

# Regional Entrepreneurial Assessment: Survey Findings to Inform Strategy Development

Region 6: Mary Ball Washington

January 3, 2019

# Agenda

- Study objective
- Preview of briefing report deliverable
- Survey findings to inform startup strategy development

# Study Objective

**GO Virginia concerned that Virginia lags in the creation and growth of new ventures**

**Improving the state's performance requires each region to assess and address their specific needs:**

- Recognize entrepreneurial development is a very localized phenomenon
- Enable regions to access state resources and tools tailored to the needs of their specific regions
- Empower local stakeholders to play a key role in governance and oversight

# Table of Contents

- I. Project Overview
- II. Project Key Steps
- III. Framework for Assessment
- IV. Situational Assessment
- V. Identification of Potential Priority Actions

## Appendices:

- Appendix A: Listing of Working Group Members
- Appendix B: Data Trends on Entrepreneurial Development
- Appendix C: Regional Asset Inventory
- Appendix D: Competitive Benchmarking
- Appendix E: Benchmark Case Study Profiles

The purpose of this briefing report is to provide a high-level baseline assessment of entrepreneurial development and identification of potential priority actions in GO Virginia Region 6 – Mary Ball Washington region.

TEconomy Partners, LLC was engaged by the GO Virginia Statewide Board to provide each GO Virginia region an independent and objective assessment of its entrepreneurial development position, to facilitate a situational assessment of the region's entrepreneurial ecosystem, and to help identify, with local leaders, priority actions to help strengthen the ecosystem.

## *Setting the Context: Importance of Entrepreneurial Development for Regional Growth*

- In 2017, there were 1,086 surviving traded sector startups formed since 2007 in Region 6.
- 6,090 jobs in 2017 were found in these 1,086 surviving startups
- By comparison, over the 2007-2017 period, total traded sector industry employment grew by 5,202 jobs in Region 6.
- Traded sector startups account for only 1:2 traded sector companies, but 1.2:1 net new jobs.

# Project Work Plan

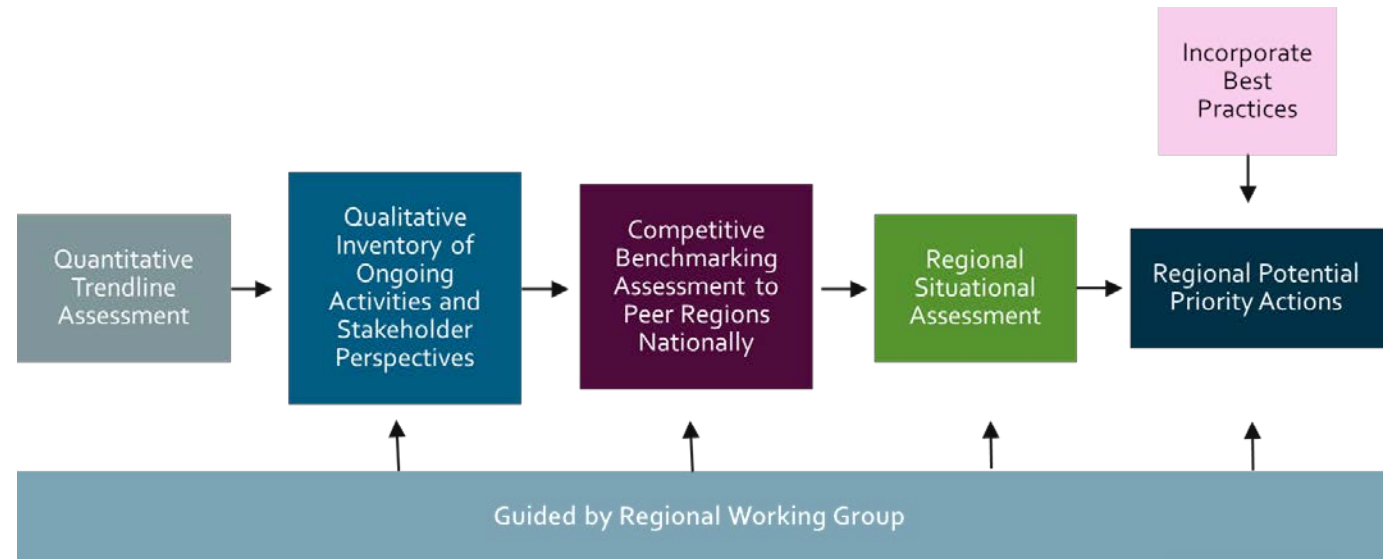
The work plan for preparing this Region 6 entrepreneurial development assessment involved examining:

- Recent data trends in entrepreneurial development
- Ongoing entrepreneurial activities and stakeholder perspectives
- Competitive position to peer regions nationally

These analyses were then utilized to develop a situational assessment of gaps and weaknesses to address and strengths and opportunities to build upon.

Based on the situational assessment and informed by best practices nationally, a set of potential priority actions has been identified for further development by GO Virginia Region 6 to catalyze the development of a robust innovation ecosystem.

## Overview of Work Plan for GO Virginia's project:

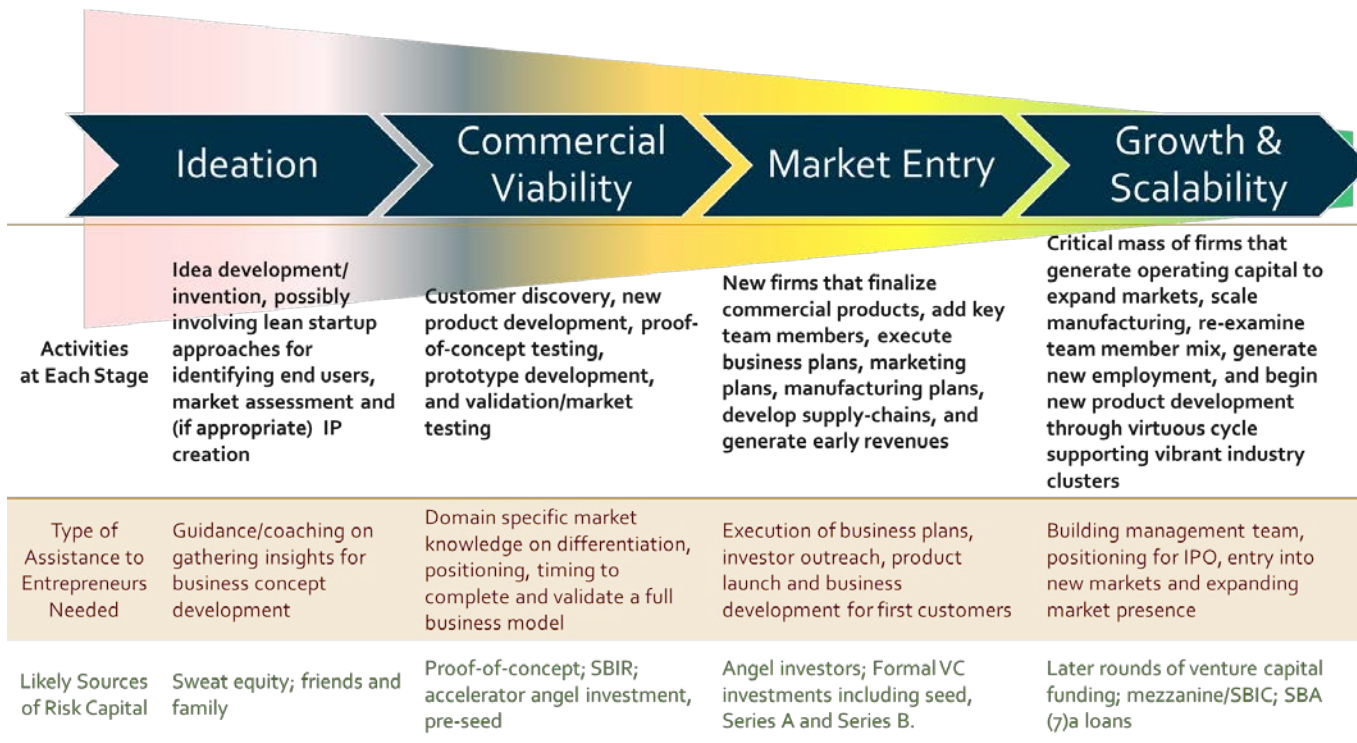


See Appendix A for listing of Working Group members from Region 9

# Strategic Framework: Focus on Entrepreneurial Development Stages Across Traded Sector Industries

## Stages of Entrepreneurial Development

Entrepreneurship is a process involving an interconnected set of development stages supported by public and private resources and services that generates successful new startup businesses to drive regional economic growth. If a region is underperforming in any stage of entrepreneurial development, then it will not realize its full potential in advanced industry development.



## Focus on Entrepreneurial Development in Traded Sector Industries

Of particular importance to GO Virginia is focusing on those new start-ups in traded sector industry activities that serve customers and markets beyond their local communities, and as a result, can drive regional economic growth. It includes industries such as: manufacturing; professional, scientific and technical services; information technology; finance and insurance; transportation and warehousing; mining; agriculture and food processing.

US Cluster Mapping Project describes the critical importance of a strong base of traded industry sectors :

*"[Traded industry clusters] are free to choose their location of operation (unless the location of natural resources drives where they can be) and are highly concentrated in a few regions, tending to only appear in regions that afford specific competitive advantages.*

*Since traded clusters compete in cross-regional markets, they are exposed to competition from other regions...Traded clusters are the "engines" of regional economies; without strong traded clusters it is virtually impossible for a region to reach high levels of overall economic performance."*

# EXAMPLE: Assessment of Growth & Scalability in Region 6

## Overall Assessment:

Region 6 has a lower share of traded sector employment in startups 0-5 years (6.6% vs 7.1%) and a higher share of employment in startups 6-10 years (8.8% vs 7.3%) compared to the state average. Region 6 had eight Inc 5000 companies which is lower than other mid-sized regions (peers have universities with Colleges of Engineering). There is an opportunity to increase traded sector startup activity and growth with more industry engagement and mentoring around existing startup programs.

## Strengths and Opportunities:

- **Higher share of traded sector employment in startups 6-10 years compared to state average.** In Region 6, 8.8% of traded sector employment was in startups 6-10 years of age compared to 7.3% at the state level.
- **Moderate number of Inc. 5000 companies for a region without a College of Engineering.** Compared to other mid-sized regions, such as Dayton, OH; Greenville, SC; and Raleigh, NC, the number of Inc. 5000-ranked companies (high three-year average revenue growth) was lower in Region 6 (8 companies compared to 13 in the benchmark region in 2017). However, Region 6 lacks a university with a College of Engineering.
- A couple of programs, such as the SBDC-affiliated, GMU Innovation Commercialization Assistance Program and BlueEagle Incubator are focused on supporting high-growth potential companies.

## Gaps and Weaknesses:

- **Share of traded sector employment in startups 0-5 years of age lower than state average.** In Region 6, 6.6% of traded sector employment was in startups 0-5 years compared to 7.1% at the state level.
- **High-growth companies concentrated in traded industry sectors tied to Federal government contracting.** From 2007-17, Business Services (77 high-growth companies) was the most represented, followed by IT Services (26 companies), R&D, Engineering, and Technical Services (23 companies), and Transportation & Logistics (22 companies).
- **Reported venture capital activity is minimal.** Only 12 deals reported by PitchBook from 2010-2017. Six deals were in one smart grid company. However, venture capital is only one type of capital in the capital continuum.

**High-Growth Startups by Traded Sector Industry Compared to Total Surviving Startups, 2017**

Major Industry Cluster	Number of Start-ups Surviving by 2017	Number of High Growth Start-ups in 2017**
Agriculture & Food Processing	101	6
Business Services	514	77
Energy, Natural Resources, & Finished Products	57	14
Engineering, R&D, Testing & Technical Services	94	23
Financial & Insurance Services	127	7
Health Care Services	36	8
Information Technology & Communications Services	74	26
Life Sciences	34	10
Manufacturing	72	16
Ship Building, Aerospace, & Defense	3	2
Transportation, Distribution and Logistics	128	22



## Nov. 13, 2018 Meeting

- Convened group of stakeholders interested in startup activity at GWRC office
- Presented TEConomy assessment of Region 6 performance on a set of startup metrics
- Discussed regional strengths and weaknesses and possible initiatives that could underpin future work by the Council and stakeholders
- Deployed a survey to gauge priorities

Participants of  
November 13, 2018  
Meeting focused on  
Startups/Innovation/  
Commercialization

- Brian Baker, UMW Center for Economic Development
- Neal Barber, Community Futures
- Kelly Copley, Stafford County ED
- Kate Gibson, George Washington Regional Commission
- Chris Hodge, NSWC Dahlgren
- Lewie Lawrence, Middle Peninsula PDC
- Melinda May, Featherstone CPA
- Kim McClellan, Fredericksburg Area Association of Realtors
- Linda Millsaps, George Washington Regional Commission
- Nick Minor, Fredericksburg Regional Alliance
- Barbara Taylor
- Kimberly Young, University of Mary Washington
- Janet Gullickson, Germanna Community College
- Jeanne Wesley, Germanna Community College

# Survey

- Sent to everyone invited to this Region 6 GO Virginia Council meeting and to companies invited by UMW CED/Blue Eagle Incubator
- Received 44 responses
  - 15 companies (startup and existing)
  - 12 economic and community development (government, nonprofit, higher ed)
  - 5 higher education
  - 2 financial institutions
  - 10 other/unknown
- Not enough responses for each category to be “representative”
- No R&D institutions responded (that perspective missing from technology commercialization questions)

Survey respondents ranked “developing the startup ecosystem based on a shared vision,” “piloting new approaches,” and “supporting ‘local-growth’ companies” as top 3 principles

N=44  
“1” least important  
“5” most important

### Question about principles that should embody any regional startup ecosystem strategy

Principle	Avg Rating
Develops ecosystem through a shared common vision of connecting startups to the right resources and removing barriers	4.6
Encourages piloting of new approaches that can be scaled if successful or eliminated if not	4.3
Supports “local-growth” companies	4.2
Builds community within and across regions	3.7
Supports “high-growth” companies	3.6
Is low ego and driven by a sense of service	3.2

Distribution of ratings tells us more than the average rating for this question. Top “5” and “4”-rated initiatives were “high-growth” startup programming, talent pipeline, “local-growth” startup programming, and technology commercialization.

N=44  
 “1” least important  
 “5” most important

Question asking to rate the importance of each type of overarching initiative

Potential Initiative	Rating of Importance						Survey
	Avg	“1”	“2”	“3”	“4”	“5”	N
“High-growth” startup programming	4.02	2	4	4	15	19	44
Talent pipeline	4.02	3	1	7	14	19	44
“Local-growth” startup programming	4.05	1	2	8	16	17	44
Technology Commercialization	3.93	0	3	14	10	17	44
Capital	3.89	2	2	10	15	15	44

Note: No responses from any R&D organizations in the Mary Ball Washington region. Only two financial institution respondents.

# Framework for strategy development

Initiative (overarching goal)

```
graph TD; A[Initiative (overarching goal)] --> B[Strategies (actions to achieve goals)]; B --> C[Tactics (how to implement)];
```

Strategies (actions to achieve goals)

Tactics (how to implement)

# Initiative 1: Talent Pipeline



## Strategies

1. Offer entrepreneurship training for students beginning in high school
2. Expand student internships with startups
3. Convene events like startup challenges and CEO talks at high schools

## Initiative 1: Talent Pipeline

### Tactics for Strategy 1 “entrepreneurship training”

- 1.1 What are existing programs (e.g., formal/informal, target audience, etc.) and what are their outcomes?
- 1.2 Where are the gaps in existing programs (e.g., community involvement, geographic coverage, etc.)?
- 1.3 How can other stakeholders contribute to existing programs to strengthen them and improve outcomes?
- 1.4 Can entrepreneurship training be built into apprenticeship and other programs?



## Initiative 1: Talent Pipeline

### Tactics for Strategy 2 “startup internships”

- 2.1 Is the goal of the internship to help the startup company or to help the student see startups as one career path? Two different things.
- 2.2 Who will identify interested companies and the skills sets they need? How much company demand is there?
- 2.3 Who will perform outreach to schools and students?
- 2.4 Who will coordinate postings, student applications, and feedback on student and company?

## Initiative 1: Talent Pipeline

### Tactics for Strategy 3 “events to raise student interest”

3.1 What are existing programs, what are their goals, and what are their outcomes? A startup challenge at the end of an entrepreneurship training course (educational + build community) is different from a startup challenge to solve a problem for a company (innovation).

3.2 Type of events mentioned by stakeholders: UMW StartUp Challenge, startup CEO speaker series in classes, at career days, as instructors, etc.

3.3 How can these events be tied to other talent pipeline programs?

## Initiative 2: “High-growth” Startup Programming

### Strategies

1. Define “high-growth” startup
2. Define differences in required resources for this group
3. Expand mentorship programs and involve angels
4. Expand networks and networking events

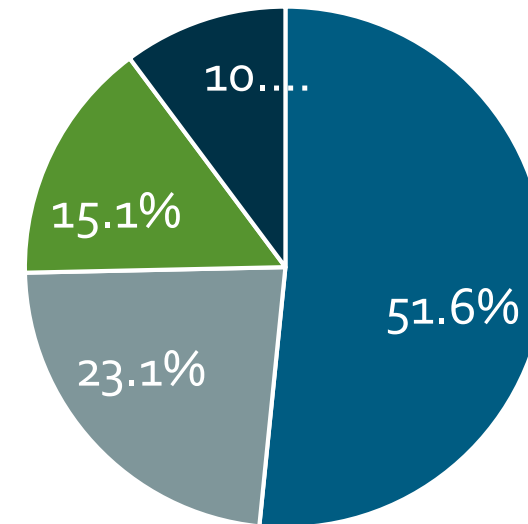
## Initiative 2: “High-growth” Startup Programming

### Tactics for Strategy 1 “defining ‘high growth’ startup”

#### Criteria:

- “Traded sector” company:  
Leverage national and international customer base and exposed to national and international competition
- At least \$2M in revenue and three years of annualized 20% revenue growth

Breakdown of Small Companies in Virginia by Number of Employees



■ 1 to 4 ■ 5 to 9 ■ 10 to 19 ■ 20 to 49

Inc 5000 companies (ranked by past 3-years revenue growth) are in the defense contracting space

## Inc 5000 Ranked Companies in Mary Ball Washington Region, 2017

Region 6: Mary Ball Washington	Founded	Revenue	Employees	Inc 5000	SBIR	Patents	VC
IntelliWare (Fredericksburg) - cybersecurity	2005	\$27M	155	2015 2016 2017	x	x	x
IST Research (Fredericksburg) - software	2008	\$7M	44	2015 2016 2017	yes	yes	x
MarathonTS (Kilmarnock) – IT recruitment	2009	\$19M	165	2015 2016 2017	x	x	x
ATSI (Fredericksburg) – govt contract management	2011	\$12M	65	2015 2016 2017	x	x	x



## Initiative 2: “High-growth” startup programming



### Tactics for Strategy 2 “defining resources for ‘high-growth’ companies”

2.1 Interview successful “high-growth” companies about pain points and lessons learned

- What did they need that they couldn’t find or still have trouble finding in the region?
- What networks and resources have been valuable to them?  
(Gauge their interest in serving as mentors, hiring interns, speaking at startup events, etc.)

2.2 Build common base of knowledge among stakeholders about type of resources specific to “high-growth” startups

## Initiative 2: “High-growth” startup programming

### Tactics for Strategy 3 “expand mentorship programs”

- 3.1 What are existing programs, and what are their outcomes?
- 3.2 Where are the gaps, and how can programs be strengthened?
- 3.3 How can we identify and engage more in-region/out-of-region mentors?
  - Invite successful models from outside region to present on how they developed this network.
  - Invite successful CEOs to talk about who their best mentors were and what type of advice they provided.

## Initiative 2: “High-growth” startup programming

### Tactics for Strategy 4 “expand networks and networking events”

- 4.1 What are existing formal and informal networks?
- 4.2 Where are the gaps (e.g., by sector, by geography, etc.)?
- 4.3 Develop list of interested community leaders and expertise
- 4.4 Develop list of out-of-region networks and point-of-contact, e.g., NVTC, CIT, angel groups, etc.
- 4.6 Coordinate and co-brand regional networking events—can be convened by different participants around different themes; can invite out-of-region participants



## Initiative 3: “Local-growth” Startup Programming



### Strategies

1. Deepen and expand peer-to-peer networks and programming to build community (e.g., Main Street orgs, UMW veteran-owned, women-owned, etc.)
2. Host meet-ups, workshops, and events at different venues to highlight resources and to cross-fertilize these networks
3. Identify where to send entrepreneurs if they have a business idea vs already have initial customers vs trying to scale or encountering certain challenges.

## Initiative 3: “Local-growth” Startup Programming

### Tactics for Strategy 1 “build upon/expand existing programming”

- 1.1 Assess existing programs and lead organizations (e.g., Main Street orgs, UMW SBDC, EagleWorks Incubator, etc.)
- 1.2 Identify gaps in programming (e.g., by type of program, by region, by sector, etc.)
- 1.3 Invite leadership of a different network to attend your group’s event
- 1.4 Develop new programming to address gaps and have existing organizations specialize to provide services at certain stage in a company life cycle or by industry vertical

## Initiative 4: Continuum of Capital



### Issues



1. Different types of capital are appropriate depending on what a company is trying to do: grants, micro loans, loans, equity
2. Survey responses differed regarding the extent of demand for micro loans—question whether the demand exists for all the new micro loan programs
3. Kauffman statistic: > 81% of entrepreneurs do not access a bank loan or VC
4. CO.LAB's Kiva Platform offers interesting microloan program and profile of entrepreneurs seeking funding in Chattanooga; they already have products and services in the market and are looking for capital to purchase additional equipment, insurance, inventory, etc., to scale up.

## Initiative 4: Continuum of Capital



### Existing Loan Programs

- Federicksburg Main Street Micro Loan Program
- Stafford County Micro Loan Program
- Virginia Small Business Financing Authority Micro Loan Program
- UMW SBDC provides SBA 7(a) program assistance
- Rappahannock Economic Development Corporation runs SBA-504 program
- UMW works with DC ArchAngels and New Richmond Ventures Private Investment Fund

## Initiative 4: Continuum of Capital



### Strategies

1. Leverage organizations working with “local growth” companies to direct good deal flow toward micro loans programs
2. Use CEOs of successful startups as review committee for micro loans—these reviewers could be future investors in private fund (be careful of conflict of interest though)
3. Engage financial advisors in networking events, talks by CEOs of high-growth companies, speakers from other regional angel groups talking about how their fund got started—impact and lessons learned

## Initiative 5: Technology Commercialization



### Strategies

1. Encourage the formation of technology councils through outreach to both companies and research institutions (Dahlgren, VIMS, Langley, UMW faculty)
2. Bring regional startup programming to research institutions and engage entrepreneurial researchers in technology-based startup networking events
3. Make technology commercialization part of the “high-growth” startups strategic initiative

# Next steps for strategy development



## Process

- Champions and working committees to organize and lead each initiative is key
- For each strategy's "how", think about existing programs, demand for programs, outcomes, and gaps
- Based on the analysis, will know what else needs to be developed, expanded, or refocused to provide a better division of labor across existing organizations
- Going back to principles, the goal is to remove bottlenecks and help companies find needed resources as quickly as possible

Contact:  
Jennifer Ozawa  
Innovation Director  
TEconomy Partners  
Tel. 703-310-9800  
[ozawaj@teconomypartners.com](mailto:ozawaj@teconomypartners.com)



# Backup Slides

## Why Focus on Traded Industry Sectors?

- New business creation is important for all regions. However, nationally, a small share of firms account for a disproportionate share of economic output and employment. **These firms tend to be in traded industries.**
- **Traded Industries** leverage customers outside the region and are exposed to national and international competition. They include manufacturing; professional, scientific and technical services; information; finance and insurance; transportation and warehousing; mining; agriculture; and tourism-related industries.
- **Local industries** serve the local market and correlated to size of population: local K-12 school system, local hospitals, restaurants and retail, utilities, etc.

### Importance of Startups for Regional Growth

- In 2017, there were 1,086 surviving traded sector startups formed since 2007 in Region 6.
- 6,090 jobs in 2017 were found in these 1,086 surviving startups
- By comparison, over the 2007-2017 period, total traded sector industry employment grew by 5,202 jobs in Region 6.
- Traded sector startups account for only 1:2 traded sector companies, but 1.2:1 net new jobs.

In 2017, traded companies accounted for 12.1% of all companies and 13.3% of all company employment, but 19.6% of the high-growth startups in Region 6.

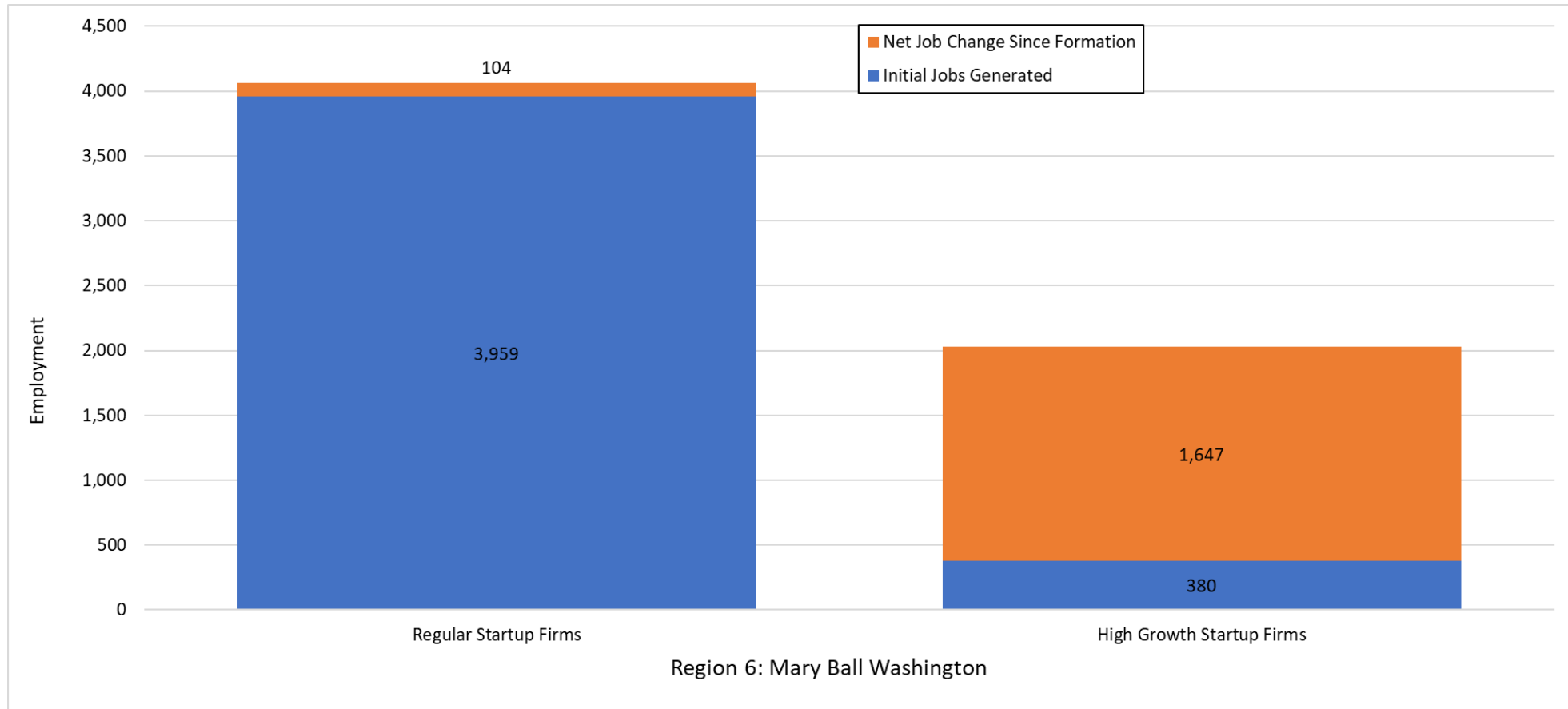
### Companies and Employment in Traded Sector vs Non-Traded Sector Companies: Mary Ball Washington (Region 6), 2017

Total 2017 Companies	Traded	Non-Traded	Total	Traded/Total
All	2,037	14,819	16,856	12.1%
Startups	1,086	7,010	8,096	13.4%
High-growth startups	132	541	674	19.6%
Total 2017 Employment	Traded	Non-Traded	Total	
All	22,602	146,959	169,561	13.3%
Startups	6,090	40,603	46,693	13.0%
High-growth startups	2,027	8,300	10,327	19.6%

# Disproportionate share of lasting net job creation observed from high-growth\*\* traded sector startups

## Initial and Net Employment Growth Generated by Current Traded Sector Startups in Mary Ball Washington Region: Firms that are < 10 years in 2017

	Total VA Regular Startup Firms	Total VA High Growth Startup Firms
Initial Jobs Generated	124,266	10,474
Net Job Growth Since Formation	-959	52,944



Source: Business Dynamics Research Consortium database

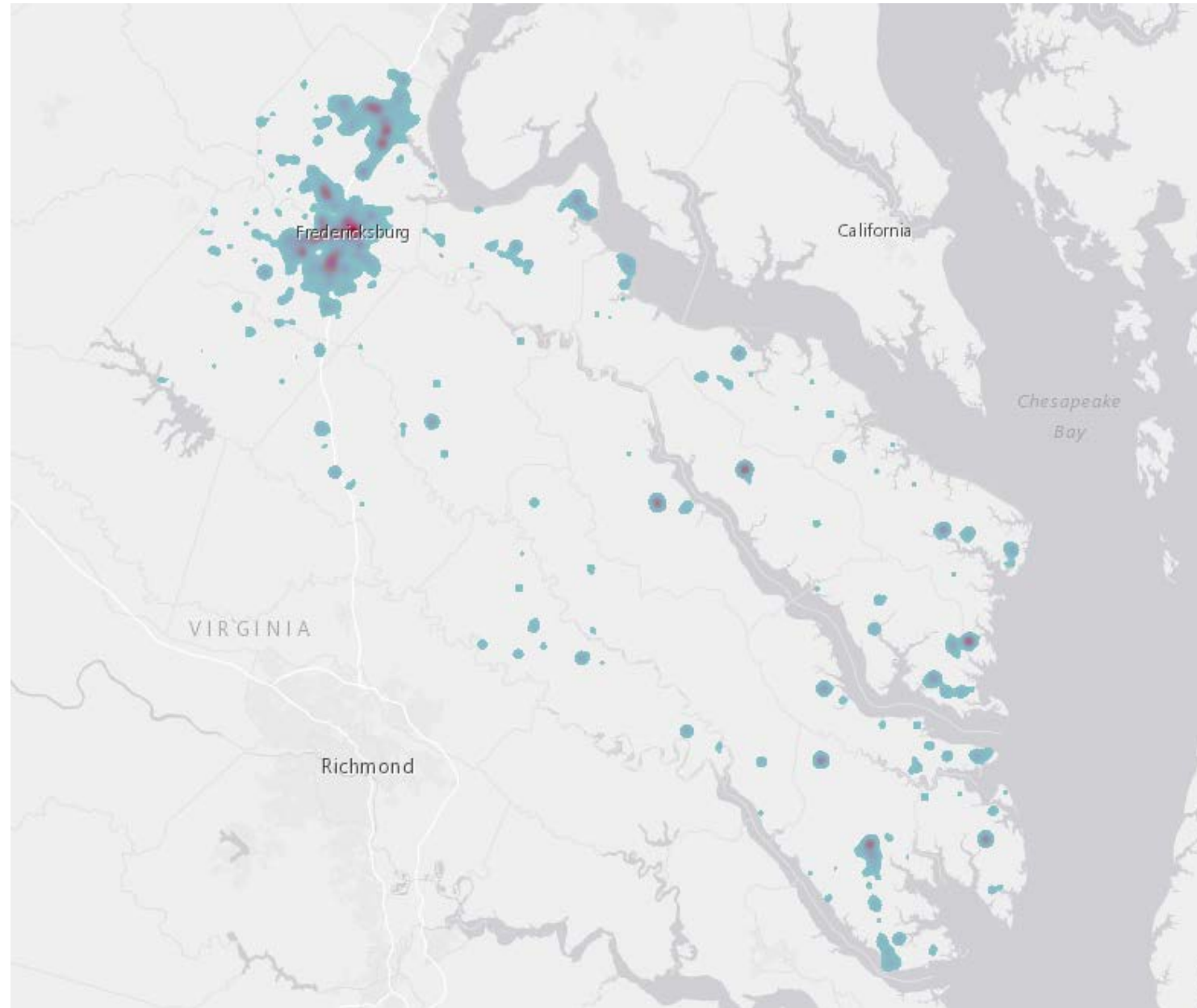
\*\*Startups defined as having firm age <10 years as of 2017, high growth startups defined as >25% annualized employment growth over lifetime of business

# Geographic Distribution of Traded Sector Startup Activity in Mary Ball Washington Region, 2017

High Regional  
Startup Activity  
Levels

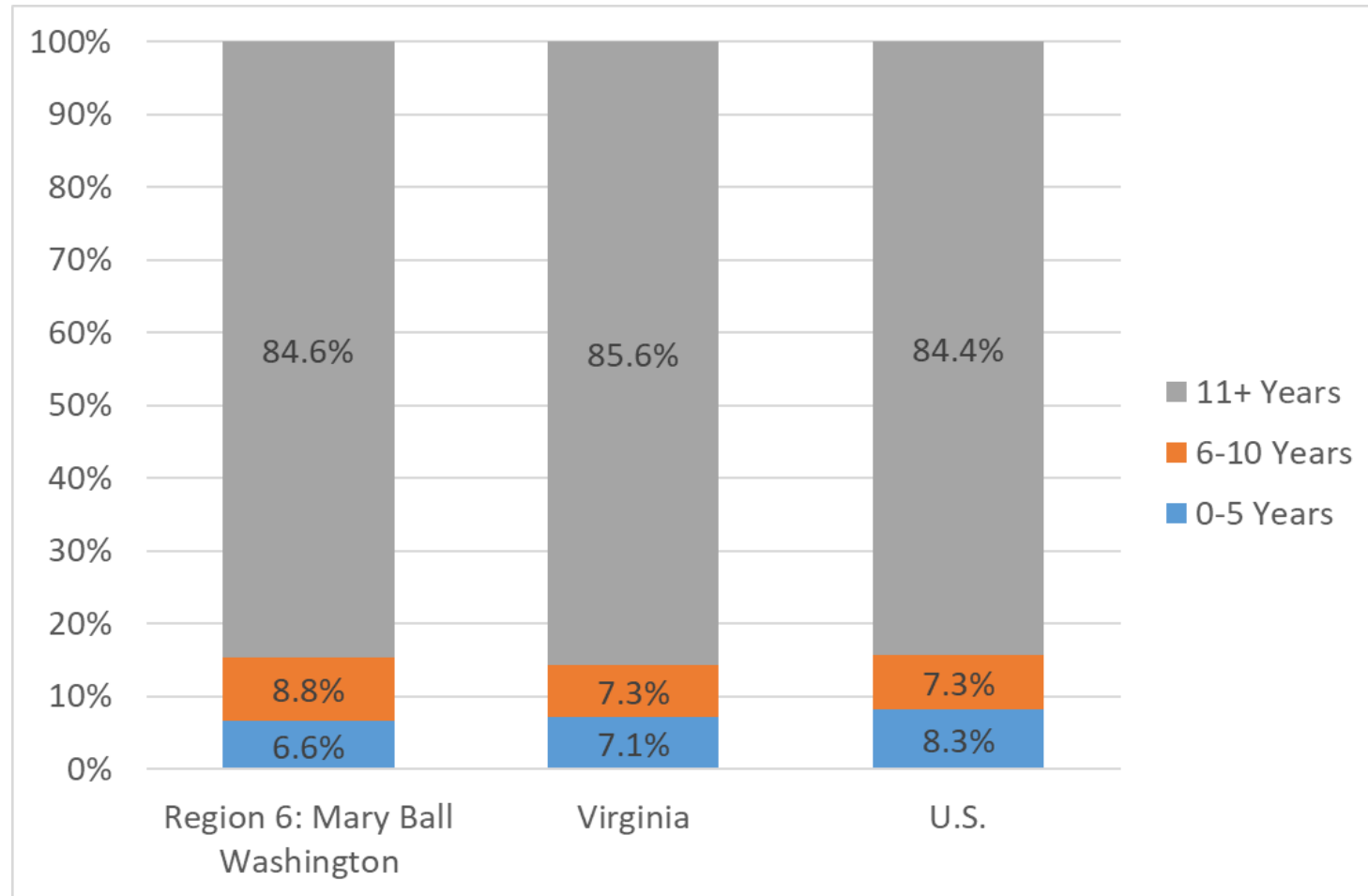


Low Regional  
Startup Activity  
Levels



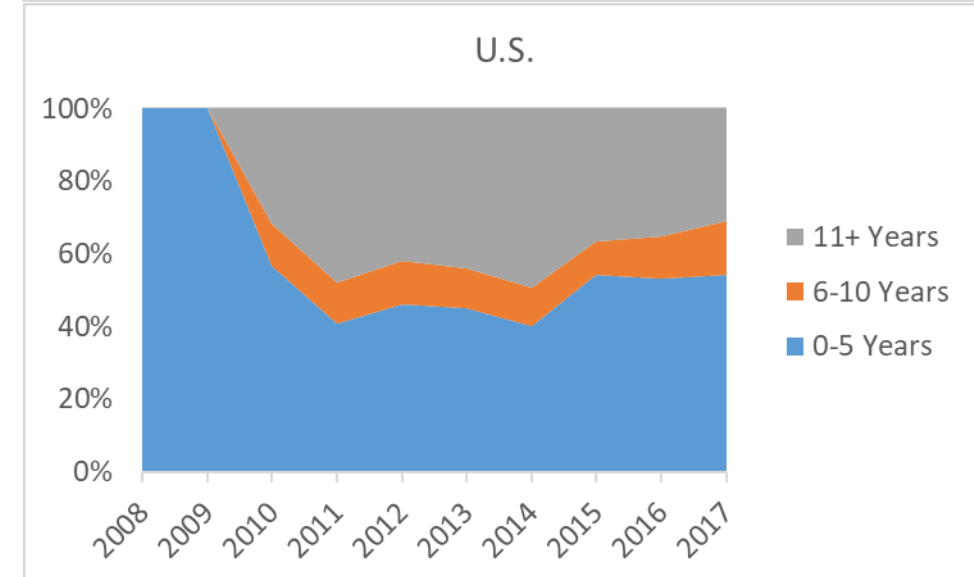
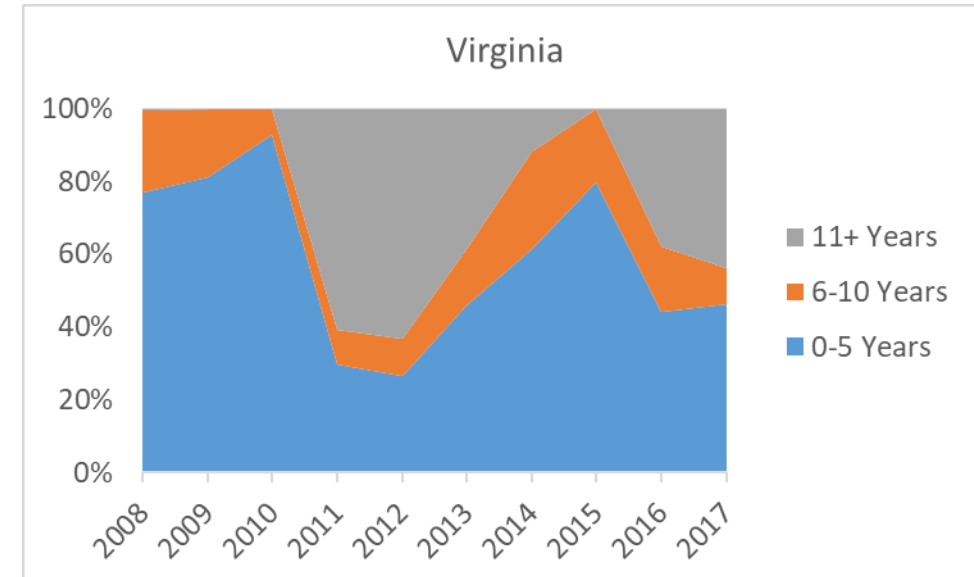
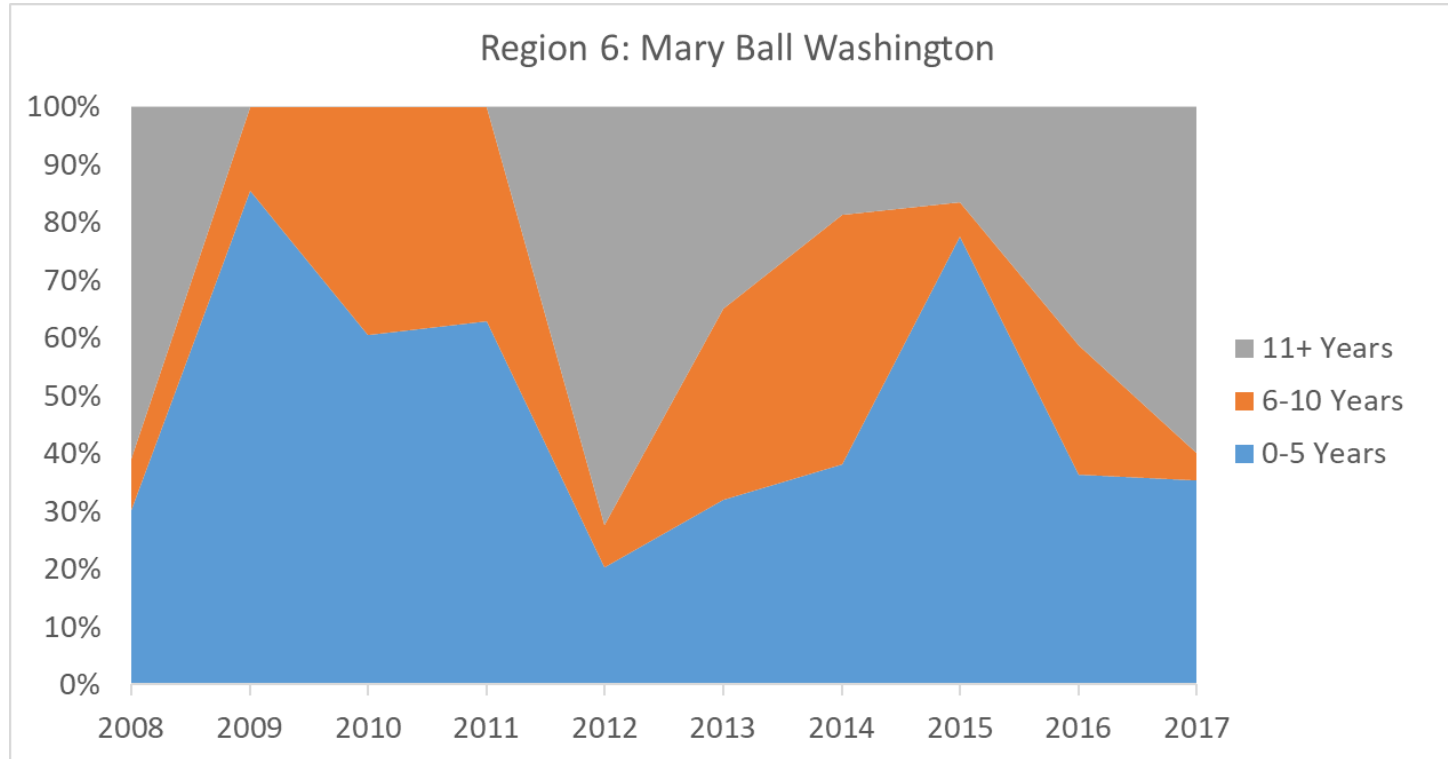
Startups in the Mary Ball Washington region account for a smaller share of traded sector employment in companies 0-5 years and a higher share of employment in companies 6-10 years compared to Virginia and the U.S.

Traded Sector Employment by Firm Age as a Percentage of Total Employment, 2008 Q1 through 2017 Q2



# Net job growth in Greater Fredericksburg region driven by 11+ years and 0-5 year firms

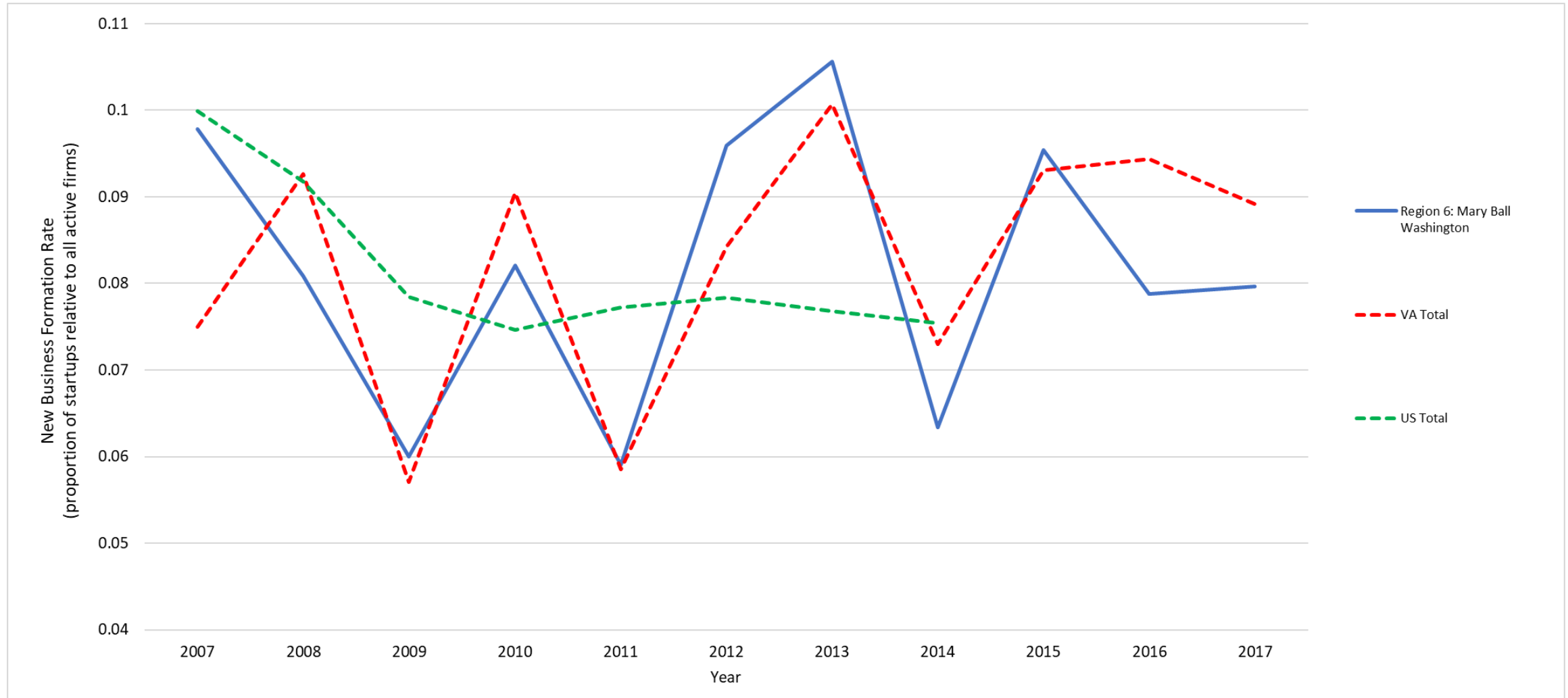
## Traded Sector Net Job Change by Firm Age, 2008 Q1 through 2017 Q2



Source: U.S. Census Bureau Quarterly Workforce Indicators dataset.

# Mary Ball Washington new business formation rate tracks Virginia's and is in the 6% to 10% range

## New Business Formation Rates: Mary Ball Washington, Virginia, U.S., 2007-2017



Source: Business Dynamics Research Consortium database for Greater Fredericksburg and Virginia; U.S. Longitudinal Business Database for U.S.

\*U.S. new business formation rates latest available is 2014



# Survival Rates and Employment Generated by Traded Sector Startups, by Cohort by Year

In 2010, 256 traded sector companies were launched in the Mary Ball Washington region; 89 were still active in 2017 (34.8% survival rate), and these 89 companies have created 574 jobs

Founding Year of Startup Cohort*	Number of Startups in Traded Sector Industries	Number of Startups Surviving by 2017	Survival Rate by 2017	Start-up Employment Levels 2017
2007	245	65	26.5%	483
2008	190	56	29.5%	441
2009	135	45	33.3%	296
2010	256	89	34.8%	574
2011	113	43	38.0%	261
2012	233	110	47.2%	679
2013	300	149	49.7%	604
2014	164	91	55.5%	434
2015	213	152	71.4%	876
2016	150	107	71.3%	494
2017	179	179	100%	948

Source: Business Dynamics Research Consortium database

Note: \*Composed of all new non-branch firms with first recorded employment activity in a given year

# GWRC: Startup employment is highly concentrated in two industry clusters, 2017

Major Industry Cluster	Number of Startups in Cluster	Number of Start-ups Surviving by 2017	Number of High Growth Start-ups in Cluster**	Start-up Employment Levels, 2017	Start-ups Industry Cluster Employment Concentration Index*
Agriculture & Food Processing	77	45	3	371	0.64
Business Services	687	365	63	2,067	0.74
Energy, Natural Resources, & Finished Products	63	30	10	572	0.99
<b>Engineering, R&amp;D, Testing &amp; Technical Services</b>	99	70	23	744	<b>1.48</b>
Financial & Insurance Services	193	88	4	391	0.61
Health Care Services	35	25	5	814	1.12
Information Technology & Communications Services	99	58	21	560	0.70
Life Sciences	47	27	6	258	0.88
<b>Manufacturing</b>	81	46	12	603	<b>1.42</b>
Ship Building, Aerospace, & Defense	4	1	1	8	0.05
Transportation, Distribution and Logistics	339	155	28	625	0.77

\*Startups Employment Concentration Index represents specialization of startup activity in certain industry clusters given overall state trends, >1.2 indicates highly specialized concentration of startups in a particular industry sector. \*\*Defined as >25% annualized employment growth over lifetime of business

# Northern Neck PDC: Startup employment highly concentrated in three industry clusters, 2017

Major Industry Cluster	Number of Startups in Cluster	Number of Start-ups Surviving by 2017	Number of High Growth Start-ups in Cluster**	Start-up Employment Levels, 2017	Start-ups Industry Cluster Employment Concentration Index*
<b>Agriculture &amp; Food Processing</b>	38	24	3	106	<b>2.80</b>
Business Services	124	62	6	266	0.86
<b>Energy, Natural Resources, &amp; Finished Products</b>	18	10	2	121	<b>2.78</b>
Engineering, R&D, Testing & Technical Services	17	9	0	26	0.38
Financial & Insurance Services	32	14	2	39	0.56
Health Care Services	5	3	0	27	0.38
Information Technology & Communications Services	22	12	1	76	0.77
Life Sciences	7	3	1	12	0.45
<b>Manufacturing</b>	20	14	1	69	<b>1.39</b>
Ship Building, Aerospace, & Defense	1	1	0	1	0.12
Transportation, Distribution and Logistics	70	24	1	132	0.86

\*Startups Employment Concentration Index represents specialization of startup activity in certain industry clusters given overall state trends, >1.2 indicates highly specialized concentration of startups in a particular industry sector. \*\*Defined as >25% annualized employment growth over lifetime of business

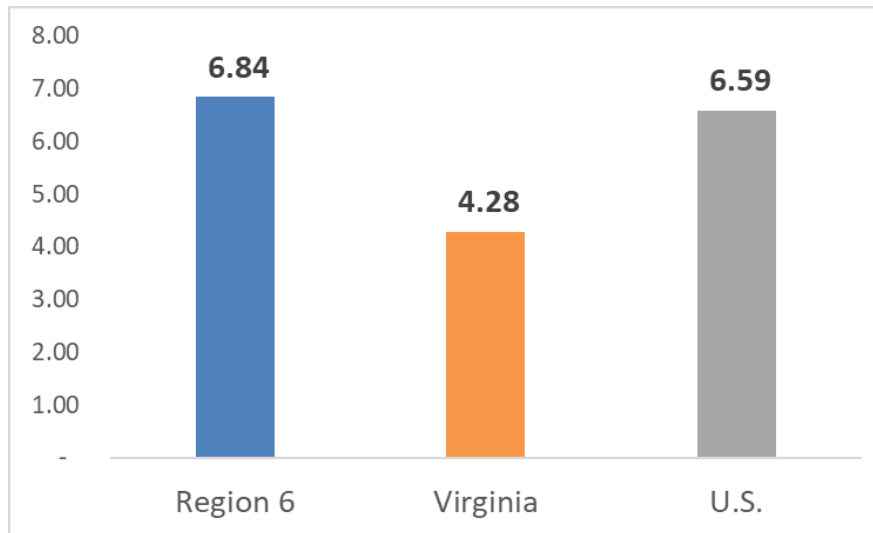
# Middle Peninsula PDC: Startup employment highly concentrated in four industry clusters, 2017

Major Industry Cluster	Number of Startups in Cluster	Number of Start-ups Surviving by 2017	Number of High Growth Start-ups in Cluster**	Start-up Employment Levels, 2017	Start-ups Industry Cluster Employment Concentration Index*
Agriculture & Food Processing	54	32	0	101	1.62
Business Services	183	87	8	254	0.50
Energy, Natural Resources, & Finished Products	29	17	2	160	2.23
Engineering, R&D, Testing & Technical Services	20	15	0	43	0.39
Financial & Insurance Services	53	25	1	66	0.58
Health Care Services	10	8	3	244	2.06
Information Technology & Communications Services	7	4	1	17	0.10
Life Sciences	16	4	3	87	1.97
Manufacturing	26	12	3	56	0.68
Ship Building, Aerospace, & Defense	2	1	1	4	0.30
Transportation, Distribution and Logistics	90	38	5	192	0.76

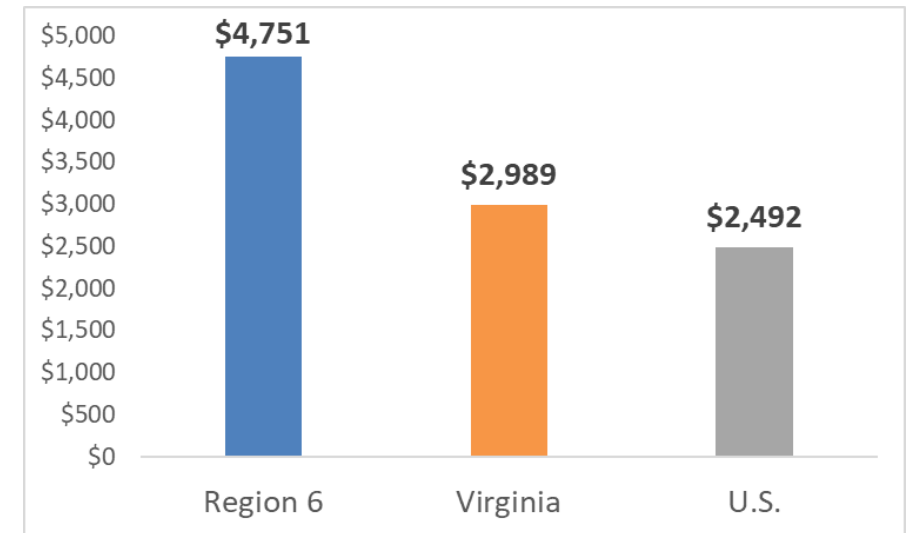
\*Startups Employment Concentration Index represents specialization of startup activity in certain industry clusters given overall state trends, >1.2 indicates highly specialized concentration of startups in a particular industry sector. \*\*Defined as >25% annualized employment growth over lifetime of business

In 2017, Mary Ball Washington region small traded sector companies were approved for more loans and larger loans relative to VA and the U.S.

SBA 7(a) Loan Counts, Traded Sector Companies Per 1,000 Establishments, 2017



SBA 7(a) Loan Amounts (\$), Traded Sector Companies Per Establishment, 2017



Source: TEconomy analysis of SBA loan reports.

## Region 6: SBA 7(a) Loans and Loan Amounts, Cumulative Totals 2010-2018Q2

Industry Clusters	Co's Receiving Loans	Total No. of Loans	Total Loan Amounts (\$)	% of Total Loan Amounts
<b>Total, All Traded Sector Industries</b>	<b>97</b>	<b>126</b>	<b>\$52,879,340</b>	<b>100%</b>
Manufacturing	11	17	\$15,347,800	29%
Agriculture & Food Processing	10	15	\$12,047,600	23%
Engineering, R&D, Testing & Technical Services	7	10	\$6,135,600	12%
Business Services	22	30	\$4,886,500	9%
Information Technology & Communications Services	11	12	\$2,760,000	5%
Energy, Natural Resources, & Finished Products	7	10	\$2,491,900	5%
Transportation, Distribution and Logistics	5	5	\$465,000	1%
Life Sciences	2	2	\$450,000	1%
Financial & Insurance Services	1	1	\$50,000	0%
Ship Building, Aerospace, & Defense	1	1	\$50,000	0%
All Other, Non-cluster Industries	20	23	\$8,194,940	15%

Source: TEconomy analysis of SBA loan data reports.

\*Data for 2018 are through Q2.

High SBA loan activity in same industry clusters where there is high startup employment concentration, but also some with lower concentration (e.g., Business Services, ICT)

# Assignees of Patents with Mary Ball Washington Region Inventors, 2010-2017

Assignees	# of patents
U.S. Navy	96
U.S. Postal Service	13
KLA-Tencor Corporation (Milpitas, CA)	11
NASA	10
Reid, John H. (Reid Engineering Corp., Fredericksburg, VA)	9
QRC Technologies Inc. (Fredericksburg, VA)	8
Altria Client Services	8
U.S. Army	8
College of William and Mary (VIMS)	8
Printpack Illinois Inc. (Fredericksburg, VA location)	7
Life Technologies Corp. (owned by Thermo Fisher Scientific; manufacturing facility in Middletown, VA)	6
Trimble Navigation Ltd. (Sunnyvale, CA; Herndon, VA location)	5
Manufacturing Technologies Inc.	5

Source: U.S. Patent & Trademark Office data from Thomson Reuters Thomson Innovation patent analysis database.

# Total Patent Activity Declining, 2014-2017

Region 6: Greater Fredericksburg	2014	2015	2016	2017	Total
Patent Counts	150	123	118	88	479

Technology Class Area	Number of Patents, 2010-2017
Digital computing or data processing equipment or methods, specially adapted for specific functions	11
Data processing systems specially adapted to administration and management purposes	7
Satellite radio beacon positioning systems; Determining position, velocity or attitude using signals transmitted by such systems	7
Biological treatment of water, waste water, or sewage	7
Mutation or genetic engineering; DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification; Use of hosts therefor	6

Source: U.S. Patent & Trademark Office data from Thomson Reuters Thomson Innovation patent analysis database.



Three companies accounted for three-quarters of SBIR activity; none are startups (< 10 years old)

## Small Business Innovation Research Awards, 2010-2017

Region 6: Greater Fredericksburg	2010	2011	2012	2013	2014	2015	2016	2017	Total
# of Companies	4	6	5	5	5	4	5	6	11
Award Counts	7	18	11	12	13	8	9	12	90
Award Amounts (\$M)	\$1.78	\$5.94	\$2.29	\$5.19	\$7.60	\$2.77	\$5.24	\$7.13	\$37.95

Source: SBIR award database



- McQ (1985), a remote monitoring and surveillance company received 40 SBIR awards from 2010-17;
- JRM Technologies (1998), a sensor company, received 18 awards;
- SimVentions (2000), a software, systems engineering, and cybersecurity company received 10 SBIR awards; Inc 5000 list in 2014, 2015, 2016 (211 employees, \$30M+ revenue)

Greater  
Fredericksburg  
Region companies  
receiving Phase II  
awards, 2015-2017

Company	Phase II Award Counts	Phase II Award Amounts (\$M)
IST Research Corp.	3	\$3.51
McQ Inc.	3	\$2.50
JRM ENTERPRISES, INC.	2	\$2.05
SimVentions, Inc.	2	\$1.98
Durbin Group LLC	1	\$1.50
Research, Evaluation and Social Solutions, Inc. (REESSI)	1	\$1.14
SYNTRONICS	1	\$0.49



- Founded in 2008
- Technology platforms for decision-making in challenging operating environments
- Less than 50 employees
- Awarded \$48.3M, 5-year Army contract in 2018
- Named to Inc. 5000 list for third consecutive year

Small number of companies and high concentration of deals in one company: smart grid software company with 6 reported deals from 2010-2016

## Venture Capital Investment in Mary Ball Washington Region Companies, 2010-2017

Region 6: Mary Ball Washington	2010	2011	2012	2013	2014	2015	2016	2017	Total
# of Companies	1	2	2	2	2		1		6
Deal Counts	2	2	2	3	2		1		12
Investment Totals (\$M)	\$1.2	\$1.6	\$2.0	\$4.2	\$0.4		N/A		\$9.3

Source: PitchBook Data, Inc.



Inc 5000 companies (ranked by past 3-years revenue growth) are in the defense contracting space

## Inc 5000 Ranked Companies in Mary Ball Washington Region, 2017

Region 6: Mary Ball Washington	Founded	Revenue	Employees	Inc 5000	SBIR	Patents	VC
IntelliWare (Fredericksburg) - cybersecurity	2005	\$27M	155	2015 2016 2017	x	x	x
IST Research (Fredericksburg) - software	2008	\$7M	44	2015 2016 2017	yes	yes	x
MarathonTS (Kilmarnock) – IT recruitment	2009	\$19M	165	2015 2016 2017	x	x	x
ATSI (Fredericksburg) – govt contract management	2011	\$12M	65	2015 2016 2017	x	x	x

