OCTOBER 2021

AMERICA'S ENTREPRENEURIAL STATES

SUPPORTING ENTREPRENEURS TO HELP DRIVE THE ECONOMY

HEARTLANDFORWARD.ORG

HEARTLAND FORWARD
AN INSTITUTE FOR ECONOMIC RENEWAL

CONTENTS

HEARTLAND FORWARD

AN INSTITUTE FOR ECONOMIC RENEWAL

ABOUT HEARTLAND FORWARD

Heartland Forward's mission is to improve economic performance in the center of the United States by advocating for fact-based solutions to foster job creation, knowledge-based and inclusive growth and improved health outcomes. We conduct independent, data-driven research to facilitate action-oriented discussion and impactful policy recommendations.

The views expressed in this report are solely those of Heartland Forward.

AUTHORS

Jonas Crews

In his role, Jonas directs Heartland Forward's entrepreneurship-focused research projects, co-authors reports and conducts data analysis. Prior to joining Heartland Forward, Jonas was a senior research associate for the Federal Reserve Bank of St. Louis, where he conducted spatial analysis, created surveys and co-authored peer-reviewed journal articles, reports and blog posts on housing, trade, agricultural finance, and the macroeconomy. Jonas holds a Bachelor of Science in economics with a focus on quantitative analysis from Auburn University. He is on the advisory board for the Center on Rural Innovation's Rural Opportunity Map. In his free time, Jonas is a volunteer mountain biking coach for a Bentonville-area junior high school.

Ross DeVol

Ross DeVol is President and CEO, Heartland Forward. Heartland Forward's goal is to promote regional innovation and entrepreneurial ecosystems that foster job creation, wage gains, health and wellbeing and economic growth for the American Heartland. Heartland Forward pursues its mission through independent, data-driven research, action-oriented convenings, such as the Heartland Summit, and impactful policy recommendations and programs such as "Connecting the Heartland." Heartland Forward works with universities, colleges, the business community, economic development officials, public policy leaders and philanthropy to analyze resources supporting the startup community and identify workforce and talent gaps. DeVol has raised the profile of Heartland Forward through media engagement with quotes in the New York Times, Wall Street Journal, Economist and Axios and op-eds in the Dallas Morning News, Milwaukee Journal Sentinel and Des Moines Register as well as TV appearances throughout the heartland. DeVol is former chief research officer for the Milken Institute where he spent nearly 20 years, an economic think tank headquartered in California. He oversaw research on international, national and comparative regional growth performance; access to capital and its role in economic growth and job creation; and health-related topics. He has been ranked among the "Superstars of Think Tank Scholars" by International Economy magazine.

Katie Milligan

Katherine (Katie) Milligan brings the power of public policy to building entrepreneurial communities. Born and raised in the Heartland, she currently serves as the Program Manager for Innovation and Entrepreneurship for Heartland Forward. Katie previously served as the Chief of Staff for Start Co., a venture development organization based in Memphis, TN and as the Director of Small Business and Entrepreneurship for the Delta Regional Authority (DRA), a federal agency that works to improve regional economic opportunity in the eight-state Delta region. While at the DRA, Katie launched the Delta Entrepreneurship Network, a competitive fellowship program to identify entrepreneurs and entrepreneurship support organizations in the Delta. Katie has served as a US delegate at the Global Entrepreneurship Congress and is currently serving as the Board Chair for the Clinton School of Public Service Alumni Board. Katie has a B.A. in political science from the University of Mississippi and a M.P.S. from the University of Arkansas Clinton School of Public Service.

AUTHORS

Minoli Ratnatunga

Minoli Ratnatunga is an economist dedicated to helping communities prosper. She is a fellow at Heartland Forward. Her work at think tanks, nonprofits and public institutions aims to inform and improve decision-making. Minoli is an Executive Advisor at Star Insights, a strategic advisory firm based in Los Angeles. Minoli holds a bachelor's degree in Philosophy and Economics from the London School of Economics, and a Master of Science in Public Policy and Management from Carnegie Mellon University.

Dave Shideler

Dave Shideler is the Chief Research Officer at Heartland Forward; he oversees research focused on identifying practical tools and policies Heartland communities can use to enhance economic performance and prosperity. Before Heartland Forward, Dave was Professor of Agricultural Economics at Oklahoma State University and Community and Economic Development Specialist with the OSU Extension Service. Those roles focused on entrepreneurship and assisted rural communities with economic development planning and implementation. Dave holds a Ph.D. in Agricultural, Environmental and Development Economics from The Ohio State University.

Julie Trivitt

Julie Trivitt joined Heartland Forward from the University of Arkansas where she was a faculty member in both the Economics and Education Reform departments for the past 8 years. She has several academic publications on the economics of education and education finance. She has lived in the Heartland her entire life and is excited to join the team working to advance economic opportunities for the middle of the nation. She has a PhD and MS in Economics from the University of Arkansas. Her bachelor's degree is also in Economics and was earned at Missouri State University. She aspires to be an herb gardener, a cruise director, and a librarian.

EXECUTIVE SUMMARY

The metrics underlying *America's Entrepreneurial States*: *Supporting Entrepreneurs to Help Drive the Economy* show that when it comes to creating and supporting entrepreneurial ecosystems, the coasts win and the heartland lags. Our country was built on the American Dream.

Even today—245 years later, the opportunity to create something to achieve a better, richer, fuller life regardless of social class or circumstance still resonates, but the challenge of becoming an entrepreneur—and living the American Dream—in the heartland is much more challenging than on the coasts.

Supporting entrepreneurs is an essential strategy for growing and diversifying a state's economy. This has always been important but even more so now as we face the realities and ramifications of COVID-19. For economic developers, policymakers, teachers, universities, and even small business owners in states, most especially those lagging in support of entrepreneurs, it will be critical to prepare people, particularly women and those with diverse backgrounds, to pursue and participate in creating a more equitable economy.

Our Entrepreneurial Capacity Index serves as a tool to monitor progress as states build entrepreneurial ecosystems to capture job and economic development opportunities provided by young, dynamic firms.

Our previous research provides the foundation for this analysis.[1] We create a composite measure of entrepreneurship at the state level by combining Main Street (percent of total private sector employment) with knowledge-intensive metrics—sometimes referred to as tech-focused— (percent of employees with bachelor's degrees or above) at young firms five years of age or less. We isolate the factors most associated with raising these measures of entrepreneurial ecosystems.

1 Crews, J., DeVol, R. Florida, R. and Shideler, D. (2020, May) Young Firms and Regional Economic Growth: Knowledge-intensive Entrepreneurs Critical, Heartland Forward. https://heartlandforward.org/wp-content/uploads/2020/05/young-firms_full-report-launch-1.pdf

KEY FINDINGS

The top heartland state in the index is Texas at 14th (thanks to 8th in Main Street entrepreneurship), followed by Illinois at 20th with Minnesota (25th), the only other state among the top 25. Heartland states held 16 of the bottom 20 positions. West Virginia was 50th overall, sparing the heartland last place.

California is first—combining high scores on Main Street (the highest in the index at 13.5 percent) and knowledge-intensive entrepreneurship. California has the second-highest value of early-stage deal flow and is third in the number of deals, both adjusted for population. The Pacific Coastline provides a huge quality of place boost for California.

New York is second overall with the third-highest knowledge intensity and a strong Main Street score. New York was third in share of jobs at firms with at least 1,000 in employment and in early-stage funding. Utah was third overall, second in Main Street entrepreneurship and first in percent of households with a computer (96.3 percent). New Jersey comes in fourth overall, second in knowledge intensity and third in business R&D per capita.

Colorado is fifth (first if you exclude the advantages of a coastline) and is second on the percent of adults with a bachelor's degree or above.

Massachusetts is sixth; but has the highest share of knowledge intensity with 31.6 percent of employees at young firms with a bachelor's degree or higher and among the adult population (44.5 percent); followed by Nevada at seventh; Florida at eighth; Washington at ninth; and Virginia, tenth.

After analyzing the entrepreneurial capacity of each state, we focus on a group of variables we refer to as the Developer Index, as it includes only those variables that can be influenced by policy leaders.

What was apparent in our study is the population with a bachelor's degree or above is an important measure that explains much of the state rankings for knowledge-intensive entrepreneurship (defined as: the creation, distribution and use of those ideas and knowledge).

Computers are very important. Many of us recognize this, but for entrepreneurs who have businesses in smaller communities, better known as Main Street entrepreneurs, having computers and internet access are important indicators as well.

Business investment in research and development (R&D) is an underlying factor for knowledge-intensive entrepreneurship but seems to suggest some crowding out of R&D at small firms since the preponderance of activity takes place in large firms. Government grants awarded to companies do not display a strong link to our composite measure of young firms, a counterintuitive finding. The number of equity-based deals and the dollar value of deals is associated with entrepreneurial ecosystem density. Access to early-stage risk capital fuels entrepreneurial success.

Entrepreneurial activity is also affected by additional variables that are not easily manipulated by policy. The share of employment at establishments with 1,000 or more employees assists in predicting knowledge-based entrepreneurship. They provide managerial and technical talent to young, knowledge-intensive firms.

And we find that the miles of coastline as well as the number of mountains is a strong factor when it comes to quality of place and its impact on entrepreneurship.

We calculated the number of miles of coastline and number of mountains among the top 200 as measured by height from base to top. States with more of these physical features are associated with more entrepreneurial success.

The relationship between entrepreneurial outcomes and the underlying factors is remarkably robust. Based upon these underlying factors (i.e., education, access to early-stage risk capital and quality of life), we can explain 86 percent of the overall difference in the composite measure of entrepreneurship between states. Policy changes resulting in enhancing these underlying factors can have meaningful impacts on a state's participation in the entrepreneurial economy. Consider Nebraska, which has a roughly average share of the adult population with a bachelor's degree or higher but is ranked 37th in the Entrepreneurship Capacity Index. If Nebraska could boost its bachelor's degree share by 16 percent, we would expect it to jump to 30th in the rankings.

Heartland states do not provide the opportunities and support needed for entrepreneurs to thrive and be successful. Entrepreneurs today could be labeled as the first remote workers who can choose where they want to build their business and live. It is no wonder they choose mountains and coastline if the middle of the country does not value entrepreneurship in the same way. What worked in the past will not work in our future.

The time is ripe for heartland states to list entrepreneurship among their priorities. Some people will look for work with a young firm or small business. Policymakers, teachers, investors, entrepreneurs themselves and others will need to step-up to the plate to make the economic and political changes needed to give aspiring entrepreneurs in the heartland the tools and support that will inspire them to live the American Dream.

While not simple, there are some immediate actions that could be taken to create a shift.

SO WHAT IS THE SOLUTION?

FUND ENTREPRENEURIAL SUPPORT ORGANIZATIONS

Establishing and providing resources to entrepreneurial support organizations (ESOs) (e.g., chambers of commerce, Vistage, Entrepreneurs Organization, Startup Nation, Business Network International) are essential to create the social capital required for success.

Strong relationships among people who live and work together in a community facilitates trust among ecosystem participants. These connections enable collaborations, guiding more substantive and productive exchanges of ideas and information available to young firms (i.e., companies that are less than six years old).

SUPPORT STATE LEVEL ENTREPRENEURIAL RISK CAPITAL

Venture capital and equity crowdfunding (i.e., raising small amounts of money from a large number of people), can increase entrepreneurial density – defined as the number of people who work at entrepreneurial companies per capita. Organizations like Right to Start have come up with various ways states can support entrepreneurial development including dedicating 5% of government procurement dollars to businesses under 5 years old, updating the State Small Business Credit Incentive to help with business financing, and educating eligible individuals on how to become accredited investors to participate as angel investors.[2]

Also, states should not overlook the $1.9 trillion economic stimulus package signed into law in March 2021. States will need to strategically decide how they should spend those funds and a portion should be dedicated to increasing the generation of new firms. Funding from the Department of Treasury for the State Small Business Credit Initiative is another opportunity.

IMPROVE ACCESS TO HIGH-SPEED INTERNET

High-speed internet availability in the home is more important than ever. As COVID-19 clearly and profoundly demonstrated, you cannot participate in the entrepreneurial economy without high-speed internet. States have utilized a variety of funding options to deploy high-speed internet, including using special designated funds, general funds, or fees from the Universal Service Fund levied on telecommunications companies to offset costs for consumers.[3] More still needs to be done. As the historic amount of funding is flowing to states and communities to increase access, affordability and adoptability, policymakers and state broadband offices need to ensure they are putting funds across their entire community—including a focus on entrepreneurial growth.

---

2 Lai, Y. L. (2021, April 8) Not Everyone Wants to be an Angel – Especially in the Heartland. Heartland Forward. https://heartlandforward.org/case-study/not-everyone-wants-to-be-an-angel-especially-in-the-heartland/

3 Learn more about Heartland Forward's work to increase access to broadband https://connectingtheheartland.com/

INVEST IN HIGHER EDUCATION

The role of universities and a university education remains critical to the entrepreneurial success of states. In addition to producing the highly skilled workforce needed for innovation, universities through their Technology Transfer Office (TTOs) also generate new commercially viable products and processes. While not directly addressed in this analysis, we would be remiss if we didn't point out the opportunity to provide universities with additional funding to better staff and support these efforts. Similarly, we do not directly address immigration in this report, though many immigrants come to the U.S. to study and earn advanced degrees, and many of the country's innovation and entrepreneurial businesses are created by immigrants. States should be proactive to retain these individuals by supporting companies that sponsor J-1[4] and H-1B Visa holders.

States should also utilize apprenticeship and cooperative education models to connect college students with in-state employers, both to provide them with experience that may help keep them focused on degree completion as well as increase the likelihood of those students working in-state following graduation.[5]

4 J-1 Visas are nonimmigrant visas that allow individuals to work or study for the purpose of "teaching, instructing or lecturing, studying, observing, conducting research, consulting, demonstrating special skills, receiving training or to receive graduate medical education or training."

5 H-1B visas are specifically for individuals that have a specialty occupation.

TEACH ENTREPRENEURIAL THINKING IN K-12

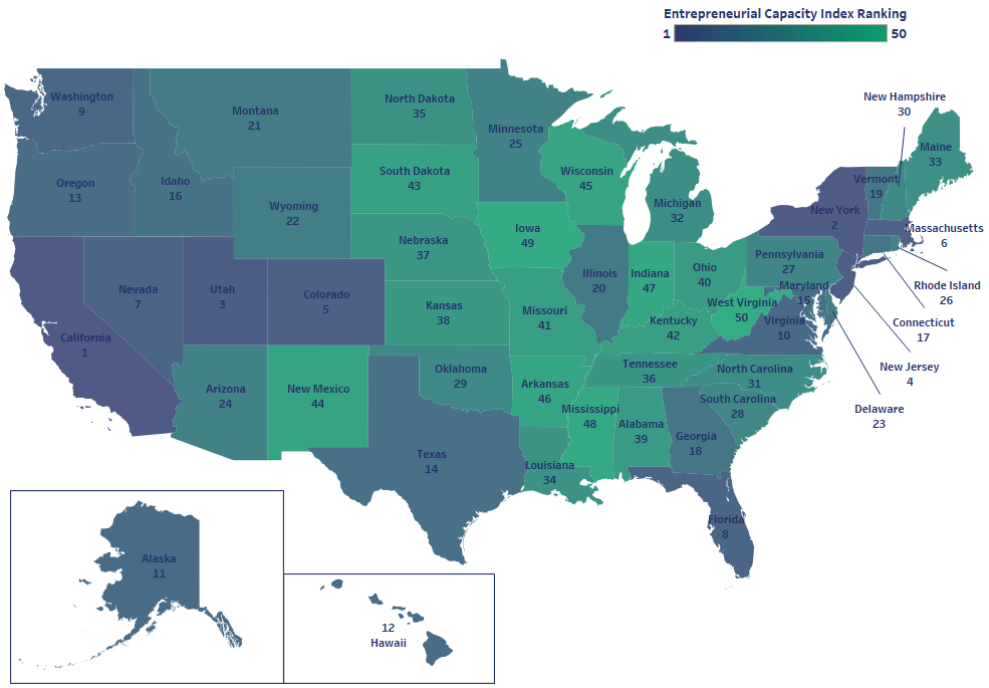
With the extended decline in business startups, young people need to be presented with entrepreneurship as a potential career path. Entrepreneurs are needed not only to perpetuate economic growth, but entrepreneurship also has the potential to create a more just society by giving underprivileged populations the opportunity to build wealth through business ownership.[6]

TAKING A MODERNIZED APPROACH

Over the past year Heartland Forward, Builders + Backers and Accenture have used a new approach to problem solving to stimulate entrepreneurial thinking and action across the heartland. The Community Growth Program and Toolkit (CGPT) leads and supports heartland communities with a transformative approach to problem solving—with an entrepreneurial mindset, creating value for communities and increasing access to capital and resources. This approach allows ideas to be tested through pebble grant funding, solving problems, creating new opportunities and the opportunity for communities to thrive.[7]

6 LaRock, J. D. (2021, June) "Investing in the Next Generation of American Entrepreneurs." Testimony to the Committee on Small Business, Subcommittee on Innovation, Entrepreneurship and Workforce Development.

7 Learn more about Heartland Forward's Community Growth Program and Toolkit https://community.heartlandforward.org/



State Rankings based upon the Entrepreneurial Capacity Index

Want to see the impact of the solutions noted above?

Go to our website to try out the interactive calculator, which allows users to see the expected effects of increased risk capital, internet access, and educational attainment.

INTRODUCTION

America's Entrepreneurial States: Supporting Entrepreneurship to Help Drive the Economy provides an evaluation tool to assess individual state preparedness to capture economic and job opportunities attributable to entrepreneurs starting and scaling their firms. In other words, which states have the most conducive environments for promoting entrepreneurship? Economic development is undergoing a transformation from relying extensively on providing financial incentives to entice firms to relocate or expand, to focusing on thriving clusters and ecosystems of young, entrepreneurial firms and the talented founders that create them.

In *Young Firms and Regional Economic Growth*,[8] Heartland Forward displayed how critical Main Street and knowledge-intensive entrepreneurs are to long-term economic success. Metropolitans and micropolitans starting with stronger entrepreneurial ecosystems, as measured by the share of total employment at firms age five years or fewer (Main Street entrepreneurship) and by the share of employment at those young firms with a bachelor's degree or higher (young firm knowledge intensity), saw notably faster employment growth between 2010 and 2017 in the United States.

Broad measures of entrepreneurship have witnessed a drop in recent decades. In 2014, just 4.2 percent of households that didn't own a business or were not self-employed two years earlier had transitioned into being an entrepreneur. In 1985, 8.1 percent of households had entered the entrepreneurial ranks within two years.[9]

The U.S. young firm employment share experienced a similar pattern, and the trend explains some of the lost dynamism in the U.S. economy overall. While it was stable in the 1990s, the U.S. saw a notable decrease in the share that lasted roughly 15 years.

Today, approximately one-third fewer workers hold jobs at young firms than in 2000. After our May 2020 report, another study found that most of the drop in households becoming entrepreneurs occurred among college graduates.[10]

The good news was the average quality of firms founded by college graduates improved, mitigating some of the decline in the firm creation rate. Entrepreneurs with a bachelor's degree are more likely to build companies that scale and provide many high-paying jobs for their states.

In this research, we create a composite state measure of entrepreneurship by combining Main Street with knowledge-intensive measures based upon our previous work. This is an outcomes-based metric. We use this to test the efficacy of factors most associated with entrepreneurial ecosystem development.

Noted entrepreneurial researcher Schumpeter commented on the factors underpinning the spark that ignites entrepreneurship in a region. Entrepreneurs are the core of an entrepreneurial ecosystem, supported by a group of factors including talent, knowledge creation, financial resources, support services, quality of place and the social capital/networks binding them together.[11] Entrepreneurs do not operate in a vacuum. To be successful, they require these ingredients to be mixed in the appropriate portions.

We use a statistical method to see which factors are most associated with the differences in the composite measure of young firms by state. Additionally, we investigate the relationships with the two individual components (Main Street and knowledge-intensive entrepreneurship).

There are several ways to measure talent, such as Richard Florida's stock of Creative Class occupations,[12] or the average years of education of employed workers[13]. Our investigation reveals that the percent of the adult population with a bachelor's degree or above is the most important relationship in explaining variation across states of our measure of knowledge-intensive entrepreneurship.

8 Crews, J., DeVol, R. Florida, R. and Shideler, D. (2020, May) "Young Firms and Regional Economic Growth: Knowledge-intensive Entrepreneurs Critical, Heartland Forward."

9 Panel Study of Income Dynamics, University of Michigan. https://psidonline.isr.umich.edu/

10 Salgado, S., (2020, June) "Technical Change and Entrepreneurship," The Wharton School, University of Pennsylvania. https://rodneywhitecenter.wharton.upenn.edu/wp-content/uploads/2021/03/10-21.Salgado.pdf.

11 Feld, B. (2012). Startup Communities: Building an Entrepreneurial Ecosystem in Your City, (pp. 31-46) Wiley.The Wharton School, University of Pennsylvania.

12 Florida, R. (2002). Creative Class, Basic Books.

13 DeVol, R., Shen, I, Bedroussian, A., and Zhang, N., (2013, February) A Matter of Degrees: The Effect of Educational Attainment on Regional Economic Prosperity. Milken Institute. https://milkeninstitute.org/sites/default/files/reports-pdf/Matter-of-Degrees-FR.pdf.

In contrast for Main Street entrepreneurship, the percent of households with a computer is the most important factor rather than degree attainment. This suggests that access to a computer and internet connectivity are imperative to support broad-based entrepreneurship, though this presumes that individuals will know how to utilize the technology for the benefit of their businesses.

Research and development (R&D), the process of trying new ideas and experimenting with new products, materials and processes to create new things, is critical to maintaining the competitive edge for growth entrepreneurs. One measure of this activity is the amount of investment in R&D. While patents are a measure of the potential value of R&D in a commercial setting, they are the outcome of a multi-year process and therefore may not characterize the entrepreneurial capacity of a state; therefore, we focus on R&D funding, which tends to be more consistent and reflective of the ideas and projects currently under development. Universities and federal research facilities are key sources of innovation that can be commercialized in an existing or new firm. We find the level of business investment in R&D per million people explains some of the variation in knowledge-intensive young firms; however, the relationship is somewhat nuanced. Large firms conduct the bulk of R&D investment in the U.S. and former colleagues might reach agreement to commercialize it in a spin-off company. Nevertheless, the relationship does seem to suggest some crowding out of R&D at small firms where large firms exist.

Additionally, we find that total government grants awarded to companies don't explain much of the variation in knowledge-intensive young firms, even though government grants reduce the costs associated with bringing a new product to market. Government programs such as the Small Business Innovations Research (SBIRs) and Small Business Technology Transfer (STTRs) awards have been shown in previous research to be good predictors of subsequent venture capital support, as they support an entrepreneur to prototype and test an idea before commercializing it. Here, too, large firms receive most government grants, apparently elbowing many young, small firms out of the way. This suggests it may be warranted to channel a higher percentage of government grants to young firms.

Access to early-stage risk capital is the fuel promoting entrepreneurs to scale up their firms. While self-financing and friends and family traditionally provided most of the capital at the beginning of the entrepreneurial journey (with crowd funding becoming more prevalent), more formalized equity and debt structures such as angel, seed, later-stage venture capital, commercial loans, collateralized-loan obligations and bonds spur the scaling of young firms. Our investigation finds support that both the number of equity-based deals and their dollar value are associated with measures of entrepreneurial ecosystem density.

Employment at establishments with 1,000 or more employees boosts knowledge-intensive entrepreneurship in a state, since more managerial and technical expertise is available to young knowledge-intensive firms and promotes spinoffs. Nevertheless, it presents a challenge in attracting talent to these young firms as wages are bid up by larger firms.

Comprehensive quality of place indicators for states are difficult to obtain, so we include non-pecuniary measures such as miles of coastline (including the Great Lakes) and the number of mountains among the top 200 for prominence as measured by height from base to top. The analysis reveals that states with more of these features correlate to more entrepreneurial success. In a statistical sense, this association is highly significant. The relationship is stronger for Main Street entrepreneurial success as most travel, tourism and recreational businesses are located near places with high natural amenities like mountains and coastline.

And, yes, you guessed it! California has the strongest entrepreneurial ecosystem for promoting the formation and scaling of impactful young firms. However, strip away the benefit of the Pacific Coastline and there are surprises. Colorado has the most dynamic entrepreneurial ecosystem without the non-pecuniary advantages of a coastline. Vermont has a top-10 position removing the advantages of other states with significant miles of coastline.

THE ENTREPRENEURIAL CAPACITY INDEX

Our analysis reveals substantial shortcomings in the entrepreneurial ecosystems in heartland states. The top heartland state is Texas at 14th, followed by Illinois at 20th with Minnesota (25th), the only other state among the top 25. Heartland states must focus on building entrepreneurial awareness and capacity to close the gap in economic performance with the coasts.

The Entrepreneurial Capacity Index consists of two components: one focusing on Main Street entrepreneurship (share of private employment at firms five years old or younger) and knowledge-intensive entrepreneurship (share of employment at firms five years old or younger with a bachelor's degree or higher educational attainment).

These two components are proxies for a community's capacity to support entrepreneurship as an economic development strategy. Such capacity encompasses tangible resources such as financial capital, technical assistance, experienced entrepreneur mentors, resource networks, as well as intangible resources like favorable attitudes toward risk and failure, creativity and the political will to try things differently.

Higher levels of entrepreneurial employment are evidence of significant capacity within the community to support entrepreneurship, though the type of entrepreneurial employment matters. Main Street entrepreneurship is an indicator of broad support and capacity for new businesses, both small and growth-oriented businesses; key goods and services will be provided in the community such as legal services, restaurants and retail stores. Knowledge-intensive entrepreneurship points to more specialized and innovation-driven businesses that attract revenue from consumers from beyond the local community and cause the local economy to grow much more rapidly.

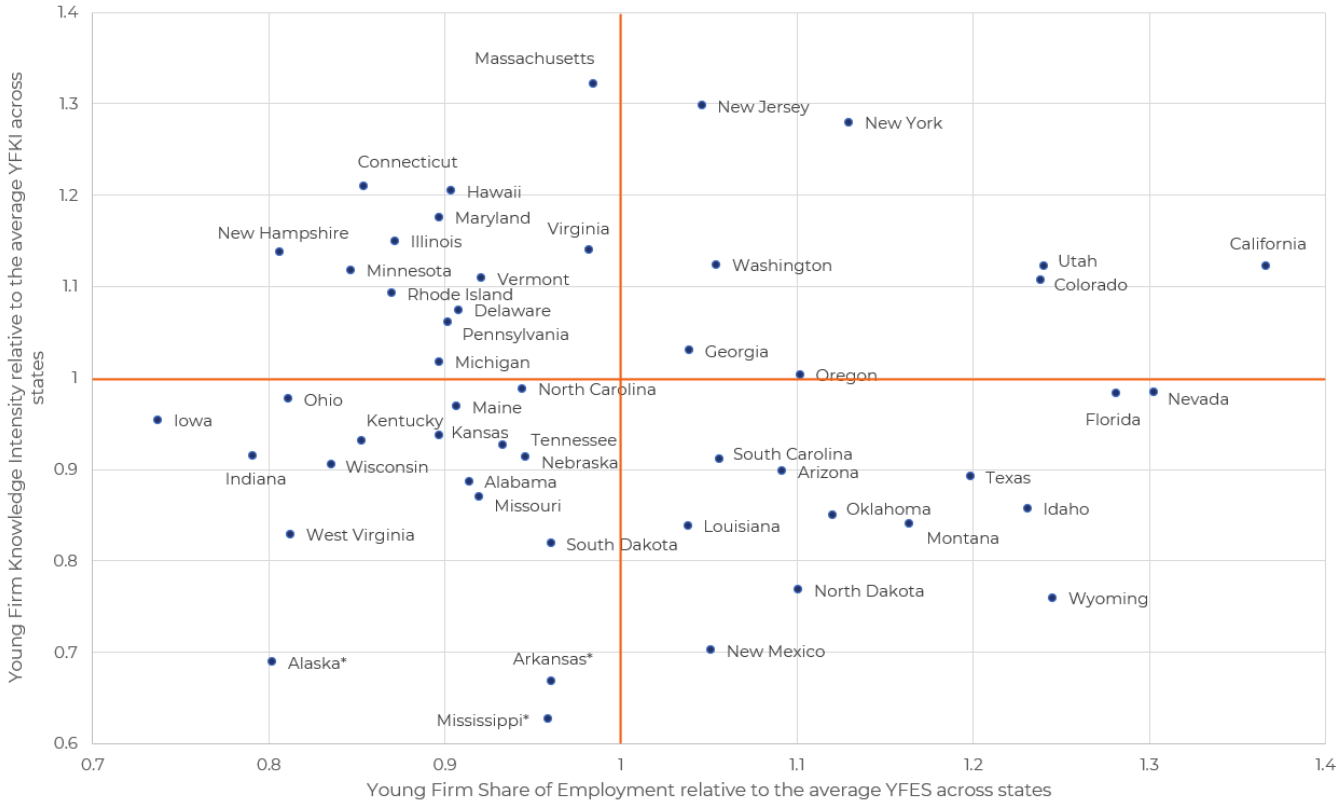
Both entrepreneurship types are necessary for community vitality. Main Street entrepreneurship ensures that the community's needs and wants are met, enhancing the quality of life and making the community a desirable place to live and work. Main Street entrepreneurs create jobs, enhance the circulation of money within the community, create wealth through business and property ownership, and are invested in the success of the community. Focusing just on Main Street entrepreneurship accelerates employment growth by 15 percent. However, knowledge-intensive entrepreneurship, which requires the services and support from Main Street entrepreneurs, has more than double the effect, causing employment growth to accelerate by 34 percent, largely because these businesses draw most of their revenue from outside the community and grow the local economy.[14]

Given the import of these two metrics in characterizing the capacity and nature of entrepreneurship within a community, we combine the two measures into an overall index used to rank states' entrepreneurial capacity. This Entrepreneurial Capacity Index is simply the average of the two measures. Each state's[15] share of young firm employment and knowledge-intensity of young firm employment are plotted on the graphic below; shares are normalized to the average value of the sample, so that a value equal to 1.00 is equal to

14 Crews, J., DeVol, R., Florida, R., & Shideler, D. (2020). Young Firms and Regional Economic Growth: Knowledge-Intensive Entrepreneurs Critical (p. 92). Heartland Forward. https://heartlandforward.org/case_studies/young-firms-and-regional-economic-growth/

15 Alaska, Arkansas and Mississippi had not provided 2018 employment data to the U.S. Census Bureau at the time of analysis for this report, so the most recent data available for these states was used. For Alaska, the most recent data available is 2015, while Arkansas and Mississippi provided data through 2017.

Comparing the Entrepreneurial Capacity Index Components Across States: Young Firm Employment Share versus Young Firm Knowledge Intensity



*Data for Alaska is from 2015, Mississippi and Arkansas are from 2017.

the average across states. States above and to the right of the orange lines represent those that have above average employment shares in young firms and knowledge intensity. Eight states are in this aspirant group, though none of the states are in the heartland region. California possesses the largest share of employment in firms five years old and less, while New Jersey possesses the highest share of employees at young firms with a bachelor's degree or higher for this group; Massachusetts has the highest knowledge-intensity overall, but it's share of employment at young firms is slightly below the state average. Six of the top 10 states in the Entrepreneurial Capacity Index are in this group.

Thirteen states possess above average knowledge-intensity in their young firms, but the share of employment at young firms is below the state average; three of these states are found in the heartland: Illinois, Minnesota and Michigan who all have large, prominent, public research universities delivering significant numbers of college graduates into their workforces.

Another 12 states possess an above average number of young firms, but the knowledge-intensity of these firms is below average. Four heartland states (Texas, Oklahoma, Louisiana and North Dakota) are among this group. The states in this category have a reputation for being "business friendly," though this often does not equate to innovative entrepreneurship. Instead, the economic development in these states is often driven by Main Street entrepreneurship and industrial recruitment, though the potential for innovation exists and some small-scale efforts to ramp up innovative activity in several of these states are underway.

Finally, 17 states are below average in both Main Street and knowledge-intensive entrepreneurial activity. Thirteen heartland states dominate this group: Alabama, Arkansas, Indiana, Iowa, Kansas, Kentucky, Mississippi, Missouri, Nebraska, Ohio, South Dakota, Tennessee and Wisconsin. Many of the states in this category have legacy industries that still dominate the economy, but that's not to suggest that there are not pockets of innovation and entrepreneurship (e.g., Huntsville, Alabama; Madison, Wisconsin or the Research Triangle in North Carolina). All of the bottom 10 states in our Entrepreneurial Capacity Index are found in this group.

DEVELOPER INDEX

INTRODUCTION

While the Entrepreneurial Capacity Index reflects the overall health of states' entrepreneurship ecosystems, the Developer Index focuses on how states perform in entrepreneurship-driving factors that governors, state economic development leaders, legislators and other policymakers can influence. To create the Developer Index, we use algorithms to identify, from a large set of possible factors, the influenceable factors that best explain states' performance in the Entrepreneurial Capacity Index. The Developer Index values are derived from states' performance in the identified factors.

From a set of possible factors ranging from business tax rates to broadband availability to research and development spending to venture capital activity, the following entrepreneurship-driving factors were identified as the ones that best explain a state's Entrepreneurial Capacity Index performance: the number of capital deals made to a state's young firms per million people in the state, the total value of capital deals made to a state's young firms per million people in the state, the percent of a state's households with a computer in the home, the percent of the state's adult population with educational attainment of a bachelor's degree or higher, business spending on research and development per million people in the state, and the number of government grants made to businesses in the state per million people in the state.

Not all of the components of the Developer Index are positively related to healthy entrepreneurial ecosystems. Increases in young firm capital deals and total value, the household computer access share, and educational attainment are related to increases in ecosystem health, while increases in business R&D spending and government grants to businesses are associated with worsening Main Street entrepreneurial health; however, some benefit is bestowed by spillovers from R&D investment in knowledge-intensive ecosystem health. These relationships make sense: More investment in young firms will help them grow, while computer access allows entrepreneurs to produce high-tech innovations more easily, to research competitors, and to learn about the product development process. More bachelor's and advanced degrees increase the labor productivity at young firms. Business R&D and grant-related business activity, on the other hand, may crowd out young firm activity because such activities reduce the share of a region's labor force available to young firms.

It is worth noting that business R&D and grant-related business activity are economically beneficial. However, our findings reflect that they have opportunity costs in the form of limiting young firm activity. Because young firm activity is so integral to a region's future economic growth, economic developers and policymakers must consider this tradeoff when crafting policies and business incentives.

Building the index in this way allows it to reflect how states are doing in key activities related to the health of their entrepreneurial ecosystems, and analysis of performance in each index subcomponent will allow economic developers and state legislators to identify how actions and policies can impact their state's entrepreneurial capacity.

For example, if Nebraska increased the percent of adults with a bachelor's degree or above by 16 percent, a policy resulting in a one standard deviation increase, it would increase the Entrepreneurial Capacity Index value such that Nebraska would have been ranked 30th instead of 37th.

The remainder of the report provides additional detail on each component of the Developer Index, as well as case studies from 2 or 3 states that describe how each state arrived at its rank within that component and the resultant outcomes. These vignettes provide examples of places to emulate, as well as ideas for how to enhance one's current state.

YOUNG FIRM FUNDING & DEAL FLOW

One way of identifying young firms judged to have the potential to grow dramatically is to look for those that have attracted early-stage funding. A state with a high density of firms receiving this type of funding suggests a vibrant ecosystem supporting entrepreneurs and startups with promise. Young firm investment deals involve an investment firm funding a start-up in exchange for a share of the company.

–we define young firm investment deals as pre-seed, incubator, accelerator, seed, angel, early-stage venture capital, and late-stage venture capital deals, thus covering the investment categories most likely to involve young firms.

By selling a percentage of the company before it is profitable, entrepreneurs gain capital to grow the firm and develop their product before they can qualify for large loans or sell shares. This helps certain firms bring their product to market. These investments often also come with increased access to expertise and networks to help a venture succeed. It reduces the personal financial risk an entrepreneur takes on to fund the initial growth of a firm. To balance out the risk that investment firms take by investing in young firms, they tend to choose firms that have the potential for significant growth.

Total young firm investment dollars and deals, adjusted for a state's population, tell us about the density of growth-focused firms in a state and their perceived potential, from which one can infer the completeness of the ecosystem that exists to support them. Some states, like California and New York, have extensive venture investment firms headquartered locally, while young firms in other states might need to attract those investors or draw on (less abundant) local funds. Access to young firm investments can result from personal connections as well as quality, and some states have established programs to help nurture networks and improve quality through accelerators and state managed funds. Non-dilutive investments, such as the federal government's competitive Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs or pebble grants provided as part of the Community Growth Program and Toolkit,[16] help businesses along at key stages in the startup process. An ecosystem where many firms have successfully attracted large young firm investments is an attractive goal for economic development initiatives, partly because it makes it more likely that firms grow and create jobs locally, and because an acquisition or successful IPO can generate significant wealth that may then be reinvested in the next generation of start-ups.

Our measures of Main Street entrepreneurship and knowledge intensity tell us about the vibrancy of local entrepreneurial ecosystems and whether people see a state as a good location to start a high-growth firm. Firms that secure investments endure, hire more people and potentially mature into an established firm exporting goods and services outside the region. Without venture funding, entrepreneurs are largely limited to business revenue and debt, along with personal funds and loans from friends and family to fund investments needed for growth. This is often true for entrepreneurs of color, whose firms are much less likely to receive investments and thus must take on more personal financial risk when starting out.

Efforts to invest more in rural entrepreneurs and entrepreneurs of color are underway, although the data show that there are still big differentials. The 2017-18 early-stage funding per million residents in Massachusetts ($1.61 billion) is 396 times West Virginia's total scaled by population ($4 million).

16 Heartland Forward Community Growth Program. Heartland Forward. (2021, September 28). Retrieved October 15, 2021, from https://community.heartlandforward.org/

CASE STUDY: UTAH

Entrepreneurial Capacity Index Rank: 3

Utah is third overall for entrepreneurial capacity, and it matches top ranked California on the knowledge intensity of its young firms. Utah startups have been successful in securing investments.

When adjusted for the size of the Beehive State's population, Utah ranks seventh for the total number of young firm investments at 112 deals per million residents in 2017-18. These deals bring in significant funds: Utah ranked fourth for the total deal capital for young firm investments with $403 million per million residents.

By institutionalizing its entrepreneurial ecosystem, Utah fosters a culture that creates more opportunities to attract venture investment. The major Utah universities stress entrepreneurship, offering opportunities for students to start businesses through the Rollins Center for Entrepreneurship & Technology at Brigham Young University (BYU) and the Lassonde Entrepreneur Institute at the University of Utah in Salt Lake City. They also create high skill workers - more than a third of residents 25 and older have earned a bachelor's degree or higher.

Silicon Slopes, which covers the region from Logan to St. George, has been consciously branded as a startup and tech hub. Through the associated non-profit organization, entrepreneurs can network with a visible startup community, learn about resources, and aspire to be named to the '25 under 5' list of top young firms.[17] Utah is also able to attract more Silicon Valley investments, bringing people into the state for the Silicon Slopes Tech Summit.

As a result of the Silicon Slopes organization, summit and activities, the Provo-Orem region saw tremendous technology-fueled growth, with clusters in software publishing, semiconductor manufacturing and computer systems design. A focus on scalable services targeting a business client base created a pool of successful startups, several of which saw large acquisitions, and executives reinvested some of the spoils to support the next several generations of homegrown startups through angel and venture capital funding. This local financial support means Utah startups are not dependent on investment firms from New York, Boston or the Bay Area.

Local investors are looking beyond the next generation of firms and fostering the next generation of founders and innovators through their investment and advocacy for K-12 computer science education in Utah. At the 2019 Silicon Slopes summit, five Utah executives challenged the state of Utah to allocate $5 million to K-12 computer science education and pledged to match that allocation with $1 million each. Utah already ranks top for the percent of households with a computer, and state leaders aspire to "*give every student access to robust computer science education by 2022*" to build skills to use them well.[18]

Beyond its natural beauty and opportunities for outdoor recreation, Utah has some characteristics not easily duplicated in other states. The family-oriented culture for example, stands in contrast to the typical Silicon Valley approach. This attracts entrepreneurs interested in clearly signaling the value they place on family life. However, the emphasis on entrepreneurship in the university system and a norm of reinvesting in place are valuable approaches to emulate. Local success stories have created wealth and experienced entrepreneurs who can help create and advise new firms. The headlines these stories garner can also inspire new founders to enter the fray and aspire to create the next Utah-based unicorn.

17 Silicon Slopes. 2019. Silicon Slopes Resource Guide. Silicon Slopes. https://newsroom.siliconslopes.com/about/

18 Bonilla, S.; Biswajit P.. 2019. Utah Computer Science Education Master Plan. Salt Lake City: Utah State Board of Education.

CASE STUDY: COLORADO

Entrepreneurial Capacity Index Rank: 5

Colorado has leveraged its assets to create a vibrant and well-recognized entrepreneurial hub, placing fifth on our composite measure of entrepreneurship. It has a high quality of life, striking natural beauty and an educated population – the second-highest share of adults aged 25 and older with at least a bachelor's degree in the country (41.7 percent). This combination draws in and retains founders and knowledge workers who value access to outdoor recreation and the entrepreneurial environment. Colorado's top Developer Index score suggests that factors included in our analysis explain most of its performance on our entrepreneurship composite and that Colorado's approach might be replicable.

The state's active startup community includes many Colorado-based investment firms investing alongside the national firms.

The number of young firm investment deals adjusted for population demonstrates this clearly – Colorado ranks fifth on the metric with 173 deals per million residents, significantly higher than its peer group. These deals brought substantial funds to startups: $313 million per million residents in 2017-18.

Colorado's academic institutions also foster multiple facets of entrepreneurship by producing a highly educated population and creating the knowledge workers needed by many growth- focused young firms.

University of Colorado Boulder Law School is home to the Silicon Flatirons Center for Law, Technology and Entrepreneurship focused on policy and entrepreneurship, and its Business School houses the Deming Center for Entrepreneurship. These centers, alongside startup accelerators and incubators like Boomtown, Galvanize and Innosphere Ventures prepare and support founders to build firms that are interesting to potential investors.

Innovation-based startups build on a long history of research and engineering expertise in Colorado. The defense and aerospace industries continue to invest and prosper in the Centennial State. In 2020, Colorado had the fourth highest SBIR and STTR grants per million residents (both for the number and the total dollars awarded). These federal awards indicate the array of local firms built on technology with the potential to scale up. The U.S. Patent and Trademark Office located its Rocky Mountain office in Denver, from where it serves a 9-state region.

The openness of the local entrepreneurial network is often touted as a major attraction for new founders, with peer learning helping entrepreneurs connect to more experienced executives and potentially avoid the pitfalls faced by an early-stage venture. MergeLane, a venture fund that only invests in high-potential startups with women in leadership roles, clearly signals an appreciation for the value female executives bring to a young firm. Successful local accelerators like TechStars, which offers mentorship-driven seed stage investments, have expanded from their Colorado base to take their approach to other parts of the US.

Colorado's thriving economy owes much to its history, high quality of life, and higher education institutions that support entrepreneurial activities across the state. Tech-based ventures have drawn founders and funders such that Colorado is also seeing Main Street entrepreneurship thrive, as well. This combination of locally focused startups and those aiming to scale up significantly bodes well for Colorado's future.

CASE STUDY: ALABAMA

Entrepreneurial Capacity Index Rank: 39

Alabama ranks 39th on our composite measure of entrepreneurship. Main Street entrepreneurship is relatively strong, making up 9 percent of total private sector employment and placing Alabama close to the middle of the pack. Looking at early-stage deal flow and the number of deals adjusted for the population tells a different story, with Alabama ranking 47th on both measures. Firms in the state struggle to attract investment – closing fewer than 18 young firm investment deals per million residents and securing approximately $13.5 million in total deal capital per million people. This limits the potential for dynamic local entrepreneurs to successfully scale new ventures in Alabama.

The dearth of young firm investment does not mean that the state lacks founders with the potential to start and grow firms that would be good investment targets. According to Crunchbase, only 1.1% of venture capital dollars went to Black-led firms in 2018, rising to 1.2% in 2021.[19] This underfunding of Black-led startups affects founders in Alabama, where more than a quarter of the population is Black. While Mississippi, Louisiana, South Carolina also had trouble attracting young firm investment capital, Georgia vastly outperforms Alabama on these metrics demonstrating that there are ways to prepare and include Black founders in the entrepreneurial ecosystem. Rising interest among investment firms in funding Black-led ventures also creates opportunity, especially in light of commitments made by firms in the aftermath of the killing of George Floyd in 2020.

Alabama has recognized the importance of fostering entrepreneurship. In 2020, Governor Ivey established the Alabama Innovation Commission, to explore how best to foster innovation and entrepreneurship in the state.[20]

19 Romburgh, M. V.; Teare, G. (2021, July 13) Funding to Black Startup Founders Quadrupled In Past Year, But Remains Elusive. Crunchbase News.https://news.crunchbase.com/news/something-ventured-funding-to-black-startup-founders-quadrupled-in-past-year-but-remains-elusive/

20 Office of the Governor State of Alabama, Press Office. (2020, July 16) Governor Ivey Announces Creation of the Alabama Innovation Commission to Promote Entrepreneurial Growth. https://governor.alabama.gov/newsroom/2020/07/governor-ivey-announces-creation-of-the-alabama-innovation-commission-to-promote-entrepreneurial-growth/

The group recommended establishing the Alabama Innovation Corporation (AIC), created in May 2021 with $4 million in funding to support entrepreneurship, rural businesses, business R&D and workforce training in advanced technology. Alabama also created the Innovate Alabama Matching Program, which will match up $250,000 in federal SBIR and STTR dollars to Alabama recipients.[21]

These non-dilutive grants support research and engineering projects that can provide the seed for technology-focused young firms with the potential to grow and create jobs.

In matching SBIR and STTR dollars, Alabama is building on its existing strengths as the Heartland State that attracted the most SBIR and STTR awards and funding dollars adjusted for population in 2020. About three quarters of the total SBIR and STTR funds awarded in Alabama ($60.6 million in 2020) come through multiple branches of the Department of Defense, serving the Air Force, Army, Navy and Missile Defense Agency. Firms like CFD Research Technologies, based in Huntsville, have attracted many of these awards and then spun-out new firms. To foster the entrepreneurial ecosystem, successful applicants have also advised peers at Alabama industry conferences.

To support less research-focused ventures, the Alabama Innovation Commission identified several policy focus areas relevant to increasing young firm investments in their interim report (published in January 2021). These include looking at venture fund regulation, access to capital for early-stage companies, and an angel investor tax credit.[22] These investigations could yield new policies that help bolster Alabama's entrepreneurial ecosystem.

21 SSTI. (2021, May 27) Alabama governor signs measures to boost state's innovation economy with $9M in appropriations. https://ssti.org/blog/alabama-governor-signs-measures-boost-state%E2%80%99s-innovation-economy-9m-appropriations.

22 Alabama Innovation Commission. 2021. Innovate Alabama Interim Report. Alabama Innovation Commission and Advisory Council.

EDUCATIONAL ATTAINMENT

Although college costs have consistently grown faster than inflation for several decades, a college degree is still a good investment.[23] College enrollment of students recently graduated from high school has also grown while the rate at which those students graduate from college has remained roughly steady for decades for the U.S. overall.[24]

The economic benefits of college graduates to a local economy are many. They earn higher incomes and experience fewer and shorter spells of unemployment, thus paying more taxes and needing less aid from government programs. College graduates are more likely to vote and volunteer with charitable organizations than residents with just a high school diploma. Plus, educational attainment, specifically a bachelor's degree or more, is known to contribute to innovation.

There is extensive literature on the importance of human capital to entrepreneurship. Since knowledge and ideas can be viewed as precursors for innovations, places with higher educational attainment yield more scalable ideas. Further, human capital investments spur research and development activity and may translate to technology commercialization. Individuals with higher levels of educational attainment are associated with a higher propensity to engage in entrepreneurship; especially in tech-related areas.

Here we consider the percentage of the adult population (age 25 and over) that has completed a bachelor's degree or higher.

The larger the share of the population that has a wider and deeper knowledge base, the better equipped they are to identify problems, design solutions, and assemble the necessary resources to make it happen.

Like so many of our nation's vast productive resources, college graduates are not equally distributed across the states. Part of this is a natural consequence of people choosing to live near natural amenities when they have options, but it is also influenced by state governments that are highly involved in education and have policies and priorities that vary considerably across states.

We can think of a state acquiring college graduates like they would any resource: they can produce their own by investing in quality education systems at the K-12 level to prepare students for college and provide ample higher education opportunities that keep students in-state for college and life beyond. Or states can import college grads from elsewhere with good job opportunities and attractive amenities that convince college graduates to move into the state. These college graduates may come from other U.S. states, or even other countries since our immigration system prioritizes highly skilled workers.

Some states do a better job of sending high school grads to college, some do a better job of keeping or bringing them home after college, and others excel at attracting college grads who grew up in other places. No single strategy is ideal for every state and, contrary to prevailing public sentiment, a four-year degree for everyone is not the best labor force solution. Here we look at three states' college education statistics, how the college educated share of the labor force compares, and how these outcomes might impact their state's entrepreneurial capacity.

23 Which College Programs Give Students the Best Bang for Their Buck? – Third Way. (n.d.). Retrieved September 30, 2021, from https://www.thirdway.org/report/which-college-programs-give-students-the-best-bang-for-their-buck

24 Data from Higheredinfo.org. http://www.higheredinfo.org/dbrowser/index.php?submeasure=24&year=2018&level=nation&mode=data&state=#/-1/

CASE STUDY: MISSISSIPPI

Entrepreneurial Capacity Index Rank: 48

Mississippi excels at sending its high school graduates to college. This is good news since our Heartland of Opportunity report found opportunity occupations are limited in Mississippi, making a college education more crucial for a middle-class income in the state.[25]

Since 2000, Mississippi has always had a larger percentage of recent high school grads attending college than the national average and has been in the top three U.S. states in this metric most of that time.

In 2018 Mississippi exceeded the national average by almost 17 percent.[26] The Magnolia State knows how to motivate students for college and get them enrolled.

Mississippi also does a good job of keeping students in state for college and attracting students from elsewhere to attend college. The ratio of students from other states/countries who attend college in Mississippi over the Mississippi students who go to college outside the state is consistently over 1, which indicates Mississippi can educate all its own college bound graduates plus many others. Mississippi is effectively exporting college education services by attracting so many out-of-state and/or international students.

However, the high college enrollment and in-state capacity does not translate to an abundance of college graduates in Mississippi's labor force. Despite 20-plus years of sending considerably more of its high school graduates to college, only 23.2 percent of adults in the state have a college degree. This is well below the national average and places Mississippi 49th out of 50 states in the percent of adults with college degrees. While Mississippi clearly sends the message that college is an option for everyone, the graduation reality is not falling in line with their education enrollment. Mississippi's 6-year graduation rate of bachelor's students is below the national average and Mississippi experiences a net out-migration of college graduates. Using ACS 5-year data for 2018, we estimate Mississippi loses about 0.9% of their college graduates each year.

The low rate of adults with college degrees combined with a high rate of college enrollment suggests Mississippi likely has a larger than average population of first-generation college students that could benefit from more student support services. Support services targeted to help students graduate and stay in the state after graduation would be most beneficial given the net out-migration of college graduates. One strategy to accomplish this would be to increase the differential tuition charged for out of state and international students. The higher funding per imported student would allow additional support services to be provided. Admittedly, this strategy comes with short-term trade-offs as out-of-state students respond to higher prices and the number of high revenue students declines, but the longer-term benefits of a better educated population may well justify the short-term loss. College graduates are an important component of a region's entrepreneurial potential; employment opportunities at young firms appeals to college graduates and can be part of a successful strategy at retaining them.

25 Trivitt, J; Kotkin, J. (2021, July 22) Heartland of Opportunity. https://heartlandforward.org/case-study/heartland-of-opportunity/.

26 http://www.higheredinfo.org/dbrowser/index.php?submeasure=63&year=2018&level=nation&mode=data&state=#/-1/

CASE STUDY: MINNESOTA

Entrepreneurial Capacity Index Rank: 25

In the 21st century Minnesota has also exceeded the national rate of high school graduates who go to college in the fall. Where Mississippi makes the top 3, Minnesota makes the top 10, consistently doing a good job of getting its high school graduates to enroll in college before entering the workforce. However, that's where the similarities between Minnesota's and Mississippi's college strategies end.

Relative to the number of Minnesota high school graduates going on to college, there are fewer students enrolled in Minnesota colleges. They are consistently below the national average and less than 1. This indicates the number of students attending college in Minnesota is less than the college-going high-school graduates from the state. By sending more students to study in other states than it brings in, Minnesota is effectively importing college education services, rather than exporting them as Mississippi does. It can do this without imposing an undue financial burden on the students since it has reciprocation agreements with neighboring states to charge only in-state tuition, with Wisconsin and North Dakota being the more popular out-of-state education destinations. While colleges in much of the country have expanded capacity and worked to attract international and out-of-state students that frequently pay more in tuition, Minnesota has been trending in the opposite direction.

Bucking the higher education trend has not caused a decrease in college graduates who live in Minnesota—they have consistently exceeded the U.S. average and are 1.7% above the national average in this report. Minnesota may outsource educational services, but it also imports college educated adults. According to the ACS 5-year sample for 2018, the number of college graduates increases by 0.8% per year due to in-migration, increasing the share of adults with a college degree by 0.2% each year. Although, Minnesota attracts some college graduates from abroad, they are predominantly from other U.S. states. Over 80 percent of Minnesota's incoming college graduates are coming from another state in the U.S. Minnesota, then, draws in talent from elsewhere to achieve its 10th ranking for educational attainment.

CASE STUDY: CALIFORNIA

Entrepreneurial Capacity Index Rank: 1

In a report about innovation we surprised you by highlighting the home of Silicon Valley for education instead of venture capital, didn't we? But California really stands out in attracting college graduates from near and far.

When it comes to sending high school graduates to college, California is not noticeably different from the U.S. overall for the past 20 years. Some years the rate of college attendance is a little higher and a little lower in others, but this is clearly not an area where California's performance is noteworthy. California's challenge is matriculating more male Latinos from high school to higher education.

If California high school students do not go to college at a high rate, it could make it up by bringing in students from outside the state. But that does not occur in California either. Not only is California consistently well below the national average, but ratio of out-of-state to in-state students is well below, indicating it sends more students out of state for college than it brings into the state. It is essentially importing college education services for its own residents.

With 34.2 percent of adults having at least a four-year degree, California is 0.5 standard deviation above the national mean (not exemplary), but it does not send its own high school grads to college or bring other college students to the state. Where do the college graduates come from? The gorgeous weather and easy venture capital do not just lure California natives back after college, California attracts college graduates from almost everywhere. Net in-migration of college graduates increases the number of college grads in the state by 1.9 percent each year, which increases the percentage of adults with a degree by 0.5 percent. Of the college graduates coming into California, 62.3 percent are from other states and 37.7 percent are from abroad.[27] California has the highest rate of international immigration of highly educated people of any state. This highly educated and diverse workforce contributes to California's ability to innovate and grow in a world with an ever-growing number of problems to solve.

It's worth noting that all the relocation flows considered here are just among people with at least four-year college degrees and occurred prior to the current pandemic. It's possible the highly educated sector of the workforce has moved and will continue as households and corporations adjust to life with COVID-19 circulating. How quickly and closely innovation patterns also move will be an interesting development to watch as we continue to study and understand policies and characteristics that drive innovative regional economies.

27 Statistics are from author calculations using Census Bureau ACS 5 year sample from 2018.

SHARE OF HOUSEHOLDS WITH COMPUTERS OR OTHER DEVICES

Another important component of the Developer Index is the share of households with computers. Highly correlated with the share of households with an internet subscription, the share of households with at least one computer or other device had greater explanatory power to predict entrepreneurship capacity so it was the variable retained in the analysis. However, the two technologies are complementary: computers and other devices are needed to access the internet, while the internet enhances the productivity of computers and other devices. This variable, then, is interpreted as the presence and proliferation of technology that could impact entrepreneurial capacity in a region.

Computers, in and of themselves, enhance productivity and create opportunities for new products, services and processes. Automation of business tasks is a great example; computers and software allow for the automation of rote business tasks ranging from invoicing to the design and production of mass marketing products like postcards. Adding internet access to the business further expands opportunities for reaching new markets via e-commerce, coordinated inventory management across different store locations, payment processing, and introduces new communication and marketing options to name a few benefits.

The COVID-19 pandemic also reinforces these realities. Businesses that were able to pivot their business model to online sales, whether for curbside pickup or shipment, were more likely to continue, and many businesses grew their sales as a result of the pivot. Access to computers and the internet enabled businesses to not only modify their business models, but accelerate trends in consumer preferences and innovation to enhance the safety and convenience for both employees and consumers – trends expected to persist well beyond the current pandemic. The pandemic also emphasized that regions without high-speed internet access, or where individuals did not have the skills or abilities to harness the internet to adapt their businesses, were more likely to fail. States need to consider multi-pronged strategies, like the Connecting the Heartland campaign, to adequately address both digital access and digital literacy to ensure maximum economic impact.

To explore the impact of computers and internet access, three case studies are presented: Alaska, Idaho and Louisiana. For Alaska and Idaho, computer ownership is relatively high (95.6 percent and 93.8 percent, respectively, ranking numbers 2 and 16 in the nation), so from these two states lessons around technology proliferation and consequences for entrepreneurship can be learned. Louisiana provides insight into the other end of the spectrum, as it ranks 34th nationally for share of households with a computer at 87.4 percent.

CASE STUDY: ALASKA

Entrepreneurial Capacity Index Rank: 11

Despite Alaska's high rural population (roughly one-third of the state's population is classified as rural[28]), it has the second highest share of households with access to a computer or other device of U.S. states at 95.6 percent.

One important explanation of this high level of penetration is the need for technology to communicate across this sparsely populated, geographically large state. Even as early as 1970, the federal and state governments were investing in communication technologies that would enable remote, Native Alaskan villages to communicate with government agencies and other institutions for critical services such as health care and education.

Access to the internet in Alaska can be a challenge, seeing as the first middle mile fiber optic cable was completed in 2020.[29,30] Prior to this, terrestrial broadband was only available via submarine cable. Residents of Alaska also have access to wireless (including cellular data) and satellite internet. The 2019 U.S. Census Bureau American Community Survey reports that 65.9 percent of households have line-based internet service (i.e., not cellular or satellite) that meets or exceeds the 25 Mbps download speed for broadband, and an additional 22.1 percent have internet service but at a slower speed.[31]

Remoteness presents its challenges for Alaskans, but it also presents entrepreneurial opportunities. The low population density across the state, and small urban places, make it an undesirable location for many national brands; as a result, local entrepreneurs fill the void by opening locally owned restaurants and retail stores. Additionally, access to technology lessens the isolation by providing access to markets, customers, and products and services that are not available locally. These realities likely boost Main Street entrepreneurship directly, but they also provide incentives to innovate and overcome challenges due to remoteness.

It is worth noting that Alaska benefits from several unique attributes that contribute to its high computer ownership numbers. First, the state has received significant amounts of federal funds from a variety of sources to increase broadband access to remote, indigenous villages, particularly through the American Recovery and Reinvestment Act of 2009, when Alaska received more than $140 million, but also through the E-rate and FCC's universal service programs.[32] Additionally, the state has been pursuing public-private partnerships to bring affordable broadband access to its residents. The fiber optic cable mentioned previously is one example; it is located alongside of the Alaska highway, which allows for year-round access to the cable should it be needed. Most recently, Governor Dunleavy created a taskforce to prioritize broadband projects to be funded from federal pandemic recovery funds.[33]

Second, because of the state's reliance on communication technology for many years, it understands that availability is not the same as access and adoption. Thus, the state legislature and the state agencies seeking federal funding have emphasized the need for digital literacy, access to equipment and support for cultural projects that demonstrate the potential of internet technologies. For example, the University of Alaska Fairbanks upgraded a native language map to a geographic information system-based map with links to traditional and contemporary place names, organizers of the Alaska Native Claims Settlement Act used cloud-based technology to preserve and share materials, and the Alaska Native Cultural Center uses the web to share cultural materials and enhance visitor experiences.[34]

28 Kassel, K. (2021, September 2). State Fact Sheets. https://www.ers.usda.gov/data-products/state-fact-sheets/.

29 Finley, K. (2019, May 1). Alaska will finally get its own fiber-optic line. Wired. https://www.wired.com/story/alaska-finally-get-own-fiber-optic-line/.

30 Guizlo, C., & Wall, K. (2020, May 26). MTA Fiber Holdings Completes AlCan ONE, Historic First All-Terrestrial Fiber Line That Will Improve Alaska's Connectivity. MTA Fiber Holdings. https://www.mtafiber.com/

31 U.S. Census Bureau. (2021). Types of Computers and Internet Subscriptions. Explore census data. https://data.census.gov/cedsci/table?q=&t=Telephone%2C+Computer%2C+and+Internet+Access&g=0400000US02%2C16%2C22&tid=ACSST1Y2019.S2801.

32 Hudson, H. E. (2011, May 1). Digital Diversity: Broadband and Indigenous Populations in Alaska. Digital Diversity. https://iseralaska.org/static/legacy_publication_links/DigitalDiversityAlaskaHudson.pdf.

33 Office of the Governor. (2021, May 6). Governor Dunleavy creates task force on broadband. – Mike Dunleavy. https://gov.alaska.gov/newsroom/2021/05/06/governor-dunleavy-creates-task-force-on-broadband/

34 Ibid.

CASE STUDY: IDAHO

Entrepreneurial Capacity Index Rank: 16

While Idaho has a couple of characteristics contributing to its 16th overall ranking, the share of employment in young firms (7th) and the share of households with a computer or other device (tied for 7th with New Hampshire) are driving this result. The high ranking for mountains helps, as well – this natural amenity helps attract and retain workers. That 93.8 percent of households have access to a computer or other device suggests the population in Idaho is relatively tech-savvy.

However, only 88.4 percent of households have a broadband internet connection having at least 25 Mbps download and 3 Mbps upload speeds[35]. The state has struggled to compete for federal funding for broadband infrastructure over the last decade, largely because the state had not updated its state broadband plan.[36] Over 37 percent of Idaho's population resides in rural parts of the state, which often have only one, if any, source of internet access. The rugged terrain is also an impediment to deploying line-based internet services. However, as with Alaska, the low population density creates an opportunity for Main Street entrepreneurs to provide goods and services when national brands are not available.

Imagine Idaho, a broad coalition of state organizations, economic development organizations, elected officials and businesses, seeks to increase broadband availability across the state by encouraging competition and securing federal funding.[37] Previous attempts at public funding in Idaho, including CARES Act funding in 2020, has favored existing, private internet service providers to the exclusion of cooperatives and municipalities, which have proven beneficial in other states. Nevertheless, the 2021 state legislative session realized the creation and funding of the Idaho broadband fund to assist with internet access issues in the state.

35 U.S. Census Bureau. (2021). Types of Computers and Internet Subscriptions. Explore census data. https://data.census.gov/cedsci/table?q=&t=Telephone%2C+Computer%2C+and+Internet+Access&g=0400000US02%2C16%2C22&tid=ACSST1Y2019.S2801.

36 Idaho Broadband Task Force. (2019, November 22). Broadband Access is Imperative for Idaho: Recommendations to Improve Idaho's Broadband Plan. bbtf-final-report_11-2019.pdf. https://gov.idaho.gov/wp-content/uploads/sites/74/2019/11/bbtf-final-report_11-2019.pdf.

37 Packer, K. (2021, January 17). New coalition, Imagine Idaho, sets goal of improving broadband throughout the states. Idaho Statesman. https://www.idahostatesman.com/opinion/readers-opinion/article248533380.html.

CASE STUDY: LOUISIANA

Entrepreneurial Capacity Index Rank: 34

While Louisiana has a particularly low share of households with computers or other devices (it ranks 47th in the nation with only 87.4 percent of households with a computer), all of the heartland states struggle in this category. Indeed, the highest ranked state in the heartland for this category is Minnesota at 92.5 percent, making it 16th in the country. Common themes across the heartland are reflected in Louisiana.

Like many states in the heartland, Louisiana has a "pro-business" perspective, such that government policy is designed to limit growth in government employment and to encourage private enterprise. Broadband internet is no exception. However, based upon people's experiences during the COVID-19 pandemic, when internet access was critical for everything from working, schooling and shopping, many states, including Louisiana are rethinking this strategy.

Prior to the pandemic, Louisiana had set an ambitious goal of universal service for all residents with speeds of 100 Mbps download and upload by 2029 under the purview of the Broadband for Everyone in Louisiana Commission.[38] The state legislature authorized $180 million of American Recovery Plan funds for broadband deployment, as well as the auction of 90% of the state's 4.9GHz spectrum allocated by the Federal Communications Commission in 2020. Future costs of broadband deployment[39] were also reduced with the passage of "dig once policy" that requires coordination of local utilities via fiber or conduit run through public rights-of-way.[40] These efforts will encourage deployment of broadband infrastructure, which is critical, though more needs to be done to ensure broadband is affordable and residents can utilize the technology.

As complementary technologies, computer and internet access are essential tools for the 21st century economy. The correlation between tech-ready workers and firms and entrepreneurial capacity is evident in this index, as is illustrated above: higher access to computers and internet strongly supports entrepreneurial capacity across states. However, as Louisiana's case reminds us, the issue is not solely one of access: households need be able to afford internet in order to adopt and use it, and they must have the skills and know-how to utilize these technologies and maximize their benefits to their families.

38 Edwards, J. B. (2019, August 29). Broadband for everyone Louisiana. Louisiana Division of Administration. https://www.doa.la.gov/doa/comm/broadband-development-and-connectivity/broadband-for-everyone-louisiana/

39 IDiversityAlaskaHudson.pdf.
Office of the Governor. (2021, May 6). Governor Dunleavy creates task force on broadband. – Mike Dunleavy. https://gov.alaska.gov/newsroom/2021/05/06/governor-dunleavy-creates-task-force-on-broadband/.

40 Kampis, J. (2021, August 26). Louisiana lawmakers push to expand broadband access. Benton Foundation.https://www.benton.org/headlines/louisiana-lawmakers-push-expand-broadband-access.

BUSINESS RESEARCH AND DEVELOPMENT AND GOVERNMENT GRANTS TO BUSINESSES

Regions seeking to promote entrepreneurship need to have funding sources available that encourage the development and testing of new ideas. Such funding should be flexible enough that the entrepreneur can experiment with their ideas and identify the the right produce, service or process that will yield the highest revenue and/or reach the largest market. Non-dilutive equity investments, such as government grants, angel investments or pebble grants in the Heartland Forward's Community Growth Program and Toolkit, share the risk of experimentation with investors and minimize costs to the entrepreneur, while allowing the entrepreneur to retain control of their enterprise and product. Thus, these types of funds are critical to supporting entrepreneurial development.

Business research and development (R&D) and government grants tend to come from a handful of government agencies such as the Department of Defense and National Science Foundation. Within those entities, only a small percentage of funding goes to small businesses. According to the National Science Foundation's Small Business Goals, only 17% of the over $6 billion dollar budget went to small business in 2018.[41]

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are specifically designed for small businesses of less than 500 employees to participate in federal R&D across government agencies to take a product from concept to market. The Small Business Administration markets SBIR and STTR as "America's Seed Fund". Yet as we look at the breakdown of SBIR and STTR funding across the nation we see that the awards are concentrated in the same ten states: California, Massachusetts, Virginia, Maryland, New York, Colorado, Texas, Ohio, Pennsylvania and New Jersey.[42] According to the Entrepreneurial Capacity Index, three of those states, Massachusetts, California and New Jersey, are also in the top ten of the R&D per million people and Massachusetts, Maryland and California sit at the top of the list for government grants to businesses. It is also worth noting that California, Texas, Virginia, Maryland, Pennsylvania and Massachusetts are some of the states that receive the bulk (over 50%) of Department of Defense spending.[43]

So what does it all mean? It means that government grants and R&D are going to many of the same states, and within those states to established businesses. It means that while Texas and Ohio are doing well to compete for SBIR and STTR funding, the rest of the heartland states are missing out.

It also means that much like young firm investment, government R&D and grants are concentrated on the coasts.

41 NSF Small Business Goals. NSF. (n.d.). https://www.nsf.gov/about/contracting/goals.jsp.

42 SBIR - STTR State Summary Map. SBA. (n.d.). https://www.sbir.gov/reports/state-summary.

43 Small Number of States Dominate Defense Spending. National Defense Magazine. (2021, February 25). https://www.nationaldefensemagazine.org/articles/2021/2/25/small-number-of-states-dominate-defense-spending.

CASE STUDY: MASSACHUSETTS

Entrepreneurial Capacity Index Rank: 6

While Massachusetts tops the list for both R&D and government grants, it also tops the list for young firm knowledge intensity activity and those with a bachelor's degree or higher. So why is Massachusetts the outlier? How can it have both promising young firm activity and still get the lion's share of R&D and government grants?

The answer? Education.[44] With elite universities like Harvard, Massachusetts Institute of Technology (MIT), Tufts and Boston College it makes sense that there is density of ideas coming out of university settings. Massachusetts has played host to the founding of Facebook from a Harvard dorm room, an early dot com pioneer in Constant Contact, not to mention an extensive list of well established companies such as Fidelity Investments, Dunkin Brands, Liberty Mutual Insurance, New Balance, Gillette and Moderna. It is safe to say that the Cambridge and Boston entrepreneurship ecosystem is a longstanding and powerful one.

It is these same universities that drive both factors. MIT ranks in the top 10 of University Tech Commercialization[45] and MIT, Harvard, University of Massachusetts, Boston University, Northeastern University and Tufts University rank #2, #10, #27, #55, #65 and #99 respectively on the list of "Top 100 Worldwide Universities Granted a Utility Patent".[46] While older, more established firms are reaping the benefits of government grants and R&D, it is also safe to say that these universities are positioning young firms to also reap those benefits.

It is unlikely that the Massachusetts model is replicable for other states. With a highly educated population, a long history of entrepreneurship and anchor institutions like Harvard and MIT, Massachusetts is an outlier or a "unicorn" much like the companies it produces.

But the state offers helpful lessons. Emphasis on education, specifically higher education, can play a significant role in a state's success in creating and maintaining young firms.

44 Davis, E. (2021, May 14). The 10 Most Educated States in America. U.S. News and World Report. https://www.usnews.com/news/best-states/slideshows/the-10-most-educated-states-in-the-us.

45 NSF Small Business Goals. NSF. (n.d.). https://www.nsf.gov/about/contracting/goals.jsp.

46 Intellectual Property Owners Association and National Academy of Inventors. (2021, June). Top 100 Worldwide Universities Granted US Utility Patents. National Academy of Inventors. https://academyofinventors.org/wp-content/uploads/2021/06/NAI-IPO-Top-100-Universities-Granted-U.S.-Utility-Patents-2020.pdf.

CASE STUDY: MICHIGAN

Entrepreneurial Capacity Index Rank: 32

Within the heartland, Michigan ranks 34th in the young firm share and sixth in business R&D dollars. Michigan also ranks in the top ten states that account for almost three-quarters of all business R&D in the United States in 2018.[47] According to the National Center for Science and Engineering Statistics, businesses performed 60% of their U.S. R&D in 10 metropolitans, with Detroit and Chicago being the only two of the cities outside of the coasts.[48] It is not surprising to learn that automobile manufacturers accounted for 74% of Michigan's total R&D spend.[49] With manufacturing being the second largest industry in Michigan, what does this mean for young firms?

Unfortunately for Michigan, it is falling into the trap of putting an enormous number of resources and funding into one, concentrated industry which does not bode well for the development of young firms or a diversified economy. This becomes more urgent when looking at the growth demand of manufacturing over the next four years as it is expected to decrease by 2.1%.[50]

This isn't to say that Michigan is failing young firms. It is well positioned at securing SBIR and STTR funding, with Detroit and Ann Arbor both emerging as locations for entrepreneurs. The University of Michigan ranks in the top 25 of university tech transfer programs[51] and the top 20 of the "Top 100 Worldwide Universities Granted a Utility Patent".[52] Michigan State University and Wayne State University also make that list. Additionally, a burgeoning life science startup and cybersecurity industry generate promise for the

potential for young firms and a diversification of the concentration of business R&D.[53]

Michigan serves as a cautionary example to the other heartland states. While the emergence of new industries for young firms is promising, the concentration of R&D into one industry gives pause. It is paramount that support continues for young firms and the entities that help them grow.

While the concentration of R&D funding and government grants on the east and west coasts is concerning, action steps are being taken to support young firms in other regions. The SBA launched the Federal and State Technology (FAST) Partnership Program to support an increase of SBIR and STTR applications, especially in rural states, and has hosted roadshows to bolster applications. The 2020-2021 cohort included the heartland states of Arkansas, Illinois, Kansas, Minnesota, Mississippi, Nebraska, Ohio, Oklahoma, and Texas.

With additional federal dollars being deployed in response to COVID-19 recovery, such as the three billion dollars in the American Rescue Act, there is an enormous opportunity for states to help support young firms.

47 Shackelford, B.; Wolfe, R. M. (2021, June 16). Businesses performed 60% of their U.S. R&D in 10 metropolitan areas in 2018. NSF.https://ncses.nsf.gov/pubs/nsf21331

48 Ibid.

49 Shackelford, B., & Wolfe, R. M. (2016, September 30). Five States Account for Half of U.S. Business R&D in 2013; New Data for Metropolitan Areas Available. NSF. https://www.nsf.gov/statistics/2016/nsf16317/?utm_source=Area%2BDevelopment%2BSite%2B%26%2BFacility%2BPlanning%2BNewsletters&utm_campaign=dfe32f1f4c-SFP_This_Week_366&utm_medium=email&utm_term=0_94850a8d43-dfe32f1f4c-302476397&goal=0_94850a8d43-dfe32f1f4c-302476397.

50 JobsEQ. Chmura. http://www.chmuraecon.com/jobseq.

51 DeVol, R., Lee, J., Ratnatunga, M. (2017, April). Concept to Commercialization: The Best Universities for Technology Transfer. Milken Institute. https://milkeninstitute.org/sites/default/files/reports-pdf/Concept2Commercialization-MR19-WEB_2.pdf

52 Intellectual Property Owners Association and National Academy of Inventors. (2021, June). Top 100 Worldwide Universities Granted US Utility Patents. National Academy of Inventors. https://academyofinventors.org/wp-content/uploads/2021/06/NAI-IPO-Top-100-Universities-Granted-U.S.-Utility-Patents-2020.pdf.

53 Burns, M. (2020, August 6). 5 vcs on the future of Michigan's startup ecosystem. TechCrunch. https://techcrunch.com/2020/08/06/7-vcs-on-the-future-of-michigans-startup-ecosystem/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAGjF3i2eYVVS2SabwMI-Z9qheR

CONCLUSIONS AND RECOMMENDED ACTIONS

While policymakers cannot change the physical landscape of their communities, there are tangible steps that they can take to improve the entrepreneurial performance of their states. Supporting higher education, increasing computer and internet access and creating a regulatory environment welcoming to venture capital are all factors that can be influenced by state lawmakers.

KEY TAKEAWAYS

- Main Street and knowledge intensive entrepreneurship are keys to long term economic success
- Access to a computer in the home improves Main Street entrepreneurship
- Having an educated population (bachelor's degree or higher) improves knowledge intensive entrepreneurship
- Young firm investments, such as angel and venture capital investments increase entrepreneurial density
- Business research and development and government grants to businesses are economically beneficial, but can potentially crowd out entrepreneurial activity

FUND ENTREPRENEURIAL SUPPORT ORGANIZATIONS

Establishing and providing resources to entrepreneurial support organizations (ESOs) (e.g., chambers of commerce, Vistage, Entrepreneurs Organization, Startup Nation, Business Network International) are essential to create the social capital required for success. Strong relationships among people who live and work together in a community facilitates trust among ecosystem participants. These connections enable collaborations, guiding more substantive and productive exchanges of ideas and information available to new firms (i.e., companies that are less than five years old). One trustbuilding resource to consider is the Builders + Backers curriculum incorporated into Heartland Forward's Community Growth Program and Toolkit, which provides a unique and impactful process of building trust between persons with ideas and community-based changemakers.

SUPPORT STATE LEVEL ENTREPRENEURIAL FUNDING

Young firm investment spending can increase entrepreneurial density, but how does that help heartland states when most investment is concentrated on the coasts? Organizations like Right to Start have suggested ways that states can support entrepreneurial development, including:

- Dedicating 5% of government procurement dollars to businesses under 5 years old.
- Passing updated versions of the State Small Business Credit Incentive.[54]

To increase the generation of new firms, states will need to strategically decide how they spend federal dollars as part of the American Rescue Act. Funding from the Economic Development Administration has already been set aside for states to reinvigorate their tourism industry and invest in economic plans, in addition to the funding from the Department of Treasury to fund the State Small Business Credit Initiative. COVID-19 was a watershed event for the United States, and states must be strategic in how they support their entrepreneurial ecosystems.

54 Ready to Start: A Roadmap for Recovery. Right to Start. https://static1.squarespace.com/static/5ed13f0ca194c46631e28de6/t/5ede89c7fff2bc46a615867f/1591642567806/Ready+to+Start.pdf.

IMPROVE ACCESS TO HIGH-SPEED INTERNET

In the era of working/schooling from home, access to the internet and a computer in the home is more important than ever. States have a variety of options at their disposal to fund broadband deployment. Minnesota utilizes a special designated fund; Michigan uses their general fund; Arkansas, Nebraska and Wisconsin all take advantage of Universal Service Fund-fees levied on telecommunications companies to offset costs for consumers.[55] Tax incentives and bonds also remain a popular option for financing the infrastructure needed for broadband.

For local policymakers there are also options for additional federal support:

- USDA ReConnect Program focuses on expanding broadband infrastructure in underserved rural areas and tribal lands.[56]
- In partnership with the FCC, Heartland Forward is working to promote the Emergency Broadband Benefit program. This program helps to provide a discount of up to $50 per month towards broadband service and a discount towards purchasing a laptop, desktop or tablet.[57]
- Federal-state partnerships like the Delta Regional Authority and Appalachian Regional Commission both support states and municipalities in improving access to broadband.

As our analysis shows, computers and internet access are complementary, so internet access is important, but ensuring every household can afford access and has one or more devices to utilize the access is equally important. The Connecting the Heartland campaign is a model that states can follow for identifying regulatory and legislative changes needed, insights around affordability, as well as programs to deliver digital literacy.

55 How states support broadband projects. The Pew Charitable Trusts. (2019, August). https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2019/07/how-states-support-broadband-project

56 Reconnect Loan and Grant Program overview. USDA. (n.d.). http://www.usda.gov/reconnect/program-overview.

57 Emergency broadband benefit. Federal Communications Commission. (2021, September 8). http://www.fcc.gov/broadbandbenefit.

INVEST IN HIGHER EDUCATION

The role of universities and a university education remains a critical component in a state's entrepreneurial ecosystem. This is true both for the emergence of new ideas and commercialization, as well as having knowledge-intensive entrepreneurs. States should consider the following:

- Reduce dependence on tuition revenue from out of state and international student populations since these students are less likely to remain in the state following graduation. This exodus can undermine a state's ability to generate a highly skilled workforce.
- Prioritize state spending on public universities to support Tech Transfer Offices (TTO) so that these resources can be broadly shared across the university, thereby increasing the potential for public benefit, in addition to a mechanism for university revenue through licensing.[58]
- Retain talent trained at state universities by increasing the number of, and reducing the sponsorship costs of, J-1 and H-1B Visas. J-1 Visas are nonimmigrant visas that allow for individuals to work or study for the purpose of "teaching, instructing or lecturing, studying, observing, conducting research, consulting, demonstrating special skills, receiving training or to receive graduate medical education or training."[59] H-1B visas are specifically for individuals that have a specialty occupation.[60] Previous administrations have limited the number of both of these visas due to the COVID-19 pandemic, but it is a detriment to entrepreneurial development to not reinstate pre-2020 limits.
- Utilize apprenticeship and cooperative education models to connect college students with in-state employers, both to provide them with experience that may help keep them focused on degree completion, as well as increase the likelihood of those students working in-state following graduation.

58 Abrams, I., Leung, G., & Stevens, A. J. (2009). How are US technology transfer offices tasked and motivated-is it all about the money. Research Management Review, 17(1), 1-34.

59 Exchange visitors. USCIS. (2020, April 22). https://www.uscis.gov/working-in-the-united-states/students-and-exchange-visitors/exchange-visitors.

60 H-1B Specialty Occupations, DOD Cooperative Research and Development Project Workers, and Fashion Models. USCIS. (2021, February 5). Retrieved October 1, 2021, from https://www.uscis.gov/working-in-the-united-states/h-1b-specialty-occupations.

TEACH ENTREPRENEURIAL THINKING IN K-12

With the extended decline in business startups, young people need to be presented with entrepreneurship as a potential career path. Entrepreneurs are needed not only to perpetuate economic growth, but entrepreneurship also has the potential to create a more just society by giving underprivileged populations the opportunity to build wealth through business ownership.[61]

61 LaRock, J. D. (2021, June) "Investing in the Next Generation of American Entrepreneurs." Testimony to the Committee on Small Business, Subcommittee on Innovation, Entrepreneurship and Workforce Development.

TAKING A MODERNIZED APPROACH

Over the past year Heartland Forward, Builders + Backers and Accenture have used a new approach to problem solving to stimulate entrepreneurial thinking and action across the heartland. The Community Growth Program and Toolkit (CGPT) leads and supports heartland communities with a transformative approach to problem solving — with an entrepreneurial mindset, creating value for communities and increasing access to capital and resources. This approach allows ideas to be tested through pebble grant funding, solving problems, creating new opportunities and the opportunity for communities to thrive.

Want to see the impact of the solutions noted above?

Go to our website to try out the interactive calculator, which allows users to see the expected effects of increased risk capital, internet access, and educational attainment.

APPENDIX I: DATA AND METHODOLOGY

Data for this report fall into two categories: young firm metrics used to generate the overall Entrepreneurial Capacity Index and various other state characteristic metrics used to capture the relationship between young firm activity and economic activity that economic developers and policymakers can influence. All data used in the analysis for the report are described in Table A.1 below. The data are generally for 2018, except for investment and government grant data, which are aggregations of data for 2017 and 2018 to smooth volatility in those metrics across individual years. All measures are either shares, indices or raw values adjusted for population size, with the exceptions being shoreline miles and mountain count.

As noted in the main text, the Entrepreneurial Capacity Index is created from an unweighted average of the Young Firm Employment Share and the Young Firm Knowledge Intensity. The decision to not weight the two variables when averaging is a conservative approach to evaluating each variable's relative importance to the state economy; our "Young Firms and Regional Economic Growth" report noted that Young Firm Knowledge Intensity has a larger impact on future job growth than Young Firm Employment Share in U.S. metropolitan areas, but the impacts are roughly equal in U.S. micropolitan areas. Additionally, job growth is only one of many ways to measure economic impact.

The Developer Index is created by applying a model selection algorithm to identify the preferred regression model characterizing the relationship between the Entrepreneurial Capacity Index and economic activity measures that economic developers and policymakers can influence. Specifically, the 20 measures denoted in white and gray in Table A.1 are considered for the index-generating model. Each measure is standardized, meaning that it is transformed so that values represent the number of standard deviations from the mean of the measure. Thus, the estimated coefficients on each variable in a regression model indicate the expected change in the Entrepreneurial Capacity Index for a one-standard-deviation increase in a given economic activity measure. We interpret a standard deviation change in an economic activity measure as a reasonable change a state could make, and therefore use the coefficients associated with our preferred regression model as weights in the Developer Index. Thus, the Developer Index is based on a data-based approach to metric selection and weighting.

The concept of identifying influenceable metrics related to entrepreneurial success is similar to the baseball metric Wins Above Replacement (WAR). WAR is based on a data-based approach to identifying the relationship between player outputs, such as singles, doubles, home runs, and wins, and then using those relationships to identify the number of wins a player has effectively produced with his outputs. Michael Porter and Scott Stern's Innovative Capacity Index involves a similar approach; that index captures nations' innovative capacity by regressing patent activity on economic characteristics and using the resultant coefficients as weights in the index.[62] However, while their approach involves the use of intuition to select index components from a broader set, our technique relies on the data themselves to identify index components.

Specifically, we use the Furnival-Wilson Leaps and Bounds algorithm, a highly utilized regression model selection algorithm since its creation in 1974, to identify the three best ordinary least squares regression models that can be created using a given number of explanatory variables.[63,64] That is, we identify the three best models that can be created using one, two, three, etc. of the 20 white- and gray-highlighted variables in Table A.1; best for a given number of explanatory variables is defined as the model that explains the largest share of the cross-state

62 Porter, M. E.; Stern, S. (2002). National Innovative Capacity. In The Global Competitiveness Report 2001-2002. Oxford University Press.

63 Furnival, G. M., & Wilson, R. W. (1974). Regressions by leaps and bounds. Technometrics, 16(4), 499–511. https://doi.org/10.1080/00401706.1974.10489231

64 Lindsey, C.; Sheather, S. (2010). Variable selection in linear regression. The Stata Journal, 10(4), 650–669. Retrieved from https://journals.sagepub.com/doi/pdf/10.1177/1536867X1101000407.

variation in the Entrepreneurial Capacity Index.[65,66] Thus, our preferred model is the one that optimizes both explanatory power and usefulness to economic developers and legislators.

Three control variables are included in every regression model the algorithm considers to control for key startup ecosystem-influencing factors that are beyond the control of economic developers and legislators in the medium term. These are the three variables highlighted in green in Table A.1: Large Establishment Employment Share, Shoreline Miles, and Mountain Count. Large Establishment Employment Share controls for the share of a state's employment utilized by establishments with over 1,000 workers.[67] A high share of employment in large establishments reflects a state dense in established institutions, which will likely be able to outcompete young firms for human capital by offering better benefits and more stable employment. While many economic development groups attempt to utilize corporate attraction methods to bring new establishments to their state, there is a limited number of very large establishments to compete for. Additionally, Bartik and Austin note that, "at least 75% of the time, typical incentives do not affect a business's decision on where to locate and create jobs."[68] The reality is that multiple regions are likely to offer a relocating or expanding company similar incentive packages, and, more importantly, the company must prioritize compatibility with a region's labor force, infrastructure, and regulatory environment. Thus, without major, time-consuming efforts to shift a state's business and economic environment to suit companies in certain industries, state economic developers and legislators can do little to influence the Large Establishment Employment Share. The number of shoreline miles or tall mountains a state has are effectively uninfluenceable.[69]

Because of missing young firm data, we are unable to include data for Alaska, Arkansas, and Mississippi when calibrating the Developer Index. Additionally, because Hawaii is a cultural, economic, and geographic outlier, we do not include its data when calibrating; if data were available for Alaska, it also would have been excluded as an outlier. In sum, Developer Index values for Alaska, Arkansas, Mississippi and Hawaii are based on a regression model calibrated without the use of data for the four states. We also use this model to estimate Entrepreneurial Capacity Index values for Alaska, Arkansas and Mississippi, which would otherwise have missing index values. In estimating Alaska's Entrepreneurial Capacity Index value, we adjust Alaska's normalized Mountain Count and Shoreline Miles values to 0. This is because Alaska is a positive outlier in both measures, but its climate prevents these natural amenities from being utilized to the degree of other states'; adjusting to 0 effectively changes Alaska's amenity levels to the state-level average for the US, which neither helps nor hurts Alaska's estimated index value.

As a robustness check, we use two other algorithms to identify the best model by BIC: an additive algorithm that continues to add explanatory variables until it reaches a point where it can no longer add variables without worsening the model's BIC value, and a subtractive algorithm that starts with a model including all explanatory variables and removes variables until BIC is optimized. The models identified using these algorithms are similar to our preferred model, and are not more than two BIC units better than the preferred model.

65 Fabozzi, F. J., Focardi, S. M., Rachev, S. T., & Arshanapalli, B. G. (2014). Model Selection Criterion: AIC and BIC. In The basics of financial econometrics: Tools, concepts, and Asset Management Applications (pp. 399–403). John Wiley & Sons, Inc.

66 We define "statistically significant" to be significant at the 10 percent level after standard errors have been adjusted for heteroskedasticity.

67 An establishment is a single location within a company or firm where business activity occurs, such as a single Best Buy store or FedEx shipping warehouse. Large companies generally have several establishments.

68 Bartik, T. J.; Austin, J. C. (2019, November 4). Most business incentives don't work. here's how to fix them. Brookings Institution. https://www.brookings.edu/blog/the-avenue/2019/11/01/most-business-incentives-dont-work-heres-how-to-fix-them/.

69 We considered other natural amenity measures, such as shoreline miles and mountain counts relative to state size, but raw miles and counts have more explanatory power, possibly due to the raw values explicitly reflecting the extent of natural amenity offerings and the fact that populations tend to aggregate around these natural amenities when they are available.

Variable	Definition	Source
Young Firm Employment Share	The share of all 2018 private employment in a state held at firms ages five years and less	Census Bureau LEHD-QWI
Young Firm Knowledge Intensity	The share of all 2018 state employment at firms ages five years and less where the worker has obtained a bachelor's degree or higher	Census Bureau LEHD-QWI
Young Firm Deals per Million People	Total count of 2017 and 2018 pre-seed, incubator, accelerator, seed, angel, early-stage venture capital, and late-stage venture capital deals to a state's businesses, per million people in 2018	PitchBook
Young Firm Capital per Million People	Total value of 2017 and 2018 pre-seed, incubator, accelerator, seed, angel, early-stage venture capital, and late-stage venture capital deals to a state's businesses, per million people in 2018	PitchBook
Government Grants to Businesses per Million People	Total count of 2017 and 2018 government grants to a state's businesses, per million people in 2018	PitchBook
Government Grant Capital to Businesses per Million People	Total value of 2017 and 2018 government grants to a state's businesses, per million people in 2018	PitchBook
Percent of Households with a Computer in the Home	2018 share of a state's households with a computer in the home; smartphones are considered computers	Census Bureau American Community Survey
Percent of Households with a Home Broadband Connection	2018 share of a state's households with a broadband internet connection	Census Bureau American Community Survey
Percentage of the Adult Population with a Bachelor's Degree or Higher	2018 share of the population ages 25 and older with a bachelor's degree or higher education	Census Bureau American Community Survey
Business Research and Development Spending per Million People	2018 research and development spending by businesses in the state, per million people	National Science Foundation
Federal Government Research and Development Spending per Million People	2018 research and development funding to state-residing institutions from the federal government, per million people	National Science Foundation
Higher Education Research and Development Spending per Million People	2018 research and development expenditures at a state's higher education institutions, per million people	National Science Foundation
Utility Patents per Million People	2018 count of patents to a state's inventors for an actual product, not simply the visual aspects of its design (design patent)	US Patent and Trademark Office
SBIR Awards per Million People	2018 count of Small Business Innovation Research awards given to a state's small businesses, per million people; these awards provide funding to small businesses to engage in research and development activity and attempt to commercialize related discoveries	National Science Foundation
InBIA Member Organizations per Million People	Count of a state's current member organizations of the International Business Innovation Association, which provides support and idea-sharing opportunities to entrepreneurship support organizations	International Business Innovation Association
Total STEM Degree Awards per Million People	Total 2018 Bachelor's, Master's, and Doctorate STEM (Science, Technology, Engineering, and Mathematics) degree awards from a state's academic institutions, per million people; the Department of Homeland Security's 2016 STEM programs definition is used to identify STEM degrees	JobsEQ and Department of Homeland Security
Location Quotient for STEM Occupations	2018 state employment location quotient for STEM (Science, Technology, Engineering, and Mathematics) occupations; the Census Bureau's definition of STEM occupations is used to identify STEM occupations; an employment location quotient is the ratio of the share of all state employees in a certain occupations/industries to the share of all national employees in the same occupations/industries	JobsEQ and Census Bureau
Corporate Income Tax Business Friendliness Index	Business friendliness of a state's corporate income tax structure as of 2018	Tax Foundation
Individual Income Tax Business Friendliness Index	Business friendliness of a state's individual income tax structure as of 2018	Tax Foundation
Sales Tax Business Friendliness Index	Business friendliness of a state's sales tax structure as of 2018	Tax Foundation
Property Tax Business Friendliness Index	Business friendliness of a state's property tax structure as of 2018	Tax Foundation
Unemployment Insurance Tax Business Friendliness Index	Business friendliness of a state's unemployment insurance tax structure as of 2018	Tax Foundation
Large Establishment Employment Share	Share of all 2018 state employment held at establishments with 1000 or more workers	Census Bureau County\ Business Patterns
Mountain Count	Number of mountains in the state among the top 200 nationally by prominence (height from base to top)	Peakbagger
Shoreline Miles	Length of a state's ocean and/or Great Lakes shoreline in miles	National Oceanic and Atmospheric Administration

Table A.1: Considered variables table

APPENDIX II: DEVELOPER INDEX REGRESSION MODEL

Young Firm Deals per Million People	0.141**
Young Firm Capital per Million People	0.236***
Percent of Households with a Computer in the Home	0.190**
Percentage of the Adult Population with a Bachelor's Degree or Higher	0.311***
Business Research and Development Spending per Million People	-0.202***
Government Grants to Businesses per Million People	-0.187**
Large Establishment Employment Share	0.098**
Mountain Count	0.552***
Shoreline Miles	0.354***
Constant	0.086**
Number of Observations	46
R^2	0.865
F(9,36)	56.74

Table A.2: Regression results determining Developer Index weights

Table A.2 provides the coefficients for our preferred model relating the Entrepreneurial Capacity Index to developer-influenceable factors. As noted in Appendix I, each coefficient reflects the impact of a standard deviation change in a given factor on the index. We interpret a standard deviation change to be a change that state legislators and/or economic developers could reasonably bring about. As the Entrepreneurial Capacity Index is an average of the z-scores for Young Firm Employment Share and Young Firm Knowledge Intensity, coefficients can be interpreted as roughly the average impact that a standard deviation change in a given factor has on each of the young firm measures; Appendix III will discuss the separate impacts of the factors on the two young firm measures.

Looking at the coefficients, the factor with the largest positive impact is the share of the population with a bachelor's degree or higher. This is not surprising because a greater density of bachelor's degrees leads to a greater density available to the state's young firms. The total number of young firm deals and the amount of capital invested in young firms both have positive and statistically significant impacts on the index. This reflects the importance of investing across a broad array of firms and providing a sufficient level of investment to those investees.

Businesses Research and Development Spending per Million People and Government Grants to Businesses per Million People have negative relationships with the index. This likely reflects the fact that an increase in activities dominated by mature firms, such as government funded research and business R&D, can crowd out young firm activity in the market for human capital.

Regarding the control variables, the Large Establishment Employment Share has a small, positive relationship with the index; this relationship will be discussed more extensively in Appendix III, as the share has very different relationships with each of the young firm measures underlying the index. Mountain Count and Shoreline Miles have positive, sizable impacts on the index, reflecting both an attractiveness of these amenities to young firms and their employees, and a high level of economic dynamism that occurs in these attractive areas to live and vacation.

APPENDIX III: YOUNG FIRM EMPLOYMENT SHARE AND YOUNG FIRM KNOWLEDGE INTENSITY MODELS

Young Firm Deals per Million People	0.121
Young Firm Capital per Million People	0.574***
Percent of Households with a Computer in the Home	0.558***
Percentage of the Adult Population with a Bachelor's Degree or Higher	-0.107
Business Research and Development Spending per Million People	-0.565***
Government Grants to Businesses per Million People	-0.319***
Large Establishment Employment Share	-0.197**
Mountain Count	1.078***
Shoreline Miles	0.788***
Constant	0.283***
Number of Observations	46
R^2	0.782
F(9,36)	28.01

Table A.3: Regression results showing impacts on Young Firms Employment Share

Young Firm Deals per Million People	0.161**
Young Firm Capital per Million People	-0.102
Percent of Households with a Computer in the Home	-0.179
Percentage of the Adult Population with a Bachelor's Degree or Higher	0.729***
Business Research and Development Spending per Million People	0.161*
Government Grants to Businesses per Million People	-0.055
Large Establishment Employment Share	0.394***
Mountain Count	0.026
Shoreline Miles	-0.080
Constant	-0.111
Number of Observations	46
R^2	0.873
F(9,36)	36.29

Table A.4: Regression results showing impacts on Young Firm Knowledge Intensity

While the model underlying the Developer Index considers factors' impacts on entrepreneurship ecosystems overall, as measured by the average of the Young Firm Employment Share and Young Firm Knowledge Intensity, it is worthwhile to understand how the factors affect the two young firm measures separately. Specifically, these results can be used by economic developers and policymakers to estimate how policy changes could affect the entrepreneurial capacity in their state.

Looking at the relationship between the young firm investment measures and each young firm employment measure, young firm investment value is more important than the number of young firm investments for the Young Firm Employment Share – the number of young firm investments is statistically insignificant. Conversely, the number of young firm investments is more important for the Young Firm Knowledge Intensity. These relationships indicate that it takes a large amount of capital to increase the share of a state's employment held by young firms, but it takes a breadth of investment across multiple firms to support knowledge-intensive activity. The former relationship is sensible – more financial support leads to more young firm employment. The latter relationship may be because knowledge-intensive young firms are more likely to need support than main street-type young firms to create a marketable product.

The Percent of Households with a Computer in the Home has a large and statistically significant positive coefficient in the Young Firm Employment Share model and a statistically insignificant coefficient in the Young Firm Knowledge Intensity model. This dichotomous relationship may reflect that computers are key to starting a business, regardless of the business' knowledge intensity. This is sensible, given that every prospective business owner will need to research the process of starting a business and to analyze competitors.

The Percent of the Adult Population with a Bachelor's Degree or Higher has the effective opposite relationship with the young firm measures – it has a large, statistically significant coefficient in the Young Firm Knowledge Intensity model and is insignificant in the Young Firm Employment Share model. The former relationship is not surprising; a high density of college-educated individuals is necessary to produce a highly educated young firm workforce, especially when the state's mature firms also demand a high density of college-educated workers. The neutral relationship between education attainment and the Young Firm Employment Share is likely because, while high-tech young firms need college-educated workers to grow, many Main Street entrepreneurs do not.

Government Grants to Businesses per Million People and Business Research and Development Spending per Million People both have sizable negative relationships with the Young Firm Employment Share. This is likely due to business R&D and government grant-related activity both generally occur at mature firms. Thus, high levels of this type of activity may draw significant labor from the market and limit the workers available to young firms. Regarding Young Firm Knowledge Intensity, government grants to businesses has an insignificant relationship, while business R&D spending has a relatively small, but still positive and significant, relationship. The latter relationship may be due to R&D activity generating spinoff firms from mature companies.

Considering the control variables, the Large Establishment Employment Share has a negative relationship with the Young Firm Employment Share, but a positive relationship with Young Firm Knowledge Intensity. Similar to business R&D spending, more large establishments tend to crowd young firms out of the market for employment, but they also create opportunities for spinoffs.

Mountain Count and Shoreline Miles both have large, positive relationships with the Young Firm Employment Share, but statistically insignificant relationships with Young Firm Knowledge Intensity. Thus, whether because of the economic dynamism that occurs in states that draw in tourists and transplants or because of the attractiveness of these locations to business founders, states with these natural amenities produce greater densities of young firm employment across all knowledge intensity levels.

Interpretation of the coefficients is similar to that of the Entrepreneurial Capacity Index model in Appendix II, except that these coefficients are the impact, in terms of standard deviations of each entrepreneurship measure, of a standard deviation increase in a factor or control variable on the Young Firm Employment Share/Young Firm Knowledge Intensity.

What are the real-world implications of these standard deviation-based coefficients? Consider the average state for Young Firm Employment Share, which has 9.9 percent of private employment held in young firms. A reasonable, standard-deviation increase in the Percentage of Household with a Computer in the Home would be expected to increase that state's Young Firm Employment Share by 8.6 percent, as the impact of the increase is a 0.558 standard-deviation increase and the standard deviation of the Young Firm Employment Share is 1.53 percentage points. That 8.6-percent increase translates to a Young Firm Employment Share of 10.76 percent.

Overall, the results of these two regression models provide economic developers and policymakers with an understanding of how to boost a lagging component of their entrepreneurship ecosystem, whether that be their state's Young Firm Employment Share or Young Firm Knowledge Intensity.

HEARTLANDFORWARD.ORG

COMPLETE LIST OF STATES AND RANKINGS

State	Entrepreneurial Capacity Index	Rank	Developer Index	Rank	Young Firm Employment Share	Rank	Young Firm Knowledge Intensity	Rank	Young Firm Deals per Million People	Rank	Young Firm Capital per Million People	Rank	Percent of Households with a Computer in the Home	Rank	Percentage of the Adult Population with a Bachelor's Degree or Higher	Rank	Business Research and Development Spending per Million People	Rank	Government Grants to Businesses per Million People	Rank
California	1.584	1	0.976	2	13.5%	1	26.8%	12	273.1	3	$ 1,400,016,559	2	94.4%	5	34.2%	15	$ 3,653,559,056	48	10.6	48
New York	1.359	2	0.906	4	11.2%	10	30.5%	3	205.4	4	$ 658,232,826	3	91.0%	28	37.2%	8	$ 896,265,105	30	6.5	33
Utah	1.183	3	0.647	5	12.3%	5	26.8%	11	112.0	7	$ 402,965,952	4	96.3%	1	34.9%	13	$ 956,943,853	32	10.4	47
New Jersey	1.153	4	0.372	9	10.4%	18	31.0%	2	45.7	26	$ 75,157,955	23	93.0%	14	40.8%	3	$ 2,273,217,100	46	3.4	20
Colorado	1.125	5	1.025	1	12.3%	6	26.4%	15	173.3	5	$ 312,589,532	6	94.5%	4	41.7%	2	$ 883,494,593	28	9.0	45
Massachusetts	1.037	6	0.955	3	9.7%	21	31.6%	1	327.9	2	$ 1,611,265,493	1	92.5%	16	44.5%	1	$ 3,952,681,984	49	26.1	50
Nevada	0.915	7	0.036	25	12.9%	2	23.5%	23	45.8	25	$ 122,745,756	15	93.6%	9	24.9%	45	$ 316,373,099	15	1.0	4
Florida	0.844	8	0.252	14	12.7%	3	23.5%	24	44.9	28	$ 57,427,572	30	93.3%	10	30.4%	26	$ 304,657,542	14	1.7	8
Washington	0.592	9	0.122	20	10.4%	16	26.8%	10	137.2	6	$ 342,905,441	5	94.7%	3	36.7%	10	$ 4,021,582,382	50	7.4	38
Virginia	0.417	10	0.574	6	9.7%	22	27.2%	8	60.5	19	$ 144,361,010	9	91.9%	21	39.3%	6	$ 672,130,984	24	4.1	24
Alaska	0.384	11	0.435	7					27.1	40	$ 15,960,664	46	95.6%	2	30.2%	28	$ 33,901,155	1	1.4	7
Hawaii	0.382	12	0.201	17	8.9%	32	28.8%	5	33.1	37	$ 18,213,588	45	91.6%	25	33.5%	18	$ 102,781,362	5	3.5	21
Oregon	0.339	13	0.099	22	10.9%	12	24.0%	21	93.5	9	$ 158,569,978	8	94.4%	5	34.0%	16	$ 2,088,188,812	43	7.6	40
Texas	0.271	14	0.104	21	11.9%	8	21.3%	36	63.3	16	$ 117,662,705	17	92.4%	18	30.3%	27	$ 729,186,573	25	3.1	19
Maryland	0.264	15	0.354	10	8.9%	34	28.1%	6	81.8	12	$ 130,084,317	13	93.2%	11	40.8%	3	$ 995,578,480	33	12.7	49
Idaho	0.258	16	-0.053	27	12.2%	7	20.5%	39	38.2	32	$ 105,951,264	19	93.8%	7	27.7%	38	$ 1,457,067,805	41	1.1	6
Connecticut	0.241	17	0.193	19	8.5%	39	28.9%	4	84.3	11	$ 118,437,288	16	92.3%	19	39.6%	5	$ 2,095,914,394	44	7.8	41
Georgia	0.226	18	0.227	15	10.3%	19	24.6%	19	56.9	20	$ 138,235,111	12	91.7%	22	31.9%	20	$ 481,678,031	22	2.4	15
Vermont	0.115	19	0.393	8	9.1%	27	26.5%	14	92.6	10	$ 66,268,667	26	91.7%	22	38.7%	7	$ 479,004,437	21	8.0	42
Illinois	0.096	20	0.224	16	8.6%	37	27.5%	7	67.2	14	$ 140,039,856	11	91.5%	26	35.1%	12	$ 1,034,606,172	35	4.2	26
Montana	-0.013	21	-0.083	29	11.5%	9	20.1%	41	39.5	30	$ 144,082,914	10	89.9%	39	31.7%	23	$ 169,442,862	8	6.6	34
Wyoming	-0.028	22	-0.086	30	12.3%	4	18.1%	46	62.3	17	$ 95,632,368	21	93.1%	13	26.9%	42	$ 67,504,764	2	6.9	36
Delaware	-0.046	23	0.271	13	9.0%	30	25.6%	17	330.9	1	$ 225,207,338	7	92.9%	15	31.3%	25	$ 2,455,615,398	47	7.2	37
Arizona	-0.051	24	0.041	24	10.8%	14	21.4%	35	47.5	23	$ 68,909,569	25	93.2%	11	29.7%	30	$ 864,933,936	27	3.1	18
Minnesota	-0.093	25	0.286	12	8.4%	41	26.7%	13	64.0	15	$ 129,224,853	14	92.5%	16	36.7%	10	$ 1,319,687,003	40	5.2	29
Rhode Island	-0.104	26	-0.060	28	8.6%	38	26.1%	16	97.4	8	$ 88,669,663	22	89.7%	40	34.4%	14	$ 664,891,730	23	8.5	44
Pennsylvania	-0.109	27	-0.278	38	8.9%	33	25.3%	18	68.2	13	$ 60,139,103	28	89.6%	42	31.8%	22	$ 945,103,716	31	6.7	35
South Carolina	-0.121	28	-0.200	33	10.5%	15	21.8%	33	26.7	42	$ 32,932,960	39	90.3%	36	28.3%	37	$ 328,473,305	17	2.2	12
Oklahoma	-0.124	29	-0.272	37	11.1%	11	20.3%	40	14.2	48	$ 20,839,679	42	90.6%	31	25.6%	43	$ 220,132,541	11	0.5	2
New Hampshire	-0.158	30	0.317	11	8.0%	45	27.2%	9	54.6	21	$ 113,985,875	18	93.8%	7	36.8%	9	$ 1,891,691,449	42	3.7	22
North Carolina	-0.219	31	-0.144	31	9.3%	25	23.6%	22	61.3	18	$ 105,060,454	20	91.0%	28	31.9%	20	$ 1,128,315,559	38	6.1	32
Michigan	-0.270	32	-0.572	43	8.9%	35	24.3%	20	35.0	34	$ 35,567,294	38	91.1%	27	29.6%	32	$ 2,242,115,904	45	5.3	30
Maine	-0.404	33	-0.255	36	9.0%	31	23.1%	26	46.3	24	$ 25,185,187	40	90.3%	36	31.5%	24	$ 212,940,188	10	9.0	46
Louisiana	-0.424	34	-0.642	45	10.3%	20	20.0%	42	23.8	45	$ 18,240,859	44	87.4%	47	24.3%	47	$ 89,056,214	3	2.1	11
North Dakota	-0.460	35	-0.050	26	10.9%	13	18.3%	45	26.3	43	$ 20,761,054	43	90.3%	36	29.7%	30	$ 410,484,727	19	0.0	1
Tennessee	-0.461	36	-0.243	35	9.2%	26	22.1%	30	45.5	27	$ 61,917,897	27	89.3%	43	27.5%	40	$ 212,702,788	9	2.1	10
Nebraska	-0.465	37	0.097	23	9.4%	24	21.8%	32	34.7	35	$ 40,047,449	36	91.7%	22	32.4%	19	$ 295,448,844	13	4.1	25
Kansas	-0.543	38	0.197	18	8.9%	36	22.4%	28	30.9	38	$ 49,787,310	32	92.1%	20	33.8%	17	$ 890,603,158	29	1.7	9
Alabama	-0.659	39	-0.684	48	9.0%	29	21.2%	37	17.8	47	$ 13,505,599	47	87.2%	48	25.5%	44	$ 457,458,881	20	2.3	13
Ohio	-0.682	40	-0.220	34	8.0%	44	23.3%	25	39.4	31	$ 59,922,058	29	90.6%	31	29.0%	35	$ 825,189,089	26	2.8	17
Missouri	-0.700	41	-0.285	39	9.1%	28	20.8%	38	48.2	22	$ 49,738,623	33	90.7%	30	29.5%	33	$ 1,170,498,031	39	3.8	23
Kentucky	-0.703	42	-0.674	47	8.4%	40	22.2%	29	27.1	41	$ 23,852,425	41	88.7%	44	24.8%	46	$ 321,143,890	16	5.1	28
South Dakota	-0.740	43	-0.177	32	9.5%	23	19.6%	44	20.4	46	$ 53,704,512	31	89.7%	40	29.2%	34	$ 227,830,453	12	2.3	14
New Mexico	-0.843	44	-0.650	46	10.4%	17	16.8%	47	33.9	36	$ 74,292,567	24	87.9%	46	27.7%	38	$ 333,583,402	18	8.1	43
Wisconsin	-0.845	45	-0.437	41	8.3%	42	21.6%	34	41.3	29	$ 43,291,038	35	90.4%	35	30.0%	29	$ 1,026,220,042	34	7.6	39
Arkansas	-0.894	46	-0.639	44					25.5	44	$ 11,805,596	48	88.6%	45	23.3%	48	$ 156,279,811	7	2.7	16
Indiana	-0.959	47	-0.528	42	7.8%	46	21.8%	31	38.1	33	$ 39,900,853	37	90.5%	33	27.1%	41	$ 1,042,457,738	36	5.7	31
Mississippi	-0.986	48	-0.762	49					5.4	49	$ 6,477,178	49	86.5%	49	23.2%	49	$ 92,414,943	4	0.7	3
Iowa	-0.996	49	-0.380	40	7.3%	47	22.8%	27	28.2	39	$ 43,560,576	34	90.5%	33	29.0%	35	$ 1,050,331,971	37	4.4	27
West Virginia	-1.178	50	-0.933	50	8.0%	43	19.8%	43	2.8	50	$ 4,070,146	50	86.2%	50	21.3%	50	$ 131,795,206	6	1.1	5
Mean					9.9%		23.9%		70		$ 157,948,091		91.4%		31.6%		$ 973,463,209		5	
Standard Deviation					1.5PP		3.5PP		73		$ 301,694,767		2.3PP		5.3PP		$ 978,433,208		4	