TEDCO
LEADING INNOVATION TO MARKET

MARYLAND INNOVATION Competitiveness Study

RTI INTERNATIONAL

Keen Point Consulting, LLC

The development of the Maryland Innovation Competitiveness Study was led by Jennifer Ozawa at RTI International and Anthony Gillespie at Keen Point Consulting in collaboration with the Maryland Technology Development Corporation. Alison Bean de Hernandez, Pearl Sullivan, Adams Bailey, and Ben Fein-Smolinski of RTI supported research, data collection, and analysis. Lisa Gardner created the report design, and Christina Rodriguez was the editor. The report addresses all areas of inquiry posed by the 2022 Joint Chairmen's Report.

January 3, 2023

It is time, Maryland. It is time given the changes in Annapolis. It is time given the resources available. It is time given the focus on diversity, equity, inclusion, and accessibility. It is time given the concentration of assets in our State. It is time given that inclusive technology-based growth is the objective. It is time given that competing states are investing significantly in their innovation infrastructure and workforce.

The 2022 Joint Chairmen's Report (JCR) entrusted the Maryland Technology Development Corporation (TEDCO) to lead a study to guide the creation of a $500 million, 10-year Equitech Growth Fund. TEDCO appreciates the confidence Maryland's legislative leaders have in TEDCO to lead this effort, but—more importantly—their vision for what the State can and should become is evident in the JCR request. This report, led by RTI International and Keen Point Consulting, speaks to the opportunities Maryland can and should pursue to not just be amongst the leaders of tech-based growth but to be the leader.

TEDCO's approach to this effort was less of a "study" and more a summation of what has been "studied" in the past and bringing that work to the forefront. The point: We have known what we need to do; how we need to do it; and when we need to do it. This report confirms the work that needs to be accomplished via a companion effort and requests the establishment of a "Kirwan-like" commission to deliver a true strategic plan and a 5-year, $250 million down payment for the Equitech Growth Fund.

Thanks again to Maryland's legislative leadership, RTI International, Keen Point Consulting, the TEDCO Board, led by Omar Muhammad, and our TEDCO colleagues, and thanks especially to Stephen Auvil, Mindy Lehman, Linda Singh, and Tammi Thomas.

Now is the time, Maryland.

Sincerely,

Troy LeMaille-Stovall
Chief Executive Officer

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EXECUTIVE SUMMARY

The Joint Chairmen's Report from the 2022 General Assembly session requested that the Maryland Technology Development Corporation: (1) conduct a study to assess the effectiveness and impact of the State's current economic development strategy and look at ways to elevate Marylanders who have not been included in early-stage technology opportunities; and (2) develop draft legislation for the establishment of a Maryland Equitech Growth Fund in consultation with the Maryland Economic Development Corporation, the Maryland Small Business Development Financing Authority, industry, university, and representative community groups.

Due to the scope of research requested, TEDCO engaged a qualified third-party vendor, RTI International, and its partner, Keen Point Consulting, (hereafter, RTI-Keen Point) to provide data-driven answers to six specific areas of inquiry raised in the 2022 Joint Chairmen's Report. The six areas are Maryland's competitiveness in cybersecurity and IT, biohealth, and other advanced industries; investments being made by other states to increase their competitiveness; participation of people of color in Maryland's high-tech sector workforce; the connection between STEM education and career development in these sectors; participation by people of color in startup activities; and wealth creation in communities of color.

Although some aspects of this study are unique, this is not the first analysis of Maryland's economic competitiveness in recent years. Previous studies (e.g., Excel Maryland,[1] Maryland Life Sciences Industry,[2] The Maryland Equitech Growth Fund,[3] and The Future Is Now[4]) identified the Life Sciences and Cybersecurity and Information Technology (IT) industries as Maryland's highest-growth industry opportunities. They also

1 Biomedical Growth Strategies and Goldberg Consulting. (2017). ***Excel Maryland: Getting to #1.***
2 Milken Institute. (2021). New opportunities for job creation in Maryland's life sciences industry.
3 TEConomy Partners. (2021). The Maryland Equitech Growth Fund: A conceptual framework.
4 TEConomy Partners. (2021). The future is now: Realizing the promise of industry 4.0.

stressed the need for Maryland to remain competitive in manufacturing. **The conclusions of these studies are consistent with the findings of this report. However, Maryland has yet to act and invest at a scale that will enable it to truly pull ahead of competitors and become a top-10 innovation state.**

At the same time, other studies (e.g., The State of Tech Diversity,[5] State of Black Venture,[6] The $11 Billion Opportunity[7]) have highlighted the underrepresentation of people of color and women in high-tech companies and startups. The stakeholders of these studies present a vision for inclusive tech and startup activity ("equitech") that "draws broadly on the brilliance of the populace, across neighborhoods and cultures, as founders, workforce, mentors, investors, and thought leaders."[8] As Fortune 500 companies set diversity and inclusion goals and search for locations in which to expand, the natural diversity of Maryland's talent base, coupled with its long-term focus on its startup ecosystem, provides an opportunity to become a leading equitech economy nationally and globally.

In summary, RTI-Keen Point found that Maryland's overall economic growth rate is slowing (real gross domestic product grew only 1.0% per year from 2011–2021).[9] If this continues, it will have a negative effect on job opportunities, livelihoods, and the state's overall fiscal health. The high-tech sector is Maryland's engine of growth, but the state needs high-tech employment growth of 3% to 4% per year compared to its past-10-years growth rate of 1.6% per year.[10] To move to a higher growth trajectory, **Maryland needs to be proactive and develop a comprehensive strategy to spur stronger high-tech industry and innovation-led growth, make the needed investment to execute that growth, engage industry and diverse communities, and act quickly to remain competitive with other states in attracting and retaining industry and talent.**

The strategic planning process should develop metrics aligned to short-term goals, long-term outcomes, and overall impact of the plan. Traditional metrics should be considered for company recruitment and expansion, workforce training, and startup activity and investment. In addition, nontraditional metrics should be examined to ensure that changing workforce dynamics in a post-COVID world are considered (e.g., measuring the impact of out-of-state, remote workers hired by Maryland companies, or Marylanders working remotely for non-Maryland companies) and to ensure the progress on equitech goals can be measured properly.

5 Kapor Center and the National Association for the Advancement of Colored People. (2022). The State of Tech Diversity: The Black Tech Ecosystem.
6 BLCK VC. (2022). State of Black Venture. In partnership with Silicon Valley Bank.
7 UpSurge Baltimore (2022). The $11 Billion Opportunity: Unlocking Capital for the Growth of Baltimore Tech.
8 UpSurge Baltimore (2022). The $11 Billion Opportunity: Unlocking Capital for the Growth of Baltimore Tech.
9 U.S. Bureau of Economic Analysis, Real Gross Domestic Product: All Industry Total in Maryland [MDRGSP], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/MDRGSP
10 RTI used the National Science Foundation high and medium-high research and development (R&D) intensity definition of high-tech industry North American Industrial Classification System codes for this analysis, which includes nine manufacturing industries and three services industries. RTI then ran growth scenarios on U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages data.

Competitiveness Positioning

A summary of RTI-Keen Point findings and recommendations with respect to the six specific areas of inquiry posed in the 2022 Joint Chairmen's Report are presented in Table 1. The findings and recommendations are intended to inform the initiation of a strategic planning process for a Maryland Equitech Fund.

TABLE 1. FINDINGS AND RECOMMENDATIONS THAT ADDRESS AREAS OF INQUIRY

AREA OF INQUIRY	FINDING	RECOMMENDATION
1. An analysis of Maryland's national competitiveness in cyber, biohealth, and advanced and emerging technology industries, with recommendations to achieve a 10-year goal of making Maryland among the top-10 fastest-growing states in advanced technology industries	Maryland ranked 21st in high-tech industry employment (180,855 employees) and 28th in high-tech employment growth (1.6% CAGR) from 2011–2021. **Maryland needs to generate employment growth of 4% CAGR (87,000 new jobs over the next 10 years) to become a top-10 fastest-growing high-tech state.**	Develop a high-tech recruitment and expansion strategy focused on attracting larger companies looking to expand (e.g., biomanufacturing, diagnostics, computer and electronics, transportation, and machinery manufacturing). Make investments in workforce training and infrastructure, as identified by industry in the strategic planning process. Continue to invest in high-tech startup activity and growth, which helps to attract larger biotech and IT companies through merger and acquisition and other activities.
2. An examination of publicly financed advanced industry investment funds in other states, including the roles and results of public funds to induce private sector growth	**Competitor states are making significant long-term investments to support growth in their innovation economies.** North Carolina and Massachusetts both made $1 billion 10-year investments in their life sciences industries, including investments in business incentives, workforce training, physical infrastructure, early-stage company grants and loans, and other needs. To develop a larger and more diverse workforce pipeline for the IT sector, Virginia is investing $15 million a year to support K–12 coding experiences, high school and college internships, research, and commercialization activities.	Develop a long-term strategic plan and execute on that plan through investments at a scale commensurate with the size of Maryland and the goals it wants to achieve in 10 years.

AREA OF INQUIRY	FINDING	RECOMMENDATION
3. An analysis of current minority participation in Maryland's advanced technology industry careers, with recommendations to achieve a 10-year goal that the share of jobs at all skill levels, including high skilled jobs, for minority workers will equal their overall workforce representation	**Black and Hispanic workers are quickly approaching representational parity in computer and math occupations** (closing the gap in an estimated 6 years and 23 years, respectively, based on past-10-year CAGRs of 5.7% and 9.4%). **Black and Hispanic Marylanders are well below parity in the life, physical, and social sciences** (closing the gap in 150 years and 54 years, respectively, based on past-10-year CAGRs of 3.8% and 5.9%) and architecture and engineering (367 years and 72 years, respectively, based on past-10-year CAGRs of 3.0% and 5.7%). **Women are well below parity in computer and math occupations** and the gap is widening based on the past-10-year CAGR of 2.8% (which is lower than the men's CAGR). **Women are also below parity in engineering** (closing the gap in 52 years based on a past-10-year CAGR of 5.1%).	Develop a plan to substantially change participation growth rates for Black and Hispanic Marylanders in the life, physical, and social sciences and engineering, and for women in computer, math, and engineering so that paritys can be reached within shorter timeframes. Recruit high-tech manufacturers and support their expansion. This will increase engineering employment and, in the life sciences, diversify the type of jobs available—e.g., biomanufacturing and diagnostics manufacturing have skills-based needs that can be met through non-degree certificates. If the industry remains heavily weighted toward scientific R&D and PhDs, it will be harder to change employment growth rates in the short term. Invest in community outreach to raise awareness about jobs and career pathways and invest in industry-aligned, non-degree certificate and degree programs (and infrastructure) at minority-serving institutions (MSIs), including community colleges, and Historically Black Colleges and Universities (HBCUs).
4. An assessment of the connection between postsecondary STEM education and career development for advanced industry jobs with recommendations to achieve a 10-year goal of raising STEM degrees and experiential learning opportunities for minority students equal to their overall presence in the workforce	**RTI estimates a much shorter timeframe is required to close the STEM degrees gap relative to the STEM employment gap.** For life sciences degrees, it will take Black and Hispanic students an estimated 11 years and 5 years, respectively, to close the gap in bachelor's degrees (based on past-10-year CAGRs of 4.6% and 10.1%) and 8 years and 5 years to do so for master's degrees (based on past-10-years-CAGR of 9.6% and 10.1%). For engineering degrees, it will take Black and Hispanic students 32 years and 2 years, respectively, to close the gap in bachelor's degrees (based on past-10-year CAGRs of 3.4% and 10.1%) and 114 years and 11 years to do so for master's degrees (based on past-10-year CAGRs of 1.5% and 8.8%). Maryland's relatively small manufacturing base is one factor driving the difference in the rate at which Maryland is closing the STEM employment vs. degrees gap in engineering. However, another challenge is the need for students to demonstrate proficiency in calculus and physics to enter and be successful in engineering programs, given the inequities of K–12 education across the state. One final note is that the share of degrees conferred to out-of-state students varies dramatically by institution.	Develop programs for students in middle and high schools to introduce them to STEM career pathways using role models and experiential learning opportunities. Invest in summer STEM programs and STEM exploration courses for middle school and high school students at MSIs, including community colleges, and HBCUs. Increase funding to HBCUs and MSIs to provide more industry-aligned curriculum, co-ops, and internships to students of color.

AREA OF INQUIRY	FINDING	RECOMMENDATION
5. An evaluation of the current state of advanced industry startups and recommendations to achieve a 10-year goal of minority entrepreneurs participating in startups at levels equal to their overall workforce representation	Maryland's leading tech sectors are Software/SaaS, Biotech/Pharma, Healthcare Devices, B2B, and Health Tech (based on 2017–2022 deal count and VC investment). Nationally, **Maryland ranks 17th for VC investment in startup companies.** **Black and Hispanic owners represent 7% and 3%, respectively, of all companies with employees (any industry sector).** It will take an estimated 47 years for Black business owners to reach representational parity based on 2012–2019 CAGR of 3.2%. The gap for Hispanic owners is widening rather than closing, based on 2012–2019 CAGR of -0.4%. **Black founders represent less than 1% of venture-backed companies in Maryland, and no data are available for LatinX founders.**[11] Women represent 23% of owners of companies with employees. It will take an estimated 43 years to reach representational parity based on 2012–2019 CAGR of 1.9%. No data are available for female founders of venture-backed startups in Maryland, but they represent 7% of VC deals and 2.4% of VC investment nationally.[12]	Expand entrepreneurial leadership training and mentoring for people of color and women. Make fund-of-funds investments in venture funds founded and managed by people of color and women. Sustain and expand direct investment funds targeting underrepresented founders.
6. An analysis of community wealth in minority communities with recommendations to achieve a 10-year goal of raising levels of resident-owned businesses and housing in surrounding neighborhoods.	**Income and wealth are highly correlated with educational attainment.** 32% of Black Marylanders and 25% of Hispanic Marylanders have bachelor's degrees or higher, compared to 43% of all Marylanders. Their median incomes are $72,931 and $80,176, respectively, compared to $91,431 for all Marylanders. Home ownership rates are 52% and 53% respectively, for Black and Hispanic households, compared to 67% for all Marylanders. Business ownership is also correlated with income and wealth creation. Although fewer than 15% of households nationally own a business, 40% of those in the top income decile own a business, compared to only 7% in the bottom five deciles. Households with businesses that employ more than five people have a median net worth of $1.1 million (assets minus liabilities)[13]	Educational attainment and business ownership create clear pathways to wealth creation and expansion. Recommendations in study requirements 3, 4, and 5 provide ideas that Maryland can build on as it initiates its strategic planning process aimed at increasing educational attainment, STEM employment rates, and business ownership rates needed to increase income, wealth, and home ownership rates in communities of color.

11 Eichensehr, Morgan. (2021). "Record year for venture capital in Greater Baltimore leaves Black founders behind," Baltimore Business Journal. 25 March 2021.
12 Pitchbook. (2022). "U.S. VC female founders dashboard," News and Analysis. 2 November 2022.
13 Federal Reserve Board. (2020). 2019 Survey of Consumer Finances.

ABOUT THIS REPORT

Background

Maryland's economy is the 15th largest in the country by gross domestic product,[14] with a population of 6.2 million[15] and a civilian labor force of 3.2 million people.[16] Maryland benefits from its density, the skills and diversity of its talent, its proximity to federal government clients, and the growth in federal spending on information technology solutions and biomedical research in recent decades.

Although many economic indicators are moving in the right direction in Maryland, policymakers requested data-driven analyses as they consider three questions:

1. **What type of strategy will position Maryland to become a top-10 fastest-growing economy over the next 10 years?**
2. **How can Maryland ensure the resulting jobs benefit all Marylanders regardless of race, ethnicity, gender, and geographic location?**
3. **At what level does Maryland need to invest to change its current pace of growth and trajectory?**

14 U.S. Bureau of Economic Analysis. (2021). Regional Economic Accounts.
15 U.S. Census Bureau. (2021). Population Estimates Program.
16 U.S. Bureau of Labor Statistics. (2021). Current Population Survey.

Maryland has the fifth-highest Black population relative to total population (31%), the 22nd highest Hispanic population (11%), and the 10th highest Asian population (7%) in the country.[17] Women represent 51% of Maryland's population.

In the United States, educational attainment and income are highly correlated. Maryland has the highest median household income ($91,431) of any state and one of the highest rates of educational attainment (41.6% of Marylanders have a bachelor's degree or higher compared with 23.5% nationally).[18] However, Marylanders without a bachelor's degree have significantly lower incomes, and some of the state's persistent economic disparities are place-based and break down along racial and ethnic lines.

The 2022 Joint Chairmen's Report tasked TEDCO with overseeing a study on innovation competitiveness, and in September 2022, TEDCO selected RTI International and its partner, Keen Point Consulting, to perform the study. The results of the study will inform the strategy Maryland develops to become a top 10 fastest-growing economy and drive broad-based economic opportunity for all Marylanders.

Purpose

This report presents findings and answers to the six areas of inquiry posed in the 2022 Joint Chairmen's Report. The complete data and responses to these questions, including modeling of growth scenarios and estimated number of years to reach racial, ethnic, and gender parity, are presented in the Appendix of this report.

The 2022 Joint Chairmen's Report instructed TEDCO to seek "an impactful, inclusive, and measurable long-term economic development strategy in advanced technology industries to accelerate Maryland's growth."[19] This study begins the process by modeling growth scenarios to achieve these goals.

Approach

RTI-Keen Point reviewed past studies that analyzed Maryland high-tech growth opportunities, as well as other studies seeking to strengthen the startup ecosystem to understand and build on their findings. The RTI team then performed a series of data collection and analysis tasks to answer the six questions posed in the 2022 Joint Chairmen's Report. This work included benchmarking Maryland's performance and competitiveness on various economic indicators vis-à-vis other states and the national average. RTI drew on data from the U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statistics; U.S. Census Bureau (Annual Business Survey, American Community Survey, Population Estimates Program); National Center for Science, Engineering, and Statistics (Higher Education R&D Survey, Business R&D Survey); National Center for Educational Statistics; and Pitchbook Venture Capital and Private Equity Database. The team provided biweekly updates to TEDCO staff, as well as a midterm update to the TEDCO Board and one to TEDCO stakeholders. Finally, RTI modeled growth scenarios and projected the estimated number of years to reach representational parity on various economic outcome indicators.

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17 Population by race includes White, Black, Asian, Two or More Races, Native American or Alaska Native, and Pacific Islander and Native Hawaiian. These sum to total population. Hispanic or Latino is an ethnicity, and Hispanics can be of any race. Maryland's White population represents 58% of the population (U.S. Census Bureau, Population Estimates Program, 2021).

18 U.S. Census Bureau. (2021). American Community Survey, 2021, 5-year estimates.

19 Chairmen of the Senate Budget and Taxation Committee and House Appropriations Committee (2022). Report on the Fiscal 2023 State Operating Budget (SB 290) and the State Capital Budget (SB 291) and Related Recommendations. Joint Chairmen's Report, 2022 Session.

Report Organization

The first section of this report analyzes Maryland's high-tech industries and growth rates vis-à-vis competitor states. The second section analyzes Maryland's employment in science, technology, engineering, and mathematics (STEM) jobs by race, ethnicity, and gender, and projects the number of years to reach representational parity. The third section examines the relationship between business ownership, income, and wealth, and analyzes business ownership by race, ethnicity, and gender. It also analyzes Maryland's high-growth, venture-backed startup activity by sector. The final section analyzes Maryland's strengths, weaknesses, opportunities, and threats to spurring more high-tech industry growth. It provides an example from North Carolina's $1.2 billion strategy to move from research to biomanufacturing to generate broader based and higher rates of employment. The Appendix includes direct responses and data that address the six areas of inquiry identified by the 2022 Joint Chairmen's Report.

About TEDCO

TEDCO (Maryland Technology Development Corporation) is an independent instrumentality of the State of Maryland, established by the Maryland General Assembly in 1998 to facilitate the creation of businesses and support their growth in all regions of the State. TEDCO's role is to be Maryland's leading source of funding for early-stage, technology-based businesses; to provide business assistance to entrepreneurs throughout the State; and to foster technology transfer and commercialization from the State's universities and Federal labs. TEDCO is leading innovation to market in Maryland and contributing to a robust, diverse entrepreneurial ecosystem in the State through its various programs and funds.

HOW MARYLAND CAN GENERATE FASTER ECONOMIC GROWTH

A Major State Economy

Maryland is a state of 6.2 million people with many enviable economic attributes. It is the country's 15th largest economy by gross domestic product (GDP) and has maintained this position over the last 20 years. It has the fourth highest educational attainment rate (41.6% of Marylanders have a bachelor's degree or higher) and the highest median household income ($91,431).[20] It also has the highest density of federal R&D laboratories.

Slowing GDP Growth

However, what is also true is that Maryland's economic growth rate is slowing. If this continues, it will have a negative effect on job opportunities, livelihoods, and the state's overall fiscal condition. In time, Maryland's GDP ranking will decline as other states with higher economic growth rates move up. During the last economic expansion from 2014–2019, Maryland's real GDP grew by 1.6% per year, well below U.S. real GDP growth of 2.4% per year. Over the last 10 years, Maryland's real GDP growth also lagged the U.S. rate (1.0% in Maryland vs. 2.1% nationally from 2011–2021) and other states like South Carolina (2.3% per year), Colorado (3.2%) and Washington (4.0%).[21]

20 U.S. Census Bureau. (2022). American Community Survey, 2021. 5-year Estimates.
21 U.S. Bureau of Economic Analysis. (2021). Regional Economic Accounts.

Faster High-Tech Industry Growth, But Not U.S. Leading

One Maryland sector that has grown faster than the state economy is the high-tech sector. Maryland's high-tech industry, which is defined by nine manufacturing industries and three services industries with high and medium-high R&D intensity, generated employment growth of 1.6% per year from 2011–2021. This 1.6% compound annual growth rate (CAGR) ranked **Maryland the 28th fastest-growing state innovation economy** over the last 10 years. Maryland's high-tech industry will need to grow much faster to increase Maryland's real GDP growth rate over the next 10 years.

Table 2 shows the high-tech employment growth rates of states that are similar in size to Maryland, as well as larger states whose high-tech industry employment grew faster than Maryland's over the same period—Georgia (3.8% employment growth per year), California (3.6%), Colorado (2.5%), Missouri (3.1%), Washington (2.8%), and Texas (2.8%). States that are much smaller than Maryland, like Utah (4.3%) and South Carolina (3.2%), also generated significantly higher rates of growth.

TABLE 2. HIGH-TECH INDUSTRY EMPLOYMENT AND COMPOUND ANNUAL GROWTH RATE, 2011–2021

STATE	HIGH-TECH EMPLOYMENT	RANK
California	1,464,124	1
Texas	736,037	2
New York	449,096	3
Ohio	389,441	4
Michigan	385,084	5
Florida	364,713	6
Illinois	360,204	7
Massachusetts	347,468	8
Pennsylvania	339,077	9
Washington	334,892	10
North Carolina	304,370	11
Virginia	293,521	12
Indiana	288,200	13
Georgia	257,944	14
New Jersey	240,036	15
Maryland	**180,885**	**21**

STATE	2011-2021 CAGR	RANK
Nevada	8.4%	1
Montana	4.6%	2
Utah	4.3%	3
Maine	4.3%	4
Florida	3.9%	5
Georgia	3.8%	6
California	3.6%	7
Colorado	3.5%	8
Mississippi	3.2%	9
South Carolina	3.2%	10
Missouri	3.1%	11
Arizona	2.9%	12
Idaho	2.8%	13
Washington	2.8%	14
Texas	2.8%	15
Maryland	**1.60%**	**28**

Note: RTI used the high and medium-high R&D intensity definition of high-tech industry North American Industrial Classification System codes for this analysis. See Appendix for list of high-tech NAICS codes.

Source: U.S. Bureau of Labor Statistics. (2022). Quarterly Census of Employment and Wages.

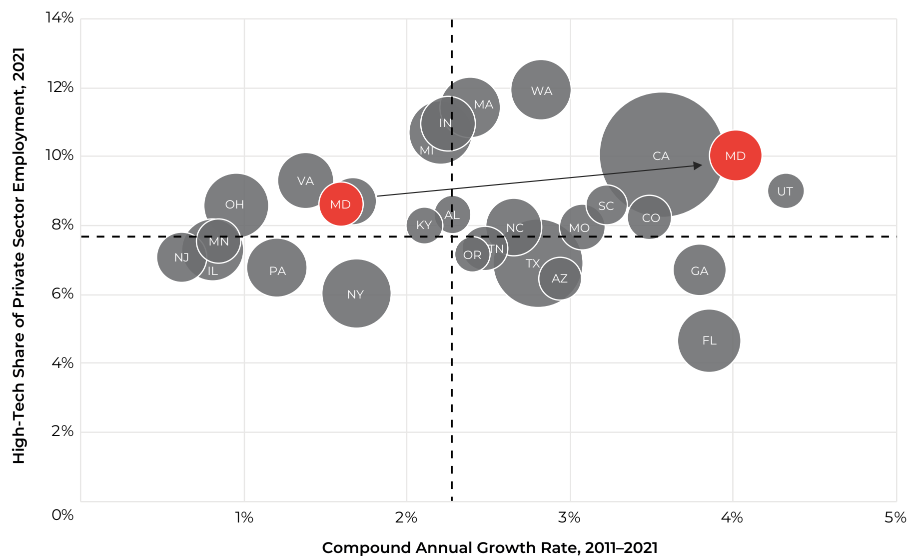
Maryland Needs Larger High-Tech Companies

Maryland needs more large, high-tech manufacturing and service companies to drive higher rates of employment growth. **If Maryland developed a strategy with the goal of adding 87,000 high-tech jobs over the next 10 years (which would represent a 4% CAGR), then it would be propelled into the top-10 fastest-growing innovation states,** as shown in Figure 1. This assumes that other states continue to grow at their past-10-years baseline growth rates, although other states are also designing strategies and investing to generate faster growth.

RTI modeled three different high-tech industry growth scenarios using a baseline compound annual employment growth rate of 2.2%, a moderate CAGR of 3.0%, and a high-growth CAGR of 4.0%. The difference between a high-tech industry CAGR of 4.0% and 2.2% is the difference between creating 87,000 new jobs versus 43,000 jobs. (See Appendix.)

Where should Maryland focus within the high-tech sector? Multiple studies (e.g., Excel Maryland,[22] Maryland Life Sciences Industry,[23] The Maryland Equitech Growth Fund,[24] The Future Is Now[25]) have pointed to existing strengths and continued growth opportunities in the Life Sciences and Cybersecurity and IT. They also stressed the importance of maintaining Maryland's competitiveness in manufacturing. Despite overall employment decline, some high-tech manufacturing segments, such as computer and electronic product manufacturing, biotech/pharmaceutical manufacturing, and medical equipment manufacturing are growing.

FIGURE 1. HIGH-TECH INDUSTRY EMPLOYMENT, SHARE OF TOTAL EMPLOYMENT, AND COMPOUND ANNUAL GROWTH RATE, 2011–2021



Note 1: This figure does not show all 50 states. Very small states with high growth rates (e.g., Nevada, Montana, Maine) are not shown because they are not innovation leaders measured by number of high-tech companies and employment. RTI modeled Maryland's future position using a 4% CAGR over the next 10 years.

Note 2: RTI used the high and medium-high R&D intensity definition of high-tech industry North American Industrial Classification System codes for this analysis. See Appendix for list of high-tech NAICS codes.

Source: U.S. Bureau of Labor. (2022). Quarterly Census of Employment and Wages.

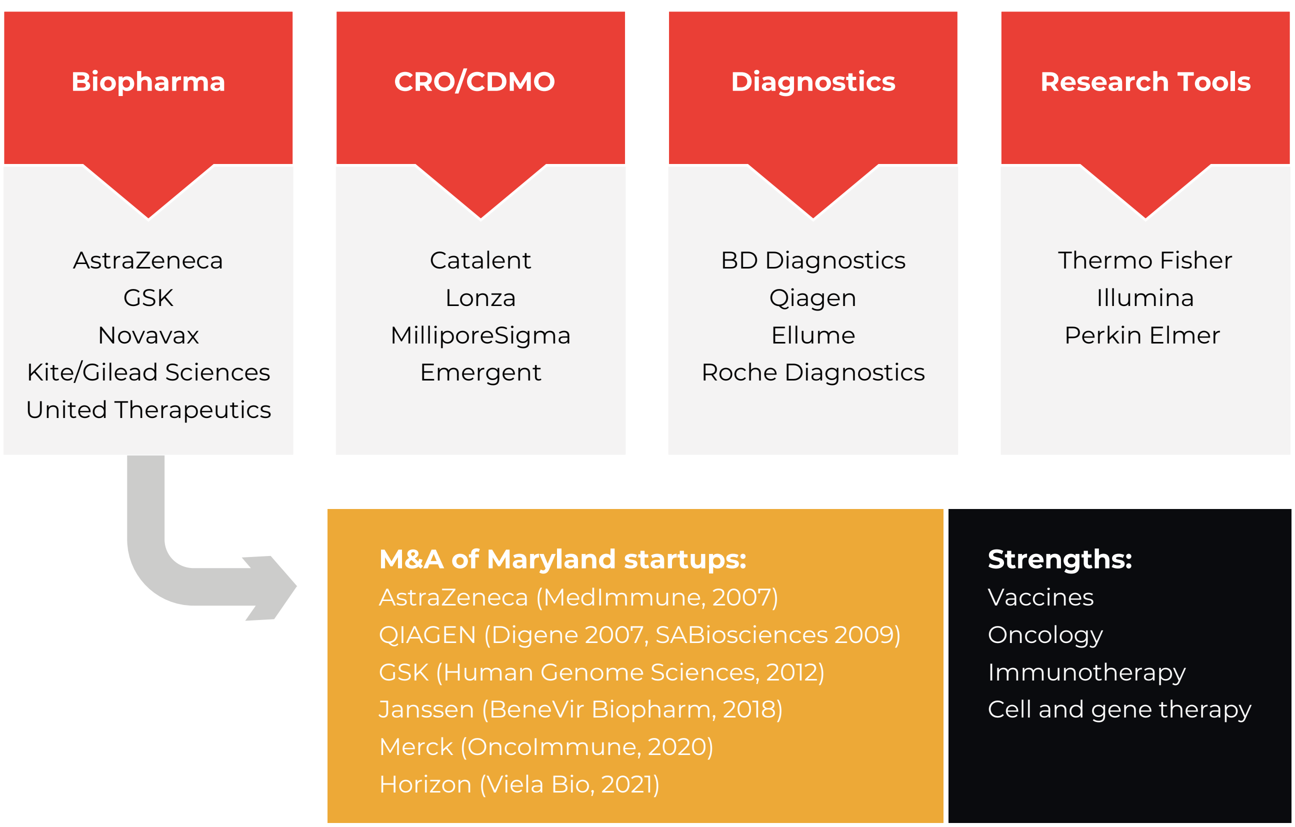
22 Biomedical Growth Strategies and Goldberg Consulting. (2017). Excel Maryland: Getting to #1.
23 Milken Institute. (2021). New opportunities for job creation in Maryland's life sciences industry.
24 TEConomy Partners (2021). The Maryland Equitech Growth Fund: A Conceptual Framework.
25 TEConomy Partners (2021). The future is now: Realizing the promise of industry 4.0.

Life Sciences Industry

In the Life Sciences, Maryland's highest-growth employment opportunities are in biomanufacturing; diagnostics manufacturing; and contract testing, research, and development manufacturing. Biomanufacturing includes the production of vaccines, gene and cell therapies, biopharmaceuticals, and other biologically derived products. Maryland currently ranks seventh nationally in biotech/pharmaceutical manufacturing with 10,183 employees, although research and discovery-stage companies still represent the largest life sciences industry segment (classified in the Scientific R&D Services North American Industry Classification System code, which has 38,514 employees). (See Appendix.)

Over the past 20 years, Maryland's strong research, innovation, and startup activities have helped Maryland attract major industry players through merger and acquisition (M&A) activity. Many of these companies later expanded their manufacturing, R&D, or commercial office activity. These companies include biopharmaceutical companies like AstraZeneca and GlaxoSmithKline (GSK), as well as diagnostic companies, such as BD Diagnostics and QIAGEN, as shown in Figure 2. In the past couple of years, Maryland has successfully recruited companies including Kite Pharmaceuticals, a California-based gene therapy company, and Ellume, an Australian diagnostics company, both of which will be manufacturing in Maryland. MilliporeSigma, a contract testing, development, and manufacturing organization, announced a major expansion in its drug biosafety testing in Maryland.

FIGURE 2. LIFE SCIENCES INDUSTRY: KEY INDUSTRY VERTICALS AND EXAMPLES OF COMPANIES OPERATING IN MARYLAND, 2022



Source: RTI International

Cybersecurity and IT Industry

The Cybersecurity and IT industry is, by far, Maryland's largest high-tech industry sector. Companies classified in the computer systems design, computer and electronic product manufacturing, and software industry segments employed 109,036 people in 2021.[26] These NAICS industries roughly map to Maryland's key Cybersecurity and IT industry verticals, as shown in Figure 3. These industry verticals are IT Services and Consulting (including cloud and infrastructure), Computer and Network Security, Software, and Computer and Electronics Hardware. Within these verticals are companies specializing in different technical domains (e.g., artificial intelligence, data analytics, autonomy, quantum computing) and different industry applications areas (e.g., fintech, edutech, healthtech, government). Maryland's proximity to federal clients and these agencies' continued demand and spending on digital solutions and network security have fueled the strong growth in this sector.

Companies operating in Maryland's Cybersecurity and IT sector include both large government contractors (e.g., Leidos, which acquired Lockheed's government IT business; General Dynamics Information Technology [GDIT]; and IBM Government Systems) and locally grown companies that have scaled through government contracts (e.g., Fearless, Mindgrub, Sonatype). Several Maryland startups have attracted VC investment (see analysis of Pitchbook venture capital data in Section 3 under Maryland's high-growth startup activity). Figure 4 includes some examples of Maryland's venture-backed companies: Tenable, ZeroFox, and Dragos, which are cybersecurity companies; Xometry, which provides an AI-enabled marketplace for on-demand manufacturing; and Protenus, which provides AI-enabled patient privacy protection and healthcare compliance analytics. The latter two AI companies fall under the software industry vertical.

It is also worth noting that Maryland has nearly 22,000 people employed in computer and electronic product manufacturing, which represents a slightly higher-than-average concentration of employment in this sector (location quotient of 1.16). These companies include large defense contractors, like Lockheed and Northrup Grumman, and their suppliers, but also companies, like IonQ, which was founded in 2015 to develop quantum computers.

FIGURE 3. CYBERSECURITY AND IT INDUSTRY: KEY INDUSTRY VERTICALS AND EXAMPLES OF COMPANIES OPERATING IN MARYLAND, 2022

IT Services and Consulting	Computer and Network Security	Software	Electronics
Leidos (Lockheed Government IT)	Tenable	Fearless	Lockheed Martin
GDIT	ZeroFox	Xometry	Northrop Grumman
IBM	Cisco	Mindgrub	
Oracle	Dragos	Sonatype	
BAE Systems		Sparkpost	

Source: RTI International

26 U.S. Bureau of Labor Statistics. (2021). Quarterly Census of Employment and Wages. This includes NAICS 5415 Computer System Design Services, NAICS 334 Computer and Electronic Product Manufacturing, and 5112 Software Publishing.

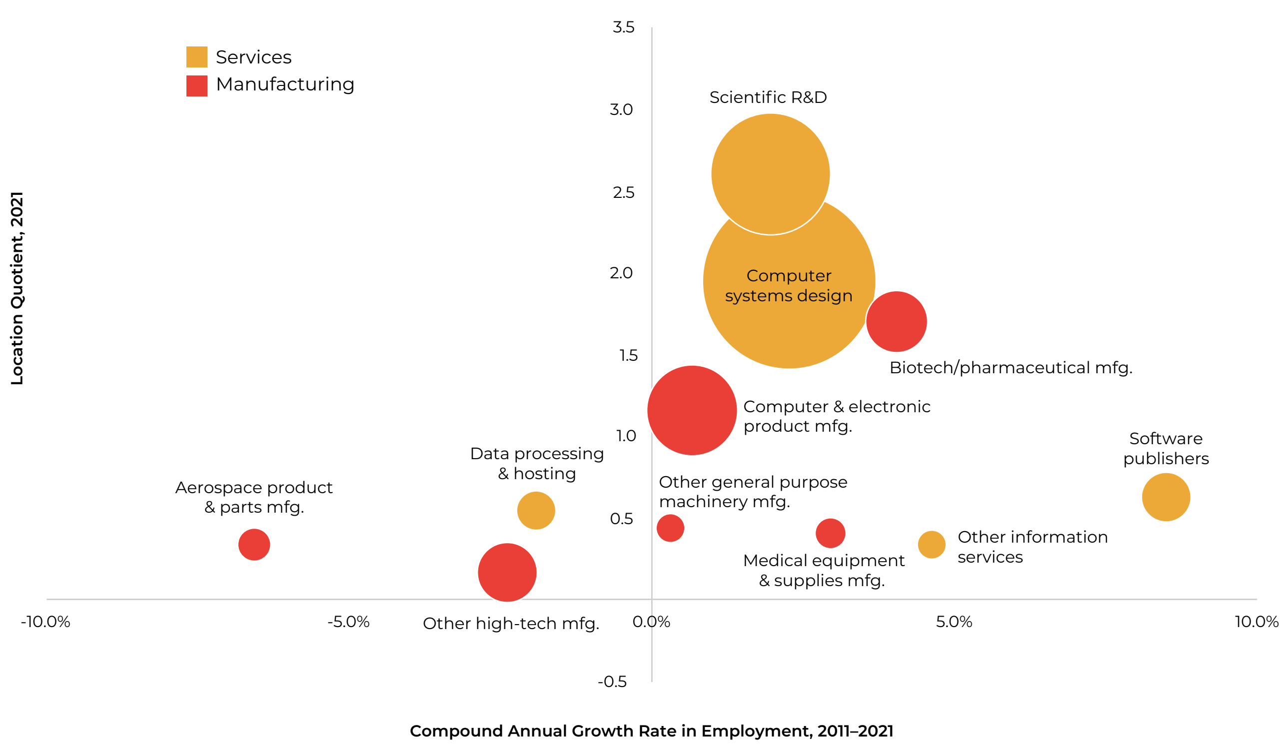
Advanced Manufacturing

Recent studies have stressed the need for Maryland to stay competitive in manufacturing.[27] **Few sectors generate the economic development footprint that manufacturing does.** First, manufacturing employs proportionally more skills-based workers relative to workers with a college degree, and second, manufacturing stimulates component and other contract manufacturing, as well as logistics and distribution activity.

Maryland ranks 34th in manufacturing sector employment compared with eighth in computer systems design employment. In 2021, the entire manufacturing sector (e.g., food and beverage, aerospace, biopharmaceutical, computer and electronics, machinery) employed 110,000 people, down from 113,033 employees in 2011. For a state the size of Maryland (ranked 15th by GDP), the share of employment in manufacturing is low, with a location quotient of 0.5 compared with the national average of 1.0. (See Appendix.)

The highest growth opportunities in manufacturing are in high-tech manufacturing. These opportunities are shown in Figure 4 as the four red bubbles to the right of the y-axis: computer and electronic product manufacturing, biotech/pharmaceutical manufacturing, medical equipment and diagnostic manufacturing, and other general purpose machinery manufacturing.

FIGURE 4. MARYLAND HIGH-TECH INDUSTRY SEGMENTS BY EMPLOYMENT, LOCATION QUOTIENT, AND COMPOUND ANNUAL GROWTH RATE, 2011–2021



Source: U.S. Bureau of Labor Statistics. (2022). Quarterly Census of Employment and Wages.

27 TEConomy Partners (2021). The future is now: Realizing the promise of industry 4.0.

Recommendation

Maryland should develop a high-tech manufacturing recruitment and expansion strategy especially focused on recruiting large biomanufacturing, diagnostics, computer and electronics, transportation, and machinery manufacturing companies looking to expand. Maryland should continue to invest in high-tech startup activity and growth, which has helped Maryland attract larger biotech and IT companies through merger and acquisition and other activities.

HOW MARYLAND CAN GENERATE ECONOMIC OPPORTUNITY FOR ALL MARYLANDERS

Closing the earnings gap is key to closing the wealth gap in Maryland. This section discusses why Maryland should focus on creating more high-tech industry jobs, with an emphasis on high-tech manufacturing, and attracting more Marylanders to these career pathways.

Jobs Strategy as a Factor in Growth Strategy

The goal of economic development is to nurture the growth of a dynamic ecosystem of small companies and large companies, locally grown companies and recently recruited companies. A good mix of these companies will, in turn, create a variety of jobs for people at different stages of life, at different skill levels, and across different industries.

High rates of employment and business ownership will raise the standard of living of residents over time, but the composition of the jobs and businesses matter. Figure 5 shows the three mechanisms that states use to support the growth of companies and jobs. Recent examples of startup companies with their current employment levels, as well as recruitments and expansions with an estimated number of new jobs to be created, are presented in this figure.

FIGURE 5. MECHANISMS FOR SUPPORTING GROWTH IN HIGH-TECH COMPANIES, INDUSTRIES, AND JOBS

Startups	Recruitments	Expansions
Dragos, 566 employees (84 in Maryland)	**Ellume Diagnostics** 1,500 jobs	**Novavax** 400 jobs
Fearless, 241 employees (158 in Maryland)	**Kite Pharma** 352 jobs	**Regenx Bio** 172 jobs
IonQ, 170 employees (50 in Maryland)	**Hitachi Rail** 460 jobs	**L3Harris** 90 jobs

Source: Maryland Department of Commerce (2020, 2022). Annual Reports, FY2019, FY2021, and LinkedIn.

Nearly 60% of Maryland Adults Do Not Have College Degrees

Maryland ranks fourth highest nationally in educational attainment (41.6% of Marylanders have a bachelor's degree or higher compared with 23.5% nationally), and this ranking is correlated with Maryland's number one ranking for median household income.[28] However, **Marylanders without a bachelor's degree have significantly lower incomes, and some of the state's persistent economic disparities are place-based and break down along racial and ethnic lines.**

Generating economic opportunity for all Marylanders means developing a high-tech industry strategy that will create higher-wage jobs for the 58.4% of Maryland adults who do not have a bachelor's degree, as well as the 41.6% of adults who do.

If Maryland sets a goal of creating 87,000 high-tech industry jobs (4% CAGR) in the next 10 years, some of the industry segments selected within the broader portfolio of high-tech industries should meet the following criteria:

- Leverage large, high-growth markets
- Build on Maryland's existing competitive advantages
- Seek to fill positions, the majority of which require workers with associate degrees, certifications, and skills-based training

Many types of high-tech manufacturing (e.g., biomanufacturing, diagnostics manufacturing, transportation manufacturing, machinery manufacturing) and high-tech services, such as software and IT, require workers who have relevant skills rather than degrees.

28 U.S. Census Bureau. (2021). American Community Survey, 2020, 5–year estimates.

The Growth in STEM Jobs

STEM jobs are those that use science, technology, engineering, and mathematics skills and knowledge to generate products and services. The definition of STEM occupations has shifted over time from a narrower definition to a broader one. **The narrower definition of STEM includes computer and math occupations; life, physical, and social science occupations; and architecture and engineering occupations.** The broader definition of STEM (STEM-related) includes healthcare workers, science and engineering (S&E) managers, teachers, and technologists. In recent years, there has been a push to include so-called **"Middle Skill" occupations: construction and extraction; installation, maintenance, and repair; and production/manufacturing occupations.** Middle Skill occupations are the largest STEM group, nearly equal in size to the traditional STEM plus STEM-related occupations, as shown in Figure 6.

FIGURE 6. STEM DEFINITIONS: NARROW TO BROAD WITH U.S. EMPLOYMENT LEVELS, 2021

STEM Occupations (8.6M)	STEM-Related Occupations (13.1M)	Middle Skill Occupations (20M)
Computer and mathematical scientists	Health-related occupations (e.g., health practitioners and health technicians)	Production
Biological, agricultural, and environmental life scientists	S&E managers	Installation, maintenance, and repair
Physical scientists	S&E teachers	Construction and extraction
Social scientists	S&E technologists	Other
Engineers		

Source: National Science Board. (2021). The STEM labor force of today. Science and Engineering Indicators.

The U.S. Bureau of Labor Statistics estimates **that STEM jobs (narrow definition) are expected grow 8% from 2019–2029 compared to 3.7% for all occupations.** This STEM growth is driven primarily by 11.5% projected growth in computer occupations.[29] **Maryland ranks third nationally for the percentage of its workforce employed in STEM occupations, not including Middle Skill occupations.** Approximately 8.3% of Marylanders are employed in STEM occupations compared with 5.3% nationally.[30] This concentration reflects high STEM employment by federal agencies and academic institutions in Maryland, in addition to the private sector.

STEM jobs are higher growth, higher-wage, and less vulnerable to business cycle shocks than jobs in non-high-tech services and manufacturing sectors. Nationally, people of color and women are less represented in some STEM occupations, such as architecture and engineering, computer and math, and physical science occupations, but more represented in others, such as health-related occupations and life science occupations.[31]

RTI's analysis finds similar patterns of participation by race, ethnicity, and gender in Maryland, but with a few key differences. For example, **Black Marylanders are rapidly reaching representational parity in computer and math occupations and health practitioner occupations (i.e., doctors, nurses, and physical therapists).**

29 U.S. Bureau of Labor Statistics. (2021). "Why computer occupations are behind strong STEM employment growth in the 2019–29 decade," Employment & Unemployment, January 2021, Vol. 10, No. 1.

30 National Science Board. (2022). Individuals in science and engineering occupations as a percentage of all occupations. Science and Engineering Indicators: State Indicators.

31 Pew Research Center. (2021). Six facts about America's STEM workforce and those training for it. STEM Education & Workforce. Research Topics.

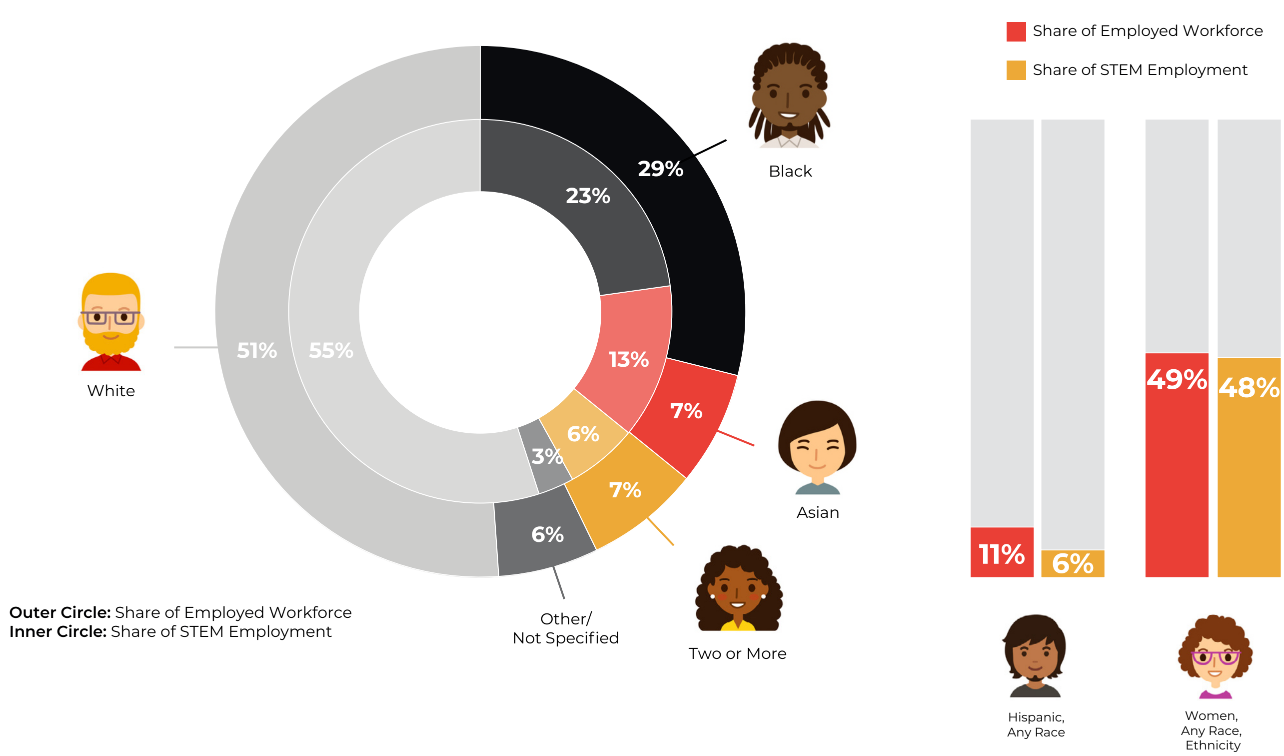
Maryland's STEM Workforce Is Increasingly Diverse

Figure 7 presents the breakdown of Maryland's total employed workforce, any occupation, by race, ethnicity, and gender, and then compares this to the share of STEM employment for each group. Across all STEM and STEM-related occupations (which includes healthcare workers), the STEM employment of Asian and white Marylanders exceeds their overall workforce representation. Black Marylanders' share of STEM employment is 80% of their total employment across all occupations (23% of STEM employment versus 29% of total employment). Hispanic Marylanders' share of STEM employment is 55% of their total employment across all occupations (6% of STEM versus 11% of total). STEM employment of Marylanders identifying as Two or More Races (6%) and as Women, any race and ethnicity (48%), are rapidly approaching representational parity (7% and 49%, respectively). The Other Race/Not Specified category includes Native American or Alaska Native, Pacific Islander or Native Hawaiian, and all other U.S. Census Bureau American Community Survey responses that do not specify a race.

About the Data

Surveys administered by the U.S. Census Bureau and Bureau of Labor Statistics ask respondents to report their race and ethnicity. In the data, White, Black or African American, Asian, two or more races, Native American or Alaska Native, Pacific Islander or Native Hawaiian sum to the total population. Hispanic or Latino is an ethnicity and can be of any race, so people identifying as Hispanic or Latino generally will be shown outside the 100% from summing by race.

FIGURE 7. BREAKDOWN OF OVERALL WORKFORCE PARTICIPATION AND STEM WORKFORCE PARTICIPATION IN MARYLAND BY RACE, ETHNICITY AND GENDER, 2021



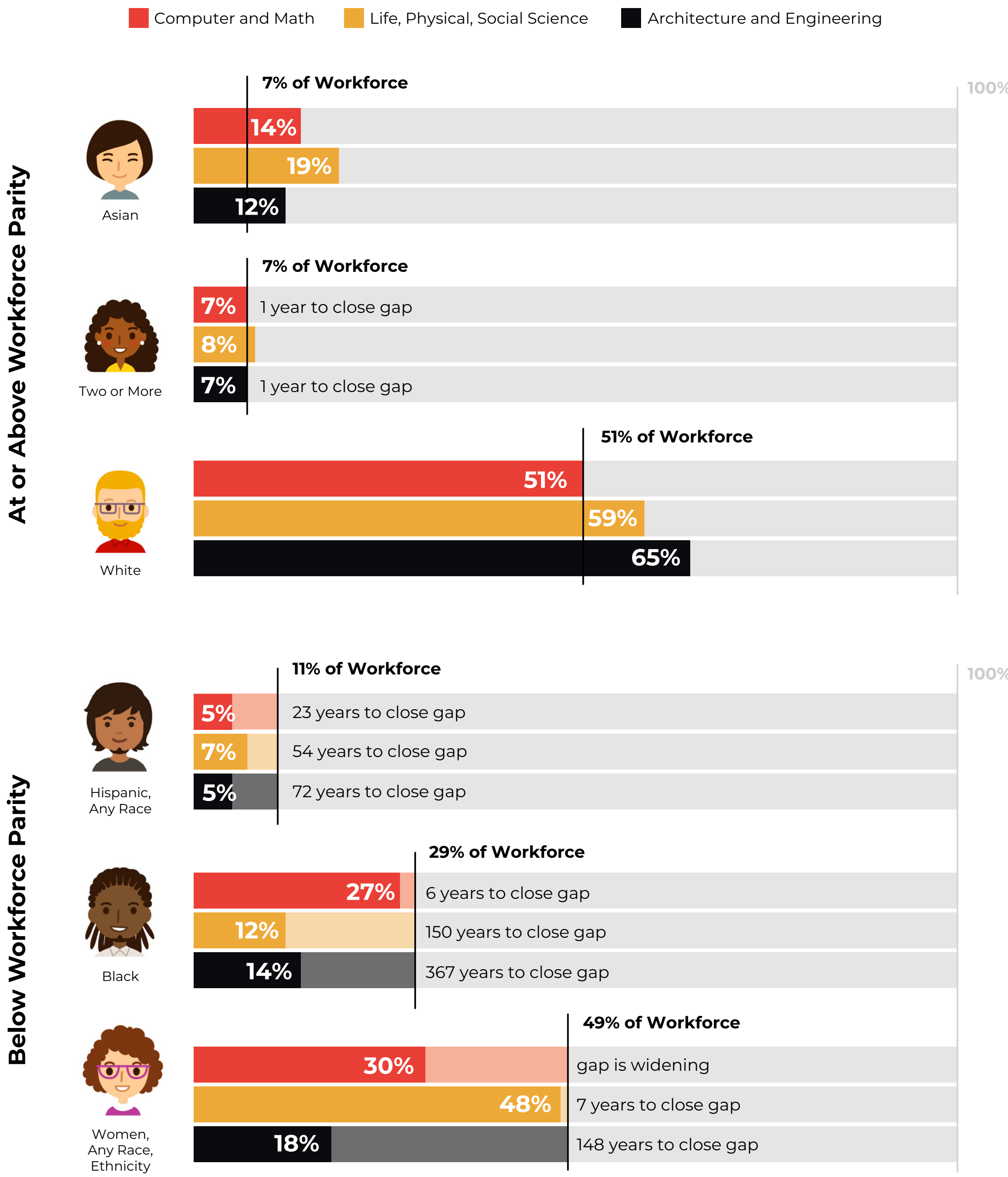
Source: U.S. Census Bureau. (2022). American Community Survey, 2021.

STEM Occupation and Education Pipeline Disparities to Address

Drilling down into STEM subcategories reveals different patterns of workforce participation. One limitation of RTI's analysis is that STEM occupational employment data for Maryland by race and ethnicity is only available at the aggregated computer and mathematical occupations; life, physical, and social science occupations; and architecture and engineering occupations levels. Data for individual STEM occupations—e.g., computer versus math occupations, architecture versus engineering occupations—are only available by gender, all races and ethnicities. (See Appendix.)

Figure 8 presents analysis of STEM employment representation for different demographic groups compared to each group's total employment across all occupations (STEM and non-STEM). **Asian, Two or More Races, and white Marylanders' share of STEM employment is at or above parity** (i.e., at or above their share of total employment) in computer and math occupations; life, physical, and social science occupations; and architecture and engineering occupations. Black and Hispanic Marylanders and women are below parity to varying degrees, with the biggest gap in architecture and engineering occupations. RTI's estimate of the number of years for each group to reach parity is based on each demographic group's current share of employment in a STEM subcategory, total workforce representation, and past 10-years average annual growth in employment. (See Appendix for employment levels and CAGRs.)

FIGURE 8. SHARE OF MARYLAND STEM EMPLOYMENT BY RACE, ETHNICITY, AND GENDER COMPARED TO SHARE OF TOTAL EMPLOYMENT, 2021



Notes: The estimated number of years to reach parity is based upon each demographic group's past-10-years employment CAGR. Due to rounding, a group could look like it has achieved parity when slightly more employment growth is still needed. "Diverging" indicates a negative growth rate and widening gap.

Source: U.S. Census Bureau. (2022). American Community Survey, 2021.

Reasons STEM Workforce Diversity Gaps Are Persisting

To assess one factor that might explain the longer time period required for some demographic groups to reach workforce parity, RTI analyzed trends in STEM postsecondary degrees conferred by Maryland institutions of higher education by race, ethnicity, and gender. Companies often look for employees who bring experience, in addition to degrees in a particular field. Nevertheless, the STEM degrees conferred data is directionally helpful in assessing the workforce pipeline. The analysis generated the following findings:

1. **The estimated number of years required to reach representational parity in STEM degrees is much shorter than that for STEM employment.** Why? The estimated number of years to reach representational parity is driven by the past-10-years growth rate and the size of the existing gap. **The growth rate of STEM bachelor's degrees conferred is much higher than the growth rate of STEM employment in many cases.** For example, the past-10-years CAGR in bachelor's degrees in computer and math conferred to Black students was 10.2% (4 years to close the gap), and the past-10-years CAGR in employment of Black Marylanders was 5.6% (6 years to close the gap).[32] In engineering, the CAGR of bachelor's degrees awarded to Black students was 3.4% (32 years to close the gap), and the CAGR of employment in engineering was 4.2% (367 years to close the gap). Black employment in engineering is beginning from a very low base (14%) compared to computer and math jobs (27%), so a much higher growth rate of engineering jobs is needed to drive workforce parity for people of color (29%). (See Appendix for CAGR of each demographic group in STEM degrees and STEM employment.)

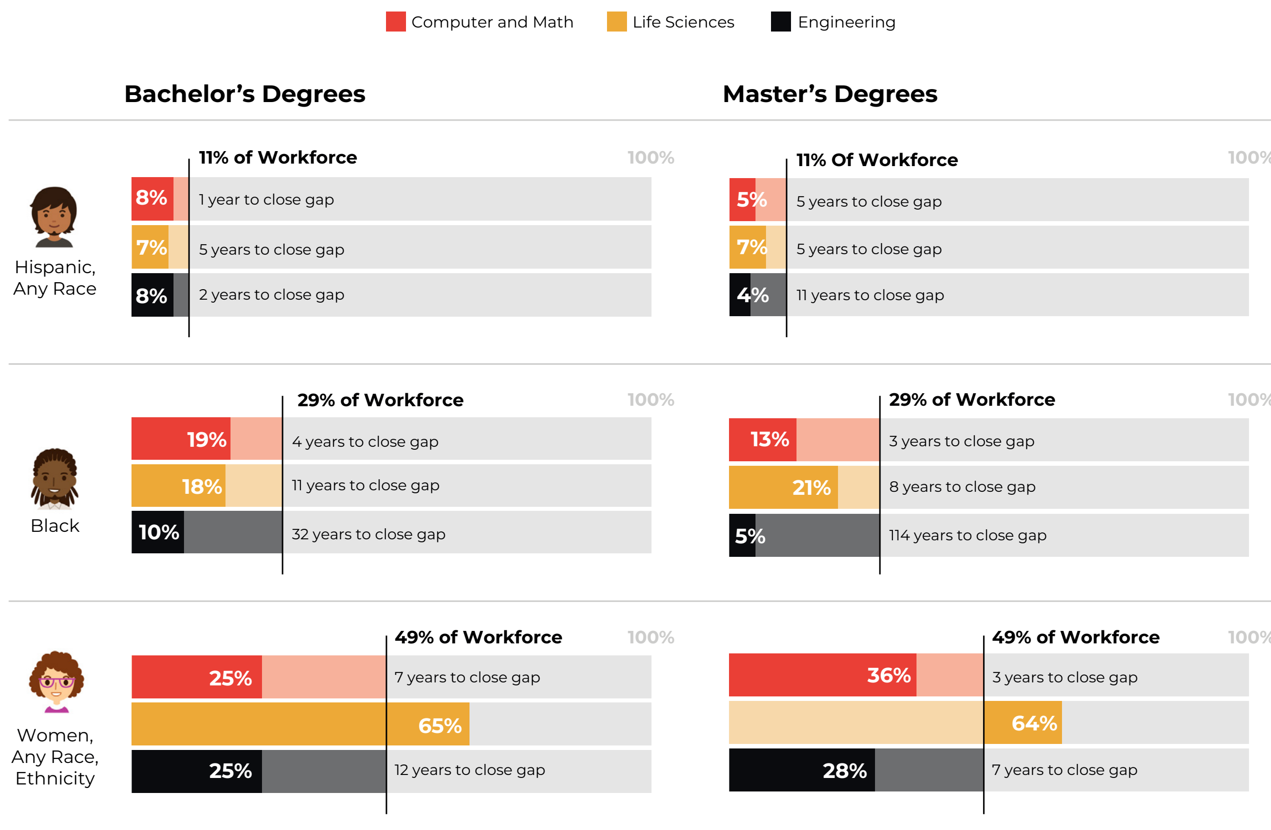
2. **The size of companies operating in Maryland is important, as is growth in employment of these companies.** Both smaller companies and larger companies need workers with industry experience, but large expanding companies are more likely to hire recent graduates with limited work experience in large numbers.

3. **There can be a misalignment between what students study and the skills that companies need.** It is possible to graduate with a STEM degree, yet not have the skills that companies are looking for. This is where internships, co-ops, and apprenticeships are key. It is also possible to earn a STEM degree but work in a non-STEM industry.

4. **The higher the level of degree, the larger the representational gap—but not in all cases.** The parity gap (i.e., difference between share of STEM degrees and share of employed workforce) doubles for Hispanic and Black students as they move from bachelor's to master's degrees awarded in engineering. Hispanic students represent 8% of bachelor's degrees awarded in engineering but 4% of master's degrees awarded. Black students represent 10% of bachelor's degrees in engineering awarded but 5% of master's degrees awarded. However, in life sciences degrees, Hispanic students were awarded 7% of bachelor's degrees in the life sciences and 7% of master's degrees, and Black students were awarded 18% of bachelor's degrees in the life sciences and 21% of master's degrees.

32 The degrees awarded and employment growth rates of other demographic groups also factors into the estimated number of years to reach parity calculation.

FIGURE 9. SHARE OF COMPUTER AND MATH, LIFE SCIENCES, AND ENGINEERING DEGREES CONFERRED BY MARYLAND INSTITUTIONS OF HIGHER EDUCATION TO HISPANIC, BLACK, AND FEMALE STUDENTS RELATIVE TO WORKFORCE REPRESENTATION, 2021



Source: National Center for Education Statistics. (2022). Integrated Postsecondary Education Data System

Recommendations

Given the persistent gaps in STEM employment and STEM degrees conferred, Maryland should develop a plan to substantially change participation growth rates for Black and Hispanic Marylanders in life, physical, engineering, and social sciences, and for women in computer, math, and engineering so that parity can be reached within a shorter timeframe.

The size of the gaps and industry employment growth data presented earlier suggest that Maryland's plan needs to emphasize the demand side, as much as the supply side. Recruit high-tech manufacturers and support their expansion. This will increase engineering employment and, in the life sciences, diversify the type of jobs available—e.g., biomanufacturing and diagnostics manufacturing have skills-based needs that can be met through non-degree certificates. If the industry remains heavily weighted toward scientific R&D and PhDs, it will be harder to change employment growth rates in the short term.

Maryland should also be mindful that awareness of career opportunities and the lack of industry-aligned curriculum and infrastructure for training can be an impediment to developing a pipeline of workers as jobs expand. Invest in community outreach to raise awareness about jobs and career pathways and invest in industry-aligned, non-degree certificate and degree programs (and infrastructure) at minority-serving institutions (MSIs), including community colleges, and Historically Black Colleges and Universities (HBCUs).

HOW MARYLAND CAN SUPPORT DIVERSE AND INCLUSIVE HIGH-GROWTH STARTUP ACTIVITY

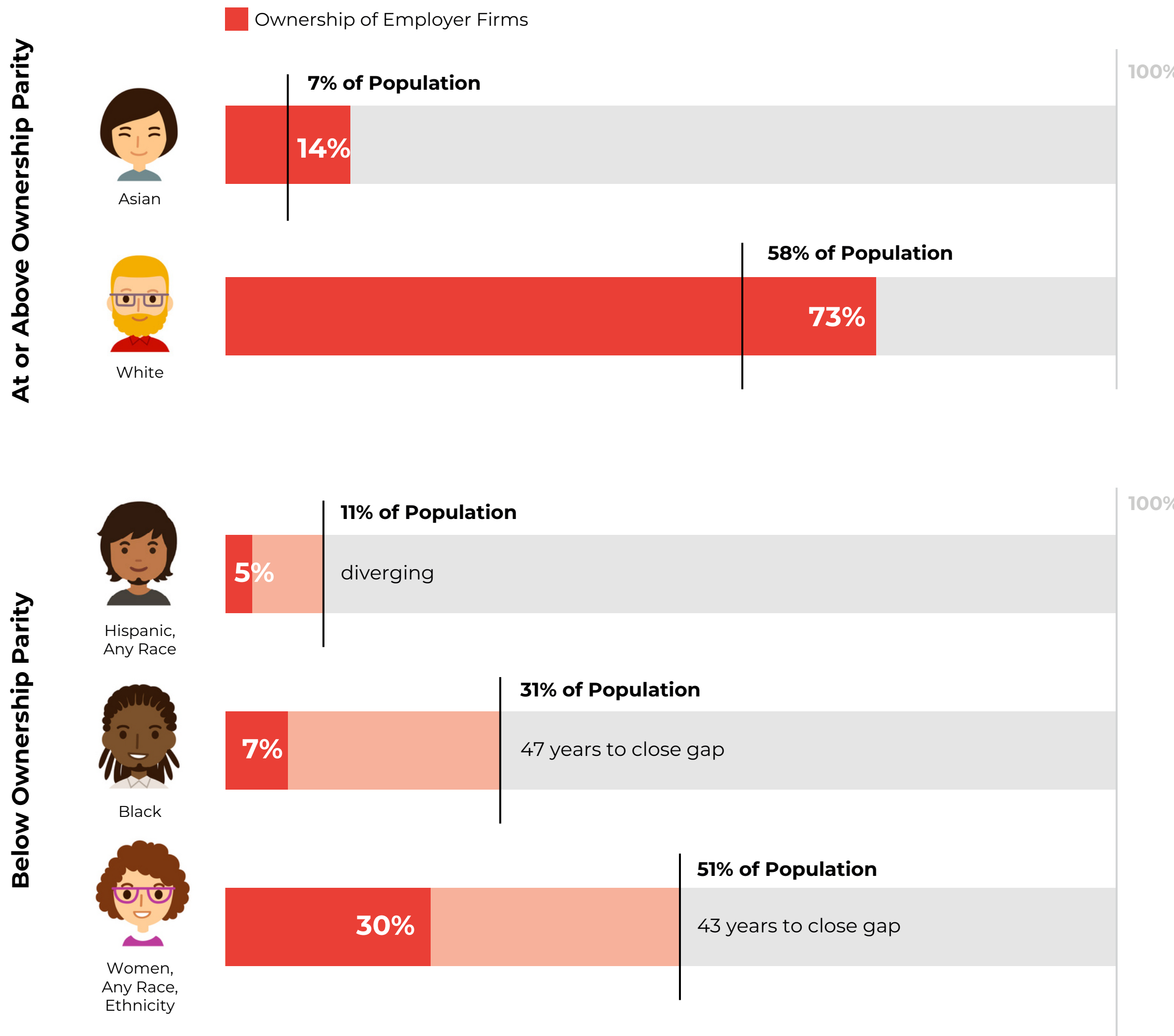
Importance of Business Ownership to Wealth Creation

Although less than 15% of U.S. households own a business, business ownership is a path to higher income and wealth creation. According to the Federal Reserve's Survey of Consumer Finances, nearly 40% of families in the top income decile in the United States, own a privately held business compared to under 20% in the next four deciles (50th to 89.9th percentiles). This compares to only 7% of families in the bottom five deciles. Business-owning families with fewer than five employees have a median net worth (assets minus liabilities) of $308,000; those with more than five employees have a median net worth of $1.1 million.

Disparities Persist in Maryland Business Ownership Diversity

How is Maryland performing in business ownership by race, ethnicity, and gender? Nationally, Maryland ranks second for its share of Black-owned employer firms and fifth for its share of women-owned employer firms (see Appendix). However, the gap between each group's business ownership representation and population representation is large: 7.1% versus 31.4% for Black Marylanders, 3.3% versus 11.1% for Hispanic Marylanders, and 22.8% versus 51.3% for women, as shown in Figure 10. RTI estimates that it will take 43 years for women and 47 years for Black Marylanders to achieve parity in business ownership based on 2012–2019 (pre-COVID) average annual growth in business ownership by race, ethnicity, and gender.

FIGURE 10. OWNERSHIP OF MARYLAND EMPLOYER FIRMS BY RACE, ETHNICITY, AND GENDER, 2019, COMPOUND ANNUAL GROWTH RATE, 2012–2019, AND ESTIMATED NUMBER OF YEARS TO REACH PARITY



Note: RTI modeling of estimated years to reach parity for each group assumes the same 2012–2019 CAGR continues. “Diverging” indicates a negative growth rate and widening gap.

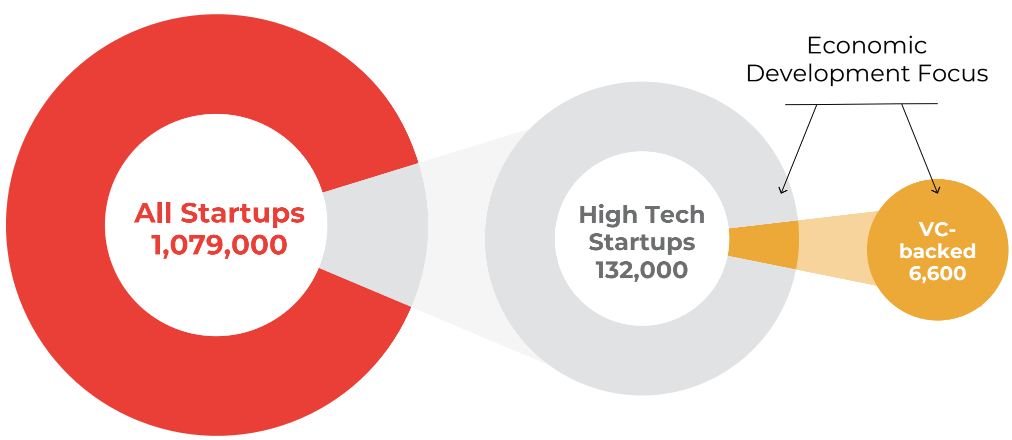
Source: U.S. Census Bureau, 2012 Survey of Business Owners, 2019 Annual Business Survey

High-Growth Startup Activity

In the United States and Maryland, the founders of most startup companies self-finance, borrow from friends and family, or pursue debt or equity investment from private capital sources. Most startup companies—restaurants, retail, dry cleaners, gyms—are founded in non-high-tech sectors. High-tech startups—companies in nine manufacturing industries and three services industries with high and medium-high R&D intensity—represented approximately 12% of all startups from 2007–2009. Venture capital-backed firms represent less than 1% of all startups. Venture capital is a form of private equity investment that provides capital to companies with high growth potential in exchange for an equity stake.

Despite their small numbers, the number of venture capital-backed companies, the levels of investment in these companies, and the technology sectors in which these companies are concentrated is of interest to policymakers. The reason for this interest is because successful venture-backed companies have had an outsized impact on the U.S. economy. For example, one recent study of companies listed on U.S. stock exchanges found that venture-backed companies represented 43% of all U.S. publicly listed companies since 1979, 57% of market capitalization, 38% of employees, and 82% of R&D expenditures.[33] If a state is underrepresented in venture-backed companies and VC investment, its high-tech economy may be missing one engine of growth.

FIGURE 11. ALL U.S. STARTUPS, HIGH-TECH STARTUPS, AND VENTURE CAPITAL-BACKED STARTUPS, 2009



Note: Startup data comes from the U.S. Census Bureau Longitudinal Business Database and includes all C-corporations, S-corporations, and Partnerships founded 2007–2009 for which 5 years of performance data were observed. Only new firms from each year were included. High-tech industry startups were defined using 4-digit NAICS industries identified by the Bureau of Labor Statistics as having a higher-than-average share of STEM workers.

Source: Azoulay, P., Jones, B., Kim, J.D., and J. Miranda (2020). "Age and High-Growth Entrepreneurship," American Economic Review: Insights, 2 (1): 65-82.

33 Strbulaev, Ilya A. and Will Gornall (2015). "How Much Does Venture Capital Drive the U.S. Economy," Insights by Stanford Business School, October 21, 2015.

Maryland High-Tech Startups Concentrated in Software, Biotech, Devices

How is Maryland performing in terms of high-tech, high-growth startup company activity? Each year, Maryland has 7 to 10 companies that rank in the Deloitte Technology Fast 500 North America, which is based on past-3-years revenue growth. The Maryland high revenue-growth companies that make the list tend to be concentrated in Software, Life Sciences, and FinTech or Other Tech, as shown in Table 4.

TABLE 3. MARYLAND COMPANIES IN TECHNOLOGY FAST 500 NORTH AMERICA RANKING, BASED ON 2018–2021 ANNUAL REVENUE GROWTH

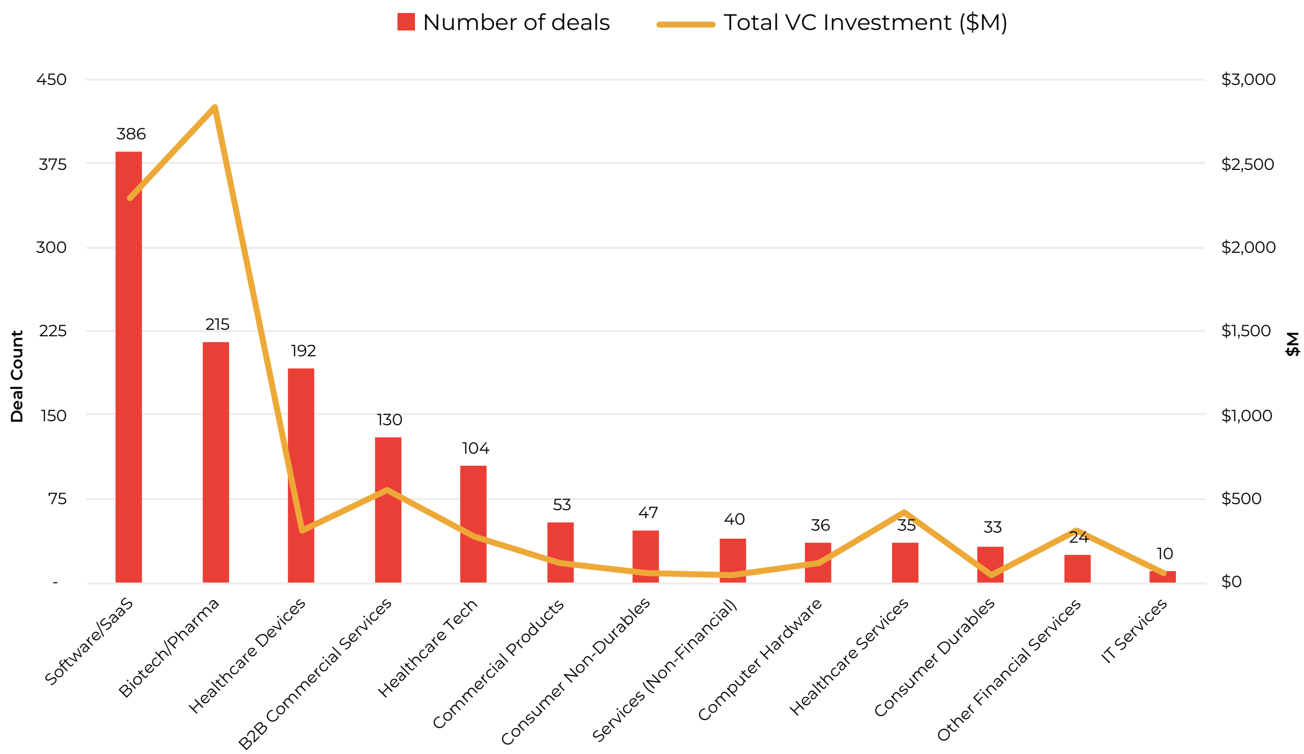
RANK	COMPANY	INDUSTRY	APPLICATION	REVENUE GROWTH	HEADQUARTERS
89	Uscreen	Software	Video monetization platform	1,829%	Gaithersburg
158	Curbio	Software	Pre-sale home renovation recommendations	913%	Potomac
162	Sales Boomerang | Mortgage Coach	Fintech	Automated borrower intelligence system	906%	Owing Mills
276	Dragos	Software	Industrial cybersecurity	538%	Hanover
309	Xometry	Software	AI-enabled marketplace for manufacturing	468%	Derwood
337	Rhythm Management Group	Life Sciences	Cardiac device remote monitoring	410%	Rockville
480	iLearning Engines	Software	AI-enabled training	252%	Bethesda

Source: Deloitte. (2022). 2022 Technology Fast 500 Rankings North America

Nationally, **Maryland ranks 17th in VC dollars invested in Maryland companies**, compared to its rank as the 15th largest state by GDP. Over the past 5 years, Maryland's strongest deal activity has been in **Software, Biotech/Pharma, Devices, B2B, and Health Tech**, as shown in Figure 12. The total counts of deals and VC investments include all stages (pre-seed through later-stage rounds) and sources of VC investment (e.g., angels, incubators/accelerators, TEDCO, and private VC firms).

To benchmark Maryland, RTI leveraged a recent study of VC activity in nine Southeastern states conducted by Panoramic Ventures and analyzed Pitchbook data for Maryland to enable comparisons. Maryland ranked fifth out of 10 states for total number of deals and VC dollars invested from 2017 through the first half of 2022 (1H 2022), as shown in Table 5. States like North Carolina that are 50% bigger in terms of GDP attracted 125% more VC investment over the same period. **Maryland tied for third with Georgia for VC investment dollars attracted relative to the size of its economy—or $1.71 for every $1,000 of GDP.**

FIGURE 12. COUNT OF MARYLAND VC DEALS AND TOTAL VC INVESTMENT ($M) BY PRIMARY INDUSTRY GROUP, 2017–2022 (1H 2022)



Source: Pitchbook. (2022). Venture Capital and Private Equity Database.

TABLE 4. MARYLAND BENCHMARKED AGAINST SOUTHEAST VENTURE CAPITAL DEALS AND INVESTMENT, 2017–2022 (1H 2022)

STATE	GDP ($BN)	VC DOLLARS/ $100 GDP	NUMBER OF DEALS	VC DOLLARS ($BN)	TOP AREA INVESTMENT (BY VC DOLLARS)
Florida	$1,255.6	$1.50	3,011	$18.8	FinTech
North Carolina	$662.1	$2.57	2,093	$17.0	Media
Georgia	$691.6	$1.72	1,809	$11.9	FinTech
Virginia	$605.0	$1.57	1,680	$9.5	FinTech
Maryland	**$443.9**	**$1.71**	**1,426**	**$7.6**	**Biotech/Pharma**
Tennessee	$427.1	$0.96	932	$4.1	Healthcare IT
South Carolina	$269.8	$0.59	488	$1.6	Mfg/Industrial Tech
Kentucky	$237.2	$0.59	403	$1.4	Biotech/Pharma
Alabama	$254.1	$0.39	354	$1.0	Mfg/Industrial Tech
Mississippi	$127.3	$0.16	54	$0.2	FinTech

Note: Mfg = Manufacturing

Source: Panoramic Ventures. (2022). The State of Startups in the Southeast 2022. Pitchbook. (2022). Venture Capital and Private Equity Database.

Characteristics of Successful Startup Founders and Implications for Maryland

What do we know about the founders of successful startups and what are implications for Maryland's inclusive high-tech growth strategy? A recent study that analyzed the characteristics of 2.7 million founders in the U.S. from 2007–2014 found that the average age at time of founding was 42 years. As noted earlier, most new and existing businesses in the United States are in non-high-tech industries. The average age of founders of companies in high-tech industries was 43 years. In the tech industry specifically, the average age of founders was between 39 and 41 years of age.

Many successful founders have previously been involved with startups and have worked in the industry in which their company was founded. Examples of factors that explain why younger entrepreneurs are less likely to launch a sustainable, revenue-generating business the first time around include the lack of:

1. Sector-specific knowledge of customer needs, strategic business opportunities, and how to clear the regulatory process
2. Experience running companies or managing operations, marketing/sales, finance, and human resources
3. Professional networks needed to raise capital, identify customers, and develop distribution and sales channels
4. Sufficient scientific or technical knowledge to manage R&D

How many high-tech companies are owned by people of color and women in Maryland? Data are not available for Maryland high-tech business ownership, specifically, where high-tech is defined as the nine manufacturing industries and three service industries with high or medium-high R&D intensity. Table 3 presented data on total business ownership by demographic group for all industries. This business ownership data indicated that 73% of employer firms (companies with one or more employees, as opposed to self-employed individuals) are white-owned and 77% are male-owned.

How many high-tech startups do people of color and women found in Maryland? Time-series data on high-tech startup activity by race, ethnicity, and gender are also not available. One study indicated that, in Maryland, in 2021, high-tech firms founded by Black individuals received 0.67% of VC investment dollars.[34] RTI could not identify any other studies that reported the number and share of female- and Latinx-founded companies in Maryland. This could be an area of future study and data collection for the state.

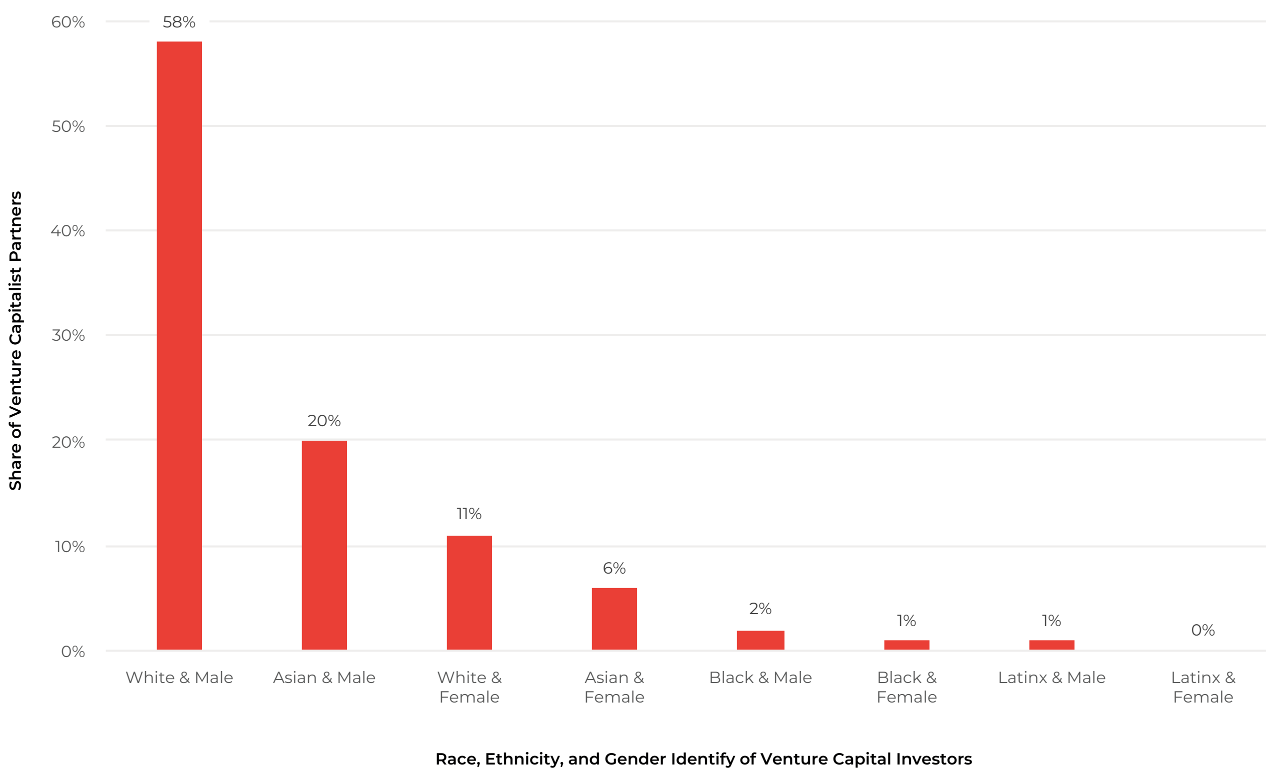
There are data available at the national level. Nationally, in 2021, venture-backed startups with Black, female, and Latinx founders represented a very small share of companies:

- Black-founded: 1.9% of VC deals and 1.2% of total VC investment[35]
- Female-founded: 6.7% of VC deals and 2.4% of total VC investment[36]
- Latinx-founded: 2.1% of total VC investment[37]

34 Eichensehr, Morgan. (2021). "Record year for venture capital in Greater Baltimore leaves Black founders behind," Baltimore Business Journal. 25 March 2021.
35 Teare, Gene. (2022). "VC funding to Black-founded startups slows dramatically as venture investors pull back," Crunchbase News. 17 June 2022.
36 Pitchbook. (2022). "U.S. VC female founders dashboard," News and Analysis. 2 November 2022.
37 Turi, Janice. (2022). "VC funding to early-stage Latine-founded startups in the U.S. has stalled. Here's why that matters," Crunchbase News, 26 January 2022.

One reason for the lack of representation of people of color and women among Maryland's venture-backed companies could be that too few people of color are working in industry sectors with high concentrations of venture-backed activity, e.g., software, biotech/pharma, devices, B2B. Another reason may be the lack of diversity among VC investors. In 2021, only 3% of VC partners were Black and only 1% were Hispanic, as shown in Figure 13. Although 18% of VC partners were women, only 1% were Black women and no VC partners identified as Hispanic women.

FIGURE 13. REPRESENTATION OF VENTURE CAPITAL PARTNERS BY RACE, ETHNICITY, AND GENDER, 2021



Source: Richard Kirby, Partner, Equal Ventures and NVCA-Deloitte, VC Human Capital Survey

Recommendations

Both national and local studies (e.g., The State of Tech Diversity,[38] State of Black Venture,[39] Equitech 2030[40]) identify areas where investments of time, energy, and capital can support systems-level changes to address persistent disparities. These recommendations include expand entrepreneurial leadership training and mentoring for people of color and women, make fund-of-funds investments in venture funds founded and managed by people of color and women, and sustain and expand direct investment funds targeting underrepresented founders.

38 Kapor Center and the National Association for the Advancement of Colored People. (2022). The State of Tech Diversity: The Black Tech Ecosystem.
39 BLCK VC. (2022). State of Black Venture. In partnership with Silicon Valley Bank.
40 Upsurge Baltimore. (2021). Equitech 2030: Quick Wins, Systems Changes, and Moonshot Recommendations from the UpSurge Teams.

WHERE MARYLAND SHOULD FOCUS ITS INVESTMENT

SWOT Analysis of Positioning for Growth

Strengths:

This study, like previous studies, identifies **Cybersecurity and IT (especially software, network security, B2B services) and the Life Sciences (biomanufacturing, diagnostics manufacturing, and contract research services)** as Maryland's highest-growth opportunities. These two sectors build on Maryland's proximity to federal agency assets and customers. They leverage locally grown companies, which increasingly reflect the diversity of Maryland's entrepreneurial talent and the state's long-term investment in the startup ecosystem. (More work can be done in the strategic planning process to assess other emerging fields.)

Weaknesses:

The most significant weakness for Maryland to address is the need to **pivot from research and discovery (where it already has strengths) to manufacturing** (where there is momentum and room to grow in key segments, such as biomanufacturing, diagnostics manufacturing, computer and electronic manufacturing, transportation manufacturing, and machinery). **This transition will require a different mix of companies and a different strategy.** However, the obvious benefit is that, by employing a larger number of people across various education levels, manufacturing creates different types of high-wage jobs and a different economic development footprint that complements Maryland's scientific research and discovery activities.

FIGURE 14. SWOT ANALYSIS OF MARYLAND POSITIONING FOR HIGH-TECH INDUSTRY GROWTH

Strengths

Proximity to federal clients and growth in spending fueling IT and biohealth industry growth (but 2% CAGR)

Lower barrier to tech occupations entry; participation of people of color is high

Density and diversity coupled with long-term investment in startup ecosystem

Weaknesses

Mfg. underrepresented (LQ=0.5) and 46th on business-friendly indicators

Companies focused on research and discovery do not employ people without college and graduate degrees in large numbers

SWOT

Opportunities

Very high global demand for biomanufactured products

More Jobs for Marylanders (refundable income tax credit of 4.75% of wages)

Very high demand for software developers, info security, network architects

Threat

Other states coupling investment in startup activity with high-tech recruitment strategy (e.g., North Carolina, Massachusetts, Pennsylvania)

States with a private sector focus positioned to grow faster than those with federal focus (e.g., 4% vs 2% CAGR)

Source: RTI International

Maryland is a higher cost-of-living, higher-wage state, and it ranks 46th on business-friendly indicators in the 2023 State Business Tax Climate Index.[41] This is one challenge to recruiting more manufacturers. A small state, much of the non-mountainous land is already privately owned and developed. States with large publicly owned sites can leverage them to help recruit large-scale manufacturing facilities.

On the tech side, Maryland, like all states, has an excess demand for software developers with the domain expertise, industry experience, and/or security clearance needed to support company growth and expansion. The biomanufacturing industry is also experiencing excess demand for workers with cGMP experience.

41 Tax Foundation (2022). 2023 State Business Tax Climate Index.

Opportunities:

The very high growth in global demand for cell and gene therapies, diagnostics, and other biologics, as well as electronics, transportation vehicles,[42] and machinery creates opportunities for Maryland in advanced manufacturing segments. The More Jobs for Marylanders refundable income tax credit for the creation of new manufacturing jobs has helped Maryland compete for higher value-added manufacturing facilities.

In the IT sector, demand for software developers (spanning web development, DevOps, artificial intelligence and machine learning (AI/ML), and other skills) continue to grow at double digits. Companies ranging from large government contractors (Northop Grumman, Raytheon, The Mitre Corporation) to Fortune 500 companies (e.g., McCormick & Company) offer Software Engineering and Data Analytics IT internships to college students for the purpose of recruiting entry-level talent.[43]

Threats:

The threat to Maryland is that currently leading and up-and-coming high-tech states (e.g., Massachusetts, Pennsylvania, North Carolina, South Carolina) are developing and implementing stronger company recruitment, workforce development, and STEM educational strategies that enable them to grow at 4% CAGR.

42 Maryland is home to Volvo Trucks, which has a powertrain manufacturing facility in Hagerstown, and recently recruited Hitachi Rail, which will establish a railcar manufacturing facility in Hagerstown.

43 These internships are for college students pursuing math, statistics, software engineering, computer science, computer engineering, and related fields.

North Carolina's Experience

In the 1980s, another state on the Eastern Seaboard grappled with how to generate a higher rate of economic growth and higher-wage jobs that would create economic opportunity for all its citizens—rural and urban, Black and white, high school graduates and college graduates. This state was North Carolina, and one of its primary economic development objectives was to offset the persistent decline of employment in tobacco, furniture, and textiles manufacturing.

> "The manufacturing of biological and pharmaceutical products is an ideal industry for North Carolina, not only because it creates clean, safe, high-paying jobs, but also because those jobs can be located in more rural parts of the state."
>
> **Letter from the President and Chairman, North Carolina Biotech Center 2003 Annual Report**

In the early 1980s, North Carolina policymakers selected IT and biotechnology, including biomanufacturing, to drive this employment growth. Fast forward 40 years: in 2021, North Carolina welcomed 34 life sciences companies, which announced plans to invest nearly $4 billion and create 4,000 new jobs as they expand their operations in the state over the next few years.[44] For context, North Carolina already employs 24,000 people in biotech/pharmaceutical manufacturing. Maryland is approaching 10,200 jobs in biotech/pharmaceutical manufacturing (see Appendix). In addition to biomanufacturing, both states have large contract research and testing industry segments (employing 37,000 people in North Carolina and 29,000 people in Maryland) and small medical device and diagnostic manufacturing segments (employing 8,300 people and 3,200 people, respectively).

On the IT side, CompTIA ranks North Carolina 11th nationally by IT sector employment, ahead of Maryland, which is ranked 15th. North Carolina ranked fourth nationally for net jobs added, signaling strong company growth, compared to Maryland, which ranked 15th. North Carolina is home to companies including IBM's Software, Global Technology Service, and Systems Technology business units; the SAS Institute; Red Hat; Epic Games; and Lenovo.

44 BusinessNC. (2022). "Round table: Life sciences, increasing production," Business North Carolina, 1 May 2022.

North Carolina's Strategy

Like Maryland, North Carolina has emphasized startup activity as one of the three pillars of its economic development strategy. This strategy has supported the creation of discovery-stage companies based upon academic research and tech transfer activity. However, **North Carolina also effectively used a second key economic development strategy—company recruitment—to establish its biomanufacturing industry vertical.** The infrastructure, tacit knowledge, and skill sets required to manufacture a regulated vaccine or cell-based therapeutic at scale are such that many discovery-stage companies partner with, outsource, or agree to acquisitions by larger established companies with existing biomanufacturing, sales, and distribution networks.

The recruitment of larger companies complements startup activity, because of the role that larger companies play in the startup ecosystem. Large companies:

- Acquire smaller companies, thus returning capital to investors
- Invest in early-stage startups and serve in an advisory capacity on their boards
- Are sources of entrepreneurial and C-suite talent for startups, when employees leave large companies to start their own companies or join startups

Startup companies are important, because they are a source of innovation (i.e., new products) and attract Fortune 500 companies through M&A activity. Examples of Maryland M&A activity that helped attract major biopharmaceutical and diagnostics companies are the MedImmune acquisition by AstraZeneca and QIAGEN's acquisitions Digene and SABiosciences.

North Carolina has recruited contract development and manufacturing organizations (CDMOs), like Fujifilm Diosynth Biotechnologies, which manufactures biologics, vaccines, monoclonal antibodies, and other large molecules, as well as big biotech and pharmaceutical companies like Biogen. Over time, these companies' portfolios of activities and footprint have grown. For example, Biogen has a biologics plant in Morrisville; a solid-dose facility in Durham; a solid-dose facility, patient services center, and laboratory in Research Triangle Park; and a new gene therapy manufacturing facility under construction at its Research Triangle Park campus. This is analogous to AstraZeneca's footprint in Maryland, which has 3,500 employees employed in biologics manufacturing in Frederick, and global biologics R&D, global marketing, and specialty care in Gaithersburg. However, North Carolina also has Eli Lilly, Merck, Pfizer, Amgen, bioMerieux, Novo Nordisk, Astellas Gene Therapies, Seqirus, Thermo Fisher Scientific, and many other CDMOs and biotech companies with biomanufacturing facilities.

Where Maryland Should Focus

Specific recommendations that address each of the six areas of inquiry are presented in the Executive Summary. In summary, to achieve its vision of becoming a top-ten fastest-growing high-tech state in the next 10 years and substantially increasing the participation of people of color and women, Maryland should:

1. **Develop a high-tech industry recruitment and expansion strategy.** Maryland needs more— and larger—high-tech companies to generate the 4% per year employment growth that is needed. **Emphasize high-tech manufacturing within this strategy**. Manufacturing creates different types of high-wage jobs and a different economic development footprint than scientific research and discovery activities.

2. **Intentionally focus on bringing more people of color, first-generation college students, women, and career changers into STEM careers** by creating more high-tech manufacturing jobs, increasing community outreach, and investing in industry-aligned, non-degree certificate and degree programs, infrastructure, and experiential learning opportunities at MSIs, including community colleges, and HBCUs.

3. **Expand entrepreneurial leadership training and mentoring for people of color and women,** make fund-of-funds investments in venture funds founded and managed by people of color and women, and sustain and expand direct investment funds targeting underrepresented founders.

Investments Other States Are Making

Competitor states are making investments to expand their high-tech industries. These range from North Carolina and Massachusetts that have each made $100 million-dollar-a-year, ten-year investments in life sciences business development, workforce development, and research activity to Virginia's Commonwealth Cyber Imitative that is investing $15-$20 million a year in cyber research competitiveness, commercialization, and workforce development. (See appendix for program details.) In each case, the investments are aligned to identified gaps and opportunities and consensus priorities that emerged during strategic planning processes. For example, North Carolina invested $134.6 million in biomanufacturing working training programs and physical infrastructure at North Carolina State University, North Carolina Central University, an HBCU, and the North Carolina community college system. The BioWork certificate is a non-degree certificate offered by 11 community colleges. It teaches students how to use process equipment and to understand cell separation methods following quality systems such as International Standards Organization and current Good Manufacturing Practices.

> "I was helping Merck select a factory site in the early 2000s, when the decision was made to invest in the Biomanufacturing Training and Education Center (BTEC) and the NC Community College BioNetwork workforce development program. They were the reasons Merck put that factory in North Carolina. They were a differentiator."
>
> **John Wagner, Program Manager, Biotech Manufacturers Forum, North Carolina BIO (former Executive Director, Plant Management, Global Vaccines at Merck)**

Charge to Strategic Planning Committee

The charge to the strategic planning committee is to use the strategic planning process to develop concrete goals and actions aligned to Maryland's vision of becoming a top-ten fastest-growing innovation state and one that substantially increases the participation of people of color in its high-tech workforce, as high-tech founders, and as high-tech investors. This report provides a strong data-driven assessment of where existing gaps and weaknesses are and initial recommendations for how they can be addressed to fully realize Maryland's opportunities for growth. It will be important for the strategic planning committee to develop appropriate metrics to measure short-term goals, long-term outcomes, and the overall impact of the plan. Traditional metrics should be considered for company recruitment and expansion, workforce training, and startup activity and investment. In addition, nontraditional metrics should be examined to ensure that changing workforce dynamics in a post-COVID world are considered (e.g., measuring the impact of out-of-state, remote workers hired by Maryland companies or Marylanders working remotely for non-Maryland companies) and to ensure the progress on equitech goals can be measured properly.

APPENDIX

High-Tech Industry Competitiveness and Growth

AREA OF INQUIRY	FINDING	RECOMMENDATION
1. An analysis of Maryland's national competitiveness in cyber, biohealth, and advanced and emerging technology industries, with recommendations to achieve a 10-year goal of making Maryland among the top-10 fastest-growing states in advanced technology industries	Maryland ranked 21st in high-tech industry employment (180,855 employees) and 28th in high-tech employment growth (1.6% CAGR) from 2011–2021. **Maryland needs to generate employment growth of 4% CAGR (87,000 new jobs over the next 10 years) to become a top-10 fastest-growing high-tech state.**	Develop a high-tech recruitment and expansion strategy focused on attracting larger companies looking to expand (e.g., biomanufacturing, diagnostics, computer and electronics, transportation, and machinery manufacturing). Make investments in workforce training and infrastructure, as identified by industry in the strategic planning process. Continue to invest in high-tech startup activity and growth, which helps to attract larger biotech and IT companies through merger and acquisition and other activities.

Methodology

RTI used the high-tech industry definition used by the National Sciences Foundation and the Organisation for Economic Cooperation and Development, which identifies nine manufacturing industries and three services industries that have high and medium-high R&D intensity based on R&D expenditures relative to total output.

RTI analyzed the past-10-year (2011–2021) CAGR of Maryland's high-tech industry and benchmarked Maryland's performance vis-à-vis other states. RTI then modeled three growth scenarios using next-10-years CAGRs of 2.2%, 3%, and 4%.

RTI also analyzed Maryland's leading high-tech industries and high-growth emerging segments. Maryland's Cybersecurity and IT industry spans the Computer Systems Design, Software Publishing, Information and Data Processing, and Computer and Electronic Products Manufacturing NAICS industries. RTI analyzed and benchmarked Maryland in the largest of these segments and used CompTIA, which aggregates all the IT- and computer-related NAICS and ranked Maryland 15th in net tech employment in 2021, as a validity check.

Maryland's Life Sciences industry includes the Scientific R&D Services, Biotech/Pharmaceutical Manufacturing, and Medical Device and Equipment Manufacturing NAICS industries. RTI used the TEConomy/BIO report as a validity check. In 2021, Maryland ranked in the top 10 states for total employment in Scientific R&D Services and Biotech/Pharmaceutical Manufacturing.

RTI analyzed employment growth data and Pitchbook VC deal and investment data to analyze emerging high-growth segments.

Data Sources

- U.S. Bureau of Labor Statistics. (2022). Quarterly Census of Employment and Wages.
- CompTIA. (2022). State of the Tech Workforce: Cyberstates 2022.
- TEConomy/BIO. (2022). The U.S. Bioscience Industry: Fostering Innovation and Driving America's Economy Forward, 2022.
- Pitchbook. (2022). Venture Capital and Private Equity Database.

TABLE 5. HIGH-TECH INDUSTRIES DEFINED BY RESEARCH AND DEVELOPMENT INTENSITY

INDUSTRY		NAICS	ISIC, REV.4
High R&D Intensity Manufacturing			
1.1	Pharmaceutical and medicine	3254	21
1.2	Computer, electronic, and optical product	334, 333314	26
1.3	Aerospace product and parts	3364	303
Medium–High R&D Intensity Manufacturing			
1.4	Chemicals and chemical products	325	20
	Basic chemical; Resin, synthetic rubber, and artificial and synthetic fiber; Paint, coating, and adhesive; Soap and cleaning compound; Other chemical product	3251-3253, 3255, 3256, 3259	
1.5	Fabricated metals	332	25X
	Miscellaneous fabricated metal products	332913, 332991	
1.6	Machinery and equipment	333	28
	Agriculture, construction, and mining machinery; Industrial machinery; Photocopying equipment, commercial and service industry machinery; Ventilation, heating, air-conditioning, commercial refrigeration equipment; Specialty and machine tool, rolling mill, and other metalworking machinery; Engine, turbine, and power transmission equipment; Other general purpose machinery	3331-3332, 333316, 33318, 3334, 333514, 333515, 333517, 333519, 3336, 3339	
1.7	Electrical equipment	335	27
1.8	Transportation equipment	336	29
	Motor vehicle; Motor vehicle body and trailer; Motor vehicle gasoline engine and engine parts; Railroad, military vehicles, and other transportation equipment	3361, 3362, 33631-33636, 33639, 3365, 3369	
1.9	Medical and dental equipment	3391	325
High R&D Intensity Services			
2.1	Software publishers	5112	582
2.2	Scientific research and development	5417	72
Medium–High R&D Intensity Services			
2.3	Information technology and other information services	5415	62-63
	Computer systems design; Data processing, hosting, and related services; Other information services	5415, 518, 519	

Note: The concordance was developed using the Census Bureau 2012 North American Industrial Classification System (NAICS) to International Standard Industrial Classification of All Economic Activities (ISIC) Rev 4 concordance.

Source: National Center for Science and Engineering Statistics. "SAKTI-1 OECD Classification of Industries by R&D Intensity" and "SAKTI-3 Concordance for Knowledge and Technology Intensive Industry Employment" Science and Engineering Indicators.

TABLE 6. MARYLAND HIGH-TECH INDUSTRY EMPLOYMENT AND COMPOUND ANNUAL GROWTH RATE, 2011–2021

NAICS	INDUSTRIES	2011	2021	2011–2021 CHANGE	2011–2021 CAGR
5415	Computer systems design	64,687	80,871	16,184	2.3%
5417	Scientific R&D services	31,694	38,514	6,820	2.0%
334	Computer and electronic product mfg.	20,462	21,854	1,392	0.7%
3254	Biotech/pharmaceutical mfg.	6,853	10,183	3,330	4.0%
5112	Software publishers	2,795	6,311	3,516	8.5%
518	Data processing and hosting services	4,679	3,855	-824	-1.9%
3364	Aerospace product and parts mfg.	5,770	2,923	-2,847	-6.6%
3391	Medical equipment and supplies mfg.	1,771	2,367	596	2.9%
519	Other information services	1,488	2,335	847	4.6%
3339	Other general purpose machinery mfg.	2,004	2,067	63	0.3%
335	Electrical equipment and appliance mfg.	1,811	1,812	1	0.0%
3334	HVAC and refrigeration equipment mfg.	1,266	1,459	193	1.4%
3255	Paint, coating, and adhesive mfg.	1,268	1,373	105	0.8%
3251	Basic chemical mfg.	1,530	955	-575	-4.6%
3256	Soap, cleaning, and toiletry mfg.	1,652	874	-778	-6.2%
3332	Industrial machinery mfg.	682	613	-69	-1.1%
3259	Other chemical product mfg.	805	554	-251	-3.7%
3331	Agricultural, construction machinery mfg.	209	350	141	5.3%
333318	Other commercial, service machinery mfg.	84	272	188	12.5%
333517	Machine tool mfg.	332	218	-114	-4.1%
3252	Resin, rubber, and artificial fibers mfg.	200	207	7	0.3%
3362	Motor vehicle body and trailer mfg.	73	179	106	9.4%
33639	Other motor vehicle parts mfg.	241	171	-70	-3.4%
3253	Agricultural chemical mfg.	159	165	6	0.4%
333514	Special tool, die, jig, and fixture mfg.	169	155	-14	-0.9%
	Other mfg[1]	1758	248	N/A[2]	N/A
	Total High-Tech Industry	**154,442**	**180,885**	**26,443**	**1.6%**

Notes: [1] Mfg. = manufacturing. [2] "Other mfg." includes industries for which data were suppressed in 2021. Therefore, the 2011–2021 change in employment and CAGR are not meaningful due to the 2021 employment suppression.

Source: U.S. Bureau of Labor Statistics. (2022). Quarterly Census of Employment and Wages.

TABLE 7. NEXT-10-YEARS GROWTH SCENARIOS: MARYLAND HIGH-TECH INDUSTRY GROWTH, 2021–2031

NAICS	INDUSTRIES	2021	SCENARIO 1: BASELINE		SCENARIO 2: MODERATE		SCENARIO 3: HIGH-GROWTH	
		Actual	10-year CAGR	Jobs Added	10-year CAGR	Jobs Added	10-year CAGR	Jobs Added
5415	Computer systems design	80,871	2.3%	20,233	3.3%	31,477	4.4%	43,955
5417	Scientific R&D services	38,514	2.0%	8,288	3.0%	13,265	4.0%	18,523
334	Computer, electronics mfg.	21,854	0.7%	1,487	1.2%	2,707	1.6%	3,781
3254	Biotech/pharmaceutical mfg.	10,183	4.0%	4,948	5.0%	6,477	6.6%	9,044
5112	Software publishers	6,311	8.5%	7,939	7.6%	6,838	9.7%	9,549
518	Data processing, hosting	3,855	-1.9%	(679)	0.0%	-	0.0%	-
3364	Aerospace product mfg.	2,923	-6.6%	(1,442)	0.0%	-	0.0%	-
3391	Medical equipment mfg.	2,367	2.9%	797	4.1%	1,159	5.3%	1,619
519	Other information services	2,335	4.6%	1,329	5.5%	1,647	7.1%	2,300
3339	Other machinery mfg.	2,067	0.3%	65	0.6%	123	0.8%	171
335	Electrical equipment and appliance mfg.	1,812	0.0%	1	0.0%	2	0.0%	3
3334	HVAC and commercial equipment mfg.	1,459	1.4%	222	2.3%	375	3.1%	524
3255	Paint, coating, and adhesive mfg.	1,373	0.8%	114	1.4%	204	1.9%	285
	Other high-tech mfg.	4,961	Mixed	-237	Mixed	-2066	Mixed	-2884
	Total	**180,885**	**2.2%**	**43,064**	**3.0%**	**62,209**	**4.0%**	**86,869**

Source: U.S. Bureau of Labor Statistics. (2022). Quarterly Census of Employment and Wages and RTI International.

TABLE 8. ALL MANUFACTURING SECTOR EMPLOYMENT AND COMPOUND ANNUAL GROWTH RATE, 2011 AND 2021

RANK 2011	RANK 2021	STATE	LQ 2021	2011	2021	JOBS ADDED	10-YEAR CAGR
1	1	California	0.88	1,238,307	1,277,555	39,248	0.3%
2	2	Texas	0.82	836,035	874,313	38,278	0.4%
3	3	Ohio	1.48	637,625	665,724	28,099	0.4%
6	4	Michigan	1.66	509,822	585,798	75,976	1.4%
4	5	Illinois	1.14	573,300	554,343	-18,957	-0.3%
5	6	Pennsylvania	1.12	564,734	543,563	-21,171	-0.4%
7	7	Indiana	2.04	463,508	524,614	61,106	1.2%
9	8	Wisconsin	1.94	443,293	465,956	22,663	0.5%
10	9	North Carolina	1.20	434,767	464,007	29,240	0.7%
8	10	New York	0.54	456,701	406,435	-50,266	-1.2%
11	11	Georgia	1.02	349,046	391,941	42,895	1.2%
12	12	Florida	0.51	311,263	388,057	76,794	2.2%
13	13	Tennessee	1.35	303,781	349,014	45,233	1.4%
14	14	Minnesota	1.32	300,802	313,043	12,241	0.4%
18	15	Missouri	1.15	246,220	270,834	24,614	1.0%
19	16	Alabama	1.57	237,326	264,500	27,174	1.1%
15	17	Washington	0.89	265,669	256,519	-9,150	-0.3%
21	18	South Carolina	1.39	215,113	249,685	34,572	1.5%
22	19	Kentucky	1.53	212,496	242,963	30,467	1.3%
17	20	New Jersey	0.71	251,529	239,168	-12,361	-0.5%
20	21	Virginia	0.72	230,203	235,536	5,333	0.2%
16	22	Massachusetts	0.79	253,948	232,786	-21,162	-0.9%
23	23	Iowa	1.69	206,069	218,148	12,079	0.6%
24	24	Oregon	1.16	167,591	186,372	18,781	1.1%
28	25	Arizona	0.72	149,514	181,837	32,323	2.0%
26	26	Kansas	1.39	161,146	160,731	-415	0.0%
27	27	Arkansas	1.53	159,353	157,204	-2,149	-0.1%
25	28	Connecticut	1.12	166,281	152,851	-13,430	-0.8%
32	29	Colorado	0.64	129,159	148,649	19,490	1.4%
34	30	Utah	1.07	112,850	144,840	31,990	2.5%
30	31	Mississippi	1.50	135,252	143,887	8,635	0.6%
29	32	Louisiana	0.83	139,660	129,074	-10,586	-0.8%
31	33	Oklahoma	0.96	129,731	128,694	-1,037	-0.1%
33	**34**	**Maryland**	**0.50**	**113,033**	**110,636**	**-2,397**	**-0.2%**
35	35	Nebraska	1.20	93,579	99,519	5,940	0.6%
37	36	Idaho	1.04	54,512	70,198	15,686	2.6%
36	37	New Hampshire	1.22	66,575	67,845	1,270	0.2%
42	38	Nevada	0.52	38,177	59,980	21,803	4.6%
38	39	Maine	1.03	50,778	53,762	2,984	0.6%
39	40	West Virginia	0.81	49,448	45,336	-4,112	-0.9%
41	41	South Dakota	1.19	39,204	43,812	4,608	1.1%
40	42	Rhode Island	0.98	40,341	39,065	-1,276	-0.3%
43	43	Vermont	1.15	30,899	28,664	-2,235	-0.7%
44	44	New Mexico	0.41	29,557	27,691	-1,866	-0.7%
46	45	North Dakota	0.76	23,747	26,146	2,399	1.0%
45	46	Delaware	0.66	25,655	24,961	-694	-0.3%
47	47	Montana	0.52	16,845	21,303	4,458	2.4%
48	48	Alaska	0.47	13,680	12,198	-1,482	-1.1%
50	49	Wyoming	0.43	9,176	9,771	595	0.6%
49	50	Hawaii	0.00	13,169	S	-	-
51	51	Washington, DC	0.00	2,070	S	-	-

Note: Computer Systems and Design is NAICS 5415. The LQ, or Location Quotient, refers to each state's concentration of employment in this industry relative to the national average concentration. An LQ > 1 means the state has a higher share of its workforce employed in that industry.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

TABLE 9. COMPUTER SYSTEMS DESIGN EMPLOYMENT AND COMPOUND ANNUAL GROWTH RATE, 2011 AND 2021

RANK 2011	RANK 2021	STATE	LQ 2021	2011	2021	JOBS ADDED	10-YEAR CAGR
1	1	California	1.26	214,021	342,742	128,721	4.8%
3	2	Texas	1.17	109,916	234,838	124,922	7.9%
2	3	Virginia	2.78	145,107	171,190	26,083	1.7%
5	4	Florida	0.84	68,085	119,110	51,025	5.8%
4	5	New York	0.81	88,889	114,933	26,044	2.6%
8	6	Illinois	0.95	61,754	86,383	24,629	3.4%
9	7	Massachusetts	1.55	59,331	85,851	26,520	3.8%
6	**8**	**Maryland**	**1.95**	**64,687**	**80,871**	**16,184**	**2.3%**
12	9	Georgia	1.08	51,628	77,153	25,525	4.1%
11	10	Pennsylvania	0.82	54,859	74,528	19,669	3.1%
7	11	New Jersey	1.17	63,646	73,740	10,094	1.5%
13	12	Colorado	1.70	41,613	73,459	31,846	5.8%
10	13	Ohio	0.80	57,653	67,432	9,779	1.6%
15	14	Washington	1.23	35,901	66,260	30,359	6.3%
16	15	North Carolina	0.90	35,632	64,858	29,226	6.2%
15	16	Washington, DC	2.15	39,340	50,104	10,764	2.4%
14	17	Michigan	0.72	40,107	47,572	7,465	1.7%
20	18	Missouri	1.07	25,088	46,920	21,832	6.5%
19	19	Arizona	0.84	25,354	39,624	14,270	4.6%
18	20	Minnesota	0.82	29,509	36,516	7,007	2.2%
23	21	Indiana	0.66	18,703	31,676	12,973	5.4%
24	22	Utah	1.23	16,019	31,190	15,171	6.9%
25	23	Wisconsin	0.59	16,012	26,425	10,413	5.1%
22	24	Alabama	0.82	21,444	25,969	4,525	1.9%
26	25	Tennessee	0.50	13,001	24,199	11,198	6.4%
21	26	Connecticut	0.86	22,242	22,032	−210	−0.1%
28	27	South Carolina	0.56	11,266	18,679	7,413	5.2%
29	28	Oregon	0.56	10,619	17,001	6,382	4.8%
27	29	Kentucky	0.53	12,746	15,665	2,919	2.1%
31	30	Kansas	0.70	9,916	15,291	5,375	4.4%
34	31	New Hampshire	1.29	7,185	13,416	6,231	6.4%
30	32	Nebraska	0.84	9,959	13,026	3,067	2.7%
36	33	Louisiana	0.41	6,807	11,978	5,171	5.8%
33	34	Iowa	0.49	7,957	11,892	3,935	4.1%
35	35	Oklahoma	0.42	6,839	10,478	3,639	4.4%
38	36	Nevada	0.42	4,977	9,176	4,199	6.3%
32	37	Arkansas	0.46	8,884	8,899	15	0.0%
37	38	Rhode Island	1.16	5,269	8,638	3,369	5.1%
47	39	Idaho	0.60	3,075	7,555	4,480	9.4%
41	40	Mississippi	0.38	4,154	6,779	2,625	5.0%
45	41	Maine	0.67	3,167	6,572	3,405	7.6%
40	42	New Mexico	0.48	4,181	6,191	2,010	4.0%
44	43	West Virginia	0.46	3,248	4,892	1,644	4.2%
46	44	Montana	0.64	3,167	4,890	1,723	4.4%
42	45	Delaware	0.69	3,859	4,872	1,013	2.4%
39	46	Hawaii	0.51	4,729	4,801	72	0.2%
43	47	Vermont	0.95	3,290	4,430	1,140	3.0%
49	48	South Dakota	0.47	1,471	3,247	1,776	8.2%
48	49	North Dakota	0.49	2,188	3,140	952	3.7%
50	50	Alaska	0.29	1,273	1,439	166	1.2%
51	51	Wyoming	0.27	537	1,138	601	7.8%

Note: Scientific R&D Services is NAICS 5417. The LQ, or Location Quotient, refers to each state's concentration of employment in this industry relative to the national average concentration. An LQ > 1 means the state has a higher share of its workforce employed in that industry.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

TABLE 10. SCIENTIFIC R&D SERVICES EMPLOYMENT AND COMPOUND ANNUAL GROWTH RATE, 2011 AND 2021

RANK 2011	RANK 2021	STATE	LQ 2021	2011	2021	JOBS ADDED	10-YEAR CAGR
1	1	California	1.79	118,698	173,542	54,844	3.9%
2	2	Massachusetts	4.56	49,640	90,181	40,541	6.2%
3	3	New York	1.08	49,280	54,700	5,420	1.0%
6	4	Pennsylvania	1.35	29,491	43,753	14,262	4.0%
4	**5**	**Maryland**	**2.61**	**31,694**	**38,514**	**6,820**	**2.0%**
5	6	New Jersey	1.52	30,679	34,168	3,489	1.1%
9	7	Texas	0.43	23,376	30,951	7,575	2.8%
14	8	North Carolina	1.19	18,716	30,704	11,988	5.1%
10	9	New Mexico	6.21	22,812	28,283	5,471	2.2%
7	10	Virginia	1.24	27,689	27,212	−477	−0.2%
13	11	Michigan	1.00	19,119	23,632	4,513	2.1%
16	12	Florida	0.47	14,920	23,624	8,704	4.7%
12	13	Washington	1.22	19,916	23,361	3,445	1.6%
11	14	Washington, DC	5.24	22,772	21,752	−1,020	−0.5%
8	15	Illinois	0.66	27,033	21,541	−5,492	−2.2%
15	16	Ohio	0.66	15,460	19,829	4,369	2.5%
17	17	Colorado	1.00	13,824	15,421	1,597	1.1%
19	18	Tennessee	0.59	8,400	10,183	1,783	1.9%
29	19	Georgia	0.38	3,951	9,756	5,805	9.5%
25	20	Connecticut	1.04	5,320	9,429	4,109	5.9%
23	21	Alabama	0.81	5,595	9,058	3,463	4.9%
28	22	Utah	0.99	4,601	8,939	4,338	6.9%
18	23	Missouri	0.56	10,018	8,732	−1,286	−1.4%
24	24	Wisconsin	0.49	5,378	7,795	2,417	3.8%
21	25	Minnesota	0.49	6,868	7,705	837	1.2%
20	26	Idaho	1.64	7,726	7,435	−291	−0.4%
27	27	Arizona	0.38	4,883	6,336	1,453	2.6%
30	28	Oregon	0.56	3,866	5,980	2,114	4.5%
26	29	Indiana	0.27	4,886	4,585	−301	−0.6%
31	30	Nevada	0.46	3,239	3,571	332	1.0%
33	31	Kansas	0.46	2,408	3,531	1,123	3.9%
32	32	South Carolina	0.25	2,598	2,993	395	1.4%
35	33	Maine	0.72	1,937	2,526	589	2.7%
39	34	Kentucky	0.23	1,497	2,409	912	4.9%
40	35	New Hampshire	0.63	1,491	2,324	833	4.5%
22	36	Delaware	0.89	5,796	2,238	−3,558	−9.1%
36	37	Iowa	0.26	1,887	2,217	330	1.6%
37	38	Oklahoma	0.21	1,715	1,877	162	0.9%
41	39	Nebraska	0.28	1,489	1,555	66	0.4%
38	40	West Virginia	0.37	1,629	1,388	−241	−1.6%
34	41	Hawaii	0.41	2,354	1,384	−970	−5.2%
46	42	Rhode Island	0.39	681	1,045	364	4.4%
44	43	Montana	0.38	1,028	1,043	15	0.1%
42	44	Arkansas	0.14	1,242	978	−264	−2.4%
50	45	South Dakota	0.39	389	965	576	9.5%
43	46	Louisiana	0.09	1,198	935	−263	−2.4%
48	47	Mississippi	0.13	595	844	249	3.6%
50	48	Vermont	0.45	352	756	404	7.9%
47	49	North Dakota	0.26	664	595	−69	−1.1%
45	50	Alaska	0.33	765	576	−189	−2.8%
51	51	Wyoming	0.20	203	305	102	4.2%

Note: Scientific R&D Services is NAICS 5417. The LQ, or Location Quotient, refers to each state's concentration of employment in this industry relative to the national average concentration. An LQ > 1 means the state has a higher share of its workforce employed in that industry.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

TABLE 11. COMPUTER AND ELECTRONICS MANUFACTURING EMPLOYMENT AND COMPOUND ANNUAL GROWTH RATE, 2011 AND 2021

RANK 2011	RANK 2021	STATE	LQ 2021	2011	2021	JOBS ADDED	10-YEAR CAGR
1	1	California	2.28	272,716	283,206	10,490	0.4%
2	2	Texas	1.02	98,585	93,610	−4,975	−0.5%
3	3	New York	0.81	61,922	52,522	−9,400	−1.6%
4	4	Massachusetts	2.02	59,567	51,265	−8,302	−1.5%
6	5	Florida	0.68	42,895	44,235	1,340	0.3%
5	6	Minnesota	2.09	46,032	42,485	−3,547	−0.8%
8	7	Oregon	2.74	36,324	37,818	1,494	0.4%
7	8	Arizona	1.53	37,602	32,813	−4,789	−1.4%
10	9	North Carolina	0.98	33,520	32,423	−1,097	−0.3%
9	10	Illinois	0.70	34,336	29,034	−5,302	−1.7%
11	11	Pennsylvania	0.68	32,019	28,148	−3,871	−1.3%
12	12	New Jersey	0.87	26,189	25,099	−1,090	−0.4%
13	13	Colorado	1.17	23,327	23,140	−187	−0.1%
15	**14**	**Maryland**	**1.16**	**20,462**	**21,854**	**1,392**	**0.7%**
14	15	Ohio	0.53	20,621	20,275	−346	−0.2%
19	16	Michigan	0.67	17,610	20,260	2,650	1.4%
17	17	Washington	0.73	19,512	17,845	−1,667	−0.9%
16	18	Wisconsin	0.84	20,214	17,251	−2,963	−1.6%
20	19	New Hampshire	3.24	15,856	15,422	−434	−0.3%
21	20	Utah	1.18	14,153	13,664	−489	−0.4%
18	21	Indiana	0.57	17,624	12,577	−5,047	−3.3%
34	22	Missouri	0.62	5,497	12,416	6,919	8.5%
24	23	Virginia	0.44	12,561	12,345	−216	−0.2%
22	24	Iowa	1.06	13,423	11,730	−1,693	−1.3%
25	25	Idaho	1.87	11,193	10,861	−332	−0.3%
23	26	Connecticut	0.86	13,388	10,017	−3,371	−2.9%
26	27	Georgia	0.29	10,574	9,387	−1,187	−1.2%
27	28	Alabama	0.53	10,153	7,694	−2,459	−2.7%
29	29	Kansas	0.74	7,676	7,309	−367	−0.5%
31	30	South Carolina	0.43	6,127	6,638	511	0.8%
33	31	Tennessee	0.29	5,565	6,362	797	1.3%
28	32	New Mexico	0.85	8,036	4,972	−3,064	−4.7%
30	33	Vermont	1.96	7,001	4,185	−2,816	−5.0%
37	34	Rhode Island	1.17	3,567	3,966	399	1.1%
36	35	Nebraska	0.53	4,576	3,739	−837	−2.0%
40	36	Nevada	0.37	3,008	3,728	720	2.2%
32	37	Kentucky	0.27	5,956	3,647	−2,309	−4.8%
35	38	Oklahoma	0.31	5,021	3,577	−1,444	−3.3%
39	39	Delaware	0.75	3,012	2,431	−581	−2.1%
44	40	Louisiana	0.17	2,038	2,287	249	1.2%
43	41	South Dakota	0.67	2,274	2,118	−156	−0.7%
41	42	Maine	0.47	2,610	2,104	−506	−2.1%
42	43	Mississippi	0.25	2,350	2,020	−330	−1.5%
38	44	Arkansas	0.19	3,101	1,712	−1,389	−5.8%
45	45	North Dakota	0.42	1,388	1,224	−164	−1.2%
47	46	Montana	0.23	533	806	273	4.2%
46	47	West Virginia	0.16	1,381	765	−616	−5.7%
50	48	Wyoming	0.14	144	275	131	6.7%
48	49	Washington, DC	0.04	164	223	59	3.1%
49	50	Hawaii	0.05	154	213	59	3.3%
51	51	Alaska	0.05	115	119	4	0.3%

Note: Computer and Electronics Manufacturing is NAICS 334. The LQ, or Location Quotient, refers to each state's concentration of employment in this industry relative to the national average concentration. An LQ > 1 means the state has a higher share of its workforce employed in that industry.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

TABLE 12. BIOTECH/PHARMA MANUFACTURING EMPLOYMENT AND COMPOUND ANNUAL GROWTH RATE, 2011 AND 2021

RANK 2011	RANK 2021	STATE	LQ 2021	2011	2021	JOBS ADDED	10-YEAR CAGR
1	1	California	1.26	42,886	49,205	6,319	1.4%
2	2	New Jersey	2.82	30,032	25,601	-4,431	-1.6%
5	3	New York	1.18	19,588	24,066	4,478	2.1%
3	4	North Carolina	2.30	20,395	23,967	3,572	1.6%
6	5	Illinois	1.70	17,959	22,402	4,443	2.2%
8	6	Indiana	2.99	14,848	20,791	5,943	3.4%
4	7	Pennsylvania	1.56	20,281	20,318	37	0.0%
9	8	Texas	0.48	9,594	13,901	4,307	3.8%
12	**9**	**Maryland**	**1.71**	**6,853**	**10,183**	**3,330**	**4.0%**
16	10	Florida	0.49	4,362	9,956	5,594	8.6%
10	10	Michigan	1.04	7,643	9,956	2,313	2.7%
9	12	Massachusetts	1.16	8,537	9,282	745	0.8%
14	13	Utah	2.12	4,677	7,748	3,071	5.2%
13	14	Ohio	0.51	5,221	6,169	948	1.7%
17	15	Wisconsin	0.93	4,036	6,006	1,970	4.1%
24	16	South Carolina	1.16	2,100	5,605	3,505	10.3%
20	17	Colorado	0.90	2,956	5,599	2,643	6.6%
15	18	Missouri	0.88	4,637	5,567	930	1.8%
18	19	Minnesota	0.78	3,578	4,998	1,420	3.4%
29	20	Arizona	0.61	1,472	4,103	2,631	10.8%
26	21	Kansas	1.31	1,984	4,087	2,103	7.5%
22	22	Iowa	1.07	2,573	3,713	1,140	3.7%
28	23	Maine	2.52	1,483	3,546	2,063	9.1%
23	24	Washington	0.46	2,374	3,545	1,171	4.1%
21	25	Georgia	0.32	2,842	3,335	493	1.6%
11	26	Connecticut	0.83	7,002	3,057	-3,945	-8.0%
19	27	Virginia	0.33	3,146	2,903	-243	-0.8%
25	28	Tennessee	0.33	2,056	2,272	216	1.0%
27	29	Nebraska	0.96	1,697	2,149	452	2.4%
31	30	Kentucky	0.43	1,236	1,830	594	4.0%
33	31	New Hampshire	1.18	1,014	1,768	754	5.7%
32	32	Alabama	0.30	1,139	1,344	205	1.7%
30	33	Rhode Island	1.23	1,375	1,320	-55	-0.4%
35	34	Oregon	0.28	901	1,237	336	3.2%
37	35	New Mexico	0.66	507	1,219	712	9.2%
39	36	Nevada	0.37	495	1,175	680	9.0%
34	37	Mississippi	0.37	945	950	5	0.1%
41	38	Montana	0.80	333	885	552	10.3%
40	39	Oklahoma	0.24	346	874	528	9.7%
36	40	Delaware	0.55	615	563	-52	-0.9%
46	41	Vermont	0.70	79	469	390	19.5%
42	42	Idaho	0.25	332	456	124	3.2%
44	43	Arkansas	0.16	158	455	297	11.2%
38	44	Louisiana	0.11	496	442	-54	-1.1%
43	45	Washington, DC	0.14	278	220	-58	-2.3%
45	46	Wyoming	0.12	146	71	-75	-7.0%
-	47	South Dakota	0.04	S	35	35	-
-	48	Alaska	0.02	S	17	17	-
-	49	Hawaii	0.01	S	10	10	-
-	-	North Dakota	S	S	S	-	-
-	-	West Virginia	S	S	S	-	-

Notes: Biotech/Pharmaceutical Manufacturing is NAICS 3254. The LQ, or Location Quotient, refers to each state's concentration of employment in this industry relative to the national average concentration. An LQ > 1 means the state has a higher share of its workforce employed in that industry. S=suppressed

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

TABLE 13. SOFTWARE INDUSTRY EMPLOYMENT AND COMPOUND ANNUAL GROWTH RATE, 2011 AND 2021

RANK 2011	RANK 2021	STATE	LQ 2021	2011	2021	JOBS ADDED	10-YEAR CAGR
2	1	California	1.65	47,284	107,748	60,464	8.6%
1	2	Washington	6.14	51,531	79,463	27,932	4.4%
3	3	Massachusetts	2.83	24,544	37,665	13,121	4.4%
4	4	Texas	0.65	16,555	31,193	14,638	6.5%
18	5	New York	0.87	4,148	29,758	25,610	21.8%
9	6	North Carolina	1.36	7,953	23,734	15,781	11.5%
8	7	Florida	0.68	8,809	23,310	14,501	10.2%
6	8	Georgia	1.29	12,168	22,227	10,059	6.2%
5	9	Colorado	1.76	12,621	18,364	5,743	3.8%
12	10	Utah	2.46	5,626	15,019	9,393	10.3%
10	11	Wisconsin	1.37	7,720	14,760	7,040	6.7%
13	12	Pennsylvania	0.65	5,387	14,253	8,866	10.2%
7	13	Oregon	1.86	9,119	13,462	4,343	4.0%
19	14	Illinois	0.56	3,726	12,299	8,573	12.7%
15	15	Ohio	0.46	5,142	9,338	4,196	6.1%
11	16	Minnesota	0.87	6,207	9,309	3,102	4.1%
17	17	New Jersey	0.61	4,198	9,169	4,971	8.1%
21	18	Arizona	0.74	2,728	8,377	5,649	11.9%
29	19	Tennessee	0.69	1,339	8,032	6,693	19.6%
14	20	Michigan	0.47	5,213	7,506	2,293	3.7%
16	21	Virginia	0.49	5,132	7,217	2,085	3.5%
20	**22**	**Maryland**	**0.63**	**2,795**	**6,311**	**3,516**	**8.5%**
38	23	Nebraska	1.48	314	5,529	5,215	33.2%
24	24	Connecticut	0.74	1,702	4,545	2,843	10.3%
23	25	Missouri	0.40	2,590	4,278	1,688	5.1%
26	26	South Carolina	0.53	1,548	4,251	2,703	10.6%
22	27	New Hampshire	1.59	2,707	3,972	1,265	3.9%
33	28	Alabama	0.41	663	3,130	2,467	16.8%
32	29	Washington, DC	1.02	770	2,868	2,098	14.1%
25	30	Indiana	0.20	1,677	2,370	693	3.5%
34	31	Nevada	0.42	636	2,195	1,559	13.2%
28	32	Kansas	0.38	1,458	1,968	510	3.0%
31	33	Iowa	0.31	806	1,798	992	8.4%
36	34	Kentucky	0.20	401	1,418	1,017	13.5%
27	35	North Dakota	0.86	1,494	1,329	-165	-1.2%
37	36	Louisiana	0.16	327	1,146	819	13.4%
39	37	Idaho	0.36	283	1,109	826	14.6%
35	38	Oklahoma	0.14	481	868	387	6.1%
30	39	Rhode Island	0.44	1,092	784	-308	-3.3%
41	40	Vermont	0.70	239	783	544	12.6%
45	41	Maine	0.22	143	519	376	13.8%
47	42	Montana	0.27	117	498	381	15.6%
43	43	New Mexico	0.16	235	488	253	7.6%
40	44	Arkansas	0.09	254	405	151	4.8%
46	45	Delaware	0.18	141	301	160	7.9%
48	46	Hawaii	0.13	68	291	223	15.6%
44	47	Mississippi	0.06	227	272	45	1.8%
50	48	West Virginia	0.08	17	197	180	27.8%
42	49	South Dakota	0.08	236	135	-101	-5.4%
49	50	Alaska	0.06	43	70	27	5.0%
51	51	Wyoming	0.06	16	61	45	14.3%

Note: Software Publishing is NAICS 5112. The LQ, or Location Quotient, refers to each state's concentration of employment in this industry relative to the national average concentration. An LQ > 1 means the state has a higher share of its workforce employed in that industry.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

TABLE 14. ARCHITECTURAL AND ENGINEERING SERVICES EMPLOYMENT AND COMPOUND ANNUAL GROWTH RATE, 2011 AND 2021

RANK 2011	RANK 2021	STATE	LQ 2021	2011	2021	JOBS ADDED	10-YEAR CAGR
1	1	California	1.03	157,881	186,753	28,872	1.7%
2	2	Texas	1.22	138,604	162,973	24,369	1.6%
3	3	Florida	1.02	67,520	95,688	28,168	3.5%
4	4	Michigan	1.99	62,819	87,418	24,599	3.4%
5	5	New York	0.78	60,783	73,500	12,717	1.9%
7	6	Pennsylvania	0.97	54,545	58,373	3,828	0.7%
6	7	Virginia	1.41	58,256	57,387	-869	-0.2%
10	8	Colorado	1.83	39,289	52,633	13,344	3.0%
8	9	Illinois	0.77	43,235	46,721	3,486	0.8%
12	10	Georgia	0.95	35,680	45,013	9,333	2.4%
16	11	North Carolina	0.89	29,330	42,658	13,328	3.8%
11	12	Ohio	0.76	39,025	42,609	3,584	0.9%
14	13	Massachusetts	1.15	35,339	42,087	6,748	1.8%
9	**14**	**Maryland**	**1.49**	**40,710**	**40,837**	**127**	**0.0%**
13	15	New Jersey	0.95	35,511	39,843	4,332	1.2%
15	16	Washington	0.98	34,138	34,878	740	0.2%
18	17	Arizona	0.93	23,099	29,165	6,066	2.4%
17	18	Alabama	1.39	24,216	29,085	4,869	1.8%
23	19	Minnesota	0.81	17,921	23,766	5,845	2.9%
20	20	Tennessee	0.73	21,012	23,450	2,438	1.1%
22	21	Missouri	0.80	19,807	23,325	3,518	1.6%
19	22	Louisiana	1.14	22,949	22,076	-873	-0.4%
24	23	Wisconsin	0.73	17,820	21,634	3,814	2.0%
25	24	Indiana	0.67	17,459	21,343	3,884	2.0%
21	25	South Carolina	0.93	20,346	20,736	390	0.2%
27	26	Oregon	0.89	12,589	17,724	5,135	3.5%
29	27	Utah	1.04	12,004	17,483	5,479	3.8%
26	28	Washington, DC	2.04	15,422	15,774	352	0.2%
28	29	Kansas	0.97	12,282	13,900	1,618	1.2%
32	30	Kentucky	0.65	10,822	12,908	2,086	1.8%
33	31	Nevada	0.89	9,487	12,798	3,311	3.0%
31	32	Connecticut	0.75	11,583	12,628	1,045	0.9%
30	33	Oklahoma	0.69	11,819	11,505	-314	-0.3%
34	34	New Mexico	1.01	8,732	8,575	-157	-0.2%
38	35	Iowa	0.51	5,929	8,201	2,272	3.3%
40	36	Idaho	0.93	5,138	7,782	2,644	4.2%
42	37	New Hampshire	1.12	5,084	7,749	2,665	4.3%
37	38	Nebraska	0.70	6,036	7,232	1,196	1.8%
36	39	Arkansas	0.53	6,201	6,776	575	0.9%
41	40	Hawaii	1.00	5,134	6,228	1,094	2.0%
35	41	Mississippi	0.49	7,230	5,775	-1,455	-2.2%
44	42	Maine	0.86	4,463	5,570	1,107	2.2%
45	43	Montana	1.04	4,174	5,290	1,116	2.4%
43	44	West Virginia	0.64	4,577	4,455	-122	-0.3%
39	45	Alaska	1.35	5,410	4,390	-1,020	-2.1%
47	46	Rhode Island	0.85	3,501	4,200	699	1.8%
48	47	North Dakota	0.94	3,064	4,004	940	2.7%
46	48	Delaware	0.77	3,592	3,615	23	0.1%
50	49	South Dakota	0.71	2,402	3,256	854	3.1%
51	50	Vermont	0.86	2,051	2,668	617	2.7%
49	51	Wyoming	0.79	2,528	2,226	-302	-1.3%

Note: Architectural and Engineering Services is NAICS 5413. The LQ, or Location Quotient, refers to each state's concentration of employment in this industry relative to the national average concentration. An LQ > 1 means the state has a higher share of its workforce employed in that industry.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

High-Tech Industry Investment in Other States

AREA OF INQUIRY	FINDING	RECOMMENDATION
2. An examination of publicly financed advanced industry investment funds in other states, including the roles and results of public funds to induce private sector growth	**Competitor states are making significant long-term investments to support growth in their innovation economies.** North Carolina and Massachusetts both made $1 billion 10-year investments in their life sciences industries, including investments in business incentives, workforce training, physical infrastructure, early-stage company grants and loans, and other needs. To develop a larger and more diverse workforce pipeline for the IT sector, Virginia is investing $15 million a year to support K–12 coding experiences, high school and college internships, research, and commercialization activities.	Develop a long-term strategic plan and execute on that plan through investments at a scale commensurate with the size of Maryland and the goals it wants to achieve in 10 years.

Methodology

States designed investments to spur high-tech industry growth based upon identified opportunities and gaps and the strategies to address them. Based upon Maryland's vision of becoming a top-10 fastest-growing innovation state and creating opportunities for greater economic participation of people of color as high-tech workers, founders, and investors, RTI identified strategies supported by investment made by competitor states.

Data Sources

- NC Biotech Center. (2021). North Carolina's 10-Year Bioscience Investment Tops $1.2 Billion.
- Massachusetts Life Sciences Center. (FY2020). FY2020 Annual Report.
- Commonwealth Cyber Initiative. (2022). The Commonwealth Cyber Initiative: Fiscal Year 2022 Report.

TABLE 15. NORTH CAROLINA INVESTMENT IN LIFE SCIENCES INDUSTRY, 1999–2008

CATEGORY	ACTUAL
Business Incentive Grants	$101,597,507
NC Biotechnology Center	$115,702,400
Workforce Training	$134,630,922
Research	$139,539,767
Physical Infrastructure	$718,750,000
Grand Total	**$1,210,220,596**

Source: NC Biotech Center. (2021). North Carolina's 10-Year Bioscience Investment Tops $1.2 Billion.

TABLE 16. MASSACHUSETTS INVESTMENT IN LIFE SCIENCES INDUSTRY: PLANNED AND ACTUAL TO DATE, FY2009–FY2019

CATEGORY	PLANNED	ACTUAL
Business Tax Incentives	$250,000,000	
Total		$154,152,491
Discretionary	$250,000,000	
Company Grants and Loans		$38,713,365
Internships and Apprenticeships		$34,017,748
Academic Research Grants		$27,108,205
STEM Equipment and Supplies		$18,600,849
Other Grants		$12,624,311
COVID-19 Response		$6,296,167
Total		
Physical Infrastructure	$500,000,000	
Total		$504,843,272
Grand Total	**$1,000,000,000**	**$796,356,407**

Source: Massachusetts Life Sciences Center. (2020). Fiscal Year 2020 Annual Report.

TABLE 17. COMMONWEALTH CYBER INITIATIVE: VIRGINIA INVESTMENT, FY2021

INVESTMENT BY CATEGORY	
Administration	5%
Faculty Recruitment	25%
Research Grants	40%
Research Infrastructure	10%
Workforce Development	10%
Innovation	10%
Total	**100%**

Note: The Commonwealth Cyber Initiative Blueprint calls for roughly $15 to $20 million a year from FY2018-FY2026.

Source: Commonwealth Cyber Initiative. (2021). Fiscal Year 2021 Report, p.52.

TABLE 18. NORTH CAROLINA BIOMANUFACTURING WORKFORCE TRAINING, 2003–2008

YEAR	RECIPIENT	RECURRING	NON-RECURRING	TOTAL
2003	BTEC[1]	-	$33,500,000	$33,500,000
	BRITE[1]	-	$17,800,000	$17,800,000
	NC Community Colleges	-	$8,700,000	$8,700,000
	Total	**-**	**$60,000,000**	**$60,000,000**
2004	BTEC	$500,000	-	$500,000
	BRITE	$500,000	-	$500,000
	NC Community Colleges	-	-	
	Total	**$1,000,000**	**-**	**$1,000,000**
2005	BTEC	$3,441,079	-	$3,441,079
	BRITE	$2,500,000	-	$2,500,000
	NC Community Colleges	$7,101,864	-	$7,101,864
	Total	$13,042,943	-	$13,042,943
2006	BTEC	$5,441,079	$2,570,000	$8,011,079
	BRITE	$5,000,000	$2,300,000	$7,300,000
	NC Community Colleges	$7,226,864	$314,150	$7,541,014
	Total	**$17,667,943**	**$5,184,150**	**$22,852,093**
2007	BTEC	$5,441,079	-	$5,441,079
	BRITE	$6,000,000	-	$6,000,000
	NC Community Colleges	$7,226,864	-	$7,226,864
	Total	**$18,667,943**	**-**	**$18,667,943**
2008	BTEC	$5,441,079	-	$5,441,079
	BRITE	$7,000,000	-	$7,000,000
	NC Community Colleges	$6,626,864	-	$6,626,864
	Total	**$19,067,943**	**-**	**$19,067,943**
			Grand Total	**$134,630,922**

Note: [1] Golden LEAF Foundation grant.

Source: North Carolina Biotechnology Center (2022). North Carolina's 1-Year Bioscience Investment Tops $1.2 Billion.

TABLE 19. NORTH CAROLINA BIOTECHNOLOGY CENTER APPROPRIATIONS, 1999–2008

YEAR	RECURRING	NON-RECURRING	TOTAL
1999	$5,738,913	$12,145,490	$17,884,403
2000	$6,738,913	$1,970,659	$8,709,572
2001	$6,270,468	-	$6,270,468
2002	$5,893,421	-	$5,893,421
2003	$5,883,395	-	$5,883,395
2004	$9,083,395	$1,800,000	$10,883,395
2005	$10,583,395	$1,500,000	$12,083,395
2006	$12,583,395	$500,000	$13,083,395
2008	$15,583,395	-	$15,583,395
2008	$15,427,561	$4,000,000	$19,427,561
		Grand Total	**$115,702,400**

Source: North Carolina Biotechnology Center (2022). North Carolina's 1-Year Bioscience Investment Tops $1.2 Billion.

TABLE 20. NORTH CAROLINA JOB DEVELOPMENT INVESTMENT GRANTS, 2004–2008

YEAR	COMPANY	AMOUNT
2004	Merck	$5,514,655
2004	Novo Nordisk	$3,032,000
2005	GlaxoSmithKline	$1,859,000
2005	Hospira	$1,812,000
2006	Novartis Vaccines & Diagnostics	$8,015,000
2006	Quintiles Transnational	$28,554,000
2006	Stiefel Research Institute	$3,000,000
2007	INC Research	$19,793,000
2007	PRA International	$10,086,000
2007	TransTech Pharma	$8,762,000
2008	Becton Dickinson	$4,165,852
	Total	**$94,593,507**

Source: North Carolina Biotechnology Center (2022). North Carolina's 1-Year Bioscience Investment Tops $1.2 Billion.

TABLE 21. ONE NORTH CAROLINA FUND GRANTS, 2004–2008

YEAR	ONE NC	AMOUNT
2004	Nitta Gelatin U.S.	$34,000
2004	Novo Nordisk	$250,000
2005	GlaxoSmithKline	$500,000
2006	Eisai	$150,000
2006	Metrics	$150,000
2006	Novartis Vaccines & Diagnostics	$3,000,000
2006	Quintiles Transnational	$2,000,000
2006	Sandoz (Eon)	$150,000
2006	United Therapeutics	$175,000
2007	Microban International	$45,000
2007	West Pharmaceutical Services	$300,000
2008	Galexe Pharma Sciences	$250,000
	Total	**$7,004,000**

Source: North Carolina Biotechnology Center (2022). North Carolina's 1-Year Bioscience Investment Tops $1.2 Billion.

STEM Employment by Race, Ethnicity, Gender

AREA OF INQUIRY	FINDING	RECOMMENDATION
3. An analysis of current minority participation in Maryland's advanced technology industry careers, with recommendations to achieve a 10-year goal that the share of jobs at all skill levels, including high skilled jobs, for minority workers will equal their overall workforce representation	**Black and Hispanic workers are quickly approaching representational parity in computer and math occupations** (closing the gap in an estimated 6 years and 23 years, respectively, based on past-10-year CAGRs of 5.7% and 9.4%). **Black and Hispanic Marylanders are well below parity in the life, physical, and social sciences** (closing the gap in 150 years and 54 years, respectively, based on past-10-year CAGRs of 3.8% and 5.9%) and architecture and engineering (367 years and 72 years, respectively, based on past-10-year CAGRs of 3.0% and 5.7%). **Women are well below parity in computer and math occupations,** and the gap is widening based on the past-10-years CAGR of 2.8% (which is lower than the men's CAGR). **Women are also below parity in engineering** (closing the gap in 52 years based on a past-10-year CAGR of 5.1%).	Develop a plan to substantially change participation growth rates for Black and Hispanic Marylanders in life, physical, and social sciences, and for women in computer, math, and engineering so that parity can be reached within shorter timeframes. Recruit high-tech manufacturers and support their expansion. This will increase engineering employment and, in the life sciences, diversify the type of jobs available—e.g., biomanufacturing and diagnostics manufacturing have skills-based needs that can be met through non-degree certificates. If the industry remains heavily weighted toward scientific R&D and PhDs, it will be harder to change employment growth rates in the short term. Invest in community outreach to raise awareness about jobs and career pathways and invest in industry-aligned, non-degree certificate and degree programs (and infrastructure) at minority-serving institutions (MSIs), including community colleges, and Historically Black Colleges and Universities (HBCUs).

Methodology

RTI analyzed Maryland's employment in STEM jobs by race, ethnicity, and gender and compared the percentages of jobs held by people of color relative to their employment across all occupations in 2021. In 2021, Marylanders employed across all occupations identified as the following races and ethnicities: White, alone (51%), Black (29%), Hispanic (11%), Asian (7%), Two or more (7%), and other/not specified (6%). These percentages served as the baseline against which RTI measured representational parity. "Other/not specified" includes Native American or Alaska Native, Native Hawaiian and Pacific Islander, as well as Marylanders who did not specify a race or ethnicity. Women represented 49% of the employed workforce.

RTI used the past-10-years CAGR of STEM employment (2011–2021) to estimate the number of years for each group to reach representational parity. A change in the STEM employment CAGR will change the estimated number of years to reach representational workforce parity.

Data Sources

- U.S. Census Bureau. (2022) American Community Survey, 2010 and 2021.
- National Science Board, National Science Foundation. (2021). The STEM Labor Force of Today: Scientists, Engineers and Skilled Technical Workers. Science and Engineering Indicators 2022. NSB-2021-2.

TABLE 22. MARYLAND BLACK OR AFRICAN AMERICAN ADULTS EMPLOYED IN STEM OCCUPATIONS: TOTAL NUMBER, 2010 AND 2021, CAGR, 2010–2021, AND ESTIMATED NUMBER OF YEARS TO REACH PARITY

	2010	2021	CURRENT	PARITY	2010–21 CAGR	YEARS TO PARITY
STEM Occupations						
Computer and mathematical	29,435	53,897	27.0%	28.7%	5.7%	6
Architecture and engineering	7,552	10,507	13.6%	28.7%	3.0%	367
Life, physical, and social science	5,552	8,392	12.5%	28.7%	3.8%	150
STEM-Related Occupations						
Health diagnosing and treating practitioners	24,818	33,631	24.9%	28.7%	2.8%	33
Health technologists and technicians	17,650	18,162	36.2%	28.7%	0.3%	> Parity
Middle Skill Occupation						
Production/manufacturing	4,670	22,923	26.4%	28.7%	-0.7%	Diverging

Notes: In 2021, Black Marylanders represented 28.7% of all adult employed workers in any occupation. “Diverging” indicates a negative growth rate and widening gap.

Source: U.S. Census Bureau. (2022). American Community Survey, 2021.

TABLE 23. MARYLAND ASIAN ADULTS EMPLOYED IN STEM OCCUPATIONS: TOTAL NUMBER, 2010 AND 2021, CAGR, 2010–2021, AND ESTIMATED NUMBER OF YEARS TO REACH PARITY

	2010	2021	CURRENT	PARITY	2010–21 CAGR	YEARS TO PARITY
STEM Occupations						
Computer and mathematical	20,999	27,659	13.8%	6.9%	2.5%	> Parity
Architecture and engineering	6,334	9,034	11.7%	6.9%	3.3%	> Parity
Life, physical, and social science	11,933	13,018	19.3%	6.9%	0.8%	> Parity
STEM-Related Occupations						
Health diagnosing and treating practitioners	15,223	15,732	11.7%	6.9%	0.3%	> Parity
Health technologists and technicians	3,123	4,342	8.7%	6.9%	3.0%	> Parity
Middle Skill Occupation						
Production/manufacturing	3,750	6,014	6.0%	6.9%	1.0%	> Parity

Note: In 2021, Asian Marylanders represented 6.9% of all adult employed workers in any occupation.

Source: U.S. Census Bureau. (2022). American Community Survey, 2021.

TABLE 24. MARYLAND HISPANIC OR LATINO ADULTS EMPLOYED IN STEM OCCUPATIONS: TOTAL NUMBER, 2010 AND 2021, CAGR, 2010–2021, AND ESTIMATED NUMBER OF YEARS TO REACH PARITY

	2010	2021	CURRENT	PARITY	2010–21 CAGR	YEARS TO PARITY
STEM Occupations						
Computer and mathematical	3,983	10,736	5.4%	10.6%	9.4%	23
Architecture and engineering	2,126	3,897	5.0%	10.6%	5.7%	72
Life, physical, and social science	2,425	4,551	6.8%	10.6%	5.9%	54
STEM-Related Occupations						
Health diagnosing and treating practitioners	4,149	7,115	5.3%	10.6%	5.0%	81
Health technologists and technicians	1,675	3,493	10.1%	10.6%	6.9%	12
Middle Skill Occupation						
Production/ manufacturing	10,394	13,226	21.9%	10.6%	2.2%	> Parity

Note: In 2021, Hispanic and Latino Marylanders represented 10.6% of all adult employed workers in any occupation.

Source: U.S. Census Bureau. (2022). American Community Survey, 2021.

TABLE 25. MARYLAND WOMEN, ALL RACES AND ETHNICITIES, EMPLOYED IN STEM OCCUPATIONS: TOTAL NUMBER, 2010 AND 2021, CAGR, 2010–2021, AND ESTIMATED NUMBER OF YEARS TO REACH PARITY

	2010	2021	CURRENT	PARITY	2010–21 CAGR	YEARS TO PARITY
Computer and Mathematical Occupations	**44,820**	**60,771**	**30.4%**	**49.2%**	**2.9%**	**Diverging**
Computer Occupations	**36,661**	**49,503**	**28.5%**	**49.2%**	**2.8%**	**Diverging**
Computer scientists, information security analysts	6,786	10,717	29.1%	49.2%	4.2%	Diverging
Software developers and programmers	17,720	20,443	27.8%	49.2%	1.3%	Diverging
Database and systems administrators, network architects	3,920	3,400	20.3%		-1.3%	Diverging
Miscellaneous computer occupations	8,235	14,943	32.1%	49.2%	5.6%	109
Mathematical Science Occupations	**8,159**	**11,268**	**42.8%**	**49.2%**	**3.0%**	**Diverging**
Architecture and Engineering Occupations	**9,985**	**13,616**	**17.6%**	**49.2%**	**2.9%**	**148**
Architects, surveyors, and cartographers	1,817	2,460	32.3%	49.2%	2.8%	122
Engineers	5,708	9,831	17.1%	49.2%	5.1%	52
Drafters, engineering, and mapping technicians	2,460	1,325	10.6%	49.2%	-5.5%	Diverging
Life, Physical, and Social Science Occupations	**23,852**	**32,792**	**48.4%**	**49.2%**	**2.9%**	**7**
Life and physical scientists	14,065	18,244	44.9%	49.2%	2.4%	30
Social scientists and related workers	6,579	8,487	57.2%	49.2%	2.3%	> Parity
Life, physical, and social science technicians	3,208	6,061	49.3%	49.2%	6.0%	3
Health Care Practitioners and Technicians	**120,801**	**139,756**	**75.4%**	**49.2%**	**1.3%**	**> Parity**
Health practitioners and other technical	**86,005**	**102,085**	**75.5%**	**49.2%**	**1.6%**	**> Parity**
Physicians and surgeons	9,676	10,099	43.6%	49.2%	0.4%	Diverging
Therapists	11,043	16,913	82.9%	49.2%	4.0%	> Parity
Registered nurses	52,011	55,630	90.3%	49.2%	0.6%	> Parity
Nurses, all other	2,644	4,822	92.6%	49.2%	5.6%	> Parity
Other practitioners and technical	10,631	14,621	59.2%	49.2%	2.9%	> Parity
Health technologists and technicians	34,796	37,671	74.9%	49.2%	0.7%	> Parity

Notes: In 2021, female Marylanders represented 49.2% of all adult employed workers in any occupation. Diverging" indicates a negative or lower employment growth rate relative to men's employment growth rate in this occupation.

Source: U.S. Census Bureau. (2022). American Community Survey, 2021.

Postsecondary STEM Degrees by Race, Ethnicity, Gender

AREA OF INQUIRY	FINDING	RECOMMENDATION
4. An assessment of the connection between postsecondary STEM education and career development for advanced industry jobs with recommendations to achieve a 10-year goal of raising STEM degrees and experiential learning opportunities for minority students equal to their overall presence in the workforce.	**RTI estimates a much shorter timeframe is required to close the STEM degrees gap relative to the STEM employment gap.** For life sciences degrees, it will take Black and Hispanic students an estimated 11 years and 5 years, respectively, to close the gap in bachelor's degrees (based on past-10-year CAGRs of 4.6% and 10.1%) and 8 years and 5 years to do so for master's degrees (based on past-10-years-CAGR of 9.6% and 10.1%). For engineering degrees, it will take Black and Hispanic students 32 years and 2 years, respectively, to close the gap in bachelor's degrees (based on past-10-year CAGRs of 3.4% and 10.1%) and 114 years and 11 years to do so for master's degrees (based on past-10-year CAGRs of 1.5% and 8.8%). Maryland's relatively small manufacturing base is one factor driving the difference in the rate at which Maryland is closing the STEM employment vs. degrees gap in engineering. However, another factor is the need for students to demonstrate proficiency in calculus and physics to enter and be successful in engineering programs, given the inequities of K–12 education across the state. One final note is that the share of degrees conferred to out-of-state students varies dramatically by institution.	Develop programs for students in middle and high schools to introduce them to STEM career pathways using role models and experiential learning opportunities. Invest in summer STEM programs and STEM exploration courses for middle school and high school students at MSIs, including community colleges, and HBCUs. Increase funding to HBCUs and MSIs to provide more industry-aligned curriculum, co-ops, and internships to students of color.

Methodology

RTI analyzed the number of STEM degrees conferred by Maryland Institutions of Higher Education by race, ethnicity, and gender. To analyze the size of the STEM degree gap , RTI used each demographic group's share of 2021 employment across all occupations as the baseline for representational parity. RTI used the past-10-years CAGR of degrees conferred to estimate the number of years to reach parity.

The CAGR of degrees conferred affects the estimated number of years to reach parity. One caveat is that the number of degrees conferred include both in-state and out-of-state students. The percentage of out-of-state students varies significantly by institution. Because of the impact of COVID on enrollment and completions in the 2020–2021 academic year, RTI used 2020 completions data rather than 2021.

Data Sources

- National Center for Education Statistics. (2021). Integrated Postsecondary Education System, Completions Survey. Institute of Education Sciences.
- U.S. Census Bureau. (2022)., American Community Survey 2021.

TABLE 26. SCIENCE AND ENGINEERING (S&E) DEGREES CONFERRED BY MARYLAND HIGHER EDUCATION INSTITUTIONS BY DEGREE, BY EDUCATIONAL LEVEL, AND BY RACE AND ETHNICITY, 2020

	TOTAL	WHITE	BLACK	ASIAN	HISPANIC	OTHER
Bachelor's Degrees						
Science	15,291	47%	19%	13%	9%	12%
Life Sciences	2,809	48%	18%	17%	7%	10%
Math and Computer Sciences	5,717	41%	19%	17%	8%	15%
Physical Sciences	513	61%	11%	9%	10%	10%
Engineering	2,335	50%	10%	15%	8%	16%
Total	**17,626**	**47%**	**18%**	**13%**	**9%**	**13%**
Master's Degrees						
Science	5,874	33%	17%	9%	5%	35%
Life Sciences	833	40%	13%	16%	7%	24%
Math and Computer Sciences	3,090	27%	21%	8%	5%	38%
Physical Sciences	169	60%	2%	5%	7%	26%
Engineering	1,548	35%	5%	9%	4%	46%
Total	**7,422**	**34%**	**15%**	**9%**	**5%**	**37%**
Doctoral Degrees						
Science	676	45%	8%	7%	4%	36%
Life Sciences	258	52%	5%	9%	6%	28%
Math and Computer Sciences	159	27%	11%	4%	3%	55%
Physical Sciences	97	55%	2%	5%	3%	35%
Engineering	244	32%	3%	9%	2%	54%
Total	**920**	**42%**	**7%**	**7%**	**3%**	**41%**

Notes: In the National Center for Education Statistics data, all the races and ethnicities sum to 100%, whereas in the U.S. Census Bureau data, Hispanic or Latino is outside the 100% total. Degrees conferred to students include both in- and out-of-state students.

Source: National Center for Education Statistics. (2021). Integrated Postsecondary Education System, Completions Survey.

TABLE 27. S&E DEGREES CONFERRED BY MARYLAND HIGHER EDUCATION INSTITUTIONS TO BLACK STUDENTS, CAGR 2010–2020, AND ESTIMATED YEAR TO REACH REPRESENTATIONAL PARITY

DEGREE	2010	2020	SHARE OF DEGREES CONFERRED	2010–2020 CAGR	YEARS TO PARITY
Bachelor's Degrees					
Science and Engineering	2,023	3,202	18%	4.7%	10
All Science	1,861	2,975	19%	4.8%	8
Life Sciences	319	501	18%	4.6%	11
Math and Computer Sciences	420	1,109	19%	10.2%	4
Physical Sciences	42	54	11%	2.5%	40
Engineering	162	227	10%	3.4%	32
Master's Degrees					
Science and Engineering	569	1,098	15%	6.8%	10
All Science	502	1,020	17%	7.3%	7
Life Sciences	44	110	13%	9.6%	8
Math and Computer Sciences	235	662	21%	10.9%	3
Physical Sciences	5	4	2%	-2.2%	Diverging
Engineering	67	78	5%	1.5%	114
Doctoral Degrees					
Science and Engineering	41	61	7%	4.1%	37
All Science	33	53	8%	4.9%	27
Life Sciences	13	14	5%	0.7%	225
Math and Computer Sciences	4	18	11%	16.2%	6
Physical Sciences	3	2	2%	-4.0%	Diverging
Engineering	8	8	3%	0.0%	No growth

Notes: African Americans represented 28.7% of Maryland's employed workforce in 2021. Degrees conferred to students include both in- and out-of-state students. "Diverging" indicates a negative growth rate and widening gap.

Source: National Center for Education Statistics. (2021). Integrated Postsecondary Education System, Completions Survey.

TABLE 28. S&E DEGREES CONFERRED TO HISPANIC OR LATINO STUDENTS BY MARYLAND INSTITUTIONS OF HIGHER EDUCATION, CAGR 2010–2020, AND ESTIMATED YEAR TO REACH REPRESENTATIONAL PARITY

	2010	2020	SHARE OF DEGREES CONFERRED	2010–2020 CAGR	YEARS TO PARITY
Bachelor's Degrees					
Science and Engineering	548	1,541	9%	10.9%	2
All Science	473	1,345	9%	11.0%	2
Life Sciences	72	189	7%	10.1%	5
Math and Computer Sciences	66	470	8%	21.7%	1
Physical Sciences	21	50	10%	9.1%	1
Engineering	75	196	8%	10.1%	2
Master's Degrees					
Science and Engineering	125	385	5%	11.9%	6
All Science	97	320	5%	12.7%	6
Life Sciences	21	55	7%	10.1%	5
Math and Computer Sciences	33	159	5%	17.0%	5
Physical Sciences	3	11	7%	13.9%	4
Engineering	28	65	4%	8.8%	11
Doctoral Degrees					
Science and Engineering	16	32	3%	7.2%	16
All Science	11	28	4%	9.8%	10
Life Sciences	4	16	6%	14.9%	4
Math and Computer Sciences	2	4	3%	7.2%	21
Physical Sciences	2	3	3%	4.1%	30
Engineering	5	4	2%	-2.2%	Diverging

Notes: Hispanics represented 10.6% of Maryland's employed workforce in 2021. Degrees conferred to students include both in- and out-of-state students. "Diverging" indicates a negative growth rate and widening gap.

Source: National Center for Education Statistics. (2021). Integrated Postsecondary Education System, Completions Survey.

TABLE 29. S&E DEGREES CONFERRED TO ASIAN STUDENTS BY MARYLAND INSTITUTIONS OF HIGHER EDUCATION, CAGR 2010–2020, AND ESTIMATED YEAR TO REACH REPRESENTATIONAL PARITY

	2010	2020	SHARE OF DEGREES CONFERRED	2010–2020 CAGR	YEARS TO PARITY
Bachelor's Degrees					
Science and Engineering	1,354	2,325	13%	5.6%	> Parity
All Science	1,118	1,968	13%	5.8%	> Parity
Life Sciences	415	479	17%	1.4%	> Parity
Math and Computer Sciences	203	974	17%	17.0%	> Parity
Physical Sciences	40	47	9%	1.6%	> Parity
Engineering	236	357	15%	4.2%	> Parity
Master's Degrees					
Science and Engineering	391	654	9%	5.3%	> Parity
All Science	310	507	9%	5.0%	> Parity
Life Sciences	81	132	16%	5.0%	> Parity
Math and Computer Sciences	125	258	8%	7.5%	> Parity
Physical Sciences	2	9	5%	16.2%	2
Engineering	81	147	9%	6.1%	> Parity
Doctoral Degrees					
Science and Engineering	46	67	7%	3.8%	> Parity
All Science	39	45	6.7%	1.4%	3
Life Sciences	19	23	9%	1.9%	> Parity
Math and Computer Sciences	7	6	4%	-1.5%	Diverging
Physical Sciences	1	5	5%	17.5%	2
Engineering	7	22	9%	12.1%	> Parity

Notes: Asians represented 6.9% of Maryland's employed workforce in 2021. Degrees conferred to students include both in- and out-of-state students. "Diverging" indicates a negative growth rate and widening gap.

Source: National Center for Education Statistics. (2021). Integrated Postsecondary Education System, Completions Survey.

TABLE 30. S&E DEGREES CONFERRED TO FEMALE STUDENTS BY MARYLAND INSTITUTIONS OF HIGHER EDUCATION, COMPOUND ANNUAL GROWTH RATE 2010–2020, AND ESTIMATED YEAR TO REACH REPRESENTATIONAL PARITY

	2010	2020	SHARE OF DEGREES CONFERRED	2010–2020 CAGR	YEARS TO PARITY
Bachelor's Degrees					
Science and Engineering	5,483	7,864	45%	3.7%	3
All Science	5,146	7,279	48%	3.5%	1
Life Sciences	1,210	1,832	65%	4.2%	> Parity
Math and Computer Sciences	563	1,444	25%	9.9%	7
Physical Sciences	159	213	42%	3.0%	6
Engineering	337	585	25%	5.7%	12
Master's Degrees					
Science and Engineering	1,879	3,135	42%	5.3%	3
All Science	1,682	2,694	46%	4.8%	1
Life Sciences	356	529	64%	4.0%	> Parity
Math and Computer Sciences	409	1,114	36%	10.5%	3
Physical Sciences	68	85	50%	2.3%	At Parity
Engineering	197	441	28%	8.4%	7
PhD					
Science and Engineering	324	340	37%	0.5%	59
All Science	271	294	43%	0.8%	15
Life Sciences	124	138	53%	1.1%	> Parity
Math and Computer Sciences	21	46	29%	8.2%	7
Physical Sciences	30	23	24%	-2.6%	Diverging
Engineering	53	46	19%	-1.4%	Diverging

Notes: Women represented 49.2% of Maryland's employed workforce in 2021. Degrees conferred to students include both in- and out-of-state students. "Diverging" indicates a negative growth rate and widening gap.

Source: National Center for Education Statistics. (2021). Integrated Postsecondary Education System, Completions Survey.

Business Ownership by Race, Ethnicity, and Gender

AREA OF INQUIRY	FINDING	RECOMMENDATION
5. An evaluation of the current state of advanced industry startups and recommendations to achieve a 10-year goal of minority entrepreneurs participating in startups at levels equal to their overall workforce representation.	Maryland's leading tech sectors are Software/SaaS, Biotech/Pharma, Healthcare Devices, B2B, and Health Tech (based on 2017–2022 deal count and VC investment). Nationally, **Maryland ranks 17th for VC investment in startup companies.** **Black and Hispanic owners represent 7% and 3%, respectively, of all companies with employees (any industry sector), but less than 1% of venture-backed companies in Maryland.** It will take an estimated 47 years for Black business owners to reach representational parity based on 2012–2019 CAGR of 3.2%. The gap for Hispanic owners is widening rather than closing, based on 2012–2019 CAGR of -0.4%. **Women represent 23% of business owners.** It will take an estimated 43 years to reach representational parity based on 2012–2019 CAGR of 1.9%. There was no available data on female founders of venture-backed startups in Maryland, but they represent 7% of deals and 2.4% of VC nationally.	Expand entrepreneurial leadership training and mentoring for people of color and women. Make fund-of-funds investments in venture funds founded and managed by people of color and women. Sustain and expand direct investment funds targeting underrepresented founders.

Methodology

RTI analyzed the ownership of Maryland employer firms (i.e., companies that have one or more employees, as opposed to self-employed individuals with no employees) by race, ethnicity, and gender in 2012 and 2019. To analyze the size of the gap in business ownership, RTI used Maryland's 2021 population break-down by race, ethnicity, and gender as the target for representational parity. RTI used each group's 2019 percentage of business ownership, target business ownership rate, and 2012–2019 CAGR in business ownership to estimate the number of years required to reach representational parity. A change in the CAGR will change the estimated number of years to reach representational parity.

RTI also performed research to assess the share of Maryland startups in high-tech industries. Although time-series data on the number of startups by industry sector are not available for Maryland, a recent national study found that approximately 12% of all startups in the United States are high-tech startups, and less than 1% are venture capital (VC)-backed startups. Maryland is likely to follow this national pattern. RTI analyzed Pitchbook VC data to assess Maryland's ranking in total VC investment. It was not possible to assess the number of founders of color or female founders from the data, but RTI performed secondary research to identify national studies on founders of color, female founders, and VC firm partners who are people of color and/or women. RTI identified and included data on one study on Black founders of Maryland venture-backed startups.

Data Sources

- U.S. Census Bureau. (2014). Survey of Business Ownership, 2012.
- U.S. Census Bureau (2021). Annual Business Survey, 2020 (Data Year 2019).
- U.S. Census Bureau (2021). 2020 Census and Population Estimates Program.

TABLE 31. OWNERSHIP OF MARYLAND EMPLOYER FIRMS BY RACE, ETHNICITY, AND GENDER IN 2012, 2019, AND ESTIMATED NUMBER OF YEARS TO REACH REPRESENTATIONAL PARITY

	EMPLOYER FIRMS 2012	EMPLOYER FIRMS 2019	SHARE OF FIRMS 2019	SHARE OF POPULATION	2012–2019 FIRM CAGR	YEARS TO PARITY
White	75,222	76,098	73.4%	57.8%	0.2%	> Parity
Black	5,885	7,331	7.1%	31.4%	3.2%	47
Asian	12,020	14,124	13.6%	6.9%	2.3%	> Parity
Native American[1]	212	255	0.2%	0.7%	2.7%	40
Other/unclassified	8,537	5,834	5.6%	N/A	N/A	N/A
Total	**101,876**	**103,642**	**100%**	**100%**		
Hispanic, any race	3,501	3,393	3%	11.1%	-0.4%	Diverging
Women	20,647	23,583	23%	51.3%	1.9%	43

Notes: [1] Native American includes Native American and Alaska Natives. Because "Other/unclassified" includes business owners who did not identify a race, ethnicity, or gender, the CAGR and years to parity calculations are not meaningful. "Diverging" indicates a negative growth rate and widening gap.

Sources: U.S. Census Bureau. (2014). Survey of Business Ownership, 2012. U.S. Census Bureau (2021). Annual Business Survey, 2020 (Data Year 2019). U.S. Census Bureau (2021). 2020 Census and Population Estimates Program.

TABLE 32. OWNERSHIP OF U.S. EMPLOYER FIRMS BY RACE, ETHNICITY, AND GENDER IN 2012, 2019, AND ESTIMATED YEARS TO REACH PARITY

	EMPLOYER FIRMS 2012	EMPLOYER FIRMS 2019	SHARE OF FIRMS 2019	SHARE OF POPULATION	2012–2019 FIRM CAGR	YEARS TO PARITY
White	4,438,062	4,819,100	83.5%	75.8%	1.2%	> Parity
Black	109,137	134,567	2.3%	13.6%	3.0%	59
Asian	481,026	581,200	10.1%	6.1%	2.7%	> Parity
Native American[1]	26,179	26,064	0.5%	1.3%	-0.1%	Diverging
Pacific Islander[2]	4,706	7,331	0.1%	0.3%	6.5%	14
Other/unclassified	365,348	203,030	3.5%	N/A	N/A	N/A
Total	**5,424,458**	**5,771,292**	**100.0%**		**0.9%**	
Hispanic, any race	287,501	346,836	6.0%	18.9%	2.7%	43
Women	1,035,655	1,141,410	19.8%	50.5%	1.4%	67

Notes: [1] Native American includes Native American and Alaska Natives. [2] Pacific Islander includes Native Hawaiian and Other Pacific Islander. Because "Other/unclassified" includes business owners who did not identify a race, ethnicity, or gender, the CAGR and years to parity calculations are not meaningful. "Diverging" indicates a negative growth rate and widening gap.

Source: U.S. Census Bureau. (2014). Survey of Business Ownership, 2012. U.S. Census Bureau (2021). Annual Business Survey, 2020 (Data Year 2019). U.S. Census Bureau (2021). 2020 Census and Population Estimates Program.

TABLE 33. COUNT AND SHARE OF BLACK–OWNED EMPLOYER FIRMS COMPARED TO SHARE OF POPULATION, 2012 AND 2019

RANK 2019	STATE	BLACK-OWNED 2012	BLACK-OWNED 2019	SHARE OF POPULATION	BLACK-OWNED 2012	BLACK-OWNED 2019	ALL FIRMS, ANY RACE 2019
	United States	2.0%	2.3%	13.6%	109,137	134,567	5,771,292
1	Washington, DC	10.3%	12.1%	45.8%	1,439	1,858	15,372
2	**Maryland**	**5.8%**	**7.1%**	**31.4%**	**5,885**	**7,331**	**103,642**
3	Georgia	5.2%	5.5%	33.0%	8,283	9,676	175,748
4	Virginia	4.1%	4.1%	20.0%	5,637	6,009	145,075
5	Missouri	3.1%	3.9%	11.8%	3,296	4,183	107,306
6	North Carolina	4.0%	3.7%	22.3%	6,157	6,268	170,174
7	Mississippi	3.9%	3.6%	38.0%	1,591	1,452	40,189
8	South Carolina	3.2%	3.5%	26.7%	2,318	2,749	79,120
9	Louisiana	3.6%	3.5%	33.0%	2,793	2,673	76,601
10	Delaware	2.7%	3.2%	23.6%	494	631	19,893
11	Alabama	2.8%	3.1%	26.8%	1,907	2,109	68,225
12	Florida	2.5%	2.6%	17.0%	9,936	11,798	454,314
13	Ohio	1.9%	2.4%	13.2%	3,338	4,170	171,328
14	Tennessee	2.5%	2.4%	17.0%	2,265	2,203	91,939
15	Texas	2.4%	2.3%	13.2%	9,167	9,985	432,422
16	New York	2.0%	2.2%	17.6%	8,537	9,780	444,674
17	New Jersey	1.8%	1.9%	15.3%	3,285	3,523	187,857
18	Arkansas	1.6%	1.8%	15.7%	760	875	47,680
19	Illinois	1.8%	1.7%	14.7%	4,246	4,094	245,126
20	Michigan	1.7%	1.7%	14.1%	2,743	2,828	164,166
21	Indiana	1.3%	1.7%	10.2%	1,296	1,774	102,170
22	California	1.4%	1.6%	1.7%	9,572	11,957	753,343
23	Nevada	1.2%	1.5%	10.6%	538	814	53,284
24	Pennsylvania	1.3%	1.4%	12.2%	2,856	2,929	214,827
25	Massachusetts	1.0%	1.3%	9.3%	1,312	1,838	138,264
26	Minnesota	1.0%	1.3%	7.4%	1,122	1,500	112,555
27	Oklahoma	1.2%	1.3%	7.8%	812	894	68,771
28	Rhode Island	0.7%	1.3%	8.8%	170	308	23,406
29	Colorado	0.8%	1.0%	4.7%	924	1,378	137,866
30	Washington	0.9%	0.9%	4.5%	1,252	1,398	151,106
31	Wisconsin	1.1%	0.7%	6.8%	1,087	736	104,400
32	New Mexico	0.8%	0.7%	2.7%	262	235	32,211
33	Oregon	0.5%	0.7%	2.3%	421	613	91,351
34	West Virginia	0.7%	0.7%	3.7%	186	160	23,509
35	Alaska	1.0%	0.7%	3.6%	151	108	16,055
36	Nebraska	0.6%	0.6%	5.3%	252	257	42,990
37	Iowa	0.4%	0.3%	4.3%	240	166	59,463
38	Wyoming	0.2%	0.2%	1.2%	38	37	17,750
39	Utah	0.3%	0.1%	1.5%	164	98	69,136
40	Idaho	0.2%	0.1%	0.9%	53	53	41,098
41	Montana	0.1%	0.1%	0.6%	29	32	32,300
42	Vermont	0.1%	0.1%	1.5%	19	24	16,757
43	North Dakota	0.1%	0.1%	3.5%	25	15	20,010
44	Kentucky	1.3%	S	8.6%	806	S	62,749
45	Connecticut	1.0%	S	12.7%	694	S	66,954
46	Arizona	0.9%	S	5.4%	837	S	108,606
47	Kansas	0.9%	S	6.2%	467	S	54,949
48	Hawaii	0.8%	S	2.2%	179	S	23,925
49	New Hampshire	0.2%	S	1.9%	70	S	29,727
50	Maine	0.2%	S	1.8%	58	S	32,436
51	South Dakota	0.1%	S	2.5%	27	S	21,798

Notes: Employer firms are firms reporting one or more employees. S = suppressed.

Source: U.S. Census Bureau. (2014). Survey of Business Ownership, 2012. U.S. Census Bureau (2021). Annual Business Survey, 2020 (Data Year 2019). U.S. Census Bureau (2021). 2020 Census and Population Estimates Program.

TABLE 34. COUNT AND SHARE OF ASIAN-OWNED EMPLOYER FIRMS COMPARED TO SHARE OF POPULATION, 2012 AND 2019

RANK 2019	STATE	ASIAN-OWNED 2012	ASIAN-OWNED 2019	SHARE OF POPULATION	ASIAN-OWNED 2012	ASIAN-OWNED 2019	ALL FIRMS, ANY RACE 2019
	United States	8.9%	10.1%	6.1%	481,026	581,200	5,771,292
1	Hawaii	48.8%	44.4%	36.8%	11,237	10,619	23,925
2	California	19.8%	21.1%	15.9%	134,607	158,742	753,343
3	New York	13.3%	15.4%	9.3%	57,381	68,428	444,674
4	New Jersey	14.0%	14.3%	10.3%	25,863	26,776	187,857
5	**Maryland**	**11.8%**	**13.6%**	**6.9%**	**12,020**	**14,124**	**103,642**
6	Virginia	11.0%	12.9%	7.2%	15,136	18,739	145,075
7	Georgia	10.6%	12.3%	4.6%	16,947	21,684	175,748
8	Texas	10.4%	12.3%	5.5%	40,005	53,201	432,422
9	Washington, DC	13.0%	12.3%	4.5%	1,811	1,885	15,372
10	Nevada	8.7%	11.1%	9.1%	4,029	5,888	53,284
11	Washington	10.1%	9.6%	10.0%	13,839	14,540	151,106
12	Illinois	7.9%	8.8%	6.1%	18,963	21,672	245,126
13	Massachusetts	6.3%	7.4%	7.5%	8,307	10,269	138,264
14	Pennsylvania	5.6%	7.0%	3.9%	12,054	15,003	214,827
15	Alabama	5.1%	6.4%	1.6%	3,431	4,380	68,225
16	Oregon	5.8%	6.4%	5.0%	4,874	5,859	91,351
17	Tennessee	5.3%	6.4%	2.0%	4,727	5,874	91,939
18	Florida	5.3%	6.2%	3.0%	21,007	28,334	454,314
19	Mississippi	4.5%	6.2%	1.1%	1,865	2,489	40,189
20	Arizona	5.5%	6.0%	3.8%	5,302	6,501	108,606
21	South Carolina	5.0%	5.8%	1.9%	3,598	4,596	79,120
22	North Carolina	4.8%	5.6%	3.4%	7,427	9,614	170,174
23	Louisiana	4.8%	5.4%	1.9%	3,637	4,150	76,601
24	Michigan	4.5%	5.1%	3.4%	7,326	8,454	164,166
25	Alaska	4.6%	4.9%	6.6%	723	782	16,055
26	Kentucky	3.6%	4.8%	1.7%	2,269	3,007	62,749
27	New Mexico	3.4%	4.7%	1.9%	1,125	1,525	32,211
28	Indiana	3.7%	4.6%	2.7%	3,733	4,706	102,170
29	Arkansas	3.3%	4.5%	1.8%	1,547	2,167	47,680
30	Ohio	4.2%	4.5%	2.7%	7,247	7,628	171,328
31	Colorado	3.9%	4.1%	3.6%	4,786	5,623	137,866
32	New Hampshire	3.2%	3.9%	3.1%	921	1,162	29,727
33	Missouri	3.4%	3.7%	2.2%	3,614	4,016	107,306
34	Rhode Island	4.1%	3.7%	3.7%	943	872	23,406
35	Oklahoma	3.8%	3.7%	2.5%	2,581	2,542	68,771
36	Kansas	3.3%	3.6%	3.2%	1,761	1,978	54,949
37	Minnesota	2.7%	3.3%	5.4%	2,937	3,732	112,555
38	Wisconsin	2.7%	3.0%	3.2%	2,717	3,131	104,400
39	Utah	2.3%	2.8%	2.7%	1,317	1,962	69,136
40	Iowa	1.8%	2.6%	2.8%	1,048	1,527	59,463
41	Nebraska	1.8%	2.2%	2.8%	720	950	42,990
42	Maine	1.3%	2.2%	1.4%	410	711	32,436
43	West Virginia	3.0%	2.1%	0.9%	773	502	23,509
44	Vermont	1.7%	2.1%	2.0%	291	347	16,757
45	Idaho	1.6%	2.0%	1.6%	556	805	41,098
46	Wyoming	1.6%	1.8%	1.1%	279	321	17,750
47	Montana	0.7%	1.3%	1.0%	213	436	32,300
49	South Dakota	1.2%	1.3%	1.7%	234	280	21,798
48	Connecticut	6.1%	S	5.1%	4,139	S	66,954
51	Delaware	7.4%	S	4.2%	1,350	S	19,893
50	North Dakota	1.3%	S	1.7%	242	S	20,010

Notes: Employer firms are firms reporting one or more employees. S = suppressed.

Source: U.S. Census Bureau. (2014). Survey of Business Ownership, 2012. U.S. Census Bureau (2021). Annual Business Survey, 2020 (Data Year 2019). U.S. Census Bureau (2021). 2020 Census and Population Estimates Program.

TABLE 35. COUNT AND SHARE OF HISPANIC-OWNED EMPLOYER FIRMS COMPARED TO SHARE OF POPULATION, 2012 AND 2019

RANK 2019	STATE	HISPANIC-OWNED 2012	HISPANIC-OWNED 2019	SHARE OF POPULATION	HISPANIC-OWNED 2012	HISPANIC-OWNED 2019	ALL FIRMS, ANY RACE OR ETHNICITY 2019
	United States	5.3%	6.0%	18.9%	287,501	346,836	5,771,292
1	New Mexico	17.2%	17.8%	50.1%	5,686	5,722	32,211
2	Florida	15.2%	15.9%	26.8%	59,956	2,160	454,314
3	Texas	12.7%	12.5%	40.2%	48,596	54,130	432,422
4	California	9.5%	10.3%	40.2%	64,463	77,606	753,343
5	Arizona	7.2%	8.1%	32.3%	6,962	8,759	108,606
6	New Jersey	5.4%	6.5%	21.5%	9,888	12,289	187,857
7	Nevada	5.5%	5.7%	29.9%	2,550	3,063	53,284
8	Illinois	5.0%	5.4%	18.0%	11,947	13,263	245,126
9	New York	5.0%	5.0%	19.5%	21,555	22,201	444,674
10	Colorado	3.7%	4.5%	22.3%	4,491	6,201	137,866
11	Utah	2.9%	4.3%	14.8%	1,686	2,996	69,136
12	Virginia	2.8%	4.3%	10.2%	3,928	6,210	145,075
13	Oregon	3.0%	4.3%	14.0%	2,483	3,892	91,351
14	Idaho	2.7%	3.9%	13.3%	923	1,608	41,098
15	Washington	2.9%	3.8%	13.7%	3,899	5,781	151,106
16	Georgia	2.5%	3.5%	10.2%	4,002	6,126	175,748
17	**Maryland**	**3.4%**	**3.3%**	**11.1%**	**3,501**	**3,393**	**103,642**
18	North Carolina	2.0%	3.1%	10.2%	3,192	5,350	170,174
19	Washington, DC	3.3%	3.1%	11.5%	455	472	15,372
20	Connecticut	2.8%	3.0%	17.7%	1,892	1,991	66,954
21	Oklahoma	2.3%	2.8%	11.7%	1,550	1,952	68,771
22	Wyoming	2.3%	2.8%	10.6%	394	496	17,750
23	Kansas	2.3%	2.6%	12.7%	1,220	1,440	54,949
24	Rhode Island	1.9%	2.4%	17.1%	440	572	23,406
25	Massachusetts	1.9%	2.3%	12.8%	2,532	3,225	138,264
26	Nebraska	1.4%	2.2%	12.0%	565	966	42,990
27	Louisiana	1.7%	2.2%	5.6%	1,280	1,682	76,601
28	Hawaii	2.3%	2.1%	11.1%	524	514	23,925
29	Indiana	1.4%	2.1%	7.7%	1,438	2,161	102,170
30	Alaska	1.8%	2.1%	7.5%	287	336	16,055
31	Delaware	1.7%	1.9%	10.1%	314	378	19,893
32	Tennessee	1.4%	1.9%	6.1%	1,260	1,733	91,939
33	Missouri	1.2%	1.7%	4.7%	1,268	1,775	107,306
34	Kentucky	1.1%	1.5%	4.2%	702	949	62,749
35	Iowa	0.7%	1.5%	6.7%	436	867	59,463
36	Wisconsin	1.1%	1.4%	7.5%	1,108	1,478	104,400
37	Minnesota	0.9%	1.4%	5.8%	988	1,588	112,555
38	Pennsylvania	1.2%	1.4%	8.4%	2,657	3,025	214,827
39	Michigan	1.1%	1.3%	5.6%	1,864	2,093	164,166
40	Alabama	1.4%	1.2%	4.8%	922	836	68,225
41	Ohio	0.9%	1.2%	4.3%	1,553	1,979	171,328
42	Montana	1.1%	1.1%	4.3%	316	355	32,300
43	West Virginia	0.7%	1.1%	1.9%	171	252	23,509
44	New Hampshire	0.6%	0.8%	4.4%	188	238	29,727
45	North Dakota	1.0%	0.7%	4.4%	81	135	20,010
46	Maine	0.4%	0.5%	2.0%	111	162	32,436
47	Arkansas	2.0%	S	8.3%	940	S	47,680
48	South Carolina	1.5%	S	6.4%	1,088	S	79,120
49	Mississippi	0.9%	S	3.5%	376	S	40,189
50	Vermont	0.7%	S	2.2%	122	S	16,757
51	South Dakota	0.4%	S	4.6%	76	S	21,798

Notes: Employer firms are firms reporting one or more employees. Non-employer, or self-employed firms, are not included. S = suppressed.

Source: U.S. Census Bureau. (2014). Survey of Business Ownership, 2012. U.S. Census Bureau (2021). Annual Business Survey, 2020 (Data Year 2019). U.S. Census Bureau (2021). 2020 Census and Population Estimates Program.

TABLE 36. COUNT AND SHARE OF WOMEN-OWNED EMPLOYER FIRMS COMPARED TO SHARE OF POPULATION, 2012 AND 2019

RANK 2019	STATE	WOMEN-OWNED 2012	WOMEN-OWNED 2019	SHARE OF POPULATION	WOMEN-OWNED 2012	WOMEN-OWNED 2019	ALL, ANY GENDER 2019
	United States		19.8%	50.5%		1,141,410	5,771,292
1	Hawaii	20.5%	24.5%	49.7%	4,717	5,861	23,925
2	Virginia	20.9%	23.9%	50.5%	28,809	34,655	145,075
3	Colorado	21.5%	23.8%	49.3%	26,111	32,749	137,866
4	**Maryland**	**20.3%**	**22.8%**	**51.3%**	**20,647**	**23,583**	**103,642**
5	Florida	20.8%	22.3%	50.8%	81,794	101,321	454,314
6	Missouri	19.9%	22.3%	50.6%	21,153	23,913	107,306
7	Nevada	17.6%	22.3%	49.6%	8,106	11,867	53,284
8	Georgia	20.5%	22.1%	51.2%	32,908	38,798	175,748
9	New Mexico	20.4%	22.0%	50.2%	6,757	7,074	32,211
10	Texas	19.5%	21.8%	50.1%	74,501	94,432	432,422
11	California	19.5%	21.5%	50.0%	132,508	161,766	753,343
12	Washington	19.2%	21.5%	49.6%	26,252	32,424	151,106
13	Illinois	19.1%	21.1%	50.6%	45,928	51,773	245,126
14	Alaska	22.9%	21.1%	47.6%	3,559	3,384	16,055
15	Arizona	19.5%	20.9%	50.1%	18,974	22,679	108,606
16	New York	18.5%	20.8%	51.1%	79,603	92,529	444,674
17	Oregon	19.8%	20.7%	50.1%	16,532	18,950	91,351
18	South Carolina	18.0%	20.5%	51.4%	12,941	16,217	79,120
19	North Carolina	19.4%	20.4%	51.1%	30,186	34,671	170,174
20	New Jersey	18.4%	20.4%	50.8%	33,984	38,256	187,857
21	Louisiana	16.6%	19.5%	51.0%	12,701	14,902	76,601
22	Oklahoma	18.2%	19.4%	50.2%	12,248	13,328	68,771
23	Massachusetts	17.4%	19.4%	51.1%	23,074	26,761	138,264
24	Michigan	17.4%	19.4%	50.4%	28,243	31,773	164,166
25	Mississippi	16.9%	19.3%	51.3%	6,951	7,751	40,189
26	Montana	19.0%	18.8%	49.4%	5,633	6,079	32,300
27	Pennsylvania	17.1%	18.8%	50.6%	36,696	40,305	214,827
28	Kentucky	16.8%	18.6%	50.5%	10,643	11,655	62,749
29	Kansas	16.4%	18.6%	49.9%	8,844	10,198	54,949
30	Minnesota	16.7%	18.5%	49.9%	18,304	20,828	112,555
31	Alabama	17.5%	18.5%	51.4%	11,780	12,612	68,225
32	Ohio	17.0%	18.5%	50.7%	29,703	31,632	171,328
33	Rhode Island	16.5%	18.4%	51.0%	3,773	4,298	23,406
34	Maine	17.8%	18.2%	50.7%	5,639	5,909	32,436
35	Washington DC	19.1%	18.2%	52.4%	2,652	2,791	15,372
36	Connecticut	16.7%	18.1%	50.9%	11,385	12,122	66,954
37	Wyoming	17.1%	18.0%	48.8%	2,908	3,199	17,750
38	Arkansas	16.8%	17.9%	50.7%	7,909	8,519	47,680
39	Tennessee	17.5%	17.5%	51.0%	15,560	16,053	91,939
40	Vermont	15.3%	17.2%	50.3%	2,631	2,880	16,757
41	Delaware	16.4%	17.1%	51.4%	2,981	3,400	19,893
42	West Virginia	16.2%	16.2%	50.1%	4,237	3,805	23,509
43	Nebraska	14.8%	16.1%	49.7%	5,823	6,931	42,990
44	Utah	15.0%	16.0%	49.4%	8,637	11,054	69,136
45	New Hampshire	16.2%	16.0%	50.1%	4,710	4,742	29,727
46	Iowa	15.6%	15.9%	49.8%	9,092	9,466	59,463
47	Idaho	14.4%	14.8%	49.6%	4,949	6,074	41,098
49	North Dakota	16.0%	14.2%	48.6%	2,914	2,849	20,010
48	South Dakota	14.0%	13.6%	49.2%	2,834	2,958	21,798
50	Indiana	17.4%	S	50.4%	17,581	S	102,170
51	Wisconsin	15.9%	S	49.9%	16,197	S	104,400

Notes: Employer firms are firms reporting one or more employees. Non-employer, or self-employed firms, are not included. S = suppressed.

Source: U.S. Census Bureau. (2014). Survey of Business Ownership, 2012. U.S. Census Bureau (2021). Annual Business Survey, 2020 (Data Year 2019). U.S. Census Bureau (2021). 2020 Census and Population Estimates Program.

Community Wealth and Home Ownership Rates

AREA OF INQUIRY	FINDING	RECOMMENDATION
6. An analysis of community wealth in minority communities with recommendations to achieve a 10-year goal of raising levels of resident-owned businesses and housing in surrounding neighborhoods.	**Income and wealth are highly correlated with educational attainment.** 32% of Black Marylanders and 25% of Hispanic Marylanders have bachelor's degrees or higher, compared to 43% of all Marylanders. Their median incomes are \$72,931 and \$80,176, respectively, compared to \$91,431 for all Marylanders. Home ownership rates are 52% and 53% respectively, for Black and Hispanic households, compared to 67% for all Marylanders. Educational attainment and business ownership create clear pathways to wealth creation and expansion. **Business ownership is also correlated with income and wealth creation.** Although fewer than 15% of households nationally own a business, 40% of those in the top income decile own a business, compared to only 7% in the bottom five deciles. Households with businesses that employ more than five people have a median net worth of \$1.1 million (assets minus liabilities).	Recommendations in study requirements 3, 4, and 5 provide ideas that Maryland can build on as it initiates its strategic planning process aimed at increasing educational attainment, STEM employment rates, and business ownership rates needed to increase income, wealth, and home ownership rates in communities of color.

Methodology

RTI performed secondary research to identify the key factors driving income and wealth creation. RTI then analyzed state and county-level data on population by race, ethnicity, and gender; educational attainment; and median household income to demonstrate how these factors affect income and wealth creation at the county level. Business ownership data by race, ethnicity, and gender are not available at the county level outside of the largest counties; however, state business ownership rates and years to reach representational parity were presented in the previous section.

RTI also analyzed home ownership rates by race, ethnicity, and gender. To analyze the size of the gap in home ownership, RTI used Maryland's 2021 population breakdown by race, ethnicity, and gender as the target for representational parity. RTI used each group's 2020 business ownership, target home ownership rate, and 2010–2020 CAGR in home ownership to estimate the number of years required to reach representational parity. A change in the CAGR will change the estimated number of years to reach representational parity.

Data Sources

- U.S. Census Bureau. (2022). American Community Survey, 2021, 5-Year Average.
- U.S. Census Bureau. (2022). Census and 2020 Population Estimates Program, 2021.

TABLE 37. MARYLAND MEDIAN HOUSEHOLD INCOME, SHARE OF POPULATION WITH COLLEGE DEGREE, AND SHARE OF COUNTY POPULATION BY RACE, ETHNICITY, AND COUNTY, 2021 (5-YEAR AVERAGE)

COUNTY	VARIABLE	ALL	ASIAN	WHITE, NOT HISPANIC	TWO OR MORE	BLACK	NATIVE AMERICAN	HISPANIC, ANY RACE
Maryland	Income	$91,431	$115,073	$102,265	$94,781	$72,931	$76,025	$80,176
	Bachelor's+	42%	63%	48%	43%	32%	20%	25%
	Population	N/A	7%	58%	3%	31%	1%	11%
Howard	Income	$129,549	$151,369	$139,379	$111,536	$103,522	$89,073	$103,507
	Bachelor's+	63%	72%	65%	56%	55%	28%	40%
	Population	N/A	20%	55%	4%	21%	0%	8%
Calvert	Income	$120,295	$153,917	$116,485	$146,417	$76,097	S	$168,833
	Bachelor's+	36%	57%	37%	50%	24%	28%	37%
	Population	N/A	2%	80%	4%	14%	1%	5%
Montgomery	Income	$117,345	$128,746	$131,602	$111,216	$82,835	$95,129	$85,910
	Bachelor's+	60%	68%	70%	54%	46%	21%	27%
	Population	N/A	16%	59%	4%	20%	1%	20%
Charles	Income	$107,808	$111,776	$108,118	$117,239	$106,942	$89,936	$109,338
	Bachelor's+	31%	45%	29%	33%	32%	18%	31%
	Population	N/A	4%	40%	4%	52%	1%	7%
Anne Arundel	Income	$108,048	$103,946	$113,927	$104,525	$91,166	$71,333	$89,053
	Bachelor's+	43%	50%	45%	47%	37%	18%	32%
	Population	N/A	5%	72%	4%	19%	1%	9%
Frederick	Income	$106,129	$130,676	$107,885	$94,100	$84,922	$87,237	$79,828
	Bachelor's+	45%	64%	46%	41%	33%	N/A	27%
	Population	N/A	6%	79%	3%	12%	1%	11%
Carroll	Income	$104,708	$88,608	$105,525	$132,528	$98,833	$173,056	$91,875
	Bachelor's+	40%	62%	40%	37%	19%	N/A	37%
	Population	N/A	2%	91%	2%	4%	0%	4%
Queen Anne's	Income	$99,597	$45,074	$104,849	$97,857	$55,625	S	$64,716
	Bachelor's+	37%	47%	38%	49%	19%	25%	31%
	Population	N/A	1%	90%	2%	6%	1%	5%
St. Mary's	Income	$102,859	$127,439	$110,090	$114,915	$56,138	S	$101,471
	Bachelor's+	33%	44%	36%	40%	15%	0%	25%
	Population	N/A	3%	78%	4%	15%	1%	6%
Harford	Income	$98,495	$127,734	$100,804	$109,839	$83,138	$183,101	$90,504
	Bachelor's+	38%	55%	38%	41%	33%	26%	34%
	Population	N/A	3%	78%	3%	15%	0%	5%
Prince George's	Income	$91,124	$106,079	$98,865	$94,563	$90,818	$69,269	$77,976
	Bachelor's+	35%	55%	46%	37%	35%	25%	12%
	Population	N/A	4%	27%	3%	64%	1%	20%
Cecil	Income	$81,817	$87,583	$85,142	$66,843	$64,173	S	$59,350
	Bachelor's+	26%	54%	25%	32%	25%	13%	26%
	Population	N/A	2%	88%	3%	8%	0%	5%
Baltimore County	Income	$81,846	$87,373	$90,173	$72,977	$68,526	$60,278	$68,790
	Bachelor's+	34%	72%	60%	48%	19%	23%	33%
	Population	N/A	7%	59%	3%	31%	1%	6%

COUNTY	VARIABLE	ALL	ASIAN	WHITE, NOT HISPANIC	TWO OR MORE	BLACK	NATIVE AMERICAN	HISPANIC, ANY RACE
Talbot	Income	$79,349	$76,222	$85,195	$57,153	$52,969	$98,553	$50,428
	Bachelor's+	41%	71%	44%	31%	21%	9%	21%
	Population	N/A	2%	83%	2%	13%	0%	7%
Worcester	Income	$71,262	$81,929	$75,858	$43,750	$44,080	S	$57,465
	Bachelor's+	31%	64%	32%	19%	14%	30%	32%
	Population	N/A	2%	83%	2%	13%	0%	4%
Washing-ton	Income	$67,349	$87,557	$69,052	$62,445	$45,048	S	$62,375
	Bachelor's+	23%	60%	23%	28%	13%	10%	14%
	Population	N/A	2%	81%	3%	13%	0%	7%
Wicomico	Income	$63,610	$69,668	$66,206	$73,472	$51,725	$68,094	$58,923
	Bachelor's+	29%	38%	34%	36%	15%	42%	20%
	Population	N/A	3%	66%	3%	28%	0%	6%
Kent	Income	$64,451	S	$73,324	$90,089	$33,198	S	$81,250
	Bachelor's+	38%	54%	41%	36%	17%	63%	39%
	Population	N/A	1%	82%	2%	14%	1%	5%
Caroline	Income	$63,027	$207,500	$66,908	$63,836	$39,508	$91,477	$49,567
	Bachelor's+	19%	31%	20%	25%	12%	0%	22%
	Population	N/A	1%	81%	3%	14%	1%	8%
Garrett	Income	$58,011	$185,202	$57,963	$28,667	S	$130,815	S
	Bachelor's+	25%	70%	24%	31%	11%	80%	35%
	Population	N/A	1%	97%	1%	1%	0%	1%
Dorchester	Income	$55,652	S	$62,658	$50,379	$36,506	S	$53,958
	Bachelor's+	20%	24%	22%	21%	13%	0%	11%
	Population	N/A	1%	67%	3%	29%	1%	6%
Baltimore City	Income	$54,124	$65,039	$83,012	$65,085	$42,493	$42,125	$62,698
	Bachelor's+	34%	72%	60%	48%	19%	23%	33%
	Population	N/A	3%	32%	2%	62%	1%	6%
Allegany	Income	$51,090	$94,783	$51,410	$46,519	$36,000	S	$43,633
	Bachelor's+	20%	65%	22%	11%	2%	19%	13%
	Population	N/A	1%	88%	2%	9%	0%	2%
Somerset	Income	$48,661	S	$57,908	$48,199	$33,990	S	$52,500
	Bachelor's+	17%	42%	20%	5.6%	12%	0%	11%
	Population	N/A	1%	55%	3%	41%	1%	4%

Notes: Native American includes Native American and Alaska Native. Native Hawaiian and Other Pacific Islander are excluded due to insufficient data for several counties. S = suppressed data. "Bachelor's+" estimates are for the adult population aged 25 or older.

Source: U.S. Census Bureau. (2022). American Community Survey, 2021, 5-Year Average. U.S. Census Bureau. (2022). 2020 Census and Population Estimates Program, 2021.

TABLE 38. MARYLAND HOME OWNERSHIP BY RACE AND ETHNICITY: CURRENT LEVELS, PERCENT OF TOTAL HOMES OWNED, COMPOUND ANNUAL GROWTH RATE, 2010–2020, AND ESTIMATED YEARS TO REPRESENTATIONAL PARITY

	OWNER-OCCUPIED 2010	OWNER-OCCUPIED 2020	OWNER-OCCUPIED 2020	POPULATION	2010–2020 OWNERSHIP CAGR	YEARS TO PARITY
White	1,035,163	995,763	66.6%	57.8%	-0.4%	> Parity
Black	319,187	340,012	22.7%	31.4%	0.6%	51
Asian	65,887	86,026	5.8%	6.9%	2.7%	7
Two or more races	17,570	38,317	2.6%	3.1%	8.1%	2
Other race/ unclassified	23,427	32,107	2.1%	0.1%	3.0%	> Parity
Native American[1]	2,928	3,603	0.2%	0.7%	2.1%	60
Total	**1,464,162**	**1,495,828**	**100%**	**100%**		
Hispanic, any race	60,031	81,528	5.5%	11.1%	3.1%	23

Note: [1] Native American includes Native American and Alaska Native.

Source: U.S. Census Bureau. (2011, 2021). American Community Survey, 2010 and 2020, 5–Year Average. U.S. Census Bureau. (2022). 2020 Census and Population Estimates Program, 2021.

TABLE 39. MARYLAND HOME OWNERSHIP RATES BY RACE AND ETHNICITY, 2020

	OWNER-OCCUPIED	RENTER-OCCUPIED	TOTAL UNITS	HOME OWNERSHIP RATE
White	995,763	312,446	1,308,209	76.1%
Black	340,012	318,601	658,613	51.6%
Asian	86,026	38,411	124,437	69.1%
Two or more races	38,317	26,549	64,866	59.1%
Native American[1]	3,603	2,477	6,080	59.3%
Pacific Islander[2]	490	418	908	54.0%
Other race/unclassified	31,617	35,797	67,414	46.9%
Maryland	**1,495,828**	**734,699**	**2,230,527**	**67.1%[3]**
Hispanic	81,528	71,772	153,300	53.2%

Notes: [1] Native American includes Native American and Alaska Native. [2] Pacific Islander includes Native Hawaiian and Other Pacific Islander.[3] For comparison, the U.S. home ownership rate is 64.4%.

Source: U.S. Census Bureau. (2021). American Community Survey, 2020, 5–Year Average.