

# Trends in Workforce Demand Demand Overview

May 2016



Metropolitan Washington  
**Council of Governments**

### **ABOUT COG**

The Metropolitan Washington Council of Governments (COG) is an independent, nonprofit association that brings area leaders together to address major regional issues in the District of Columbia, suburban Maryland, and Northern Virginia. COG's membership is comprised of 300 elected officials from 22 local governments, the Maryland and Virginia state legislatures, and U.S. Congress.

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# INTRODUCTION

During 2016, the Metropolitan Washington Council of Governments (COG) is analyzing real-time labor market data to better understand in-demand jobs and skills in the region. This effort expands upon COG's existing indicators of regional competitiveness and is one of the initiatives recommended in the 2016 State of the Region: Economic Competitiveness Report.

This is the first of two reports that will identify and analyze trends in workforce demand in metropolitan Washington. This report focuses on overall demand. A forthcoming report will examine in demand jobs and skills in seven advanced industrial clusters identified and highlighted by *The Roadmap for the Washington Region's Economic Future* and the focus of the Global Cities Initiative: advocacy services, information and communications technology, science and security technology, business and financial services, media and information, business and leisure travel. The content of these reports will serve two purposes:

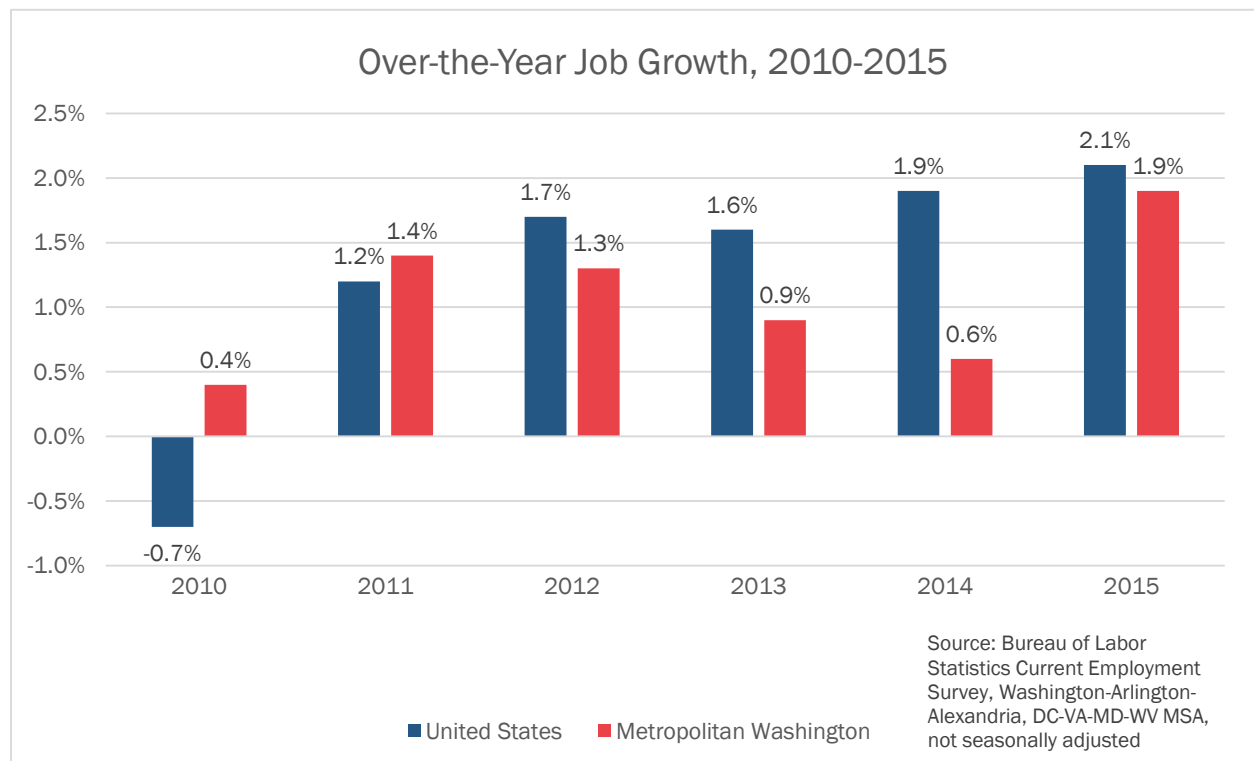
- Inform our region's governmental and business leaders about current workforce demands to assist them in crafting workforce development policies and programs that are responsive to market trends and that will advance the region's economic competitiveness in future years.
- Serve as a leading indicator about how our region's economy is growing and changing.

Analysis of real-time job posting data with a focus on identifying emerging market-driven changes in industry and occupational demands will greatly assist current efforts to better prepare the region's labor force to meet these new demands and strengthen the region's economy.

# JOB GROWTH IN METROPOLITAN WASHINGTON

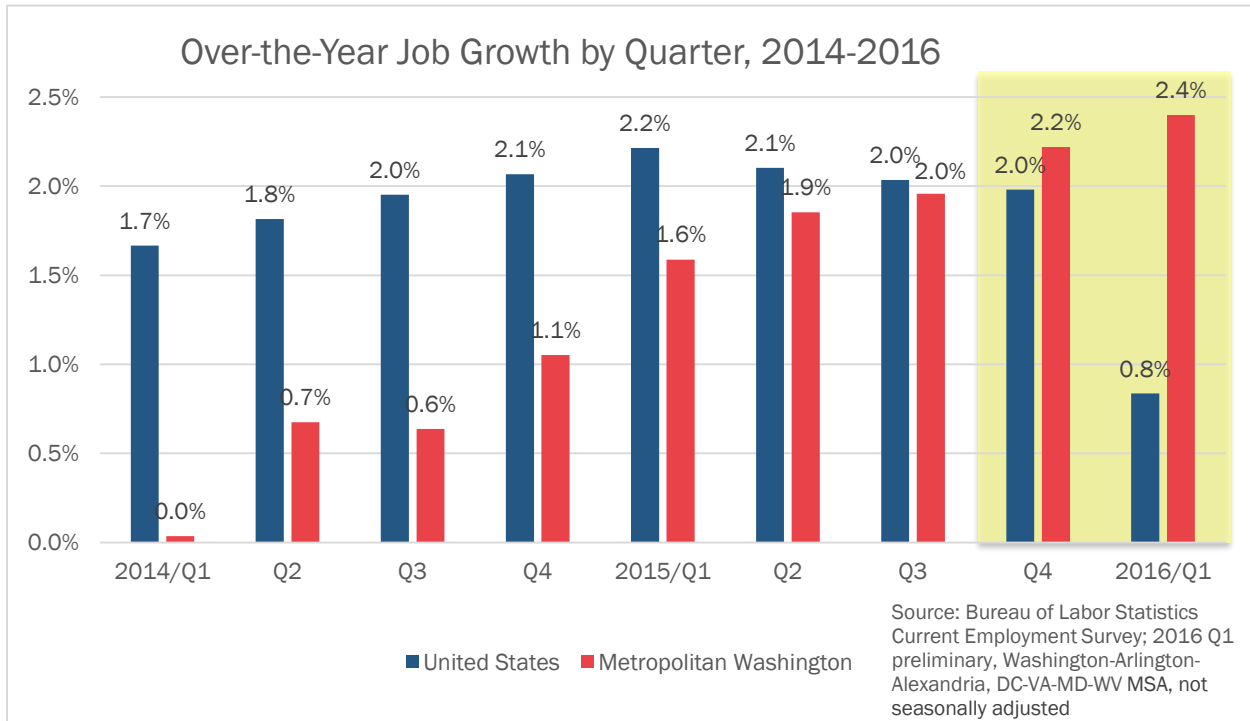
While metropolitan Washington<sup>i</sup> has a skilled and educated workforce, there have been concerns in the last few years about the region's economic performance. As other regional economies began to recover from the Great Recession, job growth in metropolitan Washington began to slow. Between the elimination of federal jobs with the enactment of the Budget Control Act of 2011 and loss of federal contracts in the first year of the sequester in 2013, an estimated thirty-six thousand jobs were lost<sup>ii</sup>. Employment growth in metropolitan Washington lagged behind the nation from 2012 through 2015. With the exception of two other years, metropolitan Washington has outperformed the nation since 1997<sup>iii</sup>.

An initial review of the 2015 estimates from the Bureau of Labor Statistics' (BLS) Current Employment Statistics program (CES) indicate that while employment increased at the greatest rate (1.9%) in a decade in metropolitan Washington, performance is still lagging behind the nation.



**Figure 1. Job growth in metropolitan Washington has lagged the nation since 2012**

However, over the year job growth by quarter data indicates that job growth in metropolitan Washington caught up between 2014 and 2015 and exceeded the nation in the last quarter of 2015 and first quarter of 2016. This report will look at this turnaround through the lens of online job postings data and examine what industries and occupations are driving this change. To improve the economic performance of metropolitan Washington, it is necessary to not only create new jobs but also to better match the supply of workers and demand from employers. Up until this point, there has been limited information about workforce demand.



**Figure 2. Job growth in the region began to accelerate in 2014**

## Online Job Posting Data as a Leading Indicator?

When employers post jobs online, they express an interest for candidates with a certain set of skills. By aggregating information from job postings, a greater understanding of emerging economic trends, as well as what knowledge, skills, and abilities are in demand, can be developed. COG recently acquired a license for Burning Glass' Labor Insight; this database transforms these stated desires into a measurable economic factor which may be used to predict employment trends.

A year over year analysis of job posting growth by quarter shows that metropolitan Washington began to outpace the nation a full year earlier than job growth began to outpace the nation. After lagging behind the nation from 2010 to 2014, metropolitan Washington began to outpace the nation in job postings growth in the fourth quarter of 2014.

Job postings data will be used in the rest of this report to determine where the region's economy is headed, who is hiring, the occupations in greatest demand, and the education and skills needed by workers wanting to fill these jobs.

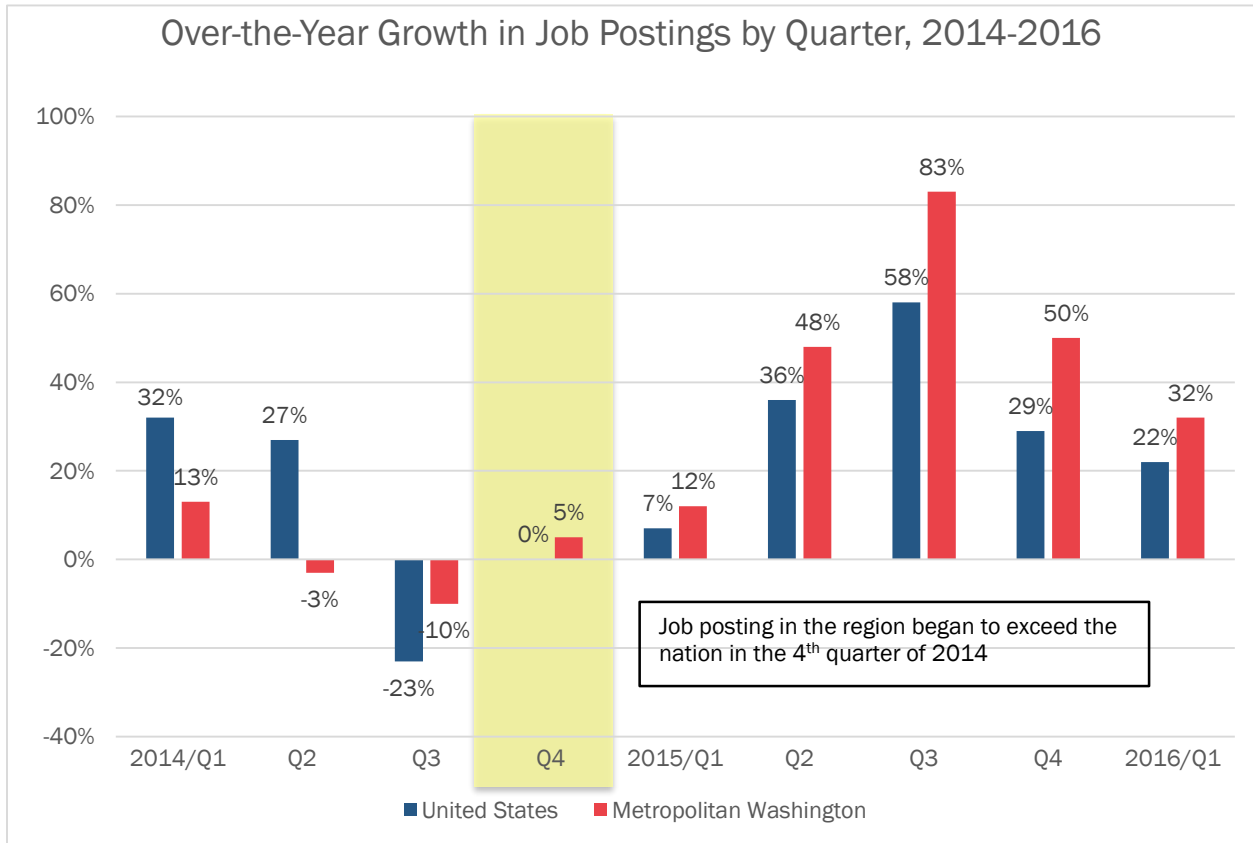


Figure 3. Job postings as a leading indicator

## WHERE IS METROPOLITAN WASHINGTON'S ECONOMY HEADED?

Significant effort is currently underway to diversify metropolitan Washington's economy. Between 2010 and 2015, federal procurement spending declined by 10 billion dollars and federal employment declined by over 15 thousand jobs. Despite outpacing the rest of the nation in job growth in the last quarter of 2015 and first quarter of 2016, federal jobs grew at a quarter of the rate of all jobs in metropolitan Washington during the same time period. The *Roadmap for the Washington Region's Economic Future* identified seven advanced industrial clusters with the potential to drive metropolitan Washington's economic growth over the next decade. The following analysis is intended to complement existing research on the composition of metropolitan Washington's economy by pairing a potential leading indicator, job postings data, with lagging indicators, employment estimates produced by the Bureau of Labor Statistics, to identify changes that are currently underway.



## Industry Sectors Driving Change in our Region

**Table 1. Annual Employment Growth by Industry, Metropolitan Washington, 2010-2015**

Sector	2010	2015	Growth	Growth Rate
<b>Professional and Business Services</b>	<b>681,800</b>	<b>721,400</b>	<b>39,600</b>	<b>6%</b>
Professional, Scientific and Technical Services	464,500	487,600	23,100	5%
Management of Companies and Enterprises	39,300	39,900	600	2%
Administrative and Support and Waste Management	178,000	193,900	15,900	9%
<b>Education and Health Services</b>	<b>362,000</b>	<b>412,900</b>	<b>50,900</b>	<b>14%</b>
Educational Services	94,300	114,300	20,000	21%
Health Care and Social Assistance	267,700	298,600	30,900	12%
<b>Trade, Transportation, and Utilities</b>	<b>381,000</b>	<b>402,700</b>	<b>21,700</b>	<b>6%</b>
Wholesale Trade	63,000	61,800	-1,200	-2%
Retail Trade	257,000	277,800	20,800	8%
Transportation and Utilities	61,000	63,000	2,000	3%
Transportation and Warehousing <sup>1</sup>	6,500	6,600	100	2%
Utilities <sup>1</sup>	54,500	56,400	1,900	3%
<b>Government</b>	<b>691,400</b>	<b>692,300</b>	<b>900</b>	<b>0%</b>
Federal Government	380,400	364,600	-15,800	-4%
State and Local Government	311,000	327,700	16,700	5%
State Government	78,200	85,400	7,200	9%
Local Government	232,800	242,300	9,500	4%
<b>Leisure and Hospitality</b>	<b>261,300</b>	<b>310,600</b>	<b>49,300</b>	<b>19%</b>
Arts, Entertainment, and Recreation	36,900	43,400	6,500	18%
Accommodation and Food Services	224,400	267,200	42,800	19%
<b>Other Services</b>	<b>182,900</b>	<b>197,500</b>	<b>14,600</b>	<b>8%</b>
<b>Financial Activities</b>	<b>147,200</b>	<b>154,100</b>	<b>6,900</b>	<b>5%</b>
Finance and Insurance	98,100	101,500	3,400	3%
Real Estate and Rental and Leasing	49,100	52,600	3,500	7%
<b>Mining, Logging, and Construction</b>	<b>141,000</b>	<b>150,500</b>	<b>9,500</b>	<b>7%</b>
Agriculture, Forestry, Fishing, and Hunting <sup>1</sup>	1,300	1,000	-300	-23%
Mining <sup>1</sup>	800	400	-400	-50%
Construction <sup>1</sup>	138,900	149,200	10,300	7%
<b>Information</b>	<b>80,900</b>	<b>76,700</b>	<b>-4,200</b>	<b>-5%</b>
<b>Manufacturing</b>	<b>53,400</b>	<b>52,800</b>	<b>-600</b>	<b>-1%</b>
<b>Total</b>	<b>2,982,900</b>	<b>3,171,400</b>	<b>188,500</b>	<b>6%</b>

Source: BLS' CES, not seasonally adjusted, Washington-Arlington-Alexandria, DC-VA-MD-WV MSA

Notes: <sup>1</sup> Estimate developed using ratios from BLS' QCEW. Estimates do not sum to total due to rounding.

Professional and Business Services has dominated the region's economy for a long time; over 20% of employment in the region has been in this sector during the last 15 years. However, in recent years, other sectors, Education and Health Services and Leisure and Hospitality, increased at faster rates and by more jobs than Professional and Business Services. In addition, Federal Government jobs declined by the greatest number, followed by the Information sector.

Below, three sectors are examined more closely, to learn more about how metropolitan Washington's economy is changing. Professional, Scientific, and Technical Services and Health Care and Social Assistance are examined because they dominated the job postings data between 2014 and 2015. In addition, Information is reviewed to highlight structural changes that are currently underway in this sector.

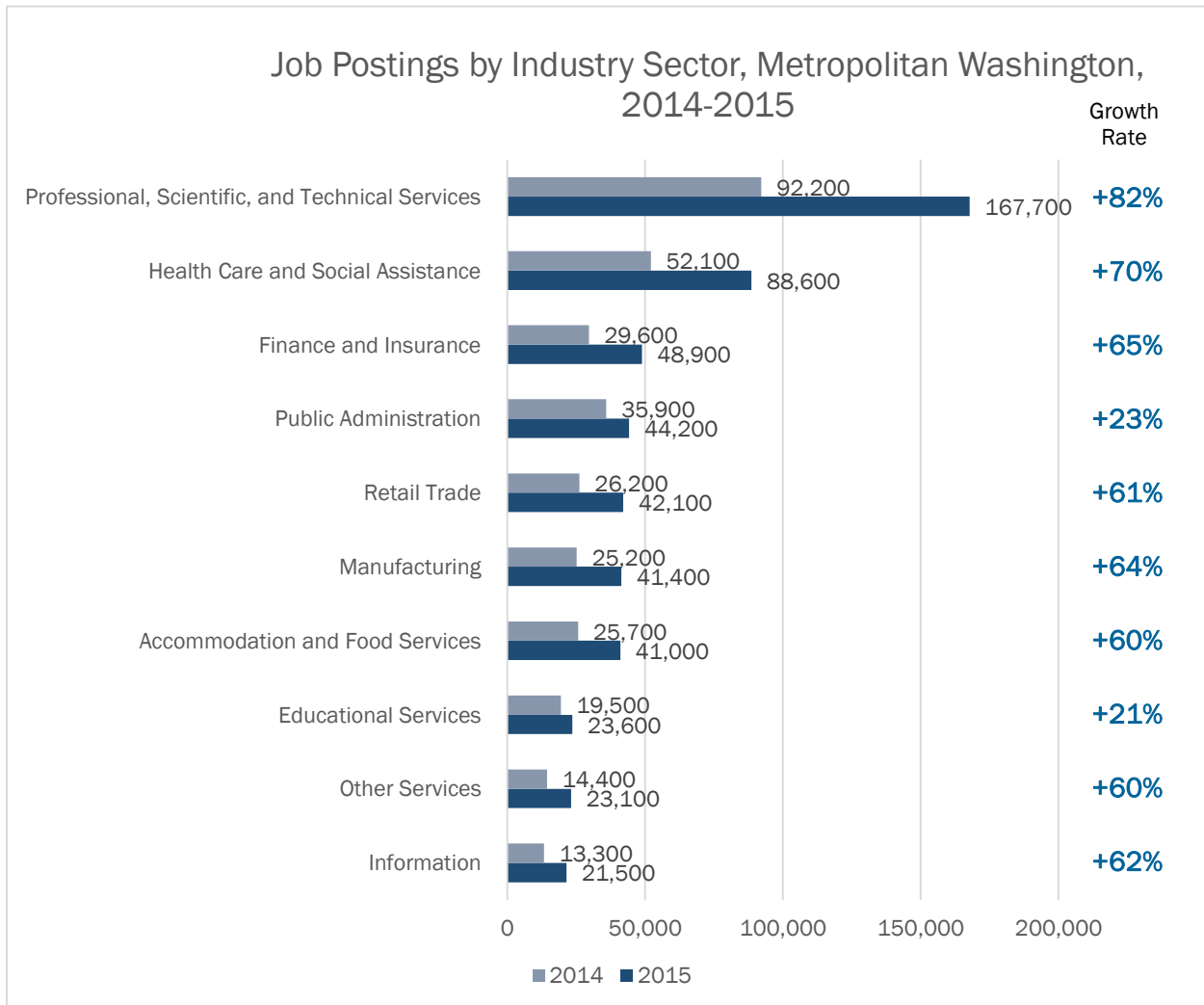


Figure 4. Job postings by industry sector, metropolitan Washington, 2014-2015

### Professional, Scientific, and Technical Services

A large share of metropolitan Washington's jobs as well as job postings are in the Professional, Scientific, and Technical Services sector. Job postings for this sector grew at a faster rate than any other industry sector between 2014 and 2015. BLS estimated that 15 percent of the total nonfarm

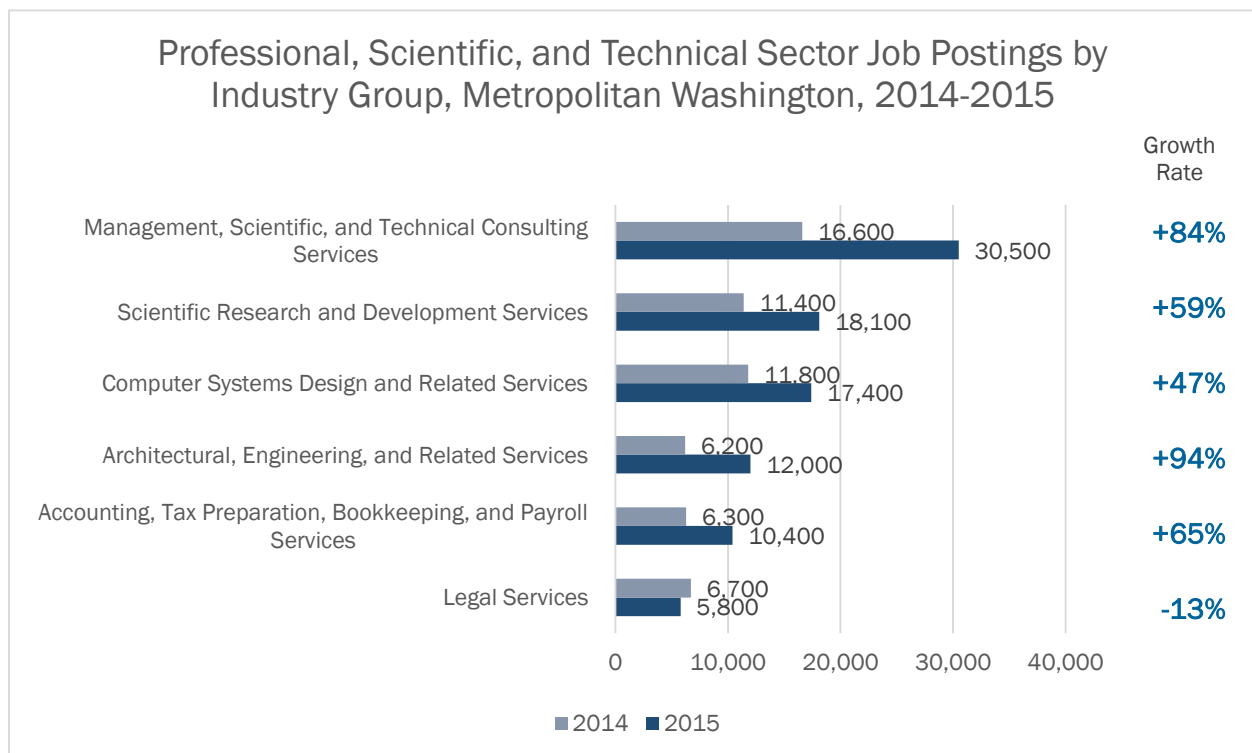
jobs were in this sector in 2015 in metropolitan Washington. In addition, COG’s regional econometric model projects that Professional and Business Services will increase by 86 percent from 2015 to 2045.

**Table 2. Employment Growth in Professional, Scientific, and Technical Services, Metropolitan Washington, 2014-2015**

Sector	2014	2015	Growth Rate
Professional and Business Services	704,900	721,400	2.3%
Professional, Scientific, and Technical Services	475,000	487,600	2.6%
All Sectors	3,112,000	3,171,400	1.9%

Source: BLS’ CES, not seasonally adjusted, Washington-Arlington-Alexandria, DC-VA-MD-WV MSA

The total number of job postings in each industry group is shown below<sup>iv</sup>. Approximately 40 percent of the job postings in this industry sector were in three industry groups: (1) Management, Scientific, and Technical Consulting, (2) Scientific Research and Development, and (3) Computer Systems Design and Related. Management, Scientific, and Technical Consulting grew by 13,900 job postings, and contributed 18 percent of jobs to Professional, Scientific, and Technical Services in 2014 and 2015. Scientific Research and Development and Computer Systems Design and Related placed similar numbers of job postings, between 17 and 18 thousand, and grew at a slightly lower rate.



**Figure 5. Professional, Scientific, and Technical Services job postings by industry group, metropolitan Washington, 2014-2015**

The ten employers in this sector with the greatest increase in number of job postings accounted for nearly 30 percent of the growth in postings in the Professional, Scientific, and Technical Services sector<sup>v</sup>. These employers are well-known federal contractors. Most of these employers are in the Computer Systems Design and Related Services and Management, Scientific, and Technical Consulting Services industry groups.

**Table 3. Professional, Scientific, and Technical Services Employers with Greatest Increase in Number of Job Postings, Metropolitan Washington, 2014-2015**

Employer	NAICS Industry Group	2014	2015	Increase
Accenture	Management, Scientific, and Technical Consulting Services	3,200	8,200	5,000
Booz Allen Hamilton Inc.	Management, Scientific, and Technical Consulting Services	4,100	7,700	3,600
Deloitte	Management, Scientific, and Technical Consulting Services	2,000	5,400	3,400
ManTech International Corp.	Computer Systems Design and Related Services	2,000	4,200	2,200
CACI	Computer Systems Design and Related Services	1,500	3,100	1,600
Engility	Architecture, Engineering, and Related Services	1,000	2,500	1,500
CGI Group	Management, Scientific, and Technical Consulting Services	1,300	2,500	1,200
Leidos	Computer Systems Design and Related Services; Scientific Research and Development Services	4,300	5,400	1,100
BAE Systems	Computer Systems Design and Related Services	1,500	2,400	900
IBM	Management, Scientific, and Technical Consulting Services	800	1,700	900
Total		21,700	43,100	21,400

### Health Care and Social Assistance

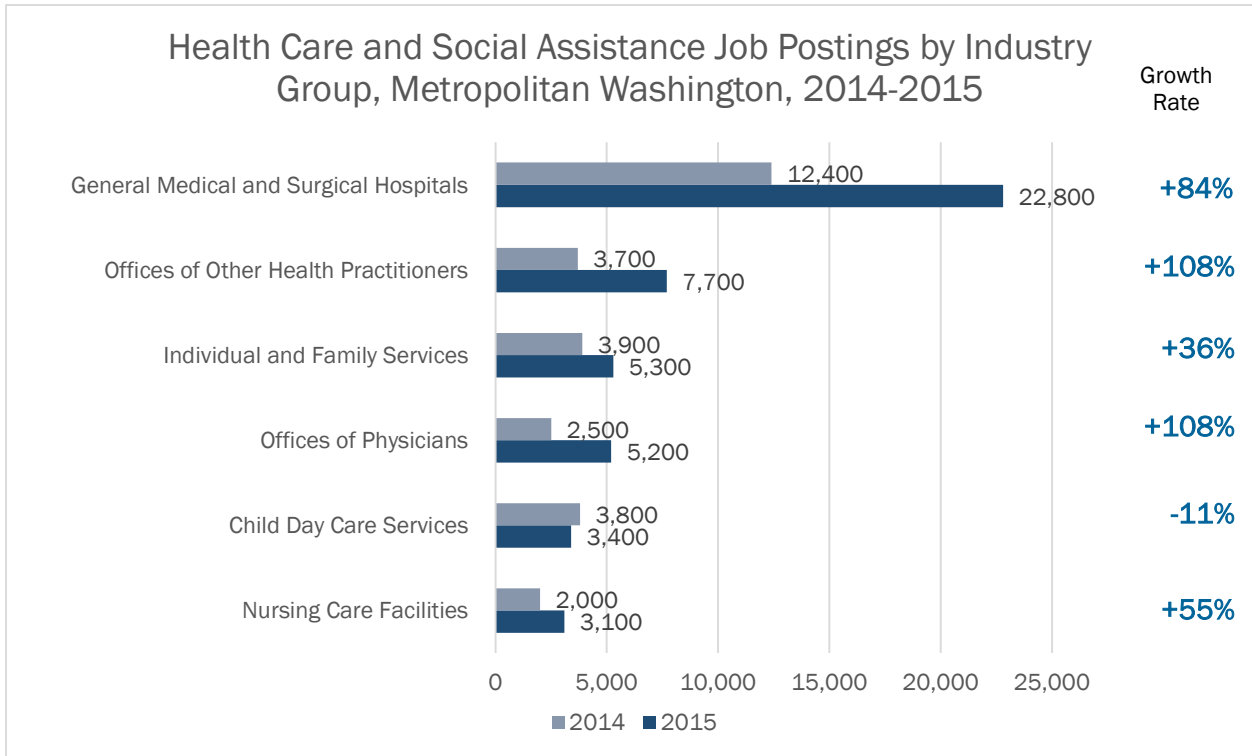
The next industry sector with the greatest number of job postings in 2015 was Health Care and Social Assistance. BLS estimates that 9 percent of jobs were in this sector in the metropolitan Washington region and that it grew faster than the rest of the region's economy in 2015.

**Table 4. Employment Growth in Health Care and Social Assistance, Metropolitan Washington, 2014-2015**

Sector	2014	2015	Growth Rate
Education and Health Services	403,500	412,900	2.3%
Health Care and Social Assistance	291,700	298,600	2.4%
All Sectors	3,112,000	3,171,400	1.9%

Source: BLS' CES, not seasonally adjusted, Washington-Arlington-Alexandria, DC-VA-MD-WV MSA

The total number of job postings in each industry group is shown in figure 6<sup>vi</sup>. More than twenty-five percent of job postings in this sector are in one industry group: General Medical and Surgical Hospitals. Job postings for this industry group grew faster than the industry sector but not as fast as job postings for Offices of Other Health Practitioners and Offices of Physicians. There was one industry group that declined in job postings, Child Day Care Services.



**Figure 6. Health Care and Social Assistance job postings by industry group, metropolitan Washington, 2014-2015**

The ten employers in this sector with the greatest increase in number of job postings accounted for about a fifth of the growth in postings in this sector<sup>vii</sup>. While many of the employers in this list are General Medical and Surgical Hospitals, employers in the following industry groups also appear: Medical and Diagnostic Laboratories, Child Day Care Services, and Nursing Care Facilities.

**Table 5. Health Care and Social Assistance Employers with Greatest Increase in Number of Job Postings, Metropolitan Washington, 2014-2015**

Employer	NAICS Industry Group	2014	2015	Increase
Inova	General Medical and Surgical Hospitals	600	3,600	3,000
Children's National Medical Center	General Medical and Surgical Hospitals	700	1,500	800
Johns Hopkins Medicine	General Medical and Surgical Hospitals	300	1,000	700
Georgetown University Hospital	General Medical and Surgical Hospitals	500	1,100	600
Quest Diagnostics Incorporated	Medical and Diagnostic Laboratories	200	700	500
Adventist Healthcare	General Medical and Surgical Hospitals	800	1,300	500
Trinity Health	General Medical and Surgical Hospitals	0	500	500
Knowledge Universe Incorporated	Child Day Care Services	200	600	400
HCR ManorCare	Nursing Care Facilities	800	1,100	300
Sentara Healthcare	General Medical and Surgical Hospitals	100	400	300
Total		4,200	11,800	7,100

### Information

While the Information sector is relatively small, grew at a rate similar to all job postings, and has not performed well in recent years, it is included to highlight the structural changes that it is undergoing. This sector includes businesses engaged in producing and distributing information and cultural products, transmitting or distributing these products, as well as, data or communications, and processing data. The primary business activity of establishments classified in this sector is varied; examples include publishing newspapers, sound recording, and telecommunications.

The COG regional econometric model projects a turnaround in this industry sector; employment is projected to grow by over 65 percent between 2015 and 2045. This is the third fastest rate; it is only slower than: (1) Professional and Business Services and (2) Construction, Natural Resources, and Mining. While identifying the seven industrial clusters for the *Roadmap for the Washington Region's Economic Future*, University of Maryland's Inforum assigned a portion of this industry to Information and Communication Technology and to Media and Information. Inforum projects that, with successful diversification, both sectors will begin increasing in employment in the next few years.

**Table 6. Employment Growth in the Information Sector, Metropolitan Washington, 2014-2015**

Sector	2014	2015	Growth Rate
Information	78,200	76,700	-1.9%
All Sectors	3,112,000	3,171,400	1.9%

Source: BLS' CES, not seasonally adjusted, Washington-Arlington, Alexandria, DC-VA-MD-WV MSA

Structural changes that are occurring within the Information sector can be observed by reviewing employment estimates for its industry sectors and industry groups. While employment for the

Information sector remained flat between 2010 and 2014, its subsectors grew at different rates. Notably, Publishing Industries did not change in its share however, its industry groups grew inversely to one another. Software Publishers increased while Newspaper, Book and Directory Publishers decreased in employment. The annual growth in employment in the Information sector's subsectors between 2010 and 2014 in metropolitan Washington is shown below.

**Table 7. Structural Change in Information Sector Employment, Metropolitan Washington, 2010- 2014**

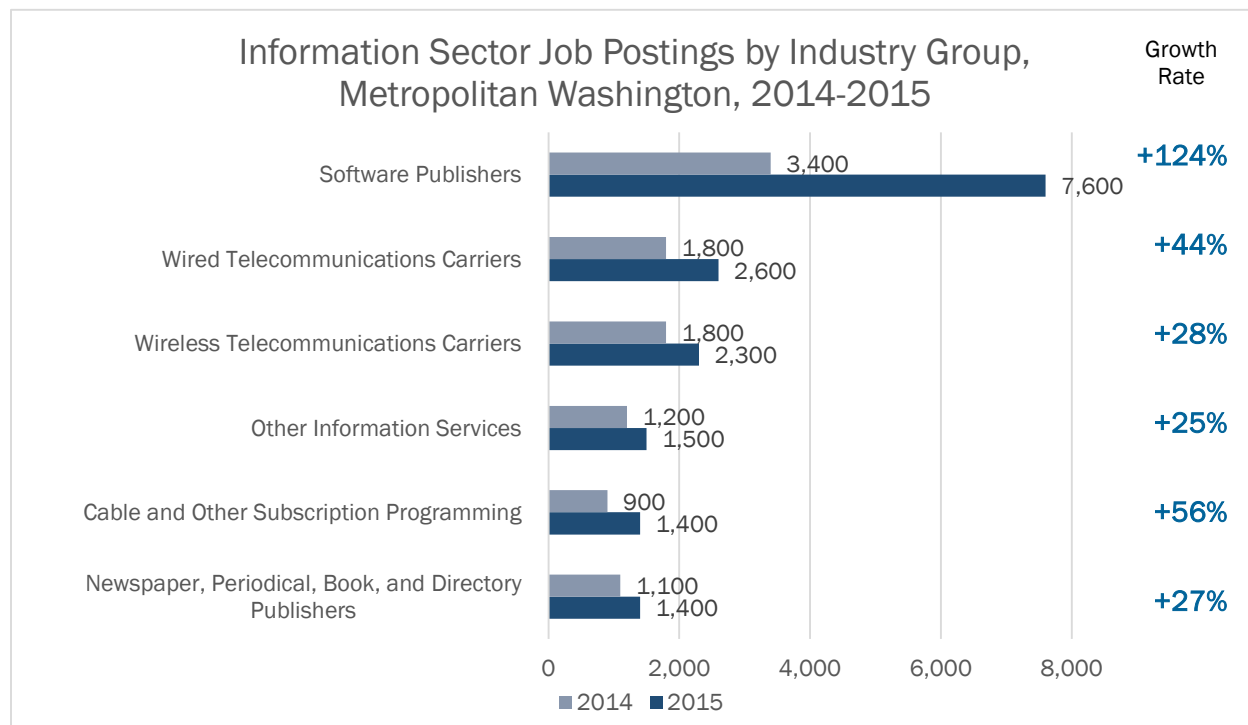
Subsector	2010 Employment	2014 Employment	Average Annual Growth Rate
Publishing Industries, Except Internet	18,700	18,000	-0.9%
Newspaper, Book, And Directory Publishers*	13,000	11,600	-2.7%
Software Publishers*	5,400	6,200	3.8%
Motion Picture and Sound Recording Industries	3,900	4,100	1.8%
Broadcasting, Except Internet	8,200	9,000	2.2%
Telecommunications	28,900	25,600	-3.0%
Data Processing, Hosting and Related Services	9,100	10,500	3.7%
Other Information Services	5,200	6,000	3.6%
Information Sector	75,200	74,000	-0.4%

\*Industry Group

Source: BLS Quarterly Census for Employment and Wage

Note: Industry subsectors do not sum to total due to rounding and nondisclosure. The BLS disclosed 98% of the information sector in metropolitan Washington in 2010 and 99% in 2014.

The total number of job postings in each industry group is shown in figure 7<sup>viii</sup>. Half of the increase in job postings is associated with the Software Publishers industry group. This can be traced to an increase in job postings by one employer, Oracle.



**Figure 7. Information job postings by industry group, metropolitan Washington, 2014-2015**

The ten employers in this sector with the greatest increase in number of job postings were responsible for over three-quarters of the increase in job postings in this sector<sup>ix</sup>. Four of the employers were in the telecommunications industry. Three are involved in software publishing. Two are involved in broadcasting. Only one, Gannet Company Incorporated, belongs to the Newspaper, Periodical, Book and Directory Publishers industry group.

**Table 8. Information Sector Employers with Greatest Increase in Number of Job Postings, Metropolitan Washington, 2014-2015**

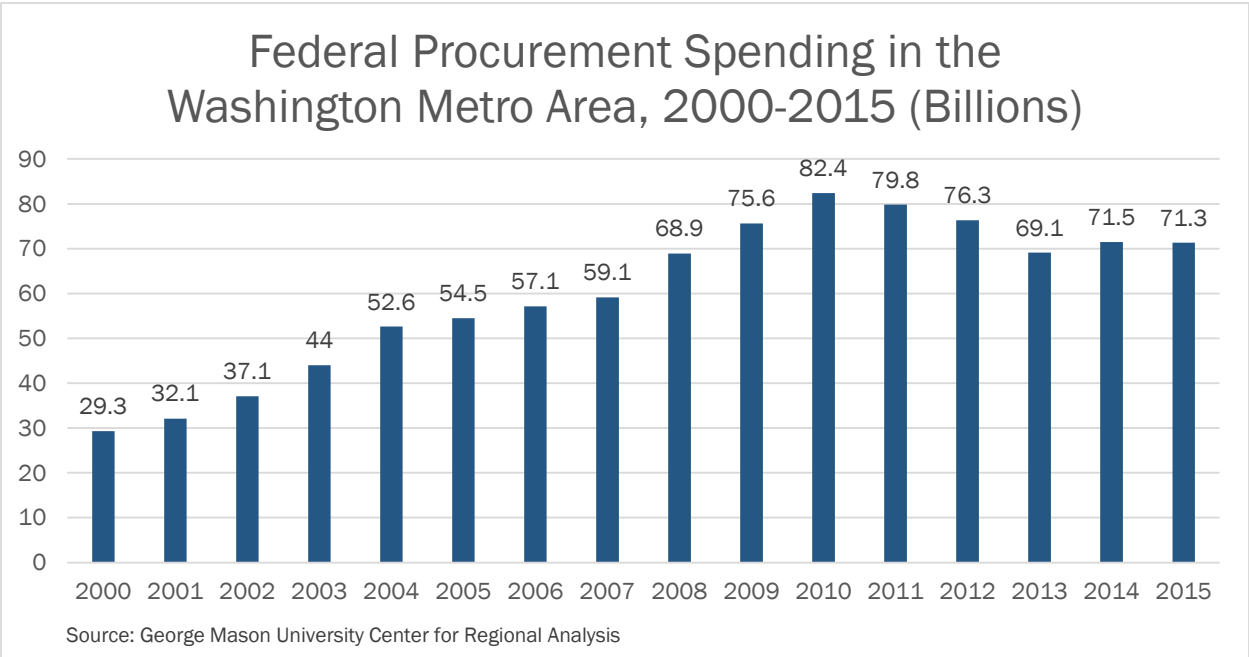
Employer	NAICS Industry Group	2014	2015	Increase
Oracle	Software Publishers	1,000	4,800	3,800
Comcast	Cable and Other Subscription Programming	100	600	500
Verizon Communications Incorporated	Wired Telecommunications Carriers	1,100	1,600	500
Microsoft Corporation	Software Publishers	400	800	400
Gannett Company Incorporated	Newspaper, Periodical, Book, and Directory Publishers	500	800	300
Sinclair Broadcast Group	Radio and Television Broadcasting	100	300	200
Pegasystems Incorporated	Software Publishers	0	200	200
AT&T	Wireless Telecommunications Carriers (except Satellite)	1,000	1,200	200
Sprint Corporation	Wireless Telecommunications Carriers (except Satellite)	200	400	200
Echostar Communications	Satellite Communications	200	400	200
<b>Total</b>		<b>4,600</b>	<b>11,100</b>	<b>6,500</b>

## Changing Federal Presence

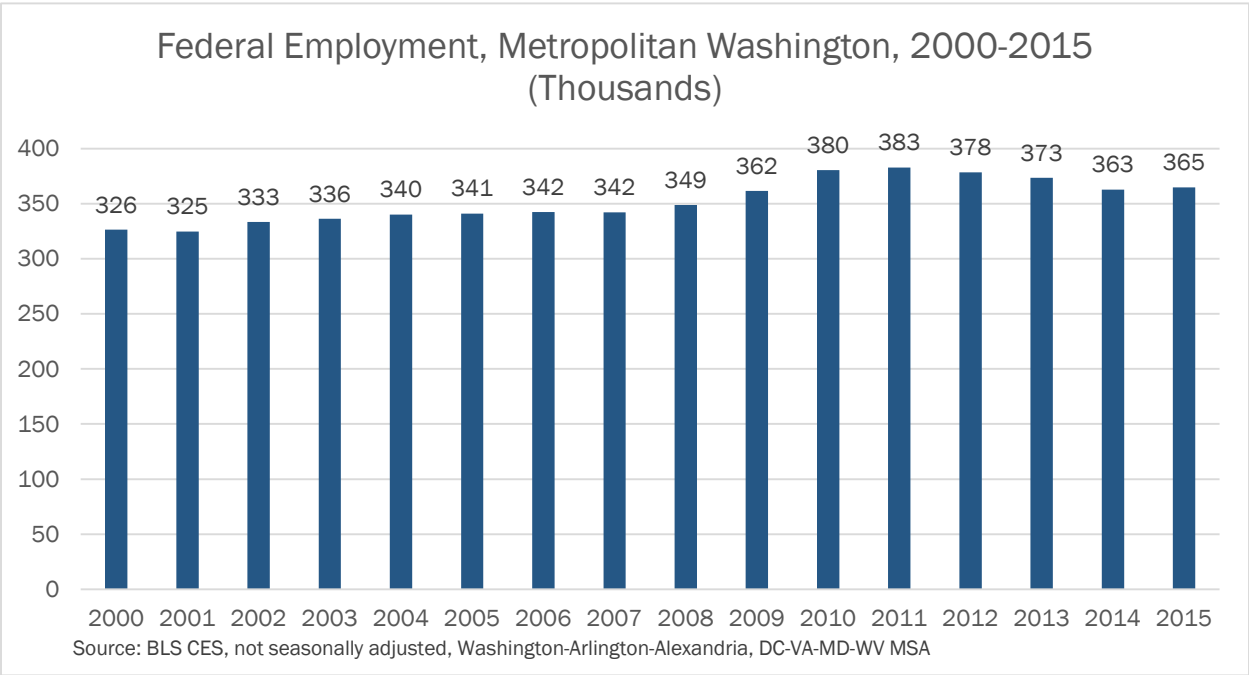
The structure of the regional economy is changing. COG's regional econometric model projects that the portion of federal employment will decline from 12 percent of nonfarm employment in 2015 to 8 percent in 2045. The Center for Regional Analysis at George Mason University (CRA) projects that while federal wages and salaries and procurement comprised almost 40 percent of the region's economy in 2010, it is forecast to decline to just under 30 percent by 2020. CRA also found little change between 2014 and 2015 in federal procurement spending<sup>x</sup>.

The federal government is the largest employer in the region. Since 2000, between 11 and 13 percent of total nonfarm employment in metropolitan Washington has been federal. BLS estimates that there were 365 thousand federal employees in 2015, down from a peak of 383 thousand in 2011 in the region. Growth in federal employment did not keep pace with total nonfarm employment between 2014 and 2015.





**Figure 8. Federal procurement spending in metropolitan Washington, 2000-2015**



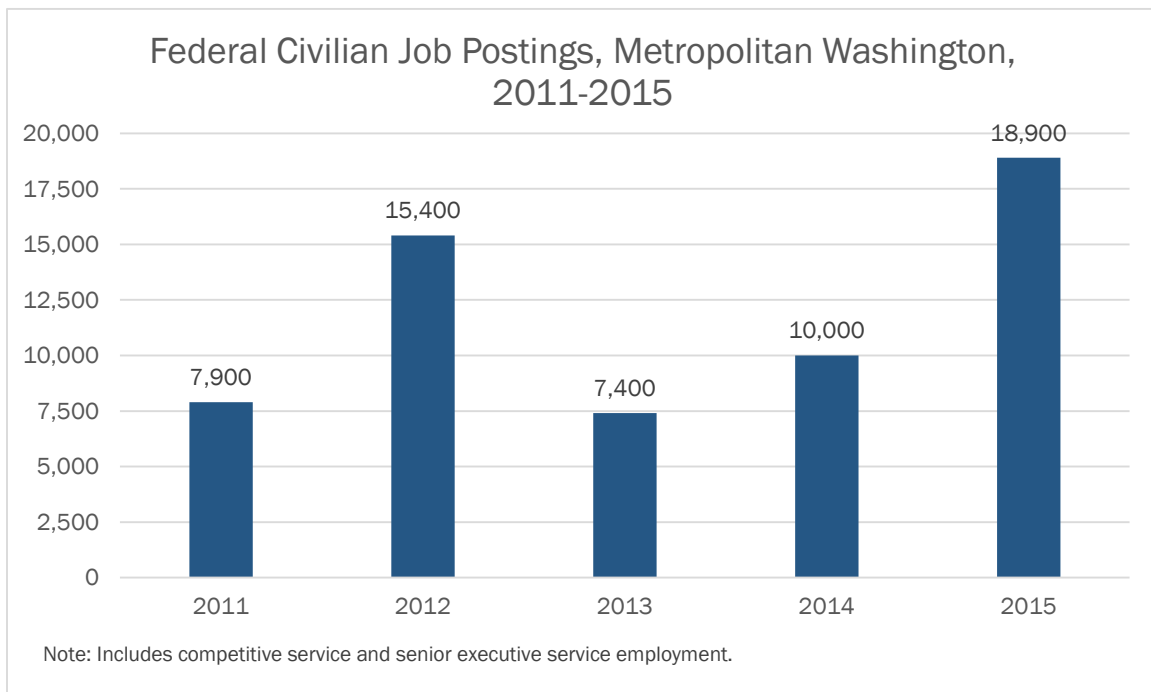
**Figure 9. Federal employment in metropolitan Washington, 2000-2015**

**Table 9. Federal versus Total Nonfarm Employment Growth, Metropolitan Washington, 2014-2015**

	Federal Employment	Total Nonfarm
2014-2015	0.5%	1.9%

Source: BLS' CES, not seasonally adjusted, Washington-Arlington-Alexandria, DC-VA-MD-WV MSA

Although federal employment grew at a slower rate than total employment, online job postings data indicate a large increase in federal civilian hiring in 2015 relative to the period from 2011 to 2014<sup>xi</sup>. (This data is not available prior to 2011.) This hiring is likely a mix of replacements for federal employees who are retiring as well as some new positions. According to a 2014 GAO Report on trends in federal civilian employment, over 30 percent of the federal workforce will be eligible to retire by 2017, up from 14 percent in 2012<sup>xii</sup>. According to the Federal Times, agencies increased hiring in 2015 as they recovered from sequestration cuts<sup>xiii</sup>.



**Figure 10. Federal civilian job postings, metropolitan Washington, 2011-2015**

## WHO IS RECRUITING?

Table 10 shows the top fifteen employers ranked by number of job postings in 2014 and 2015<sup>xiv</sup>. Eleven of the employers that ranked within the top fifteen in 2015 also ranked within the top fifteen in 2014. Employers that have considerably increased their online recruitment efforts in metropolitan Washington include Oracle, Inova Health System, and CACI. General Dynamics placed the greatest number of job postings in 2014 and 2015. Many of these employers also appear on the Washington Business Journal's *Book of Lists'* List of Largest Employers. With the exception of Inova Health

System and Raytheon, employers that appeared in the List of Largest Employers were within the list of top employers by job postings in both 2014 as well as 2015.

**Table 10. Employers Ranked by Number of Job Postings, Metropolitan Washington, 2014-2015**

Employer	Industry Group	2014	2015	Largest Employers <sup>1</sup>
General Dynamics	Other Transportation Equipment Manufacturing	1	1	*
Accenture	Management, Scientific, and Technical Consulting Services	6	2	
Leidos	Computer Systems Design and Related Services; Scientific Research and Development Services	2	3	*
Booz Allen Hamilton Inc.	Management, Scientific, and Technical Consulting Services	3	4	*
Capital One	Nondepository Credit Intermediation	4	5	*
Deloitte	Management, Scientific, and Technical Consulting Services	12	6	*
Oracle	Software Publishers	36	7	
Mantech International Corp.	Computer Systems Design and Related Services	14	8	
Northrop Grumman	Aerospace Product and Parts Manufacturing	8	9	*
Harris Teeter	Grocery Stores	11	10	
Marriott International Incorporated	Traveler Accommodation	5	11	*
Macy's	Department Stores	13	12	
Inova Health System	General Medical and Surgical Hospitals	73	13	*
CACI	Computer Systems Design and Related Services	21	14	
Raytheon	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	16	15	*

<sup>1</sup>Included in the Washington Business Journal's Book of List's Largest Employers

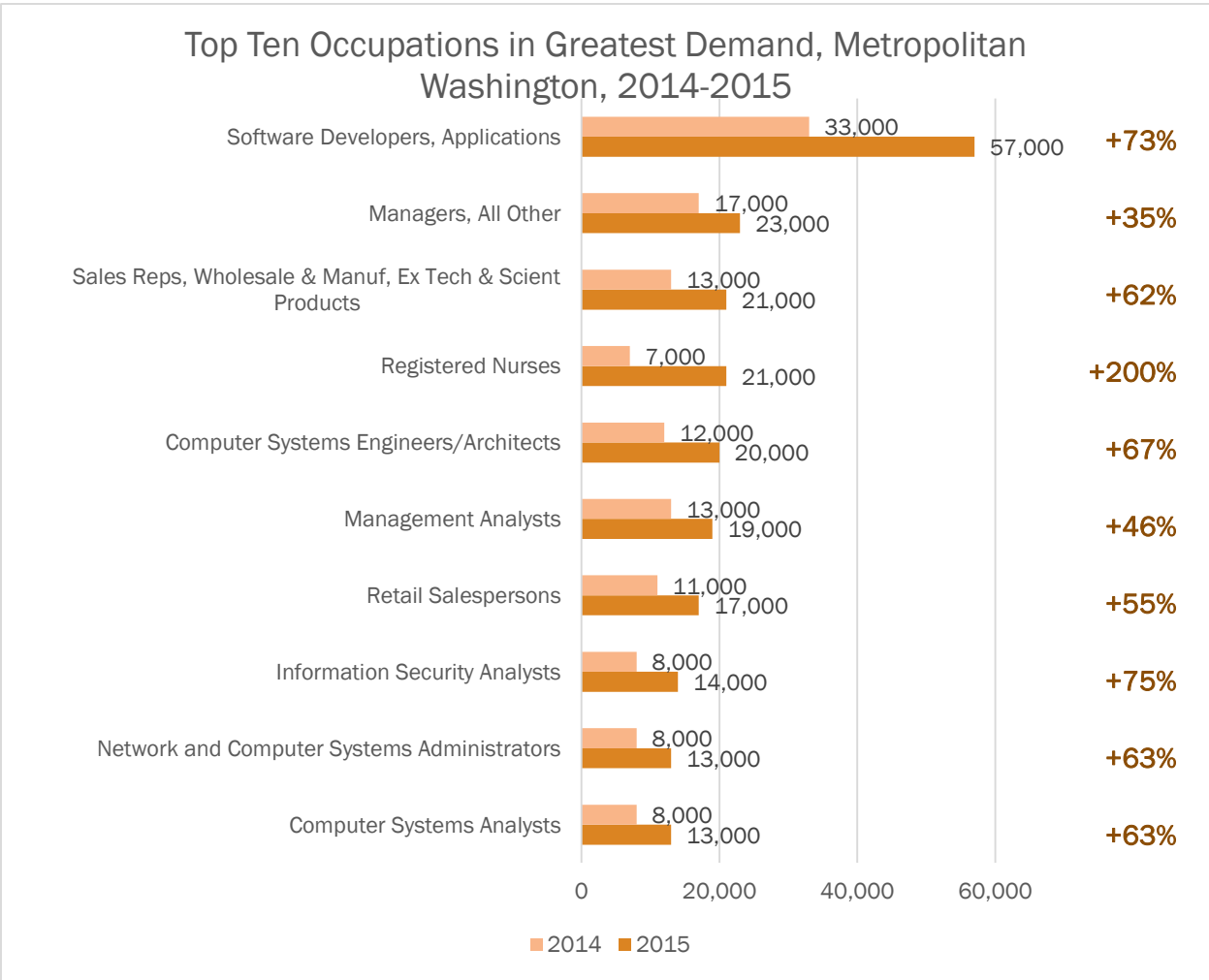
## WHAT OCCUPATIONS ARE IN THE GREATEST DEMAND?

Beyond identifying what industries and employers are driving metropolitan Washington's economy, job postings data also provides information about the kinds of candidates that employers are seeking and can be used to inform workforce development programs.

Half of the top ten occupation in greatest demand in 2015 were computer occupations. The other half, except for sales representatives, were among the fifteen most common occupations in metropolitan Washington in 2015.

The top ten occupations include:

1. **Software Developers, Applications** – Develop, create, and modify general computer applications
2. **Managers, all other** – Plan, direct, or coordinate activities in industries such as regulatory affairs, compliance, investment funds, supply chain
3. **Sales representatives, wholesale and manufacturing** – Sell goods for wholesalers or manufacturers to businesses or groups of individuals. Substantial knowledge of items sold is necessary
4. **Registered Nurses** – Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records. Administer nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management
5. **Computer Systems Engineers** – Design and develop solutions to complex applications problems, system administration issues, or network concerns. Perform systems management and integration functions
6. **Management Analysts** – Conduct organizational studies and evaluations, design systems and procedures, conduct work simplification and measurement studies, and prepare operations and procedures manuals to assist management in operating more efficient and effectively
7. **Retail Salespersons** – Sell merchandise, such as furniture, motor vehicles, appliances, or apparel to consumers
8. **Information Security Analysts** – Plan, implement, upgrade, or monitor security measures for protection of computer networks and information
9. **Network and Computer Systems Administrators** – Install, configure, and support an organization’s local area network, wide area network, and Internet systems or a segment of a network system
10. **Computer Systems Analysts** – Analyze science, engineering, business, and other data processing problems to implement and improve computer systems



**Figure 11. Top ten occupations in greatest demand, metropolitan Washington, 2014-2015**

The top ten occupations were compensated with higher average annual wages and job postings grew at similar rates to the average for all occupation in the region with two exceptions. Retail Salespersons had lower average annual wages; this job also tends to have higher turnover rates and individuals altogether leaving the occupation. Individuals tend to leave occupations with low entrance requirements that pay relatively low wages, once they can move into better opportunities. The other exception is Registered Nurses; job postings grew by 200 percent between 2014 and 2015 for this occupation. This reflects changes to the health care industry as well as demographics. For example, COG’s regional econometric model projects that the number of residents over 65 years old will increase by a third during the next ten years; it is likely that demand for Registered Nurses will continue to grow as care is needed for the region’s aging population.



Figure 12. Job postings growth and average annual wages for top ten occupations in greatest demand, metropolitan Washington

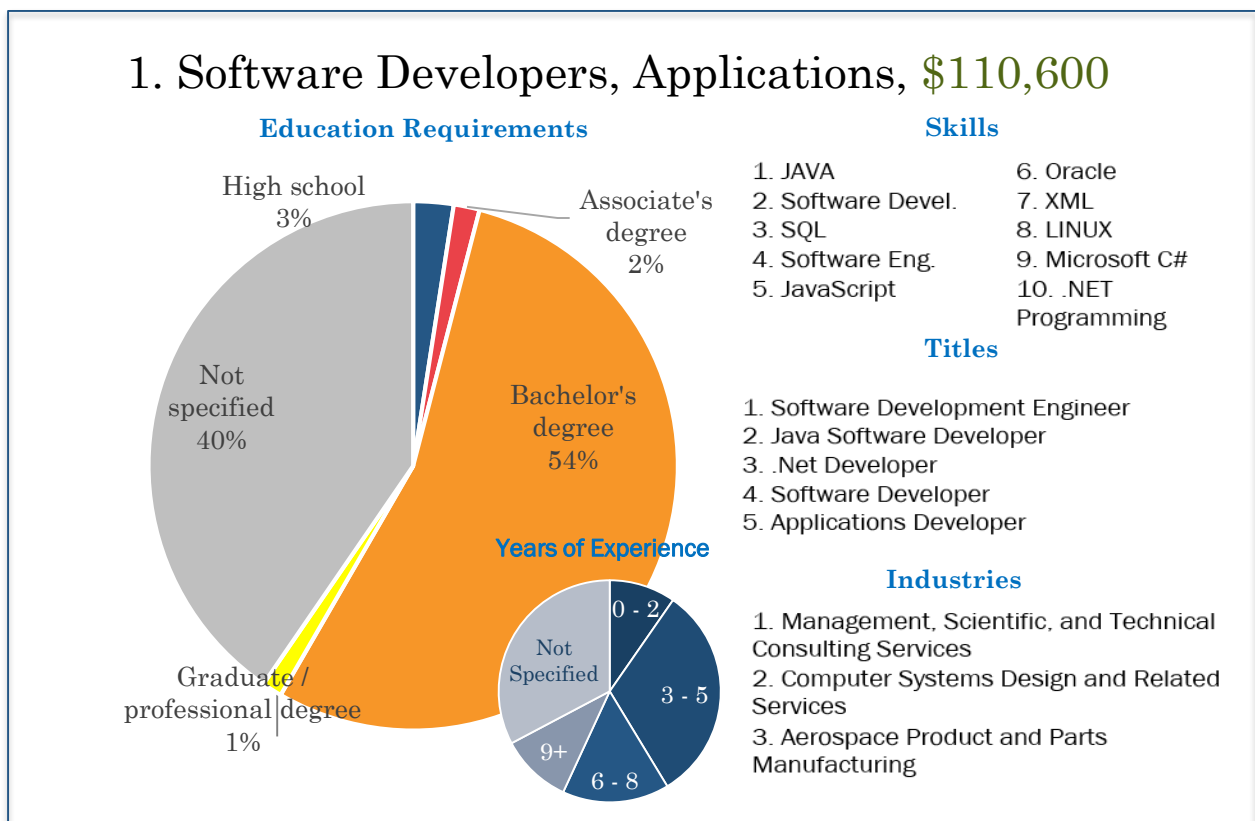
## WHAT EDUCATION AND SKILLS ARE NEEDED?

Employers often include specific information about their desired candidate. The following section reviews the education, experience, and skills desired by employers recruiting the top ten occupation in greatest demand. This information could potentially be leveraged to evaluate existing workforce development programs in metropolitan Washington.

As previously noted, half of the top ten occupations in greatest demand were computer occupations. These occupations paid high average annual wages ranging from \$99,790 to \$110,600 in 2015. The job postings for these occupations include specific technical skill requirements and over half require a Bachelor's degree. A relatively large number of the job postings required nine or more years of experience but there were also postings that required two or fewer years of experience.

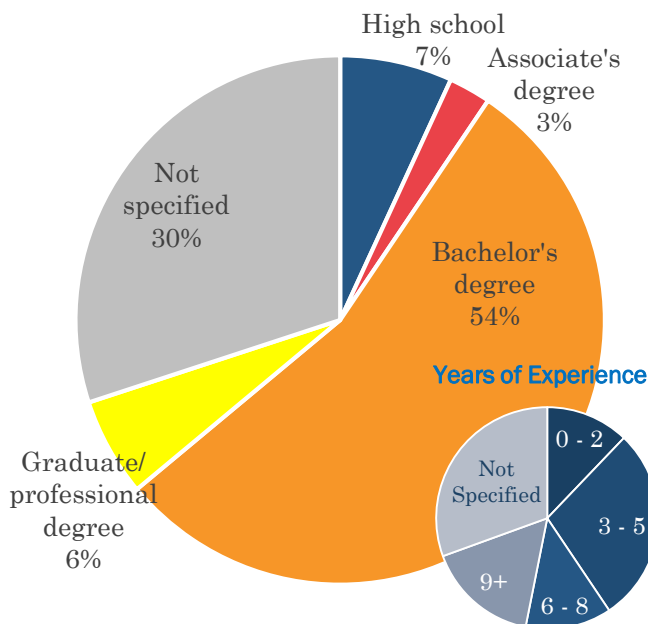
The other half of the occupations, except for Sales Representatives, were among the 15 most common occupations in metropolitan Washington in 2015. Two of those occupations involve management. Managers, all other, is the highest paying occupation; job postings include strong interpersonal and project management skills. Skills included in job postings for Management Analysts were slightly more analytical but also included project management and business development; education and years of experience requirements were similar for these two occupations.

More than fifty percent of the job postings for each occupation required a Bachelor's Degree or higher, except for Sales Reps, Registered Nurses, and Retail Salespersons. These job postings also required fewer years of experience. These occupations were compensated lower average annual wages than the other occupations in greatest demand. The Retail Salespersons occupation, which has the lowest entrance requirements is compensated the lowest wages.



## 2. Managers, All Other, \$132,380

### Education Requirements



### Skills

- |                       |                    |
|-----------------------|--------------------|
| 1. Project Mgmt       | 6. Contract Mgmt   |
| 2. Budgeting          | 7. Staff Mgmt      |
| 3. Scheduling         | 8. Building Relat  |
| 4. Program Mgmt       | 9. Cust Service    |
| 5. Supervisory Skills | 10. Business Devel |

### Titles

1. Project Manager
2. Program Manager
3. Senior Project Manager
4. Project Coordinator
5. Manager

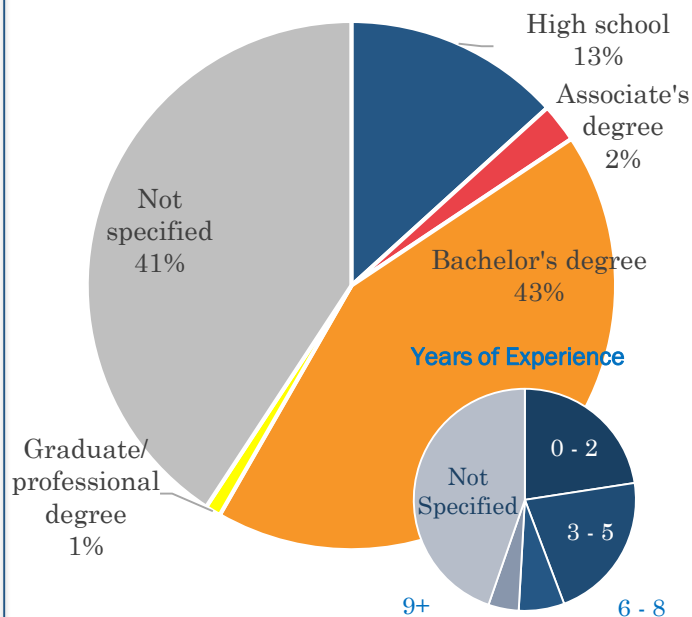
### Industries

1. Management, Scientific, and Technical Consulting Services
2. Computer Systems Design and Related Services
3. Architectural, Engineering, and Related Services

## 3. Sales Reps, \$77,700

(Wholesale and Manufacturing, Excluding Technical and Scientific Products)

### Education Requirements



### Skills

- |                     |                   |
|---------------------|-------------------|
| 1. Sales            | 6. Sales Mgmt     |
| 2. Building Relat.  | 7. Sales Goals    |
| 3. Business Devel.  | 8. Prosp. Clients |
| 4. Customer Service | 9. Cust. Contact  |
| 5. Outside Sales    | 10. Product Sales |

### Titles

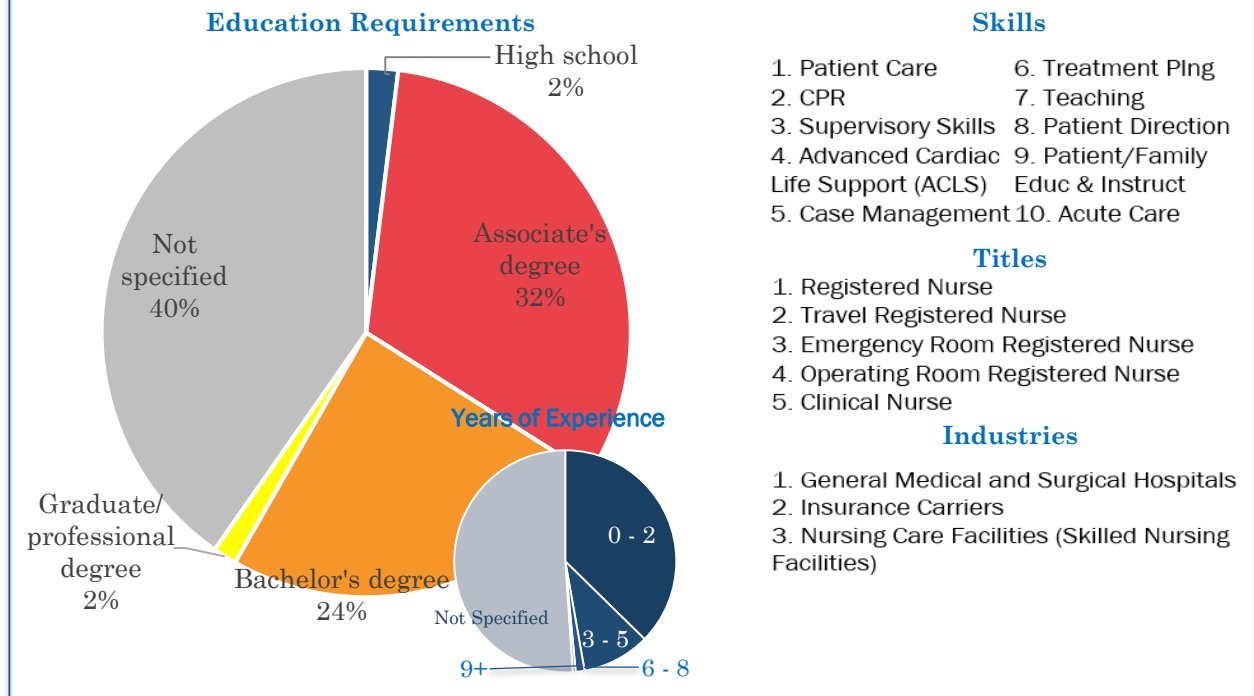
1. Sales Representative
2. Account Manager
3. Sales Consultant
4. Sales Specialist
5. Outside Sales Representative

### Industries

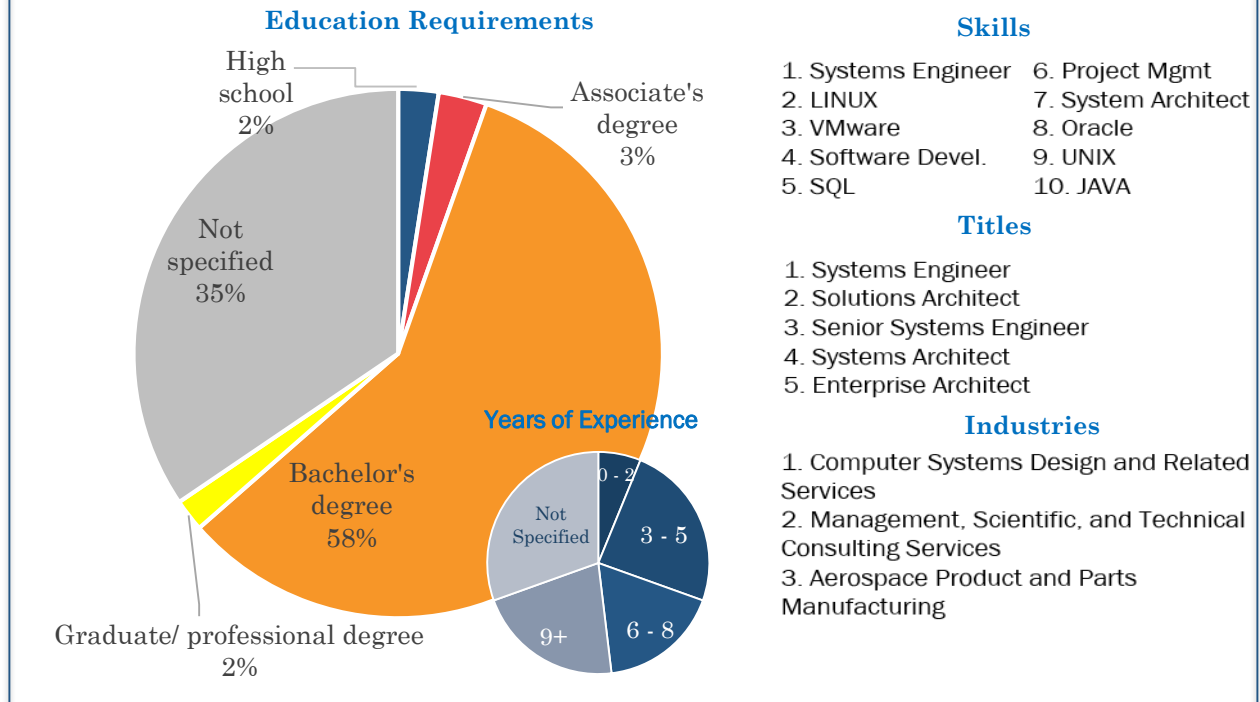
1. Business Support Services
2. Software Publishers
3. Management, Scientific, and Technical Consulting Services



## 4. Registered Nurses, \$77,490

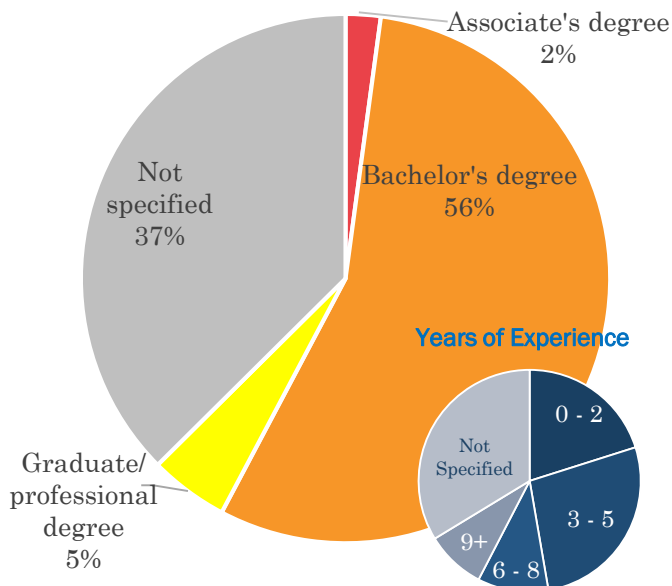


## 5. Computer Systems Engineers/Architects, \$110,180

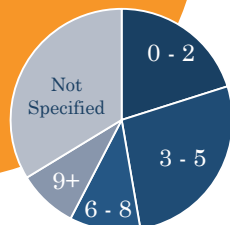


## 6. Management Analysts, \$104,140

### Education Requirements



### Years of Experience



### Skills

1. Business Analysis
2. Project Mgmt
3. Business Process
4. Budgeting
5. Scheduling
6. Cust Service
7. Building Relat
8. Business Devel
9. SQL
10. Inform Systems

### Titles

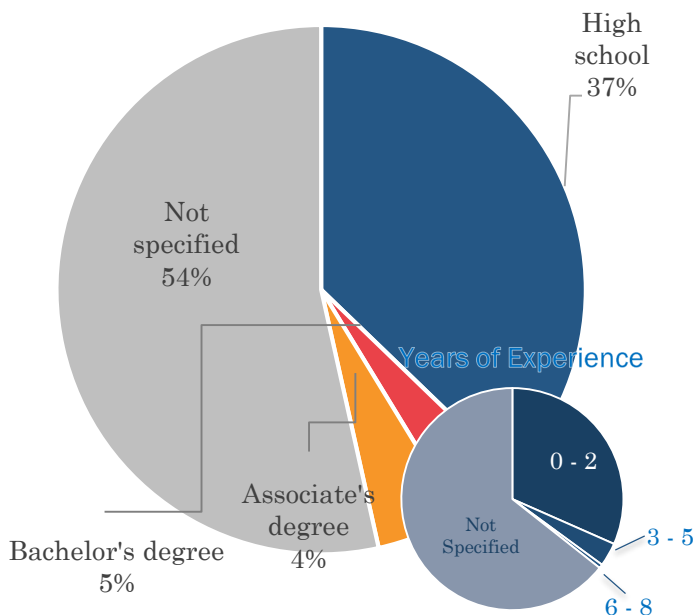
1. Business Analyst
2. Program Analyst
3. Management Analyst
4. Management and Program Analyst
5. Business Process Analyst

### Industries

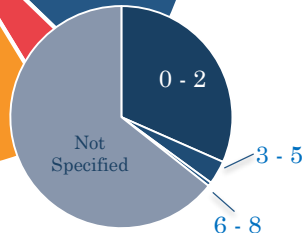
1. Management, Scientific, and Technical Consulting Services
2. Computer Systems Design and Related Services
3. National Security and International Affairs

## 7. Retail Salespersons, \$26,200

### Education Requirements



### Years of Experience



### Skills

1. Sales
2. Customer Service
3. Retail Setting
4. Retail Sales
5. Building Relat.
6. Prod. Knowledge
7. Merchandising
8. Cust. Contact
9. Mathematics
10. Sales Goals

### Titles

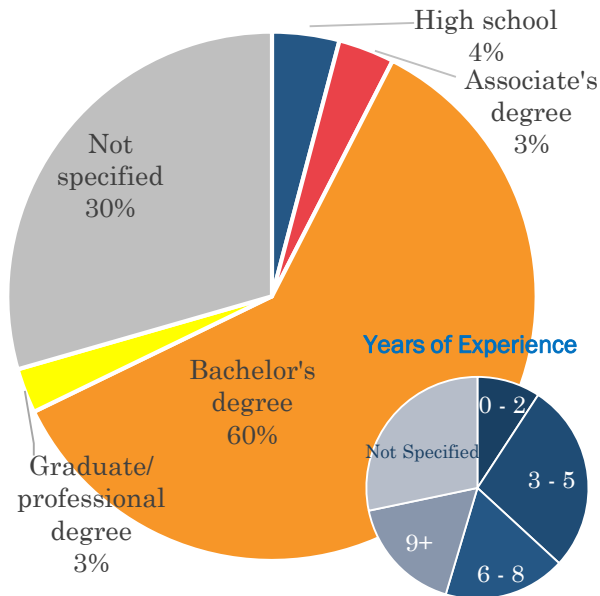
1. Sales Associate
2. Sales Consultant
3. Retail Sales Associate
4. Beauty Advisor
5. Store Associate

### Industries

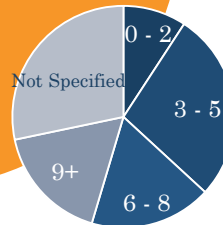
1. Department Stores
2. Wireless Telecommunications Carriers (except Satellite)
3. Building Material and Supplies Dealers

## 8. Information Security Analysts, \$109,390

### Education Requirements



### Years of Experience



### Skills

1. Information Security
2. Information Systems
3. Information Assur.
4. Network Security
5. LINUX
6. Scanners
7. Customer Service
8. UNIX
9. Fed. Info Secur Mgmt Act
10. Project Mgmt

### Titles

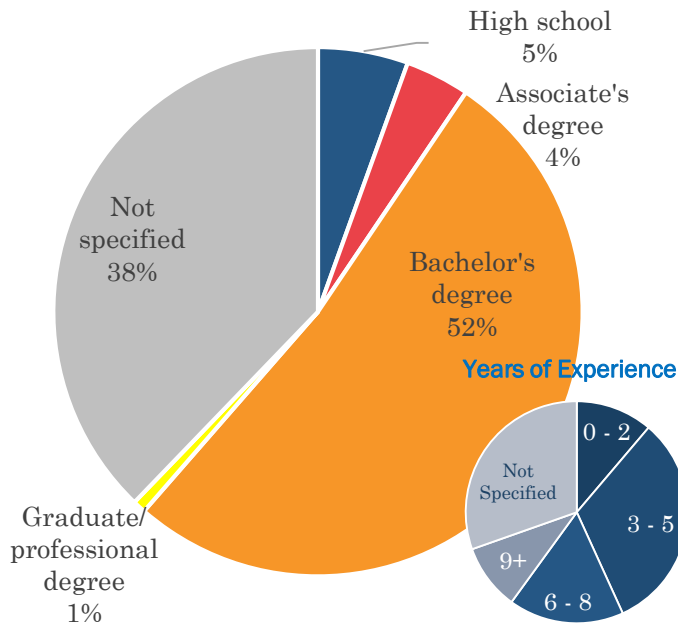
1. Security Engineer
2. Security Analyst
3. Security Specialist
4. Information Security Engineer
5. Information Security Analyst

### Industries

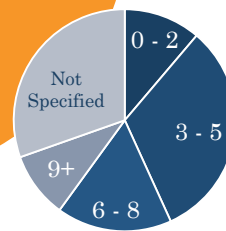
1. Computer Systems Design and Related Services
2. Management, Scientific, and Technical Consulting Services
3. Architectural, Engineering, and Related Services

## 9. Network and Computer Systems Admin., \$99,790

### Education Requirements



### Years of Experience



### Skills

1. System Admin
2. Linux
3. VMware
4. UNIX
5. Hardware and Software Installation
6. Windows Server
7. SQL
8. Technical Support
9. Domain Name System (DNS)
10. Red Hat Linux

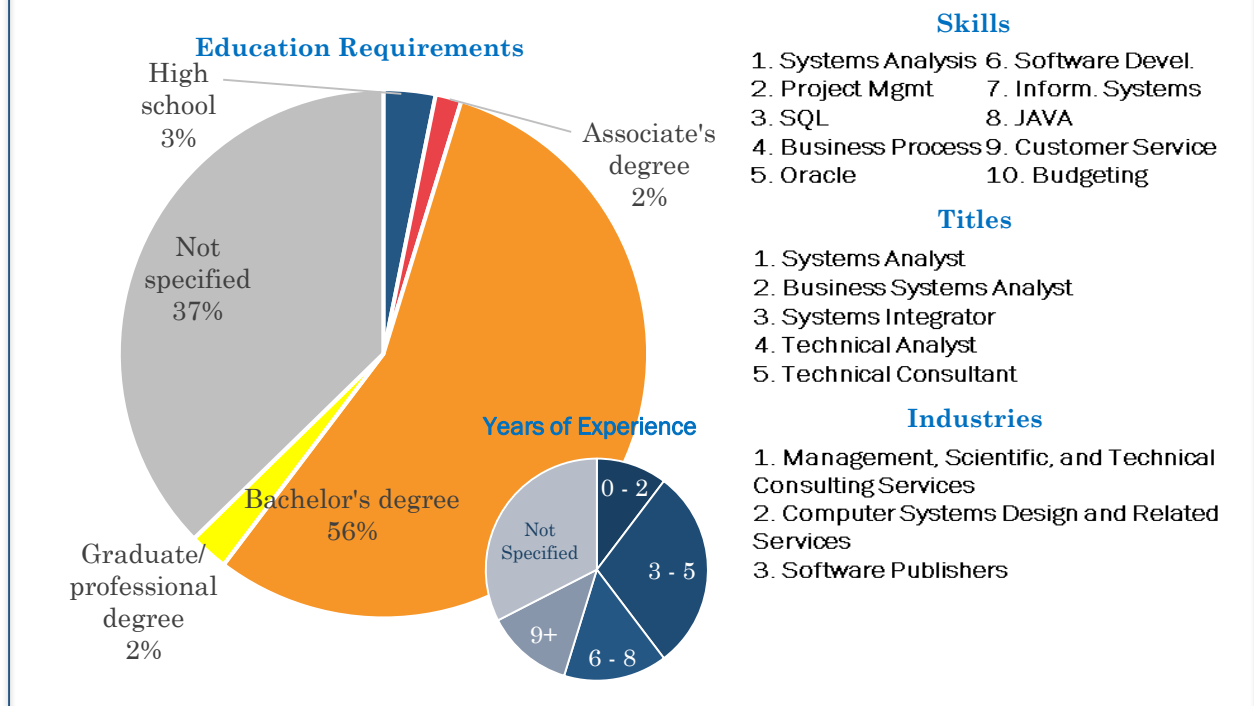
### Titles

1. Systems Administrator
2. Senior Systems Administrator
3. Network Administrator
4. Linux Systems Administrator
5. SharePoint Administrator

### Industries

1. Computer Systems Design and Related Services
2. Management, Scientific, and Technical Consulting Services
3. Architectural, Engineering, and Related Services

## 10. Computer Systems Analysts, \$101,010



## FINDINGS

This high-level overview of job postings data provides insight on workforce demand in metropolitan Washington. Performance of metropolitan Washington's economy improved during 2015. In late 2014, job posting growth began to outpace the rest of the nation. A few quarters later, metropolitan Washington's employment growth caught up and then surpassed the nation in the fourth quarter of 2015.

While federal employment is growing it is not keeping up with the rest of metropolitan Washington's economy. Instead, other sectors are driving job growth, in particular, Professional and Business Services, Leisure and Hospitality, and Education and Health Services between 2010 and 2015. Job postings data shows Professional, Scientific, and Technical Services and Health Care and Social Assistance driving an increase in job postings between 2014 and 2015.

Many of the top 15 employers ranked by online recruitment efforts are also the largest employers within metropolitan Washington, however there are a few employers on the list whose presence may be growing in the region, including Accenture, Oracle, and CACI.

For the top ten occupation in greatest demand:

- Half are computer occupations
- The other half, except for Sales Reps, were among the 15 most common occupations in metropolitan Washington in 2015.
- Except for Retail Salespersons, the annual average wages were higher than metropolitan Washington's average
- 50 percent or more of the job postings for each occupation required a Bachelor's Degree or more, except for: Sales Reps, Nurses, and Retail

## FUTURE REPORTS

This overview is the first step in utilizing online job postings data to learn about workforce demand trends within metropolitan Washington. A forthcoming report will analyze the seven advanced industrial clusters identified and highlighted by *The Roadmap for the Washington Region's Economic Future*. These sectors are also the focus on the Global Cities Initiative. They account for 27 percent of non-governmental jobs in metropolitan Washington and these industries are driving job growth<sup>xv</sup>.

## METHODS AND LIMITATIONS

Job posting data for the Demand Overview section was extracted from Burning Glass' Labor Insight database between February 25 and March 8, 2016.

To produce the Labor Insight database, Burning Glass gathers millions of job openings daily from more than 40,000 websites, and mines the text. While real-time data are relevant and help provide up-to-date job information, there are intrinsic limitations to the data:

- A job posting expresses an interest in applicants for a specific position but is not equal to a job opening. Job postings serve varied purposes beyond filling a new positions or replacing a departing worker in an existing position. For example, a job may be posted to identify a geographic area has adequate talent.
- Job postings are not standardized. Employers typically include job-specific details in job postings according to their needs and purpose. Information varies and may include: job title, location, employer, industry, level of education, certifications, skills, experience, compensation, and specific pre-hire conditions, such as background check.
- Recruiters frequently place job postings on multiple websites to reach as many candidates as possible. As a result, when job postings are initially extracted from the internet, there are typically multiple iterations of any posting. Burning Glass has developed data deduplication practices to remove duplicate or redundant information. Using a 60-day time frame, approximately 80 percent of the job postings are removed. Due to the variety and volume of data produced on a daily basis, it is not possible to completely eliminate duplication.

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<sup>i</sup> Unless otherwise noted, metropolitan Washington is defined as COG's 22 local jurisdictions: District of Columbia; Maryland: Town of Bladensburg, City of Bowie, Charles County, City of College Park, City of Frederick, Frederick County, City of Gaithersburg, City of Greenbelt, Montgomery County, Prince George's County, City of Rockville, City of Takoma Park; Virginia: City of Alexandria, Arlington County, City of Fairfax, Fairfax County, City of Falls Church, Loudoun County, City of Manassas, City of Manassas Park, and Prince William County. Since

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2000, approximately 94 percent of the Washington-Arlington, Alexandria, DC-VA-MD-WV Metropolitan Statistical Area's (MSA's) employment has been located in metropolitan Washington according to the Bureau of Labor Statistics (BLS) Quarterly Census for Employment and Wages (QCEW). The MSA includes COG's 22 local jurisdictions, plus: Maryland: Calvert County; Virginia: Clarke County, Culpeper County, Fauquier County, Rappahannock County, Spotsylvania County, Stafford County, City of Fredericksburg, and Warren County; and West Virginia: Jefferson County.

<sup>ii</sup> Fuller, Stephen S. (July 9, 2015). "Road Map for the Washington Region's Economic Future"

<sup>iii</sup> According to the Bureau of Labor Statistics' Current Employment Survey (CES), employment growth was slightly lower in 2005 and 2006. In 2005, employment in the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA (MSA) grew by 1.7 percent while the employment in the United States grew by 1.8 percent. In 2006, employment in the MSA grew by 0.8 percent while employment in the United States grew by 1.1 percent.

<sup>iv</sup> The NAICS industry group was assigned to 72 percent of Professional, Scientific, and Technical Services jobs postings in 2014 and 65 percent of jobs postings in 2015.

<sup>v</sup> The employer was included in 68 percent of Professional, Scientific, and Technical Services jobs postings in 2014 and 65 percent of jobs postings in 2015.

<sup>vi</sup> The NAICS industry group was assigned to 68 percent of Health Care and Social Assistance sector jobs postings in 2014 and 66 percent of jobs postings in 2015.

<sup>vii</sup> The employer included in 69 percent of Health Care and Social Assistance sector jobs postings in 2014 and 65 percent of jobs postings in 2015.

<sup>viii</sup> Industry group was assigned to 93 percent of Information sector job postings in the 2014 and 93 percent in 2015.

<sup>ix</sup> Employer was included in 94 percent of the Information sector job postings in 2014 and 2015

<sup>x</sup> Developed by the George Mason University Center for Regional Analysis using US Census, Consolidated Federal Funds Report, and [www.usaspending.gov](http://www.usaspending.gov), [http://cra.gmu.edu/pdfs/studies\\_reports\\_presentations/Fuller\\_CRA\\_Annual\\_Conferemce\\_2016.pdf](http://cra.gmu.edu/pdfs/studies_reports_presentations/Fuller_CRA_Annual_Conferemce_2016.pdf)

<sup>xi</sup> This measure includes hiring by the Executive Branch for competitive service and senior executive service jobs.

<sup>xii</sup> GAO Highlights. *Federal Workforce, Recent Trends in Federal Civilian Employment and Compensation, January 2014*, <http://www.gao.gov/assets/670/660450.pdf>

<sup>xiii</sup> <http://www.federaltimes.com/story/government/management/agency/2015/02/17/hiring-agencies-2015/23299037/>

<sup>xiv</sup> Employer was included in 73 percent of job postings in 2014 and 69 percent of job postings in 2015.

<sup>xv</sup> George Mason University Center for Regional Analysis (September 22, 2015). The Washington Region's Advanced Industrial Clusters and their Requirements for Growth





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