Analyzing Tennessee's Entrepreneurial Landscape

Key Findings and Recommendations

2018 REPORT

Report prepared by:
TEConomy Partners, LLC • 1355 Oakview Drive • Columbus, Ohio 43235

On behalf of:

211 7th Avenue, Suite 200 • Nashville, TN 37219
615-673-4419 • info@launchtn.org

INTRODUCTION

Goal of this Study

To inform LaunchTN's five-year strategic plan and with funding support from the Kauffman Foundation, LaunchTN sought a research partner to **analyze Tennessee's entrepreneurial landscape and barriers to startup activity**, to distill findings and benchmark Tennessee's programs and policies against peer states, and to **make policy recommendations** to address gaps and leverage opportunities.

To inform LaunchTN's five-year strategic plan and with funding support from the Kauffman Foundation, LaunchTN sought a research partner to:

- Analyze Tennessee's entrepreneurial landscape and barriers to startup activity across the state,
- Distill findings and benchmark Tennessee entrepreneurship support programs and policies against peer states, and
- Make policy recommendations to address gaps and leverage opportunities to support Tennessee startups.

Tennessee aims to be the most startup-friendly state in the nation.

To this end, in 2013, the state of Tennessee created Launch Tennessee (hereafter, LaunchTN) as a public-private partnership to help entrepreneurs build companies and create jobs. It executes this mission by fostering collaboration among entrepreneurs, the private sector, capital sources, institutions, and government. LaunchTN serves entrepreneurs by working with nine Network Partners to deliver funding and services, improve access to capital, and implement legislation, such as Tennessee's SBIR/STTR Matching Fund Program.

On behalf of LaunchTN, TEConomy Partners, a national consulting firm specializing in innovation-based economic development, performed qualitative and quantitative research to analyze strengths and weaknesses in Tennessee's entrepreneurial landscape, benchmark Tennessee's programs against other states, and develop recommendations. TEConomy conducted approximately 20 stakeholder interviews, performed research and economic analysis on startup metrics and policies, and collected and analyzed data on entrepreneurship support and financing programs in peer states, such as Kentucky, Ohio, Georgia, and North Carolina.

This report is organized into four sections.

SECTION 1	SECTION 2	SECTION 3	SECTION 4
Discusses why startup activity is critical to regional economic growth and development.	Analyzes strengths and weaknesses across Tennessee's entrepreneurial landscape and introduces Tennessee's model of providing entrepreneurial support and startup company financing.	Presents key findings from the analysis and benchmarks Tennessee against other states.	Provides recommendations for addressing persistent challenges faced by Tennessee startup companies from across the state.

SECTION 1

Why Are Startups Important to Economic Growth and Development?

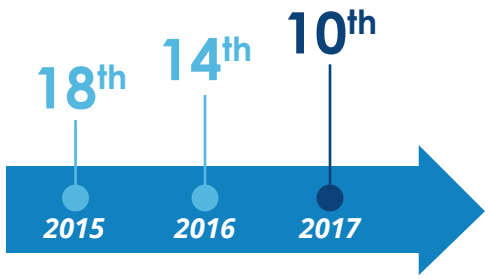
Startups put people's creative and industrious energy to work in an economically productive way.

Despite the challenges of building a successful company, startups:

- Generate up to 50% of total new jobs created nationally[1],
- Spur economic activity and employment growth in related industries[2],
- Make up for the job losses associated with the startups that do not survive, and
- Build community and economic dynamism locally.

How does Tennessee rank on metrics related to the performance of its high-growth startups?

Among the 25 largest states in the U.S., Tennessee advanced from 18th to 10th in Kauffman's Growth Entrepreneurship Index ranking from 2015-2017[3]. Jobs created by the average Tennessee startup during its first five years of operation grew 76%, from 6.3 employees to 11.1 employees per company. However, Tennessee still lags states, such as Georgia (2nd), Texas (5th), and Ohio (7th), in Growth Entrepreneurship[4].



Tennessee's rank in the Kauffman's Growth Entrepreneurship Index from 2015-2017

[1]Ryan Decker, John Haltiwanger, Ron Jarmin, and Javier Miranda (2014). "The Role of Entrepreneurship in U.S. Job Creation and Economic Dynamism," Journal of Economic Perspectives, 28(3), Summer 2014, pp. 3–24.

[2]Jaap W. B. Bos Erik Stam (2014). "Gazelles and industry growth: a study of young high-growth firms in The Netherlands," Industrial and Corporate Change, 23(1), 1 February 2014, pp. 145–169.

[3]The Kauffman Index of Growth Entrepreneurship ranks the top 25 large states and the top 25 small states on three metrics: (1) share of employer firms that start small, but grow to employ 50+ people by their tenth year of operation, (2) average employment growth of all startups after five years of operation, and (3) the number of fast-growing companies (20% annual revenue growth last three years) with at least $2M in annual revenue, normalized by business population.

[4]Kauffman Foundation (2018). The Kauffman Index: State Rankings, Larger States, Growth Entrepreneurship, https://www.kauffman.org/kauffman-index/rankings?report=growth&indicator=growth-rate&type=larger

SECTION 2

Strengths and Weaknesses in Tennessee's Entrepreneurial Landscape

When it comes to the success of startup companies, a strong economy and market fundamentals are important, but additional policies and infrastructure come into play.

In terms of economic fundamentals and business environment for large and medium-sized companies (over 500 employees and over 50 employees, respectively), Tennessee is competitive with a positive economic outlook. Tennessee's statewide economy is characterized by strong personal income growth, modest population growth, an above average employment-to-population ratio, and low debt, as illustrated by the following metrics tracked by the Pew Charitable Trusts[5].

Personal Income Growth: TN ranks 11th with 2.1% growth per year since Q4 2007, compared to 1.9% growth nationally.

Population Growth: With 6.7M people, TN ranks 19th with 0.84% growth per year since Q4 2007, compared to 0.7% growth nationally.

Employment-to-Population Ratio: TN ranks 34th in employment levels for 24- to 54-year olds (77.8%), U.S. ratio is slightly higher at 78.6%.

Debt and Unfunded Retirement: TN has the 2nd lowest state debt and liabilities as a share of personal income (2.4%), U.S. median debt is higher at 14.8%.

In addition to the overall business environment, startup success is also measured by other market factors, such as access to capital and available workforce. Interviews with state and regional stakeholders indicated Tennessee entrepreneurs seeking to bring products to market and scale their operations face several challenges:

- ***Uneven level of economic vitality*** across regions
- ***Limited availability of entrepreneurial talent*** by region and by industry/technology sector
- Uneven access to ***startup support infrastructure***
- Difficulty reaching customers to ***validate business ideas***
- Limited access to ***capital***

[5]Pew Charitable Trusts (2018). Fiscal 50: State Trends and Analysis, https://www.pewtrusts.org/en/research-and-analysis/data-visualizations/2014/fiscal-50#ind0

SECTION 2

The following sections describe why each of these factors impact the ability of startups to bring products to market.

Uneven Level of Economic Development

The size and level of development of the regional economy impacts startup companies and entrepreneurs. Some parts of the state benefit from a positive confluence of economic factors that have driven economic growth. These factors include a large, well-educated, and expanding population, a diversified industry base with several higher-wage sectors, an anchor academic research institution, and growth in economic output and incomes. The expression, "The rising tide lifts all boats," characterizes such regions. However, other parts of Tennessee have much smaller populations spread across a larger geographic area, are reliant on a smaller number of lower wage industries, lack a major university, and have lower levels and rates of economic growth and income growth. The type of startup infrastructure provided in these regions can play a catalytic role over the long term.

Entrepreneurial Talent

Individuals start companies for many reasons: out of necessity, out of a desire to shape their own destiny, out of a desire to do something "big" or more meaningful, etc. While all regions have these individuals, the pipeline in some regions is more robust than in others, even after adjusting for population size. An individual has to be aware that starting a company is a viable economic option, and has to have the product, skills, network, financial resources, and tenacity to launch and scale this product successfully. If a person never sees anyone else in his/her community do this, starting a company is a more daunting path. The entrepreneurial pipeline in such a region is more limited.

Startup Infrastructure

A great deal of learning-by-doing occurs in the process of launching a company, because there are so many factors that impact the company's trajectory: sales, marketing, operations, hiring, finances, market demand, etc. For first-time entrepreneurs, a network of peer entrepreneurs, mentors, and advisors who can provide timely feedback and lessons learned make a big difference.

RISE OF THE REST TOUR // EPICENTER MEMPHIS

Market Access

The biggest reason companies fail is lack of sales[6]. If an entrepreneur lives in a region with large companies that are potential customers and that are accustomed to working with startups, the entrepreneur is more likely to get critical feedback early on: Does the entrepreneur have a product that meets a strategic market need? Is there a different business or consumer application that the entrepreneur hadn't thought of? Does the business model work for this product? Can the entrepreneur make money doing this? If a startup lives in a region without these customers, the founders need a way to connect, be it through their own professional network, their investors' network, or the LaunchTN network.

Capital

The majority of startups fail (7 out of 10)[7], which is why traditional banks tend not to lend to new companies with limited or no revenue, no assets, and a limited track record. Nevertheless, companies need capital to grow and scale: to hire critical talent, to purchase equipment, to improve existing products, or to pivot to new applications and products, etc. Capital for early-stage companies is a constraint highlighted by all stakeholders across the state.

Commercialization

For entrepreneurs trying to bring research- and technology-based products to market that originated at a university, a university hospital, or government lab, the technical risk is greater, the capital needed to validate the technologies with initial customers is greater, and finding the corporate team who has done this before is harder to find. However, the potential upside gain is also greater for those that succeed, because such technology-based products and services are more likely to target a national and international customer base.

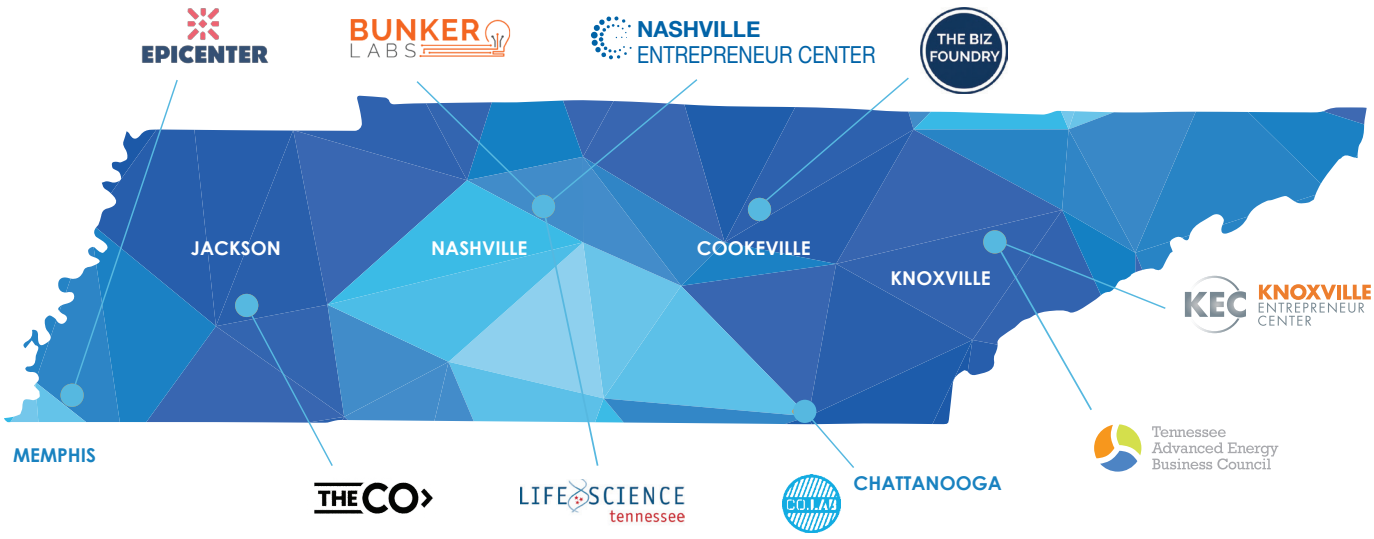
These entrepreneurial ecosystem gaps and challenges all require leadership and smart policies to overcome them. What has been Tennessee's approach to tackling gaps and barriers to startup activity across the state? States have implemented three primary models for supporting entrepreneurial ecosystems: a centralized approach, a distributed network approach, and a university-based approach. The figure below summarizes each of these models and provides examples of states that employ them.

[6]Calhoun, Lisa. (2017) "42 Percent of Startups Fail for This One Reason. Here's How to Avoid It," *Inc.*, 13 Nov. 2017.

[7]Only 35-36% of new firms still exist by year 10. See U.S. Bureau of Labor Statistics. Entrepreneurship and the U.S. Economy: Chart 3. Survival Rates of Establishments, by Year Started and Number of Years Since Starting, 1994-2015, in Percent. Business Employment Dynamics.

SECTION 2

Tennessee's distributed network approach provides entrepreneurial support through programs and services delivered by LauchTN and its nine Network Partners.



The Network Partners are grassroots organizations created through the leadership of regional stakeholders in response to interest in regional startup initiatives. LaunchTN, which provides state-level coordination and value-adding services to the nine Network Partners and the startups they serve, was conceived in 2012 as part of Governor Haslam's "investing in innovation" pillar of his economic development platform.

LaunchTN's current appropriation through the Tennessee Department of Economic and Community Development is $5.3 million a year. Of this total, approximately $2 million a year goes directly to the Network Partners to support their entrepreneurship support programs and $1.5 million a year goes to provide Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) matching grants to Tennessee companies that are awarded SBIR/STTR grants[8].

TEConomy's analysis finds that Tennessee's distributed network model, as implemented by LaunchTN and its nine Network Partners, has three key attributes that make it effective.

[8]The SBIR program is known as the federal government's seed fund. Each federal government agency with over $100 million in extramural research and development (R&D) is required to set aside 3.2% of its R&D budget for competitive grants to U.S. startup companies trying to commercialize technologies.

Three key attributes of Tennessee's distributed network model:

Strong alignment of working culture around shared objectives: LaunchTN and the Network Partners aim to help remove barriers to startup companies that are trying to bring their products to market or scale their operations.

Productive division of labor: LaunchTN focuses on state-level strategy, policy, and external branding of Tennessee's startup ecosystem. LaunchTN also plays a critical coordination, information sharing, and networking role--particularly around private sector engagement. LaunchTN works to translate corporate language into startup language and vice versa. The Network Partners have developed programming to help individual companies with their growth strategies and also to build regional startup ecosystem capacity.

Willingness to scale innovative pilot initiatives from the regions: Evidence of the "low ego," goal-oriented working culture of LaunchTN and the Network Partners is their collaboration to scale successful pilot initiatives that originated in the regions. Examples of these include the CO.STARTERS business startup training curriculum out of Chattanooga, theCO's Mobile Innovation Lab out of Jackson, and LEAP (Local Executive Access Program) out of Knoxville.

Information about the mission, history, key programs, and impacts of the nine Network Partners that deliver entrepreneurship support programs is included in the Appendix.

The four most critical gaps that TEConomy identified based on our research, analysis, and benchmarking with other states are described next.

CO.STARTERS CLASS // CO.LAB

SECTION 3

Key Findings and Benchmarking with Other States

Looking across Tennessee's entrepreneurial landscape, Tennessee has a lot of things going for it, but startups still face many obstacles that require ecosystem capacity building.

1. Startup Infrastructure

It is important to point out that, over the last five years, LaunchTN and its Network Partners have operated as startup organizations, themselves, with relatively lean staffing and operating budgets relative to the number of companies served. The previous sections discussed challenges that startups face, and described how Tennessee has responded at the state and regional levels to address constraints and build capacity. The success of their programs have resulted in growing demand for assistance from startup companies, but also growing interest by private sector companies in having LaunchTN and its Network Partners identify startups with innovative products or services that meet their corporate objectives and broker introductions. LaunchTN and its Network Partners cannot scale to meet these demands without greater investment by the state.

TEConomy benchmarked Tennessee against Kentucky, Georgia, North Carolina, Virginia, and Ohio in total technology-based economic development spending, as well as relative to the size of each state's economy and population. Technology-based economic development (TBED) is a term used to refer to economic development programs that support startup assistance, technology commercialization, and innovation activities. TEConomy analyzed budget documents and program information to collect comparable TBED spending data across states.

As shown in the table on the next page, Tennessee ranked 5th, just above Kentucky, in total technology-based economic development spending in FY2017. Tennessee tied with North Carolina for lowest TBED spending adjusted to the size of its economy, i.e., TBED spending/GDP. (The North Carolina legislature recently cut funding for TBED programs from the budget, which has led to North Carolina's lower ranking.[9]) Tennessee ranked 5th for TBED spending relative to the size of its population.

Note: See Appendix for the description of programs and budgets that comprise the TBED spending column.

[9]The State Science and Technology Institute reports that North Carolina legislature did not fund Governor Cooper's proposed $10 million "North Carolina Invents" program to assist universities with developing technologies with commercial potential, the $3 million SBIR/STTR Phase 1 matching program through the Office of Science, Technology, and Innovation, and a $445,000 Innovation Fellowship to help recent graduates or postdocs to transition to a full-time role in a startup company. See SSTI (2017). "R&D and Innovation Funding Sees some Increases, More Decreases in State Budgets: CA, IL, MS, NC, OH," SSTI Weekly Digest, https://ssti.org/blog/rd-and-innovation-funding-sees-some-increases-more-decreases-state-budgets-ca-il-ms-nc-oh

State	Annual TBED Spending*	2017 GDP	TBED/ GDP	2017 Population	TBED per Capita
Ohio	$62.1M	$645.7B	.010%	11.66M	$5.33
Virginia	$43.7M	$510.6B	.009%	8.47M	$5.16
Georgia	$36.9M	$563.6B	.007%	10.43M	$3.53
North Carolina	$16.9M	$540.5B	.003%	10.27M	$1.65
Tennessee	**$11.8M**	**$349.6B**	**.003%**	**6.72M**	**$1.76**
Kentucky	$11.2M	$202.2B	.006%	4.45M	$2.51

Source: U.S. Bureau of Economic Analysis, Regional Economic Accounts: GDP by State; U.S. Census Bureau, Population Estimates; TBED spending data from state budget documents listed in the Appendix.

One final data point is that Tennessee's TBED expenditures represent only 7.0% of the $160.6 million in traditional economic development expenditures in FY2017 and 11.9% of the $90.5 million in jobs tax credits and $3.5 million in headquarters tax credits claimed by larger companies in FY2017[10].

2. Early-Stage Capital

Stakeholders point to gaps in the continuum of capital available to startup companies as a second key constraint. This capital continuum spans grants, loans, and equity depending on what a company is trying to do. Some companies need small loans for equipment purchases and working capital to expand operations, while others need risk capital (e.g., equity investment) to hit key technical and business milestones as they scale their product and company. Startups that are still trying to commercialize early-stage technologies need R&D grants, such as SBIR/STTR funding.

Tennessee has experimented with different equity financing mechanisms in the past through the TNInvestCo (2009) and INCITE Fund (2011) models. The INCITE Fund, administered by LaunchTN, is fully invested and TNInvestCo, which has always been administered directly by the state, is fully deployed. Tennessee has learned many lessons about what works and does not work with these financing models. The state should apply a problem-solving mindset and draw on the expertise of LaunchTN and its Network Partners to design a new capital initiative. As one stakeholder noted, "Doing nothing to address this market failure is not a solution." The concern is that Tennessee will lose its highest-growth startups to other states where the capital continuum exists to keep them on a high-growth trajectory.

[10]See Appendix for programs comprising technology-based economic development expenditures and traditional economic development expenditures.

See Michael Reicher (2018), "State business tax credits awarded without proper review, comptroller finds," The Tennessean. 1 November 2017.

3. Market Access

Lean startup methodology emphasizes the importance of customer discovery and getting prototypes into the hands of customers sooner--the "fail fast, fail cheaper" or "validate quicker, optimize sooner" approach. This approach works well for startups seeking feedback from Business-to-Consumer (B2C) customers, but what about for startups seeking feedback from Business-to-Business (B2B) customers? In this case, professional networks and geographic proximity to potential corporate customers in particular industry verticals are important. A founder of a medical device company in Memphis, as opposed to Cookeville, may have an easier time getting critical feedback from an industry expert or potential customer, since Memphis is a medical device hub. Tennessee startups need mechanisms to more easily connect with the right people within larger companies that are potential customers.

4. Commercialization

Many companies are based on research- and technology-based products and services that leverage national and international customers and markets. These include startups with products in the life sciences, ag tech, logistics, advanced energy, IT and data analytics, and advanced manufacturing sectors. Often, private sector founders are the source of these new technology-based products, but universities, university hospitals, and government labs are another source. How innovative and commercially-oriented a state's public research institutions are and how much technology licensing activity emanates from these institutions are a function of the number and depth of connections they have to the private sector. Examples of these industry-university connections include ties to STEM graduates who work for these companies, formal and informal consulting activities, sponsored research, and licensing. These interactions are important, because they serve to educate faculty, researchers, and students about the "real-world" problems that private sector companies are trying to solve and the technology needs they have. One challenge for many of Tennessee's smaller, regional universities is that they lack a full-time industry liaison or tech transfer office team responsible for education and outreach related to the value of commercially-oriented research and working relationships with industry.

PRACTICE PITCH SESSION // BUNKER LABS

SECTION 4

Recommendations

Given the findings described above, TEConomy proposes the following five recommendations for building ecosystem capacity and advancing Tennessee's vision of making the state the most startup-friendly state in the nation:

RECOMMENDATION 1

Invest in startup activity as a core economic development pillar *by doubling appropriation.*

LaunchTN and its Network Partners have demonstrated their operational effectiveness and positive impact on the startup ecosystems in both rural and urban communities. They have also raised Tennessee's national visibility and branding as a state that embraces innovation and entrepreneurship—a state where startup companies can succeed. ***The state of Tennessee should double its investment from its current commitment of $5.3M annually to $10.6M to continue the momentum of LaunchTN and its partners in pursuing the goals and work laid out in the five-year strategic plan.*** States and regions do not move the economic needle appreciably over the long term when there is a lack of leadership, commitment, and investment. Underfunding LaunchTN and its Network Partners risks derailing the progress and momentum achieved to date through the inability to meet growing demand for services, the attrition of key staff, and the inability to maximize new opportunities.

RECOMMENDATION 2

Draw on lessons learned and input from LaunchTN and its Network Partners to *design a capital initiative.*

All states struggle with helping early-stage companies access capital, customers, and management talent. Capital is especially tough, because the type of capital that is needed--grants, loans, or equity--depends on what a company is trying to achieve. ***Grants, like TN's SBIR/STTR Matching Grant Program, are appropriate when a company is trying to commercialize a technology for which there is still a great deal of technical risk, or a company is trying to validate whether or not the technology will work for a particular commercial application.*** Non-recourse loans are appropriate for companies that have a product, some initial customers, and revenue, but require capital to grow. These companies may not qualify for traditional bank loans, because of a lack of assets and track record. Equity is appropriate for companies with a founding team and products aligned to high-growth opportunities. However, equity investments are complex and affect many different aspects of an early-stage company, including their management team and board. If not done well, equity positions taken by a state-supported fund can impede follow-on investment by private investors. Looking across the country, one finds a mix of grants, loans, and equity programs in use by state entrepreneurship and innovation organizations, like LaunchTN.

RECOMMENDATION 3

Engage the private sector in the state's startup and innovation agenda.

Most startups fail because of a lack of sales, and most large companies lose competitive advantage over time because of an inability to introduce new products and embrace new business models. Therefore, bringing startups and large companies together around commercialization can be a win-win. Access to customers and access to capital limit the potential of Tennessee's high-growth companies. This is where ***engaging Tennessee's corporate sector around a Tennessee startup and innovation agenda can have a big impact.*** An example of a pilot initiative with positive outcomes is Knoxville's LEAP (Local Executive Access Program) involving Scripps Network Interactive (Food Network, HGTV, Travel Channel, DIY Network), Pilot Corporation (travel centers), Radio Systems Corporation (PetSafe, Invisible Fence), and Bush's (Bush's Beans). These large companies agreed to meet with 6-8 startups that pitched products aligned with their strategic corporate objectives. The Knoxville Entrepreneur Center screened 120 proposals submitted by 60 startups to identify the best-fit proposals. Another example is FedEx Corporation's $10 million catalytic grant to Epicenter Memphis to expand access to capital for Memphis-area startups. The grant was intended to incentivize other companies, philanthropic foundations, and individuals to invest $30 million towards Epicenter Memphis's $100 million fundraising goal. Epicenter Memphis successfully raised this $30 million in September 2018. Tennessee's startup community needs the the corporate sector's participation and commitment to the startup ecosystem.

RECOMMENDATION 4

Provide tech transfer and industry engagement support to regional universities that lack formal industry liaison and tech transfer staff.

Creating a culture of innovation and entrepreneurship at regional colleges and universities is important to helping them train students for 21st century jobs and to contributing to regional economic development through technology commercialization and startup activity. Kentucky is piloting a new $1.2 million initiative called the Commonwealth Commercialization Center (C3) which launched January 1, 2019. The goal of the project is to provide tech transfer outreach and education, technical assistance, and industry engagement support to Kentucky's six regional public universities[11]. Currently, there are two university technology transfer offices (TTOs) in the state affiliated with the University of Kentucky and the University of Louisville. The C3 initiative brings these same TTO functions to all of Kentucky's public colleges and universities. These include advisory service for administrators related to intellectual property policies, industry research, entrepreneurial culture development and innovation management; advisory services for faculty; increased education opportunities related to innovation, IP and commercialization; invention review and feedback; IP protection; market research and strategy; industry engagement; student engagement; startup creation and legal services assistance; and grant coordination. Kentucky's C3 initiative is a good model for Tennessee to monitor and to assess local interest and demand for similar commercialization and tech transfer support services.

[11]These six public universities are: Northern Kentucky University, Western Kentucky University, Eastern Kentucky University, Kentucky State University, Morehead State University, and Murray State University.

RECOMMENDATION 5

Pilot and Scale Talent Programs with Partner Agencies and Organizations

Startup and innovation activity are driven by people, and the state of Tennessee should continue to invest in workforce as a key component of its larger innovation strategy. At the K-12 level, all students need exposure to stimulating, hands-on STEM and coding experiences. At the high school and post-graduate levels, students and adults need exposure to entrepreneurship, talks by successful and diverse founders, and pathways to access mentors and targeted training for startup companies. The state's investment in the Mobile Innovation Lab initiative to reach students and small business owners in rural and underserved parts of the state is one example of how the LaunchTN network has piloted and scaled a workforce talent initiative. LaunchCode Memphis, the 20-week tech education class for adults, which launched in 2019, is another. The program targets individuals who may not have the time or resources to participate in a four-year program. The state should encourage the LaunchTN network to continue to explore, pilot, and scale these types of entrepreneurship and innovation workforce initiatives.

MEMBER LUNCHIN' // NASHVILLE ENTREPRENEUR CENTER

APPENDIX 1

Overview of Network Partners

Tennessee is one of the few states with a distributed model for providing entrepreneurship support across the state. This network of partners deliver curriculum, mentors and targeted services to entrepreneurs building scalable businesses.

Entrepreneur Centers

CO.LAB, Epicenter, Knoxville Entrepreneur Center, Nashville Entrepreneur Center, The Biz Foundry, theCO

LaunchTN supports 6 regional Entrepreneur Centers that provide curriculum, mentorship, co-working space, early-stage capital and other support to entrepreneurs working to launch and build their businesses. LaunchTN leverages their unique network of regional Entrepreneur Centers to connect startups with the mentors and investors they need to move from concept to market.

Bunker Labs

In 2018, LaunchTN partnered with the Bunker Labs Nashville chapter to expand its service area into 16 counties around the state. This partnership brought inspiration, education and connections to over 700 veterans and veterans' spouses to enable them to start and grow businesses in Tennessee.

Mentor Networks

The Networks program supports entrepreneurs in industry verticals core to the Tennessee economy by pairing startups with mentors and offering highly specialized panel-based curriculum. Life Science Tennessee (LST) and the Tennessee Advanced Energy Business Council (TAEBC) have built a cadre of experts with executive experience and subject matter expertise to mentor entrepreneurs. Through completion of a stage-gate curriculum, Tennessee's life science and energy entrepreneurs are positioned to raise capital, win grant awards and scale their companies. The Networks also provide unique access to industry-specific research assets, subject-matter experts and LaunchTN's growth-stage programming.

APPENDIX 2

Comparison of State Spending on Technology-Based Economic Development, FY2017 (or latest available year)

GEORGIA			
Agency	***Line Item***	***Program***	***FY2017***
Department of Economic Development	N/A	Innovation and Technology	$1,427,382
Board of Regents of the University System of Georgia	N/A	Georgia Research Alliance	$5,097,451
Board of Regents of the University System of Georgia	N/A	Georgia Tech Enterprise Innovation Institute (EI2)	$30,332,884
		Georgia TBED	**$36,857,717**

NORTH CAROLINA			
Agency	***Line Item***	***Program***	***FY2017***
Department of Commerce	1113	Office of Science, Technology, and Innovation	$3,331,379
Department of Commerce	1121	North Carolina Biotechnology Center	$13,600,338
		North Carolina TBED	**$16,931,717**

KENTUCKY			
Agency	***Line Item***	***Program***	***FY2018***
Kentucky Cabinet for Economic Development		University of Kentucky support for commercialization assistance to six public universities	$1,200,000
Kentucky Cabinet for Economic Development		Regional Innovation for Startups and Entrepreneurs, SBIR Matching Program (replaces Kentucky Innovation Network)	$10,000,000
		Kentucky TBED	**$11,200,000**

OHIO			
Agency	***Line Item***	***Program***	***FY2017***
Development Services Agency	195665	Research and Development (OTF operating expenditures; cannot be paid for out of OTF bond funds)	$2,014,733
Development Services Agency	195617	Third Frontier Internship Program	$21,836
Development Services Agency	195686	Third Frontier Tax Exempt - Operating	$745,246
Development Services Agency	195687	Third Frontier Research and Development Projects	$14,857,431
Development Services Agency	195620	Third Frontier Taxable - Operating	$460,526
Development Services Agency	195692	Research and Development Taxable Bond Projects	$44,033,530
		OHIO TBED	**$62,133,302**

TENNESSEE			
Agency	***Line Item***	***Program***	***FY2017***
Department of Economic and Community Development	330.02	Oak Ridge Manufacturing Research Center (FY17 is second year, FY20 is fifth and final year)	$3,000,000
Department of Economic and Community Development	330.02	LaunchTN Operating Revenue (part of annual Business Development base funding)	$3,800,000
Department of Economic and Community Development	330.02	LaunchTN Grants SBIR/STTR Matching	$1,500,000
Department of Economic and Community Development	330.02	UTK RevV Manufacturing Innovation Program	$1,500,000
Department of Economic and Community Development	330.04	LiftTN Microenterprise Rural Core (HUD Community Development Block Grant)	$500,000
Department of Economic and Community Development	330.05	Innovation Programs (LiftTN Urban Core $200K)	$242,500
Department of Economic and Community Development	330.07	Innovation Lab ($1.5M one-time, initial startup funding; $657K is recurring operating budget)	$657,000
Department of Economic and Community Development	330.07	Main Street Entrepreneurship Grants (MEG)	$600,000
		TENNESSEE TBED	**$11,799,500**

VIRGINIA			
Agency	***Line Item***	***Program***	***FY2018***
Innovation and Entrepreneurship Investment Authority	53400	Technology Entrepreneurial Development Services	$4,620,778
Innovation and Entrepreneurship Investment Authority	53415	Commonwealth Technology Policy Services	$44,392
Innovation and Entrepreneurship Investment Authority	53416	Technology Industry Development Services	$2,112,154
Innovation and Entrepreneurship Investment Authority	53419	Technology Industry Research and Developmental Services	$4,410,416
State Council of Higher Education Virginia	11004	Virginia Research Investment Committee	$8,000,000
Department of Housing and Community Development	Item 109	Virginia Growth and Opportunity Fund	$24,500,000
		VIRGINIA TBED	**$43,687,740**

Source: Governor's Office of Planning and Budget, State of Georgia. Governor's Budget Report: Fiscal Year 2019. State of North Carolina. The Governor's Recommended Budget, Line Item Detail, FY2017 – FY2019. Ohio Legislative Service Commission. Budget in Detail (FY2018 – FY2019). As Enacted. For Ohio Third Frontier program detail, see slides 12 and 18 in Ohio Development Services Agency and Ohio Third Frontier Joint Meeting. December 7, 2017. Tennessee Department of Finance and Administration. The Budget Fiscal Year 2018 – 2019. Virginia Legislative Information Services. The 2017 Amended Budget: FY2016 – FY2018 Biennium.

APPENDIX 3

Tennessee Traditional Economic Development Programs and Expenditures, FY2017

Agency	*Functional Area*	*Budget Item*	*Program*	*Actual 2016-2017*
ECD	Administration	330.01	Administration	$6,755,800
ECD	Business Development and Services	330.02	Business Development	$16,156,400
ECD	Business Development and Services	330.06	FastTrack Infrastructure and Job Training Assistance	$68,089,200
ECD	Business Development and Services	330.13	Tennessee Job Skills Program	$ -
ECD	Business Development and Services	330.20	Headquarters Relocation Assistance	$54,400
ECD	Community Development	330.04	Policy and Federal Programs (Community Development Block Grants, Appalachian Regional Commission Grants, Delta Regional Authority Grants)	$35,146,900
ECD	Community Development	330.07	Community and Rural Development	$2,807,900
ECD	Community Development	330.15	Economic Development District Grants	$2,010,000
ECD	Tourism/Film	330.17	Film and TV Incentive Fund	$11,008,100
			Total ECD	**$142,028,700**
Treasury	Minority Business Development	209.05	Small and Minority-Owned Business Assistance Program	$306,700
Agriculture	Special Industry Assistance	325.06	Agricultural Advancement	$18,291,300
			Total Traditional Economic Development	**$160,626,700**

Note: ECD is the Department of Economic and Community Development.

Source: Tennessee Department of Finance and Administration. State of Tennessee Budget, Fiscal Year 2018-2019.

APPENDIX 4

Individuals Interviewed for This Study

Jose Alfaro, Vice President of Operations, CO.STARTERS

Alan Bentley, Director of Technology Transfer, Vanderbilt University

Jim Biggs, Executive Director, Knoxville Entrepreneur Center

Jeff Brown, President and Executive Director, The Biz Foundry (Cookeville)

Regina Ann Campbell, Chief Program Officer, Epicenter Memphis

John Dearie, President, Center for Amercian Entrepreneurship

Ben Ferguson, Founder and CEO, theCO (Jackson)

Lisa Garner, Executive Director, theCO (Jackson)

Blake Hogan, Founder and Executive Director, Bunker Labs (Nashville)

John Murdock, Chief Product Officer and Chief Operating Officer, Nashville Entrepreneur Center

Justin Owen, President and CEO, Beacon Center of Tennessee

Cortney Piper, Co-Founder and Vice President, Tennessee Advanced Energy Business Council

Lamont Price, Director, TNInvestCo at Tennessee Department of Economic and Community Development

Allison Reedy, Chief Operating Officer, CO.LAB (Chattanooga)

Tom Rogers, Director of Industrial Partnerships, Oak Ridge National Laboratory

Peter Rousos, Director of Economic and New Venture Development, Vanderbilt University

Stacie Patterson, Vice President for Research, University of Tennessee at Knoxville and UT Research Foundation

Jessica Taveau, Chief Brand Officer, Epicenter Memphis

Jill Van Beke, Chief Program Officer, LaunchTN

For more information:

Launch Tennessee

211 7th Avenue, Suite 200 • Nashville, TN 37219
615-673-4419 • info@launchtn.org