



# South Florida Innovation Highlights - STEM & High Tech Employment Report

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Jobs, Trends & Performance Benchmarks, 2009 - 2014

Prepared By Cherrystone Management Consultants Inc. in  
Conjunction with InternetCoast  
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# South Florida Innovation Highlights - STEM & High Tech Employment Report

## Contents

Overview .....	3
Key Findings .....	4
What is a STEM Occupation? .....	5
South Florida STEM Employment 2010 -2014 .....	5
South Florida High Tech Industry Employment 2009 - 2013 .....	7

### ***About InternetCoast***

InternetCoast was founded in 1999 with a mission is to be a proactive forum and catalyst to stimulate innovation and technology driven job creation and economic growth across the State of Florida.

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# South Florida Innovation Highlights - STEM & High Tech Employment Report

## Overview

The ***South Florida STEM & High Tech Employment Report*** is an analysis of South Florida's high tech industry and overall science, technology, engineering, and mathematics (STEM) occupation employment during the period 2009 – 2014. The report measures South Florida employment activity using publically available data from the U.S. Bureau of Labor Statistics and the U.S. Census Bureau.

The report quantifies employment trends, employment density, including benchmark ranking of South Florida performance with 24 metropolitan statistical areas (MSAs). MSAs were selected based on discussions with local economic development professionals and an analysis of high tech city/MSA ranking reports published by organizations such as Area Development Magazine, Financial Times, and Ewing Marion Kauffman Foundation.

Table 5 is a list of MSAs used to benchmark South Florida's high tech industry and STEM occupation performance. The group of 25 MSAs employing 3.7 million STEM workers in all industries in 2014 and 3.2 million workers in high tech industries in 2013, accounting for 48 percent and 53 percent respectively of U.S. STEM and high tech employment. For report purposes, "South Florida" is defined as MSA 33100 - Miami-Fort Lauderdale-West Palm Beach. This report also includes county level data for STEM and high tech employment trends and statistics for Broward, Miami-Dade and Palm Beach counties.

The InternetCoast **Facts About Florida's High Tech Workforce 2009 -2014 Report** (October 2015) measures Florida's STEM and high tech industry employment ecosystem, including an analysis of the STEM talent pipeline graduating from Florida's public and private colleges and universities. The report is available for download at the InternetCoast **FLORIDA INNOVATION HIGHLIGHTS** web page at [icoast.com](http://icoast.com).

# South Florida Innovation Highlights - STEM & High Tech Employment Report

## Key Findings

### South Florida STEM Occupation Employment

- **Zero Employment Growth:** STEM occupational employment was 88,000 in 2010 and 87,000 in 2014. During this period STEM occupational employment increased 11.9 percent nationally and 13.8 percent in the group of 25 MSAs.
- **STEM Employment Density:** Employment density declined from 4.1 percent in 2010 to 3.7 percent in 2014. The group of 25 MSAs density increased from 7.1 percent to 7.5 percent during the same period.
- **2014 Ranking Compared to 25 MSAs:**
  - 8 Total Employment
  - 18 Total STEM Employment
  - 25 STEM Employment Density

### South Florida High Tech Industry Employment

- **Employment Growth:** There were 79,000 high tech workers employed in South Florida in 2013, a 3.9 percent increase from 2009 and 5.2 percent increase from 2012. High tech employment in the group of 25 MSAs increased 7.4 percent from 2009 and 4.1 percent from 2012.
- **High Tech Employment Density:** 2013 density was 4 percent, compared to 7.4 percent in the group of 25 MSAs.
- **2013 Ranking Compared to 25 MSAs:**
  - 9 Total Employment in all industries
  - 16 High Tech Industry Employment
  - 24 High Tech Industry Employment Density

# **South Florida Innovation Highlights - STEM & High Tech Employment Report**

## **What is a STEM Occupation?**

There is not a consensus or standards to define a common list of STEM occupations. To enhance comparability across Federal agencies the U.S. Office of Management & Budget (OMB) convened a workgroup to recommend a standard list of STEM occupations. The workgroup included representatives from the Department of Labor, Department of Commerce, Department of Defense, Equal Employment Opportunity Commission, Department of Health and Human Services, Department of Education, and National Science Foundation. The recommendations of the workgroup were approved by OMB in 2012, aligning them with the Department of Labor “Standard Occupational Classification” (SOC) system.

The author sought and received feedback regarding STEM occupations from the Business Development Board of Palm Beach County, Career Source Palm Beach, Consumer Electronics Association, Florida Department of Economic Opportunity, National Science Foundation, and the U.S. Department of Labor. Based on these discussions and other research sources, the definition of STEM occupations reflected in this report are, with a few minor exceptions, the same as the occupations approved by OMB in 2012.

This report defines STEM as occupations in the field of science, engineering, information technology, communications, software and mathematics. It excludes STEM-related professions in health, social sciences, management positions other than managers of STEM occupations, K-12 educators, and higher education professions other those aligned with the STEM occupations included in this report.

## **South Florida STEM Employment 2010 -2014**

According to the 2014 OES survey there were 87,000 people employed in STEM occupations in South Florida. STEM employment levels have not changed materially since 2010, and STEM employment density is at its lowest level since 2011. Table 1 is a summary of South Florida STEM employment, employment density, and benchmark performance ranking with the group of 25 MSAs.

# South Florida Innovation Highlights - STEM & High Tech Employment Report

**Table 1. Comparison of South Florida STEM Occupation Employment With 25 MSAs  
2010 - 2014**

	2010	2011	2012	2013	2014
<b>STEM Occupational Employment (thousands)</b>					
25 MSAs <sup>a</sup>	3,275	3,359	3,297	3,874	3,727
South Florida MSA <sup>b</sup>	88	91	87	85	87
<b>STEM Employment Density</b>					
Total U.S.	5.5%	5.6%	5.9%	5.7%	5.8%
25 MSAs	7.1%	7.2%	6.9%	7.6%	7.5%
South Florida MSA	4.1%	4.2%	3.9%	3.7%	3.7%
<b>Benchmark Ranking - South Florida Compared To 25 MSAs</b>					
All Occupational Employment	8	8	8	8	8
STEM Employment	17	17	17	18	18
STEM Density	25	25	25	25	25
<b>2014 STEM Occupational Employment Growth Compared to:</b>				<b>2010</b>	<b>2013</b>
Total U.S.				11.9%	3.0%
25 MSAs				13.8%	-3.8%
South Florida MSA				-1.3%	2.3%

<sup>a</sup> The 25 MSAs include South Florida. Table 5 is a list of 25 MSAs.

<sup>b</sup> South Florida is MSA 33100, the Miami-Fort Lauderdale-West Palm Beach, FL Metro Area

Source: Occupational Employment Statistics (OES), U.S. Department of Labor

While the OES survey is designed to analyze employment and wages by occupation and industry, the Bureau of Labor Statistics cautions users that the survey is less reliable when used in a time series analysis. To compensate for potential survey error, this report uses OES survey data to compare annual changes in U.S. and group of 25 MSA STEM employment and density. Density is defined as the percentage of STEM employment of total employment.

Table 2 is a summary of Broward, Miami-Dade and Palm Beach county STEM employment and employment density for the period 2010 – 2014. MSA 33100 employment data exceeds the sum of county employment data due to redaction of certain large businesses data at the county level.

# South Florida Innovation Highlights - STEM & High Tech Employment Report

**Table 2. South Florida STEM Occupation Employment By County  
2010 - 2013**

	2010	2011	2012	2013	2014
<b>Employment (thousands)</b>					
Broward <sup>a</sup>	28.6	29.0	29.0	27.9	28.2
Miami-Dade <sup>b</sup>	35.2	35.7	35.8	33.6	34.0
Palm Beach <sup>c</sup>	22.1	21.1	19.8	21.0	21.4
<b>% STEM Occupation Employment of All Industry Employment</b>					
Broward	4.1%	4.2%	4.0%	3.8%	3.7%
Miami-Dade	3.7%	3.7%	3.6%	3.3%	3.2%
Palm Beach	4.4%	4.3%	3.9%	4.0%	3.9%
<b>2014 STEM Occupation Employment Compared To:</b>				<b>2010</b>	<b>2013</b>
Broward				-1.2%	1.3%
Miami-Dade				-3.4%	1.3%
Palm Beach				-3.1%	2.0%

<sup>a</sup>Fort Lauderdale-Pompano Beach-Deerfield Beach, FL Metropolitan Division

<sup>b</sup>Miami-Miami Beach-Kendall Metropolitan Division

<sup>c</sup>West Palm Beach-Boca Raton-Boynton Beach Metropolitan Division

Source: Occupational Employment Statistics, Bureau of Labor Statistics, U.S. Department of Labor

## South Florida High Tech Industry Employment 2009 - 2013

The U.S. Census Bureau County Business Patterns (CBP) data base provides annual statistics for businesses with paid employees by State, County, Metropolitan area, and ZIP code. County Business Patterns covers most North American Industry Classification System (NAICS) industries, excluding crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; public administration; and most establishments reporting government employees. County Business Patterns also excludes non-employer establishments and self employed individuals.

The following high tech industry sectors are included in this report: telecommunications, data processing, hosting, software, software publishing, Internet service providers and web portals,

## South Florida Innovation Highlights - STEM & High Tech Employment Report

information technology, engineering, scientific research and development, and scientific and technical consulting services. Future Florida Innovation Highlights analysis will include advanced industry sectors such as pharmaceutical and medicine manufacturing; aerospace product and parts manufacturing; semiconductor and other electronic component manufacturing; and navigational, measuring, electro-medical, and control instruments manufacturing.

There were 79,000 people employed by South Florida's high tech industry sector in 2013, an increase of 3.9 percent from 2009 and 5.2 percent from 2012. This compares to an increase of 7.4 percent from 2009 and 4.1 percent from 2012 by the group of 25 MSAs. Table 3 is a summary of South Florida high tech industry employment compared to the 25 MSAs for the period 2009 - 2013. While South Florida employment in all industries ranked 9<sup>th</sup> compared to the group of 25 MSAs, South Florida high tech employment ranked 16<sup>th</sup> and high tech employment density ranked 24<sup>th</sup>.

**Table 3. Comparison of South Florida MSA High Tech Industry Employment With 24 MSAs  
2009 - 2013**

	2009	2010	2011	2012	2013
<b>High Tech Industry Employment (thousands)</b>					
25 MSAs <sup>a</sup>	2,960	2,941	2,966	3,054	3,178
South Florida MSA <sup>b</sup>	76	74	79	75	79
<b>High Tech Industry Employment Density</b>					
25 MSAs	7.2%	7.4%	7.3%	7.3%	7.4%
South Florida MSA	4.1%	4.0%	4.3%	3.9%	4.0%
<b>Benchmark Ranking - South Florida MSA Compared To 25 MSAs</b>					
All Industry Employment	9	9	9	9	9
Hi Tech Industry Employment	15	16	15	15	16
High Tech Industry Employment Density	24	23	23	24	24
<b>2013 High Tech Industry Employment Growth Compared to:</b>				<b>2009</b>	<b>2012</b>
Total U.S.				5.3%	4.0%
25 MSAs				7.4%	4.1%
South Florida MSA				3.9%	5.2%

<sup>a</sup> The 25 MSAs include South Florida. Table 5 is a list of 25 MSAs.

<sup>b</sup> South Florida is MSA 33100, the Miami-Fort Lauderdale-West Palm Beach, FL Metro Area

Source: County Business Patterns, U.S. Census Bureau; High Tech NAICS defined as 517, 518, 519, 5413, 54142, 54143, 541490, 5415, 54162, 54,169, 5417, & 541990



## South Florida Innovation Highlights - STEM & High Tech Employment Report

Table 4 is a summary of Broward, Miami-Dade and Palm Beach county high tech industry employment and employment density for the period 2009 – 2013. MSA 33100 employment data exceeds the sum of county employment data due to redaction of certain large businesses data at the county level.

<b>Table 4. South Florida High Tech Industry Employment &amp; Establishments By County 2009 - 2013</b>					
	2009	2010	2011	2012	2013
<b>High Tech Industry Employment (thousands)</b>					
Broward <sup>a</sup>	30.1	26.3	30.2	28.4	29.9
Miami-Dade <sup>b</sup>	26.7	25.4	28.0	25.7	26.8
Palm Beach <sup>c</sup>	18.7	17.5	20.4	19.8	21.0
<b>% Tech Industry of All Industry Employment</b>					
Broward	4.9%	4.4%	5.1%	4.6%	4.8%
Miami-Dade	3.3%	3.2%	3.4%	3.0%	3.0%
Palm Beach	4.3%	4.1%	4.7%	4.4%	4.5%
<b>2013 High Tech Employment Compared To:</b>				<b>2009</b>	<b>2012</b>
Broward				-0.8%	5.2%
Miami-Dade				0.7%	4.5%
Palm Beach				12.4%	6.4%
<b>Establishments (thousands)</b>					
Broward	3.2	3.2	3.2	3.1	3.3
Miami-Dade	3.5	3.5	3.6	3.6	3.8
Palm Beach	2.4	2.4	2.3	2.4	2.4

<sup>a</sup>Fort Lauderdale-Pompano Beach-Deerfield Beach, FL Metropolitan Division

<sup>b</sup>Miami-Miami Beach-Kendall Metropolitan Division

<sup>c</sup>West Palm Beach-Boca Raton-Boynton Beach Metropolitan Division

Source: County Business Patterns, U.S. Census Bureau; High Tech NAICS defined as 517, 518, 519, 5413, 54142, 54143, 541490, 5415, 54162, 54,169, 5417, & 541990

## South Florida Innovation Highlights - STEM & High Tech Employment Report

Table 5. List of Benchmark MSAs Reflected in the High Tech Industry Analysis	
FIPS code	Area Name
12060	Atlanta-Sandy Springs-Roswell, GA Metro Area
12420	Austin-Round Rock, TX Metro Area
12580	Baltimore-Columbia-Towson, MD Metro Area
14460	Boston-Cambridge-Newton, MA-NH Metro Area
16740	Charlotte-Concord-Gastonia, NC-SC Metro Area
16980	Chicago-Naperville-Elgin, IL-IN-WI Metro Area
19100	Dallas-Fort Worth-Arlington, TX Metro Area
19740	Denver-Aurora-Lakewood, CO Metro Area
20500	Durham-Chapel Hill, NC Metro Area
26420	Houston-The Woodlands-Sugar Land, TX Metro Area
33100	Miami-Fort Lauderdale-Pompano Beach, FL Metro Area
33460	Minneapolis-St. Paul-Bloomington, MN-WI Metro Area
34980	Nashville-Davidson--Murfreesboro--Franklin, TN Metro Area
35620	New York-Newark-Jersey City, NY-NJ-PA Metro Area
37980	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metro Area
38060	Phoenix-Mesa-Scottsdale, AZ Metro Area
38300	Pittsburgh, PA Metro Area
39580	Raleigh, NC Metro Area
41620	Salt Lake City, UT Metro Area
41700	San Antonio-New Braunfels, TX Metro Area
41740	San Diego-Carlsbad, CA Metro Area
41860	San Francisco-Oakland-Hayward, CA Metro Area
41940	San Jose-Sunnyvale-Santa Clara, CA Metro Area
42660	Seattle-Tacoma-Bellevue, WA Metro Area
47900	Washington-Arlington-Alexandria, DC-VA-MD-WV Metro Area