  - ➢ Assist companies explore best practices and assist with the set up internship programs

  - ➢ Coordinate internship best practices training by industry experts

  - ➢ Network companies setting up programs with experienced and successful companies

4. **Boot Camp Business/Education Collaborative –** Grow Tampa Bay Tech is working with area business to utilize state of the art resources at area businesses to provide boot camp style training to college students in high demand skills. These partnerships will allow students to apply classroom experience with real world problem solving and work alongside the industries best and brightest. Companies will be able to identify talent early and mentor a potential future hire.

5. **Skills Needed/Skills Taught Conversation –** Grow staff network with educators and businesses to discuss strategies to create new ways of providing skills training to students and to identify the career pathways to the high demand jobs. The TBTF peer networks have been expanded to include students.

6. **Networking –** Students are invited to participate in the peer networks offered by TBTF to develop the students' networking skills and contacts to learn about the career options in the area.

Recommendations

The study recommends a mix of local and regional solutions to integrate technical and strategic changes in the workplace with the public and private education system and generational workforce dynamics, to strengthen pathways to the workforce. Recommendations include:

> 1. **Expand regional marketing efforts** with the goal of attracting both talent and new

I. Focus on the longstanding relationship between regional industries and educational institutions.

II. Capitalize on the efforts being taken regionally to address talent gap issues as a business development strategy.

III. Market innovation intrinsic to the region through The Corridor collaboration with education and high tech firms.

    a. Matching Grants

    b. FLVEC and GrowFL

    c. Incubators

IV. Market internships for area companies to Florida students and out-of-state students at colleges with specific degree programs that benefit regional businesses.

V. Conduct an Industry Contribution Study of the industries having the greatest economic impact and focus talent development to support these industries.

> 2. **Expand Quick Response Training (QRT) and Incumbent Worker Training (IWT)** programs through CareerSource boards to help businesses and workers advance and maintain competitiveness and technological skills

I. Programs to assist small- and mid-sized businesses, which have the lowest training budgets but create the greatest number of jobs

II. Grants should allow for training to complete state-required certifications for specific jobs requiring specialized skills.

> 3. **Expand opportunities for post-secondary students** to learn the latest technologies that are needed in high tech firms across all industries.

I. Deliver training through multiple strategies including boot camps, internships, job shadowing and special projects.

II. Training opportunities can be incorporated into existing curriculum, developed for new credited courses or used as courses of independent study.

III. CareerSource boards and businesses should develop an ongoing process to identify needed skills.

IV. Marketing efforts should advise students of career opportunities attached to training options and the benefits of acquiring certifications prior to graduation.

Copies of this report can be found on each sponsors website.

V.   Define new CAPE list certifications to reflect rapidly evolving needs of businesses, including development of soft and technical skills.

VI.   Expand internship opportunities for students to apply skills learned in-classroom and in alternative training such as boot camps, massive open online courses and self-directed learning.

VII.   Expand options for the long-term unemployed to learn new skills, to include boot camps, massive open online courses (MOOCs) and self-directed learning.

> **4. Increase cross-disciplinary skills development** through exploration of double majors/minors or certifications in high-demand technical skills.

I.   Leverage the requirements of the Florida Comprehensive Education Bill and the CAPE list to expand opportunities for rapid delivery of skills training.

II.   Engage businesses in defining the technical and soft skills required to meet current and future needs.

III.   Define new STEM skills certifications and those that reach across multiple disciplines – technical, social science and liberal arts.

> **5. Expand Career Pathways model** to expand the number of students gaining essential knowledge and skills, completing degree or certificate programs, and obtaining jobs with competitive wages in high demand areas.

I.   Connect businesses with students at all levels to offer boot camp style training or internships to increase the number of graduates with technical or vocational certification.

II.   Work with companies to identify the most desired certifications and develop boot camp curriculum based on need. Define new CAPE list certifications that combine completion of classroom courses and newly defined skills certification programs.

III.   Coordinate a series of community conversations engaging education and businesses to identify career pathways for students, and define strategies to deliver the skills students need to move from education to employment.

IV.   Market the Career Pathways for all industries to parents and students early and often.

V.   Expand techPATH/techCAMP and stemCONNECT programs to increase middle school student awareness of tech careers.

VI.   Identify existing student groups or create groups to establish conduits been businesses and students similar to the Tampa Bay Technology Forum Student Chapters.

6. Allow marketing of jobs across CareerSource Board boundaries to increase the audience for jobs listed by companies.

I. Provides greater efficiency for companies conducting job searches
II. Expands opportunities for job-seekers to explore jobs in multiple regions.

7. Establish peer-to-peer groups between business and education to increase networking opportunities with professionals who provide support to students entering the workforce. This can include:

I. Educator and business leader networks
II. Career counselors and HR professionals
III. Students and businesses, using successful program models such as *Tech Treks* bus tours and connections with on-campus student association and industry clubs
IV. Innovations Orlando sponsorship of quarterly events to allow groups to network and share issues and ideas

8. Define leadership for implementation study recommendations to include representatives of businesses, CareerSource, FHTCC, economic development organizations, public and private educational institutions, and association groups.

I. Model implementation of recommendations in the 2012 Hillsborough and Pinellas County Technology Talent Gap Analysis.
II. Identify a champion to take a lead role in implementation with appropriate seed funding from partners.

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