

# Regional Entrepreneurial Assessment Project:

## Final Briefing Report

### *Region 3: Southside*

December 2018

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# Overview

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 3 – Southside.

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 601 surviving traded sector startups formed since 2007 in Region 3
- 3,656 jobs in 2017 were found in these 601 surviving startups
- By comparison, over the 2007-2017 period, total traded sector industry employment declined by 6,674 jobs in Region 3.
- So without entrepreneurial growth, Region 3 would have had even steeper declines in its traded sector industry employment

# Project Work Plan

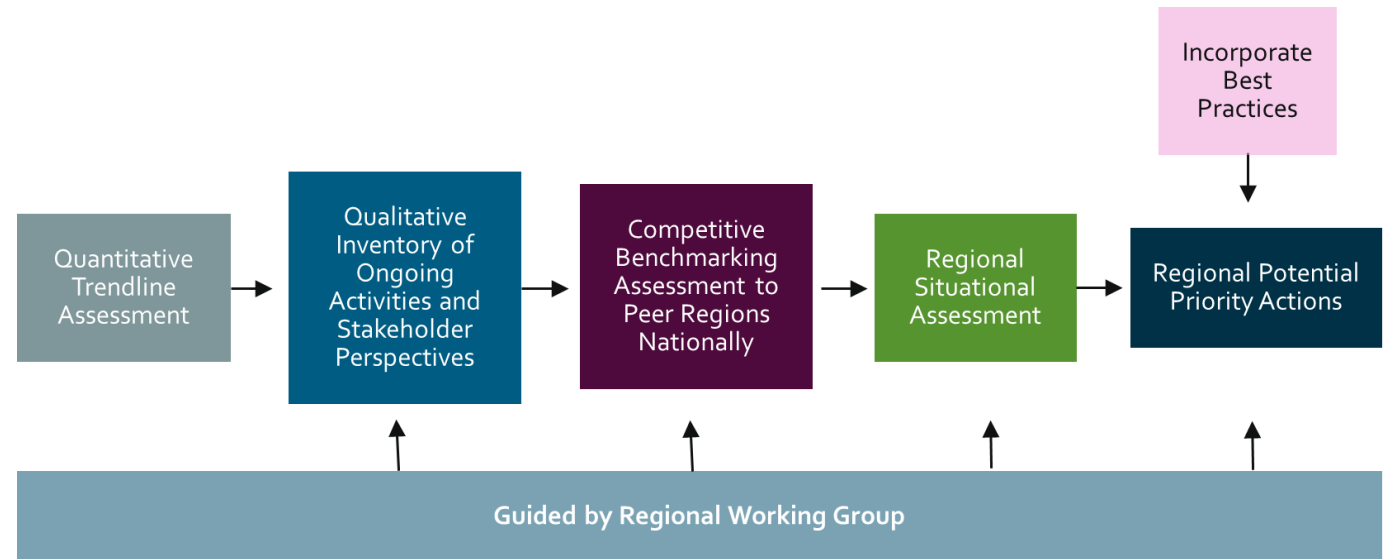
The work plan for preparing this Region 3 entrepreneurial development assessment involved examining:

- 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 3 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 3

# 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 traded sector 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; and 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.”*

# Assessment of Ideation in Region 3

## Overall Assessment:

*Region has limited deal flow for new traded sector startups, lacks “critical mass” despite several areas of strength, emerging activities, and identified opportunities.*

## Strengths and Opportunities:

- High concentrations of startups (10-year cohort) in region’s targeted industry clusters including Advanced Mfg., Healthcare, Natural Resource Products
- Opportunities raised regarding auto design/parts; higher-end textiles resurgence; industrial hemp; plant-based polymers and other agbiotech (IALR); plus opportunities in these and other tech areas for regional collaborations
- Multiple sub-regional “hubs” for startups including Danville, Martinsville (must be taken into account in driving much of the activity/analysis)
- Emergence of activity at PHCC, pitch competitions with strong push to support ideation and the entrepreneurial ecosystem, but still unfolding
- Cross border deal flow/activity from NC-RTP via Launch Place, opportunities to engage emerging NC companies, root their manufacturing, other operations in Southside
- Possible opportunity to leverage growth of highly educated working age population and in-migration of highly educated foreign population
- Slightly higher share of traded sector employment found in early-stage startups (0-5) than for rural benchmark regions (4% for Region 3 compared to 3% for rural benchmarks), though opportunity for closing the gap in business formation rates compared to state and national averages

## Gaps and Weaknesses:

- Regional patent activity – lags state and rural regions in per capita volume and has been declining
- Concerns regarding fundamental entrepreneurial acumen, culture, “savvy”
- Current overall lack of regional entrepreneurial “deal flow” or “critical mass” in traded sectors; activity largely in non-traded areas; limited activity outside of regional hubs

# Assessment of Commercial Viability in Region 3

## Overall Assessment:

*Region has a strong regional asset in the Launch Place to leverage, and a sizable base of SBIR-funded companies, but overall lack of Virginia-based traded sector companies taking advantage of regional resources/assets.*

## Strengths and Opportunities:

- Sizable base of SBIR funding to small innovative companies in the region averaging \$896K annually from 2010-17, strong performance for a region with no research institution.
- Nationally-recognized investment and entrepreneurial support organization, including pre-seed funding at the Launch Place, which was just awarded an i6 Challenge Grant from the Department of Commerce's Regional Innovation Strategies Program for capacity building.
- S. VA Higher Ed Center's Innovation Center a resource for design, prototyping, other business services
- PHCC's Dalton IDEA Center Fab Lab a key resource for prototyping, 3D printing, plus access to accelerator services.
- Virginia Growth Alliance's Pack Fund providing low-interest microloans up to \$40K for startups and expansions

## Gaps and Weaknesses:

- Southside companies very limited participation/share in Launch Place activities (vast majority are NC companies), pre-seed funding
- Insufficient mentoring capabilities in the region

### **Nationally-recognized Entrepreneurial Support Organization, Seed Funds at the Launch Place in Danville**

The Launch Place, with office locations in Danville as well as Research Triangle Park in North Carolina, is advancing entrepreneurship and innovation through direct capital investments as well as a suite of support services to startup companies.

The Danville Regional Foundation awarded the Launch Place \$10 million in 2012 to fund these activities, including \$5 million of this funding to establish pre-seed and seed funds to invest in startups and serial entrepreneurs. The seed fund's mandate includes investing in companies in the region that will create high-quality jobs. Fund and investment specifics include:

- Seed Fund, with the flexibility to structure deals as debt, convertible debt or equity with the capacity to fund up to \$250,000 per company
- Pre-Seed Investment Program, with an opportunity to secure a maximum of \$25,000 for product and market validation and \$50,000 for business model refinement

# Assessment of Market Entry in Region 3

## Overall Assessment:

*Region has assets to leverage and has generated modest VC funding for a rural area, but stakeholders raise serious concerns regarding lack of connectivity of broader regional assets, quality of management teams, and lack of mentors/serial entrepreneurs for assistance at this stage.*

## Strengths and Opportunities:

- Regional Seed Fund (Launch Place) with strong syndication
- Incubator assets: West Piedmont Business Development Center (Martinsville); Dan River BDC
- Strength/support of local/regional economic development organizations
- Good space/building options
- Good access to grant funds (e.g. Tobacco Commission, IDA, etc.)
- In VC funding, region's modest total lags well behind state on per capita basis, but is ahead of other comparable rural regions

## Gaps and Weaknesses:

- On par with other rural benchmark regions with 30% of job growth coming from early-stage startups (0-5 years), on average from 2013-2017, but still well below that of state or U.S.
- Lack of connectivity/cohesion of sub-regions to assist traded-sector firms
- Quality of entrepreneurial management teams of concern
- Lack of serial entrepreneurs for mentoring/business assistance



# Assessment of Growth & Scalability in Region 3

## Overall Assessment:

*Entrepreneurship bolstering employment declines in most all major traded sectors; though concerns regarding follow-on funding, managerial resources to significantly scale regional companies.*

## Strengths and Opportunities:

- Entrepreneurial development is making important contributions to Region 3's major industry clusters
- Still, just 30% of quarterly growth in traded sectors from 2013-2017 is being generated by early stage startups (0-5), so need to also consider opportunities for “economic gardening” for second-stage businesses
- Growth of SBA Loan Volume – outpacing state, US, rural regions

## Gaps and Weaknesses:

- Lack of sources for follow-on funding a concern
- Scaling up of companies a concern – lack of serial entrepreneurs, funding are challenges
- SBA loan volume and value; and change in SBA loan value

### Contribution of Entrepreneurial Development to Traded Sector Industry Cluster Growth

Industry Cluster	Economic Development Position in Region	Contribution of Entrepreneurship
Agriculture & Food Processing	Declining	Very Significant
Business Services	Emerging Strength	Very Significant
Energy, Natural Resources, & Finished Products	Specialized/Declining	Very Significant
Engineering, R&D, Testing & Technical Services	Emerging Opportunity	Very Significant
Financial & Insurance Services	Declining	Very Significant
Health Care Services	Sizable/Declining	Very Significant
Information Technology & Communications Services	Emerging Opportunity	Very Significant
Life Sciences	Emerging Opportunity	Very Significant
Manufacturing	Specialized/Declining	Very Significant
Ship Building, Aerospace, & Defense	Small/Emerging Opportunity	Minimal
Transportation, Distribution and Logistics	Sizable	Very Significant

# Potential Priority Actions Identified for Entrepreneurial Development in Region 3

- Promote and develop stronger ideation programming, resources targeting traded sector opportunities.
- Support scaling of early- and second-stage companies through economic gardening and first-customer orientation.
- Catalyze “follow-on” risk capital in the region.
- Concept of a “Regional Entrepreneurial Quarterback”.

# Potential Priority Action: Promote and develop stronger ideation programming, resources targeting traded sector opportunities

## Rationale:

- Address limited deal flow/ideation for traded sectors in the region with opportunities identified in several existing, emerging tech areas.
- Opportunity to enhance commercial growth of SBIR companies and engage technology-oriented potential entrepreneurs through ideation services.
- Enhance participation of VA-based companies in regional entrepr. resources, pre-seed, seed funds where NC firms currently dominating.
- Seize momentum of (and expand) regional pitch competitions, entrepreneurship programming, focus of PHCC.

## Possible Activities:

- Collaborate with Statewide SBDC's Innovation Commercialization Assistance Program and possibly other universities with NSF iCorps sites (such as UVA) to support ideation programs in the region with targeted outreach to companies receiving SBIRs and broader base of technology-oriented potential entrepreneurs in the region – tap into networks of counselors found across NSF iCorps sites in Virginia.
- Provide matching funds for business challenges at PHCC and elsewhere to enhance participation, incent ideation in traded sector tech, market areas. Consider promoting regional winners to a “regional” or “statewide” competition for more exposure.
- Promote existing regional accelerator, incubator and early-stage financing resources to VA-based companies through regional events, networking, targeted community outreach, especially in identified tech opportunity areas. Market regional opportunities to NC-based companies via Launch Place.
- Create/enhance referral network tapping existing economic development organizations, incubator facilities, local bankers, and professional service providers.
- Sponsor entrepreneurs-in-residence fellows in targeted sectors relevant to Region 3 to work with identified regional entrepreneurial startup teams, including SBIR companies, that demonstrate high-growth potential.

## Illustrative Best Practice Examples:

- Chattanooga, TN: Co.Starters 9 week lean startup program followed by Co.Lab Accelerator mentoring program for high-growth potential startups
- Charlotte: Ventureprise at UNC, Charlotte leverages its NSF i-Corps site to bring a customer discovery/mentorship program to non-university related, early-stage, innovation-driven startups in the region. Successful teams then able to tap micro-grant (up to \$10k) or seed grant (up to \$50k) from statewide NC IDEA program.
- Raleigh-Durham: Blackstone Entrepreneurs Network North Carolina that provides expert venture coaching through a veteran group of EIRs

# Potential Priority Action: Support scaling of early- and second-stage companies through economic gardening and first-customer orientation

## Rationale:

- While startup activity in traded sectors is limited regionally, there are significant opportunities to advance “second-stage” company growth—those homegrown regional companies with an existing base of 25 or 50 to 100 employees that can benefit from strategic intelligence, refinement of core strategies, and new market opportunities via “economic gardening” type programming.
- Region 3 has a base of SBIR recipients and identified market and tech opportunity areas to target assistance.
- Stakeholders cite opportunities to open markets for new startups among state government, existing large businesses across the Commonwealth.

## Possible Activities:

- Create an Economic Gardening program within an existing regional institution (potentially PHCC, Longwood University, or VA Higher Ed Center) to serve second-stage companies with intelligence and refinement of core strategies. Explore formal partnership with National Economic Gardening Center and Edward Lowe Foundation.
- Advance market opportunities for new regional startups to sell products to state government and private industry across the Commonwealth via a “First Customer” program. Facilitate networking opportunities in key clusters common across multiple GO VA regions for early-stage businesses to interact with mature companies.
- Consider SBIR/STTR grant writing assistance and matching fund to promote further federal grant awards for innovative traded sector companies.

## Illustrative Best Practice Examples:

- In less than a decade, the National Center for Economic Gardening, with support from the Edward Lowe Foundation, has established statewide and regional efforts in Economic Gardening programs in more than 25 states.
- Focuses on growing existing businesses by focusing on core strategy, market dynamics, and generating qualified sales leads
- Examples of success:
  - Five-county region in Rochester, NY has assisted 123 companies through its Economic Gardening program creating 924 new jobs and increasing sales revenue by \$170 million or a 32% increase per company.
  - Louisiana’s statewide Economic Gardening program, launched in 2011, has assisted 195 companies that created 1,952 new jobs and increased revenues by more than \$338 million.

# Potential Priority Action: Catalyze “follow-on” risk capital in the region

## Rationale:

- While Region 3 has indigenous pre-seed and seed funding resources via the Launch Place, stakeholders cite a major need for additional early- and expansion-stage, “follow-on” funding in the region. Growth firms have left the region due to lack of follow-on funding.

## Possible Activities:

- **Consider establishing an SBA Small Business Investment Company or USDA Rural Business Investment Company to provide working capital financing for scaling-up traded sector startups that are generating revenues.** Under the SBIC model, private investors participate as limited partners of the SBIC and their investments are matched by the federal Small Business Administration \$2 to \$1. SBIC investments are structured as either debt, equity or a combination of both. According to the SBA, SBIC investments that incorporate debt and equity are typically in the range of \$250,000 to \$10 million, with the interest rate loan portion at between 10% and 14%. There is only one SBIC in Virginia, based out of Reston. Nationally there are 150 SBIC that are actively investing, and most have a diversified investment approach.

RBICs are relatively new and were funded in the 2002 Farm Bill. 75% of investments must be made in communities of less than 50,000 population. Each RBIC must raise \$10 million in private equity capital and those funds can be matched \$3:\$1 with support from USDA. Plus, operational assistance grants are available at 10% of private capital raised or up to \$1 million.

- **Address need for increased funding of statewide angel investment tax credit.** There is a \$5 million cap in available credits each year, after which credits are prorated, which makes its benefit level uncertain for investors.

## Illustrative Best Practice Examples:

- Chattanooga, TN: Two private sector managed seed funds are active in the region, Chattanooga Renaissance Fund and Lamp Post Group.
- Illinois: Open Prairie, based in rural Illinois, in 2018 received a license to operate as a RBIC with initial funding of \$100 million, of which \$55 million is private capital funding from farm credit organizations and local banks. Its earlier venture funds have had a strong record of success including 22 investments in agricultural technology, medical device and other early-stage startups and a number of significant exits.
- Susquehanna, PA: Rural Business Innovation organization provides business technical assistance for accessing financing, along with a micro-loan startup grants, as well as a network of incubators near local colleges and universities (including Bucknell).

# Proposed GO Virginia Action: *Establish Regional Quarterbacks for Entrepreneurial Development in Each GO Virginia Region*

## Specific Activities:

- Identify opportunities and needs for regional entrepreneurial development within traded sector industries
- Ensure an implementation capacity on priority actions
- Provide a “front door” in each region for entrepreneurs to receive coordinated services among service providers

## Service Delivery Approach:

- Performance-based grants developed in consultation with each region to address priorities
- In each region, an advisory committee will be created to oversee the efforts of the regional quarterbacks
- Potential for multi-regional applications
- VRIC proposal articulates additional entrepreneurial activities that need to be coordinated with the regional GO Virginia efforts

## Budget Rationale:

- Award \$200k-\$300k per region to fund a full-time professional to serve as the regional quarterback. Funding could yet be made available in FY 2019.
- The regional quarterback would be tasked with advancing a regional strategic plan and prioritizing strategic investments, with the input from regional entrepreneurial ecosystem stakeholders, under the auspices of the GO VA Regional Boards.
- Once a regional prioritization investment plan is developed, further funding would be available in FY 2020 and thereafter to fill the gaps identified, including funding for efforts such as: EIRs, incubators, accelerators, mentor networks, etc.

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## Comparable Best Practice Model: *Launch Tennessee*

- Supports a network of Entrepreneur Centers, located in six cities across the state that provide entrepreneurs access to a mix of support services, including: wayfinding for entrepreneurs, boot camps, mentorship, co-working space, and initial pre-seed grants.
- In 2016, Launch Tennessee made grants to its Entrepreneur Centers of \$200,000 to \$375,000 for each center. These centers serve a much smaller area than GO Virginia regions.

# Appendix A: Listing of Working Group Members



## Working Group: Region 3

- Eva Doss, The Launch Place
- Mark Gignac, IALR
- Angeline Godwin, Patrick Henry CC
- James McClain, SWVA Gas
- Sheri McGuire, Longwood University SBDC
- Lee Minix, Benchmark Community Bank
- Nancy Pool, Regional Working Group Coordinator
- Tom Raab, Town Manager, South Boston
- Jeff Reed, Virginia's Growth Alliance
- Varun Sadana, The Launch Place
- Roger Scott, Amelia County Board of Supervisors



## Appendix B: Quantitative Trendlines on Entrepreneurial Development

# Initial Analysis of Entrepreneurial Dynamics in Your Region's Traded Industry Sectors

## Key Measures:

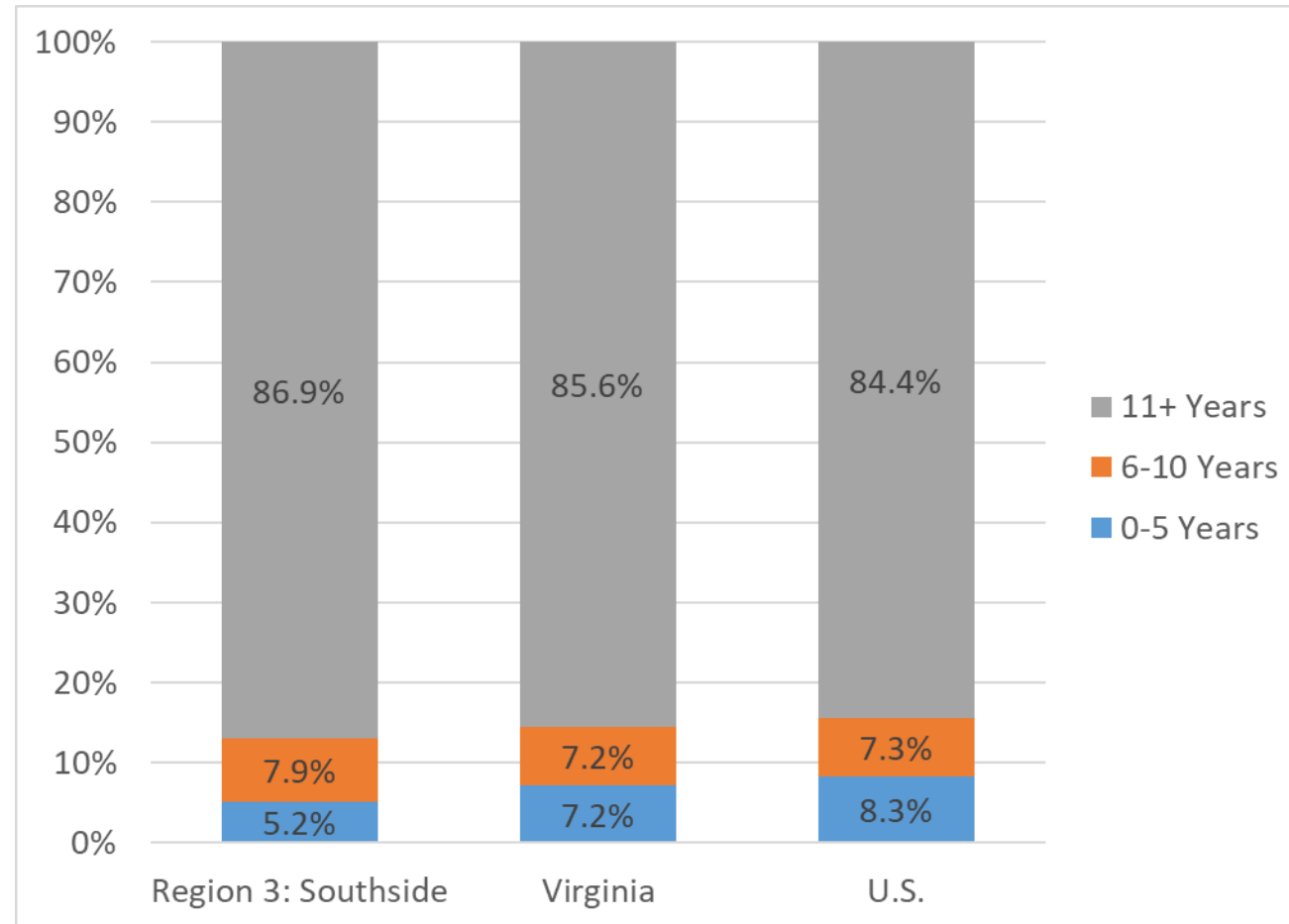
- Job distribution by age of firm
- Job creation by age of firm
- Business formation rates of start-ups
- Survival rates of startup companies
- Examining key elements of “net” employment growth
- The contribution of high-growth startups compared to all startups

## Note on Data Sources:

- Two data sources used to provide a full depiction of entrepreneurial dynamics:
- ***The Quarterly Workforce Indicators (QWI) from U.S. Census*** is a new longitudinal database with detailed data related to the job creation and other characteristics of firms, including by age groupings.
  - ***Most Detailed Level of Geographic Coverage:*** County
  - ***Coverage:*** Covers over 95% of U.S. private sector jobs (does not cover ag jobs, self-employment)
  - ***Grouping of Employment by Age of Firms:*** 0-1 Years; 2-3 Years; 4-5 Years; 6-10 Years; 11+ Years
  - ***Industry Coverage:*** 2-digit industry, which can define at a high-level traded sector industries
  - But QWI does not provide intelligence at the firm level
  - All data is on a quarterly basis
- **The Business Dynamics Research Consortium (BDRC) database** is a time-series dataset that catalogues individual establishments by location, employment, sales, and industry from 1997 to 2017. The BDRC It is maintained by the University of Wisconsin
  - Coverage: It compiles multiple data sets to track performance and growth for more than 144 million individual businesses across the United States.
  - Provides extensive firm level data
  - Able to identify firm by address
  - Detailed industry coverage

## Regional Employment Distribution by Age of Firm for Traded Sector Industries

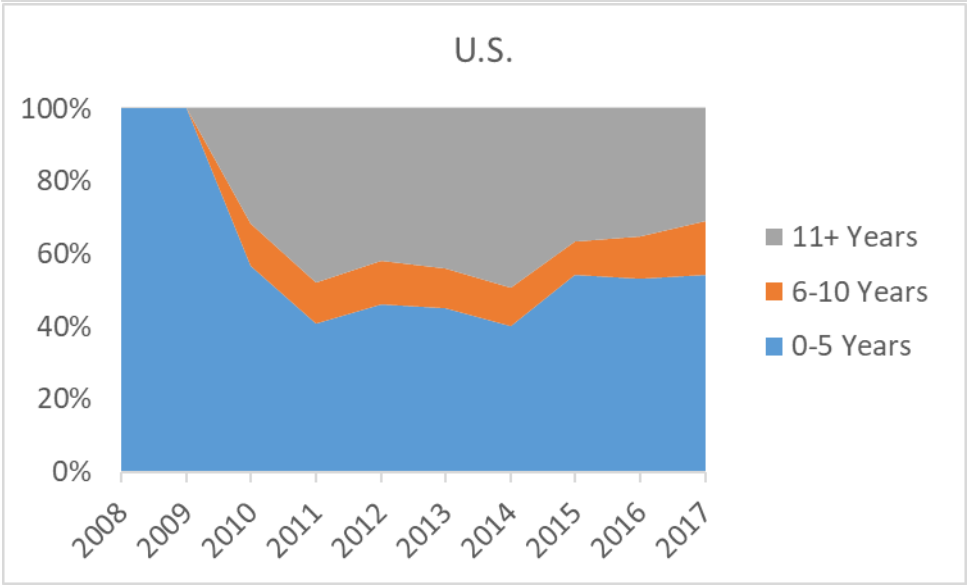
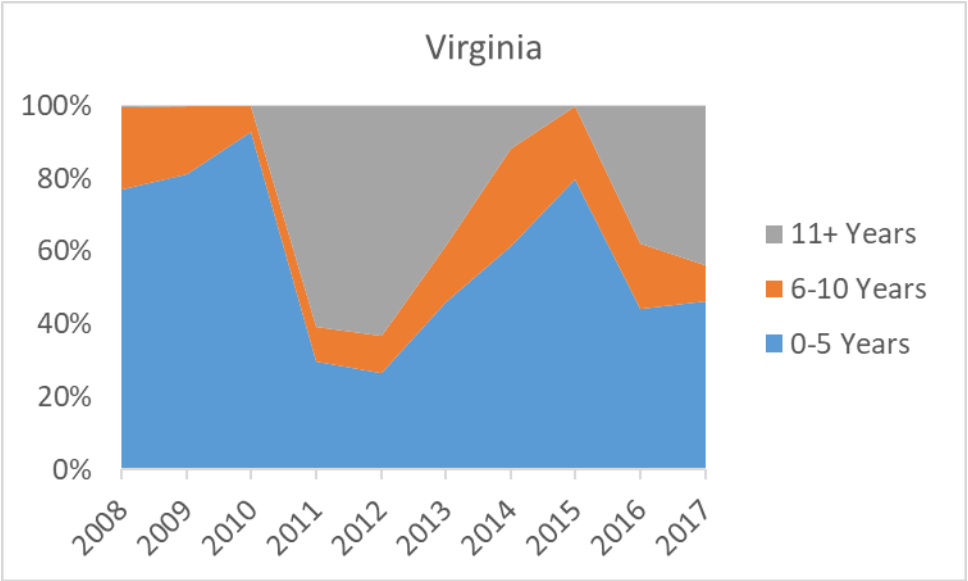
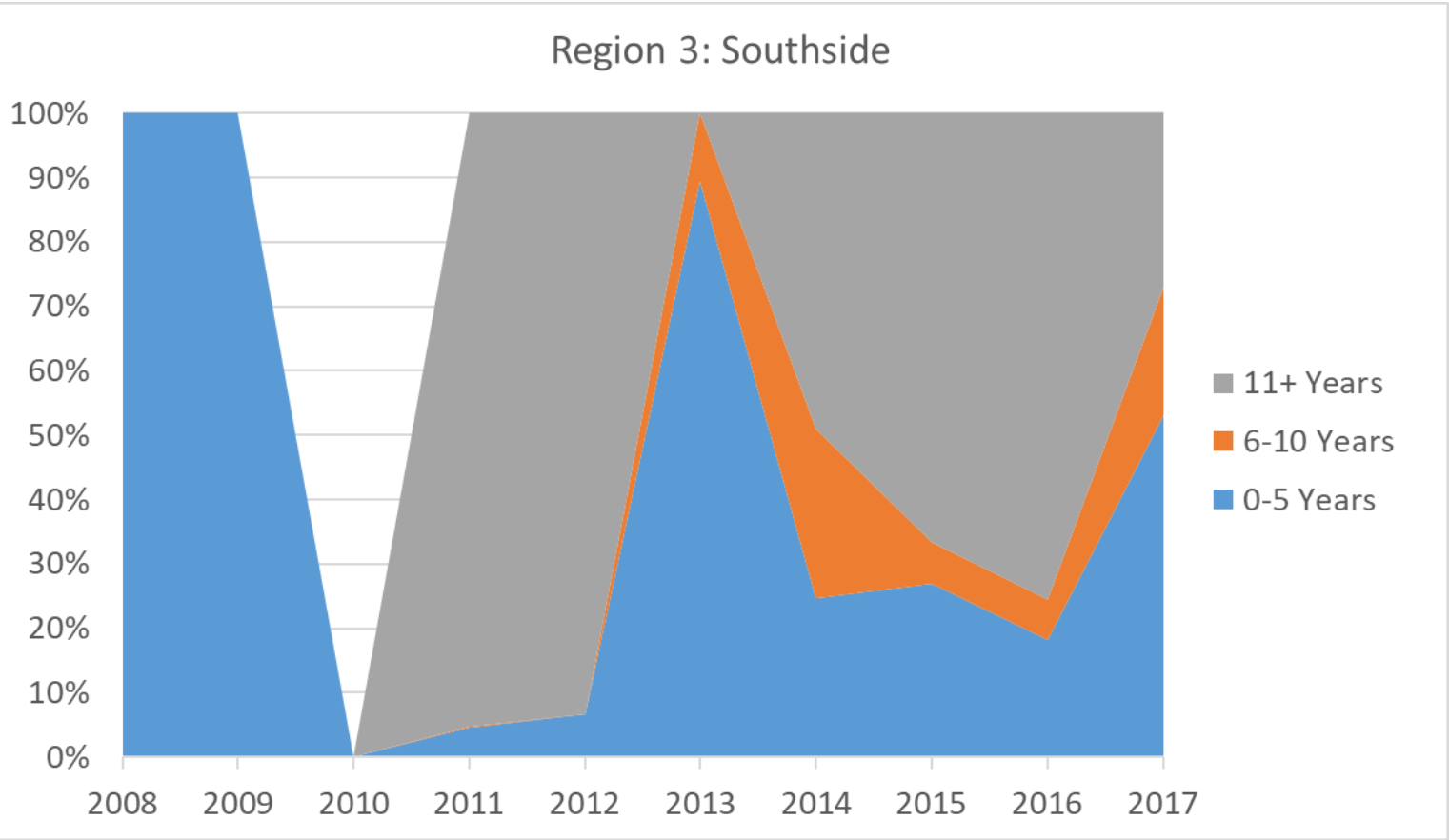
- Majority of employment base is contained within older firms, mirroring wider state and national trends



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

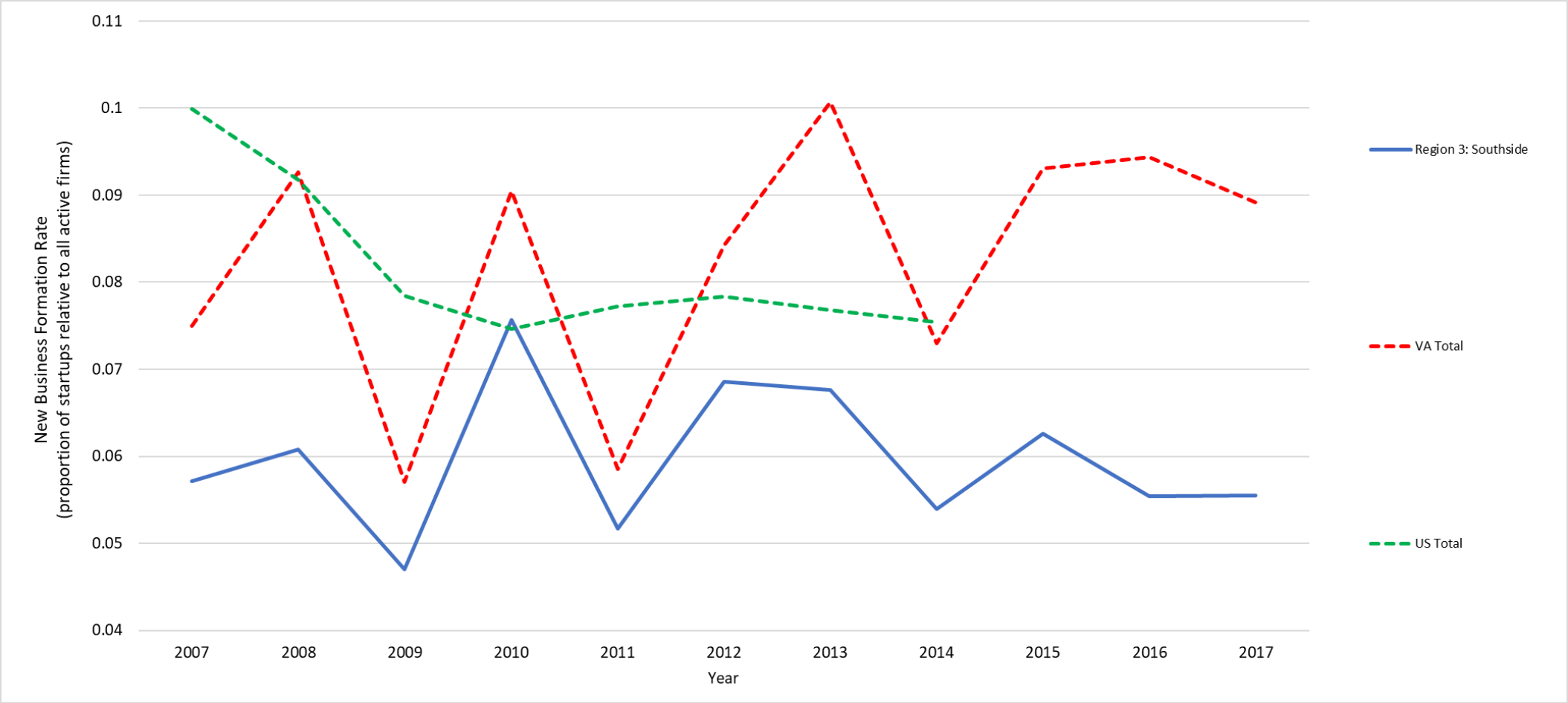
# Trends in Net Job Growth Generation by Age of Firm for Traded Sector Industries

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



# Overall New Business Formation Rates for Region Based on BDRC Firm Level Data

- Trends in overall new business formation rates for region have consistently underperformed state, particularly after 2011



\*US new business formation rates available to 2014 via US Longitudinal Business Database

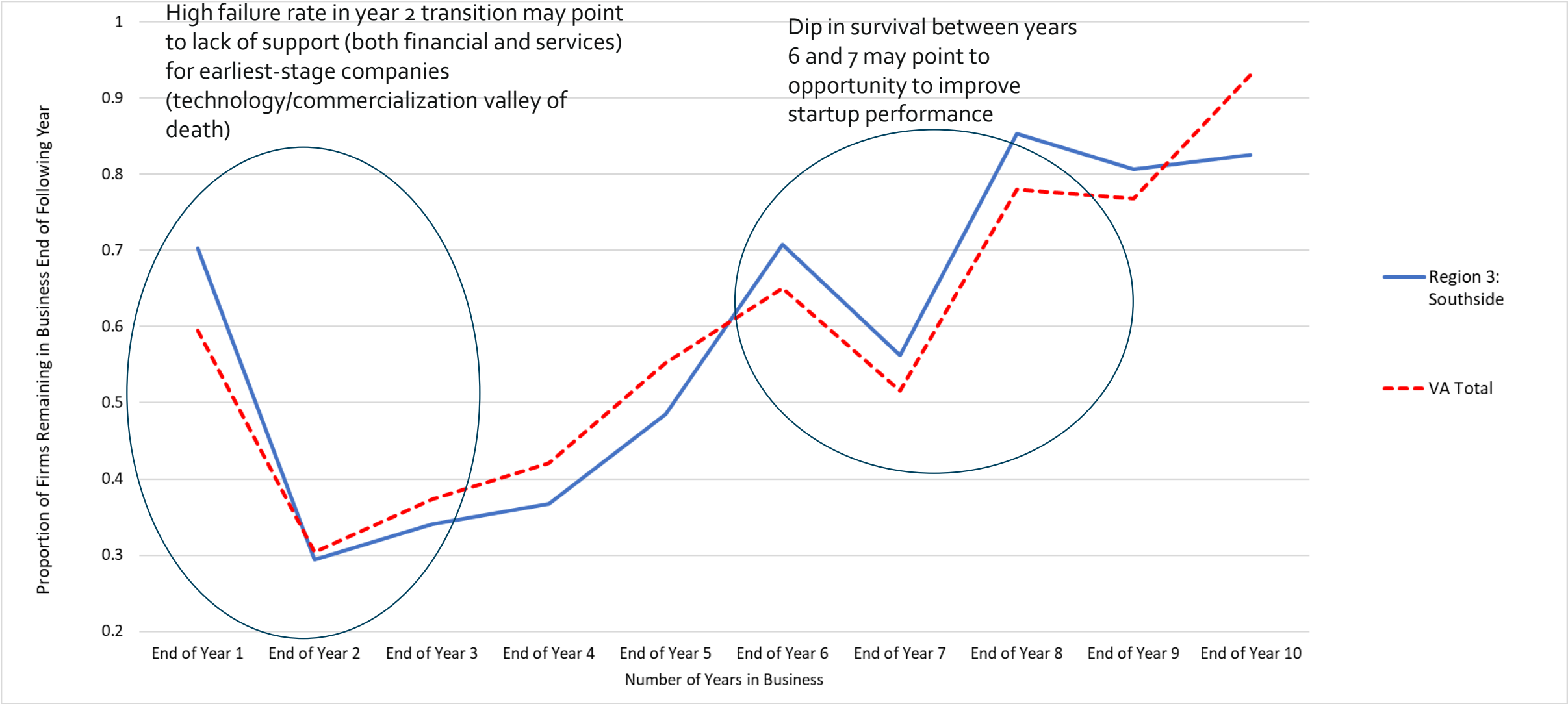
# BDRC Profile of Startup Activity Trends in Region

Founding Year of Startup Cohort*	Number of Startups in Traded Sector Industries	Number of Startups Surviving by 2017	Start-up Employment Levels 2017
2007	111	32	219
2008	100	33	200
2009	80	25	202
2010	150	64	502
2011	76	27	147
2012	135	63	343
2013	133	50	246
2014	103	57	453
2015	112	74	326
2016	100	79	508
2017	97	97	510

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

# Year over Year Survival Rate Trends in Regional Traded Sector Startups

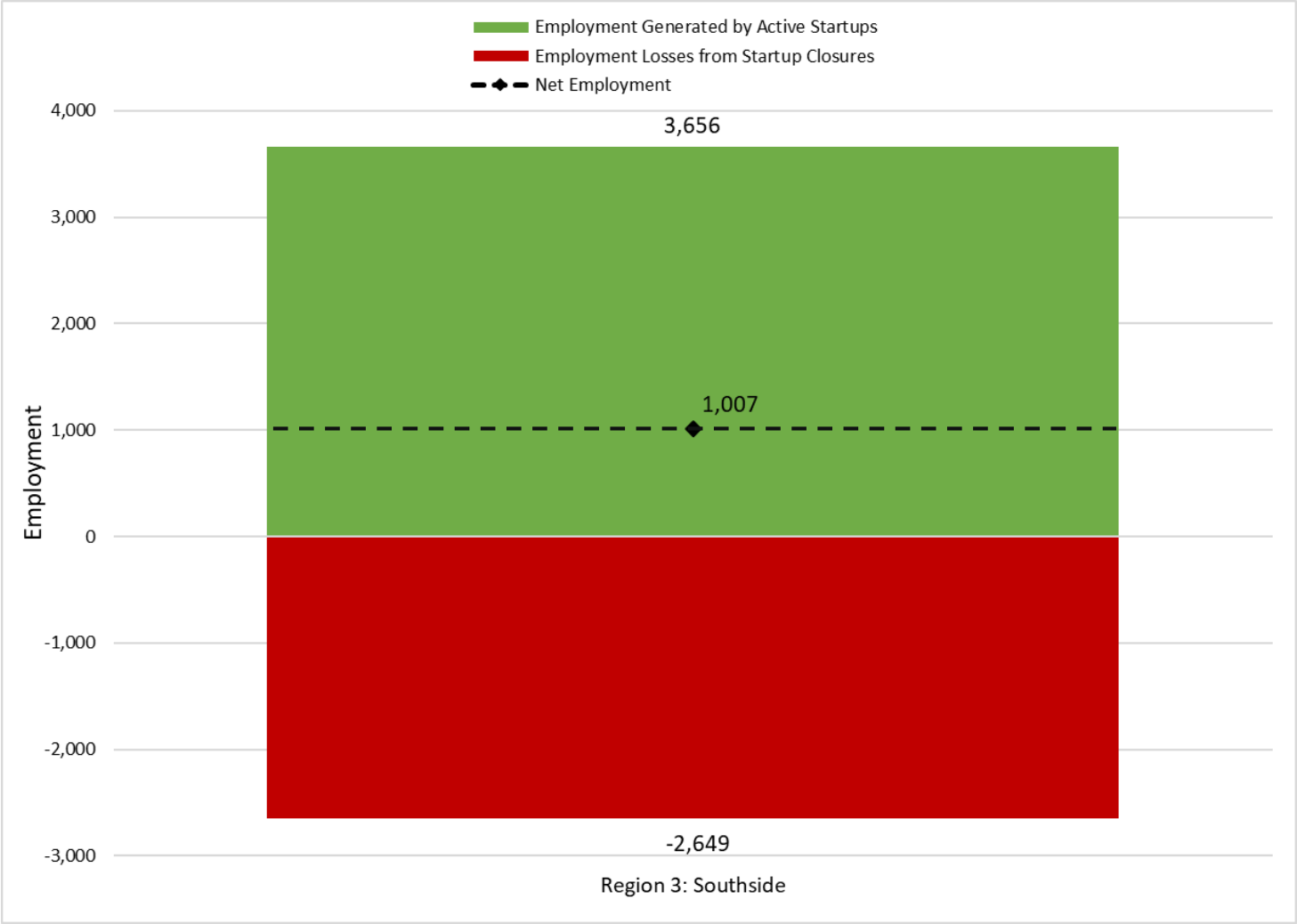
Cumulative 10-year startup cohort survival rates for region are 52.0% compared to a VA statewide rate 53.5%



\*Startups defined as having firm age <10 years as of 2017

# Net Employment Impacts Generated by Traded Sector Startup Firms in VA

- Significant churn within startups, though generally net employment gains from those surviving startup firms outpaces employment loss from failures across region



	Total Virginia Startups
Employment Generated by Active Startups	155,033
Employment Losses from Startup Closures	-98,732
Net Employment	56,301

\*Indicates GO Virginia regions with research universities  
\*\*Startups defined as having firm age <10 years as of 2017



# Profile of Traded Sector High Growth Startup\* Activity in Region

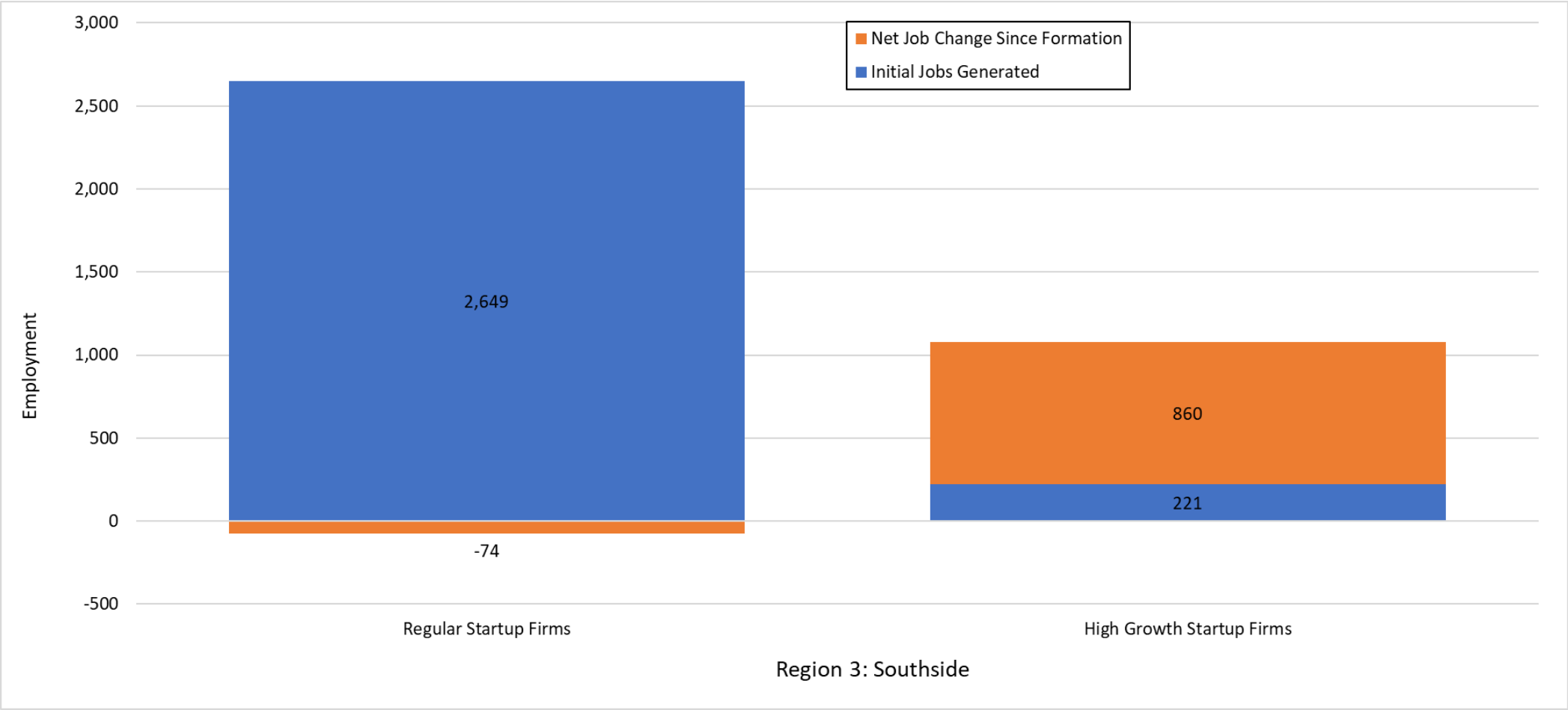
Founding Year of Startup Cohort**	Total Number of Startups in Traded Sector Industries	Number of High Growth Start-ups in Traded Sector Industries*	Employment Levels of High Growth Start-ups, 2017
2007	111	8	65
2008	100	3	79
2009	80	7	135
2010	150	10	181
2011	76	7	0
2012	135	11	107
2013	133	16	100
2014	103	22	270
2015	112	22	128
2016	100	2	16
2017	97		

\* High growth startups defined as >25% annualized employment growth over lifetime of business  
 \*\* Composed of all new non-branch firms with first recorded employment activity in a given year

# Employment Growth Impacts Generated by Current Traded Sector Startup Firms in Region

- Key to long term success is high growth startups – disproportionate share of lasting gains in employment observed from cohort of startups exhibiting high annualized growth rates

	Total VA Regular Startup Firms	Total VA High Growth Startup Firms
Initial Jobs Generated	104,889	9,058
Net Job Growth Since Formation	506	40,781



\*Indicates GO Virginia regions with research universities  
\*\*Startups defined as having firm age <10 years as of 2017, high growth startups defined as >25% annualized employment growth over lifetime of business

# Profile of Startup Activity Within Key Regional Industry Clusters

Target Industry Clusters:

- Business Services/IT Data Centers
- Advanced Mfg. & Materials
- Natural Resource Products
- Health Care

Major Industry Cluster***	Number of Startups in Cluster	Number of Start-ups Surviving by 2017	Start-up Employment Levels, 2017	Start-ups Industry Cluster Employment Concentration Index*	Number of High Growth Start-ups in Cluster**
Agriculture & Food Processing	195	113	599	2.73	9
Business Services	544	291	1,246	0.69	28
Energy, Natural Resources, & Finished Products	109	57	524	2.08	6
Engineering, R&D, Testing & Technical Services	43	25	131	0.33	5
Financial & Insurance Services	123	59	162	0.40	3
Health Care Services	57	35	498	1.20	11
Information Technology & Communications Services	50	25	186	0.32	6
Life Sciences	26	15	87	0.56	0
Manufacturing	98	59	488	1.69	9
Ship Building, Aerospace, & Defense	1	1	5	0.11	0
Transportation, Distribution and Logistics	332	137	670	0.76	33

\*Represents a measure of specialization in startup activity in certain industry clusters given overall state trends, >1.2 indicates highly specialized concentration of startup generation in industry area

\*\*Defined as >25% annualized employment growth over lifetime of business

\*\*\*Note: some industry cluster definitions include a mix of traded and untraded industry sectors

# Additional Data Insights – Region 3 Contribution of Entrepreneurial Development to Leading Industry Clusters

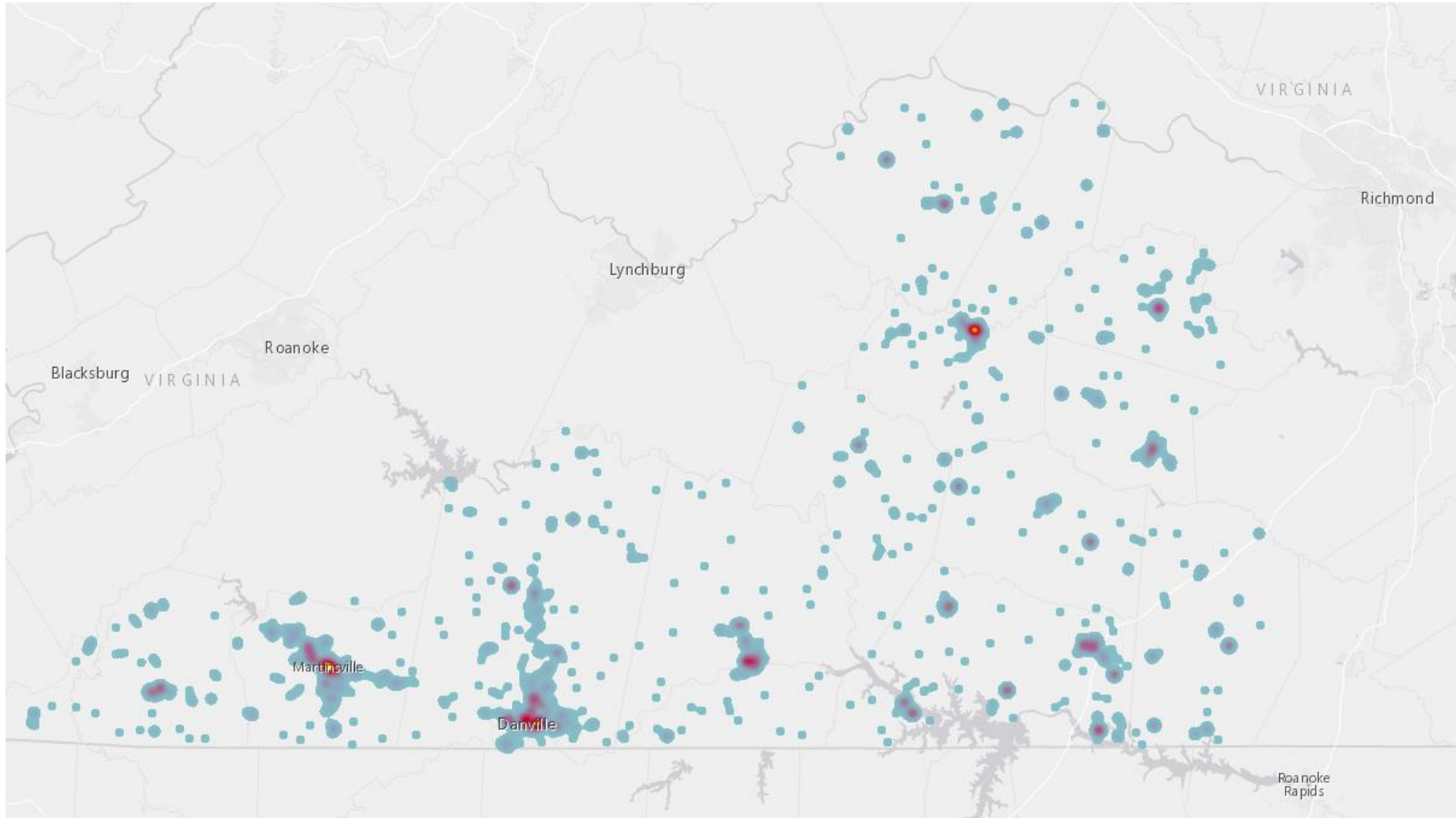
Industry Cluster	Economic Development Position in Region	Contribution of Entrepreneurship	Data Analysis						
			2017 Employment	2017 Location Quotient	Regional 2007-2017 Percentage Job Growth	U.S. 2007-2017 Percentage Job Growth	Net Job Growth, All Companies, 2007-2017	Net Job Growth, Startups, 2007-2017	Share Start-ups of All Net Job Growth, 2007-2017
Agriculture & Food Processing	Declining	Very Significant	2,278	0.90	-17.5%	10.7%	-482	599	>100%
Business Services	Emerging Strength	Very Significant	4,628	0.73	29.3%	9.1%	1,049	1246	119%
Energy, Natural Resources, & Finished Products	Specialized/Declining	Very Significant	7,372	3.56	-39.1%	-13.3%	-4,741	524	>100%
Engineering, R&D, Testing & Technical Services	Emerging Opportunity	Very Significant	337	0.24	9.6%	6.5%	30	131	444%
Financial & Insurance Services	Declining	Very Significant	487	0.19	-49.4%	-4.1%	-476	162	>100%
Health Care Services	Sizable/Declining	Very Significant	3,786	0.92	-4.6%	12.5%	-183	498	>100%
Information Technology & Communications Services	Emerging Opportunity	Very Significant	509	0.21	26.6%	50.8%	107	186	174%
Life Sciences	Emerging Opportunity	Very Significant	479	0.39	7.6%	9.7%	34	87	259%
Manufacturing	Specialized/Declining	Very Significant	10,189	1.60	-18.1%	-13.5%	-2,247	488	>100%
Ship Building, Aerospace, & Defense	Emerging Opportunity	Minimal	194	0.32	4596.2%	-7.7%	189	5	3%
Transportation, Distribution and Logistics	Sizable	Very Significant	5,070	0.91	0.9%	8.7%	46	670	1460%

# Geographic Distribution of Traded Sector Startup Activity in Region

High Regional  
Startup Activity  
Levels



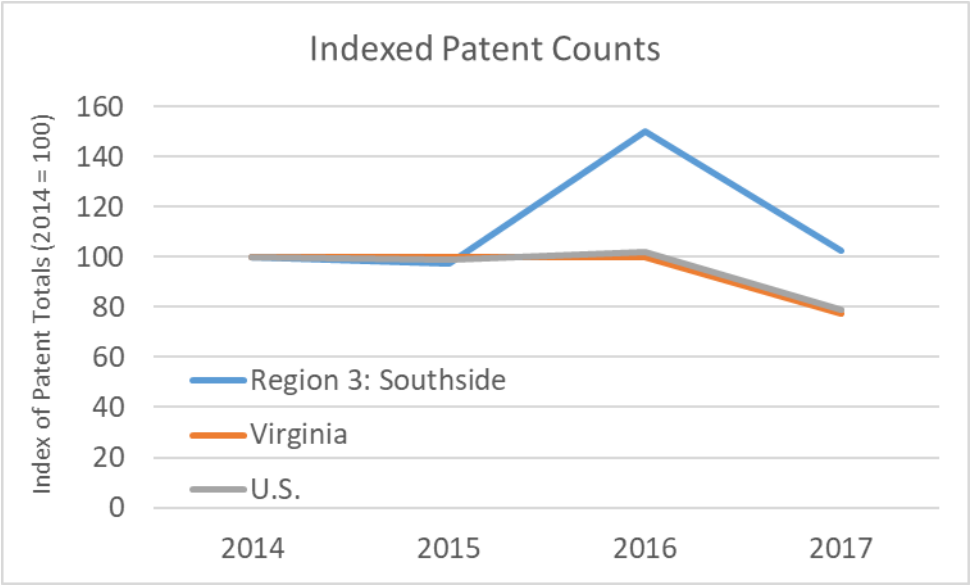
Low Regional  
Startup Activity  
Levels



## Key Measures:

- Patent Activity of Inventors Residing in Region
- Venture Capital
- Federal Small Business Innovation Research (SBIR) Awards
- Utilization of SBA Loans

# Regional Patent Activity

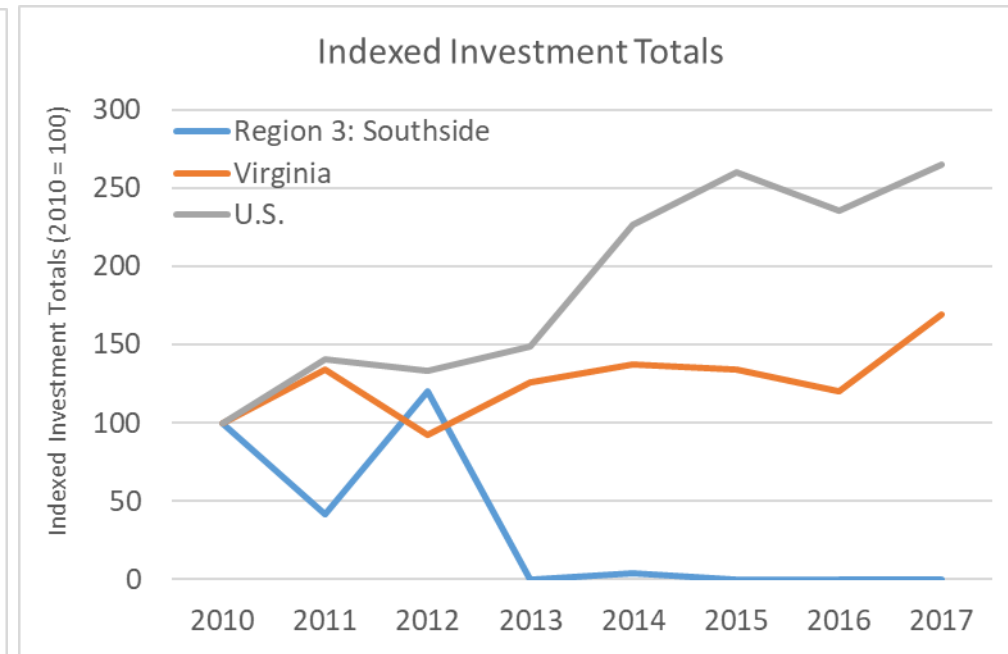
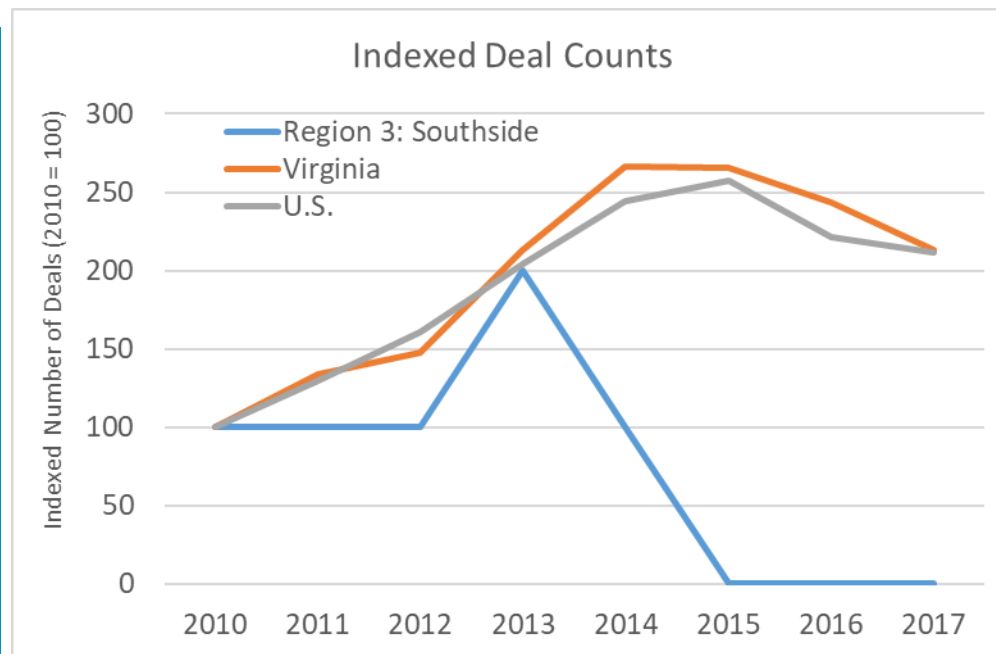


Total Patents, 2014-17

Region 3: Southside	2014	2015	2016	2017	Total
Patent Counts	40	39	60	41	180

Technology Class Area	Number of Patents with at least one inventor in Region, 2010-2017
Network arrangements or protocols for real-time communications	9
Optical components or elements other than lenses	8

# Venture Capital



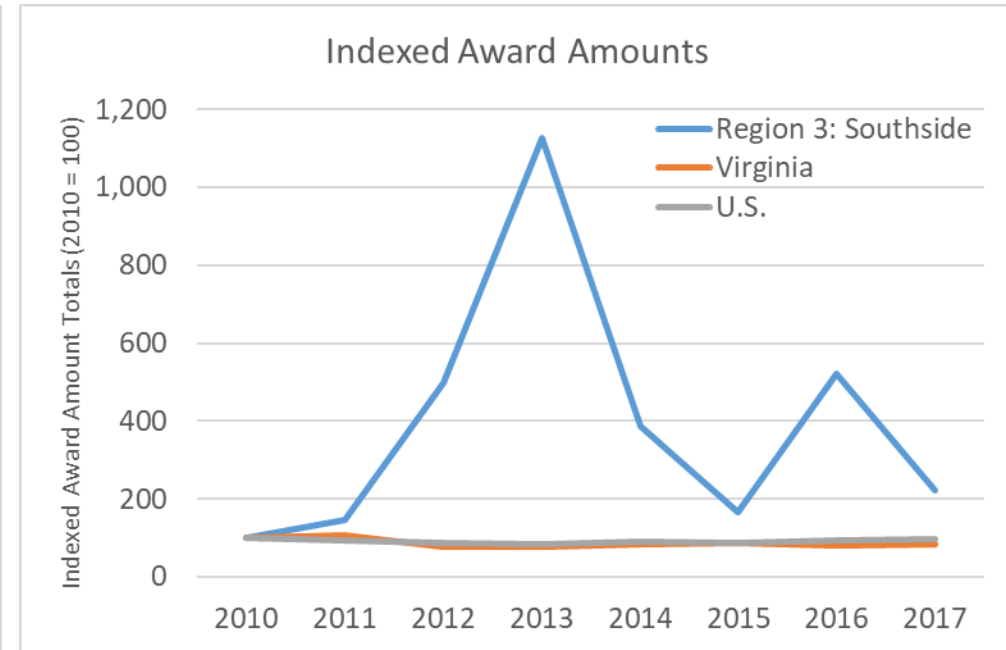
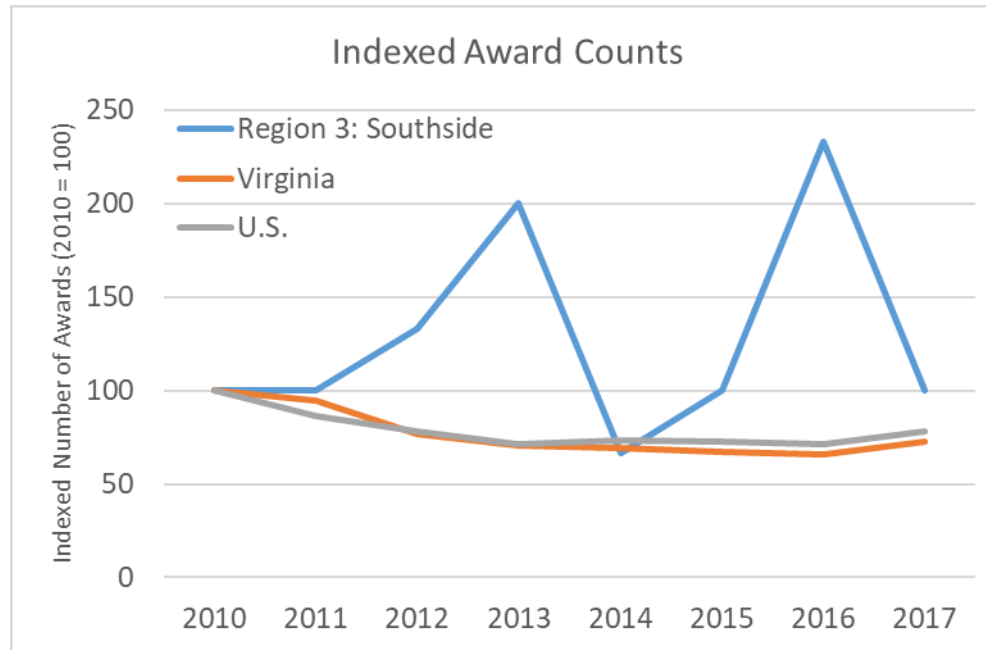
Region 3: Southside	2010	2011	2012	2013	2014	2015	2016	2017	Total
Deal Counts	1	1	1	2	1				6
Investment Totals (Millions)	\$6.1	\$2.5	\$7.3		\$0.3				\$16.1

## All Companies Receiving VC Investment, 2010-17

Company	Industry Cluster	Deal Count	Investment Total (Millions)
Healthrageous	Life Sciences	3	\$15.84
KSI Data Sciences	Information Technology & Communications Services	1	\$0.25
Solex Architecture	Engineering, R&D, Testing & Technical Services	1	\$0.00
AllergEase	Agriculture & Food Processing	1	\$0.00



# SBIR/STTR Awards



Region 3: Southside	2010	2011	2012	2013	2014	2015	2016	2017	Total
Award Counts	3	3	4	6	2	3	7	3	31
Award Amounts (Millions)	\$0.23	\$0.33	\$1.13	\$2.55	\$0.87	\$0.37	\$1.18	\$0.50	\$7.17

## Companies Receiving Phase II Awards, 2015-17

Company	Phase II Award Counts	Phase II Award Amounts (Millions)
AxNano, LLC	1	\$0.30
IRFLex Corporation	1	\$0.20

# Regional Use of SBA Loans

- **SBA 7(a) loans are the agency's primary program for financial assistance to small businesses**
  - Amounts: up to \$5M
  - SBA guarantees: 75% to 85%
  - Qualification: for-profit business, SBA size standards, demonstrate good credit/mgmt./ability to repay
  - Use of Proceeds: Startup costs, buying land/buildings/equipment, new construction, working capital, seasonal lines of credit.
  - Benefits: Flexible, longer terms, lower down payments, no prepayment penalties

## Region 3: SBA 7(a) Loans and Loan Amounts, Cumulative Totals 2010-18\*

Industry	Co's Receiving Loans	Total No. of Loans	Total Loan Amounts (\$)
Total, Traded Sectors	43	73	\$38,340,354

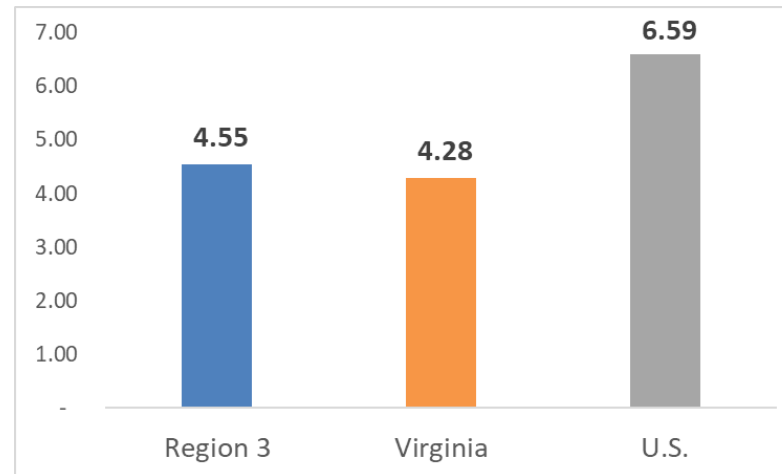
Source: TEconomy analysis of SBA loan data reports.

\*Data for 2018 are through Q2.

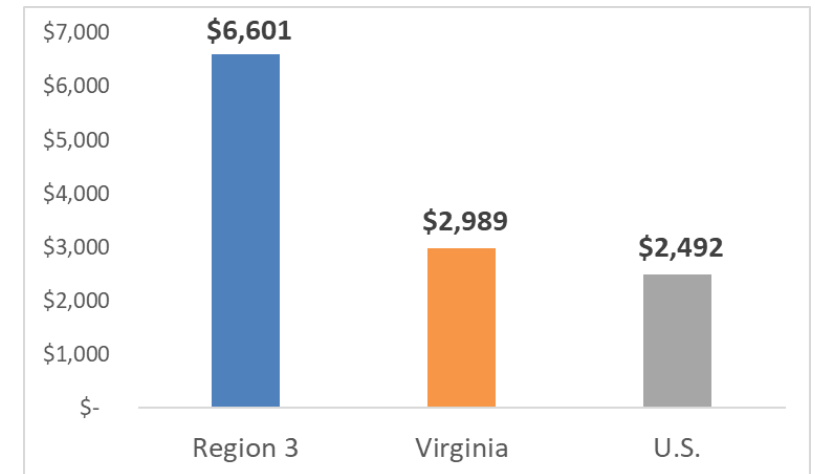
# Regional Utilization of SBA Loans vs. State & U.S. Totals

- In 2017, regional companies approved for loan funding at a greater level relative to overall establishments compared with VA and US

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



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



# Appendix C: Inventory and Stakeholder Discussions

## Informing the “Situational Assessment”

### Stakeholder Discussions and Inventory \*

- Eva Doss, The Launch Place
- Angeline Godwin, PHCC
- David Kenealy, Southern Va. Higher Ed Center
- Carl Knoblock, SBA District Director
- Cindy Green Snider, Virginia Community Capital
- Karl Stauber, Danville Regional Foundation
- David Stone, Solid Stone Fabrics
- Mark Swain, TMI AutoTech

\* See handout for inventory profiles

# Appendix D: Competitive Benchmarking

# Benchmarking: *Regions Selected and Comparative Measures*

- **Regions Selected:** TEconomy solicited and received input across the 9 GO Virginia regions on regions they benchmark themselves against, consider useful comparisons

- **Large Technology Hubs**

- Raleigh/Durham, NC
- Austin, TX
- Charlotte, NC

- **Medium-sized regions with urban core and multiple mid-tier research institutions**

- Birmingham, AL (UAB)
- Chattanooga, TN – medium-sized, minimal university presence
- Dayton, OH (Univ. of Dayton; Wright State Univ.)
- Durham, NC (Duke)
- Greenville, SC (Clemson Univ.)
- Nashville, TN – medium-sized, major research university
- Raleigh, NC (NC State)

- **Rural regions with major research institutions**

- West Lafayette, IN (Purdue University)
- Gainesville, FL (Univ. of Florida)

- **Rural region without major research institutions (near Interstate and mfg.-oriented)**

- Greater Susquehanna, PA (MSA/Micro blend)
- Cookeville, TN (Micro) – rural, minimal university presence
- Jackson, TN (Micro) – rural, minimal university presence

- **Comparative Measures:** Organized across stages of entrepreneurial development

## Ideation

- Highly educated population growth and in-migration
- New firm startup rate
- University R&D
- Patent Activity

## Commercial Viability

- SBIR/STTR Activity
- University Technology Transfer & Commercialization

## Market Entry

- Employment in Younger, Traded Sector Firms
- Venture Capital Activity

## Growth & Scalability

- Presence of High Growth Companies
- Talent dynamics such as population growth of working age population, educational attainment and highly educated population growth and in-migrations
- SBA 7(a) loan activity

\*Regional geographies are Metropolitan Statistical Areas (MSAs) if not otherwise specified above.

# Ideation

Ecosystem Element	Measure	GO VA Region 3	VA	U.S.	Benchmarking Groups: Median Value			
					Large Tech Hubs	Mid-sized Regions	Rural with Major Research Anchor	Rural with No Major Research Anchor
University R&D	University R&D Expenditures per Capita, 2016	-	\$174	\$222	\$863	\$370	\$2,800	\$62
	Percent Change in Total R&D Expenditures, 2010-16	-	22%	17%	16%	15%	13%	-25%
Patenting (Incls. Industry & University)	Invented Patents per 1,000 Population, 2017	0.1	0.3	0.5	2.1	0.4	1.4	0.2
	Percent Change in Total Invented Patents, 2014-17	-13%	-33%	7%	16%	9%	20%	6%

Note:

- Large Tech Hubs: Raleigh/Durham, NC; Austin, TX; Charlotte, NC
- Mid-Sized Regions: Birmingham, AL; Chattanooga, TN; Dayton, OH; Durham, NC; Greenville, SC; Nashville, TN; Raleigh, NC
- Rural region with Major Research Anchor: West Lafayette, IN; Gainesville, FL
- Rural region without Major Research Anchor: Greater Susquehanna, PA; Cookeville, TN; Jackson, TN



# Commercial Viability

Ecosystem Element	Measure	GO VA Region 3	VA	U.S.	Benchmarking Groups: Median Value			
					Large Tech Hubs	Mid-sized Regions	Rural with Major Research Anchor	Rural with No Major Research Anchor
SBIR/STTR Awards	SBIR, STTR Award Funding per Capita, Avg. 2014-17	\$2	\$15	\$8	\$17	\$5	\$30	\$0.30
	SBIR, STTR % Pt. Change in Share of Award Funding, Avg. 2010-13 to 2014-17	-0.01	-0.56	-	0.09	0.03	-0.04	0.00
	Number of Phase 1 Awards, 2010-2017	24	1,796	17,802	486	44	119	2
	Number of Phase 2 Awards, 2010-2017	7	935	10,002	235	33	49	0
University Technology Transfer & Commercialization	Avg. Annual Univ. Start-ups, 2014-16	-	17	911	28	5	21	-
	Avg. Startups Formed per \$10M Univ. Research, 2014-16	-	0.15	0.16	0.13	0.10	0.36	-
	Avg. Licenses/Options Executed per \$10M Univ. Research, 2014-16	-	1.12	1.14	1.54	1.03	2.87	-

# Market Entry

Ecosystem Element	Measure	GO VA Region 3	VA	U.S.	Benchmarking Groups: Median Value			
					Large Tech Hubs	Mid-sized Regions	Rural with Major Research Anchor	Rural with No Major Research Anchor
New Firm Startup Rate	Rate of New Firm Formation as a Percent of All Firms, 2014	-	7%	8%	9%	7%	7%	5%
	Percentage Pt. Change, 2010-14	-	0.3	0.2	0.0	-0.1	0.4	-1.0
Employment in Younger, Traded Sector Firms	Share of Employment in Traded Sector Firms Ages 0-5, 2017 Q2	4%	7%	8%	8%	6%	7%	3%
	Avg. Share of Employment Growth in Firms Ages 0-5, 2013-2017 Q2	31%	52%	46%	36%	34%	42%	30%

# Market Entry

Ecosystem Element	Measure	GO VA Region 3	VA	U.S.	Benchmarking Groups: Median Value			
					Large Tech Hubs	Mid-sized Regions	Rural with Major Research Anchor	Rural with No Major Research Anchor
Venture Capital Investments	VC Investments, 2014-17	\$3 M	\$2.6 B	\$308 B	\$2.3 B	\$127 M	\$66 M	\$0.2 M
	VC Investments per Capita, 2014-17	\$7	\$315	\$954	\$1,221	\$164	\$255	\$1
	Change in VC Investment, 2010-13 to 2014-17	-85%	24%	89%	42%	86%	-13%	2000%
	VC Deals, 2014-17	4	1,068	54,030	565	81	74	3
	VC Deals per 100,000 population, 2014-17	1.1	13	17	31	13	30	2
	Change in VC Deals, 2010-13 to 2014-17	-80%	67%	58%	67%	49%	135%	125%
	Share of VC Investments in Angel + Seed + Early Stages, 2014-17	100%	51%	41%	36%	79%	65%	100%
	Angel + Share of VC Deals in Seed + Early Stages, 2014-17	100%	81%	88%	85%	84%	91%	100%

## Growth & Scalability

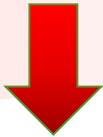



Ecosystem Element	Measure	GO VA Region 3	VA	U.S.	Benchmarking Groups: Median Value			
					Large Tech Hubs	Mid-sized Regions	Rural with Major Research Anchor	Rural with No Major Research Anchor
SBA 7(a) Loans	Avg. SBA 7(a) Loans, per 100,000 population, 2010-2017	2.1	2.9	4.7	3.6	2.7	2.0	3.2
	Change in SBA 7(a) Loans, 2010-2017	40%	11%	22%	55%	80%	-17%	-20%
	Avg. SBA 7(a) Loan Value, per Capita, 2010-2017	\$8	\$9	\$17	\$18	\$12	\$10	\$20
	Change in SBA 7(a) Loan Value, 2010-2017	-46%	214%	82%	149%	120%	693%	48%
Presence of High-Growth Companies	Number of Companies on the Inc. 5000 List of Fastest Growing US Companies, 2018	1	297	-	57	13	3	1
	Change in Companies in Inc. 5000, 2010-18	- (0 in 2010)	2%	-	15%	13%	83%	-50%

# Cross-Cutting Ecosystem Element: Talent Dynamics

Ecosystem Element	Measure	GO VA Region 3	VA	U.S.	Benchmarking Groups: Median Value			
					Large Tech Hubs	Mid-sized Regions	Rural with Major Research Anchor	Rural with No Major Research Anchor
Growth in Working Age Population	Growth in Total Working Age Population, 25-64—2012-2017	-4%	1%	3%	9%	5%	2%	-2%
	Growth in Young Working Age Population, 25-34—2012-2017	11%	3%	7%	11%	7%	6%	4%
Educational Attainment	Share of Population Ages 25-64 with a Bachelor's Degree or Higher, 2017	13%	28%	23%	31%	23%	21%	15%
	Growth in Highly Educated Workforce (BA+), (25-64, working age) — 2012-2017	10%	10%	12%	26%	17%	16%	6%
Highly Educated Migration	Net Migration of Highly Educated Workers (BA+), 2012-17	-1,506	-14,000	154,411	45,424	2,279	-9,684	-1,402
	Foreign In-Migration (BA+), 2010-17	280	151,627	3,933,494	38,243	8,782	8,423	587

# Competitive Benchmarking Assessment



Overall Assessment				
Measures Region is Performing Well In		<ul style="list-style-type: none"><li>• <b>SBIR Activity</b> – lags state but sizable volume of activity, and slightly ahead of other rural regions</li></ul>		<ul style="list-style-type: none"><li>• <b>Growth of SBA Loan Volume</b> – outpacing state, US, rural regions</li></ul>
On Par Measures			<ul style="list-style-type: none"><li>• <b>Employment in/Growth From Younger, Traded Sector Firms</b> – lags state but comparable to other rural regions</li><li>• <b>VC Investments</b> – lags well behind state but comparable to/slightly ahead of other rural regions</li></ul>	<ul style="list-style-type: none"><li>• <b>Presence of High-growth Companies</b> – (1) comparable to other rural regions</li></ul>
Measures Region is Lagging In	<ul style="list-style-type: none"><li>• <b>Patenting</b> – lags state and rural regions and has been declining</li></ul>			<ul style="list-style-type: none"><li>• <b>SBA Loan Volume and Value</b></li><li>• <b>Change in SBA Loan Value</b></li></ul>

# Appendix E: Benchmark Case Study Profiles

# Benchmark Case Studies: Wide Number of Tools for Entrepreneurial Development

Ideation

Commercial  
Viability

Market Entry

Growth &  
Scalability

## Typical Entrepreneurial Assistance Service Tools

Tool-Kit Components	<ul style="list-style-type: none"><li>• Lean startup bootcamps/pre-accelerator preparation</li><li>• Mentoring by an EIR/venture advisor</li><li>• Pitch/Business competitions</li><li>• University entrepreneurship centers</li><li>• University technology commercialization scouting</li></ul>	<ul style="list-style-type: none"><li>• Accelerators/venture development organizations/incubators</li><li>• NSF iCorps</li><li>• Mentoring by EIRs with understanding of specific markets and technologies</li><li>• Incubator, co-working, maker-spaces</li></ul>	<ul style="list-style-type: none"><li>• Mentoring by EIR with serial startup experience</li><li>• Second stage incubators, research parks, multi-tenant specialized lab facilities</li></ul>	<ul style="list-style-type: none"><li>• Growth services involving talent recruitment and development, networking in domain areas and business functions, export assistance</li><li>• Mentoring by seasoned business executive who grew companies 20x</li></ul>
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## Typical Risk Capital Catalysts Tools

Tool-Kit Components	<ul style="list-style-type: none"><li>• Commercialization/Technology Transfer Funds</li><li>• Pitch competition micro-investments</li></ul>	<ul style="list-style-type: none"><li>• Proof-of-Concept Funds</li><li>• SBIR/STTR Matching Grants</li><li>• Accelerator and Pre-Seed Funding</li><li>• Refundable R&amp;D and Technology Investment Tax Credits</li></ul>	<ul style="list-style-type: none"><li>• Angel Matching/Due Diligence Funds</li><li>• Angel Investment Tax Credits</li><li>• Seed Matching Funds</li></ul>	<ul style="list-style-type: none"><li>• Fund of Fund Investments (multiple ways to generate funding)</li></ul>
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# Innovation and Entrepreneurial Development Ecosystem Components

Ideation

Commercial  
Viability

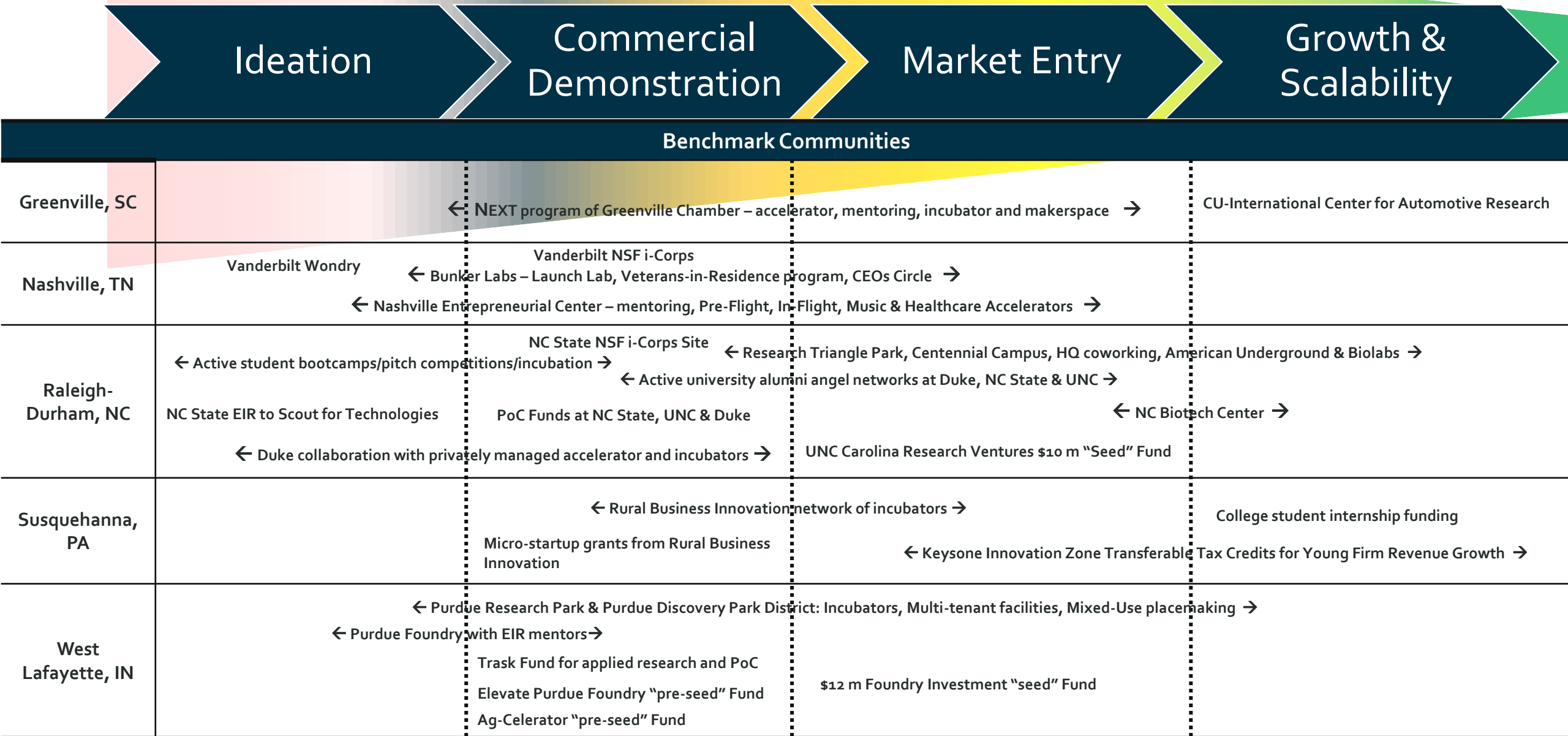
Market Entry

Growth &  
Scalability

## Benchmark Communities

Austin, TX	← IC <sup>2</sup> Institute – mentorship, networking, Austin Technology Incubator → UT Kelleher Entrepreneurial Center UT School of Engineering Innovation Center		← South by Southwest Conference & Festivals →
Birmingham, AL	← Alabama Drug Discovery Alliance → Velocity Accelerator	Innovation Depot	Focus on IT training: Covalence IT coding boot camp; Innovate Birmingham efforts in IT training for under-employed and unemployed young adults
Charlotte, NC	UNCC 49er Student Foundry ← Network of accelerators (fintech, cleantech, NC Idea → Charlotte Venture Challenge	UNCC NSF i-Corps Site Packard Place	Innovate Charlotte regional assessments on needs
Chattanooga, TN	← CO.LAB – mentorship, networking, accelerators, connection to capital → ← CO.Starters →	← CO.LAB’s Gig Tank, Consumer Goods Accelerators, etc. →	Crowd-sourced financing platforms, such as Kiva; Chattanooga Renaissance Fund (seed fund); and Lamp Post Group (early-stage VC)
Dayton, OH	Wright Brothers Institute (commercialization intermediary)	The Entrepreneurial Center accelerator program	The Entrepreneurial Center mentoring services Accelerant Seed Fund
Gainesville, FL	UF Entrepreneurship & Innovation Center	← Sid Martin Biotech Incubator & Innovation Hub Incubator → Florida Angel Nexus	← Innovation Square → StartupGNV networking events

# Innovation and Entrepreneurial Development Ecosystem Components



# Benchmark Case Study: Austin, TX

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• A major technology hub with one research anchor that until recently was not aggressive on tech transfer/startups and had no medical school</li><li>• Chamber of Commerce drove progress where government was passive or lagged</li><li>• Success at attracting semiconductor consortia in 1980s led to increasing ties to Silicon Valley and its investors</li><li>• Unexpected success of Dell Computer in 1980s/1990s created local wealth and management talent, all used in startup formation</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• <b>IC2.</b> Institute started creating entrepreneurial momentum even in a period when university itself lagged</li><li>• <b>Austin Technology Incubator.</b> Probably the most important outcome of IC2. Industry verticals aligned with Chamber targets.</li><li>• <b>Dell Medical School.</b> Chamber succeeded in lobbying state for new med school at UT Austin, and Travis County matched with local tax levy</li><li>• <b>Innovation District.</b> Next logical step after medical school is an integrated medical district, now under way</li><li>• <b>SXSW.</b> Once a music festival, it deliberately broadened to add film and software/interactive, creating additional ties to coastal media &amp; investors</li><li>• <b>Kelleher Center at UT McCombs School.</b> Finally active in entrepreneurship, UT Austin now has a campus hub in the business school</li><li>• <b>Cockrell School of Engineering Innovation Center</b> offers advice and training to faculty and staff, provides small startup grants, and hosts competitions, among other activities.</li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• Chamber has adopted Innovate Austin initiative, and names annual 'A-list' of emerging, growth, and accelerator-stage ventures</li><li>• Regional Council of Governments CEDS has unusually sophisticated section on entrepreneurship and growth acceleration, recognizing importance of both launch and expansion</li><li>• ATI itself claims to have helped clients raise \$890 million in capital, cumulatively, \$200 million in 2016 alone to 19 companies</li><li>• Across entire region, Chamber claims \$869 million in capital to 123 deals in 2016</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Growing a full, research-oriented biomedical capacity has only just begun and remains a major challenge</li><li>• Withering of semiconductor initiatives leaves status of J.J. Pickle Research Campus uncertain, isolated by expressway from main campus</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• Austin is the pre-eminent example of successfully mixing arts and technology into a single message on creative economy</li><li>• SXSW has been as impactful as any high-tech initiative, and made Austin a platform for startups nationally, as well as exposing local startups to the national audience</li><li>• There are few other mid-sized metros with such close ties to the centers of music and film (LA) and tech (NY and San Francisco)</li></ul>

# Benchmark Case Study: Birmingham, AL

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Mid-sized region with research anchors, including University of Alabama Birmingham (\$500+ m annually) and Southern Research Institute (~\$70 m annually in contract research funding).</li><li>• Research anchor focus is strongly on life sciences.</li><li>• Challenge of having to reinvent itself from being a steel-oriented economy (the “Pittsburgh of the South”) to an innovation and knowledge hub.</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• <b>Applied and translational research focus:</b> Alabama Drug Discovery Alliance, a collaboration of SR and UAB, leverages significant drug discovery and development research and shared use facilities and moves new therapeutic leads through a structured process of assay development, high-throughput drug screening, lead identification and development, pre-clinical testing and early clinical trials.</li><li>• <b>Innovation Depot</b>, a 140,000 sq. ft. incubator and co-location space, making it one of the largest in the nation. It offers range of space options, including wet lab. The Innovation Depot is far more than a technology incubator, but a home for a variety of entrepreneurial and talent initiatives in collaboration with community stakeholders.</li><li>• <b>Velocity</b>, a relatively new accelerator housed at Innovation Depot, with ability to invest \$50,000 in seed funding for each selected startup company.</li><li>• <b>IT workforce development</b> – Multiple efforts in place at different levels for IT coding/software development bootcamps targeting undergraduates and under-employed/unemployed young adults.</li><li>• <b>Networking activities:</b> Tech Birmingham programs include a monthly TechTuesday speaker series, member only networking socials, broader information sharing events, and Keep It Local to create opportunities for local companies to do more business together in IT products and services, among other efforts.</li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• Innovation Depot reports 112 companies assisted with 1,064 jobs and \$155 million in sales revenue. Largely tech-oriented companies, but some life sciences.</li><li>• Establishing networks and connections with other communities to generate investor interest and entrepreneurial teams, including New York and Israel</li><li>• Many of its graduates are now serving as tenants for a larger innovation district development in Birmingham</li><li>• Alabama Drug Discovery Alliance in early 2018 had 19 drugs in the development pipeline, leveraging major drug discovery programs in emerging infectious diseases, cystic fibrosis and cancer, engaging major biopharmaceutical companies.</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Advancing broader access to capital across stages of investment</li><li>• Generating life sciences startups from research anchors</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• Role of entrepreneurial anchor in creating focus and branding on innovation and entrepreneurship</li><li>• Advancing a single umbrella for delivery of technology transfer, commercialization and entrepreneurial services</li><li>• Embedding talent and workforce initiatives with innovation and entrepreneurial anchor activities</li></ul>

# Benchmark Case Study: Charlotte, NC

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Fast growing technology hub with smaller research anchors</li><li>• Leveraging position in banking center to generate a rising entrepreneurial community.</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• <b>Innovate Charlotte (formerly Charlotte Regional Fund for Entrepreneurship):</b> Established through the 2012 regional plan for “Prosperity for Greater Charlotte,” and funded through the region’s \$2.5 billion community foundation. It was envisioned as a grant funding mechanism to support local non-profits to advance entrepreneurial culture, ecosystem connections, risk capital availability and technical skills. Over the years has taken a more pro-active approach in providing entrepreneurial assessments of the region, holding ideation workshops and recommending specific activities.</li><li>• <b>Packard Place:</b> A redeveloped large auto showroom/building that has been transformed into an entrepreneurial hub housing multiple accelerators (see below) as well as offering fellowships to new startup founders and co-working space.</li><li>• <b>Network of accelerators:</b> Includes one in clean energy (Joules Accelerator), fintech (QC FinTech), and tech (RevTech Labs and NC IDEA)</li><li>• <b>Ventureprise:</b> UNC Charlotte’s long-time affiliated incubator founded back in 1986. Long history of engaging entrepreneurial community, though in 2017 reconstituted with a stronger focus on student and faculty startups, with programs such as Ventureprise Launch NSF iCorps for university tech commercialization and 49er Foundry a student incubator. Also manages the NC IDEA offering a lean-startup program similar to its Ventureprise Launch for innovation-driven startups in the community.</li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• Packard Place reports results for its aggregate community of accelerators, coworking spaces, fellows, etc. as generating from 2010-2017, 500 new jobs and \$1 billion in venture capital raised.</li><li>• Ventureprise reports over the 2008-2017 period supporting 46 new clients, with some notable successes such as CSi/Photograds, Verian Technologies, SecureEdge Networks and Saprex, which had successful exits or have moved into their own commercial facilities to accommodate substantial growth.</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Long time period to grow university research anchors to match fast growth of overall entrepreneurial activities and offer a deeper driver of innovation.</li><li>• Not doing well in growing new research park anchors to complement emergence of technology hub, including slow growth of campuses with Charlotte Research Institute and David H. Murdock Research Institute.</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• Role of community foundation and community leaders in spurring entrepreneurial development.</li></ul>

# Benchmark Case Study: Chattanooga, TN

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Mid-sized region with limited research anchor.</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• Company Lab (or CO.LAB) is a non-profit accelerator and one-stop shop for local entrepreneurs founded in 2008. CO.LAB has developed a range of programs and services for both local growth and high-growth companies at different stages of development, including: Way Finding to screen and guide entrepreneurs to services, CO.STARTERS a 9-week program that teaches lean startup methods for business startup; CO.LAB Accelerator, a mentor-driven program for high-growth potential startups; GIG Tank, an accelerator focused on ultra-high bandwidth business applications; Consumer Goods Accelerator, an accelerator focused on outdoor recreation and food/beverage sector.</li><li>• CO.LAB connects companies to capital, like the Chattanooga Renaissance Fund, and Lamp Post Group focused on seed investments. CO.LAB has also joined the Kiva, crowd-sourced financing platform.</li><li>• In 2015 a new intermediary organization formed, the Enterprise Center, to more broadly leverage the City's high broadband infrastructure to create a place that develops and tests many applications for urban needs.</li><li>• Chattanooga foundations and business leaders have historically invested in downtown revitalization efforts, including the riverfront development. CO.LAB spun out of downtown revitalization and visioning exercise supported by local family foundations. Other investments and assets include Chattanooga's gigabit network (10 gbps metro-wide fiber optic network), UTC, the regional university in close proximity to downtown, and the rebranded Innovation District involved mixed use developments.</li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• Significant scale of activities by CO.LAB since its formation back in 2008, including 20+ cohorts and 700+ participants in CO.Starters, 83 companies graduated and \$7M+ capital raised from CO.LAB Accelerator, 58 companies graduated and \$29M+ capital raised for GIG Tank and 200 consultations a year from Way Finding.</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Lack of capital is viewed as a key constraint to high-growth companies</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• Demonstration of how to revitalize a community and its downtown through talent retention, placemaking, startup activity, and ecosystem building that supports both "local growth" and high-growth companies</li><li>• Critical role of local foundations in catalyzing activities and combining placemaking, unique tech infrastructure development and entrepreneurial programming.</li></ul>

# Benchmark Case Study: Dayton, OH

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Mid-sized region anchored by major federal research lab, Air Force Research Labs at Wright Patterson Air Force Base, and University of Dayton with its research institute generating more than \$100m in research activities highly aligned with ARL needs, plus Wright State University, with some research programs and an important talent driver for the region.</li><li>• Challenge of moving beyond federal contract activity to drive new traded sector company growth.</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• <b>Wright Brothers Institute (WBI):</b> A partnership intermediary to facilitate technology transfer from ARL, identify unmet technology needs, further commercialization through collaborative team efforts and engage small technology-based businesses to tap opportunities and partnerships.</li><li>• <b>The Entrepreneur Center (TEC):</b> Serves as the delivery arm of entrepreneurial services supported by the Ohio Third Frontier and operates a traditional incubator with two sites in the region, which is now expanding into offering coworking space and an accelerator program. Also houses a site for WBI.</li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• Wright Brothers Institute reports supporting over 100 innovation-based projects annually, with typically \$3 million of commercialization activities and engaging over 1,000 small technology-oriented businesses.</li><li>• While not among the top performing seed funds in Ohio, the Accelerant seed fund over 2007-2014 invested \$17 million, creating 2,995 jobs and retaining 1,274 jobs. This performance though ranks last of the six privately-managed regional seed funds supported with matching funding from Ohio Third Frontier – and since 2013 has received no additional state matching funds.</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Creating more commercially focused technology-based companies.</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• While advancing industry partnerships with federal labs can be effective, it does not always translate into new commercially-focused technology businesses.</li></ul>

# Benchmark Case Study: Gainesville, FL

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Compact metro in North Central Florida surrounded by rural counties, distant from major population centers, dominated by U Florida, the land grant which also includes a medical school</li><li>• Master planning is emphasizing infill between historic downtown and the university campus</li><li>• Innovation &amp; economic development one of six “pillars” of regional CEDS</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• <b>Sid Martin Biotech.</b> 40,000 s.f. Incubator created in 1990 with long and well recognized track record, off campus in Progress Corporate Park</li><li>• <b>Florida Innovation Hub.</b> 100,000 s.f. dry incubator at downtown campus, anchoring:</li><li>• <b>Innovation Square.</b> Major live/work innovation district project planned for blocks between campus and downtown Gainesville, 1 major multitenant building already open, both wet and dry space</li><li>• <b>Entrepreneurship and Innovation Center.</b> On-campus hub for student entrepreneurship, including consultancy with real startups and ‘hatchery’ for student ventures</li><li>• <b>Florida Opportunity Fund.</b> Venture fund established with state’s allocation from Treasury SSBCI fund</li><li>• <b>Florida Virtual Entrepreneur Center.</b> State-supported through Florida High Tech Corridor collaboration of the three major research universities.</li><li>• <b>StartupGNV (formerly GAIN).</b> Not-for-profit organization encouraging local startups.</li><li>• Additional lower-tech incubators including two at smaller institutions like Santa Fe College strongly supported by the Chamber and highlighted in regional strategies</li><li>• Multiple commercial coworks, makerspaces, etc.</li><li>• <b>Florida Angel NEXUS.</b> Statewide collaborative of regional angel groups and funds</li><li>• Every county in the region (all 12 counties surrounding Alachua) qualify for planning support from the state Rural Economic Development Initiative</li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• Sid Martin claims its companies have attracted cumulatively \$500 million in capital (\$1.7 billion in funding including revenue and acquisitions), with 80% still in operation 5 years after graduation, and 16 of all biotech companies in-state started there</li><li>• UF licensing office claims to have started more than 160 companies (about half biomedical, but also technology)</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Relative isolation from state’s major business/corporate centers – 70 miles to Jacksonville, 110 to Orlando, 130 to Tampa</li><li>• Chamber recognizes need to take strategy to a higher level, including better connecting startup creation to targeted industry clusters, and reducing outward brain drain</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• Through patient nearly 30-year investment in Sid Martin Biotech, UF has moved beyond “Gatorade” to genuine standing in biotech world</li></ul>



# Benchmark Case Study: Greenville, SC

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Mid-sized region anchored by presence of university research anchors in the region and a growing academic hospital creating a new medical school in collaboration with local universities.</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• <b>New innovation center campuses outside of the main Clemson University campus with focus on specific technologies, including:</b><ul style="list-style-type: none"><li>• <b>Clemson University International Center for Automotive Research (CU-ICAR), Greenville:</b> Significant public-private partnership between growing automotive industry, Clemson University and the state to create a new R&amp;D center of excellence in automotive technologies close to the industry cluster and about 45 minutes from the Clemson campus . Includes creation of a new graduate program in automotive technologies at the site that involves multi-disciplinary approach involving electronics, computing and advanced materials, supported by recruitment of eminent scholars. Home to company research centers, including BMW IT Research Center and Koyo Bearing R&amp;D Center, plus offers a 60,000 sq ft Center for Emerging Technologies.</li><li>• <b>Clemson University Biomedical Engineering Innovation Campus, Greenville:</b> A 30,000 sq. ft. lab located within a facility at the Greenville Health System campus, which is a spearhead to advance collaborations with a new academic medical center development taking place.</li><li>• <b>Clemson University Innovation Campus and Technology Park, Anderson, SC:</b> Eight miles from the main Clemson campus. Home to university's Advanced Materials Research Lab, environmental labs and computing center; Duke Energy Innovation Center; and industry funded National Brick Research Center</li></ul></li><li>• <b>Rise of mix of accelerator, incubator and maker-spaces in Greenville region:</b> Led by the NEXT program of the Greenville Chamber, brings a strong focus on entrepreneurial and innovation-focused small businesses, with three different facilities, including one targeted for advanced manufacturing, mentoring programs, events and other ecosystem development efforts.</li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• \$250 million public-private partnerships in CU-ICAR has generated 770 jobs and another 720 jobs announced, plus major surrounding projects including 1,100-acre mixed use development with an expected population of 10,000, location of Hubbell Lighting Corporation headquarters, among other industry and health system investments.</li><li>• NEXT Innovation Center reports assisting 102 companies, attracting \$23 million in new capital in 2017 and 261 new jobs paying on average \$69,443.</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Linking major public-private innovation center developments with entrepreneurial activity.</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• Creating new anchor research and innovation centers around industry clusters through university, industry and state partnerships</li></ul>

# Benchmark Case Study: Nashville, TN

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Mid-sized region anchored by a major research university, strong music scene and leading healthcare companies</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• The Nashville Entrepreneur Center a non-profit offering a range of fee-based services and memberships spanning coworking, networking, incubation and intensive mentoring/acceleration services:<ul style="list-style-type: none"><li>• Co-Working space and Community access</li><li>• Pre-Flight program for entrepreneurs to advance business ideas</li><li>• In-Flight program for early-stage startups with up to three employees and \$150,000 in revenue</li><li>• Accelerators focused on music industry and healthcare industry verticals that accept startups nationwide</li></ul></li><li>• Vanderbilt is an NSF i-Corps site and has graduated 17 teams; Vanderbilt's Wond'ry, the university innovation center, is aimed at developing an institutional innovation culture for faculty and students, and includes programs like Innovation Garage (industry-university collaboration on disruptive solutions), entrepreneurship courses, a makerspace, pitch events, and EIRs</li><li>• Bunker Labs</li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• Branding from major LaunchTN entrepreneurial event, 36/86, is helping to create buzz for Nashville's entrepreneurial community, which is not strong in VC funding, overall net employment from young companies nor university tech transfer, but is attracting significant net in-migration and is generating significant numbers of high growth companies.</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Very diffuse entrepreneurial community, with need to create stronger presence of innovation in the region, including more placemaking</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• Importance of having a one-stop entity for entrepreneurship</li></ul>

# Benchmark Case Study: Raleigh-Durham, NC

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Mid-sized region anchored by major research universities with strong focus on innovation programs and place-making.</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• <b>NCBiotech Center:</b> Long-standing, dedicated program to growing life sciences in the region and across the state, including advancing research excellence, investing directly in emerging companies, ensuring trained workforce and advancing networking and peer groups in life sciences.</li><li>• <b>Major placemaking for technology with Research Triangle Park (RTP) and Centennial Campus at NC State.</b> RTP is one of the oldest and largest research parks in the U.S., but has been largely home to larger corporations, including a strong emphasis on biopharmaceutical. It is now reinventing itself with a new town center to offer more amenities and opportunities for emerging companies, plus single use facilities are being converted into multitenant facilities for start-ups and emerging companies, such as Alexandria Real Estate's new Agtech facility that used to be a Syngenta R&amp;D facility.. Centennial Campus at NC State has been a leader on establishing innovation districts, leveraging the university as an anchor and creating close relationships between faculty, students and company tenants, while offering mixed use developments including housing.</li><li>• <b>Role of universities in commercialization.</b><ul style="list-style-type: none"><li>• NC State is a national leader, with over 20 startups annually, dedicated funding through its Chancellor's Innovation Fund for proof-of-concept, a full-time site for NSF i-Corps, an Executive in Residence program to scout for technologies at university research labs, bootcamps and business plan competitions, strong entrepreneurial programs within its colleges and strong alumni networking of its start-ups (Wolfpack Investor Network).</li><li>• UNC in 2010 launched a stronger focus on commercialization and entrepreneurship, including commercialization training launched through an EDA i6 grant, on-campus incubators, a downtown coworking space, proof-of-concept funding (Kickstart Venture Services), alumni investor network (Carolina Angel Network) and a \$10 million seed-stage investment fund created by the university's endowment known as Carolina Research Ventures Fund.</li><li>• Duke University has also embraced entrepreneurship with fellowship program, startup challenge, an incubation fund and a prototyping facility for students, and in its technology transfer efforts participation in the Coulter program, active alumni angel network and partnerships with private sector incubators and accelerators (MedBlue incubator, Biomarker Factory and Center for Advanced Hindsight).</li></ul></li><li>• Non-university physical developments, including coworking and incubator spaces, such as HQ coworking with three facilities in Raleigh and American Underground and BioLabs in Durham</li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• Raleigh Durham is a top region for venture investment in high-potential innovation-driven companies, with over \$1 billion in venture funding to 173 companies, able to attract VC investment from East and West coasts, as well as having a strong base of SBIR backed companies.</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Linking major public-private innovation center developments with entrepreneurial activity.</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• University engagement in commercialization and innovation is key driver for the region. Builds on brand of being a major complex for university research and talent.</li></ul>

# Benchmark Case Study: Susquehanna, PA

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Rural region with no university research anchors, but presence of non-research oriented colleges and universities.</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• Presence of a Keystone Innovation Zone designation, one of 29 in the state, offering transferable tax-credits of up to \$100,000 based on growth in revenues to young companies under 8 years old, operating in innovation-led sectors and located in designated areas near colleges and universities.</li><li>• Rural Business Innovation serves as hub for entrepreneurship including:<ul style="list-style-type: none"><li>• Network of incubators located near local colleges and universities</li><li>• Business technical assistance for accessing financing</li><li>• Micro-startup grants of up to \$5,000</li><li>• Student internships of up to \$2,000 per semester</li><li>• Coordinator of local KIZ involving outreach and engagement with local businesses</li></ul></li></ul>
<b>Successes:</b>	<ul style="list-style-type: none"><li>• Diversified range of approximately 30 companies served across manufacturing, IT, and bio-health through incubators, internships, micro-loans and KIZ tax benefits</li><li>• Eleven companies received KIZ benefits in 2017 generating nearly \$1 million in new sales and receiving \$444,000 in transferable tax credits.</li></ul>
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Sustaining a rural economy by having new and small businesses generate job opportunities</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• Demonstrates role that an entrepreneurial focused entity can have across a rural region partnering with local institutions</li><li>• Shows that a targeted tax credit oriented towards young growing businesses in traded industry sectors can be effective in rural communities.</li></ul>

# Benchmark Case Study: West Lafayette, IN

<b>Regional Context:</b>	<ul style="list-style-type: none"><li>• Rural region with major research anchor</li></ul>
<b>Key Tools:</b>	<ul style="list-style-type: none"><li>• Purdue's university driven research park developments. The Purdue Research Park, a 725-acre site on formerly university ag-related lands approximately 8.5 miles from main campus. Now home to 160 tenants. Home to a 105,000 sq. ft. university incubator and coworking space, which was developed with private contributions and bond funding from a state tax-increment financing program to create business incubators that offers \$5 million in bonding per incubator. Discovery Park District, a 400-acre mixed-use development immediately west of the main campus. It is the location for many of the university's commercialization and entrepreneurial development initiatives housed in the Burton Morgan Center for Entrepreneurship.</li><li>• Purdue's Foundry is an accelerator-type program to help Purdue-affiliated entrepreneurs create startups offering access to EIR mentors as well as an umbrella for a range of entrepreneurial and commercialization initiatives including: Trask Fund for applied research and proof-of-concept funding of university inventions; an NSF iCorp site; a range of venture financing assistance, including a \$12 m Foundry Investment Fund, a pre-seed Elevate Purdue Foundry fund receiving state support, Purdue Startup Fund, Purdue Angels and pre-seed Ag-Celerator funding.</li></ul>
<b>Successes:</b>	Since the founding of the Purdue Foundry in 2013, there have been 165 startups created that generated more than \$270 million in funding and 200-plus new jobs.
<b>Challenges:</b>	<ul style="list-style-type: none"><li>• Growing a broader and sustainable innovation ecosystem for the region that sees local startups stay rooted in the region as well as attract other growth-oriented companies.</li></ul>
<b>Best Practice Lessons:</b>	<ul style="list-style-type: none"><li>• A major research anchor can both attract existing industry operations to locate nearby as well as create the tools to generate new startups from research inventions, and faculty and student ideas.</li></ul>



## **Innovating Tomorrow's Economic Landscape**

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