ALABAMA INNOVATION COMMISSION REPORT

OCTOBER 2021

"ALABAMA HAS ALWAYS HAD A RICH TRADITION OF DEVELOPING TECHNOLOGIES TO MOVE OUR STATE FORWARD. NOW MORE THAN EVER, WE MUST CAPITALIZE ON FUTURE OPPORTUNITIES BY ENGAGING OUR STATE'S TRAILBLAZERS TO DISCUSS NEW IDEAS AND POLICIES THAT SUPPORT ENTREPRENEURSHIP, ECONOMIC DEVELOPMENT AND JOBS."

ALABAMA GOVERNOR KAY IVEY

TABLE OF CONTENTS

FOREWORD

By focusing on knowledge-based skills and education, technology growth and entrepreneurship, we unlock the potential for future success across the state.

DR. CONDOLEEZZA RICE, DIRECTOR – HOOVER INSTITUTION
MEMBER OF THE ADVISORY COUNCIL

HOOVER INSTITUTION

I am proud to have served on the Alabama Innovation Commission's Advisory Council. I am an Alabama native, and the state holds a special place in my heart. During my time in Silicon Valley, I have learned the importance of an ecosystem that supports innovation. It has been a privilege to work alongside some of the brightest minds in policy and innovation from across the country to support the Alabama Innovation Commission's efforts.

Over the past 14 months and throughout the course of the commission's work, our country has faced challenges and uncertainties amid a global pandemic, social justice conversations and political divisiveness. Despite this, in many ways we have come together to develop groundbreaking solutions that will move us forward. We have also seen an increased need to cultivate an innovation ecosystem that will help serve the needs of the 21st century. Under Gov. Kay Ivey's leadership, the Alabama Innovation Commission is doing just that – developing innovative ideas and policy recommendations that will boost the trajectory of Alabama's economy.

Alabama has made great strides investing in innovation with the Alabama Incentives Modernization Act and the Alabama Matching Grant Program, both of which will foster entrepreneurship throughout the state. These significant pieces of legislation will ultimately aid in accomplishing the commission's core mission to create a more resilient, inclusive and robust economy through innovation.

As director of the Hoover Institution at Stanford University, I am proud of the unique partnership forged between the Hoover Institution and the Alabama Innovation Commission to help develop strategies that will create more economic opportunities for the state. Through a first-of-its-kind collaboration between Stanford faculty, Stanford students and student researchers from universities across Alabama (Auburn University, Alabama A&M University, Tuskegee University, the University of Alabama at Birmingham, and the University of Alabama), we were able to bring the research and policy expertise to identify strategies that maximize the state's strengths and assets.

As we've seen from the commission and Hoover fellows' research, Alabama has the assets primed for a successful innovation ecosystem. The recommendations set forth in this report will further advance the state's innovation ecosystem so that we inspire the next generation of innovators.

Policy ideas that give all Alabamians an opportunity to succeed are at the heart of the commission's recommendations. It is my hope that through this report, we see a blueprint for growth that will drive future success across the state.

Sincerely,

Dr. Condoleezza Rice
Director, Hoover Institution
Member of the Advisory Council

Dear Governor Ivey,

On behalf of the Alabama Innovation Commission, thank you for your vision to establish a group dedicated to building and growing our state's innovation ecosystem. The 16-member commission has worked diligently over the past 14 months to lay the groundwork to position Alabama as a global leader in innovation. Serving alongside our fellow commission members, as well as a six-member Advisory Council of national leaders in innovation and three esteemed university research partners, has allowed for greatly needed collaboration.

Based on thoughtful dialogue, dedicated research, engaging discussions and robust debate, you will find the commission's recommendations on policies, priorities and opportunities to ensure that Alabama will lead the nation in driving an inclusive, technology-based economy.

Through a groundbreaking partnership with the Hoover Institution at Stanford University, the commission and our partners have laid out a playbook of sorts – 25 substantial policy recommendations that the state of Alabama can use as we build our future. We hope this report will serve as a resource to shape and guide our knowledge economy as we forge a path for all Alabamians to thrive.

From the days of steel to space exploration, from automotive manufacturing to Shipt's success, Alabama has a rich history of innovation. We will continue to build on this momentum and capitalize on our success so that the next generation of entrepreneurs can leverage and elevate Alabama's existing resources.

Our work comes at a pivotal time as we face new challenges brought by a global pandemic. In many ways, we have been forced to change and innovate to shape our future. This provides another opportunity to ensure that all Alabamians are given a chance for success.

Since its launch in July 2020, the commission has worked diligently to develop policies that will support entrepreneurship and spur innovation throughout the state. The commission's interim report, released in January 2021, outlined policy recommendations that led to the passage of two key pieces of legislation to establish Alabama as a hub for technology. The Alabama Innovation Corporation was established as a public-private partnership and will lead efforts to grow Alabama's innovation economy. The Innovate Alabama Matching Program, which the Innovation Corporation will oversee, will match federal awards to Alabama-based Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) recipients. These programs will serve as building blocks for success and create a thriving innovation ecosystem.

It has been our honor to serve in this endeavor and we are grateful for your forward-thinking leadership, which will have a profound impact on the state for years to come. Our time as a commission is done, but our journey is just beginning.

Sincerely,

State Finance Director Bill Poole
Chairman

Senator Greg Reed
Vice Chairman

Dear Governor Ivey,

I am proud to have served as president of the Advisory Council to the Alabama Innovation Commission.

The economy is evolving around us, and the challenges presented by the pandemic have magnified this evolution and played a vital role in how we are planning for tomorrow. Your visionary leadership has allowed us to remain focused on aligning our state for success. Now is the time to prepare Alabama for the economy of the future. My fellow commission and Advisory Council members have done an admirable job working diligently to fulfill this charge.

We have made great strides in building a better Alabama, and believe it is important to provide opportunities for all Alabamians. To help us reach this goal, industry leaders all across the state have been working with students from diverse backgrounds to develop Alabama's next generation. By fostering growth and inclusion, our state's future is brighter than ever.

Our state has demonstrated great success in recruiting strong partners, which is driving economic growth and opportunity in many sectors of our economy. Many of them have played a critical part in shaping the growth of Alabama, and I am proud to say that we are laying the foundation for sustained growth in an evolving innovation economy.

Thanks to the Alabama Legislature's leadership and dedication to forward-thinking policies that support innovation-focused ideas, the state has already made progress investing in future economic growth. The Alabama Incentives Modernization Act will help attract new businesses, specifically technology companies, and catalyze the expansion of existing businesses. We are already seeing the commission's recommendations made into policy through the Alabama Matching Grant Program: Policies like this will help nurture a sustainable, inclusive and successful ecosystem. These recommendations will enable the success of our next phase of work through the establishment of the Alabama Innovation Corporation.

We are grateful for the support the commission has received and to those who have guided us on our path to create an entrepreneurial environment and empower younger generations. I am particularly thankful for our partnership with Dr. Condoleezza Rice and the Hoover Institution at Stanford University. Dr. Rice and her team have brought tremendous knowledge and value to this process. Their research and policy recommendations are tailored to our strengths and opportunities as a state, and their findings will better prepare us for the 21st century economy.

Thank you again for your leadership in this effort, and for continuing to cultivate an environment where we can work together to do what is best for our state and all who call Alabama home.

Sincerely,

Zeke W. Smith

Zeke Smith
Advisory Council President

EXECUTIVE SUMMARY

"These innovation policies will serve to advance our economy in meaningful ways, creating more technology-based jobs and growth opportunities in all corners of the state."

SECRETARY GREG CANFIELD, ALABAMA DEPARTMENT OF COMMERCE

2021 ACCOMPLISHMENTS

In response to the interim recommendations of the Alabama Innovation Commission, the Alabama Legislature took significant steps toward growing the state's entrepreneurial, technology and innovation ecosystems by passing the following bills during the 2021 regular session:

ALABAMA INNOVATION CORPORATION

The Alabama Innovation Corporation was established through HB 540. The corporation will be a public-private partnership that is equipped and empowered to accelerate the growth of Alabama's innovation economy.

SBIR/STTR MATCHING PROGRAM

The Alabama Legislature passed HB 609, which established a Small Business Innovation Research (SBIR) and Small Business Technology Transfer Research (STTR) state matching program. The SBIR/STTR state matching program provides a state match to eligible federal awardees. The Alabama Innovation Corporation will oversee the program.

In addition to legislation related to the commission's interim recommendations, the Alabama Legislature prioritized bills that will help spur entrepreneurial and technology growth. The Alabama Innovation Commission highlighted the need to create policies that address all aspects of what makes a successful innovation ecosystem. From education to incentives to broadband connectivity, the following bills passed during the 2021 legislative session:

RETAIN ALABAMA 2021-2022

The Alabama Legislature designated $800,000 in 2021-22 to support two programs focused on retaining Alabama's collegiate talent:

Alabama Commission on Higher Education's "Retain Alabama Pilot."

Economic Development Partnership of Alabama's "Talent Retention Initiative" that seeks to retain Alabama's college graduates.

CHANGES TO THE AIM ACT OF 2019

The Legislature renewed the Alabama Incentives Modernization Acts (AIM Act) and expanded the Growing Alabama and Jobs Act program with the following updates:

Increased Growing Alabama's tax credit cap from $10 million per year to $20 million per year, although a new $4 million cap was imposed on funding for Alabama accelerator programs.

Expanded the Jobs Act program to provide underrepresented companies with reduced requirements eligibility and enhanced benefits under the Jobs Fee and the Investment Credit.

Expanded the AIM Act's Opportunity Zone program to offer state level benefits to investments in census tracts that are eligible for New Market Tax Credits.

TEACHER EXCELLENCE AND ACCOUNTABILITY FOR MATHEMATICS AND SCIENCE (TEAMS) ACT

The TEAMS Act is designed to fill every Alabama public school with credentialed math and science teachers in grades 6-12. Under this new law, highly qualified middle and high school math and science teachers could earn up to an additional $20,000 salary annually.

CONNECT ALABAMA ACT

The Connect Alabama Act created the Alabama Digital Expansion Authority (ADEA) to oversee the expansion and availability of high-speed broadband services throughout the state, especially in rural and underserved areas. It also established the Alabama Digital Expansion Division, a subdivision of the Alabama Department of Economic and Community Affairs (ADECA), that will develop and execute a statewide connectivity plan and establish and administer a broadband accessibility grant program. The act also created the Alabama Digital Expansion Finance Corporation (ADEFC) to issue bonds and serve as a resource to ADEA and the Alabama Digital Expansion Division by helping to fund broadband deployment projects.

KEY FINDINGS AND RECOMMENDATIONS

Through a series of commission meetings and subcommittee meetings, the Alabama Innovation Commission served as a platform for meaningful discussions around policy ideas, opportunities and recommendations in addition to research, data and expertise used to create these recommendations. The commission developed the policy considerations as tools that can be deployed by policymakers to accelerate the development of Alabama's innovation economy. The commission's findings centered on the following focus areas:

The Commission will **create meaningful discussions** around policy ideas, opportunities and recommendations in addition to research, data and expertise used to create these recommendations.

ENTREPRENEURSHIP AND ACCESS TO CAPITAL

OPPORTUNITY	RECOMMENDATION

INNOVATION AND RISK CAPITAL

Support Alabama businesses in industries with technologies and proprietary products, processes or knowledge that provide high growth opportunities.

Create two Alabama Innovation Corporation-managed seed capital funds.

Create a $2 million annual grant program to provide nondilutive working capital (growth capital) targeted at high-growth companies in need of additional financing and present promising opportunities within targeted industry clusters.

The Innovation Corporation should partner with the state to apply for and implement the federal State Small Business Credit Initiative (SSBCI) by assessing small business needs, engaging partner organizations and marketing programs to private sector participants.

ENCOURAGING ENTREPRENEURSHIP AND BUSINESS DYNAMICS

Tap into Alabama-based talent for institutional knowledge pertaining to raising capital, developing a market, growing a business and planning an exit, and connect entrepreneurs to seasoned leaders for mentorship and coaching. Increase the success rate of underserved entrepreneurs and small businesses throughout Alabama by providing funding opportunities at key points in their growth stage.

Develop regionally based mentorship networks for founders and business owners to help diversify the state's economy, take advantage of innovation-based opportunities and drive broader participation among underserved and underrepresented communities.

TAX CREDITS

Encourage private-sector innovation and investment activity by implementing a state research and development tax credit to foster R&D among Alabama's key industries. Stimulate job growth, create wealth and accelerate the creation of new ventures in Alabama by incentivizing the transfer of capital from investors to entrepreneurs, particularly during early-stage growth.

Create an angel investor tax credit that would equal 25% of an equity investment made into a qualifying high-growth business that has been preapproved by the Alabama Innovation Corporation.

Create an R&D state tax credit for certain targeted, high-growth industries that are critical to Alabama's traded-sector strengths or emerging global market opportunities.

TALENT ATTRACTION AND RETENTION

OPPORTUNITY	RECOMMENDATION

TALENT AND HUMAN CAPITAL

Establish incentive programs focused on recruiting and retaining a workforce with the skills, knowledge and credentials necessary to create innovation ecosystems throughout the state.

Create a program under the Alabama Innovation Corporation focused on incentivizing workers with requisite credentials and entrepreneurs with records of success to move to Alabama, which may include targeting former residents of Alabama.

The Alabama Innovation Corporation should create a retention program targeting talent in science, technology, engineering and math (STEM) fields at Alabama universities and colleges (or expand the 2021 Retain Alabama program).

MARKETING ALABAMA'S INNOVATION ECONOMY

Direct resources in targeted ways toward highlighting Alabama's statewide and city-specific innovation assets. This will enable Alabama to be in a stronger position to recruit the talent needed to fill the jobs of the future.

The Alabama Innovation Corporation should conduct research to identify cities around the nation with innovation-related talent and sector-specific businesses whose citizens would be open to moving to Alabama, and heavily market the growing statewide opportunities for such workers and businesses, including the proposed relocation incentives and existing Alabama business-related incentives.

The Alabama Innovation Corporation should partner with Alabama regions with marketable innovation assets to develop co-funded marketing campaigns that highlight their innovation economy. For example, cities would collaborate to recruit talent to work in a region, regardless of where people choose to live and work. A co-funded marketing campaign would use research to identify municipalities in regions with resources that support and bolster innovation initiatives and efforts.

The Alabama Innovation Corporation should engage influential Alabamians to serve as Alabama ambassadors/influencers who promote Alabama's innovation economy and the state itself as an excellent place to live and work.

CREATE AN ENVIRONMENT TO ATTRACT AND RETAIN ALABAMIANS

Alabama will have more success in recruiting and retaining talent if it invests in Alabama organizations, assets and events that highlight the high quality of life of residents in Alabama, on terms that appeal to the talent needed to develop the state's innovation economy.

Alabama's outdoor recreation and related tourism assets should be better leveraged as a tool to attract and retain workforce talent.

Create a tax credit program under the Alabama Innovation Corporation that would enable Alabama taxpayers to fund activities of nonprofit programs focused on recruiting and retaining talent in Alabama.

The corporation should host a world-class summit for entrepreneurs and investors nationally, targeting groups in cities whose citizens are open to moving to Alabama, in order to expose outside entrepreneurs and investors to the state and to showcase Alabama's entrepreneurs and innovation assets.

INCREASING COMMERCIALIZATION

OPPORTUNITY | RECOMMENDATION

INNOVATION DISTRICTS

Identify Alabama's innovation clusters and focus innovation development efforts on a regional scale to ensure the state moves cohesively toward a more innovative economy.

The Alabama Innovation Corporation should engage an industry-leading firm to perform a comprehensive study on Alabama's innovative traded sectors (industry clusters that produce goods/services consumed outside of Alabama).

After the Alabama Innovation Corporation completes the targeted sector study, use the data to identify Alabama's key innovative communities and create Regional Innovation Hub designations that will fund and incentivize collaboration to build and advance innovation-focused ecosystems, ensuring opportunities for all innovation-based businesses throughout Alabama.

INVESTMENT IN R&D INNOVATION

Clearly identify university strengths and weaknesses to foster the creation of innovative businesses. Increase commercialization activities from universities through the creation of the Alabama Innovation Corporation.

The Alabama Innovation Corporation should assemble stakeholders to draft a Research and Technology Strategic Roadmap (Roadmap) to identify university research areas worthy of economic development and institutional focus.

Coalesce industry and academic partners to create an accelerator program that will educate students and faculty about bringing academic research, business ideas and technology from an idea to a licensable product.

UNIVERSITY COMMERCIALIZATION AND DEPLOYMENT

Clarify and enhance state policies that currently limit commercialization activities at universities. Partner with universities to recruit the very best scientists and professors in order to start a chain reaction of impact and results.

Enact legislation allowing university faculty to become stakeholders in startups commercializing their research findings and technology and adopt other founder-friendly policies for university spinoffs.

Create a "Commercialization Scholars" program that allows for a public-private endowment to attract and retain eminent scholars working in areas of commercial viability consistent with the strategic guidance of the Roadmap.

BRIDGING DIGITAL AND ECONOMIC DIVIDES

OPPORTUNITY	RECOMMENDATION

UNIVERSAL BROADBAND ACCESS

Accelerate deployment of affordable, high-quality digital infrastructure across underserved and unserved areas in Alabama.

The Alabama Innovation Corporation should support the state, ADECA and ADEA in their goal of expanding high-speed broadband access across the state.

GOVERNMENT TECHNOLOGY AND TRANSPARENCY

Promote data sharing to ensure that state government data is more accessible, transparent and open to innovative uses that may help transform and improve citizens' lives.

The state should work with its partners to create an Open Data Council (ODC) that brings together a team of public and private citizens focused specifically on making nonsensitive data available to state agencies and members of the public.

KNOWLEDGE ECONOMY

OPPORTUNITY	RECOMMENDATION

EMPOWERING YOUNGER GENERATIONS AND POST-SECONDARY TALENT

Alabama must develop its knowledge to prepare for the innovation and digital economy. This development begins in preschool and continues beyond postsecondary education into career upskilling and reskilling.

Establish marketing programs in partnership with local workforce development partners to inform high school and university/college guidance counselors regarding job and career trends within the innovation and digital industry and the types of credentials needed to succeed in such innovation-related careers.

Create and/or support pilot programs designed to increase science, technology, engineering and math (STEM) as well as entrepreneurship offerings in Alabama's K-12 schools and measure outcomes to build into a broader program.

Create an assistance program tailored to local/regional innovation and digital industry needs to fund nonprofits providing upskilling/reskilling programming to adults.

"THE COMMISSION CONTINUES TO DRIVE IMPORTANT POLICY DISCUSSIONS THAT WILL BUILD THE FUTURE OF OUR STATE. FORWARD-THINKING POLICIES LIKE THE ALABAMA INNOVATION CORPORATION AND SBIR MATCHING PROGRAMS ELEVATE ALABAMA AND ATTRACT AND RETAIN TOP TALENT AND INNOVATIVE COMPANIES TO STAY AND GROW HERE."

ZEKE SMITH, EXECUTIVE VICE PRESIDENT OF EXTERNAL AFFAIRS, ALABAMA POWER
ALABAMA INNOVATION COMMISSION ADVISORY COUNCIL PRESIDENT

"I'm inspired by the potential for future growth in our state's innovation community and look forward to continued momentum and growth in this sector."

FINANCE DIRECTOR BILL POOLE
CHAIRMAN, ALABAMA INNOVATION COMMISSION

FIRST 90 DAYS RECOMMENDATIONS

In the final months of the Alabama Innovation Commission's (AIC) work, it identified certain recommendations as priorities for the first 90 days of the existence of the Alabama Innovation Corporation. Each of these recommendations is described in greater detail in this report in Section II, Executive Summary, and in Section V, Policy Outcomes and Recommendations. What follows are actionable recommendations that would enable the corporation to make progress on addressing these priorities within the first 90 days of its establishment.

TALENT ATTRACTION AND RETENTION

The AIC identified attracting and retaining talent as a priority for the corporation in its first 90 days. The main methods for doing this that the AIC identified include:

1. DEVELOPING A COORDINATED UNIVERSITY AND COLLEGE GRADUATE RETENTION PROGRAM

30 DAYS: The corporation, or an Economic Development and Innovation Entity (EDIE) engaged as a contractor, should identify the universities and colleges in Alabama that are graduating the most students with degrees in fields that could enhance Alabama's innovation economy and develop an understanding of the methods used by each school to retain such students, together with data from each school regarding the historic retention of such students.

60 DAYS: The corporation, or an EDIE engaged as a contractor, should draft memoranda of understanding for use with employers and universities and colleges for participation in a formalized graduate retention program for students in specified fields at identified universities and colleges.

90 DAYS: The corporation should ensure that an EDIE has been identified and engaged to develop and manage the graduate retention program.

2. ESTABLISHING A NEW PROGRAM FOCUSED ON TALENT RETENTION, BEYOND UNIVERSITIES AND COLLEGES, IN FIELDS THAT ADVANCE ALABAMA'S INNOVATION ECONOMY

30 DAYS: The corporation, or an EDIE engaged as a contractor, should determine the credentials for participants in the program and identify nonfinancial incentives to market to such persons for the retention program.

60 DAYS: The corporation, or an EDIE engaged as a contractor, should develop a legislative strategy to establish incentives to be used by program.

90 DAYS: The corporation should ensure that an EDIE has been identified and engaged to develop and manage the talent retention program.

3. LAUNCHING A STRATEGICALLY COORDINATED NATIONAL MARKETING CAMPAIGN THAT PROMOTES ALABAMA'S INNOVATION ECONOMY

30 DAYS: The corporation, or an EDIE engaged as a contractor, should engage a consulting firm to prepare a report identifying the five U.S. cities that are most likely to have talent and businesses open to relocating to Alabama.

60 DAYS: The corporation, or an EDIE engaged as a contractor, should develop and maintain a list of Alabama projects, sites and incentives.

90 DAYS: The corporation and/or EDIE should engage a marketing firm to develop a marketing strategy and campaign targeting such cities.

ENTREPRENEURSHIP AND ACCESS TO CAPITAL

Additionally, the AIC positioned the increase of entrepreneurship and access to capital in Alabama as priorities for the corporation in its first 90 days. The main methods that the AIC identified include:

1. LAUNCHING ENTREPRENEUR MENTORSHIP NETWORKS

30 DAYS: The corporation, or an EDIE engaged as a contractor, should identify regions in Alabama with established and/or growing innovation economies that would be strong candidates for the entrepreneur mentorship networks.

60 DAYS: The corporation, or an EDIE engaged as a contractor, should identify existing entrepreneur mentorship networks in such regions and communicate with the leaders of such networks regarding a strategy for coordination.

90 DAYS: The corporation, or an EDIE engaged as a contractor, should identify core areas of mentorship expertise and experience and enter into memoranda of understanding with mentors in each respective region within the core areas.

2. CREATING SEED FUNDS FOR INVESTMENT IN ALABAMA STARTUPS THROUGH THE CORPORATION

30 DAYS: The corporation, or an EDIE engaged as a contractor, should engage legal counsel to establish two revolving, "evergreen" seed capital funds and begin setting up such funds.

60 DAYS: The corporation, or an EDIE engaged as a contractor, should engage a fund manager to help direct the investment of the seed fund capital.

90 DAYS: The corporation, or an EDIE engaged as a contractor, should establish the thesis of both funds and strategically identify the sectors that will be invested in through each fund.

3. ESTABLISHING NONDILUTIVE GRANT FUNDING PROGRAMS FOR STARTUPS IN ALABAMA

The Alabama Legislature established a Small Business Innovation and Research (SBIR) and a Small Business Technology Transfer (STTR) matching fund in response to interim recommendations from the AIC. This SBIR/STTR matching program should be implemented by taking the following steps:

30 DAYS: The corporation, or an EDIE engaged as a contractor, should issue a public request for information seeking industry and academic input regarding guidelines for the SBIR/STTR matching program.

60 DAYS: The corporation, or an EDIE engaged as a contractor, should draft and publish such industry- and academy-informed guidelines.

90 DAYS: The corporation, or an EDIE engaged as a contractor, should award its first matching grant to an eligible application.

30 DAYS: Additionally, the corporation should identify all nondilutive grant funding programs for startups that already exist in Alabama, discern the geographic and industry focus of such programs, and promote such programs on its website.

60 DAYS: The corporation should establish a statewide grant program to provide competitively awarded nondilutive funding to Alabama startups or small businesses that will advance Alabama's innovation economy. It should do this by developing a notice of funding opportunity and related application materials for the grant program.

90 DAYS: The corporation should identify and begin seeking federal funding opportunities for the grant program.

4. SECURING AND DEPLOYING SMALL BUSINESS CREDIT INITIATIVE (SSBCI) FUNDING

90 DAYS: To the extent that the SSBCI funding has not been applied for, the corporation should coordinate with the state of Alabama to apply for and implement the SSBCI program. It should do this by taking the following step:

The corporation should coordinate with the governor and the Alabama Department of Economic Development and Community Affairs to identify the appropriate state applicant for the SSBCI funding and the appropriate entities that should administer the SSBCI loan and investment programs.

RESEARCH AND DEVELOPMENT AND CLUSTER RESEARCH

The AIC also noted that research and development and cluster research should be priorities of the corporation in its first 90 days. The main methods that the AIC identified for advancing these priorities include:

1. **CONDUCTING COMPREHENSIVE RESEARCH ON ALABAMA'S INNOVATIVE TRADED SECTORS**
   90 DAYS: The corporation, or an EDIE engaged as a contractor, should identify and engage an industry-leading firm to perform a comprehensive study on Alabama's innovative traded sectors.

2. **DRAFTING A RESEARCH AND TECHNOLOGY STRATEGIC ROADMAP**
   30 DAYS: The corporation, or an EDIE engaged as a contractor, should identify and recruit officials from state government, the private sector and economic development organizations to form a working committee that would identify university-specific strengths and weaknesses when it comes to commercialization.

   90 DAYS: The corporation, or an EDIE engaged as a contractor, should convene the first meeting of the working committee.

3. **DEVELOPING A UNIVERSITY COMMERCIALIZATION ACCELERATOR PROGRAM**
   30 DAYS: The corporation, or an EDIE engaged as a contractor, should identify and recruit the appropriate public and private partners who should comprise a working group focused on establishing a university commercialization accelerator program.

   90 DAYS: The corporation, or an EDIE engaged as a contractor, should convene the first meeting of the working committee.

EXPANDING BROADBAND

Finally, the AIC established the need to provide funding to support broadband expansion to facilitate the growth of Alabama's innovation economy as a priority for the corporation in its first 90 days. The main methods that the AIC identified for pursuing this priority include:

1. **PURSUING FEDERAL GRANT FUNDING FOR BROADBAND EXPANSION**
   90 DAYS: The corporation, or an EDIE engaged as a contractor, should coordinate with the Alabama Digital Expansion Authority (ADEA) to identify federal grant opportunities, additional co-applicants and potential subrecipients to apply for such federal grant opportunities to fund ADEA broadband expansion focused on growing Alabama's innovation economy.

THE ALABAMA INNOVATION COMMISSION'S JOURNEY

"Through this commission, we hope to tap into the potential for the state to become a hub for startups and technology-based companies."

SENATOR GREG REED
VICE CHAIRMAN, ALABAMA INNOVATION COMMISSION

The Alabama Innovation Commission, also known as Innovate Alabama, is Alabama's first statewide commission focused on entrepreneurship, innovation and technology. Established by Gov. Kay Ivey on July 16, 2020, through Executive Order 720, the commission brought together private sector experts and state policymakers to develop forward-thinking policies for Alabama to remain competitive in a 21st century world.

Innovate Alabama's goal is simple: Elevate Alabama by creating a more resilient, inclusive and robust economy through innovation.

At its core, the commission was responsible for accomplishing the following:

> *Monitoring, reviewing and researching the effectiveness of existing policies that will foster entrepreneurship, innovation and economic development. This includes policies for supporting early-stage companies and financial capital and enhancing the effectiveness of technology accelerators.*
>
> *Producing a report detailing the commission's findings and recommendations on the state of innovation and entrepreneurship in Alabama to be presented to the Office of the Governor and the Legislature.*

COMMISSION

Appointed by Gov. Ivey, the Alabama Innovation Commission is comprised of Alabama's brightest, most innovative leaders, entrepreneurs and policymakers who are leading our state to the forefront of innovation.

Chairman: **Bill Poole**
Director, Alabama Department of Finance

Vice Chairman: **Greg Reed**
Senate President Pro Tem, Alabama Senate

Scott Adams
Executive Vice President and Chief Digital & Innovation Officer, Protective Life Corporation

Greg Barker
President, Economic Development Partnership of Alabama

Lindsay Rane Carter
Associate General Counsel, Great Southern Wood Preserving

Rick Clementz
Entrepreneur

Miller Girvin
Executive Vice President of Innovation and Entrepreneurship, Economic Development Partnership of Alabama

Jeremy Gray
Representative, Alabama House of Representatives

Abe Harper
CEO, Harper Technologies

Linda Coleman-Madison
Senator, Alabama Senate

Shegun Otulana
President, Harmony Venture Labs

Peggy Sammon
CEO, GeneCapture Inc.

Malika Sanders-Fortier
Senator, Alabama Senate

Arndt Siepmann
Deputy Director of Economic Development, City of Auburn

Charisse Stokes
Executive Director, TechMGM

Neill Wright
President, Bronze Valley

UNIVERSITY RESEARCH PARTNERS

Russell Mumper
Vice President for Research and Economic Development, University of Alabama

Delmonize Smith
Dean of the College of Business and Public Affairs, Alabama A&M University

James Weyhenmeyer
Vice President for Research and Economic Development, Auburn University

ADVISORY COUNCIL

The Advisory Council is a diverse group of talented leaders who are strong advocates for Alabama on a national level and who want to see Alabama succeed. Their role was to provide support and forward-thinking ideas to the commission, its chairs and the governor's office to help advance Alabama's technology, innovation and entrepreneurial ecosystem.

President: **Zeke Smith**
Executive Vice President, Alabama Power

Greg Canfield
Secretary of Commerce, Alabama Department of Commerce

Chris Moody
Partner, Foundry Group

Condoleezza Rice
Director, Hoover Institution

Bill Smith
Founder, Smith Ventures

Jared Weinstein
General Partner, Thrive Capital

SUBCOMMITTEES

As part of the commission structure, members of the commission and Advisory Council were divided into two subcommittees: Education & Corporate and Finance & Infrastructure. These subcommittees were responsible for researching ideas and policy recommendations within their workgroups that were discussed among the commission and Advisory Council and considered in the commission's recommendations.

Dir. Bill Poole
Chair

EDUCATION & CORPORATE

Chris Moody *Advisor*
Dr. Condoleezza Rice *Advisor*
Zeke Smith *Advisor*
Scott Adams
Lindsay Rane Carter
Rick Clementz
Peggy Sammon
Sen. Malika Sanders-Fortier
Arndt Siepmann
Charisse Stokes

Sen. Greg Reed
Vice Chair

FINANCE & INFRASTRUCTURE

Greg Canfield *Advisor*
Bill Smith *Advisor*
Jared Weinstein *Advisor*
Greg Barker
Miller Girvin
Rep. Jeremy Gray
Abe Harper
Shegun Otulana
Neill Wright

EDUCATION AND CORPORATE SUBCOMMITTEE

How do we create a thriving and sustainable ecosystem? The Education and Corporate subcommittee focused its efforts on identifying opportunities for more technology-focused learning, skills training and corporate partnerships that enable startups to succeed.

FOCUS AREAS:

- Integration of University Accelerators.
- Role of State Funding in Support of Accelerators and Greater Entrepreneurial Ecosystem.
- Recruitment of Tech Companies.
- Mentorship Networks.
- Innovation Districts.
- Talent Development, Attraction and Retention.
- Branding of Alabama's Innovation and Entrepreneurial Ecosystem.
- Alabama Fellows Program.
- Statewide Innovation Structure.
- Encourage Commercialization Activity.

FINANCE AND INFRASTRUCTURE SUBCOMMITTEE

How do we encourage more startup growth in Alabama? The Finance and Infrastructure subcommittee centered on answering this question by identifying the resources, infrastructure, capital and support needed for entrepreneurs and technology-based companies to thrive.

FOCUS AREAS:

- State Benchmarking and Government Efficiencies.
- Venture Fund Regulation.
- Broadband Expansion.
- Access to Capital for Early-Stage Companies.
- Increased State-Level CDFI Funding.
- Rural Growth and Equitable Initiatives.
- Evergreen Innovation Funds.
- SBIR/STTR Matching Funds.
- Definition of Accelerators.
- Connecting Established Corporations with Startups.
- Angel Investor Tax Credit.
- R&D Tax Credit.

THE PROCESS AND TIMELINE

Through a series of nine commission meetings and 18 subcommittee meetings, the Alabama Innovation Commission served as a platform for meaningful discussions about the challenges entrepreneurs and startups face, as well as the opportunities and policies that will ensure Alabama is where the next generation of innovators want to call home. The commission explored more than 50 ideas generated by commission members and the general public that helped inform this report's recommendations.

HOOVER INSTITUTION

JULY 16, 2020
Innovate Alabama established through executive order.

SEPTEMBER 2020
Subcommittees formed.

NOVEMBER 2020
Hoover Institution partnership established.

AUGUST 2020
First commission meeting.

OCTOBER 2020
First in-person meeting.

JANUARY 2021
Interim policy recommendations released.

BUILDING CONNECTION-MILESTONES AND ENGAGEMENT

Some of Alabama's greatest success stories are rooted in innovation. For decades, Alabama has attracted some of the biggest names in science, technology, auto manufacturing and aerospace. Innovation is not new to the state; however, Innovate Alabama has amplified the need to better position Alabama as a leader in innovation and share the stories of entrepreneurial wins, innovative partnerships and the state's existing assets. Through intentional engagement efforts, Innovate Alabama has helped shift the perception of the state, built connections among stakeholders and fostered collaboration among public and private entities.

FEBRUARY 2021
Incentives reauthorized and modernized by the state legislature and Gov. Ivey.

MAY 2021
Innovation Corporation bill passed.

JULY 2021
Innovation Corporation and SBIR/STTR Matching Grant Program signed into law.

MAY 2021
Connect Alabama Act passed.

MAY 2021
SBIR/STTR Matching Grant Program passed.

OCTOBER 2021
Final report delivered to Governor Kay Ivey.

"The focus on innovation to deliver sustainable growth will benefit our entire state through new solutions and more job opportunities."

DR. CONDOLEEZZA RICE, DIRECTOR – HOOVER INSTITUTION
MEMBER OF THE ADVISORY COUNCIL

WHY CREATING A 21ST CENTURY ECONOMY IS CRITICAL FOR ALABAMA'S ECONOMIC FUTURE

Throughout its history, Alabama has seen tremendous economic development success in traditional industries like manufacturing, agriculture and aerospace. However, smart policies that expand how the state approaches economic development can be gamechangers for the state – like in 1993 when Mercedes-Benz announced that Alabama would become the site for Mercedes' first passenger vehicle assembly plant outside of Germany.

Today's global marketplace is constantly evolving, powered by a highly skilled workforce producing disruptive technologies and cutting-edge research.

While Alabama is often known for winning championships in football, for the state to win in today's economy, it must expand how it approaches economic development to better align with the demands of a 21st century economy. Alabama is home to world-class research institutions and existing industries like health care, chemicals, information technology, manufacturing, automotive and aerospace. By encouraging state policymakers and leaders to embrace public policy initiatives that advance innovation, Alabama can build on its existing strengths and further position itself as a national and global leader in these sectors.

Recent successes of Alabama-based businesses like Shipt, Landing and Therapy Brands have put Alabama's entrepreneurial ecosystem on the map and have shown how startups can also lead to significant job growth and economic prosperity.

In 2019, the Alabama Legislature passed the Alabama Incentives Modernization Act, which served as a catalyst for economic momentum in the technology space. This set the foundation for making Alabama even more appealing to entrepreneurs and emerging businesses that want to grow here. But there is much work to be done in creating a vibrant innovation ecosystem critical to Alabama's future economic success.

THE COMPONENTS OF AN INNOVATION ECONOMY

For Alabama to remain competitive in the 21st century, it must prioritize key components that serve as a foundation for the state's innovation economy. These five elements play an important role in how the state fosters growth and opportunities for entrepreneurs and innovators. Each of these components work together to provide a favorable environment for starting or growing a business. Additionally, to support future jobs, Alabama should focus on efforts to provide education and training initiatives that cultivate a pipeline of skilled workers to meet these demands.

ENTREPRENEURSHIP AND ACCESS TO CAPITAL

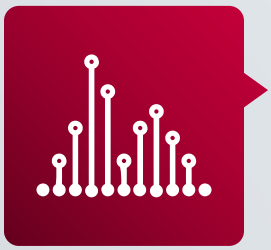
Identifying opportunities to fuel entrepreneurial development at every stage of growth

TALENT ATTRACTION AND RETENTION

Recruiting and retaining a workforce with the skills, knowledge and credentials necessary to create innovation ecosystems throughout the state

INCREASING COMMERCIALIZATION

Fostering an environment that increases commercialization activities, R&D efforts and supports the state's economy as a whole



BRIDGING DIGITAL AND ECONOMIC DIVIDES

Leveraging initiatives and resources that support growth throughout Alabama

KNOWLEDGE ECONOMY

Developing a skilled workforce ready to meet the demands of the future

THE ROLE OF ENTREPRENEURSHIP AND INNOVATION

From education to energy to bioscience, innovation is at the center of our everyday lives.

Like other states, Alabama faces many challenges that affect the quality of life of its citizens. With a global pandemic, political divisiveness and social justice discussions, the need to further innovation and increase economic opportunities has never been greater.

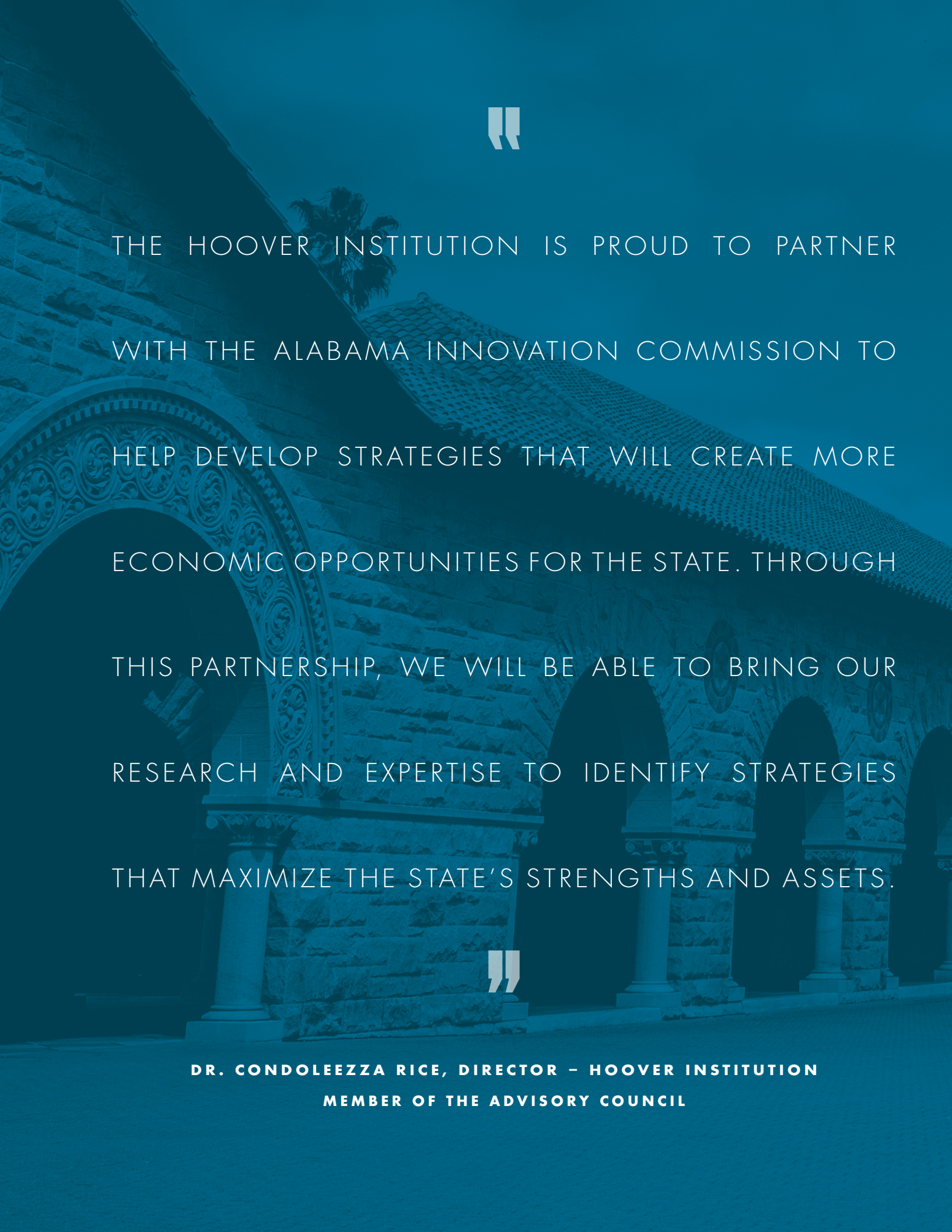
The Alabama Innovation Commission's efforts have centered on developing policy recommendations that will inspire and encourage new approaches to technology-based economic growth that give all Alabamians an opportunity to succeed. To achieve this, the state should prioritize investing in the people, programs and policies that foster an environment where entrepreneurs can take innovative ideas and transform them into successful businesses. It also means developing initiatives that close the digital and economic divides so that those in rural or vulnerable areas of the state have the same opportunity to succeed as those in urban areas.

Investing in Alabama's technology ecosystem and infrastructure while developing innovation-based policies creates more access to opportunity so that Alabama businesses in all corners of the state can thrive.

Based on the research the Hoover Institution at Stanford University conducted through its partnership with the Alabama Innovation Commission, Alabama has what it takes to be successful. Elevating Alabama's entrepreneurial ecosystem and prioritizing innovation across all sectors will help unlock its potential.

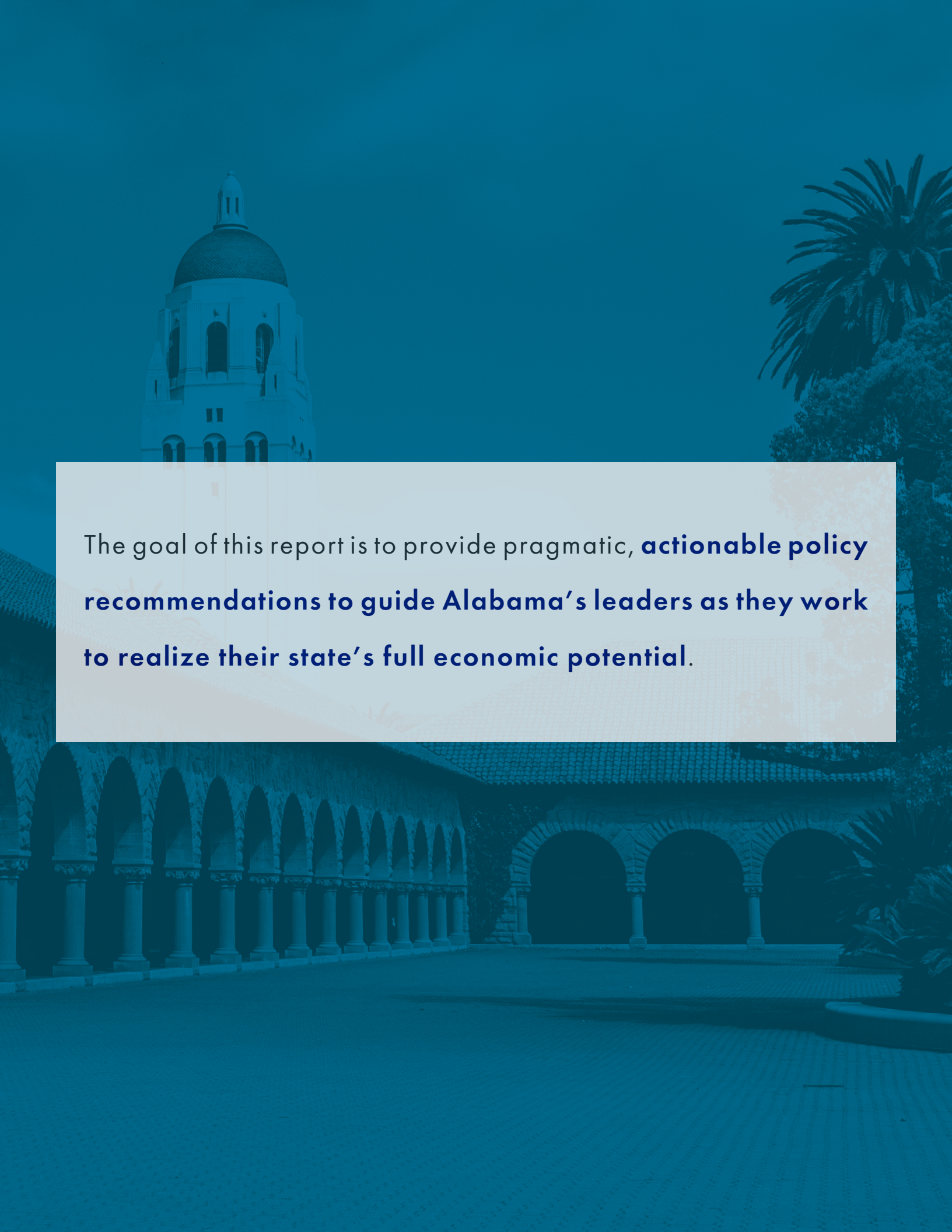
Giving entrepreneurs and startups the tools and resources to succeed, along with collaborating with the state's research institutions and private sector partners, Alabama can create more opportunities for high-wage jobs with significant growth potential. Building a vibrant innovation ecosystem will also inspire future generations of entrepreneurs and innovators who want to stay in Alabama.

While Alabama's economy is strong, especially coming out of the COVID-19 pandemic, recognizing the role that entrepreneurship and innovation play as a catalyst for producing high-quality jobs will further accelerate Alabama's economic growth and elevate the state as a whole.



"THE HOOVER INSTITUTION IS PROUD TO PARTNER WITH THE ALABAMA INNOVATION COMMISSION TO HELP DEVELOP STRATEGIES THAT WILL CREATE MORE ECONOMIC OPPORTUNITIES FOR THE STATE. THROUGH THIS PARTNERSHIP, WE WILL BE ABLE TO BRING OUR RESEARCH AND EXPERTISE TO IDENTIFY STRATEGIES THAT MAXIMIZE THE STATE'S STRENGTHS AND ASSETS."

DR. CONDOLEEZZA RICE, DIRECTOR – HOOVER INSTITUTION
MEMBER OF THE ADVISORY COUNCIL



The goal of this report is to provide pragmatic, **actionable policy recommendations to guide Alabama's leaders as they work to realize their state's full economic potential**.

THE HOOVER INSTITUTION AT STANFORD UNIVERSITY EXECUTIVE SUMMARY

BACKGROUND

The Alabama Innovation Commission, established by Gov. Ivey in July 2020, is the state's first statewide commission focused on entrepreneurship, technology and innovation. Since its inception, the AIC has partnered with the Hoover Institution, a public policy think tank affiliated with Stanford University in Palo Alto, California, to bring the institution's leading scholars on topics of tech innovation, education and economic development to work on the advancement of the state's innovation ecosystem.

Over the past several months, Hoover fellows and students from Stanford and universities in Alabama have been leveraging in-state practitioners, unique data sources and field research to develop a preliminary set of findings and policy recommendations for Hoover fellows to use in their own final recommendations to the commission. As part of this process, Hoover fellows established dedicated policy labs to study discrete issue areas, drawing on student researchers from Stanford University, Auburn University, Alabama A&M University, Tuskegee University and the University of Alabama at Birmingham. With the assistance of students from the University of Alabama, Hoover fellows spent the summer integrating the policy labs' recommendations into the final Hoover report to the commission, which was presented to the commission in August.

POLICY LABS OVERVIEW

FOCUS AREAS

The policy labs focused on the following three research areas, with each staffed by a team of students from all the participating universities. In addition to conducting research independently, the policy lab teams met weekly under the supervision of the Hoover fellows with participation from a variety of guests (see below).

POLICY LAB 1:

Business Incentives and Prosperity (Faculty Director – Josh Rauh). This project evaluated Alabama's existing incentives for attracting businesses and made recommendations based on the successes and failures of recent incentive programs around the country. The project weighed the potential for traditional recruitment tactics such as tax incentives and subsidized industrial sites against alternatives such as infrastructure development, skills development programs and customized business services. For instance, while some recruitment initiatives indeed bring substantial local economic benefits, recent research has called into question many commonly held beliefs about state incentives. Such incentives often may have costs that exceed benefits, and there is even some question as to whether they increase local economic activity. Exploring these and other issues, the policy lab generated a variety of original ideas and approaches to attracting businesses, which will inform Professor Rauh's final recommendations to the commission.

POLICY LAB 2:

Fostering the Role of Universities (Faculty Directors – Rick Banks and Josh Rauh). This policy lab sought to make specific, concrete recommendations for state government policy to build on the strength of Alabama's universities in growing Alabama's technology and innovation economy. It is widely recognized that universities are key to the development of innovative economic activity at the state and local level, and as a result, the project leveraged the first-hand experience of a variety of senior faculty and administrators from universities in Alabama. Studying some of the most productive local innovation economies in the U.S. (in locations such as Silicon Valley, North Carolina's Research Triangle and the Boston area), the policy lab explored success stories of the impact of universities in smaller, more nascent markets and developed a set of recommendations specific to Alabama.

POLICY LAB 3:

The Outdoor Recreation Lab (Faculty Director – Steve Haber). This policy lab was premised on the idea that persuading someone to move thousands of miles to a new home, a new community and a new state is not an event; it is a process. What's more, when it comes to people who have invested in human capital that is specific to high technology industries, tourism and outdoor recreation can be a large draw. The purpose of the Outdoor Recreation Lab was to assess the hypothesis that the Cumberland Plateau is an underdeveloped resource for Alabama. Specifically, the lab assessed the plateau's natural endowments compared to its physical and business infrastructure. An important component of this assessment was the extent of public lands, the interpretation of "public trust" in Alabama law regarding access to navigable rivers and streams, and the number and identity of agencies that would have to be coordinated to provide access to those lands and waterways.

THE ROLE OF BROADBAND IN EDUCATION OUTCOMES

In parallel to the policy labs, Macke Raymond conducted her own research into the deployment of broadband-based education in Alabama. (Students from the various Alabama universities also participated as research members on the team). This project explored the current and future potential for deploying broadband-based education throughout the state to augment the capacities of K-12 educators in delivering high-quality instruction, especially in the priority areas of science, technology, engineering and math (STEM).

GUESTS

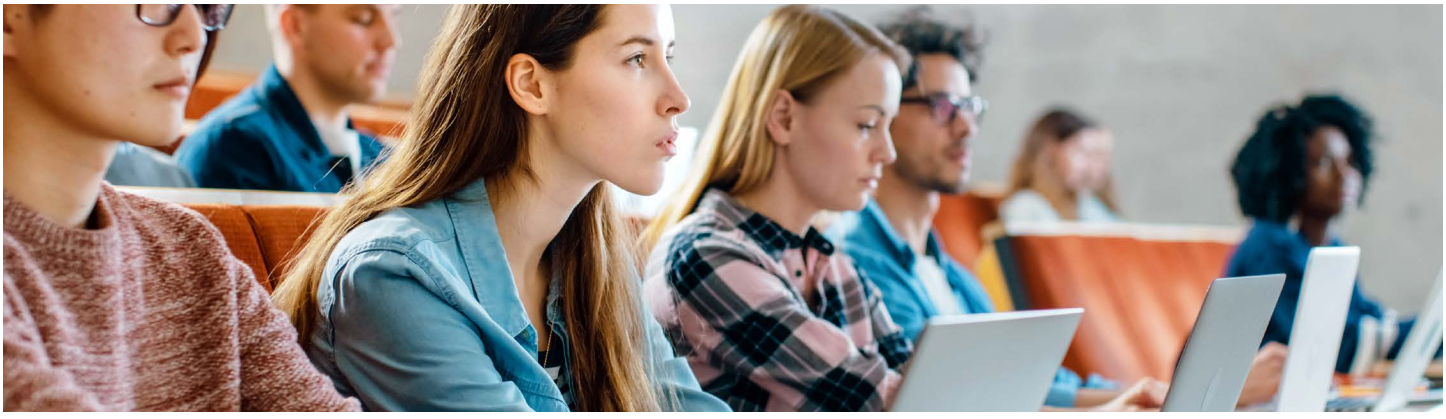
The policy labs featured over 20 guests from various state, business and nonprofit entities across Alabama, including:

Dir. Bill Poole	Chairman, Alabama Innovation Commission
Alabama Sen. Greg Reed	Vice Chairman, Alabama Innovation Commission
Greg Canfield	Secretary of Commerce of Alabama
Dr. Russell Mumper	Vice President of Research & Economic Development, University of Alabama
Chris Blankenship	Commissioner, Department of Conservation and Natural Resources
Greg Barker	President, Economic Development Partnership of Alabama
Dr. Del Smith	Co-Founder and CEO of Acclinate
Brian Rushing	Director of Economic Development Initiatives, University of Alabama
Caleb Goodwyn	Community and Finance Development Representative at Powersouth Energy Cooperative
Saksham Narang	Venture Adviser With the Bill L. Harbert Institute for Innovation and Entrepreneurship at UAB
Pam Swanner	Director, Alabama Black Belt Adventures
Arndt Siepmann	Deputy Director of Economic Development, City of Auburn
Dr. Jim Weyhenmeyer	VP of Research & Economic Development, Auburn University
Dr. Walter Hill	Professor and Dean of the College of Agriculture, Environment and Nutrition Sciences at Tuskegee University
Lindsay Rane Carter	Associate General Counsel, Great Southern Wood Preserving
Kevin Savoy	Vice President of Logistics, Great Southern Wood Preserving
Peggy Sammon	CEO, GeneCapture
Rick Clementz	Entrepreneur
Charisse Stokes	Executive Director, TechMGM

SUMMARY

The policy labs were a first-of-its-kind collaboration between Stanford faculty, Stanford students and students from different universities. They have provided an excellent model for Hoover projects moving forward, including future potential collaborations with Alabama and the Alabama Innovation Commission.

Equipped with preliminary findings and recommendations from these policy labs, the Hoover fellows will continue to explore new and unique policy solutions to advance the commission's agenda. In the coming months, they will solicit feedback from commission members on these interim findings and recommendations, and will begin to compose Hoover's final report, which will be delivered to the commission as part of its own report-drafting process.



The policy labs, along with the broadband project, presented a unique opportunity for 43 students from both Stanford and four different universities in Alabama to jointly explore policy solutions. Students were selected for their exceptionalism by the administrators at their respective universities.

Jouvens Blanchard	Tuskegee University
Andrea Lockett	Tuskegee University
Arkaysia Hampton	Tuskegee University
Kiara Coleman	Tuskegee University
Jordan Windham	Auburn University
Allison Foster	Auburn University
Dhivan Patel	Auburn University
Andrew Miller	Auburn University
Madeline Ellison	Auburn University
Trey Sims	Auburn University
Regan Moss	Auburn University
Emily Schramek	Auburn University
Amanda Summers	UAB
Annisha Borah	UAB
Zahrah Abdulrauf	UAB
Andrew Bartholomew	UAB
Lauren White	UAB
Mathew Banker	UAB
Karthik Reddy	UAB
Hannah Rodgers	UAB
Naya Onianwa	Alabama A&M
Jamaal Jude	Alabama A&M
Justiss Martin	Alabama A&M
DeAndre Grandison	Alabama A&M
Mitrick Johnson	Alabama A&M
Jamaya Black	Alabama A&M
Cameron Brown	Alabama A&M
Matt Devine	Stanford University
Mackenzie Findlay	Stanford University
Will Golinkin	Stanford University
Jonathan Hess	Stanford University
Jonathan Hurowitz	Stanford University
Rebecca Jacobson	Stanford University
Sarah Johnson	Stanford University
Shilpa Kannan	Stanford University
Eric Kotin	Stanford University
Eric Mattson	Stanford University
Yvonne Ploder	Stanford University
Drake Pooley	Stanford University
Tim Rosenberger	Stanford University
Jake Sparkman	Stanford University
Patrick Toth	Stanford University
Chris Warley	Stanford University

HOOVER FELLOWS AND STANFORD EXPERTS

1. THE ROLE OF ALABAMA UNIVERSITIES IN FOSTERING INNOVATION AND GROWTH

Joshua Rauh is a senior fellow at the Hoover Institution and the Ormond Family Professor of Finance at the Stanford Graduate School of Business. He studies public finance and financial economics. He served as principal chief economist on the President's Council of Economic Advisers (2019-20). He holds a B.A. from Yale University and a Ph.D. from Massachusetts Institute of Technology, both in economics.

Natalie Millar is a doctoral candidate studying economics at the University of Alabama. She received her B.A. in mathematics from Jacksonville State University. Her research focus is on applied nonparametric microeconometrics with an emphasis in the economics of education, urban economics and experimental economics.

Gregory Kearney is a master's candidate at Princeton University's School of Public and International Affairs. Previously, he worked as a research analyst at the Hoover Institution, as a research economist at the Council of Economic Advisers at the White House and at Deloitte & Touche as a consultant on the Global Transfer Pricing team in New York.

2. IF YOU BUILD IT, THEY WILL COME: HIGH-SKILL WORKERS AND ALABAMA'S OUTDOOR RECREATION INFRASTRUCTURE

Alexander Galetovic is a research fellow at the Hoover Institution and a senior fellow at Universidad Adolfo Ibáñez, Santiago, Chile. His current research focuses on three fields: institutional design for the efficient provision of infrastructure; the design of efficient capacity and reserve markets in electricity; and the role of patents and Ricardian rents in fostering innovation.

Stephen Haber is the Peter and Helen Bing Senior Fellow at the Hoover Institution and the A.A. and Jeanne Welch Milligan Professor in the School of Humanities and Sciences at Stanford University. He is also a professor of political science, history and economics (by courtesy), as well as a senior fellow of the Stanford Institute for Economic Policy Research and the Stanford Center for International Development.

Jordan Horrillo is a doctoral candidate in comparative politics at Stanford University. He specializes in geospatial analysis and data visualization, and his research focuses on the role of climate and geography in the historical development of political institutions. Horrillo received his B.A. in economics from California Polytechnic State University, San Luis Obispo, in 2015.

Isabel Lopez is a senior program manager at the Hoover Institution. She holds a B.A. in global affairs and world history from Stanford University, where she graduated with honors and distinction.

3. SUPPORTING ADVANCED MANUFACTURING IN ALABAMA

Jonathan Rodden is a professor of political science at Stanford University and senior fellow at the Hoover Institution and the Stanford Institute for Economic Policy Research. He received his Ph.D. at Yale University and was previously the Ford Professor of Political Science at MIT and a Fulbright Fellow at the University of Leipzig, Germany. He has written extensively on federalism and fiscal decentralization, and has worked with the International Monetary Fund, World Bank, U.S. Agency for International Development and the European Parliament on related issues.

4. TAX POLICY, SUBSIDIES AND INNOVATIVE BUSINESS INVESTMENT IN ALABAMA: PAST AND PROSPECT

Joshua Rauh is a senior fellow at the Hoover Institution and the Ormond Family Professor of Finance at the Stanford Graduate School of Business. He studies public finance and financial economics. He served as principal chief economist on the President's Council of Economic Advisers (2019-20). He holds a B.A. from Yale University and a Ph.D. from MIT, both in economics.

Gregory Kearney is a master's candidate at Princeton University's School of Public and International Affairs. Previously, he worked as a research analyst at the Hoover Institution, as a research economist at the Council of Economic Advisers at the White House and at Deloitte & Touche as a consultant on the Global Transfer Pricing team in New York.

5. ESTABLISHING THE FOUNDATION FOR ECONOMIC GROWTH: THE ALABAMA EDUCATION LABORATORY

Eric A. Hanushek is the Paul and Jean Hanna Senior Fellow at the Hoover Institution. He has been a leader in the development of economic analysis of educational issues. His widely cited research spans many policy-related education topics, including the economic value of teacher quality, the finance of schools and the role of education in economic growth.

6. ALABAMA BROADBAND FOR EDUCATION

Sofoklis Goulas is a senior researcher at the Center for Research on Education Outcomes (CREDO) at Stanford. He specializes in the economics of education and policy evaluation. He has been the lead analyst on impact evaluations of school choice and school improvement programs in the United States. He holds an M.Sc. in finance and economics from Warwick Business School, and an M.S. and Ph.D. in economics from University of North Carolina-Chapel Hill.

Chunping Han is the quantitative research manager of the Center for Research on Education Outcomes (CREDO) at Stanford University. Her research in education focuses on the impact on student learning outcomes of education policies, such as school choice, closure of low-performing schools and equity in education. She received a Ph.D. in sociology from Harvard University and a master's in education from Stanford.

Margaret "Macke" E. Raymond is the director of the Center for Research on Education Outcomes (CREDO) at Stanford University, which analyzes education reform efforts around the country. She is passionate about ensuring our country provides opportunities for all its youths through excellent education in all schools. CREDO is a leader in studying U.S. charter schools, school reform policy, measurement and performance, and accountability systems and incentives. Raymond holds a B.A. summa cum laude from Boston University, with three master's degrees and a Ph.D. in political science from the University of Rochester.

STEVE HABER: Economic policy and infrastructure

Stephen Haber is the Peter and Helen Bing Senior Fellow at the Hoover Institution and the A.A. and Jeanne Welch Milligan Professor in the School of Humanities and Sciences at Stanford University. In addition, he is a professor of political science, professor of history and professor of economics (by courtesy), as well as a senior fellow of the Stanford Institute for Economic Policy Research and the Center for International Development.

From 1995 to 1998, Haber served as associate dean for the social sciences and director of Graduate Studies of Stanford's School of Humanities and Sciences. He is among Stanford's most distinguished teachers, having been awarded every teaching prize Stanford has to offer. He was honored in 2011 with Stanford's highest teaching honor, the Walter J. Gores Award.

Haber has spent his academic life investigating the political institutions and economic policies that delay innovation and improvements in living standards. Much of that work has focused on how regulatory and supervisory agencies are often used by incumbent firms to stifle competition, thereby curtailing economic opportunities and slowing technological progress.

His current research focuses on three areas: the creation of regulatory barriers to entry in finance; the economic and political consequences of holdup problems created by different systems of agricultural production; and the comparative development of patent systems. He is a regular consultant to the World Bank and has been a visiting faculty member at the California Institute of Technology; the University of California, San Diego; and the University of Chicago. He serves as director of Hoover's Working Group on Innovation and Intellectual Property.

MACKE RAYMOND: Education reform

Margaret "Macke" Raymond has served as founder and director of the Center for Research on Education Outcomes (CREDO) at Stanford University since its inception in 1999.

The CREDO team conducts rigorous and independent analysis and evaluation of promising programs that aim to improve outcomes for students in U.S. K-12 public schools. Their mantra is "We let the data speak." The team conducts large-scale analyses under a collaboration with 30 state education agencies.

Macke has steered the group to be a well-regarded source of impartial insight into the performance and workings of charter schools, city reform strategies and national reform programs. CREDO's studies and reports are relied upon by the U.S. Department of Education, governors, state chief school officers, state legislators, the courts, other policy makers and the media. Supporters and opponents alike point to CREDO findings, moving the debate past evidence disputes to more substantive arguments.

She is a regular source for local and national media, including The New York Times, The Wall Street Journal, the Washington Post, the Los Angeles Times and The Denver Post. Macke's deep belief in building capacity for improved analysis of programs and policy has found its place through service on advisory boards, technical resource groups and peer review panels. She was selected as a Pahara-Aspen Education Fellow in recognition of her leadership in U.S. education policy.

ERIC HANUSHEK: Education reform

Eric Hanushek is the Paul and Jean Hanna Senior Fellow and a member of the Koret Task Force on K-12 Education at the Hoover Institution. A leader in the development of the economic analysis of educational issues, his research spans the impact on achievement of teacher quality, high-stakes accountability and class-size reduction. He pioneered measuring teacher quality on the basis of student achievement, the foundation for current research into the value-added evaluations of teachers and schools. His work on school efficiency is central to debates about school finance adequacy and equity; his analyses of the economic impact of school outcomes motivate national and international educational policy design.

Hanushek is also chairman of the Executive Committee for the Texas Schools Project at the University of Texas at Dallas, a research associate of the National Bureau of Economic Research and area coordinator for Economics of Education with the CESifo Research Network. He formerly served as chair of the board of directors of the National Board for Education Sciences.

His latest book, "The Knowledge Capital of Nations: Education and the Economics of Growth," identifies the close link between the skills of the people and the economic growth of the nation and shows the economic impact of high-quality schools. This analysis is the basis for estimating the economic benefits of a world development standard based on achieving basic skills (Universal Basic Skills: What Countries Stand to Gain). His prior book, "Endangering Prosperity: A Global View of the American School," considers the performance of U.S. schools from an international perspective and identifies the costs of not improving student outcomes. Earlier books include "Schoolhouses, Courthouses and Statehouses," "Courting Failure," "Handbook of the Economics of Education," "The Economics of Schooling and School Quality," "Improving America's Schools," "Making Schools Work," "Educational Performance of the Poor," and "Education and Race," along with numerous widely cited articles in professional journals.

JOSH RAUH: Economic policy and infrastructure

Joshua D. Rauh is a senior fellow at the Hoover Institution and the Ormond Family Professor of Finance at Stanford's Graduate School of Business. He formerly served at the White House where he was principal chief economist on the President's Council of Economic Advisers and taught at the University of Chicago's Booth School of Business (2004-9) and the Kellogg School of Management (2009-12).

Rauh studies corporate investment, business taxation, government pension liabilities and investment management. He has published numerous journal articles and was awarded the 2006 Brattle Prize for the outstanding research paper on corporate finance published in the Journal of Finance for his paper "Investment and Financing Constraints: Evidence from the Funding of Corporate Pension Plans." In 2011, he won the Smith Breeden Prize for the outstanding research paper on capital markets, published in the Journal of Finance, for his paper "Public Pension Promises: How Big Are They and What Are they Worth?" coauthored with Robert Novy-Marx. His other writings include "Earnings Manipulation, Pension Assumptions and Managerial Investment Decisions," coauthored with Daniel Bergstresser and Mihir Desai, which won the Barclays Global Investor Best Symposium Paper from the European Finance Association and appeared in the Quarterly Journal of Economics. Other work has appeared in the Review of Financial Studies, the Journal of Financial Economics and the Journal of Political Economy.

Rauh's research on state and local pension systems in the United States has received national media coverage in outlets such as The Wall Street Journal, The New York Times, the Financial Times and The Economist.

JONATHAN RODDEN: Economic Development

Jonathan Rodden is a senior fellow at the Hoover Institution and a professor in the Political Science department at Stanford. Rodden was a fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford, 2006-7, and a W. Glenn Campbell and Rita Ricardo-Campbell National Fellow, 2010-12.

He has written several articles and a pair of books on federalism and fiscal decentralization. His most recent book, "Why Cities Lose: The Deep Roots of the Urban-Rural Political Divide" (Basic Books, 2019), Rodden demonstrates the left's electoral challenges have deeper roots in economic and political geography. He frequently works with the World Bank and the International Monetary Fund on issues related to fiscal decentralization.

His research focuses on the comparative political economy of institutions. Rodden has also written papers on the geographic distribution of political preferences within countries, legislative bargaining, the distribution of budgetary transfers across regions and the historical origins of political institutions.

He is writing a series of articles and a book on political geography and the drawing of electoral districts around the world.

Rodden received his Ph.D. in political science from Yale University and his B.A. from the University of Michigan and was a Fulbright student at the University of Leipzig, Germany. Before joining the Stanford faculty in 2007, he was the Ford Associate Professor of Political Science at the Massachusetts Institute of Technology.

ALEXANDER GALETOVIC: Economic Development

Alexander Galetovic is a research fellow at the Hoover Institution. He is also a senior fellow at Universidad Adolfo Ibáñez.

Galetovic's research is about the economics of industries and the equilibrium determinants of industry structure. He has written extensively on competition and regulation of infrastructure industries – electricity, telecommunications, water and transport. His recent book, "The Economics of Public-Private Partnerships: A Basic Guide," which he coauthored with Eduardo Engel and Ronald Fischer, is a standard reference of the economics and policy of infrastructure concessions.

Together with Engel and Fischer, Galetovic invented the least-present-of-revenue auction, which is routinely used by governments in many countries to procure transport infrastructure through public-private partnerships.

His current research is about the interplay of intellectual property and antitrust in high technology industries like mobile phones, semiconductors and autonomous vehicles. During the past 50 years of technological progress, information technology has proceeded at unprecedented speed. Yet, antitrust authorities see a constant tension between, on the one hand, intellectual property, patents and the right to exclude and, on the other hand, intense competition. Indeed, in recent years many antitrust authorities around the world have taken the view that strong intellectual property may put competition and technological progress at risk. Galetovic's research evaluates this tension critically and quantitatively and suggests that the concern of antitrust authorities is unfounded.

EXECUTIVE SUMMARY OF THE HOOVER INSTITUTION REPORT

Alabama's leaders recognize that the state holds unlocked potential to grow and spread innovative industries across the state. Gov. Kay Ivey convened the Alabama Innovation Commission to stimulate economic growth with a focus on entrepreneurship, innovation and technology. The commission has made progress toward that goal with the signing of the Alabama Innovation Corporation into state law and the establishment of a federal grant-matching program for small businesses. These measures constitute an important step in creating the legal and financial infrastructure necessary to support an innovation ecosystem within Alabama.

A team from the Hoover Institution has written this report to build upon these efforts by conducting data-driven research to assess Alabama's infrastructure in its educational, legal, financial, governance and physical aspects – all of which are necessary components to transform the state into an innovation hub. The goal of this report is to provide pragmatic, actionable policy recommendations to guide Alabama's leaders as they work to realize their state's full economic potential.

Crucially, Alabama already possesses two key assets. First, it already has important innovation hubs around Birmingham, which has distinguished itself as a thriving center for biomedical technology research and development, and around Huntsville, which boasts the Redstone Arsenal, Cummings Research Park and NASA's Marshall Space Flight Center. Second, it has passionate, dedicated and hardworking people in public service, universities, K-12 education, nonprofit organizations and the private sector who are determined to build a more prosperous future for Alabamians. In our experience, this is an exceedingly rare asset – one which has no market price.

INNOVATION AS THE BASIS FOR A PROSPEROUS SOCIETY Innovation is the creative act of seeing a demand curve for a product that may not yet exist, and then putting together the components necessary to bring that product or service to market. A canonical example is the iPhone. Introduced by Apple in 2007, it took the creative leap of combining a cellular telephone, a personal computer, a camera and a music player into a single handheld device. The result was a completely new product. The global market for such devices, now generically known as smartphones and produced by dozens of firms, is roughly $400 billion per year.

Innovation is also the creative act of seeing how to produce an existing product or service more efficiently, and then realizing the results of that vision such that the price falls and the market expands. A quintessential example is the Swedish firm Spotify, which transformed the way consumers purchase recorded music: Instead of buying and owning audio content (e.g., records, tapes, compact discs, downloads), consumers access music by streaming it on demand for a flat fee. The product – recorded music – is the same. What Spotify changed was the unit cost; and in so doing it earned roughly $9 billion in revenues in 2020.

Successful innovations generate what economists call "Ricardian rents" – the ability to produce more revenue per dollar of input than the least productive producer in that same market. Some of those rents are captured by firms in the form of higher profits than those of their competitors. Some of the rents are captured by government in the form of higher tax revenues than it would have received otherwise, allowing it to finance more public goods, such as roads and schools. Some of the rents are captured by the firm's employees in the form of higher wages than they would have earned otherwise. Those rents are then shared more broadly, as those workers consume housing, food, entertainment and other services produced by construction firms, restaurants, movie theaters and the like. Innovation and the Ricardian rents it generates are, in short, the basis for a prosperous society.

INNOVATION IS PEOPLE If innovation is such a good thing, why don't we see it happening everywhere? The short answer is that innovation is the outcome of cooperation and competition among people with complementary skill sets who have access to investable funds. Some of those people know how to invent new technologies. Others know how to combine technologies that already exist in novel ways. Still others know how to secure financing, write contracts, navigate regulatory mazes, build prototypes, set up manufacturing facilities and market consumer products. Yet other people, who have saved more than they consume, invest their savings in the people with specialized skills.

Innovation therefore happens in environments in which the educational, financial, legal, governance and physical infrastructure incentivizes a pool of people with complementary assets – whether those assets be human capital or financial wealth – to come together to take calculated risks. Getting them to do that – to collocate, cooperate and compete – requires that it be common knowledge that calculated risk taking will be rewarded. Those rewards come in three forms:

1. a share of the Ricardian rents earned by the people who took the risk of investing in their human capital;
2. a share of the Ricardian rents earned by the people who took the risk of investing their savings;
3. a share of the Ricardian rents allocated to the public goods – the nonrival and non-excludable goods that are essential to the functioning of a society – necessary to sustain life, liberty and the pursuit of happiness.

THE CRUCIAL ROLE OF GOVERNMENT Government, as the principal producer of educational, legal, financial, governance and physical infrastructure, plays a crucial role in innovation. Without that infrastructure, people with specialized knowledge and skill sets and people with investable savings move elsewhere.

Our recommendation to the Alabama Innovation Commission (AIC) is, therefore, that the state government move simultaneously on a range of infrastructural investments. We provide summary statements about each of these components in the paragraphs below, with more complete discussions in the chapters that follow. We underline, however, that while we discuss these investments individually, we consider them to be mutually reinforcing and mutually dependent.

THE ROLE OF UNIVERSITIES IN FOSTERING INNOVATION AND GROWTH Universities play a vital role in the development of their local economies and in the innovation ecosystem. In the short run, university students boost their local economies. In the long run, universities can provide skilled human capital. Their graduates can become the leaders in an innovative economy for years to come. In order to accomplish that goal, however, universities must succeed in producing this pool of talented people and in providing a framework that retains them. In Chapter 1, "The Role of Alabama Universities in Fostering Innovation and Growth," Joshua Rauh, Natalie Millar and Gregory Kearney argue that Alabama needs to strengthen the link between its universities and innovation. Various indicators and rankings of innovative practices and behavior show consistently that Alabama finds itself in the middle to bottom third of the country. Rauh, Millar and Kearney argue that Alabama has an opportunity to develop curricula and academic environments within its universities to attract and keep talented students who are focused on innovation.

To strengthen innovation within universities, Rauh, Millar and Kearney suggest that Alabama replicate the Wisconsin Alumni Research Foundation (WARF). WARF is an independent, nonprofit corporation run by alumni trustees of the University of Wisconsin that manages the university's patented technologies and invests the revenue to support future university research. While WARF receives substantial funding from investment returns, the bulk of its revenues stems from contributions. The Alabama Innovation Corporation, which was established in May 2021, provides an entity that could potentially emulate WARF.

In addition to creating an entity that provides financial support for innovation, Rauh, Millar and Kearney suggest that Alabama's universities would benefit from having offices of technology licensing (OTLs) that assist in the commercialization of technology developed at the universities and ensure that some returns from the innovations accrue to the universities. This requires that the individuals who staff the OTLs understand the long-term processes and potential benefits from innovation. It also requires that they are able to connect academics with market opportunities.

Rauh, Millar and Kearney also suggest that Alabama's universities may want to create new programs that focus on entrepreneurship within MBA programs. In addition, they suggest that universities use these programs to connect students with successful entrepreneurs, thus improving entrepreneurial quality and impact.

Finally, Rauh, Millar and Kearney stress the need to invest in amenities that promote strong quality of life in cities and areas surrounding universities, to create an environment in which potential faculty and alumni entrepreneurs will remain and locate their innovative activities.

OUTDOOR RECREATION INFRASTRUCTURE In Chapter 2, "If You Build It, They Will Come: High-Skill Workers and Alabama's Outdoor Recreation Infrastructure," Alexander Galetovic, Stephen Haber, Jordan Horrillo and Isabel Lopez develop the idea of quality of life further by arguing that a crucial component to establishing an innovation ecosystem within a state is retaining and attracting human capital. They show that Alabama is exceptionally well endowed with a vast array of natural assets that can be leveraged to expand its outdoor recreation industry, enhancing the state's attractiveness for high-skilled individuals, as well as yielding substantial returns for both rural and urban communities.

Galetovic, Haber, Horrillo and Lopez also show, however, that Alabama has not invested in its outdoor recreation infrastructure at the same scale as neighboring states. To convert its endowments into assets, the state should ramp up spending on outdoor recreation infrastructure. Funding may come from combining private philanthropy, state funds, federal funds and revenues from user fees. Because projects will generate externalities and incremental economic activity, over time they will also generate higher tax revenues for the state.

The primary recommendation of Galetovic, Haber, Horrillo and Lopez is the creation of a joint commission for outdoor recreation infrastructure, named by the governor, that includes broad representation across the public, private and nonprofit sectors to expand the supply of outdoor infrastructure throughout the state. The joint commission is not a replacement for any state agency, higher education center, nonprofit organization or private initiative. Quite the contrary, its purpose is to reinforce them. The joint commission might include: the commissioner of the Alabama Department of Conservation and Natural Resources; the director (or a program director) of the University of Alabama Center for Economic Development; the leaders of nonprofit organizations with long-standing interests in promoting outdoor recreation and conservation or with interests in promoting an innovative Alabama economy, such as the Freshwater Land Trust, Alabama Audubon, the Nature Conservancy, Ducks Unlimited, the Alabama Trails Foundation and the Economic Development Partnership of Alabama; the mayors of three or four cities; a number of outdoor recreation entrepreneurs operating small-scale firms; and representatives from Alabama-based firms and foundations with demonstrated philanthropic track records.

The joint commission would have three primary goals. First, it would draw on Alabama's Statewide Comprehensive Outdoor Recreation Plan (to be released in 2022) to identify projects that would generate significant positive externalities for the state, and then estimate the scale of the necessary investment. Second, the joint commission would be a vehicle through which funding sources, beyond those already in place, would be identified and pursued. One such source might be the Infrastructure Investment and Jobs Act (HR 3684) that is winding its way through Congress. Third, the joint commission would work with state agencies, municipalities, nonprofit organizations and the private sector to plan outdoor recreation infrastructure projects, select developers, distribute funds and ensure delivery of projects and services.

SUPPORTING ADVANCED MANUFACTURING IN ALABAMA Since 2010, Alabama has seen a robust rebound of manufacturing, both in its larger cities and nonmetro areas. Much of this manufacturing activity involves new investments and sophisticated techniques, and a sizable share is linked to firms with links to Germany, a country that is at the technological frontier of advanced manufacturing.

In Chapter 3, "Supporting Advanced Manufacturing in Alabama," Jonathan Rodden argues that Alabama can solidify its position as one of the most dynamic manufacturing areas in the United States if it continues to build an infrastructure to support advanced manufacturing along the lines of the German model of collaboration between government, educational institutions and the private sector.

Rodden stresses that Alabama has already made impressive investments in workforce training. The next step is to build robust institutions that help bridge what he calls the "valley of death" – the gap between abstract or academic innovations and their commercial application in the marketplace. The German model is of particular interest to Alabama because it links research to application.

Rodden explains that the Fraunhofer institutes, a set of 75 public-private applied research institutions organized around specific scientific fields and areas of research, are at the center of the German model. Private and public entities – universities, large corporations, small- and medium-sized enterprises, research organizations and trade associations – can enter into research contracts with Fraunhofer and gain access to vast collaborative networks and a wealth of focused expertise. The institutes employ permanent staffs of scientists and technicians, along with a rotating group of experts from universities and other institutions. Each institute focuses on applied research in a specific area that often corresponds to a cluster of regional private-sector firms in areas such as optics, lasers, wind energy and automotive research. Funding combines direct government support, contracts with government entities and private-sector contracts.

Rodden's proposal is to mobilize existing links with German firms, researchers and officials to study the German system of institutional support for advanced manufacturing, paying special attention to Fraunhofer and the network of related institutions in the Stuttgart region. He suggests that the Alabama Innovation Commission consider the creation of a delegation that is tasked with exploring whether there are specific aspects of what might be called the "Stuttgart model" that can be applied in Alabama.

TAX POLICY, SUBSIDIES AND INNOVATIVE BUSINESS INVESTMENT IN ALABAMA Innovation and economic growth emerge from a combination of factors and policies, and one of them is tax policy. In recent years, Alabama has updated its business tax code and established new incentives for innovative business investment. That legislation includes the Alabama Jobs Act of 2015, the Alabama Incentives Modernization (AIM) Act of 2019, and HB 540 and HB 609 in 2021. The latter two bills establish the Alabama Innovation Corporation and grant-matching programs for small businesses.

In Chapter 4, "Tax Policy, Subsidies, and Innovative Business Investment in Alabama: Past and Prospect," Joshua Rauh and Gregory Kearney provide an initial analysis of the effects of these legislative measures. Overall, they find no statistically robust evidence that the Jobs Act caused Alabama counties to outperform the counties in neighboring states in terms of job growth. They also find no evidence consistent with the hypothesis that targeted Alabama counties outperformed nontargeted Alabama counties. Based on this initial evidence, they argue that these results call into question how useful any new or additional jobs credit programs might be. More generally, they argue that the rules that govern tax relief are often cumbersome and costly for small- to medium-sized businesses to navigate. Instead, they recommend simplifying the tax code by replacing some of the existing, specific tax incentives with broader cuts in the corporate and sales tax rates. They also recommend that the remaining incentives be simpler, of shorter duration and highly targeted.

Based on existing research on innovation-specific financial incentives, Rauh and Kearney also recommend that the AIC establish venture capital funds that match private investments in companies seeking to move to Alabama. They suggest structuring AIC's programs with guidance and rules similar to those used by Launch Tennessee in its INCITE Co-Investment Fund and Impact Fund, which match private investment in companies seeking to move to Tennessee. One key aspect of their proposal is that for a business to qualify for some amount of co-investment, investment fund dollars must be matched by private dollars, thus providing a market test for fund allocation.

Finally, Rauh and Kearney recommend an amendment to the AIM Act that would remove the requirement to include state funds from the qualified opportunity zone fund designation and replace the "state funds" guarantee of downside losses with some degree of co-investment to be applied from the future Alabama Innovation Fund (AIF) specified in HB 540, with the AIF having some input to the process. This would eliminate a blanket state guarantee and improve governance around investment decisions.

ESTABLISHING THE FOUNDATION FOR ECONOMIC GROWTH: THE ALABAMA EDUCATION LABORATORY In Chapter 5, "Establishing the Foundation for Economic Growth: The Alabama Education Laboratory," Eric A. Hanushek proposes an independent education laboratory to conduct systematic research and evaluation of Alabama's schools. Hanushek notes that the performance of Alabama's students is currently not comparable to that of students in other U.S. states or other countries that are in direct economic competition. Improving the K-12 schools in Alabama is not a onetime event but a protracted process that must continue over decades. However, long-run growth and development are unlikely to be possible without improvement of the labor force in Alabama.

Hanushek also notes that the state currently lacks the institutional capacity to evaluate new and ongoing education programs and policies so that successes can be expanded and failures curtailed. He also notes that this is an opportune time to develop such a laboratory: There is the COVID-induced critical need for improving Alabama's schools, and there is funding available from the federal American Rescue Plan.

According to Hanushek, the work plans of the education lab would be developed in consultation with existing educational institutions, relevant state departments and individual school districts. The education lab would also be charged with providing a biennial report on the state of Alabama education, assessing the achievement of Alabama students, their high school graduation rates and their entry into college and careers. It would provide detailed analysis of the progress of students toward meeting the overall goals of Alabama's plan under the Every Student Succeeds Act, along with an update on the results of its various evaluations and research activities. Finally, the education lab would work with the Legislature and with the Department of Education to design appropriate evaluations of new programs before they are implemented. By working with programs before they begin, it is possible to get baseline information and to establish appropriate control groups for evaluations, thus obtaining the most useful information about the effectiveness of new initiatives.

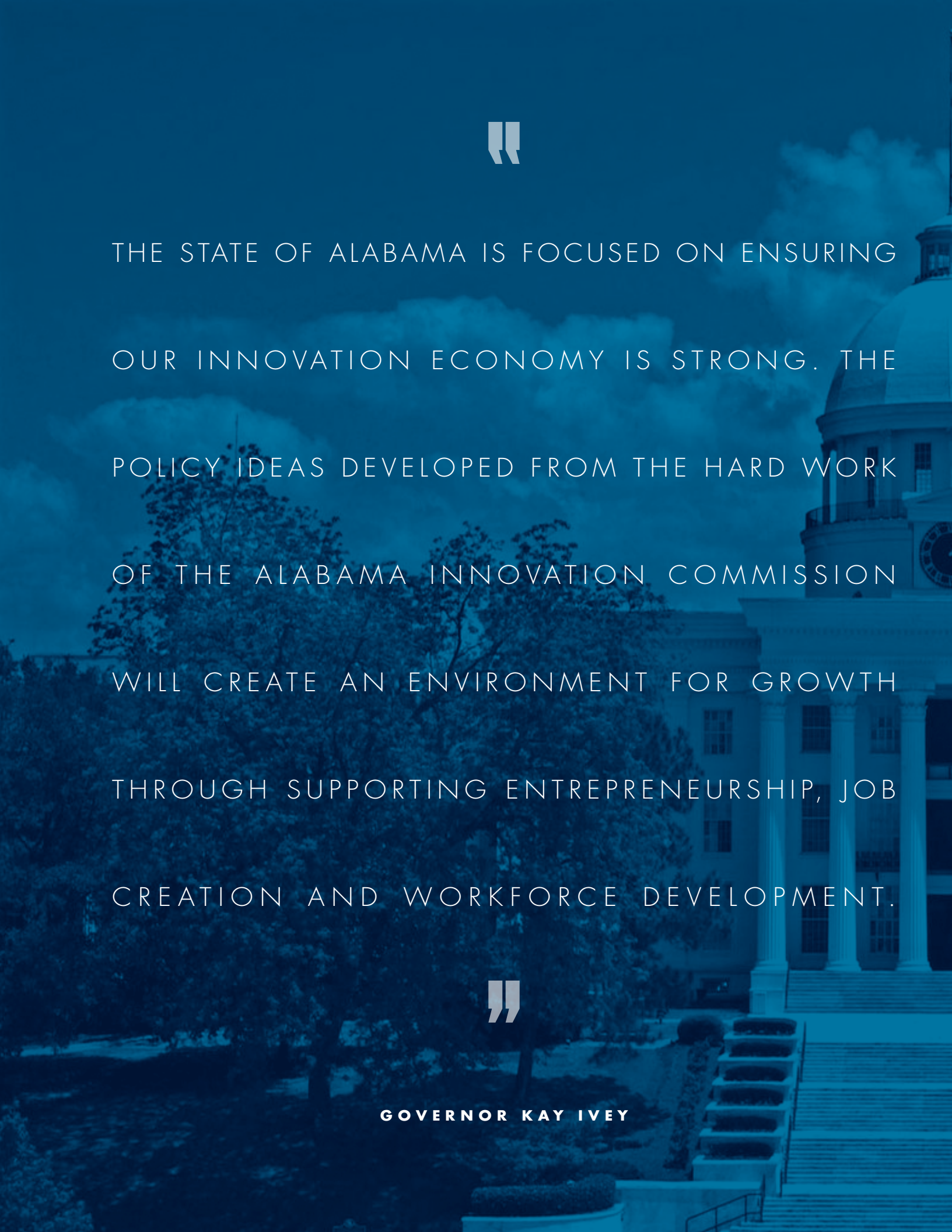
To ensure the education lab's credibility, Hanushek suggests that the results of any analysis would be made public in order to insulate the work from political manipulation. More generally, the education lab would produce its own work and facilitate work by outside researchers. Hanushek argues that the nature of the evaluation and policy issues surrounding schools means that other states can gain from the insights that would be generated by an Alabama education lab and can provide their own insights to Alabama.

BROADBAND INFRASTRUCTURE FOR EDUCATION In Chapter 6, "Alabama Broadband for Education," Sofoklis Goulas, Chunping Han and Margaret E. Raymond examine the state's commitment to expanding broadband coverage throughout Alabama through the lens of public K-12 education. Current broadband expansion plans can be strengthened if they are grounded in specific needs and uses. They propose that ensuring access to broadband for all Alabama schools and extending broadband coverage to all households with K-12 students could provide critical infrastructure for rapid improvements in school quality. Making broadband for education a priority would open other ways to leverage the investment in health, employment, civics and public safety.

Goulas, Han and Raymond argue that universal classroom access to broadband is necessary because it allows coteaching, professional development and support of student learning in more efficient ways. Moreover, Alabama can realize substantial returns on future broadband investment if it makes coverage of households with K-12 students a priority. Students would have access to digital resources to support their learning regardless of location.

Goulas, Han and Raymond estimate that by ensuring access for all students, each future graduating cohort will add 2,483 students to the set of college-educated adults. They estimate cumulative gains in personal income over the 20-year useful life of the fiber equipment at roughly $5.5 billion. After deducting the state's investment, the estimated social welfare return on investment would be 214 percent.

FINAL REMARKS One of the central themes of the six chapters is that remarkable developments are already taking place in Alabama. These have been pushed forward by talented, dedicated and passionate individuals in public service, universities, K-12 education, nonprofit organizations and private enterprise. Investments by the state in educational, legal, financial, governance and physical infrastructure would not be starting from scratch but would constitute enhancements to an already existing asset: Alabama's people.



"THE STATE OF ALABAMA IS FOCUSED ON ENSURING OUR INNOVATION ECONOMY IS STRONG. THE POLICY IDEAS DEVELOPED FROM THE HARD WORK OF THE ALABAMA INNOVATION COMMISSION WILL CREATE AN ENVIRONMENT FOR GROWTH THROUGH SUPPORTING ENTREPRENEURSHIP, JOB CREATION AND WORKFORCE DEVELOPMENT."

GOVERNOR KAY IVEY

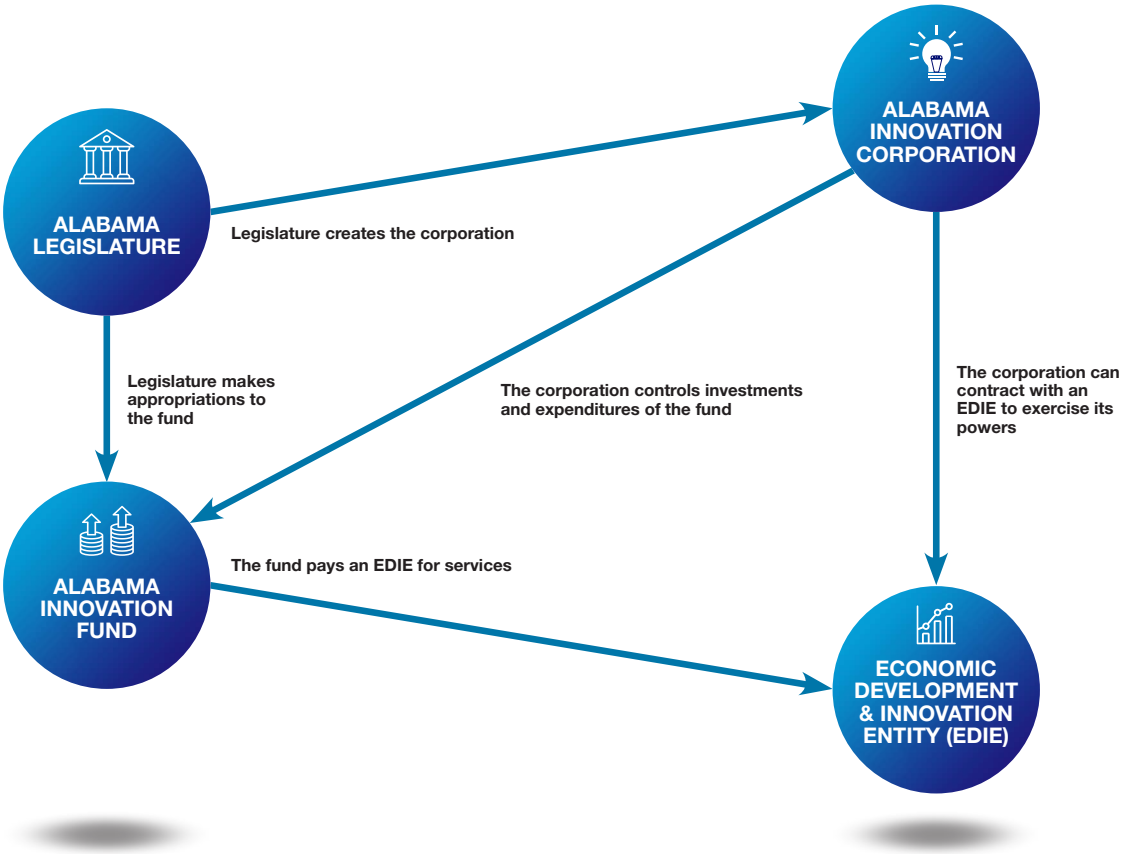
The Alabama Legislature **prioritized bills that will help spur entrepreneurial and technology growth.** The Alabama Innovation Commission highlighted the need to create policies that address all aspects of what makes a successful innovation ecosystem.

2021 ACHIEVEMENTS

ALABAMA INNOVATION CORPORATION

In response to the interim recommendations of the Alabama Innovation Commission, the Alabama Innovation Corporation was established through HB 540 during the 2021 legislative session. The corporation will be a public-private partnership that is equipped and empowered to accelerate the growth of Alabama's innovation economy. HB 540 charged the corporation with "respond(ing) rapidly ... to challenges and opportunities in the fields of technology, research and development, innovation and entrepreneurship" in order to "prepar(e) the state for the economy of the future." The Legislature directed the corporation to:

> *Make this state a hub for technology, research and development, innovation and entrepreneurship by partnering with the private sector, state agencies and state policymakers to develop and implement programs and policies to lead to a more robust, diverse and resilient economy for this state.*



The statute established the following structure, function and powers for the corporation:

1. STRUCTURE:

- FIVE EX OFFICIO DIRECTORS.
  - Governor.
  - Speaker of the House.
  - President Pro Tempore of the Senate.
  - House Minority Caucus leader.
  - Senate Minority Caucus leader.

- SIX AT-LARGE DIRECTORS
  - Selected by governor
  - Having relevant private experience
  - Reflecting the state's diversity

- ALABAMA INNOVATION FUND (AIF)

- ADVISORY COMMITTEE
  - The Advisory Committee is tasked with providing information and making recommendations to the board concerning the actions of the board.

- ECONOMIC DEVELOPMENT AND INNOVATION ENTITIES (EDIE)
  - The law requires that, to qualify, an EDIE must be:
    - A nonprofit corporation.
    - Able to serve the entire state on matters involving economic development.
    - Able to manage startup competitions or related programming.
    - Eligible to receive grant funding from federal, state, or private sources.

  - Any Alabama Innovation Corporation contract with an EDIE must require:
    - Regular reporting to the corporation.
    - Payment of overhead costs only to be reimbursed or paid if directly related to fulfillment of the contract.

2. FUNCTION:

- The AIF will be capitalized entirely or in part by the Alabama Legislature.

- The corporation will control investments and expenditures of the AIF.

- The corporation will coordinate with its Advisory Committee to determine how to best direct its resources.

- The corporation will contract with EDIEs to exercise its powers and implement its programming.

- The AIF will reimburse or otherwise pay EDIEs for implementing the programming.

3. POWERS:

- AMONG OTHER POWERS OUTLINED IN THE STATUTE, THE CORPORATION IS EMPOWERED TO:
  - Take action to make Alabama a hub for technology, innovation and entrepreneurship.
  - Market and brand the state.
  - Support commercialization, entrepreneurship, R&D, accelerators and incubators.
  - Incentivize innovative businesses through programs including SBIR/STTR matching grants.
  - Engage in rural initiatives.
  - Support R&D for a 21st century transportation system.
  - Attract, recruit and retain skilled STEM workers.
  - Support businesses owned or led by "Aspiring Alabamians."
  - Support businesses headquartered in low-income census tracts.
  - Enter into contracts, employ people and deal in property to accomplish these purposes.

2021 ACHIEVEMENTS

SBIR/STTR MATCHING PROGRAM

In response to the interim recommendations of the Alabama Innovation Commission, the Alabama Legislature in the 2021 session passed HB 609, which established a Small Business Innovation Research (SBIR) and Small Business Technology Transfer Research (STTR) state matching program. The SBIR/STTR state matching program provides a state match to eligible federal awardees.

The federal SBIR programs offer grant funding for small businesses to conduct research that will be commercialized in a manner that stimulates technological innovation. The federal STTR programs offer grant funding to small businesses that partner with research institutions to accomplish the same. Federal Phase I awardees, focused on concept development research, can receive between $50,000 and $250,000. Federal Phase II awardees, focused on prototype development, can receive between $500,000 and $1.5 million.

HB 609 created a state match program for the federal awardees. Twenty-two other states have similar matching programs designed to make them more competitive in:

- Business recruitment and retention efforts.
- Recruitment of SBIR and STTR funding.

HB 609's state match offers to eligible applicants the lesser of:

- 50% of their federal SBIR/STTR award.
- Up to $100,000 in Phase 1; up to $250,000 in Phase 2.

In order to be eligible, a small business must, in addition to federal requirements:

- Have its primary place of business in Alabama.
- Have one of its top executives reside in Alabama.
- Have 75% of its employees residing in Alabama for at least five years from the date of the award.

The Alabama Innovation Corporation will be responsible for establishing rules and accepting applications for the state SBIR/STTR matching grant and will have discretion over awards based on corporation research and development priorities. The corporation will enter into a grant agreement with any awardee with a repayment requirement for default. The Legislature has appropriated funding for FY 2021-2022 to the corporation for the match program.

"STATE MATCHING PROGRAMS MAKE IT MORE ATTRACTIVE FOR SMALL BUSINESSES TO PURSUE FUNDING AND CONDUCT INNOVATIVE RESEARCH IN THE STATE. THIS PROGRAM WILL CONTINUE TO BUILD ENTREPRENEURSHIP IN ALABAMA TO ENSURE WE'RE A LEADER IN INNOVATION."

REPRESENTATIVE JEREMY GRAY
ALABAMA INNOVATION COMMISSION MEMBER

2021 ACHIEVEMENTS

RETAIN ALABAMA 2021-2022

The Innovation Commission identified the departure of Alabama college students upon graduation as a significant inhibitor of Alabama's innovation economy. In 2021-2022, the Alabama Legislature designated $800,000 to support two programs focused on retaining Alabama's collegiate talent. The first $400,000 supports the Alabama Commission on Higher Education's "Retain Alabama Pilot" in order to enable the development of:

- Digital marketing strategies targeting Alabama's college graduates.
- Promotional materials about Alabama.
- Materials highlighting career opportunities in Alabama.
- Other strategies focused on retaining Alabama college graduates.

The second $400,000 supports the Economic Development Partnership of Alabama's "Talent Retention Initiative" that seeks to retain Alabama's college graduates by:

- Identifying and publishing internship, co-op and entry-level job opportunities in Alabama.
- Partnering with Alabama colleges and universities to promote career opportunities in Alabama with soon-to-be graduates.
- Creating educational/experiential opportunities for Alabama college students to learn about communities in Alabama in a cohort environment.

"FOR US TO BE PROSPEROUS AND COMPETITIVE WE HAVE TO FIND WAYS TO ENSURE THAT THERE ARE ATTRACTIVE CAREER OPPORTUNITIES FOR ALABAMA COLLEGE GRADUATES HERE IN THE STATE."

DIRECTOR BILL POOLE
CHAIRMAN, ALABAMA INNOVATION COMMISSION

2021 ACHIEVEMENTS

CHANGES TO THE AIM ACT OF 2019

The Innovation Commission highlighted the important role of incentive programs in driving innovation and equitable economic growth. The Alabama Incentives Modernization Act's (AIM Act) expanded Growing Alabama and Jobs Act program was renewed in the 2021 legislative session.

Growing Alabama's tax credit cap was increased from $10 million per year to $20 million per year, though a new $4 million cap was imposed on funding for Alabama accelerator programs. Since the AIM Act was passed in 2019, six startup accelerator programs have been established in three of Alabama's growing entrepreneurial hubs. The types of activities that Growing Alabama tax credits can be used for today was expanded in the 2021 legislative session to include funding for:

> The creation, operation or support of programs designed to provide funding or other resources for underrepresented companies (African American-owned, woman-owned or businesses in low-income census tracts).
>
> Any site improvement or public infrastructure work in low-income census tracts.

The Jobs Act program was expanded to provide underrepresented companies with reduced requirements eligibility and enhanced benefits under the jobs fee and the investment credit. These reduced requirements and enhanced benefits are similarly offered to technology companies and projects located in targeted counties (low population or declining population). The purpose of these improvements was to foster a more equitable economic landscape in Alabama and to realize the significant economic opportunity that exists if representation in these areas is increased.

Additionally, the AIM Act's opportunity zone offerings were expanded to offer state level benefits to investments in census tracts that are eligible for New Market Tax Credits, thereby expanding incentives to invest in Alabama's low-income communities.

"I THINK ALABAMA'S FUTURE IS VERY BRIGHT ... BUT BEING ABLE TO RECRUIT, INNOVATE, BE COMPETITIVE – IT'S SOMETHING THAT IS VERY IMPORTANT TO US. AND I THINK THIS LEGISLATION GIVES US A CHANCE TO DO THAT.."

SENATOR GREG REED

2021 ACHIEVEMENTS

TEACHER EXCELLENCE AND ACCOUNTABILITY FOR MATHEMATICS AND SCIENCE (TEAMS) ACT

WHAT DOES THE TEAMS ACT DO?

The TEAMS Act is designed to fill every Alabama public school with credentialed math and science teachers in grades 6-12. Under this new law, highly qualified middle and high school math and science teachers could earn up to an additional $20,000 salary annually.

HOW MANY TEACHERS CAN QUALIFY FOR THE TEAMS SALARY?

Each school district may employ one TEAMS math and one TEAMS science teacher for every 105 students in grades 6-12 – roughly 7,000 teachers statewide.

HOW DO TEACHERS APPLY TO THE PROGRAM?

Teachers can apply to their district for a TEAMS position if they:

1. Hold a valid Alabama professional educator certificate or alternate certificate in middle level math or science OR secondary math, science or computer science.

2. Teach full-time approved math and/or science courses in grades 6-12 with the appropriate certificate endorsements.

3. Hold or plan to obtain an advanced credential from either the National Institute for STEM Education or National Board for Professional Teaching Standards (NBPTS) Certification in math or science. An advanced credential means a specialized certification provided by the National Institute for STEM Education, the National Board of Professional Teacher Standards or other criteria that may be established by the Alabama Department of Education.

HOW LONG CAN ELIGIBLE TEACHERS EARN THE BONUS?

If the eligible teacher does not hold, but is planning to obtain, the specified advanced credentials, the teacher is eligible to apply for a one-year Preliminary TEAMS Contract that is renewable year to year for up to six years while the teacher works to obtain the advanced credentials. If the teacher holds advanced credentials, the teacher is eligible for an Advanced TEAMS Contract for a contract term of up to three years. If the teacher has over 20 years of service with the Alabama school system and the teacher holds advanced credentials, the teacher is eligible for a contract term of five years.

Each contract is valid for the 189-day school year. At the end of the preliminary or advanced contract, the local school district may either:

1. Offer the participating teacher a new, advanced three-year contract.

2. Terminate the teacher's employment by not renewing or approving a new contract.

3. Reemploy the teacher in any position outside of the TEAMS program.

IS THERE ANY INCENTIVE FOR TEACHERS IN UNDERPERFORMING SCHOOLS?

Yes. The Department of Education will annually determine which schools are "hard to staff" based on out-of-field teaching assignments, poverty levels, etc. An annual supplement of $5,000 – in addition to the $20,000 maximum annual payment – will be paid to those teaching in these hard-to-staff schools, and teachers on the TEAMS pay will remain eligible for already existing state National Board Certified Teachers stipends.

2021 ACHIEVEMENTS

CONNECT ALABAMA ACT (SB 215)

The act creates the Alabama Digital Expansion Authority (ADEA) to oversee the expansion and availability of high-speed broadband services throughout the state, especially in rural and underserved areas. The authority consists of the Alabama Department of Economic and Community Affairs (ADECA) director, Alabama Digital Expansion Division chief and nine designees from state leaders.

The act also establishes the Alabama Digital Expansion Division, a subdivision of ADECA, which will develop and execute a statewide connectivity plan and establish and administer a broadband accessibility grant program. The grant program will promote the deployment and adoption of high-speed broadband internet networks, services and technologies throughout the state. The newly created statewide connectivity plan must be submitted to ADEA by July 1, 2022. Prior to this, Alabama was the only state in the Southeast without a comprehensive and statewide broadband plan.

The Alabama Digital Expansion Finance Corporation (ADEFC), also created by the act, will issue bonds and serve as a resource to ADEA and the Alabama Digital Expansion Division by helping to fund broadband deployment projects.

There is a desire for success in the state. Many people and many companies are willing to give to make that happen.

PEGGY SAMMON, CEO – GENECAPTURE
ALABAMA INNOVATION COMMISSION MEMBER

INTERIM RECOMMENDATIONS AND IMPLEMENTATION

In January 2021, the Alabama Innovation Commission made four interim recommendations, some of which were implemented during the 2021 legislative session, and others that are included in the policy considerations in this report. What follows is a description of the interim recommendations and the action, if any, that has been taken to implement such recommendations.

1. **Develop a Statewide Innovation Coordination and Incentive Structure (Legislative Action)**
   INTERIM RECOMMENDATION DESCRIPTION: Create a public-private partnership to coordinate and accelerate new economic growth, encourage statewide entrepreneurship and support talent attraction and retention within key target cluster areas. Legislation developing the partnership should contemplate the promotion of specific initiatives to support statewide entrepreneurship, rural businesses and entrepreneurship, research and development at existing companies, minority owned businesses, access to advanced tech skills and skilled talent attraction and retention. The structure may support marketing and branding of Alabama's innovation assets, infrastructure deployment, educational programs, business accelerators, mentor networks, incentives and other best practices to generate successful business growth.

   IMPLEMENTATION TO DATE: The Alabama Innovation Corporation was authorized for creation by Act No. 2021-455 and will serve as a public corporation that facilitates the public-private partnerships contemplated by the interim recommendation and deploys resources to accomplish its goals.

2. **Provide for a Private Fund Adviser Exemption (Legislative or Regulatory Action)**
   INTERIM RECOMMENDATION DESCRIPTION: Develop a plan with the Alabama Securities Commission to create securities exemptions that encourage early-stage formation of private venture capital funds.

   IMPLEMENTATION TO DATE: No action has been taken to implement this recommendation, but the corporation has included it in its policy considerations for implementation in this report.

3. **Fund and Launch an Alabama Branding Campaign (Legislative Appropriation)**
   INTERIM RECOMMENDATION DESCRIPTION: In partnership with the Alabama Department of Commerce and Department of Tourism, conduct a national marketing campaign to promote and highlight Alabama's modern quality of life strengths, define our own perception and develop our brand as a destination for growth.

   IMPLEMENTATION TO DATE: The Alabama Innovation Corporation has been empowered, and has received legislative appropriations, to conduct an initial state marketing campaign in a manner that furthers the goals of this interim recommendation. The policy considerations in this report make additional recommendations regarding marketing strategies and campaigns that could be used to further accomplish the goals of this interim recommendation.

4. **SBIR/STTR Matching Funds**
   INTERIM RECOMMENDATION DESCRIPTION: Explore the potential creation of a state program to provide matching funds for Small Business Innovation Research (SBIR) and Small Business Technology transfer (STTR) awardees in Alabama.

   IMPLEMENTATION TO DATE: Act No. 2021-449 created a state SBIR/STTR matching program, with funding for its initial implementation. This matching program will be implemented by the Alabama Innovation Corporation and establishes a strong foundation for accomplishing the goals of this interim recommendation.

"WE ALL PLAY A ROLE IN INNOVATION. DIVERSITY OF THOUGHT IS WHERE WE WILL ACCELERATE CHANGE AND WHEN WE DO THAT, WE ALL WIN."

CHARISSE STOKES, EXECUTIVE DIRECTOR – TECHMGM
ALABAMA INNOVATION COMMISSION MEMBER

RECOMMENDED POLICY CONSIDERATIONS

The Alabama Innovation Commission developed the following policy considerations as tools that policymakers could deploy to accelerate the development of Alabama's innovation economy. Members of the Innovation Commission relied upon research, data and their own expertise in crafting these tools. These policy considerations are not intended to be prescriptive, but instead are meant to be used as tools in a toolbox or plays in a playbook. Policymakers may not decide to call every play or use every tool, but it is the intent of the Innovation Commission that these recommendations would be evaluated and improved in order to accomplish their underlying goals.

ENTREPRENEURSHIP AND ACCESS TO CAPITAL

INNOVATION AND RISK CAPITAL

OPPORTUNITY:

Support Alabama businesses in industries with technologies and proprietary products, processes or knowledge that provide high-growth opportunities. In order to assist the innovation ecosystem, the Alabama Innovation Corporation should look for ways to reduce the friction encountered by startups in search of funds and provide a better return for their efforts. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "Tax Policy, Subsidies and Innovative Business Investment in Alabama: Past and Prospect" on pages 91-92.

1. SEED CAPITAL FUND – ACTION

RECOMMENDATION:

Create two Alabama Innovation Corporation-managed seed capital funds. The first would be a $5 million revolving, "evergreen" equity fund that would invest in Alabama-based high-growth businesses in strategically identified sectors. The second would be a $2 million fund that would invest in less scalable small businesses and underrepresented companies in Alabama with the intent of increasing access to capital. The goal for each would be to use the state's investment to attract additional private investment. A state investment would require at least a 50 percent match from private sources to be eligible for an investment from the seed capital funds. One critical component of this recommendation would be the creation of a private investment adviser exemption from registration in collaboration with the Alabama Securities Commission in order to facilitate greater private investment in Alabama.

BACKGROUND AND RATIONALE:

Venture capital funding provides startup companies with needed capital funding to support the development of products and services at an early stage in the business life cycle. More than three quarters of venture capital investments are made in California, New York and Massachusetts, leaving other states struggling to compete and develop or keep startup companies within their borders. Alabama is one of many states across the country that has developed programs to support in-state venture capital.

Alabama ranks low compared with nearby states and the nation in terms of venture capital funding disbursed. According to data from the National Science Foundation, Alabama ranks 46th among all states in the average dollars of venture capital disbursed per state gross domestic product in 2019. Except for Mississippi, which is ranked 49th, Alabama ranks over 20 spots lower in this metric compared with its neighboring states. This disparity may be explained by the type of entrepreneurial activity taking place in Alabama. It is possible that a significant number of new entrepreneurs in Alabama are starting businesses outside of the typical high technology target industries for venture capital. The disparity between entrepreneurial activity and venture capital funding may also suggest that Alabama is at risk of losing startups to outside venture capital investment as the supply of venture capital in the state falls short of demand. By providing a state funding match into targeted high-growth startups, Alabama can attract additional entrepreneurial-focused capital.

MEASURES OF SUCCESS

Program use and amount of capital investment.

Comparison of capital investment in general to capital investment in eligible projects.

Alabama jobs created by firms receiving incentive.

Financial performance of the funds.

State return on investment.

MILESTONES

2021-22

Draft formation documents to create the seed capital funds.

Identify and select fund manager.

Develop review process for different levels of investment.

2022-23

Obtain additional legislative appropriations to establish the seed capital fund.

Create data analysis system to collect relevant data points on investment recipients.

LEGISLATION REQUIRED: **NO**
ADDITIONAL FUNDS REQUIRED: **YES**

2. NONDILUTIVE FUNDING – ACTION

RECOMMENDATION:

Create a $2 million annual grant program to provide nondilutive working capital (growth capital) targeted at high-growth companies in need of additional financing and present promising opportunities within targeted industry clusters. This program would provide grants of up to $50,000 to support commercialization activities of companies at the concept stage in high-growth industries, prior to the seed capital funding round. Grant applicants would first have to satisfactorily complete the mentorship network program.

BACKGROUND AND RATIONALE:

As noted, the state has a lack of early-stage capital for small businesses developing and commercializing new, innovative technologies. Creating a nondilutive grant program would address a critical private-sector market gap for investment dollars as the size is usually too small for larger venture funds or traditional sources of capital to consider.

MEASURES OF SUCCESS

Program use and number of grants awarded.

Additional follow-on investment.

MILESTONES

2021-22

Draft documents establishing the grant program (e.g., application form, selection criteria used by the corporation, etc.).

2022-23

Obtain additional legislative appropriations to adequately fund the grant program.

Develop branding campaign to advertise the grant program.

Issue awards to targeted startups.

Create data analysis system to collect relevant data points on grant recipients.

LEGISLATION REQUIRED: **NO**
ADDITIONAL FUNDS REQUIRED: **YES**

---

3. SSBCI FUNDING – ACTION

RECOMMENDATION:

The Alabama Innovation Corporation should partner with the state government to apply for and implement the federal State Small Business Credit Initiative (SSBCI) by assessing small business needs, engaging partner organizations and marketing programs to private sector participants. The corporation should also consider the ability to use these SSBCI funds as the initial capitalization of a targeted evergreen fund

BACKGROUND AND RATIONALE:

The SSBCI is a federal-state partnership where a state agency is designated to participate in the program and implement approved program strategies. ADECA is the state agency responsible for the SSBCI in Alabama.

Originally established by the Small Business Jobs Act of 2010 in the wake of the Great Recession, SSBCI provided $1.5 billion in federal funds at that time to states to restore small business lending and investing activity by sharing in financial risk. SSBCI-supported lending programs work with mission lenders such as community development finance institutions and community banks to address the systemic market needs of socially and economically disadvantaged individuals.

On March 11, 2021, President Joe Biden signed the American Rescue Plan Act (ARP) which provided $10 billion to re-fund the SSBCI and broaden its activities. The new SSBCI is designed to support entrepreneurs and small businesses, and Alabama will initially receive approximately $56 million in SSBCI funds, of which $25 million will go toward the Alabama Rural, Agribusiness and Opportunity Zone Jobs Act. These funds can be used to design a portfolio of small business financing programs that meets the unique needs of local entrepreneurs and considers the conditions of local capital markets.

MEASURES OF SUCCESS

Number of SSBCI participants.

Amount of private dollars leveraged.

Revenue and employee growth of participant businesses.

MILESTONES

2021-22

Meet with state government and identify partners with relevant experience to administer the SSBCI funding.

Draft procedures for administering SSBCI funding.

2022-23

Continue distribution of SSBCI funding.

Create data analysis system to collect relevant data points on SSBCI recipients.

LEGISLATION REQUIRED: **NO**
ADDITIONAL FUNDS REQUIRED: **YES**

ENCOURAGING ENTREPRENEURSHIP AND BUSINESS DYNAMICS

OPPORTUNITY:

Tap into Alabama-based talent for institutional knowledge pertaining to raising capital, developing a market and planning an exit, and connect entrepreneurs to seasoned leaders. Increase the success rate of underserved entrepreneurs and small businesses throughout Alabama by providing funding opportunities at key points in their growth stage. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "Introduction" on page 6 and "The Role of Alabama Universities in Fostering Innovation and Growth" on page 30.

1. MENTORSHIP NETWORKS – STRATEGY

RECOMMENDATION:

Develop mentorship networks for founders and business owners to help diversify the state's economy, take advantage of innovation-based opportunities and drive broader participation among underserved and underrepresented communities. Such mentorship networks could also be avenues for technical assistance to be delivered to founders and business owners and a method to use the mentors to evangelize innovation in the state.

BACKGROUND AND RATIONALE:

In Alabama, there is a lack of experienced, serial entrepreneurs/mentors who know how to turn an idea or a product into a successful venture. Such serial entrepreneurs are needed not only to lead new ventures, but also to serve as mentors to help fledgling entrepreneurs develop their skills and increase their chances of success. Serial entrepreneurs/mentors have contacts in the investor community, can recognize quality deals and help to generate deal flow that helps firms access capital markets.

Many entrepreneurs, particularly in underserved communities, lack the network, resources and personal relationships often needed to get businesses off the ground. A statewide program to connect serial entrepreneurs/mentors with underserved and underrepresented entrepreneurs would strengthen Alabama's startup ecosystem and bring new and diverse voices to the table.

A strong mentoring group in the state could become a driving force for encouraging and marketing success in the state and would unify business leaders in participating in state-based innovation.

MEASURES OF SUCCESS

Number of new business starts by underrepresented and underserved entrepreneurs.

Number of businesses applying for and receiving nondilutive funding.

MILESTONES

2021-22

Identify regions of the state where these mentor networks could/should be established.
Identify seasoned leaders in each region who will participate in the mentorship networks.
Develop marketing campaign to promote the mentorship network program.

2022-23

Obtain additional legislative appropriations to adequately fund the mentorship networks.
Accept first cohort of entrepreneurs.
Create data analysis system to collect relevant data points on program participants.

LEGISLATION REQUIRED: **NO**
ADDITIONAL FUNDS REQUIRED: **YES**

TAX CREDITS

OPPORTUNITY:

Encourage private-sector innovative activity through the implementation of a state R&D tax credit to foster R&D among Alabama's key industries. Stimulate job growth, create wealth and accelerate the creation of new ventures in Alabama by incentivizing the transfer of capital from investors to entrepreneurs, particularly during early-stage growth. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "Tax Policy, Subsidies and Innovative Business Investment in Alabama: Past and Prospect" on page 84, "The Role of Alabama Universities in Fostering Innovation and Growth" on page 31 and "Supporting Advanced Manufacturing" on pages 65 and 76-78.

1. ANGEL TAX CREDIT PROGRAM – ACTION

RECOMMENDATION:

Create an angel investor tax credit that would be equal to 25% of an equity investment made into a qualifying high-growth business that has been preapproved by the Alabama Innovation Corporation. The credit should be subject to a cap, such as $5 million per year, there should be a minimum investment threshold (e.g., $25,000) and the pool of potential investors should be limited to accredited investors. In order to maximize its impact, the credit should be able to be claimed against various tax types, including, but not limited to, taxes that the Growing Alabama Credit can be claimed against (e.g., the individual income tax, corporation income tax, insurance premium tax, etc.).

BACKGROUND AND RATIONALE:

Seed capital is difficult to raise for startups, especially in a state like Alabama that is still coalescing its startup ecosystem. Angel investors can meet that need, as they are willing to invest their personal funds into high-risk startups in exchange for an equity share of the business. Compared to later stage venture capital financing, angel investment tends to be smaller and occurs earlier in the life of the new business.

An angel investor tax credit program (or a direct matching program) would help Alabama entrepreneurs attract investors who provide much needed capital, helping to mitigate the risks involved in financing startup companies. The program would also help to address Alabama's regional disparity in private equity investment and work to close the funding gap faced by entrepreneurs by incentivizing more private investment.

MEASURES OF SUCCESS

Number of companies participating.

Amount of private capital leveraged.

Businesses created by Alabama's innovation endeavors.

MILESTONES

2021-22

Meet with stakeholders to determine market-rate parameters of an angel tax credit program.

Draft legislation for the creation and funding of an angel tax credit program.

2022-23

Create data analysis system to collect relevant data points on angel tax credit program participants (both the investors and the related companies receiving the investment).

LEGISLATION REQUIRED: **YES**
ADDITIONAL FUNDS REQUIRED: **YES**

2. RESEARCH AND DEVELOPMENT (R&D) TAX CREDIT PROGRAM – ACTION

RECOMMENDATION:

Create an R&D state tax credit for certain targeted, high-growth industries that are critical to Alabama's traded-sector strengths or emerging global market opportunities. The credit should be competitive with the R&D credits offered by peer states by exempting 5-10% of the taxpayer's qualified research expenses from taxes and including a carry-forward provision to offset future profits, which is essential for startups that may not have profits during their early years when they invest most heavily in R&D. In addition, excess R&D tax credits should either be refundable – subject to an annual cap – or be able to offset the state's payroll withholding, for more mature R&D firms.

BACKGROUND AND RATIONALE:

Alabama ranks 45th among all states, according to the Tax Foundation, in terms of its tax competitiveness for established R&D firms, while its immediate neighbor, Georgia, ranks second overall. Alabama currently provides no R&D tax credit, which is suboptimal, since such credits have been shown to stimulate private-sector R&D investment and help locations move up the technology development value chain.

Technological innovation is the main driver of long-term economic growth and increases in living standards. It is difficult to have ongoing technological innovation and more productivity without investing in R&D. Increasing productivity – the goods and services that can be developed in a place given its availability of people, facilities and resources – is an important part of facilitating innovation and improving economic growth. While there are various paths to increasing productivity, a fundamental driver of this growth is the production of new knowledge through R&D. R&D comprises three main parts:

Basic research refers to the experiments or theoretical work that is undertaken without any application or use in view; the primary purpose is to expand knowledge, not to create or invent something.

Applied research seeks to solve specific, practical issues affecting individuals or groups such as states or businesses. Solving problems and improving conditions are important goals of applied research.

Development refers to the conversion of research into new ideas, services or products in order to improve standards of living. Common elements of the development process include concept formulation, design, product testing, prototyping and other types of pilot projects.

While basic research is important because it serves as the pipeline for ideation, there must be a focus within industry and academia on applied R&D, which helps generate further innovation and economic growth. Focusing on R&D and the early stages of knowledge generation helps fuel the other innovation ecosystem elements and will provide sustained growth for Alabama's industry clusters.

MEASURES OF SUCCESS

Number of R&D conducting firms created.

Number of high-tech jobs boosted.

Value of capital investment linked to the state's R&D tax credit.

MILESTONES

2021-22

Meet with stakeholders to determine parameters of a R&D tax credit program that would encourage targeted business growth in Alabama.

Draft legislation for the creation and funding of an R&D tax credit program.

2022-23

Create data analysis system to collect relevant data points on R&D tax credit program participants.

LEGISLATION REQUIRED: **YES**
ADDITIONAL FUNDS REQUIRED: **YES**

TALENT ATTRACTION AND RETENTION

TALENT AND HUMAN CAPITAL

OPPORTUNITY:

Establish incentive programs focused on recruiting and retaining a workforce with the skills, knowledge and credentials necessary to create innovation ecosystems throughout the state. In order to drive growth in Alabama's innovation ecosystems, Alabama should prioritize, as part of its economic development efforts, developing the state's talent, recruiting new talent and retaining both. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "The Role of Alabama Universities in Fostering Innovation and Growth" on pages 11 and 19-20.

1. RETAINING IN-STATE TALENT – ACTION

RECOMMENDATION:

The Alabama Innovation Corporation should create a retention program targeting talent in STEM fields at Alabama universities and colleges (or expand the 2021 Retain Alabama program). This program could facilitate introductions to companies and executives in Alabama and fund activities that expose such talent to job opportunities, employers and quality of life in Alabama.

BACKGROUND AND RATIONALE:

Alabama colleges and universities train Alabama's young talent and recruit out-of-state talent for such training as well. However, Alabama does a poor job retaining the talent that it develops, with many graduates receiving their degrees in Alabama and taking their skills out of state. This is an issue that needs to be addressed through collaboration between universities, colleges and industries. A program that highlights the benefits of living and working in Alabama and connects Alabama employers to the talent that is already in Alabama receiving training could have lasting impact on the growth of Alabama's innovation economy.

MEASURES OF SUCCESS

Number of employers engaged in campaign and their industry.

Number of graduates taking jobs identified through program.

State return on investment.

MILESTONES

2021-22

Execute memoranda of understanding with employers and universities and colleges.

Prepare programming.

Identify students for program.

Launch program.

Enlist 20 employers in program.

Report 50 graduates participating in program have found employment in Alabama.

2022-23

Retain participation of previous 20 employers in program.

Enlist 20 new employers (40 total) for program.

Report 100 graduates participating in program have found employment in Alabama.

2023-24

Reevaluate efficacy of program.

Refine program.

Grow program.

LEGISLATION REQUIRED: **NO**

ADDITIONAL FUNDS REQUIRED: **YES,** *though funding was provided to ADECA and the Economic Development Partnership of Alabama for a similar purpose.*

2. TARGETED RECRUITMENT OF TALENT — ACTION

RECOMMENDATION:

Create a program under the Alabama Innovation Corporation focused on incentivizing workers with requisite credentials and entrepreneurs with records of success to live and work in Alabama. This program could provide access to the mentorship networks, discussed above, or other nonfinancial incentives to certain qualifying applicants to work in Alabama to take a full-time job in clearly defined sectors, or to work remotely within such sectors in Alabama, for a period of no less than two years. For example, nonfinancial incentives could be a nonrefundable reduction in state income tax equal to the amount of student loan payments made by eligible applicants in a year, up to a capped amount; and/or caps on certain capital gains incurred by entrepreneurs who relocate a business to the state. The nonfinancial incentive program could be privately funded through a tax offset program managed by the corporation (e.g., tax offsets could be purchased by the recruit's employer, similar to the existing Growing Alabama tax credit program).

BACKGROUND AND RATIONALE:

Incentives for individuals and business have the dual impact of recruiting needed talent and/or jobs to the state and providing a marketing beacon capable of capturing national headlines. These types of incentives have been deployed by states and cities throughout the U.S. Deploying a pilot program in Alabama would provide an offering that could be leveraged in the marketing campaigns proposed in this report. Data could be collected to evaluate the efficacy of such a program and to improve it in future years.

MEASURES OF SUCCESS:

Number of new workers employed by Alabama businesses as a result of their recruitment.

Economic impact of new Alabama workers compared to cost of incentive payment.

State return on investment.

MILESTONES:

2021-22

Identify nonfinancial incentives to market to potential applicants.

Determine whether to apportion any funding between incentives.

Develop legislation that includes applicant, residence and job requirements.

Recruit/retain 100 individuals using incentives.

2022-23

Recruit/retain 100 residents using incentives.

2023-24

Reevaluate efficacy of program.

Refine program.

Grow program.

LEGISLATION REQUIRED: **NO**
ADDITIONAL FUNDS REQUIRED: **YES**

MARKETING ALABAMA'S INNOVATION ECONOMY

OPPORTUNITY:

Alabama has established itself as a state for athletic excellence through its success on national stages; this has resulted in an influx of athletic talent. If Alabama could direct resources in targeted ways toward highlighting its statewide and city-specific innovation assets, Alabama could be in a stronger position to recruit the talent needed to fill the jobs of the future. In order to drive growth in Alabama's innovation ecosystems, Alabama should prioritize, as part of its efforts to attract and retain talent, the marketing of Alabama's innovation economy and its entrepreneurs. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "The Role of Alabama Universities in Fostering Innovation and Growth" on pages 21 and 31.

1. TARGETED NATIONAL CAMPAIGN – ACTION

RECOMMENDATION:

The Alabama Innovation Corporation should conduct research to identify national cities with innovation-related talent and sector-specific businesses whose citizens would be open to moving to Alabama, and then heavily market the growing statewide opportunities for such workers and businesses, including the proposed relocation incentives and existing Alabama business-related incentives. It would be essential to ensure that the campaign has unique elements targeting former residents of Alabama.

BACKGROUND AND RATIONALE:

While Alabama cannot dictate its perception in the eyes of the American public, it can help shape it. The perception of the state matters nationally but is more important in the markets that Alabama desires to recruit/recover talent. By strategically identifying out-of-state cities where the talent Alabama needs is educated and/or works and there is an openness to relocating to Alabama, the state could more deliberately target a marketing campaign that could have more impact. This would result in a data-driven marketing campaign that would maximize the investment being made and ensure alignment with other efforts to attract talent.

MEASURES OF SUCCESS:

Development of city research report and identification of top 5 cities.

Number of individuals in each of top 5 cities reached by campaign.

Number of businesses in each of the top 5 cities reached by campaign

Number of individuals and businesses engaging with the corporation as a result of campaign.

MILESTONES:

2021-22

Engage consulting firm for city research.

Accept city research report; identify top 5 cities for campaign.

Establish strategy for campaign.

Report individuals reached by campaign.

Report businesses reached by campaign.

Report unique engagements with the corporation as a result of campaign.

Report workers and businesses known to have moved to state as a result of campaign.

2022-23

Report individuals reached by campaign.

Report businesses reached by campaign.

Report unique engagements with the corporation as a result of campaign.

Report workers and businesses known to have moved to state as a result of campaign.

2023-24

Reevaluate efficacy of program.

Refine city research if needed.

Grow the marketing campaign.

LEGISLATION REQUIRED: **NO**

ADDITIONAL FUNDS REQUIRED: **YES,** *though partially funded through Alabama Innovation Corporation for FY 2021-22. Future campaigns would need additional funding.*

2. ALABAMA CITY CAMPAIGNS – ACTION

RECOMMENDATION:

The Alabama Innovation Corporation should partner with Alabama regions with marketable innovation assets to develop co-funded marketing campaigns that highlight their innovation economy. For example, cities would collaborate to recruit talent to work in a region, regardless of where people choose to live and work. A co-funded marketing campaign would use research to identify municipalities in regions with resources that support and bolster innovation initiatives and efforts. This program could potentially be funded collaboratively through the corporation, a city or cities and employers in a region (such as a Metropolitan Statistical Area).

BACKGROUND AND RATIONALE:

When making a decision to relocate to a new place, a city, more than the state, influences an individual's decision. The state's reputation certainly matters, but it is a city that the individual will choose. People choose a city for its specific culture, community and offerings. As such, any effective marketing campaign should highlight the state, the region and the particular city recruiting talent.

MEASURES OF SUCCESS:

Number of innovation asset maps developed for Alabama cities.

Number of individuals in each of top five cities reached by campaign.

Number of businesses in each of the top five cities reached by campaign.

Number of individuals and businesses engaging with city or the corporation as a result of campaign.

MILESTONES:

2021-22

Establish strategy for campaign.

Report individuals reached by campaign.

Report businesses reached by campaign.

Report unique engagements with the corporation as a result of campaign.

Report workers and businesses known to have moved to city as a result of campaign.

2022-23

Report individuals reached by campaign.

Report businesses reached by campaign.

Report unique engagements with the corporation as a result of campaign.

Report workers and businesses known to have moved to city as a result of campaign.

2023-24

Reevaluate efficacy of program.

Grow the marketing campaign.

LEGISLATION REQUIRED: **NO**

ADDITIONAL FUNDS REQUIRED: **YES,** *though partially funded through the corporation for FY 2021-22. Funding from city could also be required. Future campaigns would need additional funding.*

3. ALABAMA AMBASSADORS/INFLUENCERS – STRATEGY

RECOMMENDATION:

The Alabama Innovation Corporation could engage influential Alabamians to serve as Alabama ambassadors/influencers who promote Alabama's innovation economy and the state itself as an excellent place to live and work. This could take the form of coordinated social media campaigns that leverage influential Alabamians with broad regional or national reach in markets that the corporation desires to reach.

BACKGROUND AND RATIONALE:

Attracting talent requires identifying and leveraging the mediums the specific desired talent accesses and relies on. Today, that often means using a diverse array of social media platforms. Leveraging the existing platforms of Alabamians with large out-of-state social media followers would allow the state a means of reaching out-of-state talent through the other campaigns identified in this report.

MEASURES OF SUCCESS:

Number of influential Alabamians engaged.

Interactions with influential Alabamians' social media activity around campaign.

Number of publications featuring influential Alabamians around campaign.

MILESTONES:

2021-22

Secure influential Alabamians' support.

Develop social media and publication strategy/content.

Report individuals reached by campaign.

Report businesses reached by campaign.

Report unique engagements with the corporation as a result of campaign.

2022-23

Secure new influential Alabamians' support.

Develop social media and publication strategy/content.

Report individuals reached by campaign.

Report businesses reached by campaign.

Report unique engagements with the corporation as a result of campaign.

LEGISLATION REQUIRED: **NO**

ADDITIONAL FUNDS REQUIRED: **YES,** *though partially funded through Alabama Innovation Commission for FY 2021-22. Future campaigns would need additional funding.*

CREATING AN ENVIRONMENT TO ATTRACT AND RETAIN ALABAMIANS

OPPORTUNITY:

Alabama will have more success in recruiting and retaining talent if it invests in Alabama organizations, assets and events that could improve quality of life, on terms that appeal to the talent needed to develop the state's innovation economy. Three offerings that help improve the quality of life of talent transplants and could benefit from increased investment are outdoor recreation, young professional organizations and entrepreneurship-focused events. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "The Role of Alabama Universities in Fostering Innovation and Growth" on page 21 and "If You Build It, They Will Come: High-Skill Workers and Alabama's Outdoor Recreation Infrastructure" on pages 33, 44 and 53-55.

1. INVEST IN OUTDOOR RECREATION AS ATTRACTION/RETENTION TOOL – ACTION

RECOMMENDATION:

Alabama's outdoor recreation and related tourism assets should be better leveraged as a tool to attract and retain workforce talent. This could take the form of the Alabama Innovation Corporation partnering with state agencies to incentivize the improvement and marketing of existing outdoor recreation assets and incentivizing the creation and marketing of additional outdoor recreation assets. The state of Alabama allocated $85 million to improving outdoor recreation in 2021 so funding is already available. A repository for the state's outdoor recreation assets should also be developed and made publicly available to achieve these efforts.

BACKGROUND AND RATIONALE:

Alabama is well-situated to recruit talent that is interested in having quick access to outdoor assets, as further described in the Hoover Institution Report. Alabama's waterways, biking routes and trail systems provide many outlets for outdoor recreation near growing innovation ecosystems. Connecting innovation-oriented employment opportunities to outdoor recreational activities will provide a valuable metric to persuade potential talent being recruited to the state.

MEASURES OF SUCCESS:

Increased web traffic related to exploring and visiting registered outdoor recreation assets.

Number of out-of-state visitors at registered outdoor recreation assets.

Number of in-state visitors at registered outdoor recreation asserts.

MILESTONES:

2021-22

Develop repository of Alabama outdoor recreation assets.

Identify five top outdoor recreation assets most likely to attract talent.

Establish marketing programs for outdoor recreation assets.

Incentivize improvement of five top outdoor recreation assets most likely to help attract and retain talent.

Report any increase in web traffic for such outdoor recreation assets.

Report visitors and any increase in use of outdoor recreation assets (evaluate in-state versus out-of-state use if possible).

LEGISLATION REQUIRED: **YES**
ADDITIONAL FUNDS REQUIRED: **YES**

2. ENTREPRENEURS AND INVESTOR SUMMIT – ACTION

RECOMMENDATION:

The Alabama Innovation Corporation could host a world-class summit for entrepreneurs and investors nationally, targeting groups in cities whose citizens are open to moving to Alabama, in order to expose outside entrepreneurs and investors to the state and to showcase Alabama's entrepreneurs and innovation assets. This would require a budget of $500,000, which could be funded through appropriations. This will build the entrepreneurial ecosystem, market the innovation assets of Alabama and help attract talent and capital to the state.

BACKGROUND AND RATIONALE:

Alabama can showcase the success of its entrepreneurs and highlight the innovation assets of the state through events that convene out-of-state entrepreneurs and investors. Hosting such events is one means of helping people discover the opportunities that exist in Alabama today and the opportunities that could be created in Alabama tomorrow. This also offers a platform for championing the work of the corporation and the incentives and programs that have been developed to grow Alabama's innovation ecosystem.

MEASURES OF SUCCESS:

Number of out-of-state entrepreneurs attending.

Number of out-of-state entrepreneurs who move to Alabama after summit.

Number of out-of-state entrepreneurs who secure investment as a result of summit.

Number of in-state entrepreneurs attending.

Number of in-state entrepreneurs who secure investment as a result of summit.

Number of out-of-state investors attending.

Number of in-state investors attending.

Number of out-of-state investors who move to Alabama after summit.

MILESTONES:

2021-22

Secure/raise $500,000 for first summit.

Host first summit in an Alabama city with excellent innovation assets.

1,000 overall attendees with 50% being from out of state.

2022-23

Secure/raise $500,000 for second summit.

Host second summit in an Alabama city with excellent innovation assets.

1,000 overall attendees with 50% being from out of state.

2023-24

Reevaluate efficacy of program.

Refine and grow the program.

LEGISLATION REQUIRED: **YES**
ADDITIONAL FUNDS REQUIRED: **YES**

INCREASING COMMERCIALIZATION

INNOVATION DISTRICTS

OPPORTUNITY:

Identify Alabama's innovation clusters and focus innovation development efforts on the regional scale to ensure the state is cohesively moving toward a more innovative economy.

1. TARGETED CLUSTERING – ACTION

RECOMMENDATION:

The Alabama Innovation Corporation should engage an industry-leading firm to perform a comprehensive study on Alabama's innovative traded sectors (industry clusters that produce goods/services consumed outside of Alabama). The findings of the study should be subject to annual assessments of Alabama's innovation economy by the corporation, and the study should be used to create policies that support Alabama's innovation clusters.

BACKGROUND AND RATIONALE:

To increase the links between targeted entrepreneurship support and the regional economy, the Alabama Innovation Corporation should adopt a focused regional ecosystem approach. Before the approach can be developed, the corporation must have a clear understanding of what Alabama's innovation clusters and regional strengths actually are. While there are many candidates (including automotive, aerospace, robotics and advanced manufacturing, life sciences and energy), the state has not performed a specific, comprehensive study on its innovative traded sectors.

A well-researched innovation strategy will allow the corporation to identify Alabama's unique assets and competitive advantages in the modern economy and coordinate state resources to support regional areas of growth. Doing so would also help maximize the return on efforts to confront other shortcomings in the state's innovation economy. Such a study would also typically benchmark how Alabama is doing relative to its competitors, evaluate state progress over time and provide recommendations for forward-looking programs and initiatives. Alabama has not conducted a statewide inventory of its innovation ecosystem.

MEASURES OF SUCCESS:

Completion of an industry cluster report by July 2022.

MILESTONES

2021-22

Identify third party that can perform the industry cluster report.

Work with third party to obtain a completed report by summer 2022.

2022-23

Use data sets from industry cluster report to focus recruitment and commercialization efforts on the identified industries.

LEGISLATION REQUIRED: **NO**
ADDITIONAL FUNDS REQUIRED: **YES**

2. BUILD REGIONAL ECOSYSTEMS – STRATEGY

RECOMMENDATION:

After the Alabama Innovation Corporation completes the targeted sector study, use the data to identify Alabama's key innovative communities and create Regional Innovation Hub designations that will fund and incentivize collaboration to build and advance innovation-focused ecosystems, ensuring opportunities for all innovation-based businesses throughout Alabama. The hubs would accomplish the following:

Connect entrepreneurial efforts to existing regional business base and emerging opportunities, tailoring each effort to leverage the region's comparative advantages.

Deliver services throughout the region in coordination with existing efforts, academic assets and other key stakeholders. Consideration should be given to co-locate the hub in or near the regional business school and/or community college, and to support any existing tech accelerators or tech incubators whose mission is similar to the goals of the Alabama Innovation Corporation.

Consider how best to address the need for physical infrastructure/place-making to catalyze an entrepreneurial culture within the region.

Ensure programming is culturally specific, accessible and impactful to rural and historically underserved populations.

BACKGROUND AND RATIONALE:

While many of Alabama's regions have established or are proposing to establish entrepreneurship centers/programs/accelerators, there is considerable variance in the scope, scale, coverage, focus and resources to carry out these tasks. In addition to often being under-resourced, the efforts are also often siloed, disconnected from larger statewide efforts and often treat entrepreneurship as a one-size-fits-all model – not understanding the unique needs of innovative traded-sector firms. Because of this disconnect, state and regional efforts to support entrepreneurship will fall short of the mark if Alabama wants to use entrepreneurship as a way to build a more innovation-driven economy.

Regional Innovation Hubs should be created through peer-reviewed competitions and judged by the corporation. The following key criteria and evidence should be submitted with hub applications to be considered for designation:

Develop a cohesive vision and a plan to support, strengthen and integrate the region's ecosystem components to facilitate the support of innovation-based entrepreneurs.

Coalesce, coordinate and convene existing partners to leverage existing assets and serve traded-sector entrepreneurial efforts within the region.

Align efforts with existing or emerging regional priorities to ensure continuity among stakeholders, including industry, workforce and education, finance and policymakers.

Report on various performance metrics, including diversity and equity outcomes.

It is important to note that, while innovation hubs are needed in every region of the state, it does not mean that every region will be awarded a designation. It will take collaboration at the regional level to be able to coordinate the existing efforts cohesively. The state funding is to serve as an incentive for dedicated and forward-thinking regions to coalesce around a larger vision for their economic future. Ideally, this application process would expose areas where competing entities in a region have opportunities to partner, as well as instances where the critical dependencies around broadband, talent or R&D can be strengthened.

MEASURES OF SUCCESS

Drafting of an application by the corporation.

Identification of Regional Innovation Hubs.

MILESTONES

2021-22

After completion of industry cluster report in 2022, identify potential regional communities for hub designations.

Develop application process and criteria to select hubs.

2022-23

Invite communities to apply to the corporation for selection as a hub.

Select hubs and provide initial investment dollars and support to encourage the hubs' development.

LEGISLATION REQUIRED: **NO**
ADDITIONAL FUNDS REQUIRED: **YES**

INVESTMENT IN R&D INNOVATION

OPPORTUNITY:

Clearly identify university strengths and weaknesses in order to foster the creation of innovative businesses. Increase commercialization activities from universities through the creation of the Alabama Innovation Corporation. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "The Role of Alabama Universities in Fostering Innovation and Growth" on pages 21-26.

1. TARGETED NATIONAL CAMPAIGN – ACTION

RECOMMENDATION:

The Alabama Innovation Corporation should assemble stakeholders to draft a Research and Technology Strategic Roadmap (Roadmap) to identify university research areas worthy of economic development and institutional focus. This Roadmap should offer a comprehensive and cohesive framework to foster collaboration between higher education, economic development and private-sector industry along the continuum from research to commercialization.

BACKGROUND AND RATIONALE:

Knowledge, innovation and collaboration drive economic growth. Alabama's strongest asset for such growth is the collective expertise of its institutions of higher education. Therefore, state officials with working knowledge of the state's postsecondary system are uniquely suited to partner with existing industry and develop a strategic roadmap to grow the state's innovation economy.

While industry-led research and development in Alabama remains low, higher education research and development activity continues to increase. For example, in 2019 the University of Alabama at Birmingham (UAB) surpassed $600 million in research funding for the first time. In 2020, UAB received more than $325 million in research funding from the National Institutes of Health alone.

Specific areas of opportunity within Alabama's innovation economy would likely include life and health sciences, but further research and industry collaboration is needed to clearly identify points of focus for commercialization. The Roadmap will identify and focus collaboration around sectors that offer the most promise for growing Alabama's innovation economy.

MEASURES OF SUCCESS

Completion of the Roadmap, which should include any statutory process, areas of focus and steps to support collaborative research, development and commercialization efforts around those areas of focus.

MILESTONES

2021-22

Identify officials from state government, in the private sector and economic development professionals to form a working committee that would identify university strengths and weaknesses for commercialization.

Begin research and leverage resources to identify university areas of growth that would supplement or enhance Alabama's traded sectors.

2022-23

Complete Roadmap.

Based on the findings of the Roadmap, encourage university-industry collaborations to further commercialization efforts and create a sustainable talent pool.

LEGISLATION REQUIRED: **NO**
ADDITIONAL FUNDS REQUIRED: **YES**

2. SUPPORT EARLY-STAGE INNOVATION AT UNIVERSITIES – ACTION

RECOMMENDATION:

Coalesce industry and academic partners to create an accelerator program that will educate students and faculty about bringing academic research from an idea to a licensable product. The accelerator would be similar to the federal Innovation Corps program or Ohio's I-Corps@Ohio and should provide access to specialized knowledge and technical expertise regarding product development and sources of funding to support translational efforts and a multiyear grant. For example, every year the accelerator could select 10 faculty members to participate in the cohort, where they would be provided extensive educational mentoring on developing their product. Funding would be distributed as project milestones are met. Once a milestone is achieved, additional funds could be requested for the next stage of development, subject to an annual cap (e.g., $75,000/year).

BACKGROUND AND RATIONALE:

Bridging the gap between an idea and a product can be overwhelming and is not necessarily an intuitive process for academics. Universities and colleges spun off 11,000 startups between 1996 and 2015 – an average of 550 per year – according to the Association of University Technology Managers, whose members oversee what is known as technology transfer. That's 0.1 percent of the roughly 400,000 annual startups reported by the Bureau of Labor Statistics. One reason for this difference is the challenge in translating academic research into new products. These hurdles are an important focus for the industries and investment communities, which have historically favored later-stage assets with lower risk and clearer commercial value.

Most early-stage programs will fail during development, no matter how promising the science or perceived business case. These early-stage ideas rarely attract investment interest until they have reached significant milestones, and even then, funding is very competitive for this critical transition. As a result, Alabama must be deliberate in its actions by creating a support system to facilitate commercialization activities from its universities. A university-focused program would work with students and faculty to generate proof of concept using industry standards and connect industry with academia.

MEASURES OF SUCCESS:

Measurable increase of commercialization activities from participant universities.

MILESTONES

2021-22

Identify public and private partners to assemble a working group to develop accelerator program.

Identify best practices from other states and programs to develop a comparable acceleration program.

Develop branding campaign to promote the accelerator program.

Roll out first pilot program in a university for the accelerator program.

2022-23

Expand accelerator program to other universities.

LEGISLATION REQUIRED: **NO**

ADDITIONAL FUNDS REQUIRED: **YES.** *(Funds could be reallocated from the Education Trust Fund to achieve these purposes.)*

UNIVERSITY COMMERCIALIZATION AND DEPLOYMENT

OPPORTUNITY:

Clarify and enhance state policies that limit commercialization activities at universities. Partner with universities to recruit the very best scientists and professors in order to start a chain reaction of impact and results. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "The Role of Alabama Universities in Fostering Innovation and Growth" on pages 23-26.

1. REMOVING BARRIERS AND SUPPORTING TECHNOLOGY TRANSFER OFFICES – ACTION

RECOMMENDATION:

Enact legislation to amend the Alabama Ethics Act to explicitly authorize university faculty to become stakeholders in startups commercializing their research findings and technologies, and adopt other founder-friendly policies for university spinoffs. In addition, provide increased support for university technology transfer offices (TTOs) through the creation of a statewide TTO coordinating office to manage faculty research intellectual property and commercialization for colleges and universities.

BACKGROUND AND RATIONALE:

Increased involvement in technology commercialization has resulted in a heightened awareness of, and opportunity for, conflicts of interest. Many Alabama universities have addressed these conflicts in their intellectual property policies. Issues of importance include manipulation of research results for personal enrichment, inappropriate use of university-owned facilities and equipment, and improper influencing of graduate students to pursue research for profit rather than for knowledge. As Alabama universities become more involved in the creation of startup companies to commercialize their technologies and research, which may result in the acquisition of ownership interests by the university and the faculty inventors, these issues become more important and complex.

Seemingly small differences in the technology transfer office's size, professional makeup and policies make a surprisingly large difference to a university's innovation impact. The most productive institutions seem to have larger TTO resources per dollar of research spending, a greater tendency to employ trained engineers as TTO heads, bigger patenting budgets per dollar of research spending and a greater tendency to have seed funds. Based on research from the George W. Bush Institute, a university with a TTO staff of 20 employees will achieve an innovation impact score approximately 20% higher than an otherwise similar peer with a staff of 10. Notably, these technology transfer policies influence not only an institution's success in generating patents, technology licenses and spinout companies but also its research impact and teaching impact. To support technology transfer activities from public and private research institutions to companies in Alabama, the Alabama Innovation Corporation should work with TTOs at Alabama research institutions; faculty, researchers and students who have commercially promising ideas; and companies across Alabama.

MEASURES OF SUCCESS

Enacting legislation that would protect faculty members and universities from conflicts of interest.

Creating a statewide TTO coordinating office.

MILESTONES

2021-22

Support the passage of legislation to amend the Alabama Ethics Act to explicitly authorize university faculty to maintain ownership in for-profit activities that use the faculty's research findings.

Meet with statewide TTOs from other states to develop a best practice for creation of Alabama's statewide TTO.

2022-23

Obtain additional appropriations to fund creation and operation of statewide TTO (including the hiring of staff).

LEGISLATION REQUIRED: **YES**

ADDITIONAL FUNDS REQUIRED: **YES.** *(Funds could be reallocated from the Education Trust Fund to achieve these purposes.)*

2. TARGETED RECRUITMENT – ACTION

RECOMMENDATION:

Create a "Commercialization Scholars" program that allows for a public-private endowment to attract and retain eminent scholars working in areas of commercial viability consistent with the strategic guidance of the Research and Technology Strategic Roadmap (Roadmap). This would enable the steady recruitment of two to three new scholars each year, plus allow for targeted funding for one-time expenditures for research infrastructure (specialized laboratory equipment) needed to attract scholars.

BACKGROUND AND RATIONALE:

Talent is the foundation for Alabama's sustained growth in innovation. By bringing some of the brightest minds in science and technology to Alabama – and supporting their research while here – this Commercialization Scholars program would give the state's universities greater capacity to:

Attract more federal and private research grants, which expands employment.

Generate more discoveries and inventions, which leads to new products and companies.

Enrich the academic reputation of Alabama's universities throughout the nation and world. This last point is notable because attracting and retaining the Commercialization Scholars would work to organically attract and retain other researchers and students.

Further, attracting industry-leading scientists would work to increase the patents produced within the state. Patent activity helps measure innovation activity in the state on a more basic level. Overall, patent activity per employee in Alabama is well below the national median. Utility patent activity per 1,000 employees in science and engineering fields indicates a similar standing for Alabama, which ranks below each of its neighboring states. This data suggests that, despite the significant national funding drawn to the state, university-backed research is producing overall utility patent activity that is below the national average.

MEASURES OF SUCCESS:

The successful hiring of highly productive, widely published scientists in the fields identified in the Roadmap

MILESTONES:

2022-23

Meet with university officials to identify facility and faculty needs to lure capable faculty; focus should be limited to faculty with high commercialization factors.

Establish and fund a program to hire "Commercialization Scholars."

Develop targeted branding campaign for potential hires (e.g., advertise in the Research Triangle, work with recruiting firms to socialize the new program, etc.).

2023-24

Working with university partners, hire first cohort of Commercialization Scholars.

LEGISLATION REQUIRED: **NO**

ADDITIONAL FUNDS REQUIRED: **YES.** *(Funds could be reallocated from the Education Trust Fund to achieve these purposes.)*

BRIDGING DIGITAL AND ECONOMIC DIVIDES

UNIVERSAL BROADBAND ACCESS

OPPORTUNITY:

Accelerate deployment of affordable, high-quality digital infrastructure across underserved and unserved areas in Alabama. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "Tax Policy, Subsidies and Innovative Business Investment in Alabama: Past and Prospect" on pages 2 and 13-14, as well the "Alabama Broadband for Education" section of the report.

1. CLOSING THE RURAL VS. URBAN DIVIDE – STRATEGY

RECOMMENDATION:

The Alabama Innovation Corporation should support the state, ADECA and ADEA in their goal of expanding high-speed broadband access across the state. This could be done by providing additional matching funds or by forming a partnership to support "last mile" infrastructure, which connects the local network to end users, or "middle mile" infrastructure, which connects "last mile" networks to telecommunications carriers and the broader internet.

BACKGROUND AND RATIONALE:

The proliferation of the internet across every industry and nearly all facets of life has made broadband truly essential infrastructure. While this was becoming increasingly clear through the first two decades of the 21st century, the onset of the COVID-19 pandemic and the expansion of remote work and learning highlight both the indispensability of high-speed internet access and existing inequities in its distribution.

In Alabama and throughout the nation, many companies are still struggling with COVID-related repercussions and having difficulty sustaining and scaling operations. Meanwhile, a lack of access to broadband limits the ability of many in the state to launch a business or access customers, service providers, training, networks and other resources. For governments, a "business friendly environment" does not exclusively refer to regulations or tax incidence. Instead, support for infrastructure (especially broadband), talent development or tactics aimed at addressing gaps in the innovation ecosystem offers different approaches to encouraging economic growth that benefits businesses. While some disparity is to be expected given the returns of scale in the knowledge economy, if the benefits to innovation are too concentrated, it will depress the positive impacts for citizens and communities. This extends to physical investments, including broadband, necessary to spur growth in the modern economy.

Alabama has a choice between having communities and regions across the state continue to fall behind, or incentivizing and funding investments in digital infrastructure and digital transformation (i.e., driving the productive use of online practices). Given the importance to this strategic plan of spreading innovation-based industries throughout Alabama, digital infrastructure is especially important to ensuring that opportunities for rural innovation are realistic.

MEASURES OF SUCCESS: Support efforts by ADEA to build awareness and capacity among communities to identify and pursue innovative and emerging strategies for funding broadband.

MILESTONES

2021-22

Partner with the ADEA board to identify strengths and weaknesses for the corporation to address in its branding and outreach campaign.

Discuss partnership to support "last mile" and "middle mile" infrastructure.

LEGISLATION REQUIRED: **NO** *(creation of ADEA).*
ADDITIONAL FUNDS REQUIRED: **YES**

GOVERNMENT TECHNOLOGY AND TRANSPARENCY

OPPORTUNITY:

Promote data sharing to ensure that state government data is more accessible, transparent and open to innovative uses that may help transform and improve citizens' lives. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "Tax Policy, Subsidies and Innovative Business Investment in Alabama: Past and Prospect" on pages 83-84 and "Establishing the Foundation for Economic Growth" on pages 105-107.

2. STATEWIDE DATA SHARING PLAN

RECOMMENDATION:

The state should work with its partners to create an Open Data Council (ODC) that brings together a team of public and private citizens focused specifically on making more data available to state agencies and the public. The ODC would be tasked with promoting open data, establishing a statewide data strategy and recommending data standards for publicly available data.

BACKGROUND AND RATIONALE:

Data is a strategic asset, yet one of the most underutilized resources in the public sector. State governments collect and maintain vast amounts of data, which should be treated as a public asset that can be used to explore and discover patterns, correlations and insights to improve efficiency and solve problems.

Differences in data collection and data sharing procedures across state agencies can affect the ability of policymakers to use data to enhance the effect of linking these cross-agency efforts in a meaningful way. Currently, Alabama's state agencies largely operate with a high degree of autonomy in Alabama, which creates a responsive environment to benefit the state's residents. However, each agency has developed, often independently, its own performance standards as well as methods for maintaining and disclosing information to the general public. By coalescing data to inform policymakers and improve public understanding of opportunities, Alabama can efficiently and effectively develop innovative strategies and improve economic mobility for its residents.

MEASURES OF SUCCESS

Clarify current legal parameters that govern data sharing by state agencies with the general public.

Start small – bring together data from a few state agencies in order to demonstrate the value of data sharing.

Expand data sharing with the creation of a formal state data plan, including establishing a program to collect, analyze and exchange government information from agencies, and making government information available to agencies, political subdivisions, educational institutions, researchers and the general public.

Create a website dedicated to hosting open data from state, regional and local public entities and public institutions of higher education and providing links to additional open data websites in Alabama.

MILESTONES

2021-22

Meet with Gov. Ivey's team members to discuss the need for public data access.

Facilitate discussions with the Office of Information Technology and other relevant partners in state government to develop a roadmap for public data access.

Partner with the identified agencies to create a "best practices" guide for public data sharing that can be universally applied across all state agencies.

2022-23

Enact pilot program with select state agencies to allow public access to anonymized data..

LEGISLATION REQUIRED: **PROBABLY NOT** *(likely can be accomplished by executive order).*

ADDITIONAL FUNDS REQUIRED: **YES**

KNOWLEDGE ECONOMY

EMPOWERING YOUNGER GENERATIONS AND POSTSECONDARY TALENT

OPPORTUNITY:

In order to prepare the state of Alabama for the innovation economy, state government, working with K-12 and postsecondary schools, nonprofits and the private sector, must build a skilled workforce to meet the job demands of the future. This development begins in pre-school and continues beyond post-secondary education into career upskilling and reskilling. If Alabama, along with partners in the education and private sectors, can increase the talent of its citizens, it will be better positioned to recruit the businesses and jobs of tomorrow. The following recommendations align with portions of the recommendations provided in the Hoover Institution Report under "The Role of Alabama Universities in Fostering Innovation and Growth" and "Establishing the Foundation for Economic Growth.

1. INNOVATION INDUSTRY-DRIVEN HIGH SCHOOL AND UNIVERSITY/COLLEGE GUIDANCE COUNSELING PROGRAM – ACTION

RECOMMENDATION:

Establish marketing programs at city or county levels that collect information from local innovation industry employers in partnership with local workforce development partners to inform high school and university/college guidance counselors regarding job and career trends within the innovation industry and the types of credentials needed to succeed in such innovation-related careers. Begin collecting nonpersonally identifiable information about career goals and pathways of high school and college/university students before and after engaging with a guidance counselor participating in the program.

BACKGROUND AND RATIONALE:

Guidance counselors provide education- and career-related guidance to students at the high school and college level. These early interactions often influence the education and career decisions of such students. If these guidance counselors are not informed regarding local and regional industries and employment opportunities, they will be less equipped to inform their students of opportunities nearby. A program that directly markets to, informs and connects guidance counselors with industry partners would have the effect of bridging this gap and ensuring that staying local is an option to be seriously considered.

MEASURES OF SUCCESS:

Number of industry innovation employers, high school and university/college guidance counselors and local workforce development partners engaged.

Number of students recruited into Alabama jobs out of high school and university/college as a result of program.

MILESTONES:

2021-22

Execute memoranda of understanding with five employers, one local workforce development partner, one high school and one local or regional university/college in five cities throughout Alabama with meaningful innovation assets.

Compile information from employers and local workforce development partners on workforce needs and pathways.

50 guidance counselors reached by the program.

100 students recruited into Alabama jobs out of high school and university/college as a result of program.

2022-23

Execute memoranda of understanding with five employers, one local workforce development partner, one high school and one local or regional university/college in five additional cities throughout Alabama with meaningful innovation assets.

Compile information from employers and local workforce development partners on workforce needs and pathways.

50 additional guidance counselors reached by the program.

100 additional students recruited into Alabama jobs out of high school and university/college as a result of program.

2023-24

Reevaluate efficacy of program.

Improve as needed.

LEGISLATION REQUIRED: **NO**
ADDITIONAL FUNDS REQUIRED: **YES**

2. K-12 TEACHER AND STUDENT STEM PROGRAMS – ACTION

RECOMMENDATION:

Create and/or support pilot programs designed to increase science, technology, engineering and math (STEM) offerings in Alabama's K-12 schools and evaluate outcomes to build into a broader program. This pilot should include funding for nonprofit partners to deliver training to teachers and to expand program offerings for students. The need for more STEM teacher training and student offerings could also be addressed through policymaking that would require, incentivize and fund STEM skills programs. Ensure that the skill sets required for innovation industry careers are embedded into Alabama's core educational offerings.

BACKGROUND AND RATIONALE:

Preparing for the economy of the future requires long-term planning. It is necessary to begin this work at the K-12 level by ensuring that teachers are equipped to deliver high-quality STEM education and that students are provided with ample STEM offerings that help them develop an interest in, and prepare them practically for, post-secondary education and/or careers in STEM-related fields. Dovetailed with the guidance counselor program contained in this report, such students would be equipped to take relevant jobs in Alabama.

MEASURES OF SUCCESS:

Number of teachers trained through program.

Increased teacher understanding and interest in STEM offerings.

Number of students taught by teachers trained through program.

Increased student understanding and interest in STEM offerings.

MILESTONES:

2021-22

Secure appropriation of $2 million.

Identify three pilot school systems (strong STEM offerings, limited STEM offerings and no STEM offerings) and prepare mechanisms to evaluate inputs and outcomes.

Engage nonprofits to deliver teacher training and to fund student offerings.

200 teachers trained, leveraging nonprofit partners.

500 students trained, leveraging nonprofit partners.

2022-23

Secure appropriation of $2 million.

Identify one school system to direct all program resources to as the full pilot and evaluate inputs and outcomes.

Engage nonprofits to deliver teacher training and to fund student offerings.

200 teachers trained, leveraging nonprofit partners.

500 students trained, leveraging nonprofit partners.

2022-23

Reevaluate efficacy of program.

Improve as needed.

LEGISLATION REQUIRED: NO
ADDITIONAL FUNDS REQUIRED: YES

3. INNOVATION INDUSTRY-DRIVEN UPSKILLING/RESKILLING PROGRAMMING – ACTION

RECOMMENDATION:

Create a grant program to fund nonprofits providing upskilling/reskilling programming to adults that is tailored for local/regional innovation industry needs.

BACKGROUND AND RATIONALE:

There must be synergies between the current and anticipated needs of innovation employers and the educational/trainings offerings for the next generation of workers. Additionally, there are many Alabamians who would seek out upskilling or reskilling opportunities if given the opportunity. The effectiveness of such training programs, as a tool to develop and retain talent, is dependent on the availability of in-market jobs immediately upon completion of the program. Failing to connect graduates of such programs to jobs immediately upon graduation would reduce enrollment. Failing to connect graduates of such programs to jobs in market would lead those graduates to seek employment outside of the market where they were trained.

MEASURES OF SUCCESS

Number of nonprofits engaged.

Number of innovation industry employers engaged.

Number of adult learners graduating from programs.

Number of adult learners taking relevant jobs in Alabama.

MILESTONES

2021-22

Appropriate $3 million in funds for the program.

Execute memoranda of understanding with innovation industry employers.

Develop application materials for nonprofits.

Raise $3 million in taxpayer donations.

Support the creation and/or expansion of three upskilling/reskilling nonprofits in Alabama cities with meaningful innovation assets.

Graduate 300 adult learners.

90% of adult learner graduates take relevant jobs in Alabama.

2022-23

Raise $3 million in taxpayer donations.

Support the creation and/or expansion of three upskilling/reskilling nonprofits in Alabama cities with meaningful innovation assets.

Graduate 300 additional adult learners.

90% of adult learner graduates take relevant jobs in Alabama.

2023-24

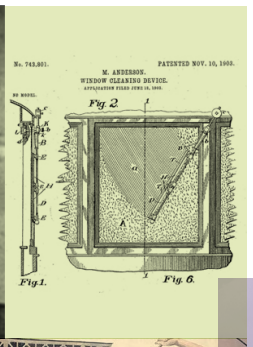
Reevaluate efficacy of program.

Improve as needed.

LEGISLATION REQUIRED: **YES**
ADDITIONAL FUNDS REQUIRED: **YES**

APPENDIX

ALABAMA'S HISTORY OF INNOVATION AND ECONOMIC DEVELOPMENT



1903
Mary Anderson secures a patent for windshield wipers

1906
George Washington Carver creates the Jessup Agricultural Wagon

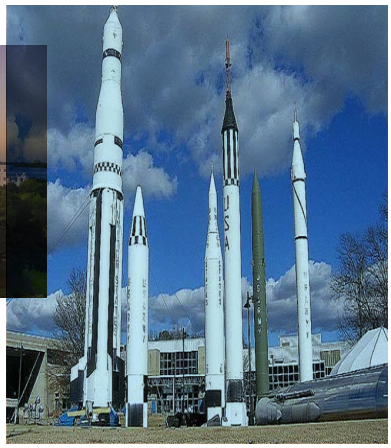
1909
Orville and Wilbur Wright establish "flying school"

1958
NASA opens the Marshall Space Flight Center

1969
NASA develops the Saturn V rocket

1969
University of Alabama at Birmingham is established

1994
Mercedes-Benz establishes a plant in Alabama



2008
HudsonAlpha opens in Huntsville

2011
Innovation Depot contributes over $1 billion in economic impact

2017
Target acquires Birmingham-based Shipt

2018
Mercedes-Benz opens new state-of-the-art electric battery plant

2019
Alabama Legislature passes the Alabama Incentives Modernization Act

2020
University of Alabama School of Medicine joins the fight against COVID-19

2020
Governor Ivey announces creation of Alabama Innovation Commission

2020
Apple partners with Birmingham-based "Education Farm" to offer innovative education solutions

2021
U.S. Air Force selects Huntsville as U.S. Space Command headquarter location

ALABAMA'S HISTORY OF INNOVATION AND ECONOMIC DEVELOPMENT

1800-1819

Following the invention of the cotton gin in 1773, commercial cotton farming would be a significant driver of Alabama's economy for over 100 years. [8]

In 1804, Abram Mordecai, who owned a trading post in what would become Montgomery County, established the first cotton gin-house in Alabama. [9]

In 1819, Alabama was admitted to the United States as the 22nd state. The population of the state was approximately 128,000, with the majority of its citizens living as subsistence farmers. [10]

1820-1865

After 1819, agriculture moved away from being solely for sustenance. Agriculture would instead become the most important commercial industry in the state. Alabama was well suited for agriculture – containing rich soil, a temperate climate and an extensive river system that supplied ample water and provided transportation to markets. [11]

As cotton farming grew beyond small subsistence farms, Alabama's cotton industry became increasingly reliant on slave labor to harvest cotton. As a result, slavery grew into a fundamental component of the state's agricultural economy. [12]

By 1850, Alabama became the leading producer of cotton in the United States. [13]

In 1861, with the beginning of the Civil War, the role of agriculture in Alabama's economy would be altered forever. [14] Legal slavery continued until Jan. 1, 1863, when President Abraham Lincoln delivered the Emancipation Proclamation, which was followed by the 13th Amendment to the U.S. Constitution in 1865, abolishing slavery throughout the United States. [15]

1865-1900

After the Civil War, banks began foreclosing on farms, large and small, for failure to pay off debts incurred during the war. This forced many planters to look for work on larger, more financially secure farms. [16] Furthermore, due to bad weather, insect infestation and limited resources, the crops of 1865 and 1866 were disastrous, wiping out many acres. Farmers with cotton lacked the necessary labor to harvest the crop. [17]

In 1880, of the 135,864 farms listed in the census, 40,761 were rented for a share of the crop and 22,888 were rented for cash. In 1890, there were 223,220 farms, with 54,544 rented for a share of the crop and 74,330 rented for cash. This was due in large part to ownership of land moving from large planters to merchants, banks and cotton factories that insisted on cash as large landowners sold their land or were foreclosed on. [18]

*See reference key on page 120


"
INNOVATION IS A KEY
PART OF ALABAMA'S
PAST, PRESENT
AND FUTURE.
"
GOVERNOR KAY IVEY

Although little other industry existed, Alabama contained large, unexploited deposits of coal, iron ore and limestone. [19] Jefferson County was the only place in North America where these three essential ingredients for steel production were found in such close proximity. These natural resources drew investors to Alabama.

From 1880 to 1890, the manufacture of iron products came to dominate industry in Alabama. [20] By 1889, Alabama ranked second in the nation in iron ore production. [21]

Despite the wave of industrialization sweeping through the state in the late 19th century, most Alabamians – nearly 90% – still lived on and worked farms. [22] Cotton production rebounded by the 1880s to pre-Civil War yields, but market prices dropped continuously into the 1880s and 1890s. As a result, conditions for Alabamians engaged in agricultural production did not improve after Reconstruction. [23]

With advances in lumber technology, such as the advent of the circular saw and the mill pond, the pine forests of southern Alabama helped the lumber industry become the second largest industry in terms of employment and value added in the state, second only to mining. The building of railroads also encouraged development and expanded the lumber industry. [24]

In the last half of the 19th century, Alabama's farmers began to practice diversified agriculture, scientific farming and farm efficiency, but cotton would remain king for some time. [25]

1901-1930

By the turn of the 20th century there were 5,602 business establishments in the state. [26] Leading industries included iron and steel, lumber and timber products, cotton goods, foundry and machine shop products, cars and general construction and repairs, coke, flouring and gristmill products, fertilizers and leather products. [27]

The entrance of U.S. Steel in 1907 brought significant investment to Birmingham, Alabama.

Only 31 banks were operating in Alabama in 1875, but that number grew to 107 by 1900.

In 1909, 3.7 million acres in the state were dedicated to cotton growth. [28] Cotton accounted for 60.3% of total crop values in the state. [29] Alabama was still third in the nation for its cotton production. [30]

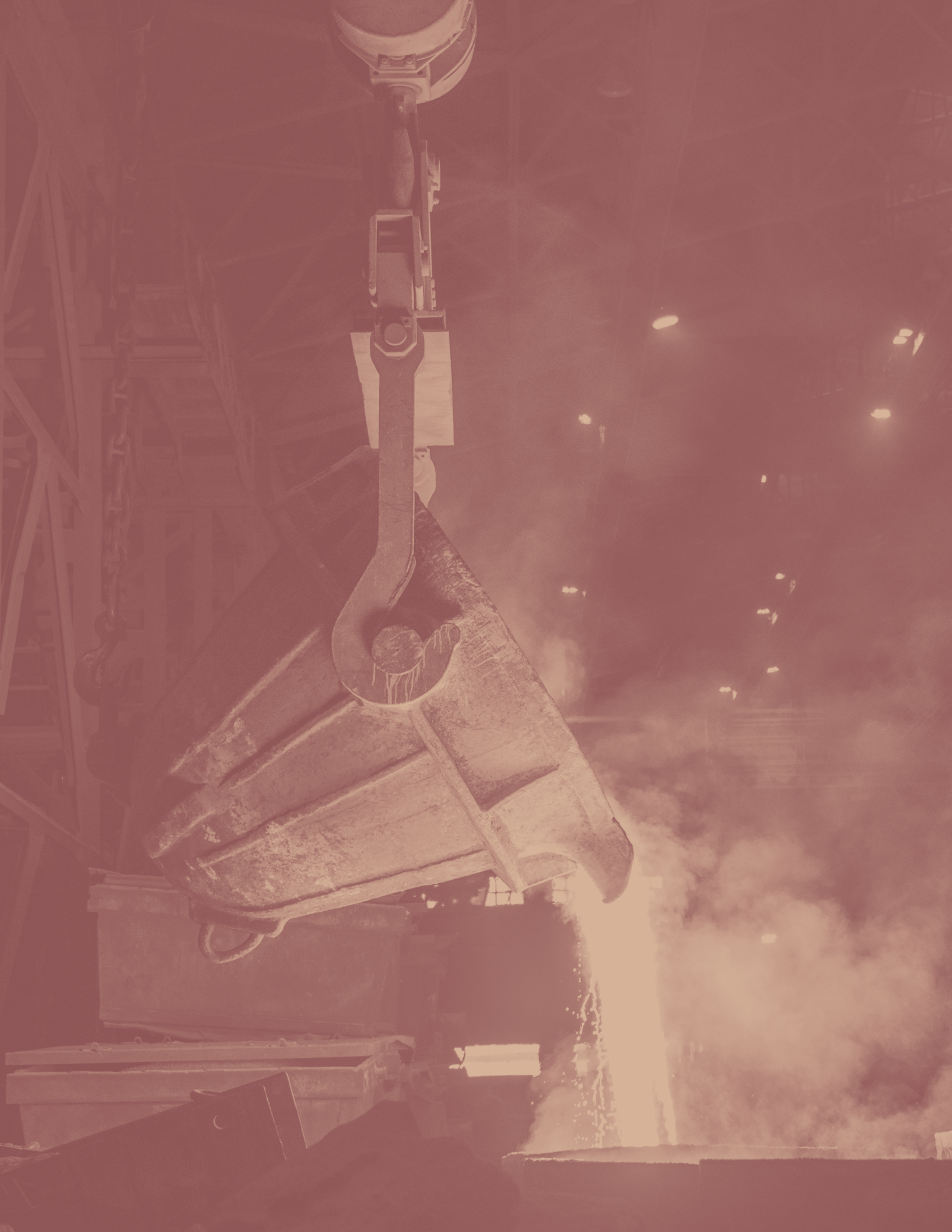
The first recorded instance of boll weevil infestation occurred in 1909 in Mobile. [31] The infestation peaked in 1915 and severely damaged Alabama's cotton economy, forcing a diversification of the rural economy. [32] In the Wiregrass region of southeastern Alabama, farmers began planting peanuts. Farmers in north Alabama found that the weevil was kept somewhat at bay by low winter temperatures, so cotton planting during the weevil era shifted heavily to northern areas of the state. [33] Hundreds of landowners were forced to sell their land and even more tenant farmers and sharecroppers left the South, with many moving north and west in search of employment in what has become known as the Great Migration. Those who remained turned to other crops and agricultural commodities, including corn, peanuts and livestock, a result praised by some because it forced the diversification of Southern agriculture. [34] By 1917, Enterprise was harvesting more peanuts than anywhere else in the nation. Peanuts led to value-added products like oil and nut butters, and the plant's use as hog feed led to a robust market in meat processing. [35] By 1919 – right when the boll weevil scourge was reaching its peak elsewhere in the South – Coffee County was the largest producer of peanuts in the country, and shortly thereafter became the first in the region to produce peanut oil. [36]

Around 1920, Alabama diversified its economy. Agriculture, especially cotton, faded into the background, giving the state an opportunity to focus on manufacturing automobiles and steel. [37]

Between 1920 and 1930, the number of landowners fell from around 96,000 to 75,000. The number of tenant farmers increased from 148,000 to 166,000 over the course of the decade. [38]

Between 1920 and 1930, the average farm size shrank from 75 to 68 acres and dropped in value from $3,803 to $2,375 while the percentage of farms worked by tenants increased from 58 to 65%, another sign of worsening times prior to the Depression. [39]

*See reference key on page 120



1930-1939

During the Great Depression, cotton prices in Alabama dropped to their lowest levels since the 1880s. Between 1921 and 1932, the price of cotton dropped from 35 cents/pound to 5 cents/pound. In Alabama, personal annual income fell from an already low $311 in 1929 to $194 in 1935. [40]

Alabama's industrial sector, centered in Birmingham, collapsed during the Great Depression, further devastating the state's economy. Of nearly 3,000 mines and mills operating in the state in 1929, only half were still in operation in 1933, indicating an abrupt decline in national demand and international trade led to a drop in production. [41] From 1929-1931, employment in iron and steel industries fell by 28%. Of 100,000 wage and salaried workers in Birmingham, 25,000 were jobless, 60,000 were working part time, and only about 15,000 were working full time by June 1932 – an unemployment rate of 25%. When city leaders announced that 100,000 people in Birmingham (out of a total population of 260,000 – nearly 40%) received some kind of economic aid in 1934, President Franklin Roosevelt called the city the "worst hit town in the country." [42]

Huntsville's Dallas Mill went from profiting almost $800,000 in 1920 to losing almost $280,000 in 1930. [43] However, the textile industry weathered the Depression better than the iron, steel, timber and mining industries. Mill owners cut workers' pay, lengthened hours and took advantage of increasing unemployment to hire men, women and children willing to work for very low wages. Between 1929 and 1935, textile mills lost only 4,300 jobs, and then recovered dramatically after 1936 to outpace other state industries. In 1935, Alabama ranked fifth in the nation in textiles manufacturing. [44]

1939-1945

Alabama's economy began to recover after the World War II defense buildup. [45] Agriculture shifted from small farms and tenancy to fewer and larger farms, wage laborers and mechanization. The number of tenants decreased sharply due to the availability of good-paying war work, even as mechanization increased as a result of New Deal subsidy payments and industrialization. [46]

Wartime plants and facilities in Huntsville, Gadsden and Childersburg, and increased demand for iron and steel from Birmingham and ships from Mobile, led to an employment boom as many Alabamians migrated from field to factory. Huntsville saw employment skyrocket from 133 total workers in 1939 to more than 11,000 in just five years at its two arsenals and ordnance depot alone. [47] Both new and expanded defense plants and military bases came to Alabama because of the state's inexpensive land and temperate climate. [48]

By 1940, the state's unemployment rate had dropped to 6.6%, a combination of defense employment, holdover employment on public relief and incentives for aging workers to retire. [49]

Alabama's textile mills produced fabric for uniforms and its timber industry boomed as a result of wartime demand for construction and paper products. [50]

The war brought unique employment opportunities and dramatically improved economic conditions for women and African Americans who were hired into jobs formerly available only to white men. [51] Women held between one-fourth and one-half of all defense-related jobs. Women who had once worked as teachers with starting salaries beginning at $800 annually found jobs as assembly line workers in the Huntsville Arsenal at $1,400 a year or as welders in the Mobile shipyards at $3,600 a year. [52]

*See reference key on page 120

1950-2000

Between 1954 and 1968, the civil rights movement occurred in the United States. During this period, Alabama was a major focal point for the movement as a whole. The civil rights movement resulted in increased economic freedom for African Americans in Alabama, allowing for greater and more equitable economic growth for the state. [53]

Alabama became a significant national leader in the space race as a result of innovation occurring in Huntsville. The George C. Marshall Space Flight Center at Huntsville produced the Saturn booster rockets that propelled the Apollo and Skylab spacecraft of the 1960s and early 1970s. [54] Since 1977, 49 companies in Alabama have generated spinoff technologies (commercial products and services that have been developed with the help of NASA, through research and development contracts). Of those, 32 worked with Marshall Space Flight Center in Huntsville. [55]

In the mid-1990s, Alabama became an automotive manufacturing hub by securing Mercedes-Benz and then Honda manufacturing plants in the state. This continued in the 2000s with Hyundai and Toyota Mazda. [56] Automotive manufacturing remains a significant component of the Alabama economy, even today.

2000-2021

Alabama has continued to diversify its economy from cotton farming and steel to becoming an automotive manufacturing hub. Today the state is working to develop the assets it needs to establish and grow a future-ready innovation economy that will benefit all Alabamians.

Alabama's agricultural industry has changed considerably since the turn of the millennium. Between 2002 and 2017, the land used in farming has fallen from nearly 9 million acres to about 8.5 million acres. [57] Despite this significant reduction in land use, the market value of all agricultural products sold has nearly doubled from $3.2 billion in 2002 to $5.9 billion in 2017. [58] One of the main drivers in the development of Alabama's agricultural industry has been the growth of livestock and poultry products. In 2002, the value of livestock and poultry products was $2.7 billion. [59] By 2017, the value had soared to about $4.8 billion. [60]

Alabama's aerospace industry has enjoyed rapid growth over the past decade. According to estimates from the Alabama Department of Commerce, Alabama's aerospace product exports rose to $2.4 billion in 2018 – a 28% increase over the previous year [61] that eclipses 2014's total of $747 million. [62]

Alabama's startup ecosystems have also grown in Alabama's metropolitan areas. As examples of recent successes: In 2017, Shipt was acquired by Target for $550 million. [63] In 2021, Therapy Brands was purchased for $1.25 billion. [64] The sustained and accelerated growth of the entrepreneurial ecosystems that can produce such success stories will drive Alabama's innovation economy in the future.

*See reference key on page 120


Shipt
Shipt
REGIONS
REGIONS
VIVA HEALTH
VIVA HEALTH

APPENDIX: Alabama's History of Innovation and Economic Development, *Key

1 https://ncses.nsf.gov/indicators/states/indicator/venture-capital-per-1-million-state-gdp/table

2 https://taxfoundation.org/state-tax-costs-of-doing-business-2021/

3 Paul M. Romer, "Endogenous Technological Change," Journal of Political Economy 98:5 (October 1990), www.jstor.org/stable/2937632.

4 https://www.nsf.gov/news/special_reports/i-corps/

5 https://icorpsohio.org/

6 https://www.bushcenter.org/publications/resources-reports/reports/universities-innovation-impact.html

7 https://ncses.nsf.gov/indicators/states/indicator/patents-per-1000-se-occupation-holders

8 Alabama Historical Commission, "The History of Agriculture in Alabama: A Historic Context," available at https://ahc.alabama.gov/architecturalprogramsPDFs/History%20of%20Agriculture%20in%20Alabama.pdf (last accessed April 28, 2021).

9 A.J. Messing Jr., "Old Mordecai" – The Founder of the City of Montgomery," Publications of the American Jewish Historical Society, available at https://www.jstor.org/stable/43057689 (last accessed July 1, 2021).

10 Supra note 1, at 6.

11 See id. at 7.

12 See id.

13 See id. at 16

14 See id. at 17.

15 See id. at 12.

16 See id. at 22.

17 See id. at 18.

18 See id. at 22.

19 Ethel Armes, "The Story of Coal and Iron in Alabama," at xxv (1910).

20 Supra note 14.

21 Rob Dixon, New South Era, http://encyclopediaofalabama.org/article/h-2128 (Nov. 21, 2016).

22 Supra note 14.

23 See id.

24 See supra note 1, at 24.

25 See id at 23.

26 "Alabama's Changing Economy through the Twentieth Century," Culverhouse College of Business, the University of Alabama, July 16, 2019, available at https://cber.culverhouse.ua.edu/2019/07/26/alabamas-changing-economy-through-the-twentieth-century/.

27 See id.

28 See id.

29 See id.

30 See id.

31 Lorraine Boissoneault, "Why an Alabama Town Has a Monument Honoring the Most Destructive Pest in American History," Smithsonian Magazine, May 31, 2017, available at https://www.smithsonianmag.com/history/agricultural-pest-honored-herald-prosperity-enterprise-alabama-180963506/.

32 See id.

33 Ron Smith, "Boll Weevil in Alabama," Encyclopedia of Alabama, Jan. 22, 2008, last updated Dec. 3, 2018, available at http://encyclopediaofalabama.org/article/h-1436.

34 See id.

35 Ansel Payne, "The Beetle That Helped Alabama Adapt to a Changing Environment," Time.com, Jan. 8, 2016, available at https://time.com/4166486/boll-weevil-history/.

36 Boissoneault, supra note 6.

37 Dr. Dwayne Cox, "A short history of Alabama Agriculture," available at https://www.lib.auburn.edu/archive/aghy/alag.htm.

38 Matthew L. Downs, "Great Depression in Alabama," Encyclopedia of Alabama, July 10, 2014, last updated Oct. 1, 2019, available at http://encyclopediaofalabama.org/article/h-3608.

39 See id.

40 See id.

41 Downs, supra note 33.

42 See id.

43 See id.

44 "Alabama's Changing Economy through the Twentieth Century," Culverhouse College of Business, the university of Alabama, July 16, 2019, available at https://cber.culverhouse.ua.edu/2019/07/26/alabamas-changing-economy-through-the-twentieth-century/.

45 Downs, supra note 33.

46 See id.

47 See id.

48 "Alabama Moments in American History," http://www.alabamamoments.alabama.gov/sec50qs.html (last accessed April 28, 2021).

49 Downs, supra note 33.

50 See id.

51 See id.

52 See id.

53 See Niclas Berggren, "The Benefits of Economic Freedom," https://www.independent.org/pdf/tir/tir_08_2_2_berggren.pdf (last accessed July 2, 2021).

54 "Economy of Alabama," Britannica, available at https://www.britannica.com/place/Alabama-state/Economy.

55 Shannon McDonald, "Teeming with Engineers, Alabama's rocket city USA is luring hot new industries to town," CNBC, Nov. 12, 2019, available at https://www.cnbc.com/2019/11/12/economic-case-study-huntsville-capitalizes-on-rocket-city-roots.html.

56 Jason Margolis, "How Alabama is becoming the auto capital of the South," The World, April 3, 2018, available at https://www.pri.org/stories/2018-04-03/how-alabama-becoming-auto-capital-south.

57 United States Department of Agriculture, National Agricultural Statistics Service, 2017 Census Vol. 1, Chapter 1: State Level Data, Table 1. Available at https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Alabama/st01_1_0001_0001.pdf.

58 Supra note 52.

59 See id.

60 See id.

61 Dawn Azok, "Alabama aerospace exports surge as industry growth gains pace," Made in Alabama (June 20, 2019), https://www.madeinalabama.com/2019/06/alabama-aerospace-exports-surge-as-industry-growth-gains-pace/

62 See supra note 56.

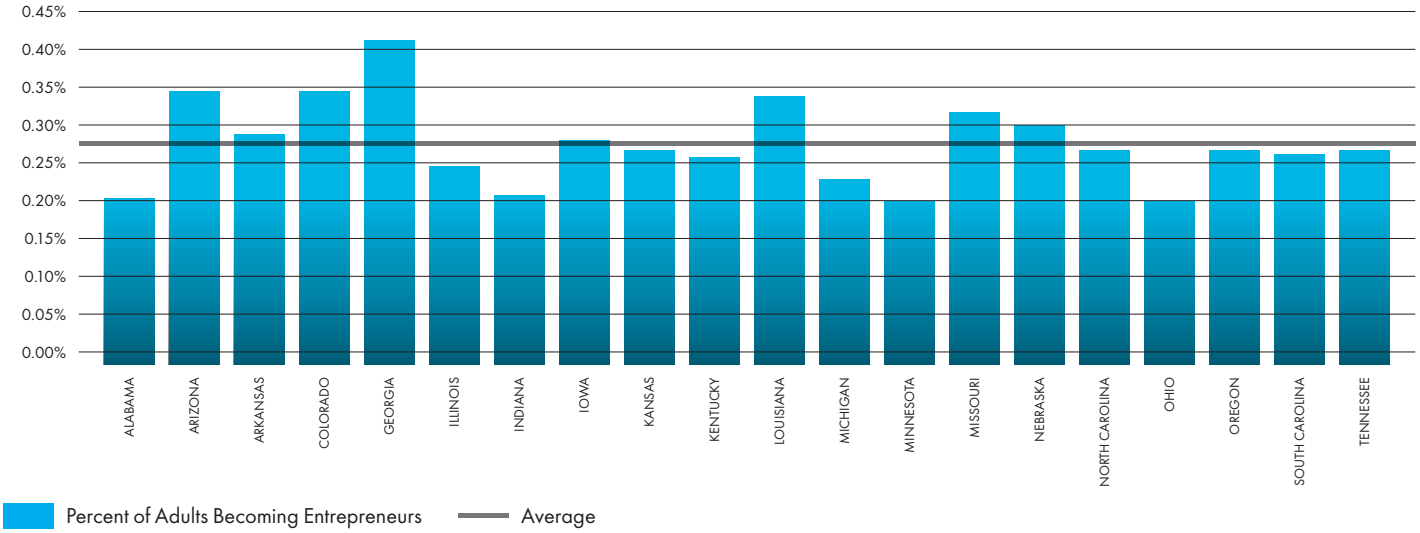
63 "Target to Acquire Same-Day Delivery Platform Shipt Inc. to Bolster Fulfillment Capabilities," Target (Dec. 13, 2017), https://corporate.target.com/press/releases/2017/12/target-to-acquire-same-day-delivery-platform-shipt.

64 See Sarah Pringle, PE Hub (last visited July 6, 2021) https://www.pehub.com/lightyears-therapy-brands-goes-to-kkr-for-1-25bn/.

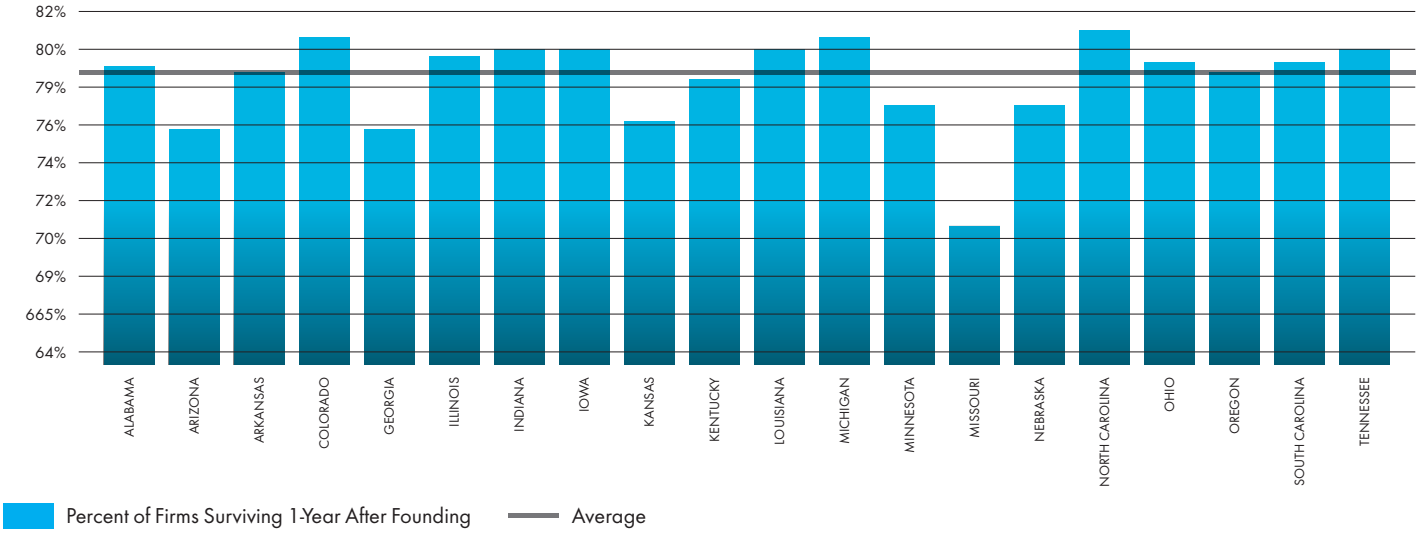
KEY FORCES IMPACTING ALABAMA'S INNOVATION

According to Forbes Magazine, Alabama ranks 46th in the country on the list of "Best States to Start a Business in 2020," with only Rhode Island, Connecticut, New Jersey and Maine falling behind it. The report was based on a study by Seek Capital, and it analyzed 21 factors, ranging from venture capital deal flow and business survival rates, to the rate of new entrepreneurs and business tax climate.

RATE OF NEW ENTREPRENEURS 2018



STARTUP EARLY SURVIVAL RATE



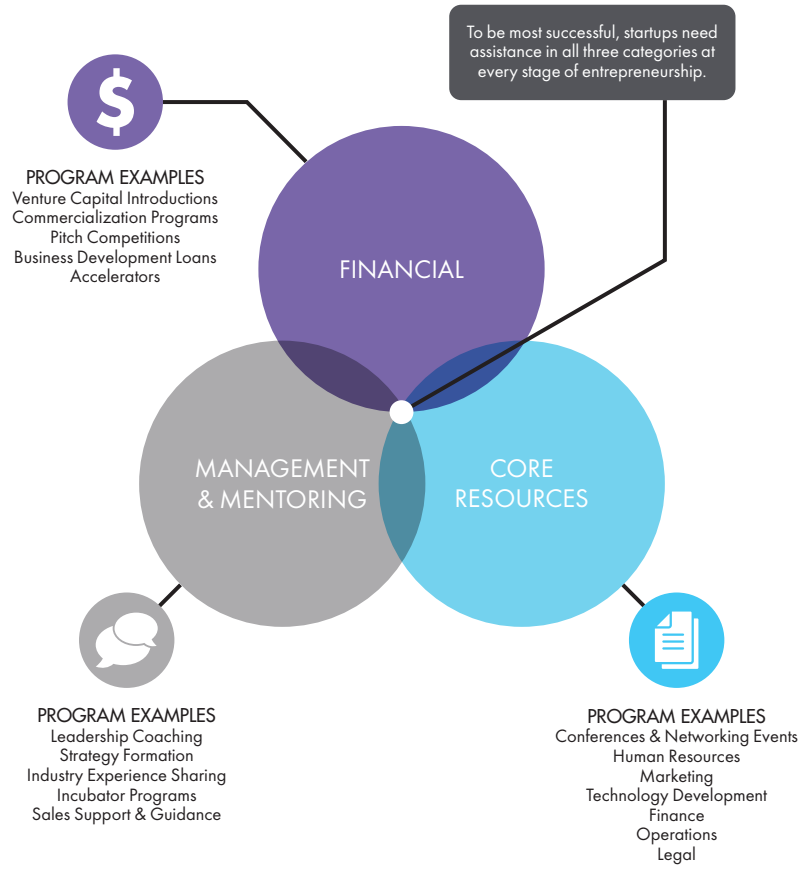
Once the research was complete, Alabama entrepreneurs were surveyed to validate the research findings. Of those entrepreneurs surveyed, more than half believe that the entrepreneurial ecosystem across the state is "emerging," providing Alabama the opportunity to climb in the rankings as the state continues to emerge into the space.

Despite a low rate of new entrepreneurs, the Alabama startup early survival rate is above average with 79.42% of firms surviving one year after founding. While not many are looking to Alabama as an ideal place to start a business, the ones who do are finding success.

While this shows that Alabama already provides some of the resources that help entrepreneurs achieve success, there are countless programs that the state of Alabama can offer to further spark innovation and entrepreneurship.

According to The Small Business Chronicle, the five resources needed to succeed at starting a business are financial resources, such as funding, capital or loans; human resources (employees); educational resources, such as industry know-how; physical resources, such as premises and equipment; and emotional resources, such as a support system, including friends, family, mentors and professional groups. Fingerprint For Success, an online platform for entrepreneurs, outlines 61 entrepreneur resources needed to be successful, from business plan models and marketing automation to mentors and support groups. From this research, the resources needed for entrepreneurs were broken into three overarching categories.

STARTUP EARLY SURVIVAL RATE



To make Alabama a more desirable location to start a business, programs must be provided in the categories of financial traction, mentoring and management teams, and core resources such as legal, marketing and sales support. While financial resources are often the main focus of the three categories in the eyes of entrepreneurs, all three categories are equally important. In order to increase the number of investable companies, management and mentoring and core resources play a vital role.

Notes:

ALABAMA INNOVATION COMMISSION REPORT