



The
STEPHEN S. FULLER INSTITUTE
for Research on the Washington Region's Economic Future

The Roadmap for the Washington Region's Economic Future: Comparative Performance of Regional and National Clusters

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for Research on the Washington Region's Economic Future
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Executive Summary

The Washington region's economy lost 0.5 percent of its gross regional product in 2013; the region's economy actually shrank while the U.S. economy expanded. In 2014, job growth totaled only 18,600, the fewest new jobs in any of the nation's largest fifteen metropolitan areas that year. The impacts of The Sequester are well documented as is the recognition that the region's economy was too dependent on federal spending and that it should reduce this vulnerability by diversifying its export base into national and global markets. The key question was: what will drive the region's economic growth in the absence of growth in federal spending?

The Roadmap for the Washington Region's Future Economy identified and analyzed seven advanced industrial clusters within the Washington region. These clusters were defined to include only non-federally dependent jobs, jobs in businesses that were export-based (that attract new money into the region's economy), that were high-value added (their growth would support the growth of additional local-serving jobs in the region) and for which the region had a competitive advantage. The Washington region was found to have a higher concentration of jobs in these clusters that were forecasted to have strong future growth potential nationally.

The Washington region's economy continues to face challenges stemming from its historic dependence on the federal government. While in 2016 it generated the second largest number of new jobs since 2005, the mix of these new jobs has continued to favor local-serving and more moderate salaried jobs than prior to 2010. Today, the region's progress in pivoting away from its federal dependence has renewed urgency. With further cutbacks likely in federal employment, and federal spending more broadly, the region's vulnerability will be further exposed to this longstanding federal spending dependence.

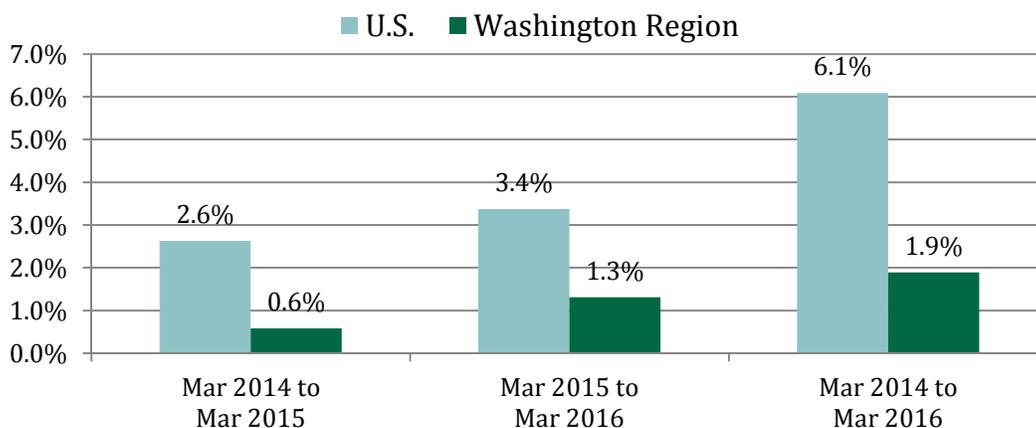
The question now is: how have the region's advanced industrial clusters performed since The Sequester? Or, has the performance of the region's seven non-federally dependent clusters resulted in reducing the region's economic dependence on the federal government thereby reducing its vulnerability to possible future reductions in federal spending? In the two years since The Sequester (March 2014-March 2016), jobs in these clusters grew by 1.9 percent substantially lagging the growth of non-cluster jobs in the region, which grew by 4.9 percent.

Employment growth in the advanced industrial clusters in the Washington region also lagged the performance of their respective clusters nationally. Between March 2014 and March 2016, jobs in these seven clusters increased 6.1 percent nationally, three times the rate of the job growth that occurred within the Washington region. The Washington region underperformed the nation throughout the two-year period. Between March 2014 and March 2015, the clusters increased 2.6 percent nationally but just 0.6 percent within the Washington region, a difference of 2.1 percentage points. This 2.1 percentage point difference remained during the March 2015 to

March 2016 period. While the clusters increased 1.3 percent within the Washington region, the clusters increased 3.4 percent nationally.

Had the Washington region kept pace with the national growth within these advanced industrial clusters, it would have added 43,448 jobs rather than the 13,502 jobs its clusters actually generated, an underperformance of 29,946 jobs. As a result, the total job growth in the region during this period would have increased by 4.5 percent instead of only 3.5 percent.

Growth Rates of the Washington Region's Advanced Industrial Clusters, Washington and the Nation



Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

While the aggregate performance of the region's advanced industrial clusters has not kept pace with their respective clusters nationally, two of the region's clusters did out-perform their respective national clusters and there were also detailed industries in each of the underperforming clusters that registered well above-average job growth during the March 2014-March 2016 period.

The conclusions from this research points to the difficulty pivoting a large metropolitan economy (Washington's ranks 5th nationally) away from its principal core business, especially when this core business is so interdependent and longstanding as in the case of the federal government's interconnectedness within the Washington region's economy. This research also confirms that the region's seven advanced industrial clusters are growing their non-federal job base, albeit slowly. The fact that the pace of job growth in these clusters has been well below their respective national trends underscores the importance of taking aggressive strategic action at the regional level to establish ecosystems favorable to accelerating growth in these clusters; it cannot be left to chance. The region's economic vulnerability puts it at risk to changes in federal spending and policy. Building a less federally dependent economy is the solution.

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Comparative Performance of Regional and National Clusters

Introduction

In March 2014, the Washington region had 713,227 private sector jobs in the advanced industrial clusters identified by *The Roadmap for the Washington Region's Future Economy* (the Roadmap).¹ These clusters accounted for 24.3 percent of all the region's jobs and 31.5 percent of the region's private sector jobs. Over the next two years, the number of jobs in the advanced clusters increased by 13,502, or 1.9 percent and underperformed the region's non-cluster private sector jobs (largely local serving), which grew 4.9 percent during this two-year period.

As shown in Table 1, growth was led by the Biological & Health Technology cluster, which increased 10.4 percent and by 1,283 jobs. The largest absolute gains were in Business Services (+5,027 jobs) and Information Communications Technology (+4,119 jobs). Combined, these three clusters accounted for 77.2 percent of the clusters' growth, but only 11.6 percent of all private sector growth.

**Table 1. Employment in the Washington Region's
Advanced Industrial Clusters (Ranked by Percentage Change)**

	Jobs		Change	
	Mar 2014	Mar 2016	Jobs	%
Biological & Health Technology	12,358	13,641	1,283	10.4%
Advocacy	114,357	117,653	3,296	2.9%
Business Services	180,553	185,580	5,027	2.8%
Information Communications Technology	201,900	206,019	4,119	2.0%
Business & Leisure Travel	71,695	73,102	1,407	2.0%
Science & Security Technology	103,811	102,866	(945)	-0.9%
Media & Information	28,553	27,868	(685)	-2.4%
Clusters, Total	713,227	726,729	13,502	1.9%
Non-Cluster, Private	1,550,067	1,626,604	76,537	4.9%
Total, Private	2,263,294	2,353,333	90,039	4.0%
Government	677,112	689,270	12,158	1.8%
Total Jobs	2,940,406	3,042,603	102,197	3.5%
Clusters as a % of Jobs	24.3%	23.9%	13.7%	

Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

¹ Fuller, Stephen. *The Roadmap for the Washington Region's Future Economy*. December 2015.
http://sfullerinstitute.gmu.edu/wp-content/uploads/2017/01/roadmap_for_the_washington_regions_future_economy_123115.pdf

Two clusters had job decreases during this period: Science & Security Technology and Media & Information. Science & Security Technology decreased 0.9 percent and by 945 jobs, marking the first post-recession decline for this cluster. Media & Information lost 685 jobs for a decline of 2.4 percent. This cluster has had declines both regionally and nationally since the early-2000s, corresponding to the rise in web-based content and media, which usually requires fewer workers than print media.

Growth in the region's advanced industrial clusters lagged the growth in non-cluster employment in the private sector. The number of jobs in the private sector outside of clusters increased by 76,537 jobs, rising 4.9 percent, between March 2014 and March 2016. These gains were driven by Leisure & Hospitality jobs, primarily restaurants, which increased by 21,677 jobs (+4.5 percent). The Education & Health Services sector increased by nearly as much, adding 19,205 jobs (+2.6 percent). Together, these sectors accounted for more than one-half of the non-cluster growth during this period. These sectors are not export-based but rather are resident-serving and their growth is driven by population growth and demographic changes and not growth in national and global markets.

National Performance

Sixteen percent (16%) of private sector employment in the U.S. was in one of the seven clusters in March 2014. In the Washington region, 31.5 percent of all private sector jobs were in an advanced industrial cluster, or twice the percentage as the nation. This comparatively high concentration of jobs in these seven clusters confirms the region's competitive advantage among these clusters and indicates that the region should benefit disproportionately from national growth. However, the region did not achieve this performance during the 2014-2016 period and, as a result, growth in the Washington region lagged that of the nation.

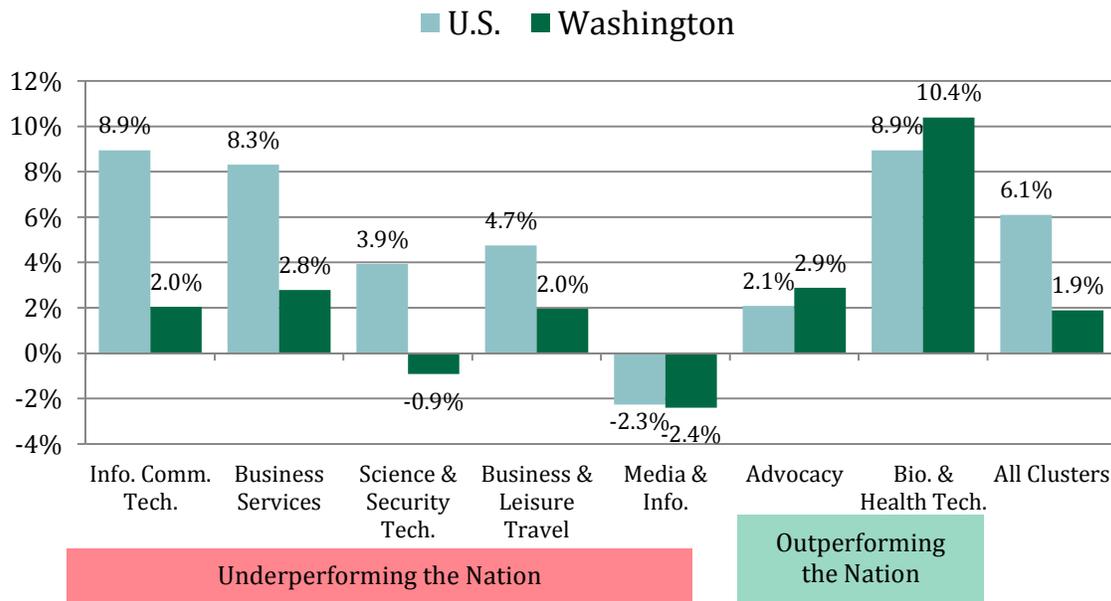
The number of jobs in the advanced industrial clusters increased 6.1 percent² nationally, more than three times as quickly than in the Washington region. As shown in Figure 1 on page 6, the Washington region outperformed the nation in only two clusters. The Biological & Health Technology cluster increase 10.4 percent in the Washington region but only 8.9 percent nationally. The only other cluster to outperform the nation, the Advocacy cluster, increased 2.9 percent within the region, gaining 3,296 jobs. Nationally, this cluster increased 2.1 percent.

All of the Washington region's other advanced industrial clusters underperformed their respective clusters nationally between March 2014 and March 2016. The Information & Communication Technology cluster lagged the national growth rate by 6.9 percentage points, the largest difference of any cluster. The Washington

² The national rates are calculated using the detailed industries and applying them to the region's base jobs in March 2014.

region added 4,119 jobs in this cluster, an increase of 2.0 percent. Nationally, this cluster increased 8.9 percent.

Figure 1. Employment Change in the Washington Region's Advanced Industrial Clusters, March 2014 to March 2016



Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

The Science & Security Technology cluster declined in the Washington region over the March 2014-March 2016 period, despite national gains. The Washington region had 945 fewer jobs (-0.9 percent) in this cluster in March 2016 compared to March 2014. Nationally, this cluster increased 3.9 percent.

Had the region followed national patterns for each of its seven advanced industrial sectors, the number of jobs generated by these clusters would have increased by 43,448 rather than the 13,502 new jobs they added. This underperformance cost the region's economy 29,946 jobs in its export-based, high-value added clusters for which the region is suppose to have a competitive advantage. Had this faster job growth been achieved, the number private sector jobs in the region would have increased by 5.3 percent instead of 4.0 percent and the region's total jobs would have increased 4.5 percent instead of 3.5 percent.

Biological & Health Technology Cluster

The Biological & Health Technology (BHT) cluster is the smallest of the clusters but had the strongest growth between March 2014 and March 2016. BHT growth in the region also exceeded that for the nation overall and was one of just two clusters to do so. The BHT cluster is less concentrated in the Washington region compared to the nation, as shown by a location quotient of 0.7. The location quotient measures the concentration of the jobs in the cluster relative to the nation. A location quotient of 1.0 indicates that the Washington region has the same share of private sector jobs as the nation. At 0.7, the BHT cluster has the lowest location quotient of all the clusters and is the only cluster to have a location quotient below 1.0.

The clusters are defined to only include the private sector employment and this cluster excludes about 40,000 federal jobs in the biological and health technology field. Their exclusion decreases the location quotient, but results in a cluster that is independent of the federal government.

As shown in Table 2, the BHT cluster increased by 1,283 jobs and 10.4 percent during the two-year period. There were gains in all detailed industries led by medical equipment & supplies manufacturing (+16.3 percent). The largest absolute gains were in research & development in biotechnology (+587) and pharmaceutical & medicine manufacturing.

Table 2. Employment in the Biological & Health Technology Cluster, Washington Region (Ranked by Percentage Change)

	Employment		Change	
	March 2014	March 2016	Jobs	%
Medical equipment & supplies manufacturing ¹	700	814	114	16.3%
Pharmaceutical & medicine manufacturing	4,266	4,830	564	13.2%
Research & development in biotechnology	6,117	6,704	587	9.6%
Medical equipment merchant wholesalers	1,275	1,293	18	1.4%
Biological & Health Technology	12,358	13,641	1,283	10.4%

Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

¹Includes nine jurisdictions covering 84 percent of establishments in the region.

The BHT cluster had more robust growth in the Washington region than in the nation. Nationally, this cluster increased 8.9 percent between March 2014 and March 2016, including a decline in medical equipment & supplies manufacturing.

The Roadmap identified two threats to this cluster: restricted federal research and government health coverage, and regulatory overreach. It is likely that the Trump administration will reduce, or attempt to reduce, both governmental health coverage and regulations that may affect this cluster. The reduction in governmental health coverage may result in a larger negative effect on regional activity in this cluster than the benefits that may be gained from reduced regulations.

Advocacy Cluster

The Advocacy cluster is the third largest cluster and had 114,357 jobs in March 2014. Over the March 2014-March 2016 period the Advocacy cluster added 3,296 jobs for a gain of 2.9 percent. As of March 2016, 5.0 percent of all private sector jobs in the region were in this cluster. Nationally, only 1.3 percent of private sector jobs were in this cluster. The resulting location quotient of 3.8 is the highest of all clusters.

Table 3. Employment in the Advocacy Cluster
Washington Region (Ranked by Percentage Change)

	Employment		Change	
	March 2014	March 2016	Jobs	%
Grantmaking foundations	3,798	4,509	711	18.7%
Religious organizations ¹	4,244	4,588	344	8.1%
Civic & social organizations	7,948	8,495	547	6.9%
Political organizations	1,555	1,626	71	4.6%
Voluntary health organizations	2,248	2,349	101	4.5%
Social advocacy organizations	22,121	22,975	854	3.9%
Marketing research & public opinion polling	2,532	2,614	82	3.2%
Business associations	17,901	18,235	334	1.9%
Social science & humanities research	14,239	14,492	253	1.8%
Professional organizations	19,275	19,615	340	1.8%
Public relations agencies	8,087	8,037	(50)	-0.6%
Other grantmaking & giving services	2,320	2,303	(17)	-0.7%
Labor unions & similar labor organizations	5,192	5,060	(132)	-2.5%
Other similar organizations	2,897	2,755	(142)	-4.9%
Advocacy	114,357	117,653	3,296	2.9%

Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

¹Includes an estimated 13 jobs in Rappahannock.

Among the detailed industries within this cluster, the highest percentage increase occurred in grantmaking foundations, which added 711 jobs for an increase of 18.7

percent (Table 3). The largest absolute increase occurred in social advocacy organizations, which increased by 854 jobs and 3.9 percent. Combined, these detailed industries accounted for nearly one-half (47.5 percent) the total increase in this cluster. The Advocacy cluster grew more quickly within the Washington region than the nation during the 2014-2016 period and was one of only two clusters to do so.

As identified by the Roadmap, the main threat for this cluster was the potential for reduction in federal spending, which might decrease the demand for lobbying. It seems increasingly likely that the Trump administration will decrease federal spending in non-defense and non-security agencies. However, the increased competition for federal dollars could result in more activity within this cluster, particularly early in the administration, as organizations lobby to preserve spending within their respective industries.

Business Services Cluster

The Business Services cluster is the second largest cluster, with 180,553 jobs, and accounted for 8.0 percent of the Washington region's private sector employment in March 2014. By March 2016, this cluster had grown to 185,580 jobs, an increase of 5,027 jobs and 2.8 percent. The location quotient of this cluster was the third highest and was 1.7 in March 2016.

As shown in Table 4, one-half the detailed industries in this cluster had gains. The fastest growth within this cluster occurred in all other professional & technical services (+49.9 percent), which includes a variety of specialty services such as non-real estate appraisal and patent broker services. The largest absolute job increase was in accounting & bookkeeping services, which added 3,025 jobs. While management consulting services had the second largest absolute job increase, firms specializing in the management of companies and enterprises had the largest job declines of the detailed industries, off-setting the job gains from the consulting services.

Nationally, the Business Services cluster increased 8.3 percent during this time (three times the percentage gain in the Washington region) and had increases in every detailed industry cluster except other technical consulting services.

The main threat identified by the Roadmap was a drastic reduction in federal spending that would result in a smaller client base for businesses in the region. Federal spending over the past two years has experienced slight gains. Consequently, the gains in this cluster have been modest, especially when compared to national trends. The Trump administration has been vocal about cutting federal spending. If it is successful in doing so, this cluster is likely to decline as it did during The Sequester, as it has yet to pivot sufficiently to a private sector client base to effectively reduce its vulnerability to changes in federal spending.

**Table 4. Employment in the Business Services Cluster
Washington Region (Ranked by Percentage Change)**

	Employment		Change	
	March 2014	March 2016	Jobs	%
All other professional & technical services	4,764	7,140	2,376	49.9%
Translation & interpretation services	1,474	1,817	343	23.3%
Accounting & bookkeeping services	31,453	34,478	3,025	9.6%
Other technical consulting services	10,704	11,232	528	4.9%
Management consulting services	78,714	81,148	2,434	3.1%
Architectural services	6,389	6,377	(12)	-0.2%
Management of companies & enterprises ¹	38,352	36,161	(2,191)	-5.7%
Employment placement agencies	3,855	3,571	(284)	-7.4%
Specialized design services	3,040	2,689	(351)	-11.5%
Executive search services	1,808	967	(841)	-46.5%
Business Services	180,553	185,580	5,027	2.8%

Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

¹Excludes the offices of bank holding companies sector outside of the District of Columbia, or about 10 establishments, which account for 0.9 percent of all management of companies & enterprises establishments.

Note: The financial services industries were not disclosed for any year and have been excluded from this cluster. Inforum reported 15,525 jobs in financial services in 2014.

Information & Communications Technology Cluster

The Information & Communications Technology (ICT) cluster is the largest cluster in the Washington region. In March 2016, the ICT cluster consisted of 206,019 jobs, or 8.8 percent of all private sector jobs in the region. Compared to March 2014, this cluster increased by 4,119 jobs and 2.0 percent. Nationally, 3.1 percent of all private sector jobs were in this cluster as of March 2016, resulting in a location quotient of 2.9 and the second highest of the region's clusters.

As shown in Table 5, the growth in this cluster was driven by 4 of the 11 detailed industries, led by computer facilities management services (+15.3 percent). The largest absolute increases were in computer systems design services (+4,151) and custom computer programming services (+3,339). The only other detailed industry with increased employment was other computer-related services, which includes computer disaster recovery services and software installation services.

Nationally, this cluster increased four times as quickly as in the Washington region, growing 8.9 percent, with increases in nearly every detailed industry.

Table 5. Employment in the Information & Communications Technology Cluster, Washington Region (Ranked by Percentage Change)

	Employment		Change	
	March 2014	March 2016	Jobs	%
Computer facilities management services ¹	1,929	2,225	296	15.3%
Other computer-related services	6,783	7,359	576	8.5%
Custom computer programming services	42,298	45,637	3,339	7.9%
Computer systems design services	99,556	103,707	4,151	4.2%
Data processing, hosting & related services	10,806	10,681	(125)	-1.2%
Software publishers	6,458	6,356	(102)	-1.6%
Computer training ²	187	176	(11)	-5.9%
Computer & software merchant wholesalers	7,950	7,207	(743)	-9.3%
Wired telecommunications carriers	19,665	17,246	(2,419)	-12.3%
Wireless, Satellite telecom. & all other telecommunications	6,268	5,425	(843)	-13.4%
Information Communications Technology	201,900	206,019	4,119	2.0%

Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

¹Includes nine jurisdictions covering 93 percent of establishments in the region. Fauquier and Prince William estimated in March 2014 using annual 2014 data.

²Includes Prince George's, Arlington, Prince William and Loudoun. Loudoun estimated in March 2014 using annual 2014 data.

The main threat identified by the Roadmap for this cluster was the strength of this cluster in other areas, specifically Silicon Valley and Austin, TX. Both the San Francisco-Oakland and Austin metropolitan areas had significant growth in this cluster between March 2014 and March 2016. San Francisco-Oakland added nearly 25,000 ICT jobs, for a gain of 19.4 percent. The number of ICT jobs in Austin increase by nearly 3,000 and 32.3 percent. Combined, these two metros accounted for 4.0 percent of the nation's jobs in this cluster in March 2014 but captured 12.9 percent of the growth over the next two years. By comparison, the Washington region had 5.9 percent of the nation's ICT jobs in March 2014 but only captured 1.9 percent of the growth. While the Washington region continues to have a competitive advantage in this cluster, this advantage weakened during the 2014-2016 period.

Business & Leisure Travel Cluster

In March 2014, the Business & Leisure cluster had 71,695 jobs and was the fifth largest cluster in the Washington region's economy. Over the next two years, this cluster added 1,407 jobs and increased 2.0 percent. In March 2016, this cluster accounted for 3.1 percent of private sector employment in the region, compared to the 2.8 percent in the nation. The resulting location quotient, 1.1, is the second lowest of the clusters.

**Table 6. Employment in the Business & Leisure Travel Cluster
Washington Region (Ranked by Percentage Change)**

	Employment		Change	
	March 2014	March 2016	Jobs	%
Convention & trade show organizers	2,512	2,937	425	16.9%
Scenic & sightseeing transportation	615	719	104	16.9%
Support activities for air transportation	4,094	4,659	565	13.8%
Museums	1,120	1,219	99	8.8%
Nature parks & other similar institutions	46	50	4	8.7%
Performing arts companies	2,562	2,782	220	8.6%
Taxi & limousine service	1,827	1,888	61	3.3%
Traveler accommodation	40,113	40,618	505	1.3%
Promoters of performing arts & sports	2,937	2,934	(3)	-0.1%
Travel arrangement & reservation services	3,843	3,820	(23)	-0.6%
Air transportation	10,988	10,559	(429)	-3.9%
Spectator sports ¹	1,038	917	(121)	-11.7%
Business & Leisure Travel	71,695	73,102	1,407	2.0%

Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

¹Includes seven jurisdictions covering 81 percent of establishments in the region.

The majority of the detailed industries in this cluster had more jobs in March 2016 compared to March 2014 (Table 6). The convention & trade show organizers and scenic & sightseeing transportation led in growth, increasing 16.9 percent each. The largest absolute gain was in support activities for air transportation, which added 565 jobs. These gains were partially offset by losses, most notably in air transportation and spectator sports. Combined, these detailed industries lost 550 jobs (-4.6 percent).

The Roadmap identified climate change as the main threat to this cluster. While this remains a longer-term threat, this cluster may benefit in the near-term from increased advocacy. However, conventions and association meetings may be reduced if budgets tighten and the increased tourism related to protests will not have a large enough impact to counteract these decreases. Additionally, protests may deter international travelers, who spend more on average than domestic tourists. Early reports indicate a decline in business conferences booked annually at major DC hotels due to the adverse political climate.

Science & Security Technology Cluster

In March 2014, the Science & Security Technology (SST) cluster consisted of 103,811 jobs and was the fourth largest of all the clusters in the Washington region. Over the next two years, the number of jobs in the SST cluster decreased by 945 jobs to 102,866. Even with this decline, the SST cluster had the fourth highest location quotient, at 1.7, and accounted for 4.4 percent of the private sector jobs in the region in March 2016.

**Table 7. Employment in the Science & Security Technology Cluster
Washington Region (Ranked by Percentage Change)**

	Employment		Change	
	March 2014	March 2016	Jobs	%
Investigation & security services	31,560	32,476	916	2.9%
Environmental consulting services ¹	3,789	3,874	85	2.2%
Other physical & biological research	22,414	22,716	302	1.3%
Emergency & other relief services	5,372	5,183	(189)	-3.5%
Engineering services	39,715	37,854	(1,861)	-4.7%
Other transportation equipment manufacturing	125	104	(21)	-16.8%
Aerospace product & parts manufacturing	836	659	(177)	-21.2%
Science & Security Technology	103,811	102,866	(945)	-0.9%

Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

¹Includes an estimated 61 jobs in nine non-disclosed jurisdictions in March 2016.

As shown in Table 7, only three of the seven detailed industries within the SST cluster had job gains between March 2014 and March 2016. The largest two-year job gains were in investigation & security services, which increased by 916 jobs and 2.9 percent. Environmental consulting services added 85 jobs and other physical & biological research increased by 302 jobs. The largest losses were from engineering services, which declined by 1,861 jobs or 4.7 percent.

Nationally, this cluster increased 3.9 percent over this two-year period and had gains in all detailed industries. This is the only cluster that declined within the Washington region but had growth in the nation overall.

The Roadmap identified two main threats to this cluster. First, reductions in federal spending in defense, space and research would suppress overall growth in private sector SST. Second, growth in international firms would increase competition. The Trump administration is likely to increase defense spending, but the funding may be increasingly concentrated in spending on supplies and personnel, instead of research. While there has been growth in international security firms, privacy laws and national security concerns may continue to keep SST activity in the U.S.

Media & Information Cluster

The Media & Information cluster is the second smallest cluster in the Washington region and had 28,553 jobs as of March 2014. Over the next two years, the number of jobs in this cluster decreased by 685, or 2.4 percent. With a location quotient of 1.5, this cluster had the fifth highest (third lowest) concentration of jobs among the clusters.

As shown in Table 8, the decline was driven primarily by newspaper publishers and periodical publishers. The number of jobs in newspaper publishers decreased by 1,250 (-20.3 percent) between March 2014 and March 2016. The number of jobs in periodical publishers decreased by 529 jobs during the same period. Half of the detailed industries within this cluster had job gains. The number of jobs in radio stations increased 19.3 percent, or by 166 jobs, and had the sharpest percentage gains. The largest absolute increase (+457 jobs) was in all other information services, which includes news syndicates.

Nationally, this cluster also had employment declines between March 2014 and March 2016, down 2.3 percent. Among the clusters, the Media & Information cluster most closely matched the national employment trend.

The rise of web-based content was identified as the main threat to this cluster by the Roadmap. This structural shift has resulted in declines in this cluster both nationally and in the Washington region. The losses in the region have slowed during the 2014-2016 period when compared to the prior decade, potentially indicating that the structural change is nearing its end. The Trump administration's increased media attention may result in near-term gains in this cluster.

**Table 8. Employment in the Media & Information Cluster
Washington Region** (Ranked by Percentage Change)

	Employment		Change	
	March 2014	March 2016	Jobs	%
Radio stations	860	1,026	166	19.3%
All other information services	2,460	2,917	457	18.6%
Internet publishing & web search portals	3,125	3,537	412	13.2%
Television broadcasting	3,298	3,561	263	8.0%
Libraries & archives	624	662	38	6.1%
Book publishers	629	654	25	4.0%
Books printing	535	520	(15)	-2.8%
Cable & other subscription programming	3,181	3,091	(90)	-2.8%
Radio networks	1,893	1,815	(78)	-4.1%
Periodical publishers	5,205	4,676	(529)	-10.2%
All other publishers	582	498	(84)	-14.4%
Newspaper publishers	6,161	4,911	(1,250)	-20.3%
Media & Information	28,553	27,868	(685)	-2.4%

Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU

Comparative Performances of Washington Region and U.S. Clusters

The Washington region's advanced industrial clusters were identified in the Roadmap as having the potential to be the source of the region's future economic growth in place of growth in federal spending (payroll and procurement) that had driven the region's growth until 2010. These clusters were defined to be export-based, high-value added, non-federally dependent, and having high growth potential for which the Washington region had a comparative advantage.

The analysis of these clusters' performances over a two-year period (March 2014-March 2016) since The Sequester, compared to their respective performances nationally, shows that only two of the seven clusters performed better (registered a higher two-year job growth rate) in the Washington region than nationally. This analysis also found that two of the Washington region's clusters lost jobs during this two-year period. One of these declining clusters experienced gains nationally while the other cluster that declined in the Washington region also experienced job losses nationally but at a lesser rate.

In total, of the Washington region's seven advanced industrial clusters, two outperformed their respective clusters nationally and five underperformed their respective cluster nationally. Had all seven clusters in the Washington region

achieved the growth rates of their respective national clusters, the Washington region's economy would have added 43,448 new jobs in these clusters instead of the 13,502 actual jobs added by these clusters. This differential performance is shown in Table 9.

Table 9. Comparative Cluster Performances: Washington Region and the U.S. March 2014-March 2016

	Actual Cluster Job Gain	Cluster Job Gain At U.S. Growth Rate¹	Jobs Growth Difference
Biological & Health Technology ²	1,283	1,104	(179)
Advocacy ²	3,296	2,450	(846)
Business Services	5,027	15,011	9,984
Information Communications Technology	4,119	18,042	13,923
Business & Leisure Travel	1,407	3,405	1,998
Science & Security Technology	(945)	4,084	5,026
Media & Information	(685)	(645)	40
Totals, All Cluster	13,502	43,448	29,946

Sources: U.S. Bureau of Labor Statistics (Quarterly Census of Employment and Wages); The Stephen S. Fuller Institute at the Schar School, GMU.

¹Applies national growth rate by detailed industry to the Washington region's base in March 2014. May not sum due to rounding.

²Washington region's cluster outperformed respective U.S. cluster.

Underperformance cost the Washington region's clusters a total of 29,946 jobs. Had these unrealized jobs been generated; that is, had the Washington region's advanced industrial clusters grown only at the same growth rate as their respective national clusters achieved during the two-year period, total cluster job growth would have been 6.1 percent rather than 1.9 percent. Similarly, total job growth in the region would have totaled 4.5 percent rather than 3.5 percent, assuming no multiplier effect from cluster job growth on non-cluster jobs, which has been shown to exist. This cluster underperformance has significant economic (gross regional product) implications due to the export and high-value added characteristics of these unrealized cluster jobs. This underperformance also raises serious questions regarding the region's ability to pivot away from and reduce its dependency on federal spending as the principal determinant of the region's economic vitality.

Conclusions

The Washington region's economy has experienced growth in its non-federally dependent clusters during the two years immediately following The Sequester beginning in March 2014. The research reported herein shows that the seven advanced industrial clusters, which were identified in the Roadmap as having the

potential to replace federal spending as the principal source of future growth, grew during this period. They added 13,502 net new jobs for a gain of 1.9 percent. These are clusters that are export-based, high-value added, non-federally dependent, and for which the Washington region has a comparative advantage.

However, this research also found that their aggregate performance fell substantially below the growth rates of their respective clusters nationally. Nationally, these same seven clusters grew by 6.1 percent. This underperformance cost the Washington region 29,946 jobs, jobs that would have been added to the region's employment base had its seven advanced industrial clusters grown at their respective national rates rather than what they actually achieved. Stated another way, the growth of the Washington region's non-federally dependent clusters, for which it has a competitive advantage, only achieved 31 percent of the job growth that they would have achieved had they grown at the rates of their respective national clusters.

This performance in these early years of the Washington region's post-Sequester period has several possible explanations. The first is that pivoting a \$500 billion economy from its substantial and historic dependence on federal spending is a long-term process and it will take many years to achieve. The second explanation is that the Washington region's economy is so integrally interconnected to the region's federal functions that it cannot pivot away from these historic interdependencies in any meaningful way; that is, Washington is a company town, always will be a company town and will enjoy the cycle of vitality that parallels changes in federal spending and policies.

A variation to these extremes might be what is revealed in the details of the analyses presented here. It should be noted that two of the Washington region's clusters did outperform their respective national clusters. Furthermore, each cluster in the Washington region included sub-clusters—detailed industries—that registered strong job growth during this period, even in the two clusters that experienced actual job losses.

Considering the facts that (1) two years is a short timeframe for assessing the long-term restructuring of a large and advanced economy, (2) the strength of the federal government's direct and indirect interdependencies that have historically and continue to shape the Washington region's economy provide the region its primary competitive advantages in the national and global economies, and (3) the Washington region's economy does possess seven advanced industrial clusters in which it has a concentration of non-federally dependent employment (and that are export-based and high-value added) that are growing rapidly in the national economy, suggest the following conclusions.

- The Washington region's economy may still successfully diversify away from its over-dependence on federal spending as its principal driver of future growth but this will take time and will not likely accelerate without strategic

- interventions by local governments and private sector leaders acting regionally to establish the ecosystems required to support more rapid growth of businesses with proven growth potential within these clusters;
- The Washington region's economy will continue to be vulnerable to changes in federal spending and policies and local government and business leaders should recognize the costs and benefits of this continuing vulnerability in their collaborative efforts to protect the regional economy from the downside of these changing conditions as well as to realize the advantages that accrue from the beneficial economic independencies of national capital functions; and,
 - As a short-term strategy aimed at advancing the pivot of the regional economy away from its current degree of dependence on federal spending and indirect interdependencies to drive future economic growth, local economic policies and programs should be directed to the detailed industries within the seven advanced industrial clusters that are performing strongly during this early stage of regional economic diversification; this short-term targeted strategy would build on the growth momentum that is inherent in the region's economy as indicated by the above-average rates of job growth of select detailed industries within the region's clusters (these are identified in Tables 2-8).

The listing of target detailed growth industries is only a start; it is not complete. More attention needs to be given to identifying those businesses that have successfully pivoted away from federal spending dependence or were established initially as non-federally dependent businesses. The ecosystems that support these non-traditional Washington-based businesses—non-federally dependent businesses that have succeeded in competing in national and global markets—need to be better defined and understood so that they can be replicated and the businesses that they support can be effectively attracted and incubated locally.

The Washington region continues to be a company town-based economy and many of the clusters that have been identified as offering the potentials for non-federally dependent growth in fact are closely connected to this federal base. This is the region's competitive advantage. Still, this leaves the economy vulnerable to changes in federal spending policy. Some of these clusters have a position in both markets, the federal and the non-federal. And, a few businesses in these clusters only do non-federal business although they may have had their origins directly or indirectly from the federally based economy; these are the ones, either that have pivoted away to a new market direction or that developed initially only serving the non-federally based market that should be the focus of efforts to grow a parallel economy that can mitigate the downside of reductions in federal spending and capture the benefits of national and global economic growth in the Washington region.

Unless these types of businesses that can operate successfully in a non-federally dependent ecosystem can be identified—businesses that find the Washington base comfortable and encouraging—it will be impossible to promote these non-traditional business models (for the Washington area) into common occurrences in the regional economy. The more of these non-federally dependent businesses operating locally, the less vulnerable the regional economy will be to future changes in federal policy. While the federal core will always be central to the Washington region's economy, reducing this dependence should be the principal goal of the region's economic development initiatives.

About These Data

All data are from the U.S. Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW). For confidentiality, BLS withholds employee and wage data “to the extent needed to protect the confidentiality of sensitive data.” In general, if there are fewer than three establishments or any single establishment constitutes 80 percent of the industry, then the data are not disclosed. Because of this non-disclosure, some industries either include estimates for some detailed industries or exclude jurisdictions that typically account for a small share of the industry's establishments. The QCEW data are based on unemployment insurance and excludes self-employment, proprietors, domestic workers and other types of employment not covered by unemployment insurance. Because of these exclusions, the QCEW reflects fewer jobs than other public sources. However, the QCEW provides detailed data on industries that other public sources do not.