Region 3: Southside

Update on Entrepreneurial Trends: Phase 1 Analysis of Startup Activity and Firm Dynamics

August 13, 2021

Data Sources used for Phase 1 Update of Entrepreneurial Trends of Startup Activity and Firm Dynamics in Your Region's Traded Industry Base
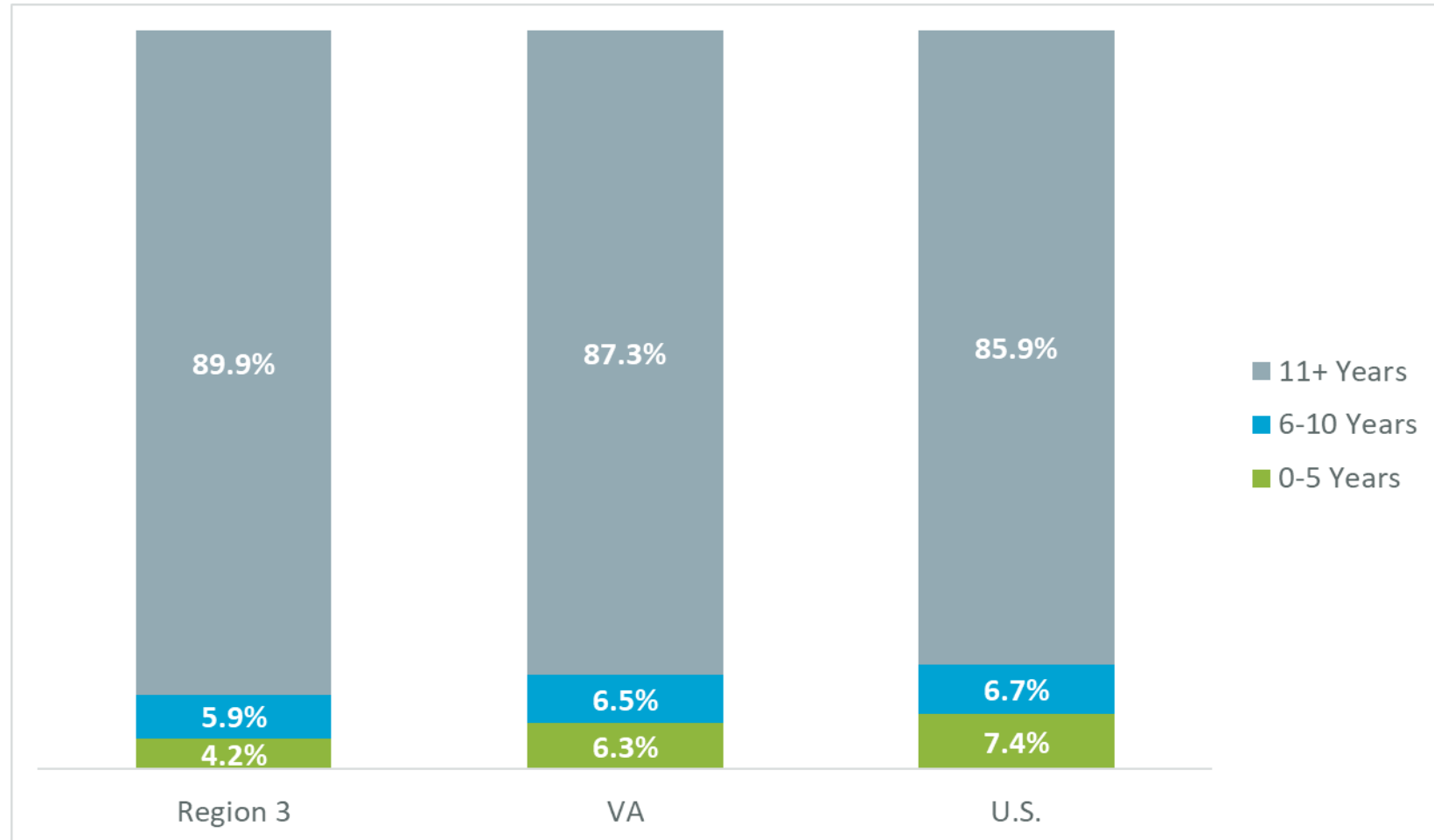
Two data sources used to provide a full depiction of entrepreneurial dynamics:

- *The Quarterly Workforce Indicators (QWI) from U.S. Census* is a 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 industries
  - But QWI does not track or provide information on individual firms
  - 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

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Regional Employment Distribution by Age of Firm for Traded Industries

- **What is it?** A more "static" look at where current traded industry jobs are found by different firm ages across all traded industries
- **Why it matters?** Makes the point that job retention activities with existing firms are an important component of a region's economic development strategy

**Traded Industry Employment Levels by Firm Age as a Percentage of Total Employment, Averaged 2010 Q1 through 2020 Q2**

Legend:
- 11+ Years
- 6-10 Years
- 0-5 Years

Region 3: 89.9% / 5.9% / 4.2%
VA: 87.3% / 6.5% / 6.3%
U.S.: 85.9% / 6.7% / 7.4%

Year-to-Year Job Change in Traded Industry Base by Age of Firm

- **What is it?** A more "dynamic" look at job changes by age of firm on a year-to-year basis in your region's traded industry base
- **Why it matters?** Reveals that the presence of new and younger firms in any year are a critical driver of job growth in a region -- even' as the previous slide shows' that they do not employ most workers in traded industries

Traded Industry Job Change by Firm Age, 2010 Q1 through 2020 Q2


Region 3

Virginia

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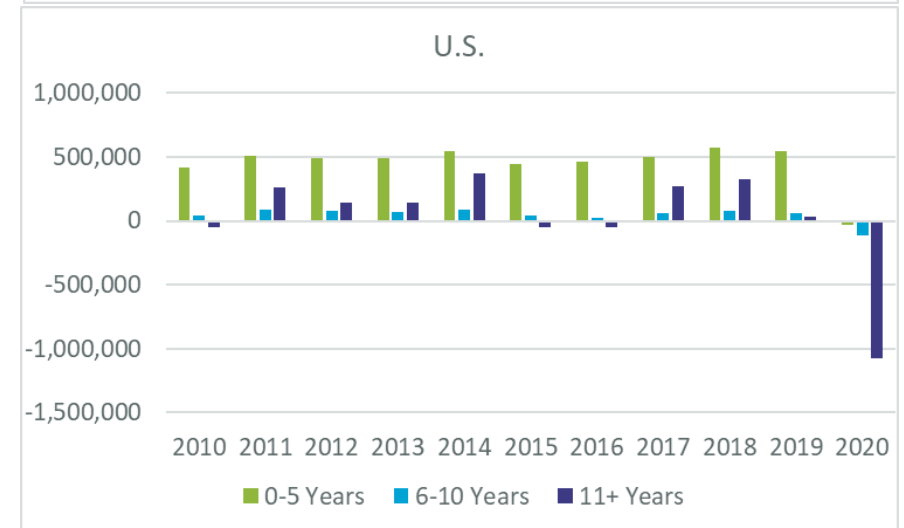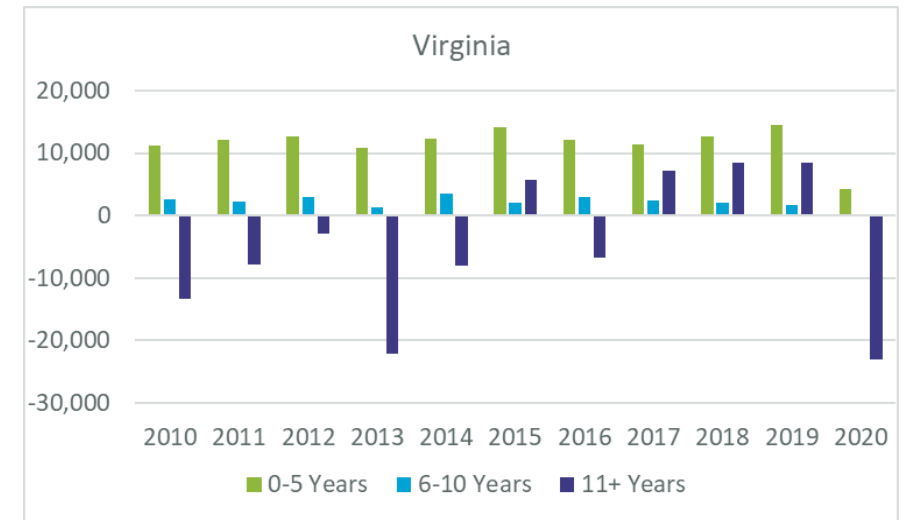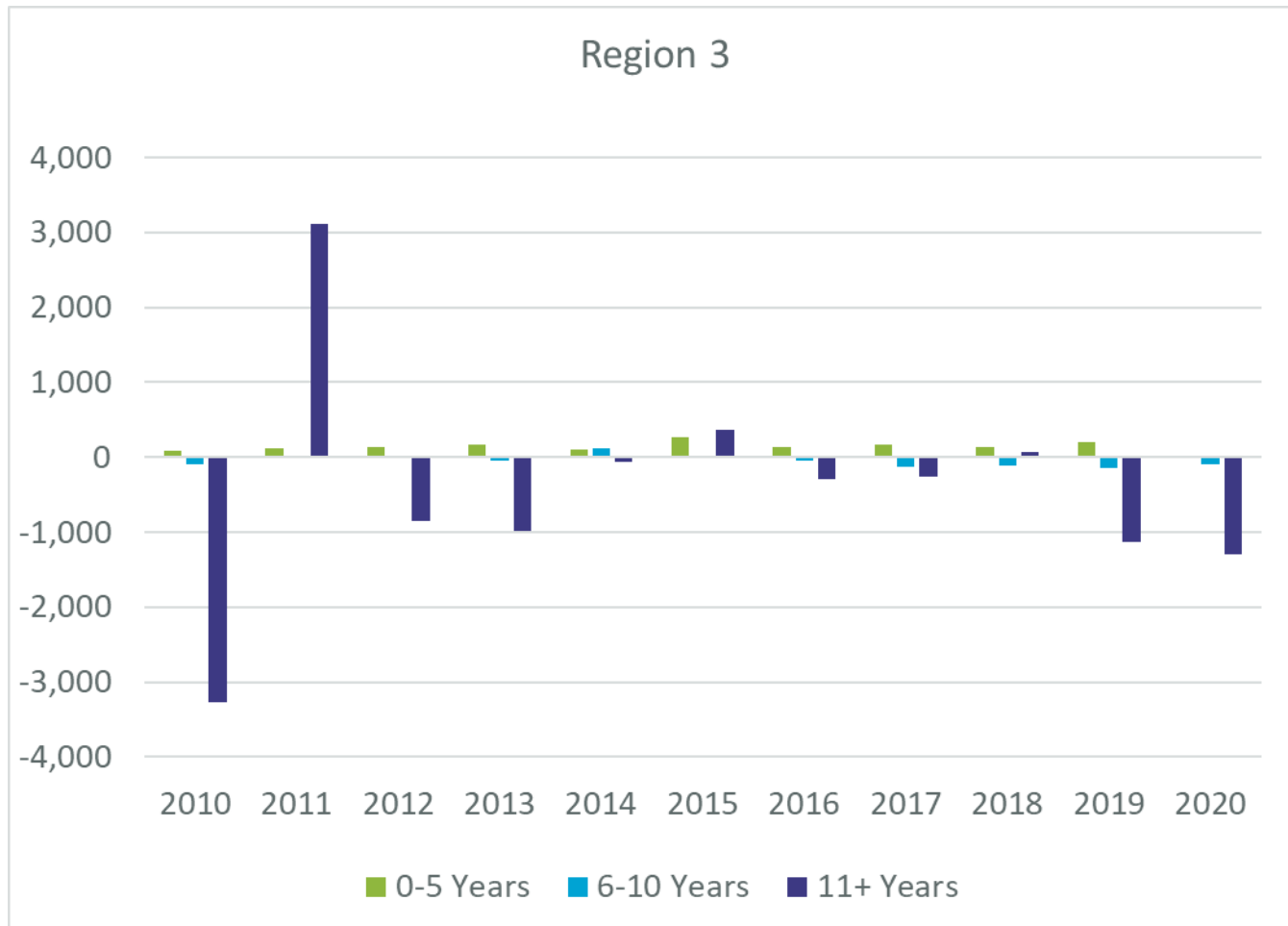
Source: U.S. Census Bureau Quarterly Workforce Indicators dataset.

Employment Growth by Age of Firm over 2010-2020 Period

- **What is it?** Aggregates quarterly employment change from 2010/Q1 through 2020/Q2 for traded industries by age
- **Why it matters?** Offers a more consolidated view over a long period of time on sources of job growth by age of firm – confirming the importance of new and younger firms for job growth at the region, state and national level

Traded Industry Job Change by Firm Age, Aggregated 2010 Q1 through 2020 Q2

Source: U.S. Census Bureau Quarterly Workforce Indicators dataset.
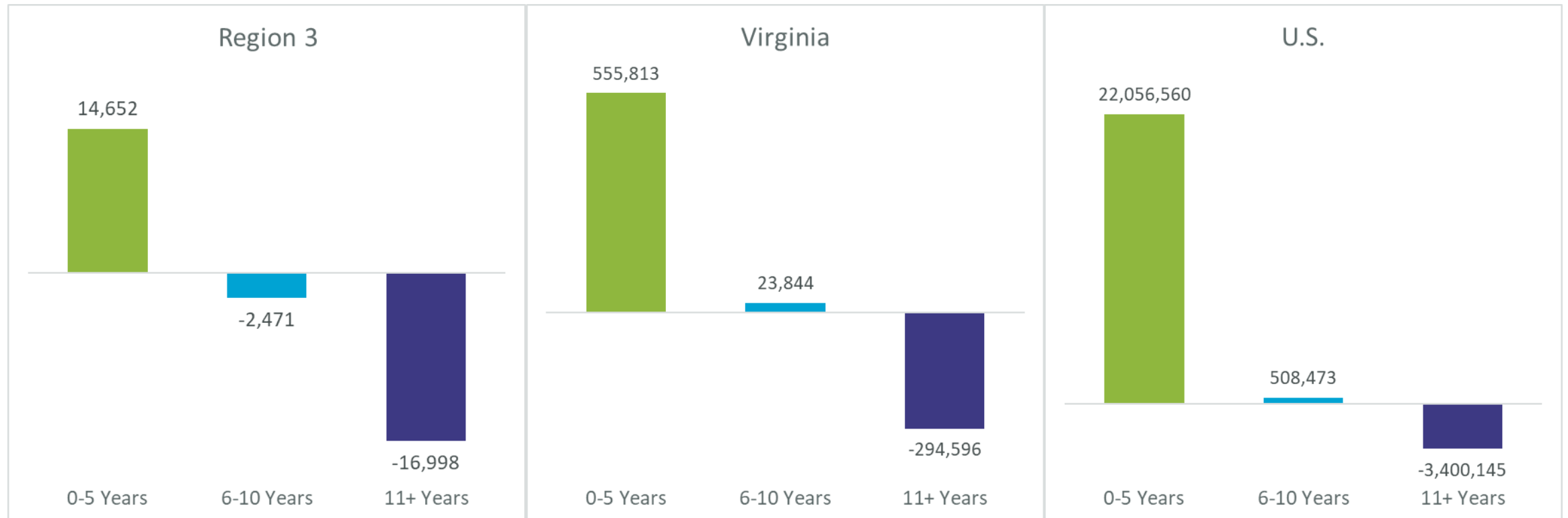
BDRC Profile of Startup Activity and Business Formation Rates in Traded Industries

- **What is it?** Startups are all new non-branch firms in traded industries with their first recorded employment in a given year, while the Business Formation Rate compares the level of startups to the total number of all firms in traded industries.
- **Why it matters?** Together, the total number of Traded Industry Startups and Business Formation Rates allows a region to determine whether its startup activity is rising or declining, with the Business Formation Rates offering a normalized measure for a region to compare itself to other jurisdictions as well as within industries.

New Startups* in Traded Industries, 2019 and 2020
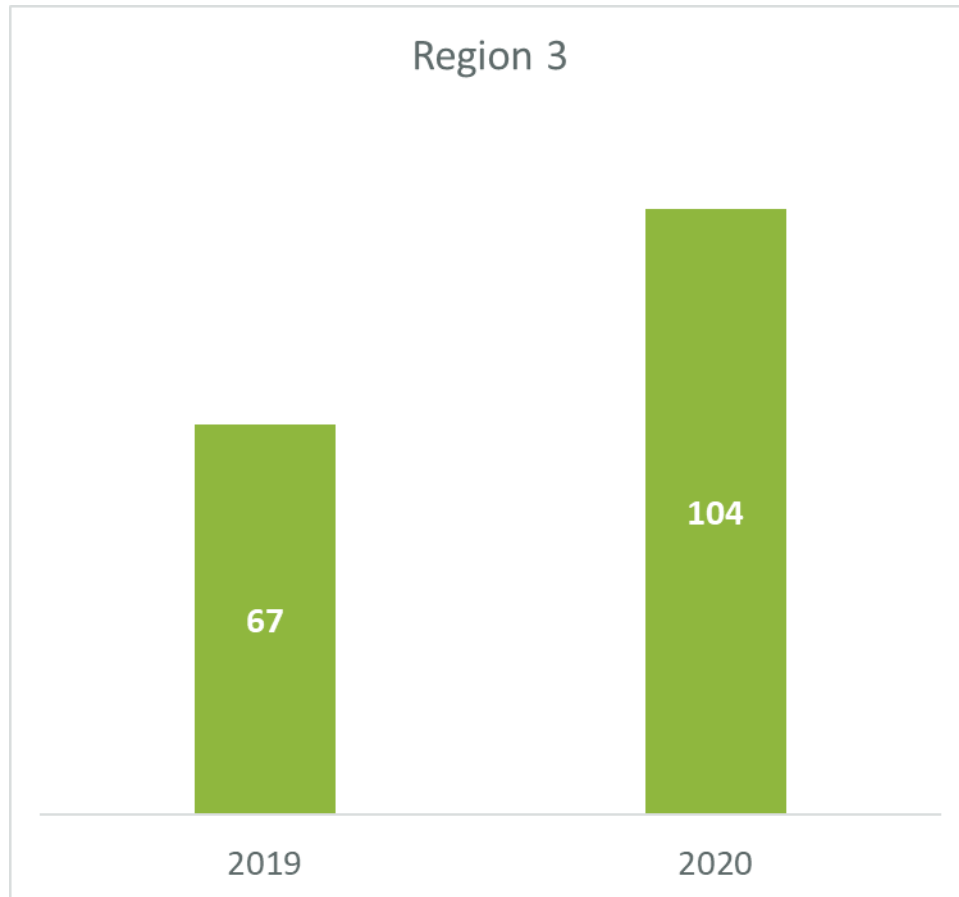
New Business Formation Rate in Traded Industries, 2010-2020**
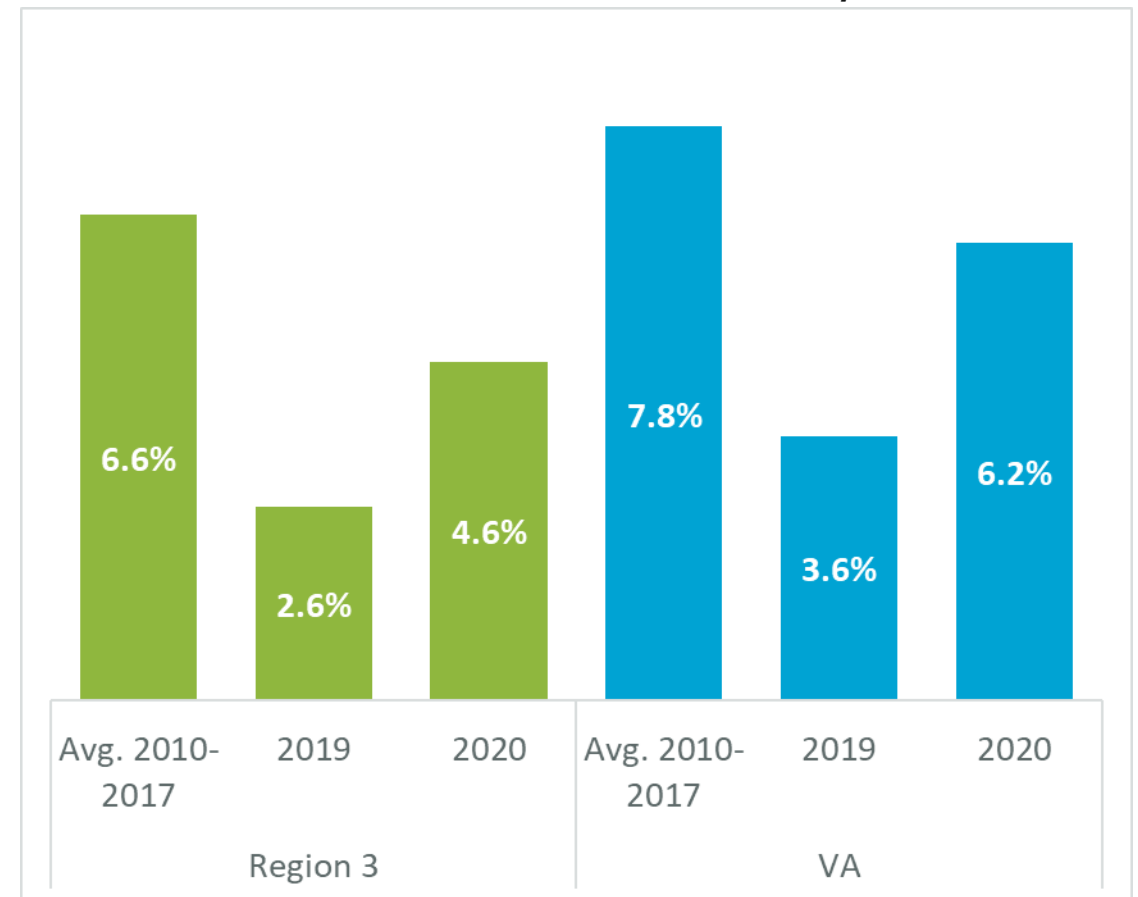
Note: 2018 excluded due to addition of a major source of firm data to underlying BDRC database that makes comparisons using 2018 not possible
Source: Business Dynamics Research Consortium, Your-economy Time Series (YTS); TEConomy analysis.

Year-by-Year New Business Formation Rates in Traded Industries

- **What is it?** Annual Business Formation Rates compares the level of startups to the total number of all firms in traded industries for region compared to state.

- **Why it matters?** Depicts the longer-term pattern of Business Formation Rates for the region in traded industries and how it has generally fallen over the past decade at both the region and state level.

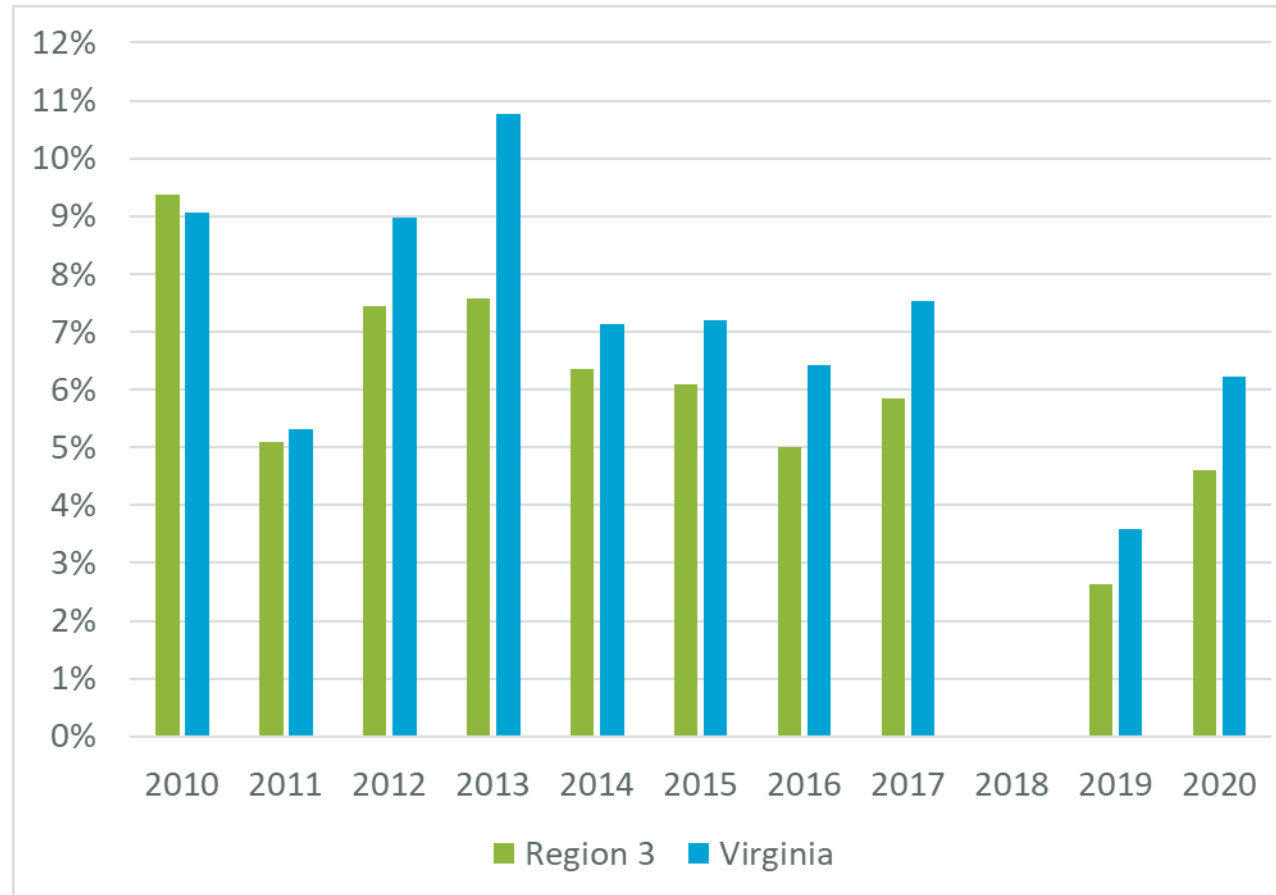**New Business Formation Rate in Traded Industries, 2010-2020**


Note: 2018 excluded due to addition of a major source of firm data to underlying BDRC database that makes comparisons using 2018 not possible
Source: Business Dynamics Research Consortium, Your-economy Time Series (YTS); TEConomy analysis.

Startup Density* Across Region 3

- **What is it?** A mapping of where traded industry startups are located within a region over the 2018-2020 period based the specific geo-coordinates of the firm's address

- **Why it matters?** Reveals the areas within a region where startup activity is aggregating that can help inform how to advance place-based developments, such as incubators, accelerators, and co-working spaces, and other entrepreneurial services
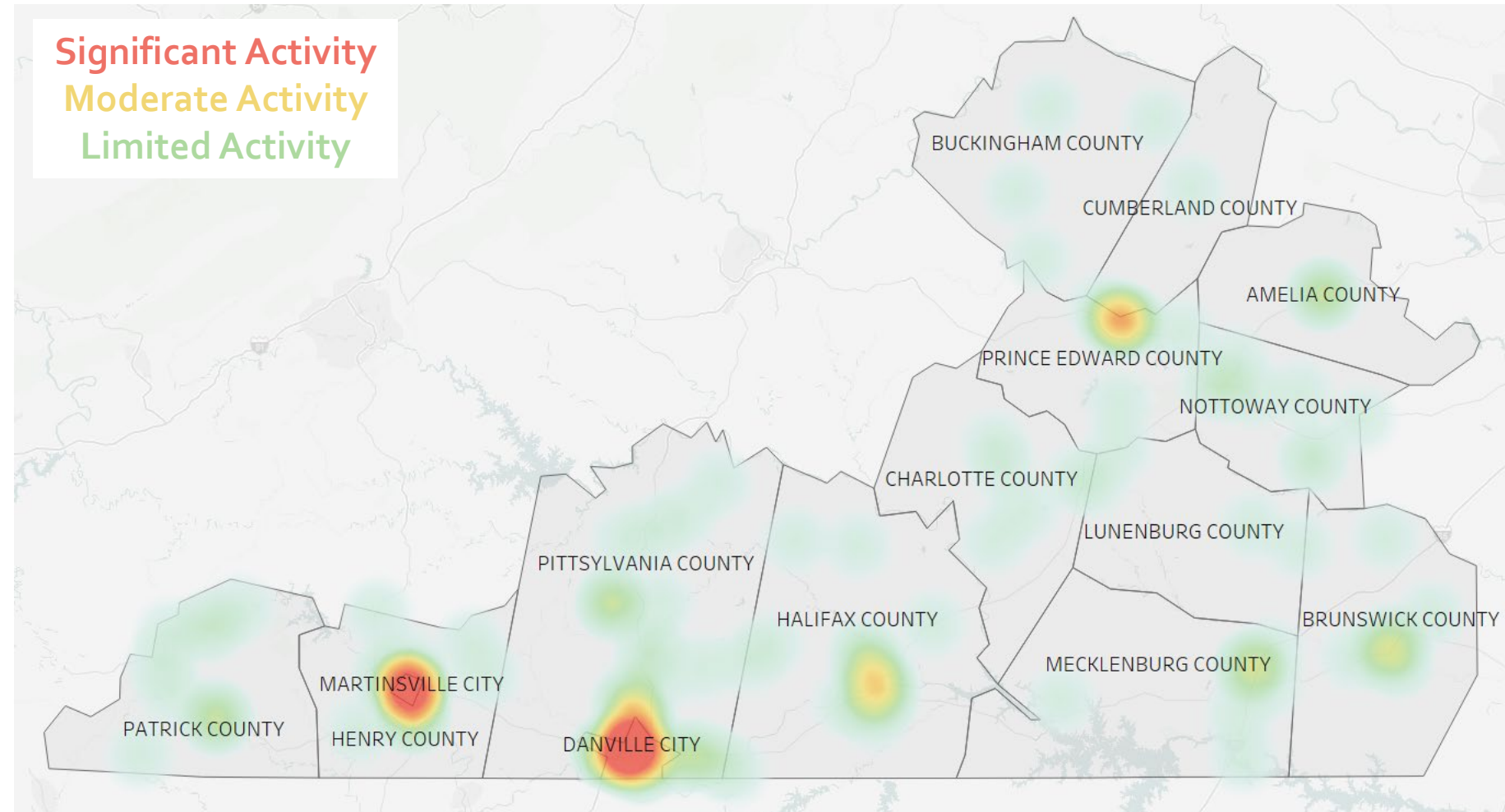
Note: This map is based on geocoordinates of individual establishments, not an aggregation of establishment counts to a prescribed geography such as census tracts. The mapping software plots a visualization of startup spread by analyzing the clustering of coordinates in a multi-dimensional spatial context relative to each region. It is not possible to provide a numeric estimate of density (i.e. establishments per square mile) since calculation of spread is multi-dimensional and not fixed to a prescribed geographic boundary.

*Startup density is relative to overall regional startup rates
Source: Business Dynamics Research Consortium, Your-economy Time Series (YTS); TEConomy analysis.

Profile of Startup Activity Within Key Regional Industry Clusters

- **What is it?** Tracks number of Startups and Business Formation Rates across a standardized set of Traded Industry Clusters for the region and statewide average in 2019 and 2020. The standardized clusters were informed by priority clusters set out across all GO VA regions (see separate handout for NAICS industries included in each Traded Industry Cluster).
- **Why it matters?** Allows a region to determine the trends and competitiveness of its startup activity across Traded Industry Clusters in the region with comparison to the statewide average business formation rate for each Traded Industry Cluster.

Major Traded Industry Cluster***	Startups, 2019	New Business Formation Rate, 2019		Startups, 2020	New Business Formation Rate, 2020	
		Region	State		Region	State
Agriculture & Food Processing	10	4.4%	4.1%	6	3.2%	5.5%
Business Services	15	2.4%	4.4%	27	5.1%	7.6%
Energy, Natural Resources, & Finished Products	4	1.7%	2.5%	9	4.5%	3.9%
Engineering, R&D, Testing & Technical Services	1	2.0%	4.2%	3	8.1%	7.4%
Financial & Insurance Services	1	0.6%	3.5%	1	0.5%	4.0%
Health Care Services	2	2.9%	4.2%	9	12.5%	15.8%
Information Technology & Communications Services	2	4.3%	3.6%	4	10.8%	8.0%
Life Sciences			2.7%	2	4.9%	6.1%
Manufacturing	5	2.2%	2.1%	7	3.5%	3.7%
Ship Building, Aerospace, & Defense	1	25.0%	1.1%			0.9%
Transportation, Distribution and Logistics	12	3.1%	2.9%	21	6.4%	4.6%
All Other Traded Industries	14	2.9%	3.3%	15	3.6%	5.9%
Traded Industry Total	67	2.6%	3.6%	104	4.6%	6.2%

Source: Business Dynamics Research Consortium, Your-economy Time Series (YTS); TEConomy analysis.

Additional Data Insights – Comparison of Region's New Business Formation and Overall Economic Performance of its Traded Industry Clusters

- **What is it?** The regional position in new business formation compares the region to the state for 2019 and 2020 for each of the Traded Industry Clusters, while the overall economic performance uses employment data from EMSI based on the Quarterly Census of Employment and Wages to track regional economic measures to provide a summary view – see next slide for how summary assessments were determined.

- **Why it matters?** Puts into context the performance of a region in its standardized Traded Industry Clusters in both entrepreneurial activity and overall economic performance.

Major Traded Industry Cluster	Regional Position in New Business Formation Relative to State Average*	Summary of Economic Development Position in Region, 2018-2020	Measures of Regional Economic Performance for overall Traded Industry Cluster			
			2020 Employment	2020 Location Quotient	Regional 2018-20 Percentage Job Growth	U.S. 2018-20 Percentage Job Growth
Agriculture & Food Processing	Below	Mid-sized, Declining	2,121	0.87	-5.3%	0.4%
Business Services	Below	Mid-sized, Declining	3,319	0.54	-13.3%	0.3%
Energy, Natural Resources, & Finished Products	Mixed	Large, Declining Specialization	6,470	3.33	-7.7%	-3.3%
Engineering, R&D, Testing & Technical Services	Mixed	Small, Emerging Strength	424	0.29	5.0%	3.8%
Financial & Insurance Services	Below	Small, Declining	437	0.18	-7.3%	0.0%
Health Care Services	Below	Mid-sized, Emerging Strength	3,482	0.88	4.7%	0.8%
Information Technology & Communications Services	Above	Small, Emerging Strength	534	0.21	14.8%	6.9%
Life Sciences	Below	Small, Emerging Strength	818	0.64	12.7%	4.6%
Manufacturing	On Par	Large, Declining Specialization	9,335	1.56	-8.6%	-3.1%
Ship Building, Aerospace, & Defense	Mixed	Small, Emerging Strength	117	0.19	116.1%	4.7%
Transportation, Distribution and Logistics	Below	Mid-sized, Declining	4,690	0.87	-5.8%	2.1%

*See previous slide for data on new business formation by traded industry cluster
Source: Quarterly Census of Employment and Wages (QCEW) via Emsi; TEConomy analysis.

Summary Assessment Typology

Summary Assessment of Regional Position in New Business Formation

Summary Category	Comparison of Region to State Business Formation Rates for 2019 and 2020
Above	Region higher in business formation rate than state in both 2019 and 2020
On Par	Within 0.1-0.2 percentage points of state
Mixed	Region higher in business formation rate than state in one year and lower in another year
Below	Region lower in business formation rate than state

Summary Assessment of Regional Economic Performance in Traded Industry Cluster

Summary Category by Size of Firm	Size of Traded Industry Cluster Employment Compared to Total Traded Industry Employment		
	Under 5%	Between 5%-15%	Over 15%
Large			✓
Mid-Sized		✓	
Small	✓		

Summary Category by Performance	Regional Economic Measures		
	Location Quotient Above 1.2	Positive Job Growth	Higher Job Growth Compared to National Average
Current Strength	✓	✓	✓
Growing Specialization	✓	✓	
Declining Specialization	✓		
Emerging Strength		✓	✓
Emerging Opportunity		✓	
Declining			

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Region 3: Southside

Update on Entrepreneurial Trends: Phase 2 Analysis of Broader Innovation Ecosystem Measures

September 14, 2021

Data Sources used for Phase 2 Update of Entrepreneurial Trends

- **Academic R&D** – annual research expenditures from all sources by university reported by the National Science Foundation's Higher Education Research and Development Survey – no institutions in Region 3 report to HERD

- **Patent Activity of Inventors Residing in Region** – annual patents generated by residents in the region from U.S. Patent & Trademark Office data collected by Derwent Innovation

- **Venture Capital** – PitchBook database of private investor funding in emerging ventures, including pre-seed (accelerator and incubator funding), angel investor, seed and formal venture capital

- **Federal Small Business Innovation Research (SBIR) Awards** – SBIR funding by federal agencies to small businesses in the region as reported from SBIR.gov maintained by the U.S. Small Business Administration

- **SBA 7(a) Loan Activity** – Number of loans and loan amounts to small businesses in traded sector industries under SBA 7(a) financing vehicles as reported by the Small Business Administration

Patents Invented in the Region

- **What is it?** Patents are a primary way in which inventors are able to protect their innovations in products from being replicated.

- **Why it matters?** By focusing on patents generated by residents we are able to more accurately gauge the region's capacity to generate technology innovations. The patent classes help identify specific areas of technology innovation taking place in a region.

Total Patents, 2010-20

Region 3	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Patent Counts	13	16	27	18	29	24	27	36	38	34	53	315

Technology Class Area	Number of Patents, 2010-2020
transmission of digital information, e.g. telegraphic communication	20
optical elements, systems, or apparatus	14
semiconductor devices; electric solid state devices not otherwise provided for	10
containers for storage or transport of articles or materials	9
buildings or like structures for particular purposes; swimming or splash baths or pools; etc.	9
line connectors; current collectors	8
layered products, i.e. products built-up of strata of flat or non-flat, e.g. cellular or honeycomb, form	7
separation (separating solids from solids by wet methods; by pneumatic jigs or tables; by other dry methods; etc.)	6
cyclically operating valves for machines or engines	6
data processing systems or methods, specially adapted for administrative, commercial, financial, managerial, supervisory or forecasting purposes	5

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Venture Capital Investments

- **What is it?** Venture capital represents equity investments made to emerging technology companies that offer high growth potential to generate sizable returns on that equity investment.
- **Why it matters?** Venture capital investments are a direct measure of innovation activity taking place in a region. Beyond the number of deals and investment taking place on an annual basis, it is important to also consider the stage at which investments are taking place to ensure a robust pipeline of emerging ventures being formed and gaining scale in a region.

Venture Capital Activity

Region 3	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Deal Counts	1	1	1	1		3				2	2	11
Investment Totals (Millions)	$6.1	$2.5	$7.3	$0.1		$0.3				$13.6	$13.0	$42.7

Region 3	Pre-Seed	Angel	Seed	Early Stage	Later Stage	Total
Deal Counts	1	2		5	3	11
Investment Totals (Mil)	$0.1	$4.2		$16.1	$22.4	$42.7

Source: PitchBook Data, Inc.; TEConomy calculations.

Federal Small Business Innovation Research (SBIR) Grants

- **What is it?** The federal Small Business Innovation Research (SBIR) program is a source of innovation funding for emerging technology companies. The SBIR program encourages small businesses to undertake technology commercialization by requiring federal agencies with extramural R&D budgets that exceed $100 million to allocate 2.5 percent of their R&D budgets to the SBIR program. Each federal agency involved in the SBIR program then issues requests for proposals on topics reflecting their technology needs and interests, and competitively awards SBIR grants based on the technical merits and commercialization potential in a phased approach.
- **Why it matters?** SBIR awards are another direct measure of innovation activity taking place in a region by small businesses.

Small Business Innovation Research Awards

Region 3	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Award Counts	3	3	4	6	2	3	8	4	5	3	5	46
Award Amounts (Millions)	$0.2	$0.3	$1.1	$3.1	$0.9	$0.4	$1.3	$1.6	$4.2	$0.4	$1.0	$14.5

Source: www.SBIR.gov; TEConomy calculations.

Regional Use of SBA Loans

- **What is it?** U.S. Small Business Administration (SBA) 7(a) loans are that federal agency's primary program for financial assistance to small businesses across the nation. These loans are typically issued by private lenders based on SBA guarantees of 75% to 85% with amounts not to exceed $5 million. Small businesses must demonstrate good credit/mgmt./ability to repay. Proceeds can be used for a variety of purposes: startup costs, buying land/buildings/equipment, new construction, working capital, and seasonal lines of credit.
- **Why it matters?** SBA 7(a) loan activity is a measure of how active regional small businesses in traded sectors are in seeking to grow their operations. It also helps measures availability of capital to small businesses in the region since lending in the SBA 7(a) program often is through local lending sources.

Region 3: SBA 7(a) Loans and Loan Amounts, Cumulative Totals 2010-20

Industry Clusters	Co's Receiving Loans	Total No. of Loans	Total Loan Amounts ($ Millions)	% of Total Loan Amounts
Total, All Traded Sector Industries	**66**	**93**	**$70.3**	**100%**
Agriculture & Food Processing	16	20	$9.4	13.4%
Business Services	7	9	$13.8	19.7%
Energy, Natural Resources, & Finished Products	8	10	$11.3	16.1%
Manufacturing	3	15	$7.0	9.9%
Transportation, Distribution and Logistics	9	16	$2.0	2.9%
All Other Traded Sectors	23	23	$26.7	38.0%

Source: TEConomy analysis of SBA loan data reports.

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

- **What is it?** By normalizing SBA 7(a) loans to traded sector small businesses by the number of traded sector establishments, it is possible to compare the level of lending activity in a region to that of the state and nation.

- **Why it matters?** High utilization of SBA 7(a) loans in a region suggests that the region has a growth-oriented traded sector small business base and/or good access to capital, while low utilization suggests a region's small businesses are not seeking to grow and/or are having trouble accessing capital.

SBA 7(a) Loan Counts, Traded Sector Companies Per 1,000 Establishments, Avg. 2018-2020

Source: TEConomy analysis of SBA loan data reports.
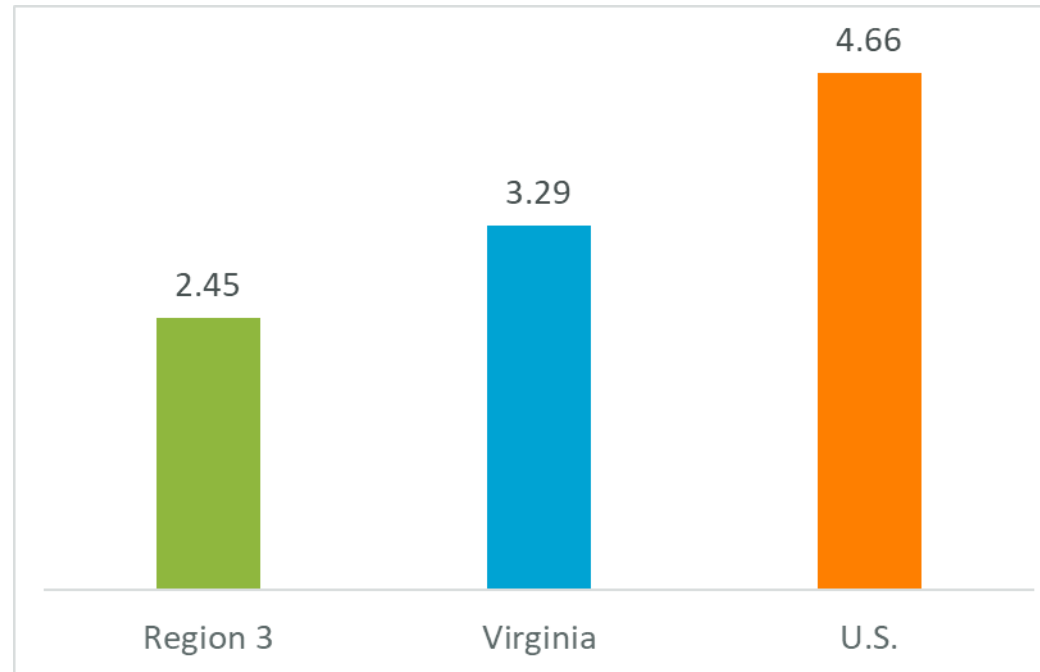
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